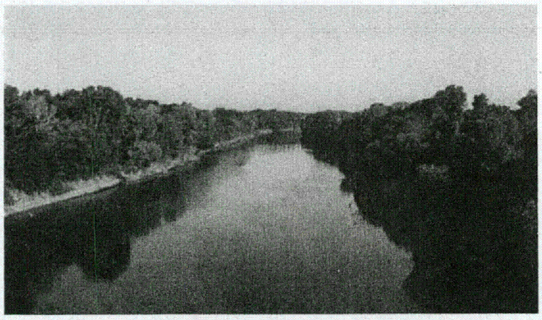
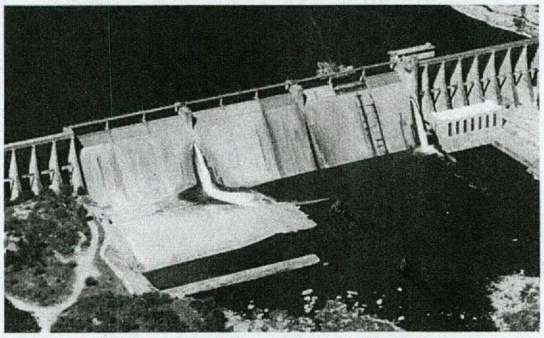
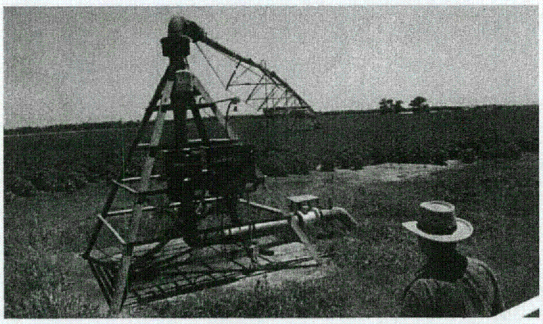


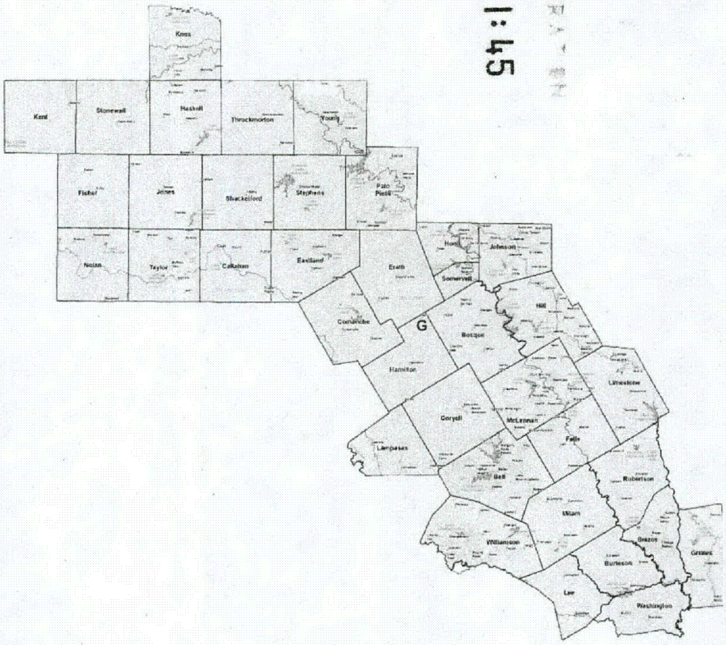
BRAZOS G
WATER PLANNING GROUP

Texas Water
Development Board

2016 Brazos G Regional Water Plan

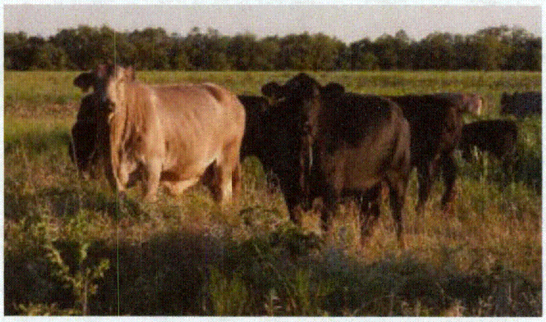
Volume I
Executive Summary and Regional Water Plan

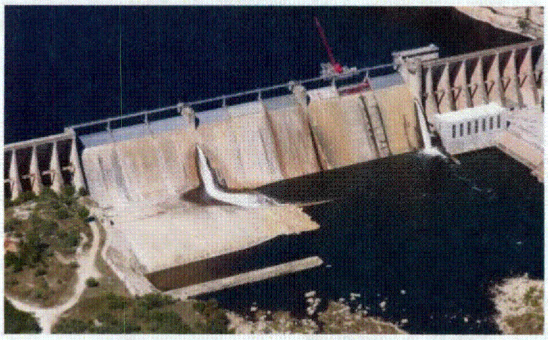
December 2015

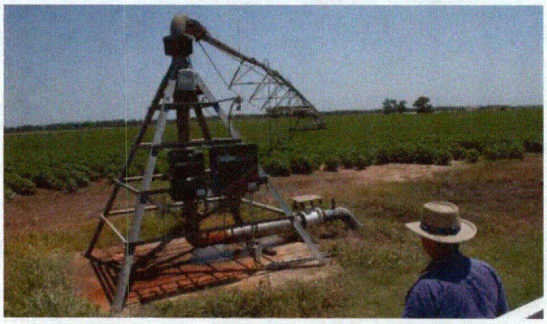


HDR

FREESE NICHOLS







BRAZOS G
WATER PLANNING GROUP

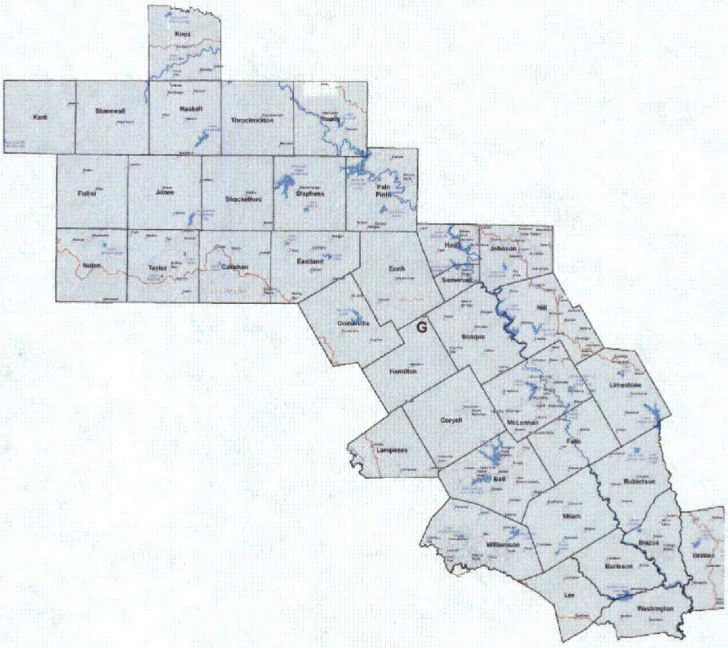
Texas Water
Development Board

2016 Brazos G Regional Water Plan

Volume I

Executive Summary and Regional Water Plan

December 2015



HDR

FREESE AND NICHOLS

This page intentionally left blank.

2016 Brazos G Regional Water Plan

STATE OF TEXAS
DAVID D. DUNN
82630
REGISTERED
PROFESSIONAL ENGINEER

11/23/15

David D. Dunn, PE

STATE OF TEXAS
ADAM CORY SHOCKLEY
94761
LICENSED
PROFESSIONAL ENGINEER

11/23/15

Adam Cory Shockley, PE

STATE OF TEXAS
LARRY F. LAND
31380
REGISTERED
PROFESSIONAL ENGINEER

11-23-15

Larry F. Land, PE

STATE OF TEXAS
PETER L. NEWELL
108054
LICENSED
PROFESSIONAL ENGINEER

11-23-15

Peter L. Newell, PE

STATE OF TEXAS
KRISTINE S. SHAW
93962
LICENSED
PROFESSIONAL ENGINEER

11-23-15

Kristine S. Shaw, PE

STATE OF TEXAS
ZACHARY A. STEIN
106331
LICENSED
PROFESSIONAL ENGINEER

11/23/15

Zachary A. Stein, PE

Grady Reed

Laura Sampson

HDR Engineering, Inc.
Registration No. F-754.

This page intentionally left blank.

Table of Contents

Appendices

List of Figures

List of Tables

This page intentionally left blank.

Executive Summary

ES

Executive Summary

This page intentionally left blank.

Executive Summary

ES.1 Background

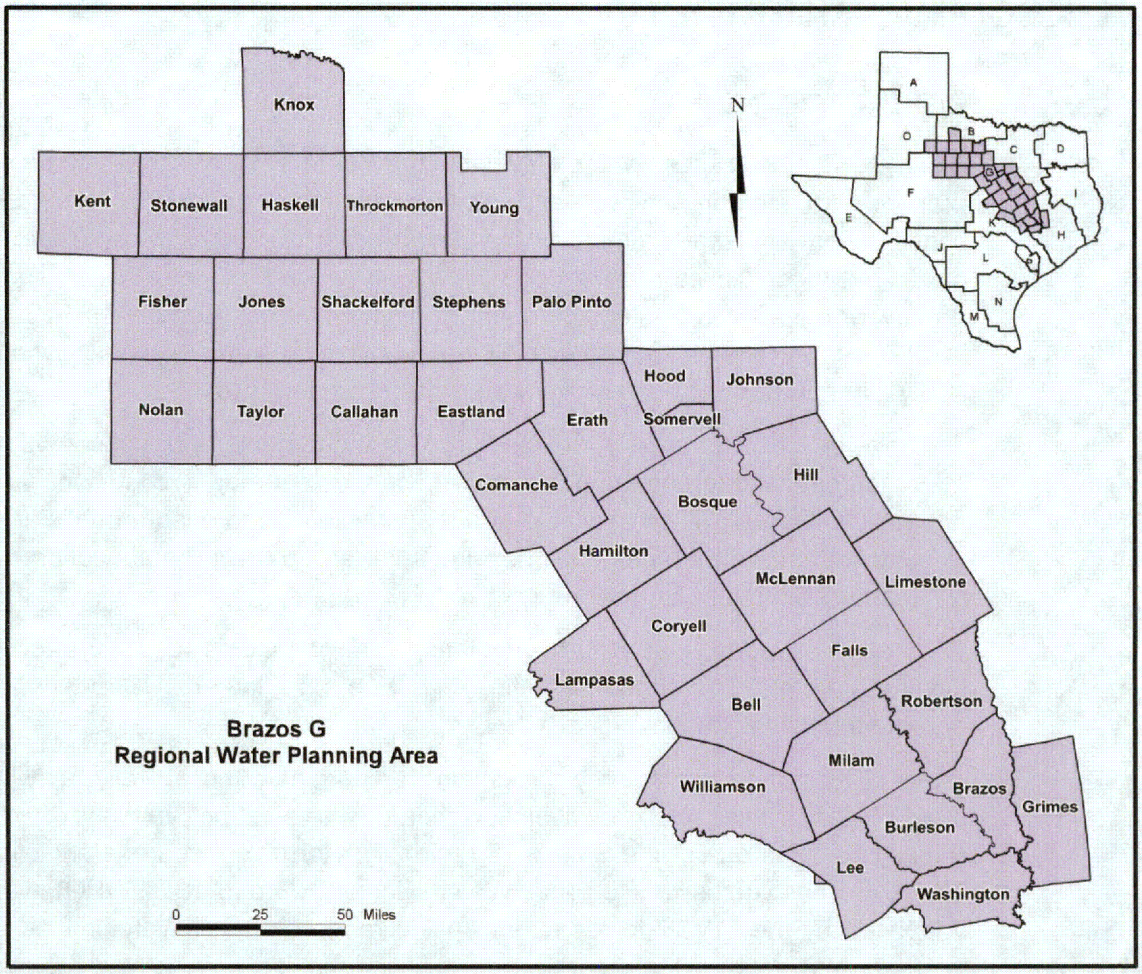
Since 1957, the Texas Water Development Board (TWDB) has been charged with preparing a comprehensive and flexible long-term plan for the development, conservation, and management of the state's water resources. The current state water plan, Water for Texas, January 2012, was produced by the TWDB and based on approved regional water plans pursuant to requirements of Senate Bill 1 (SB1), enacted in 1997 by the 75th Legislature, and further modified by subsequent legislation. As stated in SB1, the purpose of the regional water planning effort is to:

> "Provide for the orderly development, management, and conservation of water resources and preparation for and response to drought conditions in order that sufficient water will be available at a reasonable cost to ensure public health, safety, and welfare; further economic development; and protect the agricultural and natural resources of that particular region."

SB1 also provides that future regulatory and financing decisions of the Texas Commission on Environmental Quality (TCEQ) and the TWDB be consistent with approved regional plans.

The TWDB is the state agency designated to coordinate the overall statewide planning effort. The Brazos G Area, which is comprised of all or portions of 37 counties (Figure ES-1), is one of the State's 16 regional water planning areas established by the TWDB. The Brazos G Regional Water Planning Group (BGRWPG) was originally appointed by the TWDB to represent a wide range of legislatively-defined stakeholder interests and acts as the steering and decision-making body of the regional planning effort. As members (who serve without pay) leave the planning group, new members are appointed by the BGRWPG through solicitation of nominations. The BGRWPG adopted bylaws to govern its operations and, in accordance with its bylaws, designated the Brazos River Authority (BRA) as the administrative agency and principal contractor to receive grants from the TWDB to develop the water plan. Mr. Trey Buzbee currently serves as the Regional Planning Project Manager for the BRA, assisted by Jennifer White. The BGRWPG selected HDR Engineering, Inc. as the prime consultant for the planning and engineering tasks necessary for plan development.

Figure ES-1. Brazos G Regional Water Planning Area



The BGRWPG consists of 23 voting members who represent the following 12 interest groups:

- the public,
- counties,
- municipalities,
- industries,
- agriculture,
- the environment,
- small businesses,
- electric-generating utilities,
- river authorities,
- water districts,
- water utilities, and
- groundwater management areas.

The BGRWPG also includes several non-voting members who participate in the deliberations of the BGRWPG, and contribute excellent knowledge and insight to the group. Table ES-1 lists the voting and non-voting members and interest groups represented on the BGRWPG who contributed to the development of the 2016 Brazos G Regional Water Plan (both current and recently resigned).

The regional water plans are developed on a 5-year cycle, with previous plans developed in 2001, 2006, and 2011. In accordance with legislative and rule requirements, all of the regional water plans must be completed and adopted by December 1, 2015. The TWDB will then compile the 16 plans into the 2017 State Water Plan. The regional water plans will continue to be updated every 5 years.

Table ES-1. Current and Recent Brazos G RWPG Members

Interest Group	Name	Affiliation
Voting Members		
Agricultural	Judge Dale Spurgin (past Chair) Wayne Wilson (Chair)	Judge, Jones County Rancher, Brazos County
Counties	County Commissioner Tim Brown Judge Travis Floyd Judge Mike Sutherland	Bell County Knox County Burleson County
Electric Generating Utilities	Brian Patrick (resigned Dec. 2014) Gary Spicer	Luminant Luminant
Environmental	Kevin Wagner	Texas Water Resources Institute
Industry	Jim Hodson (passed away Sept. 2014) Randy Waclawczyk (resigned 2014)	ALCOA RRW Consulting
Municipalities	David Blackburn (resigned Nov. 2014) Jim Briggs Alva Cox Larry Groth (resigned Nov. 2014) Tommy O'Brien Kenny Weldon	City of Temple City of Georgetown City of Granbury City of Waco City of Abilene City of Stephenville
Public	Gary Newman	Trio Development
River Authorities	Phil Ford (Secretary)	Brazos River Authority
Small Business	Gail L. Peek (Vice Chair)	Beard Kultgen Brophy Bostwick & Dickson
Water Districts	Joe Cooper Kelly Kinard	Middle Trinity GCD West Central Texas MWD
Groundwater Management Areas	Dale Adams Zach Holland Mike McGuire Judy Parker Gary Westbrook	Wes-Tex GCD Bluebonnet GCD Rolling Plains GCD Clearwater Underground WCD Post Oak Savannah GCD
Water Utilities	Charles Beseda	Birome WSC

Table ES-1. Current and Recent Brazos G RWPG Members

Interest Group	Name	Affiliation
	Non-Voting Members	
Llano Estacado (O) RWPG Liaison	Mike McClendon	Brazos River Authority
Region C RWPG Liaison	Bill Ceverha	Self-Employed
Region F RWPG Liaison	John Grant	Region F Chair
Lower Colorado (K) RWPG Liaison	Mark Jordan	Lower Colorado River Authority
Region H RWPG Liaison	David Collinsworth	Brazos River Authority
LCRA Representative	James Kowis	Lower Colorado River Authority
TWDB Project Manager	Lann Bookout	Texas Water Development Board
Texas Parks and Wildlife Dept.	Jennifer Bronson	Texas Parks and Wildlife Dept.
Texas Dept. of Agriculture	E.W. Wesley	Texas Department of Agriculture

The planning horizon to be used is the 50-year period from 2020 to 2070. This planning period allows for long-term forecast of future water demands and supplies sufficiently in advance of needs to allow for appropriate water management measures to be implemented. As required by statute, the TWDB has promulgated planning rules and guidelines to focus the efforts and to provide for general consistency among the planning areas so that the regional plans can then be aggregated into the overall State Water Plan.

The 2016 Brazos G Regional Water Plan is organized in accordance with TWDB guidelines by chapter as follows.

Chapter 1	Description of the Brazos G Area
Chapter 2	Projected Population and Water Demands
Chapter 3	Evaluation of Current Water Supplies
Chapter 4	Comparison of Water Demands with Water Supplies to Determine Needs
Chapter 5	County and Wholesale Water Provider Plans (Volume I)
Chapter 5	Evaluation of Water Management Strategies (Volume II)
Chapter 6	Consistency with Long Term Protection of the State's Water, Agricultural and Natural Resources
Chapter 7	Drought Response Information, Activities and Recommendations
Chapter 8	Recommendations for Unique Stream Segments, Unique Reservoir Sites and Other Legislative Policy Recommendations
Chapter 9	Infrastructure Financing

Chapter 10 Public Participation and Adoption of Plan

Chapter 11 Implementation and Comparison to the 2011 Brazos G Regional Water Plan

ES.2 Description of the Brazos G Area

The Brazos G Area can be described by a single word—**diverse**. From the piney woods of Brazos and Grimes Counties to the rolling plains of Nolan County; from sparsely populated Stonewall County to Williamson County, often listed as the fastest growing county in the nation; from the prodigious Carrizo-Wilcox Aquifer in the southeast to the meager dribbles from windmills in Shackelford County; from 44 inches of annual rainfall in the east to 24 inches annually in the west (in a good year); from the Chisholm Trail through Stephens County to the NAFTA trail known as Interstate Highway 35 (IH-35); these diverse characteristics make for a wide variation in water supplies, demands, and availability of affordable options to meet needs.

ES.3 Population and Water Demand Projections

The TWDB publishes population and water demand projections for each county in the state for use by the regional water planning groups. In the Brazos G Area, population projections were developed for 197 municipal water user groups (WUGs), which are defined as cities with a population greater than 500 in 2010, and water supply corporations and utilities using water volumes of 280 acre-feet (acft) or more in 2010. To account for people living outside the cities or service areas of defined WUGs, projections are also developed for a 'county-other' category of municipal water use for each of the 37 counties in the region. Several utilities have grown into WUG size since the 2011 Plan, and the 2016 Plan includes 8 more municipal WUGs than the 2011 Plan, including Texas A&M University, which was included as part of the City of College Station WUG in the 2011 Plan, but has been separated out for the 2016 Plan.

Figure ES-2 illustrates population growth in the entire Brazos G Regional Water Planning Area (BGRWPA) for 1900 to 2010 and projected growth for 2020 to 2070.

Population trends may be further understood by dividing the planning region into three subregions: the northwestern Rolling Plains, the central IH-35 Corridor, and the southeastern Lower Basin. Figure ES-3 illustrates historical population growth in the three sub-regions from 1900 to 2010 and projected growth from 2020 to 2070. Projected growth is greatest in the IH-35 Corridor.

Water demand projections have been compiled for six categories of water use: (1) Municipal, (2) Manufacturing, (3) Steam-Electric Cooling, (4) Mining, (5) Irrigation, and (6) Livestock. Each of the non-municipal uses is aggregated on a county basis, and is defined as a separate water user group (WUG) within each county. The TWDB has developed and provided water demand projections for each of the five non-municipal WUGs in each of the 37 counties in the Brazos G Area.

Figure ES-2. Historical and Projected Brazos G Area Population

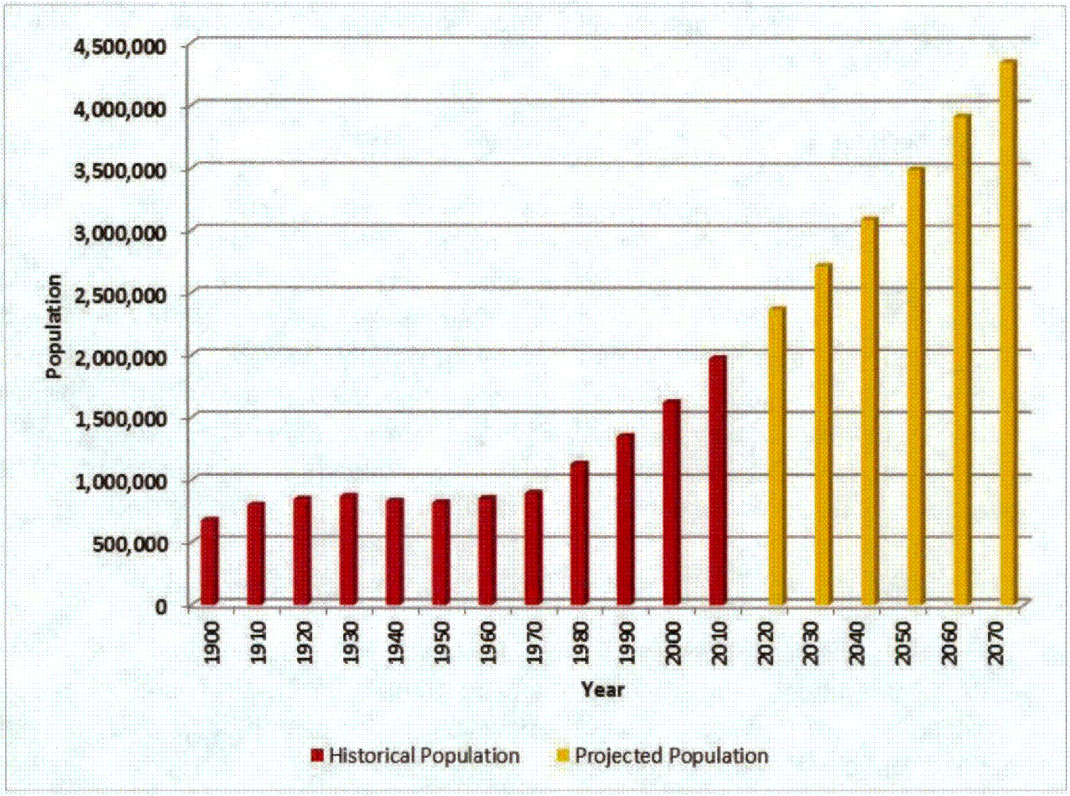
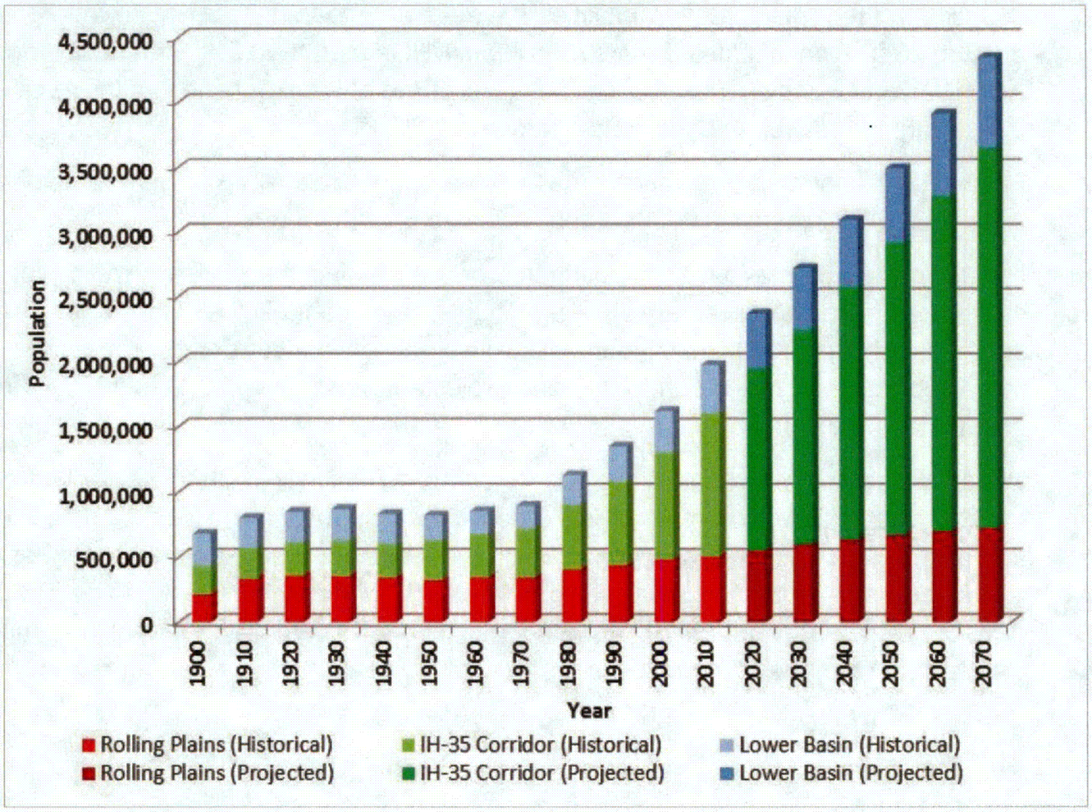


Figure ES-3. Historical and Projected Population by Subregion



Annual total water use for the region is projected to increase from 853,170 acft in 2010 to 1,478,295 acft in 2070, a 73 percent increase, as shown in Figure ES-4. The six types of water use as percentages of total water use are shown for 2010 and 2070 in Figure ES-5. Municipal and steam-electric water use as percentages of the total water use are projected to increase from 2010 to 2070, while mining, irrigation, and livestock water use are projected to decrease as percentages of the total. Manufacturing use is projected to retain at about the same percentage of the total water use.

Population and water demand projections for each WUG category are presented in Table ES-2, which is a report generated by the TWDB's DB17 database application. Population projections for each municipal WUG and water demands for each WUG and WWP in the Brazos G Area are presented in Appendix L, which contains detailed reports from DB17.

Figure ES-4. Projected Total Water Demand

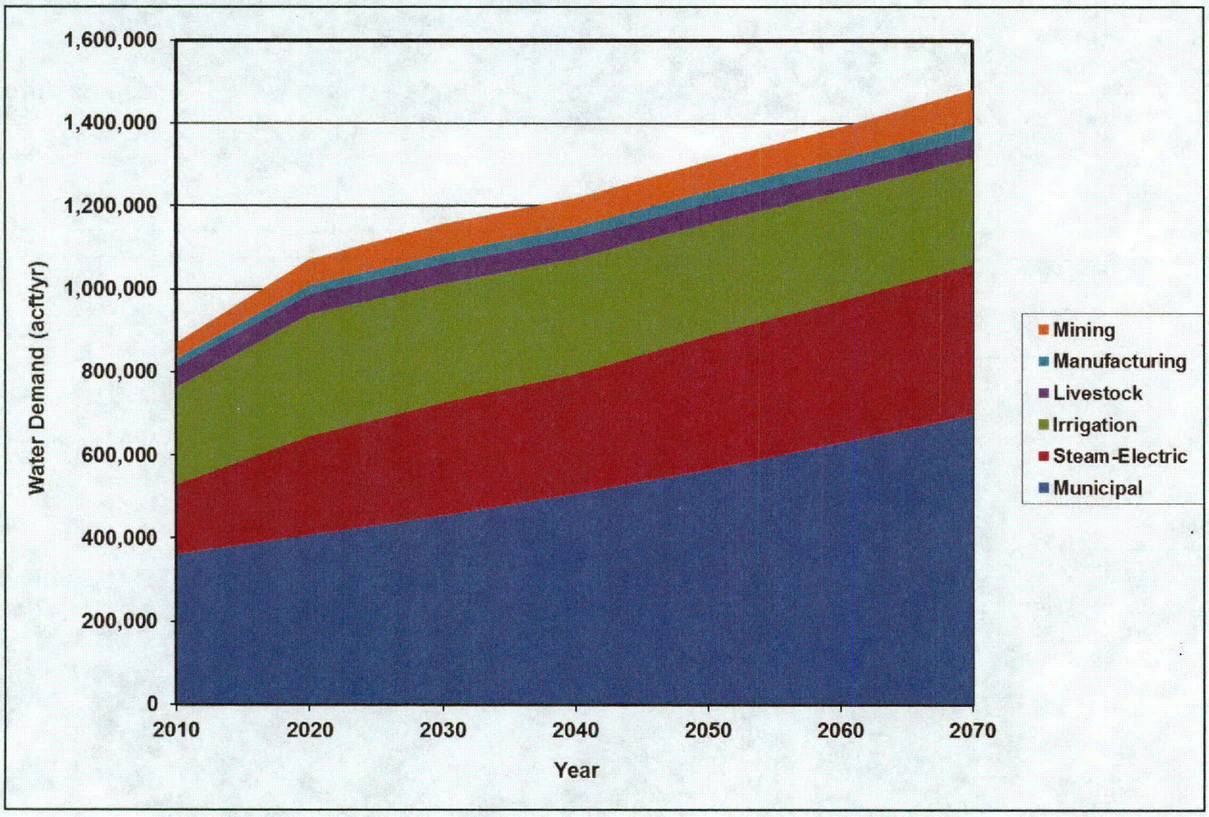
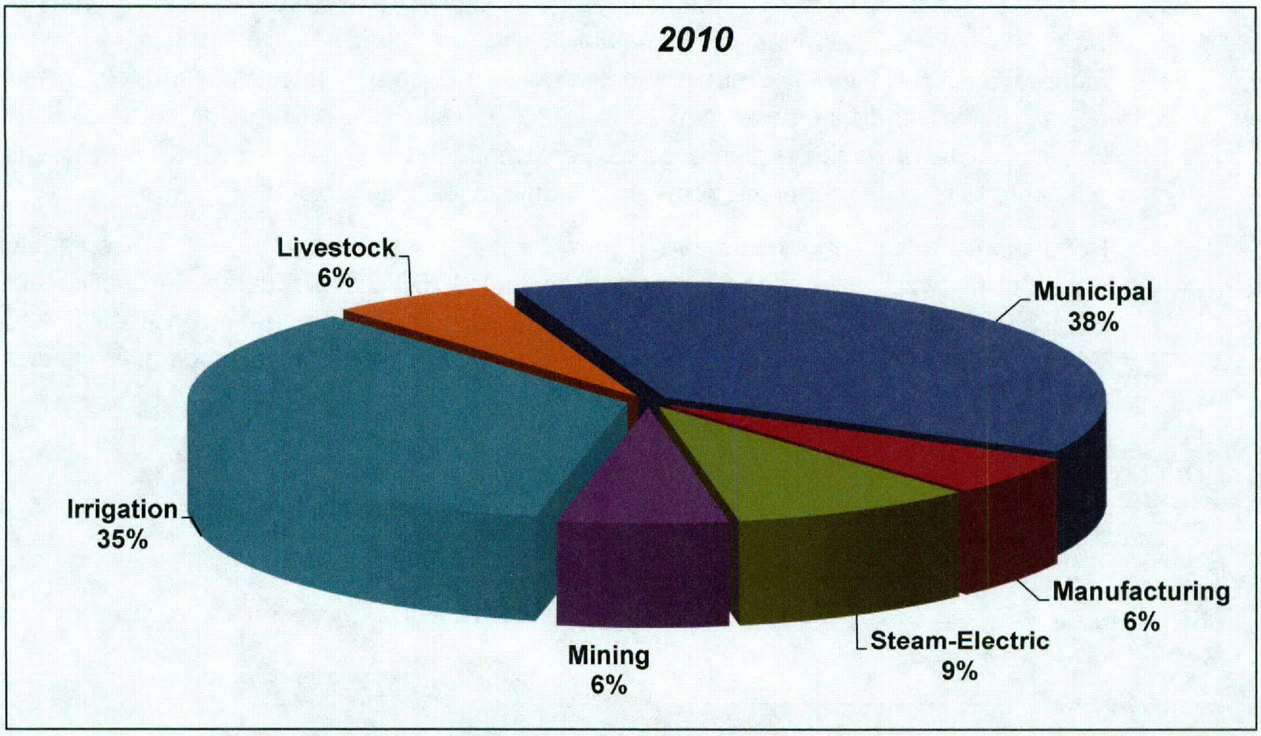


Figure ES-5. Total Water Demand in 2010 and 2070



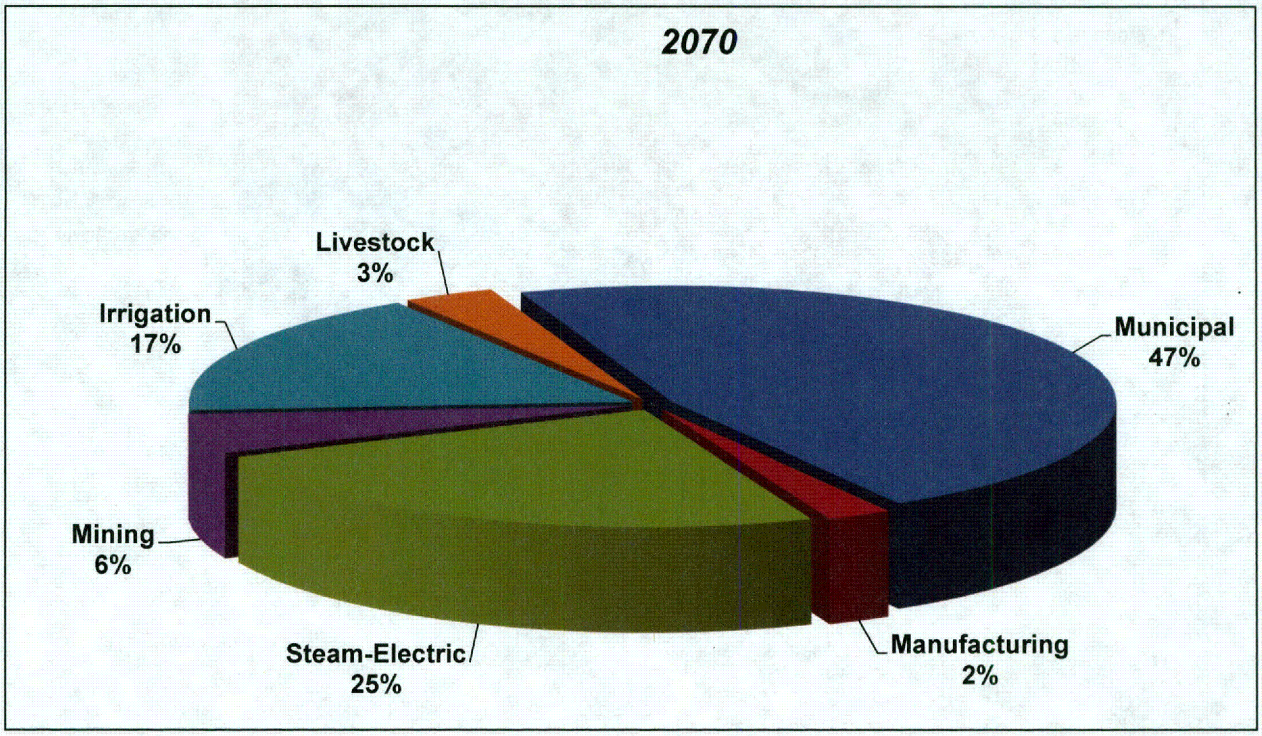


Table ES-2. Population, Water Demands, and Needs Projections by WUG Category (DB17 Report)

REGION G	2020	2030	2040	2050	2060	2070
MUNICIPAL						
POPULATION	2,052,854	2,373,753	2,713,083	3,093,516	3,468,428	3,856,114
DEMANDS (acre-feet per year)	362,711	407,517	455,417	511,562	569,831	630,472
EXISTING SUPPLIES (acre-feet per year)	475,109	473,037	469,939	462,157	459,100	456,266
NEEDS (acre-feet per year)*	(23,116)	(50,914)	(87,636)	(134,096)	(181,183)	(232,185)
COUNTY-OTHER						
POPULATION	318,210	346,943	383,924	401,028	449,769	494,928
DEMANDS (acre-feet per year)	40,383	43,281	47,866	49,815	56,767	63,357
EXISTING SUPPLIES (acre-feet per year)	40,169	40,031	40,057	40,170	40,676	40,914
NEEDS (acre-feet per year)*	(9,198)	(10,862)	(14,496)	(15,548)	(21,313)	(27,217)
MANUFACTURING						
DEMANDS (acre-feet per year)	21,848	24,554	27,270	29,687	32,223	34,977
EXISTING SUPPLIES (acre-feet per year)	26,247	28,795	30,077	31,270	32,494	33,940
NEEDS (acre-feet per year)*	(7,179)	(7,263)	(8,620)	(9,771)	(11,040)	(12,319)
MINING						
DEMANDS (acre-feet per year)	61,586	70,381	68,875	70,949	75,038	81,409
EXISTING SUPPLIES (acre-feet per year)	21,165	21,133	21,099	21,067	21,033	21,001
NEEDS (acre-feet per year)*	(41,731)	(50,127)	(50,494)	(53,675)	(57,802)	(64,121)
STEAM ELECTRIC POWER						
DEMANDS (acre-feet per year)	239,299	272,711	288,696	322,702	341,364	362,386
EXISTING SUPPLIES (acre-feet per year)	279,241	280,555	279,298	280,080	279,340	275,170
NEEDS (acre-feet per year)*	(70,834)	(88,264)	(99,300)	(128,694)	(144,204)	(162,658)
LIVESTOCK						
DEMANDS (acre-feet per year)	49,650	49,650	49,650	49,650	49,650	49,650
EXISTING SUPPLIES (acre-feet per year)	49,650	49,650	49,650	49,650	49,650	49,650
NEEDS (acre-feet per year)*	0	0	0	0	0	0
IRRIGATION						
DEMANDS (acre-feet per year)	292,091	284,321	276,847	268,840	262,305	256,044
EXISTING SUPPLIES (acre-feet per year)	215,562	209,152	202,681	202,413	205,381	204,856
NEEDS (acre-feet per year)*	(83,218)	(83,258)	(83,455)	(77,447)	(70,261)	(67,066)
REGION TOTALS						
POPULATION	2,371,064	2,720,696	3,097,007	3,494,544	3,918,197	4,351,042
DEMANDS (acre-feet per year)	1,067,568	1,152,415	1,214,621	1,303,205	1,387,178	1,478,295
EXISTING SUPPLIES (acre-feet per year)	1,107,143	1,102,353	1,092,801	1,086,807	1,087,674	1,081,797
NEEDS (acre-feet per year)*	(235,276)	(290,688)	(344,001)	(419,231)	(485,803)	(565,566)

*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.

ES.4 Water Supply

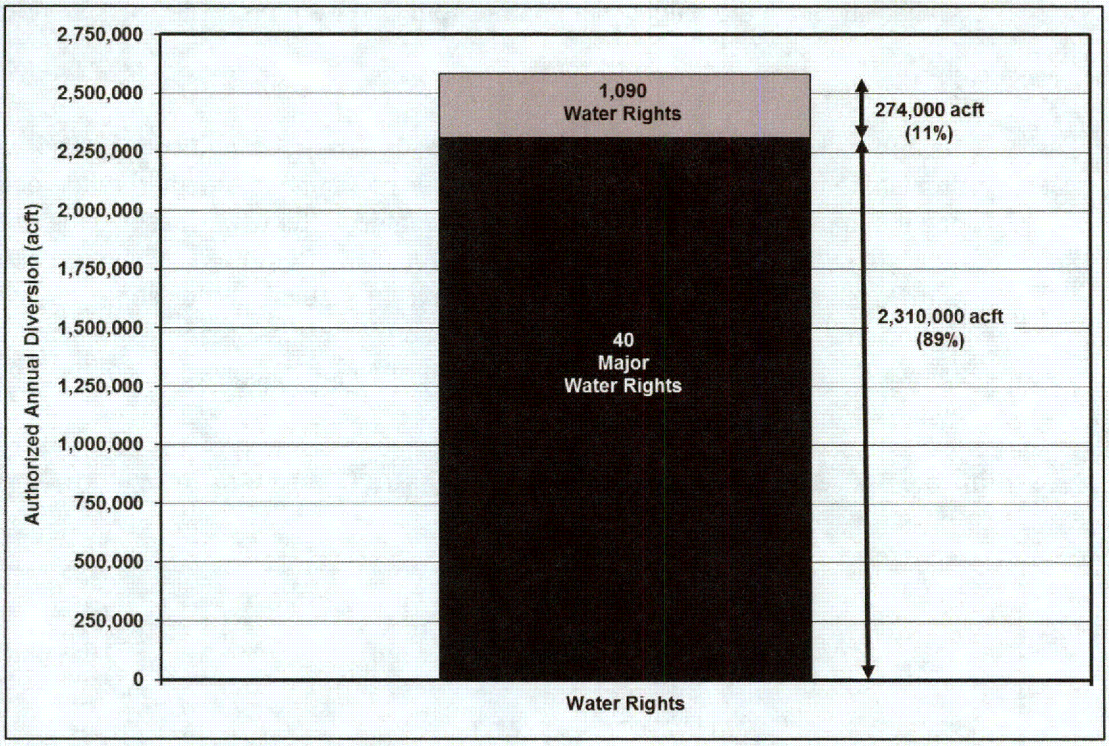
ES.4.1 Surface Water Supplies

Streamflow in the Brazos River and its tributaries, along with reservoirs in the Brazos River Basin and Colorado River Basin, comprise the surface water supply of the Brazos G Area. Diversions and use of this surface water occurs throughout the entire region. However, the supply of surface water varies greatly through the region due to the large variation in rainfall and a correspondingly large variation in evaporation rates. The principal tributaries to the Brazos River in the planning area are the Clear Fork, the Double Mountain Fork, the Salt Fork, Bosque River, Little River, Navasota River, Little Brazos River and Yegua Creek. Major water supply reservoirs are owned by the BRA (three in the planning region), U.S. Army Corps of Engineers (nine in the region), West Central Texas MWD, the City of Abilene, and Texas Utilities. The western part of the region is heavily dependent on surface water sources, partly due to the absence of large quantities of groundwater.

The State of Texas owns the surface water resources of the State, and issues water rights to utilize surface water. A total of 1,130 water rights currently exist in the Brazos River Basin, with a total authorized diversion of 2,584,000 acft/yr, of which 964 rights with total authorized diversions of 1,323,000 acft/yr are located in the BGRWPA. It is important to note that a small percentage of the water rights make up a large percentage of the authorized diversion volume. In the Brazos River Basin, 40 water rights (3.7 percent) make up 2,310,000 acft/yr (89.7 percent) of the authorized diversion volume. The remaining 1,090 water rights consist primarily of small irrigation rights distributed throughout the river basin. Figure ES-6 shows a comparison of significant water rights in the Brazos River Basin by number of rights and diversion volume.

The Brazos Basin Water Availability Model (Brazos WAM) Run 3 maintained by the TCEQ was used to determine surface water supply available to WUGs and WWPs in the Brazos G Area. The model input data were modified to account for expected future return flows (discharge of wastewater effluent), future sedimentation conditions for major reservoirs, and existing subordination agreements. The resulting model is termed the Brazos G WAM. Firm yield supply was computed for each major reservoir (greater than 5,000 acft authorized storage capacity), and smaller reservoirs that serve as municipal water supplies. Supplies for run-of-river water rights are based on the minimum annual supply (computed on a monthly basis). Surface water supplies were allocated to individual WUGs and WWPs based upon a listing of water right ownership as maintained by TCEQ, and contractual agreements between water rights holders and wholesale customers. Supplies were constrained based upon facility limitations to access the raw water supply, such as intake capacity and water treatment plant capacity.

Figure ES-6. Comparison of Water Rights in the Brazos River Basin



ES.4.2 Groundwater Supplies

Groundwater supplies in 21 counties in the Brazos G Area are regulated by 13 Groundwater Conservation Districts (GCDs). These GCDs are part of Groundwater Management Areas 6, 7, 8, 12, and 14, which are tasked with determining Desired Future Conditions (DFCs) and the Modeled Available Groundwater (MAG) for the jointly-regulated aquifers in their areas. The GCDs and GMAs affecting the Brazos G Area are shown in Figure ES-7. The MAG serves as the maximum annual supply that can be developed from an aquifer within a county for the purposes of regional water planning. For aquifers without a MAG determination, water availability estimates used in the 2011 Plan were adopted by the BGRWPG for use in the 2016 Plan.

Fifteen aquifers underlie parts of the Brazos G Area and, if developed fully, can provide a combined reliable supply of about 634,369 acft/yr, (2020 decade) based on the MAGs and other availability estimates for aquifers without a MAG estimate. As currently developed, a total groundwater supply of 396,771 acft/yr exists in the planning area (2020 estimate). The Seymour Aquifer supplies significant quantities of water in the western part of the region. Other aquifers that are depended on in the western part of the region are the Dockum and the Edwards-Trinity. The Trinity and Edwards-BFZ (Northern Segment) are heavily relied upon in the IH-35 corridor and to the west. In the eastern part of the region, the Carrizo-Wilcox is a prolific water supply with lesser amounts pumped from the Queen City, Sparta, and Brazos River Alluvium.

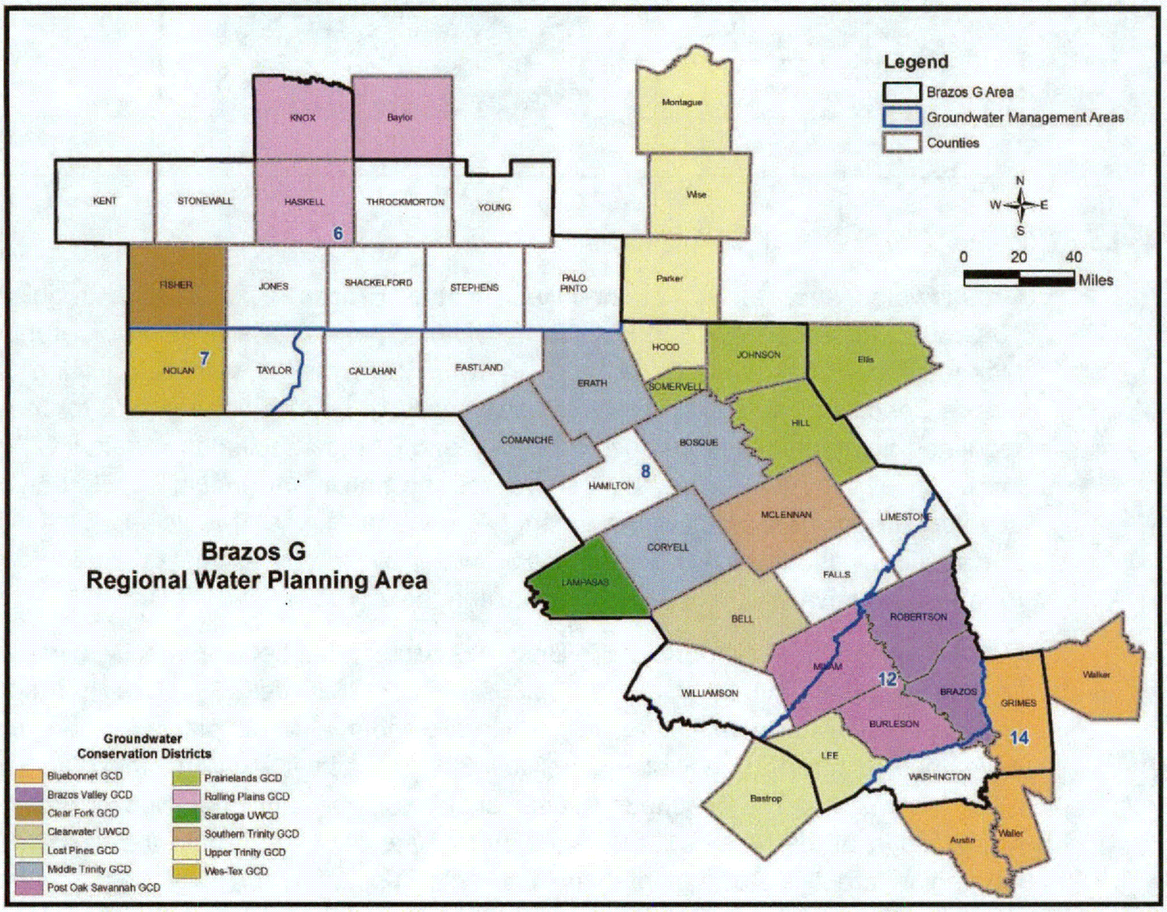
MAG was allocated to each existing user based upon currently installed well capacity for municipal WUGs and WWPs, and recent pumping estimates for county-aggregated WUGs. When the existing capacities exceeded the MAG, supplies adjusted proportionally so that the MAG would not be exceeded.

Existing water supplies by WUG category are presented in Table ES-2. Detailed water availability and water supply summaries from DB17 are presented in Appendix L.

ES.4.3 Water Quality

Natural salt pollution has been recognized as a serious and widespread water quality problem in the Brazos River Basin. No other pollution source, man-made or natural, has had the impact of the natural salt sources located in the upper basin. Due to these water quality issues, some sources of water—particularly from Lake Whitney, Lake Granbury, and Possum Kingdom Reservoir—may limit their suitability for some uses and require higher cost, advanced treatment (desalination). As the Brazos River flows to the Gulf, inflows from tributaries dilute the concentration of dissolved minerals, improving the quality of water.

Figure ES-7. Groundwater Conservation Districts and Groundwater Management Areas

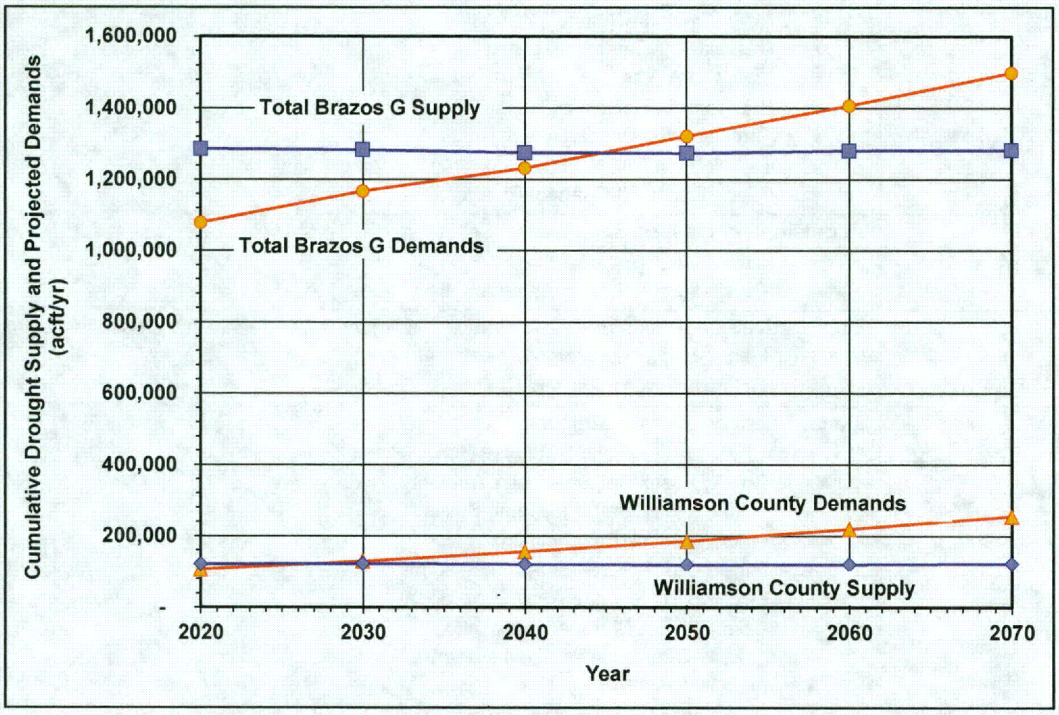


ES.4.4 Supply and Demand Comparison

Supplies are compared with projected demands, and shortages (needs) or surpluses are computed for each WUG and WWP. Table ES-2 presents a summary of identified water needs by WUG category. Detailed tabulations of water needs from various DB17 reports are presented in Appendix L.

A comparison of total supplies available (developed groundwater supplies and firm surface water) with demand for all use categories in the planning area shows a surplus past the year 2040. These mask shortages that are projected to occur to individual water supply entities and water user groups. Figure ES-8 illustrates this issue by summarizing demands and supplies for the Brazos G Area, and for Williamson County. Shortages are projected for Williamson County starting about the year 2030, while overall regional supplies are projected to exceed regional demands until past the year 2040. Even within most counties that have projected overall surpluses, there are individual entities that do not have sufficient supply to meet projected needs. Every county in the Brazos G Area has at least one WUG with a projected shortage.

Figure ES-8. Comparison of Supplies and Demands for Brazos G Area and Williamson County



ES.4.5 Water Supply Strategies to Meet Needs

The water management strategies in Table ES-3 were identified by the BGRWPG as potentially feasible to meet shortages. These strategies were evaluated by the consultant team and compared to criteria adopted by the BGRWPG. Chapter 1 of Volume II discusses the methods by which the strategies were evaluated. Technical evaluations of the potentially feasible water management strategies are presented in Chapters 2 through 13 of Volume II.

Table ES-3. Potentially Feasible Water Management Strategies Evaluated for the 2016 Brazos G Regional Water Plan

Chapter (Volume II)	*Water Management Strategy and Description*
2	**Water Conservation** (implement accelerated use of various water conservation techniques to achieve water savings above what is already included in the TWDB water demand projections)
3	**Wastewater Reuse** (use highly treated wastewater treatment plant effluent to meet non-potable and potable water needs)
4	**New Reservoirs** (new or updated evaluations of the following proposed new reservoirs) • Brushy Creek Reservoir • Cedar Ridge Reservoir • Coryell County Off-Channel Reservoir • City of Groesbeck Off-Channel Reservoir • Palo Pinto Off-Channel Reservoir • Little River Off-Channel Reservoir • Main Stem Off-Channel Reservoir • Meridian Off-Channel Reservoir • Lake Creek Reservoir • South Bend Reservoir • Throckmorton Reservoir • Turkey Peak Dam – Lake Palo Pinto Enlargement • Peach Creek Off-Channel Reservoir
5	**Acquisition of Existing Supplies** • Lake Aquilla Augmentation • Purchase from Possum Kingdom Reservoir
6	**Conjunctive Use** (conjunctively use surface water supplies with available groundwater supplies) • Lake Granger Augmentation • Oak Creek Reservoir and Champion Well Field
7	**Management of Existing Supplies** • Lake Belton to Lake Stillhouse Hollow Pipeline • Brushy Creek Regional Utility Authority System • Control of Naturally Occurring Salinity • Gibbons Creek Reservoir Expansion • Millers Creek Reservoir Augmentation • Lake Aquilla Storage Reallocation • Lake Granger Storage Reallocation • Lake Stillhouse Hollow Reallocation • Lake Whitney Reallocation • BRA Sediment Reduction Program • BRA System Operation of Reservoirs
8	**Regional Water Supply Projects** • Bosque County Regional Project • East Williamson County Water Supply Project • Somervell County Water Supply Project • West Central Brazos Water Distribution System
9	**Groundwater** • Regional Groundwater for Bryan • Local Groundwater for College Station • Regional Groundwater for Williamson County
10	**Aquifer Storage and Recovery** (Inject or percolate excess surface water into groundwater aquifers, storing for future use) • City of Bryan ASR • City of College Station ASR • Johnson County SUD and Acton MUD ASR • Lake Granger ASR • Waco and McLennan County ASR
11	**Brackish Groundwater**

12	**Miscellaneous Strategies** (various pipelines, treatment plants and groundwater wells to meet projected needs of water user groups and wholesale water providers)
13	**Brush Control** (increase deep percolation and discharge to streams by removing unwanted brush)

ES.5 Water Plan Findings

Municipal demands are developed assuming a hot, dry year, and 2011 was selected as the basis for estimating daily per capita use values (GPCD) for each WUG. Through review of GPCD data developed from water use reports submitted to the TWDB, the BGRWPG identified multiple instances where GPCD values needed to be adjusted. GPCD values were adjusted either because of improper coding of data into the water use reports database, or because of anomalies in the 2011 data, frequently caused by drought restrictions implemented during the summer of 2011 that reduced water use substantially and rendered the GPCD for 2011 inappropriate for use in planning. The Brazos G Regional Water Planning Group worked closely with a number of WUGs and the TWDB to resolve these discrepancies and adopt reasonable GPCD values for the affected WUGs.

Conservation is considered first as a water management strategy for all WUGs with identified needs before any other water management strategies. Table ES-4 presents a summary of Second-Tier water needs, which are those water needs remaining after implementation of conservation and direct reuse strategies. A detailed presentation of Second-Tier water needs for each WUG and WWP is included in Appendix L. The individual plans for each WUG also includes a presentation of Second-Tier water needs.

Table ES-4. Summary of Second-Tier Water Needs (DB17 Report)

REGION G

	2020	2030	2040	2050	2060	2070
MUNICIPAL	16,816	34,689	55,505	89,499	122,970	160,278
COUNTY-OTHER	9,198	10,862	14,367	14,887	19,764	24,485
MANUFACTURING	5,236	4,830	5,622	6,494	7,445	8,476
MINING	39,404	46,029	45,095	48,055	51,895	57,769
STEAM ELECTRIC POWER	58,036	68,799	69,841	79,600	88,310	90,857
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	76,217	71,668	67,811	65,623	59,517	56,359

The 2016 Brazos G Regional Water Plan includes recommendations for 99,573 acft/yr of municipal conservation savings and another 46,662 acft/yr for wastewater reuse. The conservation savings are in excess of those already included in the TWDB demand projections. Conservation savings for municipal users reflect a 1% annual reduction in GPCD until a target of 140 gallons per capita per day is reached. Conservation recommendations for several entities in Williamson County go beyond this and call for a reduction to a target of 120 GPCD by 2070.

Water management strategies recommended to meet water needs are presented by WUG in Appendix L and by WWP in Chapter 5. Table ES-5 includes a summary of recommended strategies.

Table ES-5. Summary of Strategies Recommended for WUGs and/or WWPs

Recommended Strategies	WUG/ WWP using Strategy [1]	1st Decade Average Annual Unit Cost ($/acft)	Supply Developed						Total Project Cost
			2020	2030	2040	2050	2060	2070	
Municipal Conservation	93	$478	10,845	30,658	46,765	61,587	73,849	81,664	NA
Irrigation Conservation	10	$230	4,431	7,168	9,739	9,453	9,175	8,940	NA
Industrial Conservation	19	ND	2,399	6,684	12,564	14,853	16,081	17,526	ND
Advanced Conservation	6	$470	39	81	1,233	4,036	9,700	17,909	NA
Advanced Industrial Conservation	2	ND	5,279	5,279	5,279	5,279	6,690	16,817	NA
Voluntary Redistribution	5	ND	1,205	1,676	1,262	1,547	2,043	2,574	NA
Leave Needs Unmet	15	ND	56,916	59,998	58,116	61,814	72,014	85,347	NA
Purchase Additional Water	27	$903	12,180	21,818	21,327	21,247	20,971	21,065	NA
Increase WTP Capacity	7	$1,000	18,983	30,436	32,981	33,946	35,273	36,554	$122,634,000
Reuse	21	$635	35,077	35,833	36,785	38,794	41,957	46,662	$76,898,000
Millers Creek Reservoir Augmentation	7	$740	2,833	3,013	3,194	3,374	3,554	3,735	$99,896,000
Throckmorton Reservoir	1	$601	3,540	3,540	3,540	3,540	3,540	3,540	$28,041,000
Turkey Peak Reservoir	1	$643	8,100	8,100	8,100	8,100	8,100	8,100	$83,363,000
Little River OCR	4	$800	0	56,150	56,150	56,150	56,150	56,150	$487,611,000
Blaine Groundwater	3	$887	876	876	876	876	876	876	$6,093,000
Brazos River Alluvium Groundwater	2	$530	4,000	4,000	4,000	4,700	4,700	5,100	$23,948,000
Carrizo Groundwater	11	$974	30,384	31,143	31,402	35,504	29,244	21,406	$231,702,609
Dockum Groundwater	2	$7,368	450	450	540	540	540	540	$13,116,000
Edwards Groundwater	8	$1,061	4,481	4,478	4,475	4,487	4,501	4,513	$45,324,000
Gulf Coast Groundwater	4	$1,036	7,359	7,678	7,554	7,453	7,367	7,338	$41,016,000
Other Groundwater	5	$1,513	1,256	1,256	1,246	1,246	1,246	1,246	$15,340,000
Seymour Groundwater	1	$571	1,571	1,345	1,193	1,116	1,041	1,041	$9,817,000
Sparta Groundwater	2	$972	740	790	790	790	825	825	$6,398,000
Trinity Groundwater	23	$1,358	12,546	13,023	10,979	10,521	10,445	10,963	$152,155,000
Woodbine Groundwater	5	$908	1,700	560	0	0	285	285	$11,624,000
Yegua-Jackson Groundwater	1	$656	4,452	5,565	5,565	5,565	5,565	5,565	$32,957,000
Rehab Existing Wells	2	$49	0	0	0	173	173	185	$35,000
Lake Granger ASR	1	$870	9,050	9,050	9,050	9,050	9,050	9,050	$99,820,000
McLennan County ASR	1	$677	8,000	8,000	8,000	8,000	8,000	8,000	$43,940,000

Table ES-5. Summary of Strategies Recommended for WUGs and/or WWPs

Recommended Strategies	WUG/ WWP using Strategy 1	1st Decade Average Annual Unit Cost ($/acft)	Supply Developed						Total Project Cost
			2020	2030	2040	2050	2060	2070	
College Station ASR	1	$3,069	2,800	2,800	2,800	2,800	2,800	2,800	$63,850,000
Belton to Stillhouse Pipeline	1	$154	30,000	30,000	30,000	30,000	30,000	30,000	$38,069,000
Purchase from Walnut Creek Mine	1	$500	0	0	0	9,000	9,000	9,000	NA
Lake Aquilla Augmentation	3	$926	14,700	14,700	14,700	14,700	14,700	14,700	$79,627,000
Lake Aquilla Reallocation	1	$865	2,400	2,400	2,400	2,400	2,400	2,400	$21,887,000
Bosque County Interconnection	6	$2,277	1,070	1,070	1,070	1,070	1,070	1,070	$22,372,000
Brushy Creek Reservoir	1	$481	1,450	1,450	1,450	1,450	1,450	1,450	$20,836,000
Cedar Ridge Reservoir	1	$1,031	26,575	26,575	26,575	26,575	26,575	26,575	$290,868,000
Coryell County OCR	3	$1,405	0	3,135	3,135	3,135	3,135	3,135	$42,246,000
Gibbons Creek Reservoir Expansion	1	$359	2,605	2,605	2,605	2,605	2,605	2,605	$12,979,000
Groesbeck OCR	1	$617	1,755	1,755	1,755	1,755	1,755	1,755	$11,909,000
Reallocation of Supplies	9	$330	40,574	47,927	54,849	61,366	63,360	61,786	NA
Oak Creek Reservoir Conjunctive Management	1	ND	1,575	1,575	1,575	1,575	1,575	1,575	NA
WCBWDS	5	$2,492	1,400	1,400	1,400	1,400	1,400	1,400	$21,148,000
Somervell County Water Supply Project	2	$4,305	900	900	1,084	1,084	1,084	1,084	$35,249,000
East Williamson County Water Project	5	$1,173	8,400	8,400	8,400	8,400	8,400	8,400	$42,127,000
BCRUA Water Supply Project	4	$994	67,000	67,000	67,000	67,000	67,000	67,000	$314,847,000
BRA System Operation	6	$20	95,223	101,871	109,174	125,682	155,969	166,952	$23,582,000
Restructure Contracts	1	ND	890	1,028	167	1,306	1,444	1,583	NA

ND - costs and/or supply from strategy not determined
1 – Number of WUG/WWPs that are using the strategy in the final adopted regional water plan

Total new supplies of water into the Brazos G Area total 397,655 acft/yr, comprised of newly developed groundwater, supply transferred from other regions, newly developed surface water supplies, or supplies made available through conservation or augmentation of existing facilities. These totals do not reflect water trades between users of existing supplies in Brazos G, but represent entirely new supplies to the Brazos G Area. Total project costs for these new supplies exceed $2.5 billion.

System operation of the Brazos River Authority's reservoirs can increase supplies in the Brazos G Area by nearly 167,000 acft/yr (assuming interruptible supplies can be firmed up through conjunctive operation with other sources), with additional supplies available to the Region H Area in the lower basin. This strategy would more efficiently utilize the existing resources of the BRA by expanding the supply that can be developed from the BRA's existing reservoirs, thus delaying the need for new reservoirs to meet growing needs in the basin. Related to this, overdrafting of Lake Granger when the reservoir is nearly full and injecting part of this supply into the Trinity Aquifer through an Aquifer Storage and Recovery (ASR) project can yield an additional 9,050 acft/yr of supply when the ASR well field is operated in conjunction with Lake Granger to meet demands.

Existing supplies combined with recommended water management strategies do not exceed the Modeled Available Groundwater (MAG) from any aquifer in any county. This is a planning requirement which limits the number of available water management strategies in some cases. For example, in Burleson County, all remaining MAG from the Carrizo-Wilcox Aquifer is slated to be transported out of the Brazos G Area for use in Regions K and L through a contract that the San Antonio Water System (SAWS) recently entered into with a group developing what is known as the Vista Ridge project. A small portion of the water is recommended to be sold to Williamson County entities.

During the Brazos G regional water planning process, water management strategies such as additional development of Carrizo-Wilcox Aquifer groundwater and the Lake Granger Augmentation Project were preferred options to include in the 2016 Brazos G Regional Water Plan. When confronted by the Modeled Available Groundwater (MAG) limitations of these two options, the BGRWPG has little alternative but to make the Little River Off-Channel Reservoir a recommended strategy.

Future utilization of existing supplies and new water management strategies will increase use from the water supply sources available to users in the Brazos G Area.

Alternative water management strategies are presented in Table ES-6. An alternative strategy can replace a recommended strategy by a vote of the regional water planning group at a regularly scheduled meeting without needing to pursue the process prescribed by the TWDB for amending a regional water plan.

Table ES-6. Alternative Water Management Strategies (DB17 Report)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
ABILENE	G	POSSUM KINGDOM TO ABILENE	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	14,800	14,800	14,800	14,800	14,800	14,800	$2586	$1063
ASPERMONT	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	33	47	62	76	90	105	$0	$0
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION-PH 1	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	17,017	17,017	17,017	17,017	17,017	17,017	$0	$0
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION-PH 1	G | TRINITY AQUIFER | WILLIAMSON COUNTY	8,509	8,509	8,509	8,509	8,509	8,509	$584	$305
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION-PH 2	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	18,107	18,107	18,107	18,107	18,107	18,107	$0	$0
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION-PH 2	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	28,118	28,118	28,118	28,118	28,118	28,118	$1611	$458
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	SEDIMENT REDUCTION PROGRAM (LAKE LIMESTONE WATERSHED)	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	177	355	532	710	888	N/A	$167
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	STORAGE REALLOCATION OF LAKE GRANGER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,940	1,940	1,940	1,940	1,940	1,940	$1552	$314
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	STORAGE REALLOCATION OF LAKE WHITNEY	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	20,842	20,842	20,842	20,842	20,842	20,842	$361	$4
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	STORAGE REALLOCATION OF STILLHOUSE HOLLOW RESERVOIR	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	2,643	2,643	2,643	2,643	2,643	2,643	$1177	$19
BRYAN	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	3,826	3,826	4,171	5,565	11,826	19,478	$1006	$323
COLLEGE STATION	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	6,000	6,000	6,000	6,000	6,000	6,000	$1065	$547
COLLEGE STATION - UNASSIGNED WATER VOLUMES	G	DPR- COLLEGE STATION	G | DIRECT REUSE	2,800	2,800	2,800	2,800	2,800	2,800	$3484	$1805
COUNTY-OTHER, CORYELL	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	0	100	200	525	N/A	$1309
COUNTY-OTHER, HASKELL	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	53	76	100	123	146	170	$0	$0
COUNTY-OTHER, HOOD	G	ACTON MUD REDUCTION TO HOOD COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	968	344	77	121	22	0	$977	N/A
GLEN ROSE	G	SOMERVELL COUNTY WSP	G | BRAZOS RUN-OF-RIVER	0	0	0	0	50	50	N/A	$1059

Table ES-6. Alternative Water Management Strategies (DB17 Report)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
HALLSBURG	G	REUSE- WMARSS WACO EAST	G | DIRECT REUSE	31	31	31	31	31	31	$869	$191
HASKELL	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	176	254	332	410	488	566	$0	$0
HUTTO	G	LITTLE RIVER OCR	G | LITTLE RIVER OFF-CHANNEL LAKE/RESERVOIR	0	378	2,181	4,001	6,215	8,499	N/A	$350
IRRIGATION, BELL	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,200	1,200	1,200	1,200	1,200	1,250	$66	$66
IRRIGATION, MCLENNAN	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,200	1,200	1,200	1,200	1,200	1,200	$66	$66
IRRIGATION, MCLENNAN	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | MCLENNAN COUNTY	1,000	1,000	1,000	1,000	1,000	1,000	$1047	$86
IRRIGATION, PALO PINTO	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	2,494	2,392	2,299	2,260	2,222	2,188	$66	$66
JOHNSON COUNTY SUD	G	TRINITY - JOHNSON COUNTY ASR	G | TRINITY AQUIFER ASR | JOHNSON COUNTY	2,000	2,000	2,000	2,000	2,000	2,000	$1131	$640
KNOX CITY	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	72	104	136	167	199	231	$0	$0
MANUFACTURING, BELL	G	REUSE-BCWCID #1 NORTH	G | DIRECT REUSE	1,000	1,000	1,000	1,360	1,360	1,360	$765	$765
MANUFACTURING, BURLESON	G	CALDWELL REDUCTION TO BURLESON MANUFACTURING	G | CARRIZO-WILCOX AQUIFER | BURLESON COUNTY	0	50	50	50	85	85	N/A	$500
MART	G	REUSE- WMARSS WACO EAST	G | DIRECT REUSE	134	134	134	134	134	134	$869	$191
MERIDIAN	G	MERIDIAN OCR	G | MERIDIAN OFF-CHANNEL LAKE/RESERVOIR	615	615	615	615	615	615	$3961	$1220
MINING, MCLENNAN	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	0	1,050	1,050	1,050	N/A	$66
MUNDAY	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	74	107	140	173	205	238	$0	$0
NORTH CENTRAL TEXAS MUNICIPAL WATER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	13,815	13,511	13,208	12,905	12,601	12,298	$1308	$313
PALO PINTO COUNTY MWD #1 - UNASSIGNED WATER VOLUMES	G	PALO PINTO OCR	G | LAKE PALO PINTO OFF-CHANNEL LAKE/RESERVOIR	3,110	3,110	3,110	3,110	3,110	3,110	$980	$169
RIESEL	G	REUSE- WMARSS WACO EAST	G | DIRECT REUSE	43	43	43	43	43	43	$869	$191
ROUND ROCK	G	TRINITY - WILLIAMSON COUNTY ASR	G | TRINITY AQUIFER ASR | WILLIAMSON COUNTY	0	0	0	0	9,050	9,050	N/A	$368
RULE	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	12	18	23	29	34	40	$0	$0
VENUS	G	WOODBINE AQUIFER DEVELOPMENT	G | WOODBINE AQUIFER | JOHNSON COUNTY	0	150	150	450	450	450	N/A	$203
WACO - UNASSIGNED WATER VOLUMES	G	REUSE- WMARSS WACO EAST	G | DIRECT REUSE	0	0	0	0	0	0	N/A	N/A
			Region G Total Alternative WMS Supplies	152,632	152,543	154,393	159,481	177,112	187,430		

Irrigation needs are much greater than in previous plans because of differences in determining available supplies and some substantial increases in irrigation demands, notably in Burleson County. For the first time in the history of the Brazos G regional water planning process, the BGRWPG has recommended that irrigation and mining needs in some counties remain unmet, because there are no water management strategies identified that can economically meet those needs. A small unmet need of 7 acft is recognized in 2020 for Possum Kingdom WSC in Palo Pinto County which will be met through drought management. A summary of unmet needs is presented in Table ES-7.

Table ES-7. Unmet Needs in the Brazos G Area (acft/yr)

REGION G

	2020	2030	2040	2050	2060	2070
MUNICIPAL	7	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	19,144	26,184	27,715	32,173	37,830	44,827
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	37,757	33,814	30,401	29,640	34,184	40,519

*WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The unmet needs shown in the WUG Unmet Needs report are calculated by first deducting the WUG split's projected demand from the sum of its total existing water supply volume and all associated recommended water management strategy water volumes. If the WUG split has a greater future supply volume than projected demand in any given decade, this amount is considered a surplus volume. In order to display only unmet needs associated with the WUG split, these surplus volumes are updated to a zero and the unmet needs water volumes are shown as absolute values.

Implementation of the 2016 Brazos G Regional Water Plan provides for the development of new water supplies that will be reliable in the event of a repeat of the most severe drought on record. Implementation of all recommended water management strategies would often provide supplies sufficient to meet more than the projected needs with which the strategies are associated. The BGRWPG explicitly recognizes the difference between additional supplies and projected needs as "System Management Supplies" and has recommended water management strategies that would supply in excess of some needs in the 2016 Brazos G Regional Water Plan for the following reasons:

- So that water management strategies are identified to replace any planned strategies that may fail to develop, through legal, economic or other reasons;
- To serve as additional supplies in the event that rules, regulations, or other restrictions limit use of any planned strategies;
- To facilitate development of specific projects being pursued by local entities for reasons that may not be captured in the supply and demand projections used to identify future supply shortages; and/or
- To ensure adequate supplies in the event of a drought more severe than that which occurred historically.

ES.6 Other Aspects of the 2016 Brazos G Regional Water Plan

In addition to providing a roadmap for development of supplies to meet future water needs in the basin, the 2016 Brazos G Regional Water Plan includes other elements of value and interest to water supply managers and others in the Brazos G Area.

- The plan provides a concise summary of physiographic, hydrologic and natural resources in the Brazos G Area,
- The plan provides a comprehensive understanding of how water supplies have been developed and are managed in the Brazos G Area,
- The plan provides recommendations for drought management and emergency supply measures that may assist water managers with developing plans for their systems, and
- The plan includes recommendations to the TWDB and the Texas Legislature regarding key water policy issues and the direction of water supply management in Texas.

Chapter 1

1

Description of the Brazos G Area

This page intentionally left blank.

1 Description of the Brazos G Area

1.1 Background

Senate Bill 1 (SB1), which was passed into law in June 1997 and enacted by the 75th Texas Legislature, stemmed from increased awareness of Texas' vulnerability to drought and of the limitations of existing water supplies to meet the needs of the state's growing population. Senate Bill 2 (SB2), enacted in September 2001, expanded on the regional water planning process as created by SB1, and provided for further analysis and planning for water resources in the state. With rapidly growing populations, the need to adequately plan for existing and future water needs is vital to the economic health of the region and State. Some areas of the State are already facing near-term water shortages, and the projected population is expected to double by 2060. The purpose of SB1 and SB2 is to ensure that the water needs of all Texans are met in the 21st century.

The SB1/SB2 legislation calls for a "bottom up" water planning process wherein Regional Water Planning Groups (RWPGs) are formed with members representing a minimum of 11 different interests, including the environment, industry, municipalities, water authorities, and the public. The Texas Water Development Board (TWDB) has established 16 regional water planning areas; each with its own RWPG. Each RWPG is tasked with preparing a regional water plan for its area that assesses the available water supplies, the projected demands on these supplies and identifies a means to meet future water needs while maintaining long-term protection of the State's resources.

In accordance with SB2 (as amended), all of the regional water plans must be completed and adopted by December 1, 2015. The TWDB must approve them and compile the 16 plans into one statewide plan by January 5, 2017. The regional water plans will continue to be updated every 5 years.

1.1.1 Brazos G Regional Water Planning Area

The Brazos G Regional Water Planning Area (BGRWPA), shown in Figure 1-1, comprises all or portions of 37 central Texas counties. The Brazos G Area is about 31,600 square miles in area, or 12 percent of the State's total area. About 90 percent of the region lies in the Brazos River Basin. Figure 1-2 shows the major features of the BGRWPA, such as major cities, reservoirs, and highways. This figure also shows that parts of several counties extend into the Red, Trinity, Colorado, and San Jacinto River Basins. Cities in the region with current populations greater than 50,000 are Abilene, Bryan, Cedar Park, College Station, Killeen, Round Rock, Temple, and Waco[1].

The region's geography varies from the rugged, uneven terrain and sandy soils of Kent and Knox Counties in the northwest to the hilly, forested areas and rich soils in Grimes and Washington Counties in the southeast. In the central part of the region are the Blackland Prairies in Hill and McLennan Counties.[2]

[1] U.S. Census Bureau, *2010 Census*, http://www.census.gov/2010census/

[2] The Dallas Morning News, *1997-1998 Texas Almanac*, 1998.

Figure 1-1. Location Map

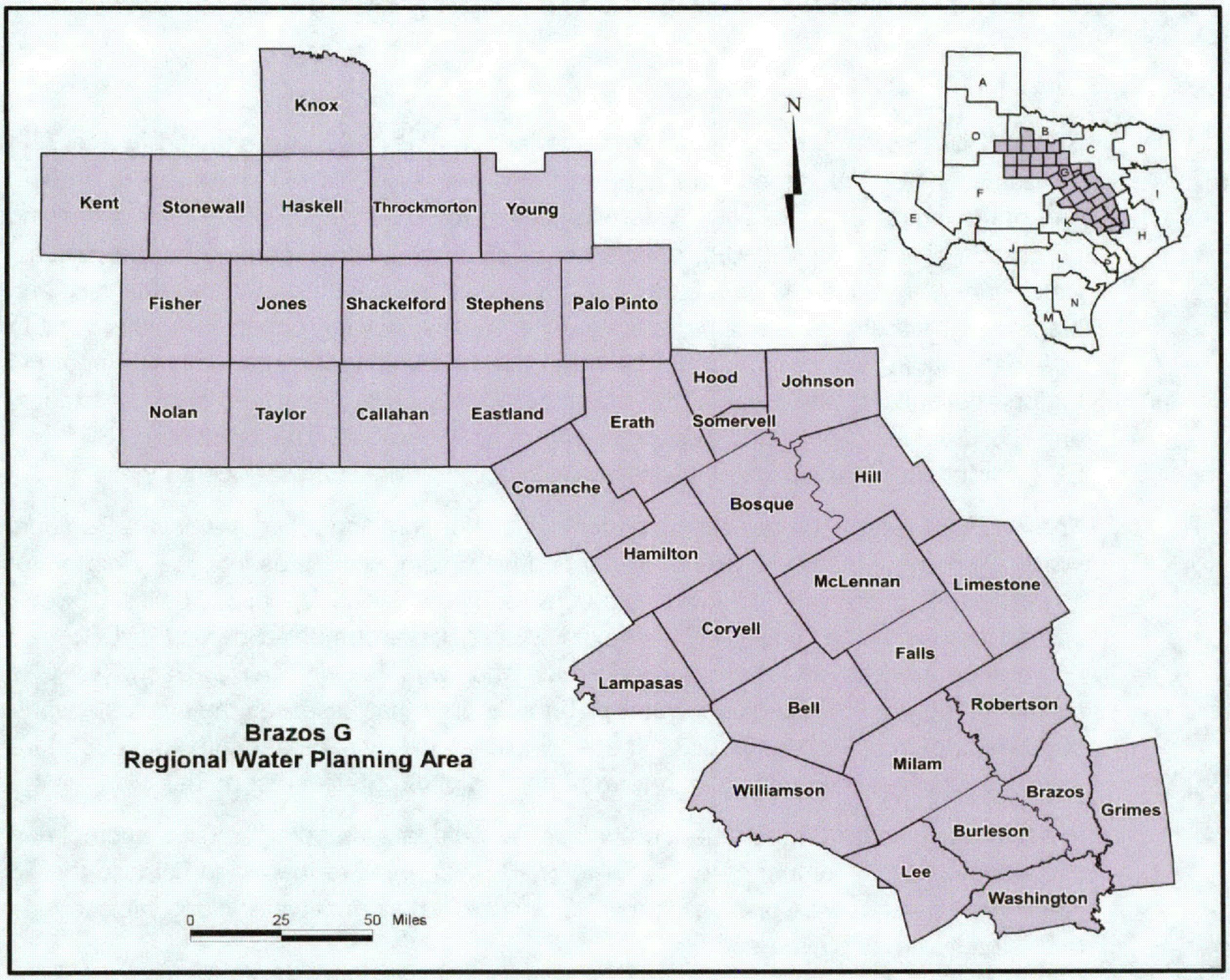
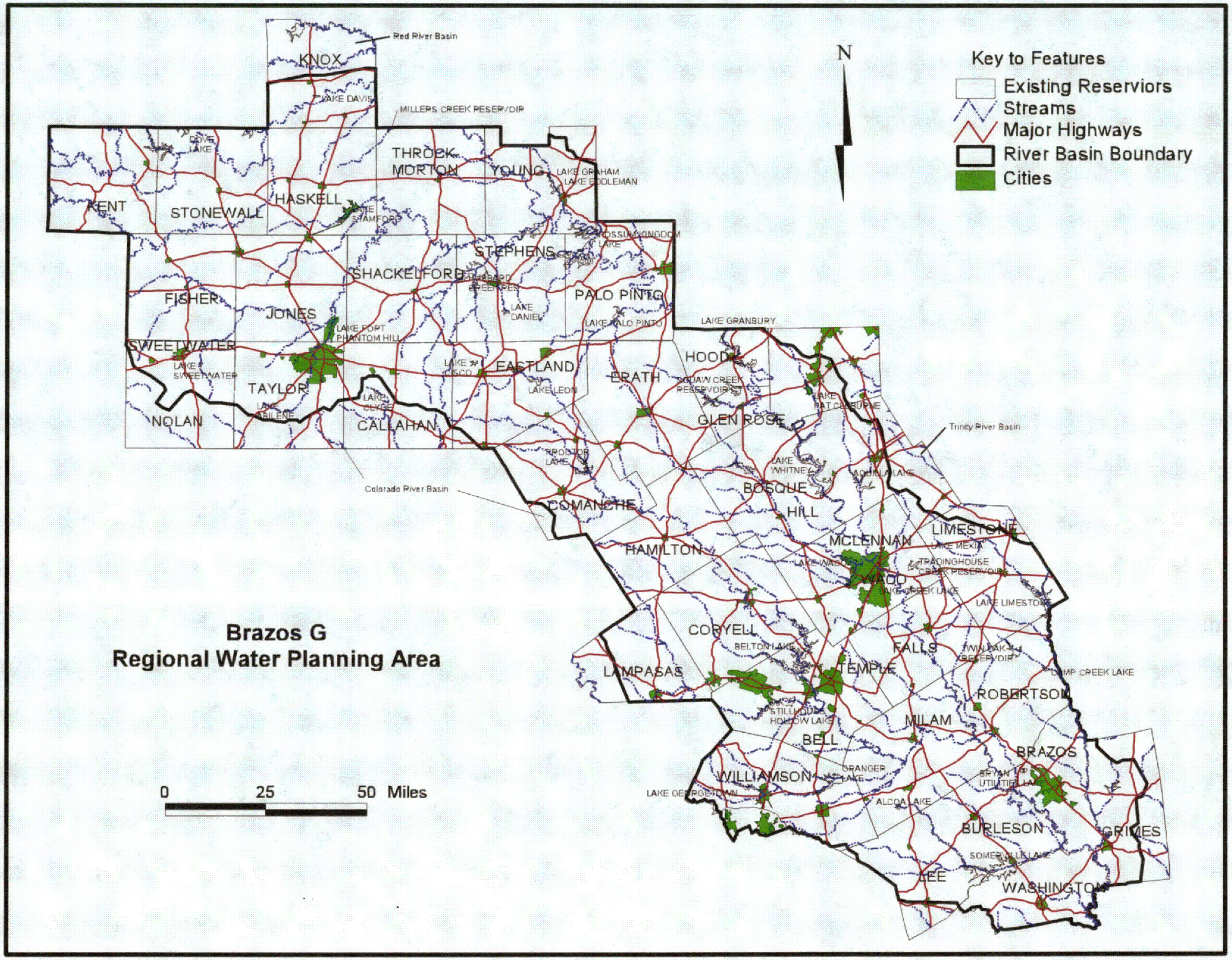


Figure 1-2. Major Features of the Brazos G Area



Members of the Brazos G RWPG who contributed to the development of the 2016 Brazos G Regional Water Plan are listed in Table 1-1. These members represent 12 interest groups: the public, counties, municipalities, industries, agriculture, the environment, small businesses, electric-generating utilities, river authorities, water districts, groundwater management areas and water utilities. The Brazos G RWPG has retained the services of engineering firms and other specialists to assist the RWPG with the preparation of the regional plan, and it has designated the Brazos River Authority (BRA) as its administrative contracting agency.

Table 1-1. Current and Recent Brazos G RWPG Members

Interest Group	Name	Affiliation
	Voting Members	
Agricultural	Judge Dale Spurgin (past Chair) Wayne Wilson (Chair)	Judge, Jones County Rancher, Brazos County
Counties	County Commissioner Tim Brown Judge Travis Floyd Judge Mike Sutherland	Bell County Knox County Burleson County
Electric Generating Utilities	Brian Patrick (resigned Dec. 2014) Gary Spicer	Luminant Luminant
Environmental	Kevin Wagner	Texas Water Resources Institute
Industry	Jim Hodson (passed away Sept. 2014) Randy Waclawczyk (resigned 2014)	ALCOA RRW Consulting
Municipalities	David Blackburn (resigned Nov. 2014) Jim Briggs Alva Cox Larry Groth (resigned Nov. 2014) Tommy O'Brien Kenny Weldon	City of Temple City of Georgetown City of Granbury City of Waco City of Abilene City of Stephenville
Public	Gary Newman	Trio Development
River Authorities	Phil Ford (Secretary)	Brazos River Authority
Small Business	Gail L. Peek (Vice Chair)	Beard Kultgen Brophy Bostwick & Dickson
Water Districts	Joe Cooper Kelly Kinard	Middle Trinity GCD West Central Texas MWD
Groundwater Management Areas	Dale Adams Zach Holland Mike McGuire Judy Parker Gary Westbrook	Wes-Tex GCD Bluebonnet GCD Rolling Plains GCD Clearwater Underground WCD Post Oak Savannah GCD

Table 1-1. Current and Recent Brazos G RWPG Members

Interest Group	Name	Affiliation
Water Utilities	Charles Beseda	Birome WSC
Non-Voting Members		
Llano Estacado (O) RWPG Liaison	Mike McClendon	Brazos River Authority
Region C RWPG Liaison	Bill Ceverha	Self-Employed
Region F RWPG Liaison	John Grant	Region F Chair
Lower Colorado (K) RWPG Liaison	Mark Jordan	Lower Colorado River Authority
Region H RWPG Liaison	David Collinsworth	Brazos River Authority
LCRA Representative	James Kowis	Lower Colorado River Authority
TWDB Project Manager	Lann Bookout	Texas Water Development Board
Texas Parks and Wildlife Dept.	Jennifer Bronson	Texas Parks and Wildlife Dept.
Texas Dept. of Agriculture	E.W. Wesley	Texas Department of Agriculture

1.2 Population

1.2.1 Regional Trends

Figure 1-3 illustrates population growth in the entire BGRWPA for 1900 to 2010 and projected growth for 2020 to 2070. Historical population data for each county in the BGRWPA are displayed in Appendix A, as well as regional and State population totals, for 1990 to 2010.

From 1900 to 1970, population in the Brazos G Area grew slowly at an average rate of 0.4 percent per year from 680,093 people to 895,682. During the same period, the total population of Texas grew at an average rate of 1.9 percent annually, from 3,048,710 to 11,196,730. Beginning in the 1970s, however, both the State's and the region's population began to increase at faster rates. Growth in the region was about 2 percent annually, which approximates the State's total growth rate of 2 percent. Population in the BGRWPA is expected to increase by an average of 1.3 percent annually, reaching 4.35 million by 2070. This is roughly double the census population in 2010.

Population trends may be further understood by dividing the BGRWPA into three subregions: the northwestern Rolling Plains, the central IH-35 Corridor, and the southeastern Lower Basin. Table A-2 in Appendix A provides historical population data for all counties in each subregion from 1900 to 2010.

Figure 1-3. Historical and Projected BGWRPA Population

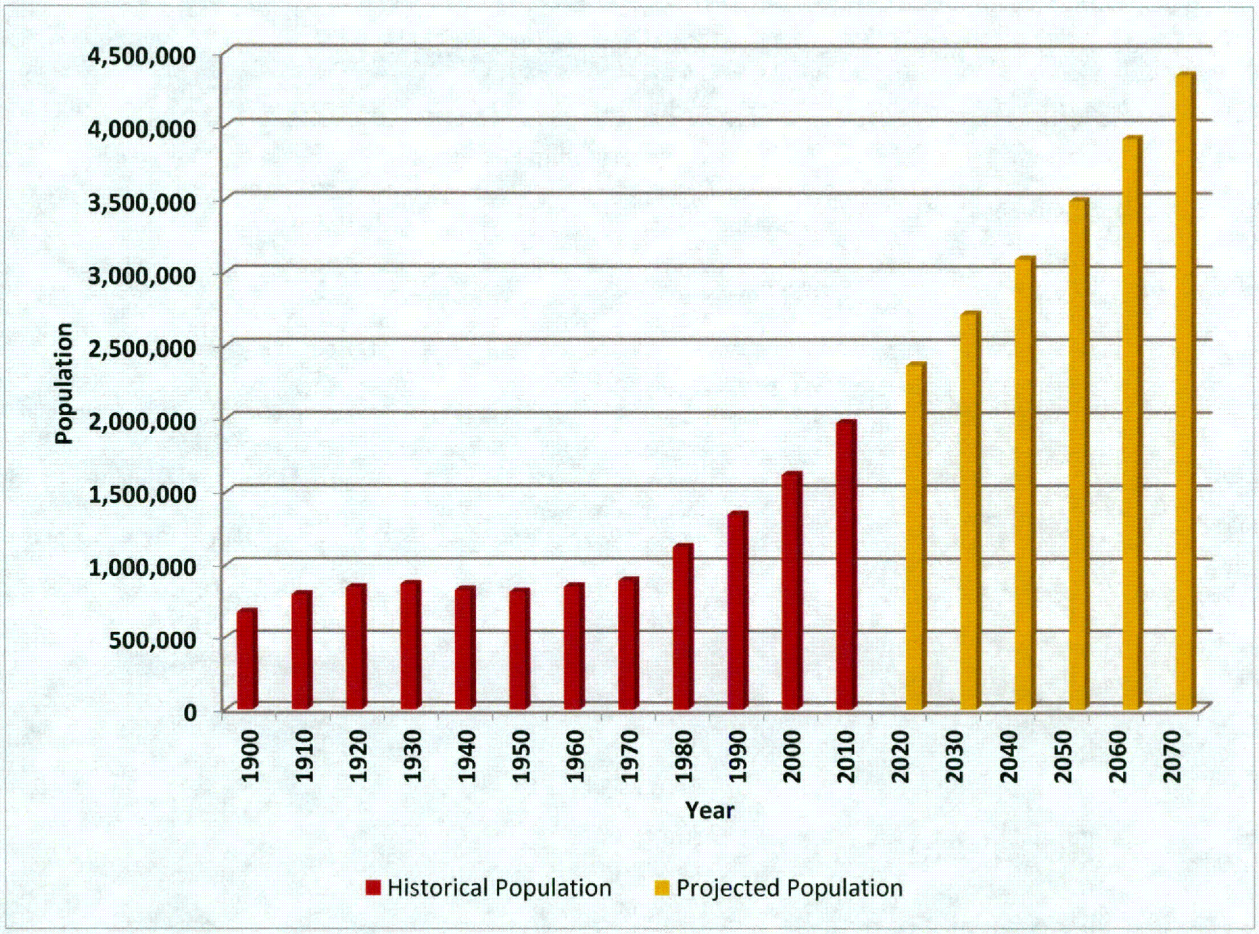


Figure 1-4 illustrates historical population growth in the three subregions from 1900 to 2010 and projected growth from 2020 to 2070. Figures 1-5 and 1-6 illustrate population distribution by county for years 2020 and 2070, respectively. The greatest growth is projected to occur along the IH-35 corridor, which connects some of the larger cities in the region and the state. Table 1-2 presents 2010 populations and projected populations for 2020 and 2070 for the major cities in each subregion. Major cities are defined as those having at least 10,000 people in 2010. This table also presents the percent change in populations from 2020 to 2070 in each city. The overall division of the population between large cities and rural areas is expected to increase from 56.6 percent in 2010 to 65.6 percent by 2070.

1.2.2 Rolling Plains

The counties in the Rolling Plains subregion are Knox, Kent, Stonewall, Haskell, Throckmorton, Young, Fisher, Jones, Shackelford, Stephens, Palo Pinto, Nolan, Taylor, Callahan, Eastland, Erath, Hood, Somervell, Comanche, Hamilton, Bosque, Coryell, and Lampasas. These counties, with about 25 percent of the BGRWPA's population in 2010, have grown moderately since 1970 at an average rate of 0.8 percent per year. Major cities in this subregion include Abilene, Copperas Cove, Gatesville, Mineral Wells, Stephenville, and Sweetwater.

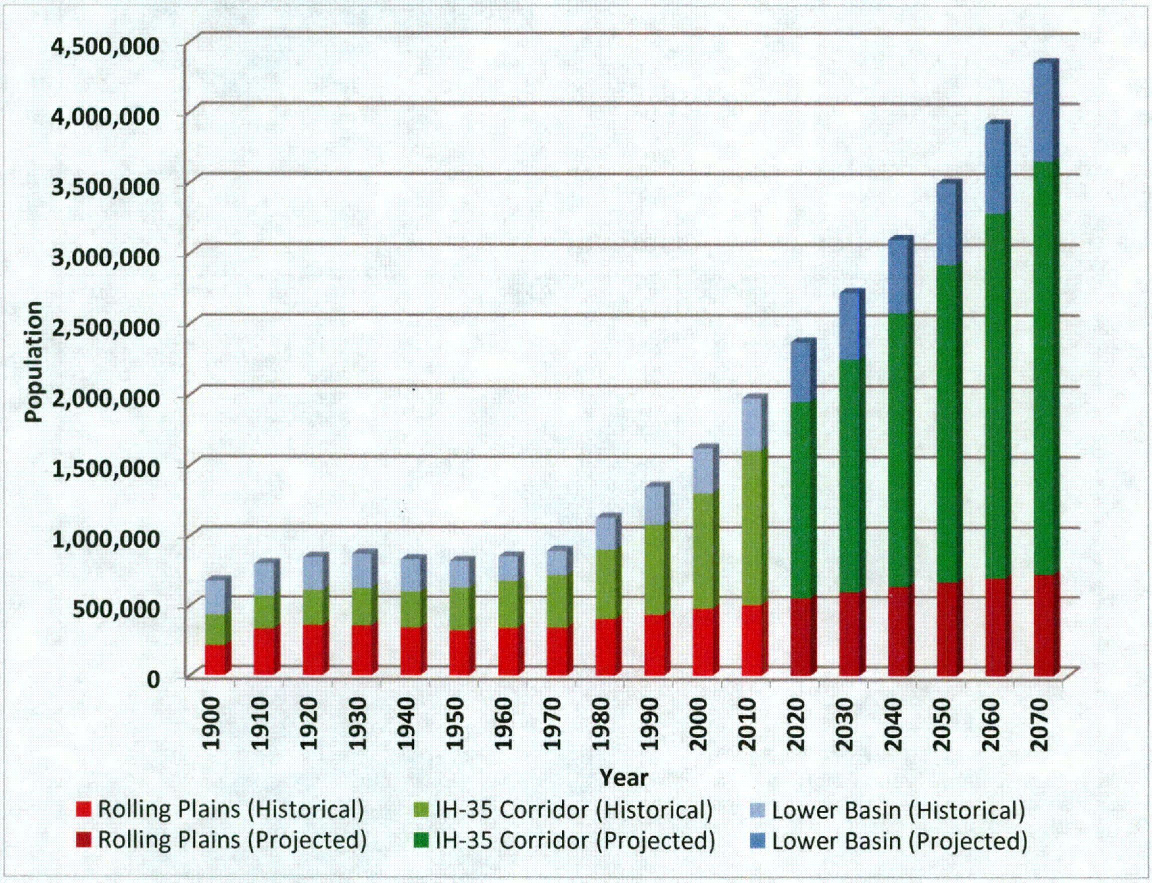
1.2.3 IH-35 Corridor

The counties in the IH-35 Corridor are Johnson, Hill, McLennan, Bell, and Williamson. Population growth in these counties has been rapid since 1970, averaging 2.4 percent annually. In this subregion, cities with a current population greater than 10,000 include Belton, Burleson, Cedar Park, Cleburne, Fort Hood, Georgetown, Harker Heights, Hewitt, Hutto, Killeen, Leander, Robinson, Round Rock, Taylor, Temple, and Waco[3]. Total population in the IH-35 Corridor was about 56 percent of the region's total in year 2010, and it is expected to keep growing rapidly.

1.2.4 Lower Basin

Counties in the Lower Basin are Limestone, Falls, Milam, Robertson, Lee, Burleson, Brazos, Washington, and Grimes. This subregion also has seen a relatively high growth rate averaging 1.5 percent annually since 1970. Major cities include Brenham, Bryan, and College Station. The Lower Basin had 19 percent of the population of the BGRWPA in 2010.

Figure 1-4. Historical and Projected Population by Subregion



[3] U.S. Census Bureau, *2010 Census*, http://www.census.gov/2010census/

Figure 1-5. 2020 Population Distribution by County

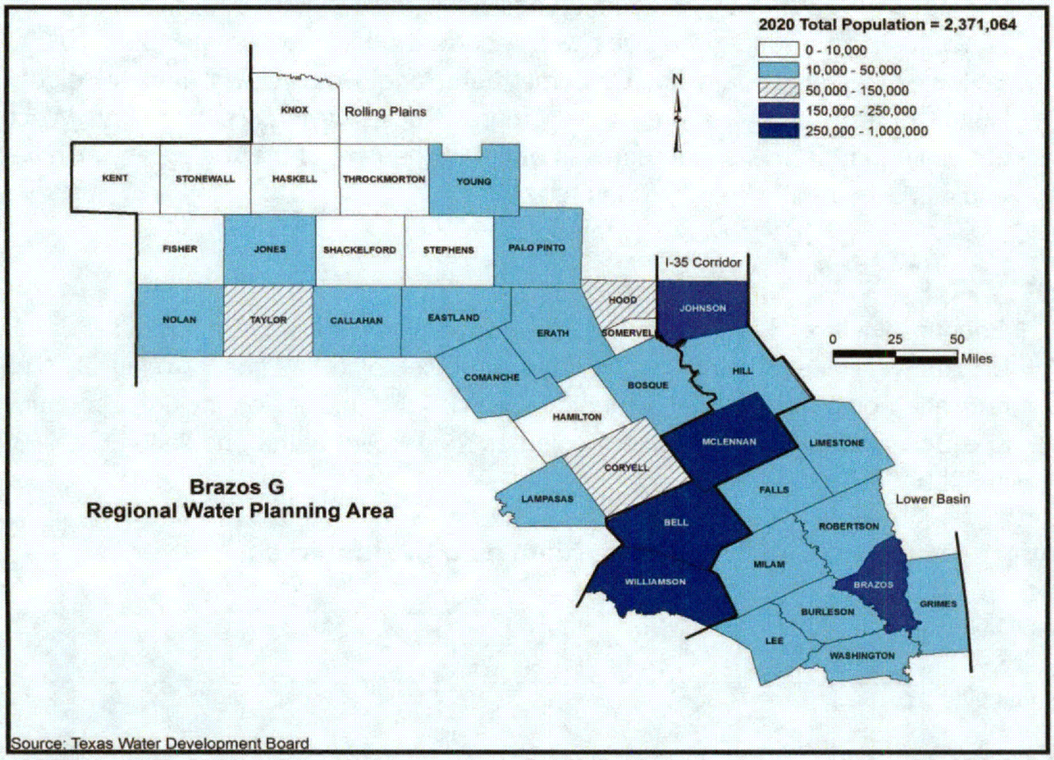


Figure 1-6. 2070 Population Distribution by County

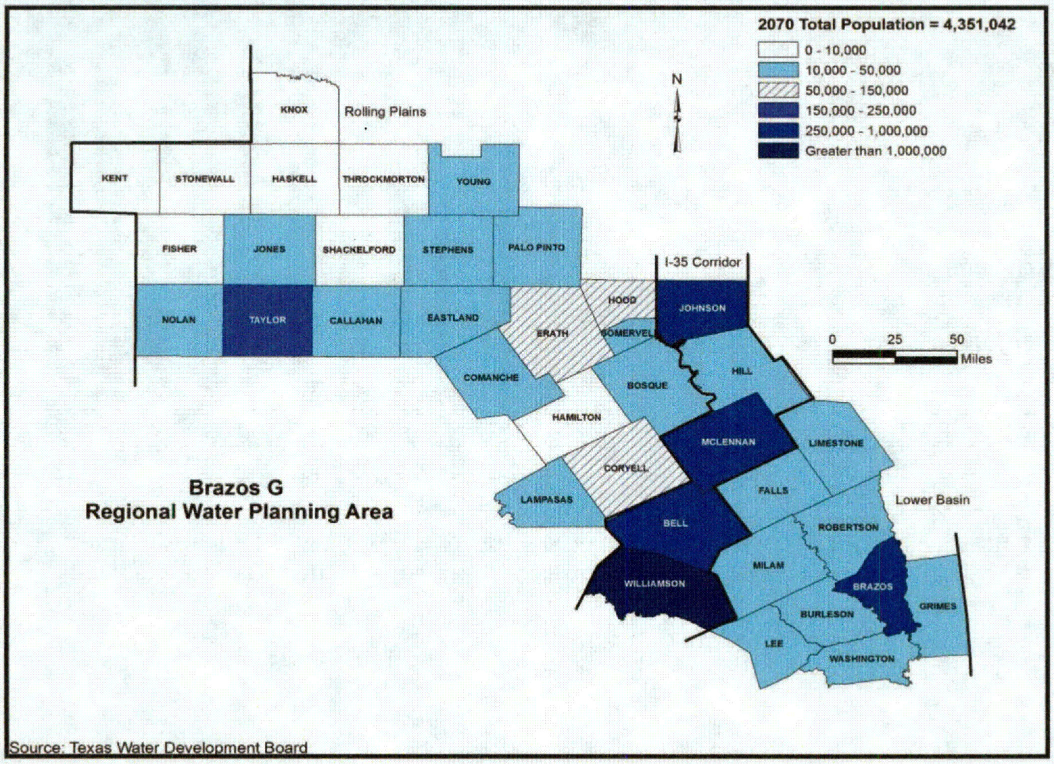


Table 1-2. Population of Major Cities in the BGRWPA (> 10,000 People in 2010)

City	County	Population Data[1]			% Change
		2010	2020	2070	(2020 to 2070)
Rolling Plains					
Abilene	Jones, Taylor	117,063	125,179	144,711	15.6
Copperas Cove	Coryell	32,032	36,989	64,130	73.4
Gatesville	Coryell	15,751	17,990	30,554	69.8
Mineral Wells[2]	Palo Pinto	14,644	15,907	19,577	23.1
Stephenville	Erath	17,123	19,041	27,948	46.8
Sweetwater	Nolan	10,906	11,564	13,852	19.8
IH-35 Corridor					
Belton	Bell	18,216	21,841	40,404	85.0
Burleson[2]	Johnson	29,111	35,167	68,170	93.8
Cedar Park	Williamson	48,448	71,518	79,329	10.9
Cleburne	Johnson	29,337	32,501	53,517	64.7
Fort Hood	Bell, Coryell	29,589	33,333	33,711	1.1
Georgetown	Williamson	47,400	72,507	196,604	171.2
Harker Heights	Bell	26,700	32,012	59,222	85.0
Hewitt	McLennan	13,549	15,543	25,976	67.1
Hutto	Williamson	14,698	31,492	114,500	263.6
Killeen	Bell	127,921	153,371	283,732	85.0
Leander	Williamson	25,444	41,071	293,630	614.9
Robinson	McLennan	10,509	12,665	23,945	89.1
Round Rock[2]	Williamson	98,525	150,712	408,660	171.2
Taylor	Williamson	15,191	17,209	27,182	58.0
Temple	Bell	66,102	79,253	146,616	85.0
Waco	McLennan	124,805	133,769	180,673	35.1
Lower Basin					
Brenham	Washington	15,716	17,355	22,430	29.2
Bryan	Brazos	76,201	88,434	181,797	105.6
College Station	Brazos	93,857	102,140	215,545	111.0
Total, Major Cities	—	**1,118,838**	**1,410,128**	**2,852,142**	**102.3**
% of Region Total	—	**56.6**	**59.5**	**65.6**	
Total, Rural Areas	—	**856,996**	**960,936**	**1,498,900**	**56.0**
% of Region Total	—	**43.4**	**40.5**	**34.4**	
Region Total	—	**1,975,834**	**2,371,064**	**4,351,042**	**83.5**

[1] 2010 population data obtained from U.S. Census. 2020 and 2070 projections are based on TWDB.
[2] Represents only the portion of the city located in Region G

1.3 Economic Activities

The BGRWPA includes all or part of the following metropolitan statistical areas as defined by the Texas State Data Center: Abilene, Waco, Dallas-Fort Worth-Arlington Killeen-Temple-Fort Hood, Austin-Round Rock, and College Station-Bryan. The economy of the region can be divided into the following general sectors: agriculture, agribusiness, mineral production, wholesale and retail trade, and varied manufacturing. Table 1-3 lists 2012 payrolls and employment in the BGRWPA by subregion and economic sector.[4] As of this writing, 2012 was the most recent year for which such data were available. Payroll and employment in the Brazos G Area were concentrated along the IH-35 Corridor, which in 2012 had a total payroll of about $13.9 billion and employment of approximately 346,000 people. Primary economic activities were manufacturing, retail trade, and services, accounting for about 57 percent of the region's total payroll in 2012.

Table 1-3. 2012 Economic Data[1] (x$1,000)

Economic Sector	Rolling Plains	IH-35 Corridor	Lower Basin	Region Total
Agricultural, Forestry, Fishing	$6,105	$1,285	$2,108	$9,498
	$339,872	$224,190	$162,000	$726,062
Construction	$379,258	$886,111	$233,040	$1,498,409
Manufacturing	$645,818	$1,620,704	$538,842	$2,805,364
Transportation, Public Utilities	$210,420	$476,377	$116,660	$803,457
Wholesale Trade	$227,361	$1,421,829	$181,716	$1,830,906
Retail Trade	$604,373	$1,318,080	$366,310	$2,288,763
Finance, Insurance, Real Estate	$355,709	$1,066,580	$188,966	$1,611,255
Services	$1,930,654	$4,892,228	$1,013,945	$7,836,827
Unclassified	$185,172	$463,300	$116,465	$764,937
Not Categorized	$64,620	$486,964	$84,209	$635,793
Total Payroll	$5,354,838	$13,892,954	$3,251,418	$22,499,210
Total Employed	162,625	345,854	94,811	603,290
1 - Source: U.S. Census Bureau.				

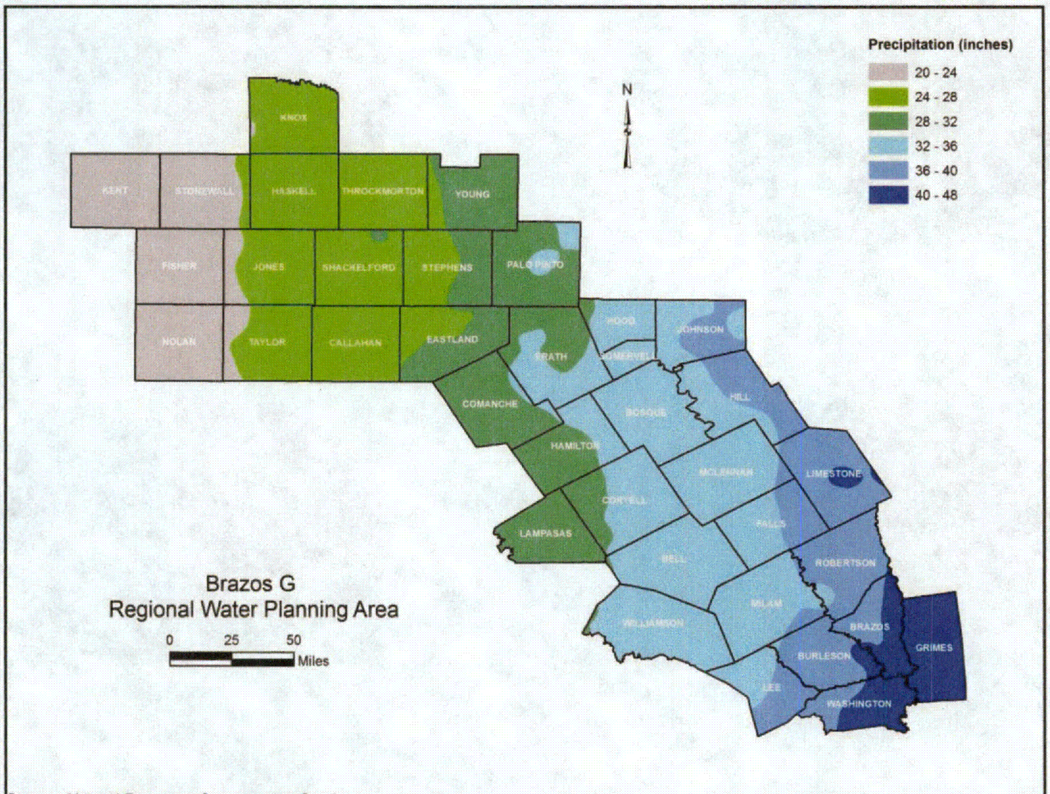
1.4 Climate

Temperatures in the Brazos G Area range from an average low of 35°F in January to an average high of 95°F in July. Average annual precipitation ranges from 20 to 24 inches in Kent County in the northwest corner of the region to 40 to 48 inches in Washington and

[4] U.S. Census Bureau, "2012 Economic Data," Online: available URL: http://factfinder2.census.gov/faces/nav/jsf/pages/community_facts.xhtml.

Grimes Counties in the southeast. Figure 1-7 depicts average annual precipitation for the entire region.

Figure 1-7. Average Annual Precipitation (1911 to 2010)

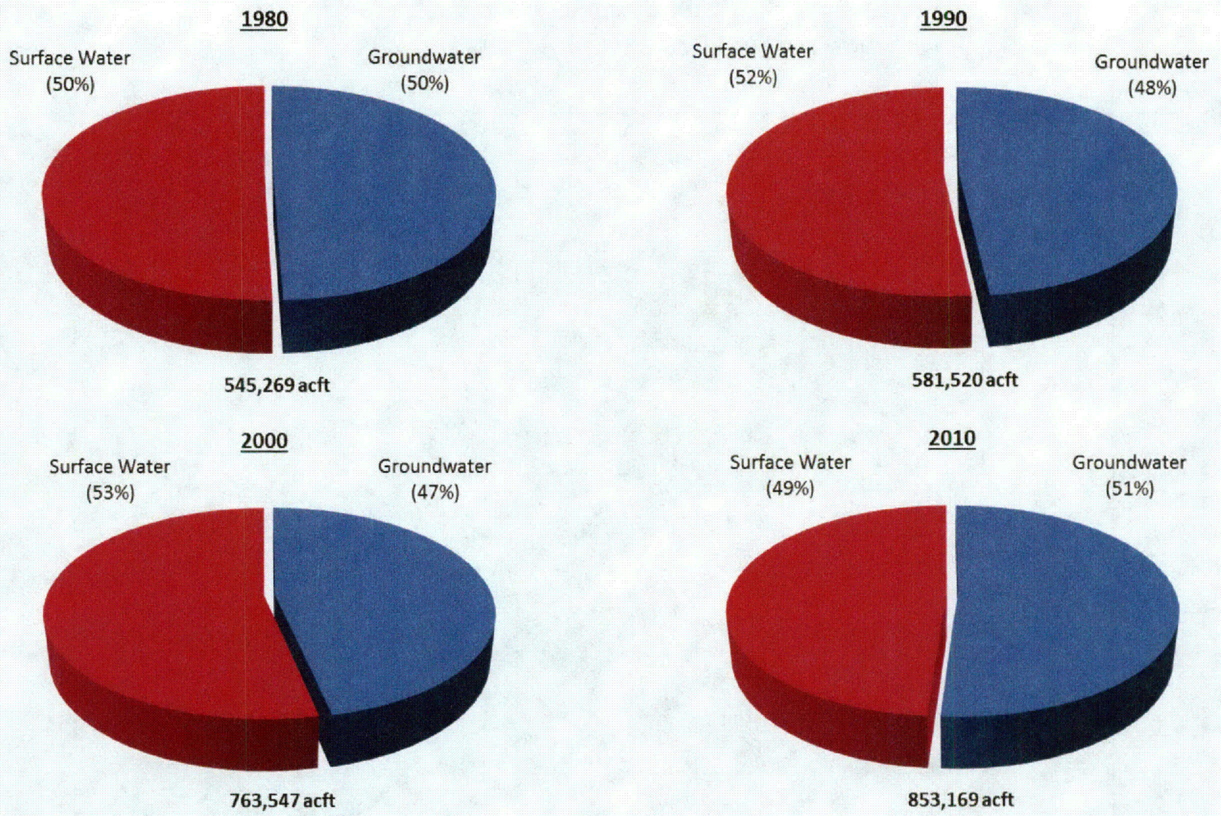


Source: Natural Resource Conservation Service

1.5 Sources of Water

Table A-3 in Appendix A provides historical data on use of groundwater and surface water within the BGRWPA from 1980 to 2010. These data suggest that the planning area has depended slightly more on surface water than on groundwater during the 1980s and 1990s. Figure 1-8 shows the proportion of surface water use to groundwater use in 1980, 1990, 2000, and 2010. While the proportions were equal in 1980, surface water use was greater by 2 percent in 1990, and 3 percent in 2000. In 2010, the surface water use was 2 percent less than groundwater.

Figure 1-8. BGRWPA Historical Water Use by Source



1.5.1 Groundwater

Aquifers[5,6,7]

Portions of six major and ten minor aquifers extend into the Brazos G Area (Figures 1-9 and 1-10). Major aquifers are defined generally as those aquifers that supply large amounts of water to large areas of the State. Minor aquifers are defined as those that supply large amounts of water to small areas of the State or provide small supplies to wide areas. Figure 1-11 shows historical water pumpage for each aquifer in the BGRWPA in 1980, 1990, 2000, and 2010. In 2010, about 69 percent of the groundwater pumped came from four aquifers: Brazos Valley Alluvium, Carrizo-Wilcox, Seymour, and Trinity. Table 1-4 depicts historical pumpage in 2010 and projected availability in 2070 of groundwater in each aquifer in the BGRWPA.

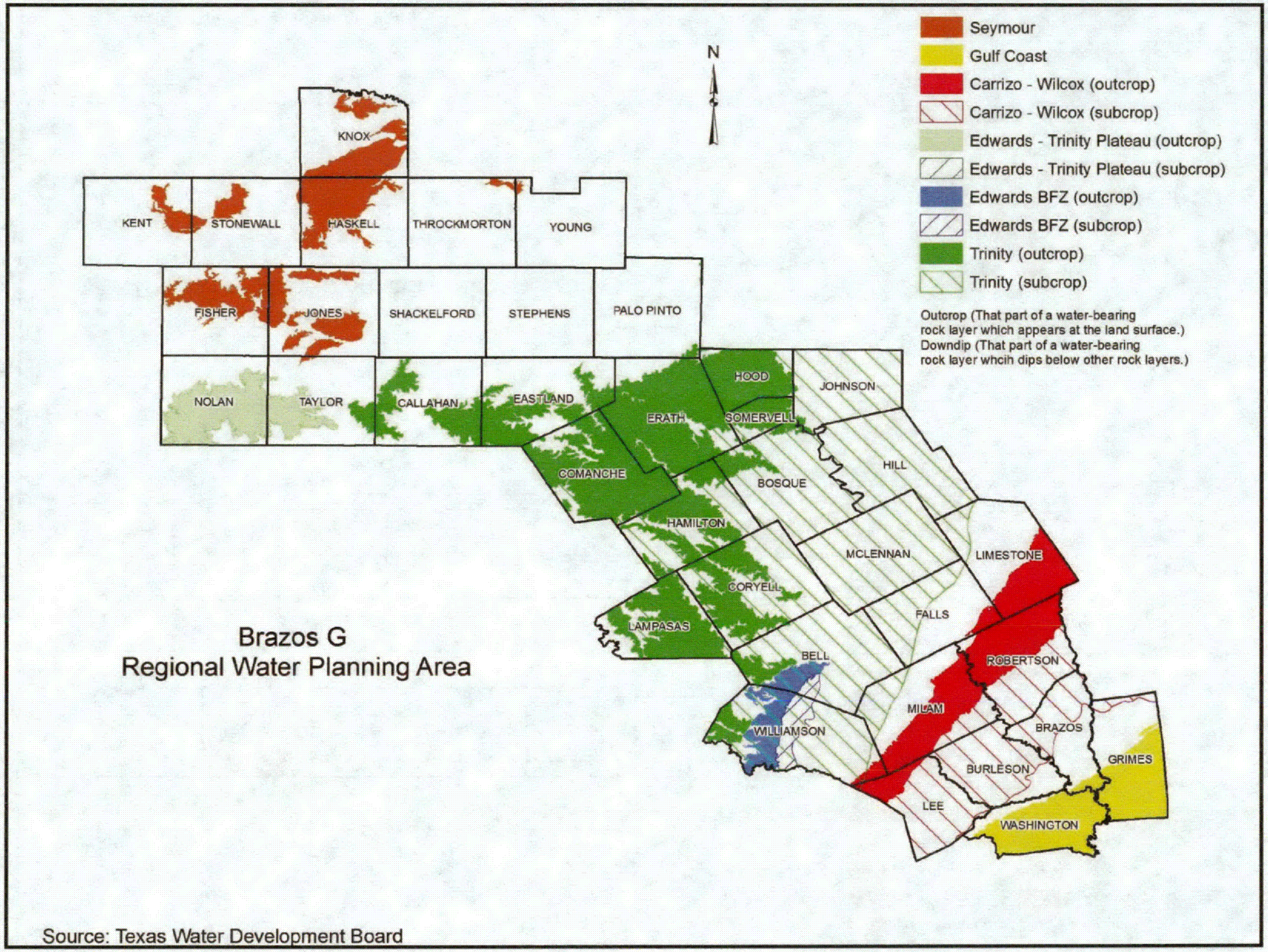
---

[5] Texas Water Commission, *Groundwater Quality in Texas - An Overview of Natural and Man-Affected Conditions*, TWC Report No. 89-01, 1989.

[6] Texas Water Development Board (TWDB), *Water for Texas*, 1997.

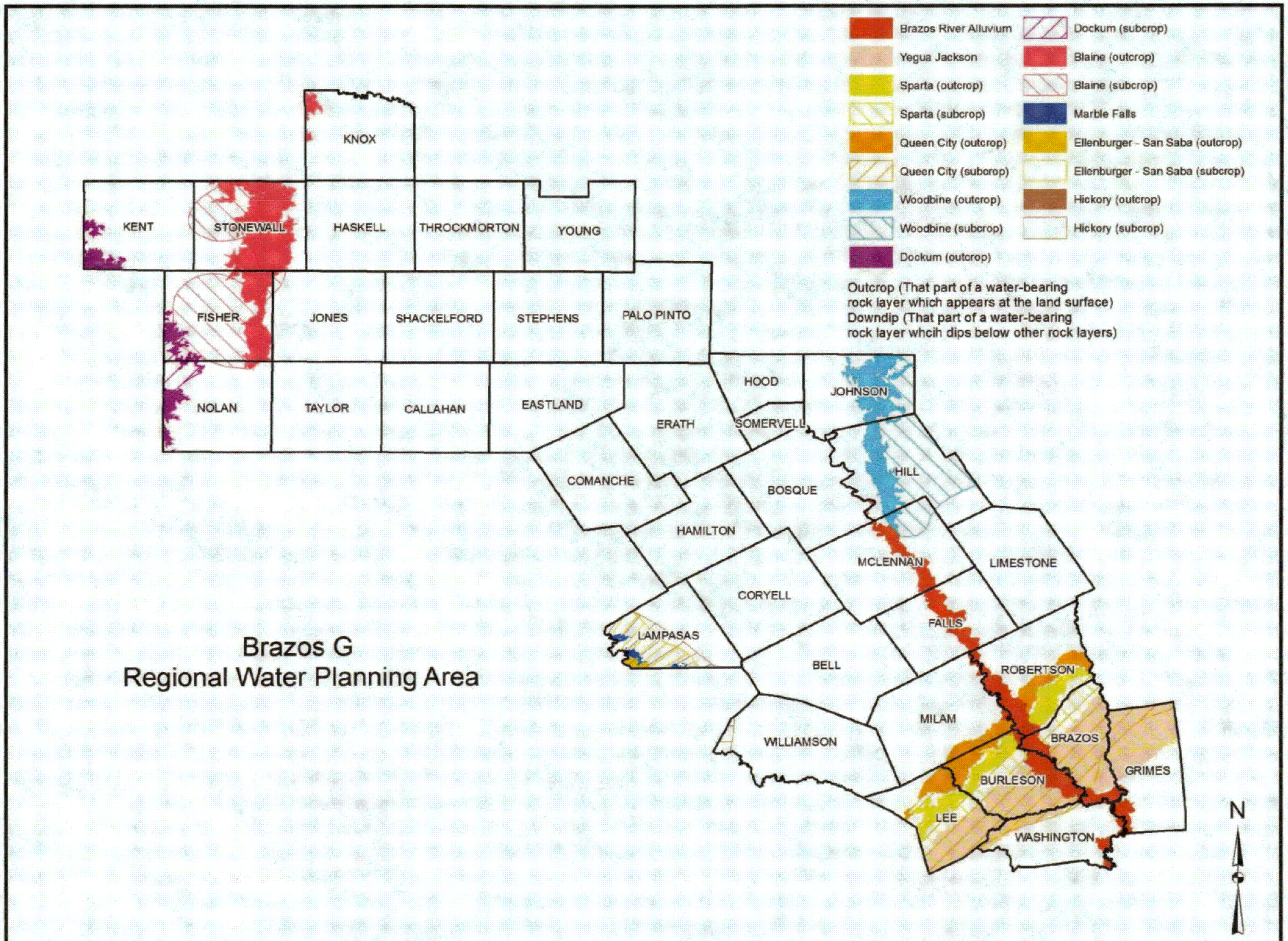
[7] TWDB, *Estimated Groundwater Pumpage by County and Aquifer*, 2010.

Figure 1-9. Major Aquifers



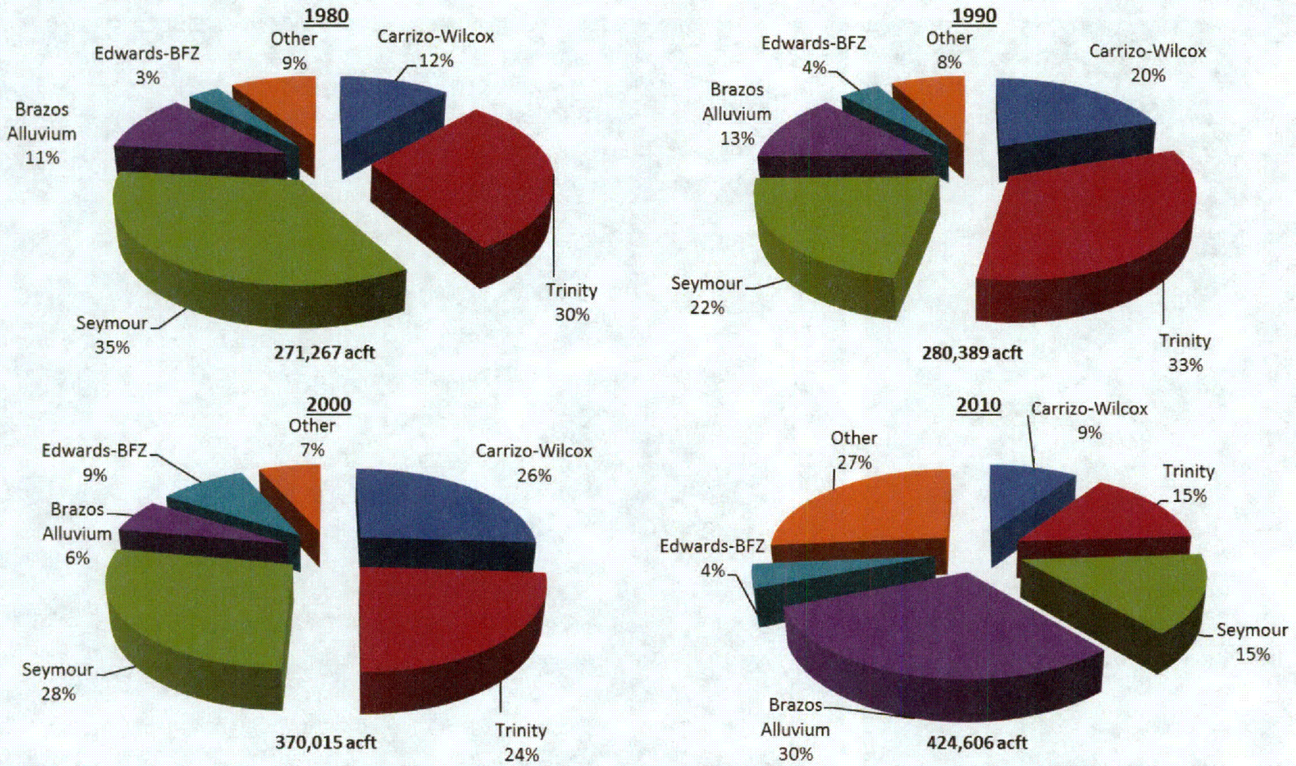
[redacted]

Figure 1-10. Minor Aquifers



Source: Texas Water Development Board

Figure 1-11. Brazos G Area Historical Water Pumpage by Aquifer



Source: Texas Water Development Board Water Use Survey Groundwater Pumpage Estimates - http://www2.twdb.texas.gov/ReportServerExt/Pages/ReportViewer.aspx?/wu/sumfinal_groundwater_pumpage

Fewer than half of the aquifers in the BGRWPA have potential for further development. Seven of them extend only slightly into the planning area. The aquifers that do offer potential for further development are all in the southeastern part of the region.

In the western part of the region, the Seymour Aquifer is the most significant in terms of usage and yield. The Seymour Aquifer, which has an uneven distribution, is highly developed, and most of its water is used for irrigation. The aquifer is prone to depletion if subjected to a combination of prolonged drought and heavy use, but groundwater supply in the aquifer has remained fairly constant. Also in the west, the fringes of three aquifers, the Dockum, Blaine, and Edwards-Trinity (Plateau), extend into the planning area, but these offer little room for further development. In the northeastern part of the region, there is a wide area with no major or minor aquifers, including Throckmorton, Young, Shackelford, Stephens, and Palo Pinto Counties. In these areas, locally occurring groundwater is not associated with a defined major or minor aquifer system and is primarily used for domestic and livestock purposes.

Table 1-4. Brazos G Area Aquifers

Aquifer	2010 Pumpage (acft)	2070 Availability (acft/yr)	Remarks
Western Area			
Seymour	62,600	83,074	Fully developed
Dockum	8,440	14,880	Limited extent within region
Blaine	410	14,562	Limited extent within region
Edwards-Trinity (Plateau)	2,550	1,182	Limited extent within region
Subtotal:	74,000	113,698	
Central Area			
Trinity	61,820	148,441	Overdeveloped in some areas
Edwards (BFZ)	18,740	9,921	Overdeveloped in drought
Woodbine	910	7,032	Limited extent within region
Marble Falls	20	2,837	Limited extent within region
Ellenburger-San Saba	30	2,593	Limited extent within region
Hickory	ND[1]	128	Limited extent within region
Subtotal:	81,520	170,952	
Southeastern Area			
Brazos River Alluvium	129,060	87,989	Overdeveloped in drought, water quality variable
Carrizo-Wilcox	40,060	217,751	Additional potential
Queen City	2,810	1,780	
Sparta	4,450	17,522	Additional potential
Gulf Coast	4,160	26,952	Additional potential
Navasota River Alluvium	ND[1]	2,216	
Yegua-Jackson	3,600	24,056	
Subtotal:	184,140	378,266	
Other and Undifferentiated	84,950	3,724	Many widely-scattered sources
Total:	424,610	666,640	

[1] ND indicates no data available.

The Trinity Aquifer is the most significant groundwater source in the central part of the BGRWPA. It is widespread and furnishes small to moderate amounts of groundwater in 17 counties. In the confined portions of the aquifer, however, development has resulted in significant declines in water levels.

In the southeastern part of the region, groundwater supplies are dominated by the Carrizo-Wilcox System and the Gulf Coast Aquifer. The Carrizo-Wilcox has significant potential for further development, but the Gulf Coast Aquifer in this area has low to moderate potential. Several minor aquifers also have potential for further development over wide areas in this sector. The Brazos Alluvium, which lies along the Brazos River, also extends into the central portion of the area and has some potential for additional development, but most of the BGRWPA's undeveloped groundwater lies in the southeastern sector.

The Trinity Aquifer and all other aquifers to the southeast have outcrop areas under water-table conditions and downdip areas with overlying confining layers where artesian conditions may occur. Most of these aquifers contain fresh water to considerable depths, and all contain slightly saline water just downdip (commonly to the southeast) of the fresh water. Maps in Appendix B show the locations of fresh water, defined as containing less than 1,000 milligrams per liter (mg/L) total dissolved solids (TDS), and slightly saline water, defined as having 1,000 to 3,000 mg/L TDS, within various aquifers. Maps are included for all aquifers within the BGRWPA that have availability estimated to exceed 5,000 acre-feet per year (acft/yr). The use of aquifers with groundwater containing more than 1,000 mg/L TDS is an option only where consumers can use the saline water or where special treatment (desalination or blending) is available. More detailed descriptions and availability of water from each aquifer in the BGRWPA are in Appendix B.

Major Springs

The BGRWPA contains few major springs, defined as springs with discharges commonly greater than 1 cubic foot per second (cfs). The majority of these issue from the Edwards-Balcones Fault Zone (BFZ) Aquifer in Bell and Williamson Counties and from the Marble Falls Aquifer in Lampasas County. Of the Edwards Aquifer springs, all but one are intermittent. The three largest Edwards springs are:

1. Salado Springs at Salado in Bell County along the Lampasas River with discharges ranging from 5 to 60 cfs.
2. Berry Springs, which is located 5 miles north of Georgetown in Williamson County, with discharges ranging from 0 to 50 cfs.
3. San Gabriel Springs at Georgetown in Williamson County with discharges ranging from 0 to 25 cfs.

Springs from the Marble Falls Aquifer include Hancock Park Springs along the Sulfur River, which is a tributary to the Lampasas River, with discharges reportedly ranging from 6 to 12 cfs, and Swimming Pool Springs at Hancock Park with a reported discharge of 1.3 to 1.6 cfs. Both springs are in the City of Lampasas in Lampasas County.

Some springs in the region significantly affect the quality of the water in the Brazos River. These are primarily the salt springs and seeps, such as those along Salt Croton and Croton Creeks, in the upper Brazos River Basin in Dickens, Kent, and Stonewall Counties. These natural saltwater sources cause the water in the main stem of the Brazos River above Possum Kingdom Lake to be too saline for most uses during low flow periods. For example, from 1963 to 1986, TDS and chloride concentrations in Croton Creek near Jayton averaged 7,933 mg/L and 3,169 mg/L, respectively. The mean values for TDS and chlorides in the Salt Croton Creek near Aspermont from 1969 to 1977 were 71,237 mg/L and 41,516 mg/L, respectively. Water in Possum Kingdom Lake usually contains more than 400 mg/L chloride and 1,200 mg/L TDS. The natural chloride pollution in the upper Brazos River affects water quality in the lower basin. In the Brazos River at Richmond, it has been estimated that 85 percent (or about 95 mg/L for the years 1946 to 1986)[8] of the chloride is from the upper basin.

There are many smaller springs in the Brazos G Area, but cataloging is inconsistent and incomplete. Only a few small springs have been cataloged in just nine of the 37 counties in the BGRWPA.[9] These springs flow substantially less than 1 cfs, and most flow only a few gallons per minute (1 cfs = 448.8 gpm).

1.5.2 Surface Water

The BGWRPA lies within the Brazos River Basin, the boundaries of which are the Red River Basin to the north, the Colorado River Basin to the west, the Trinity and San Jacinto River Basins to the east, and the counties of Fayette, Austin, Waller, and Montgomery to the south. The total drainage area for the Brazos River Basin is about 45,400 square miles, and of this about 28,400 square miles are in the BGRWPA.

The Brazos River is the third-largest river in Texas and the largest river between the Rio Grande River and the Red River in terms of total watershed area.[10] The Brazos River rises in three upper forks: the Double Mountain Fork, Salt Fork, and Clear Fork. Twenty-nine major reservoirs provide surface water to the BGRWPA. Major reservoirs, listed in Table 1-5, are defined as having an authorized conservation capacity greater than 10,000 acft. This table shows amounts of storage and annual use that the Texas Commission on Environmental Quality (TCEQ) authorizes for each reservoir. Figure 1-2 shows locations of some of the reservoirs in the BGRWPA, and Table A-5 in Appendix A provides more detailed information about all reservoirs in the BGRWPA with a permitted capacity greater than 2,500 acft. Diversions permitted for municipal, industrial, irrigation, and mining uses for each BGRWPA subregion are listed in Table 1-6. Total diversions permitted by use in each BGWRPA county are given in Table A-6 in Appendix A.

[8] Ganze, C. Keith and Ralph A. Wurbs, "Compilation and Analysis of Monthly Salt Loads and Concentrations in the Brazos River Basin," U.S. Army Corps of Engineers, Contract No. DACW63-88-M-0793, January 1989.

[9] Brune, Gunnar, *Major and Historical Springs of Texas: TWDB Report 189*, 1970.

[10] The Dallas Morning News, *2004-2005 Texas Almanac*, 2004.

Table 1-5. Major Reservoirs in BGRWPA (Authorized Capacity Greater than 10,000 acft)

Reservoir	Stream	County	Authorized Storage (acft)	Authorized Use (acft/yr)	Owner
Abilene	Elm Creek	Taylor	11,868	1,675	City of Abilene
Alcoa Lake	Sandy Creek	Milam	15,650	14,000	Aluminum Co. of America
Aquilla	Aquilla Creek	Hill	52,400	13,896	U.S. Army Corps of Engineers[1]
Belton	Leon River	Bell	469,600	130,257	U.S. Army Corps of Engineers[2]
Cisco	Sandy Creek	Eastland	45,000	2,027	City of Cisco
Cleburne	Nolan Creek	Johnson	25,600	6,000	City of Cleburne
Daniel	Gonzales Creek	Stephens	11,400	2,100	City of Breckenridge
Dansby Power Plant	Unnamed Trib. Brazos River	Brazos	15,227	850	City of Bryan
Fort Phantom Hill	Elm Creek	Jones	73,960	33,190	City of Abilene
Georgetown	North Fork San Gabriel River	Williamson	37,100	13,610	U.S. Army Corps of Engineers[1]
Gibbons Creek	Gibbons Creek	Grimes	32,084	9,740	Texas Municipal Power Agency
Graham/Eddleman	Flint Creek	Young	52,386	20,000	City of Graham
Granbury	Brazos River	Hood	155,000	64,712	Brazos River Authority
Granger	San Gabriel River	Williamson	65,500	19,840	U.S. Army Corps of Engineers[1]
Hubbard Creek	Hubbard Creek	Stephens	317,750	56,000	West Central Texas MWD
Leon	Leon River	Eastland	28,000	6,300	Eastland Co. WSD
Limestone	Navasota River	Robertson	225,400	65,074	Brazos River Authority
Millers Creek Lake[3]	Millers Creek	Baylor	30,696	5,000	North Central Texas MWA
Palo Pinto	Palo Pinto Creek	Palo Pinto	44,124	18,500	Palo Pinto MWD
Possum Kingdom	Brazos River	Palo Pinto	724,739	230,750	Brazos River Authority
Proctor	Leon River	Comanche	59,400	19,658	U.S. Army Corps of Engineers[1]
Somerville	Yegua Creek	Washington	160,110	48,000	U.S. Army Corps of Engineers[1]
Squaw Creek	Squaw Creek	Somervell	151,500	23,180	Texas Utilities Electric Co.
Stamford	Paint Creek	Haskell	60,000	10,000	City of Stamford
Stillhouse Hollow	Lampasas River	Bell	235,700	67,768	U.S. Army Corps of Engineers[1]

Table 1-5. Major Reservoirs in BGRWPA (Authorized Capacity Greater than 10,000 acft)

Reservoir	Stream	County	Authorized Storage (acft)	Authorized Use (acft/yr)	Owner
Tradinghouse	Tradinghouse Creek	McLennan	37,800	15,000	Texas Utilities Electric Co.
Truscott Brine	Bluff Creek	Knox	107,000	N/A	Red River Authority of Texas
Twin Oak	Duck Creek	Robertson	30,319	13,200	Texas Utilities Electric Co.
Waco	Bosque River	McLennan	192,062	192,062	U.S. Army Corps of Engineers[5]
Whitney	Brazos River	Hill	50,000	18,336	U.S. Army Corps of Engineers[1]
Totals	—	—	**3,517,375**	**1,025,334**	—

[1] Water rights held by the Brazos River Authority.
[2] Water rights held by the Brazos River Authority and the Department of the Army (Fort Hood).
[3] Millers Creek Lake is listed in Baylor County in Region B, but is used exclusively in the Brazos G Area.
[4] Storage authorization includes both Lake Stamford and College Lake
[5] Water rights held by the City of Waco.

Table 1-6. Permitted Surface Water Diversions by Subregion

Subregion	Permitted Diversion (acft/yr)[1]					
	Municipal	Industrial	Irrigation	Mining	Other[2]	Total
Rolling Plains	505,047	46,058	62,023	9,249	75	622,451
IH-35 Corridor	467,025	109,181	21,286	1,121	5	598,618
Lower Basin	204,415	170,977	97,179	2,385	1,480	476,436
Region Total	1,176,487	326,216	180,488	12,755	1,560	1,697,506

[1] Available supply may be less than the permitted diversion based on hydrologic conditions and priority of individual water rights.
[2] Category includes consumptive amounts for recreation and other uses as classified by the TCEQ.

1.6 Wholesale Water Providers

Wholesale water providers are defined in SB2 as any entity that sold more than 1,000 acft of wholesale water in any one year during the five years preceding the adoption of the last regional water plan. The Brazos G RWPG may also identify a provider who is expected to sell more than 1,000 acft per year of wholesale water during the 60-year planning period. There are 26 identified wholesale water providers in the BGRWPA, plus an additional six from outside Brazos G. These providers are listed in Table 1-7 and described below.

1.6.1 River Authorities

Brazos River Authority

The largest provider of water in the BGRWPA is the BRA. The BRA also operates water and wastewater treatment systems, has programs to assess and protect water quality, does water supply planning, and supports water conservation efforts in the Brazos River Basin. The BRA provides water from three wholly owned and operated reservoirs: Lake Granbury, Possum Kingdom Lake, and Lake Limestone. The BRA also owns water rights for the proposed Allens Creek Reservoir in Region H. In addition to these sources, the BRA contracts for conservation storage space in the eight U.S. Army Corps of Engineers reservoirs in the region: Lakes Proctor, Belton, Stillhouse Hollow, Georgetown, Granger, Somerville, Whitney, and Aquilla. The total permitted capacity of the 12 constructed reservoirs in the BRA system is approximately 2.3 million acft. The BRA holds rights for diversion in the region totaling 661,901 acft, and contracts to supply water to municipal, industrial, and agricultural water customers in the BGRWPA and other regions. The BRA's largest municipal customers in 2000 included Bell County Water Control and Improvement District No. 1, the City of Round Rock, and the Central Texas Water Supply Corporation.

In 2004, the BRA submitted a water rights application to the TCEQ requesting an additional firm supply appropriation of up to 421,449 acft/yr and an interruptible supply of up to 670,000 acft/yr. These additional supplies would be made available through coordinated operation of the BRA's system of reservoirs, as further described in Volume II, Chapter 7.10. The water right application is pending with the TCEQ.

Table 1-7. Wholesale Water Providers

Entity	Contract Amounts (acft/yr)[1]	Water Sources
Aquilla Water Supply	6,512	Lake Aquilla (BRA)
Bell County WCID No. 1	62,509	Lake Belton (BRA)
Bistone MWSD	5,405	Lake Mexia, Carrizo-Wilcox Aquifer
Bluebonnet WSC	7,125	Lake Belton (BRA)
Brazos River Authority	675,191[2]	Lakes Aquilla, Belton, Georgetown, Granbury, Granger, Limestone, Possum Kingdom, Proctor, Somerville, Stillhouse Hollow, Whitney

Table 1-7. Wholesale Water Providers

Entity	Contract Amounts (acft/yr)[1]	Water Sources
Central Texas WSC	10,240	Lake Stillhouse Hollow (BRA)
City of Abilene	37,911	Fort Phantom Hill, Hubbard Creek, Kirby
City of Anson	1,484	Hubbard Creek
City of Bryan	19,634	Carrizo-Wilcox Aquifer, Sparta Aquifer
City of Cedar Park	19,446	Highland Lakes System (LCRA)
City of Cleburne	9,393	Trinity Aquifer, Lake Aquilla, Lake Pat Cleburne, Reuse Supplies
City of Gatesville	5,652	Lake Belton
City of Mineral Wells	5,084	Lake Palo Pinto
City of Round Rock	28,761	Edwards BFZ Aquifer, Lake Stillhouse Hollow, Lake Georgetown
City of Stamford	3,252	Lake Stamford
City of Sweetwater	3,850	Dockum Aquifer
City of Temple	22,601	Lake Belton, run-of-river water right (Leon River)
City of Waco	52,211	Lake Waco, Lake Brazos, Reuse Supplies
Eastland County WSD	5,411	Lake Leon, Run-of-River Right
Heart of Texas Water Suppliers LLC	5,600	Carrizo-Wilcox Aquifer
Johnson County SUD	10,983	City of Mansfield (Region C), Lake Granbury, Trinity Aquifer
Kempner WSC	4,400	Lake Belton, Lake Stillhouse Hollow
North Central Texas MWA	1,797	Millers Creek Reservoir
Palo Pinto County MWD No. 1	9,414	Lake Palo Pinto
Upper Leon MWD	4,572	Lake Proctor (BRA)
West Central Texas MWD	27,900	Hubbard Creek Reservoir
Out of Region WWPs		
Colorado River MWD	15,000	Lake Ivie (to Brazos G)
Lower Colorado River Auth.	49,400[3]	Lake Travis (to Brazos G)
Trinity River Authority	ND	TRWD (Region C to Brazos G)
City of Fort Worth	ND	TRWD (Region C to Brazos G)
City of Arlington	ND	TRWD (Region C to Brazos G)
City of Mansfield	ND	TRWD (Region C to Brazos G)

[1] Contracted volumes through 2020
[2] Includes contracts in other regions.
[3] Brazos G contracts only.

1.6.2 Districts and Water Supply Corporations

Aquilla Water Supply District

Aquilla Water Supply District is located in Hill County, and obtains raw water from Lake Aquilla through a contract with the BRA. The district supplies treated water to five wholesale customers. The City of Hillsboro is the district's largest customer, with a contract to purchase up to 4,200 acft/yr.

Bell County WCID No. 1

Bell County WCID No. 1 obtains raw water from Lake Belton for distribution to its customers. Major customers include the U.S. Department of the Army (Fort Hood) and the Cities of Belton, Copperas Cove, Harker Heights, and Killeen. The District also provides treated water to customers under the customers' individual BRA contracts.

Bistone Municipal Water Supply District

The Bistone Municipal Water Supply District owns and operates Lake Mexia in Limestone County, with authorized diversions for municipal and industrial use of 2,887 acft/yr. The MWSD also utilizes groundwater from the Carrizo-Wilcox Aquifer. The MWSD serves the City of Mexia and other entities in Limestone County.

Bluebonnet Water Supply Corporation

The Bluebonnet Water Supply Corporation (WSC) is located in Bell County. The WSC obtains raw water from Lake Belton, and sells treated water to eight entities in the BGRWPA.

Central Texas Water Supply Corporation

Central Texas WSC contracts with the BRA to obtain raw water from Lake Stillhouse Hollow, and holds contracts to supply 17 entities in Bell, Williamson and Lampasas Counties.

Eastland County Water Supply District

The Eastland County Water Supply District owns and operates Lake Leon and has a water right to divert 5,800 acft/yr for municipal and industrial purposes and 500 acft/yr for irrigation. The district currently provides treated water to entities in Eastland County through the Cities of Eastland and Ranger.

Heart of Texas Water Suppliers LLC

The Heart of Texas Water Suppliers own and operate a well field in the Carrizo-Wilcox Aquifer in Williamson County and permits with the Lost Pines Groundwater Conservation District in Lee County for 3,300 acft/yr. Heart of Texas has a contract to provide 5,600 acft/yr to the City of Hutto.

North Central Texas Municipal Water Authority

North Central Texas Municipal Water Authority supplies treated water to entities in Knox, Haskell and Stonewall Counties. The district has water rights to divert 5,000 acft/yr of raw water from Millers Creek Reservoir for municipal, industrial, and mining purposes.

Palo Pinto County Municipal Water District No. 1

Palo Pinto County Municipal Water District No. 1 owns and operates Lake Palo Pinto, which is used to supply water to entities in Palo Pinto and Parker Counties (Region C). The district has rights to 18,500 acft a year for municipal and steam electric power uses. Treated water is supplied to the City of Mineral Wells (and its customers) and Lake Palo Pinto Water Association. The district is currently pursuing the Turkey Peak Reservoir project to increase its total reservoir storage capacity to the volume authorized in its water rights.

Upper Leon Municipal Water District

The Upper Leon Municipal Water District obtains water from Lake Proctor through contracts with the BRA. The MWD provides treated water to the Cities of Comanche, De Leon, Dublin, Gorman, and Hamilton. The MWD also has a contract to sell water to Stephenville.

West Central Texas Municipal Water District

The West Central Texas Municipal Water District owns and operates Hubbard Creek Reservoir, and provides water to the Cities of Abilene, Albany, Anson, and Breckenridge. This district has rights to 56,000 acft/yr of water for municipal, industrial, irrigation, and mining uses.

1.6.3 Municipal WUGs

City of Abilene

The City of Abilene obtains raw water from Lake Fort Phantom Hill, Lake Abilene, and Lake Kirby, all of which it owns and operates. The total permitted capacity of these reservoirs is about 94,300 acft. The City has the right to divert up to 37,365 acft/yr from these lakes for municipal, industrial, and irrigation uses. The City also uses surface water purchased from the West Central Texas Municipal Water District, and surface water purchased from CRMWD (Lake Ivie). The City has contracts to supply treated water to 14 entities in the BGRWPA and the Dyess Air Force Base, which is located in Abilene. The City also has a contract with the City of Hamlin to treat raw water from Hubbard Creek Lake that is purchased from the City of Anson.

City of Anson

The City of Anson receives surface water supplies from West Central Texas MWD and Lake Anson North. Although the City owns Lake Anson North, the water resource is unreliable and is not considered a supply. The City has a 1.8 MGD WTP for its own demand. Anson sells supply to Hawley WSC and City of Hamlin and contracts with Abilene to provide treatment for these supplies.

City of Bryan

The City of Bryan owns wells in the Carrizo-Wilcox Aquifer as well as a bed and banks water right permit for reuse of the city's wastewater effluent. The City of College Station, Wellborn SUD and Wickson Creek SUD have agreements with Bryan to purchase or sell potable water through metered lines. These connections are typically only used during times of high demand or in emergency situations.

City of Cleburne

The City of Cleburne obtains its water supply from Lake Pat Cleburne, Lake Aquilla, and groundwater from the Trinity Aquifer. The City of Cleburne also has contracted supplies from Lake Whitney that are not yet connected. The City of Cleburne provides treated supplies for manufacturing use and wastewater reuse supplies for steam-electric customers in Johnson County.

City of Gatesville

The City of Gatesville is supplied by a 5,898 acft/yr BRA contract for water from Lake Belton. The City provides treated supplies to five municipal water user groups in Coryell County including supply for all the projected demand for Coryell City Water Supply District.

Johnson County SUD

Johnson County Special Utility District (SUD) is located in Johnson, Hill, Ellis (Region C) and Tarrant (Region C) counties. The SUD obtains its water supply from groundwater from the Trinity Aquifer, and a contract with the Brazos River Authority for water from Lake Granbury and a contract with the City of Mansfield (10,089 acft/yr) for water from the Tarrant Regional Water District.

Kempner WSC

Kempner WSC has service area in portions of Coryell, Bell, Burnet (Region C) and Lampasas Counties. The WSC receives surface water supplies from the Brazos River Authority out of Lake Stillhouse Hollow. Kempner WSC sells supplies to the cities of Kempner, Copperas Cove, Lampasas, as well as to Salado WSC and Lampasas County-Mining.

City of Mineral Wells

City of Mineral Wells obtains raw water from Lake Mineral Wells and additional surface water supplies from Palo Pinto MWD #1. The city supplies treated water to ten water user groups in Palo Pinto and Parker County (Region C).

City of Round Rock

The City of Round Rock obtains raw water from the Edwards (BFZ) Aquifer and purchases additional water from the Brazos River Authority through Lake Stillhouse Hollow and Lake Georgetown. The City sells wholesale water to local providers in Williamson County. Round Rock is a participant in the Brushy Creek Regional Utility Authority project to obtain supplies from the Highland Lakes.

City of Stamford

The City of Stamford obtains supply from Lake Stamford and supplies water to several entities in Jones and Haskell Counties. The City of Stamford is authorized to store up to 60,000 acre-feet in Lake Stamford and to divert 10,000 acft/yr from Lake Stamford. The City also constructed a diversion structure on California Creek to divert from California Creek to Lake Stamford to augment supplies in the reservoir.

City of Sweetwater

The City of Sweetwater owns and operates two reservoirs in the BGRWPA, Lake Sweetwater and Lake Trammel, and a groundwater well field in the Dockum Aquifer. The City also owns and operates the Oak Creek Reservoir in Coke County (Region F) in the Colorado River Basin. The City of Sweetwater provides wholesale water to entities in Nolan and Fisher Counties, and the City of Bronte in Region F.

City of Temple

The City of Temple holds water rights for 15,804 acft/yr from a 500 acre-foot reservoir on the Leon River, and contracts with the Brazos River Authority for an additional 30,453 acft/yr from Lake Belton. The City provides supply to the Cities of Little River-Academy, Morgans Point Resort, and Troy, also supplies effluent from its wastewater treatment plan to a new generating station owned by Panda Power.

City of Cedar Park

The City of Cedar Park in Williamson County obtains supply from the Highland Lakes and provides wholesale water to entities in Williamson and Travis Counties. The City is a participant in the Brushy Creek Regional Utility Authority to develop additional supplies from the Highland Lakes.

City of Waco

The City of Waco obtains raw water from Lake Waco, and a small amount of groundwater from the Trinity Aquifer. In 2003, the City, in cooperation with the BRA and the U.S. Army Corps of Engineers, implemented a project to raise the water level in Lake Waco to provide for additional supply. With this additional supply, the City has the right to divert 79,870 acft/yr from Lake Waco for municipal, industrial, and irrigation uses. The City provides treated water to multiple neighboring communities and water supply corporations. The Waco Metropolitan Area Regional Sewerage System (WMARSS) facility is operated by the City of Waco on behalf of the member cities of Bellmead, Hewitt, Lacy Lakeview, Lorena, Robinson and Woodway. Effluent from the WMARSS is reused used to supply steam-electric cooling supply, and multiple other reuse projects are planned to offset potable water use for manufacturing and landscape irrigation in McLennan County.

1.6.4 Out-of-Region Wholesale Water Providers

Lower Colorado River Authority

The Lower Colorado River Authority (LCRA) manages much of the lower Colorado River Basin through the Highland Lake System (Lake Buchanan, Inks Lake, Lake LBJ, Lake Marble Balls, Lake Travis and Lake Austin) and is a significant regional water provider in Region K. The LCRA's two primary water supply reservoirs are Lakes Travis and Buchanan, with the rest of the Highland Lakes operating as balancing reservoirs. In the BGRWPA, LCRA provides raw water to the Cities of Cedar Park and Leander from Lake Travis. The cities of Cedar Park, Leander and Round Rock have formed the Brush Creek Regional Utility Authority (Brushy Creek RUA), and are pursuing additional supplies from the Highland Lakes, as described in Volume II, Chapter 7.2. The BRA and the LCRA have formed the Brazos-Colorado Water Alliance to identify water supply and treatment alternatives to meet the future needs of the Brazos and Colorado River Basins.

Colorado River Municipal Water District

Colorado River Municipal Water District (CRMWD) provides water to customers in the upper Colorado River Basin (Region F) and the City of Abilene in the BGRWPA. Treated water from the City of Snyder, a CRMWD member city, is supplied to the City of Rotan in Fisher County in the BGRWPA. The district owns and operates multiple sources of raw water including three reservoirs (O.H. Ivie, J.B. Thomas and E.V. Spence) and several groundwater well fields. In the BGRWPA, the district is contracted to provide up to 15,000 acft of raw water per year to the City of Abilene from Lake Ivie.

Other Wholesale Water Providers in Region C

The Trinity River Authority, City of Fort Worth, City of Arlington and the City of Mansfield provide supplies from Region C to WUGs and WWPs in Johnson County, and minor amounts of supply to Hill and Limestone Counties.

1.7 Current Water Users and Demand Centers

1.7.1 Regional Water Use

Total water use by each county in the BGRWPA is provided in Figure 1-12 for 2010. Water use can be classified into four general types of use: municipal, industrial, agricultural, and non-consumptive. Figure 1-13 shows historical water use by municipalities, industries, and agriculture in the BGRWPA. Industrial use can be further broken down into three sub-categories: manufacturing, steam-electric cooling, and mining. Agricultural use consists of the subcategories of water used for irrigation and livestock. Historical water use in the planning area for six categories is summarized in Table 1-8.

Historical water use data for all counties and categories of use in the BGRWPA are included in Appendix A. Historical surface water use greater than or equal to 1,000 acft is presented in Appendix D for each surface water right holder.

1.7.2 Municipal Use

Municipal water use includes water consumed by residences, commercial enterprises and institutions. Residential and commercial uses are categorized together because they are similar types of uses (i.e., they both use water primarily for drinking, cleaning, sanitation, air-conditioning, and landscape watering). Generally, municipal use does not include water use by large industries. Projections for future municipal use take into account population growth and anticipated efforts at water conservation. Municipal use of 326,414 acft accounted for about 38 percent of the region's total water use in 2010. Figure 1-14 shows municipal water use in each BGRWPA county in 2010.

Figure 1-12. 2010 Total Water Use by County

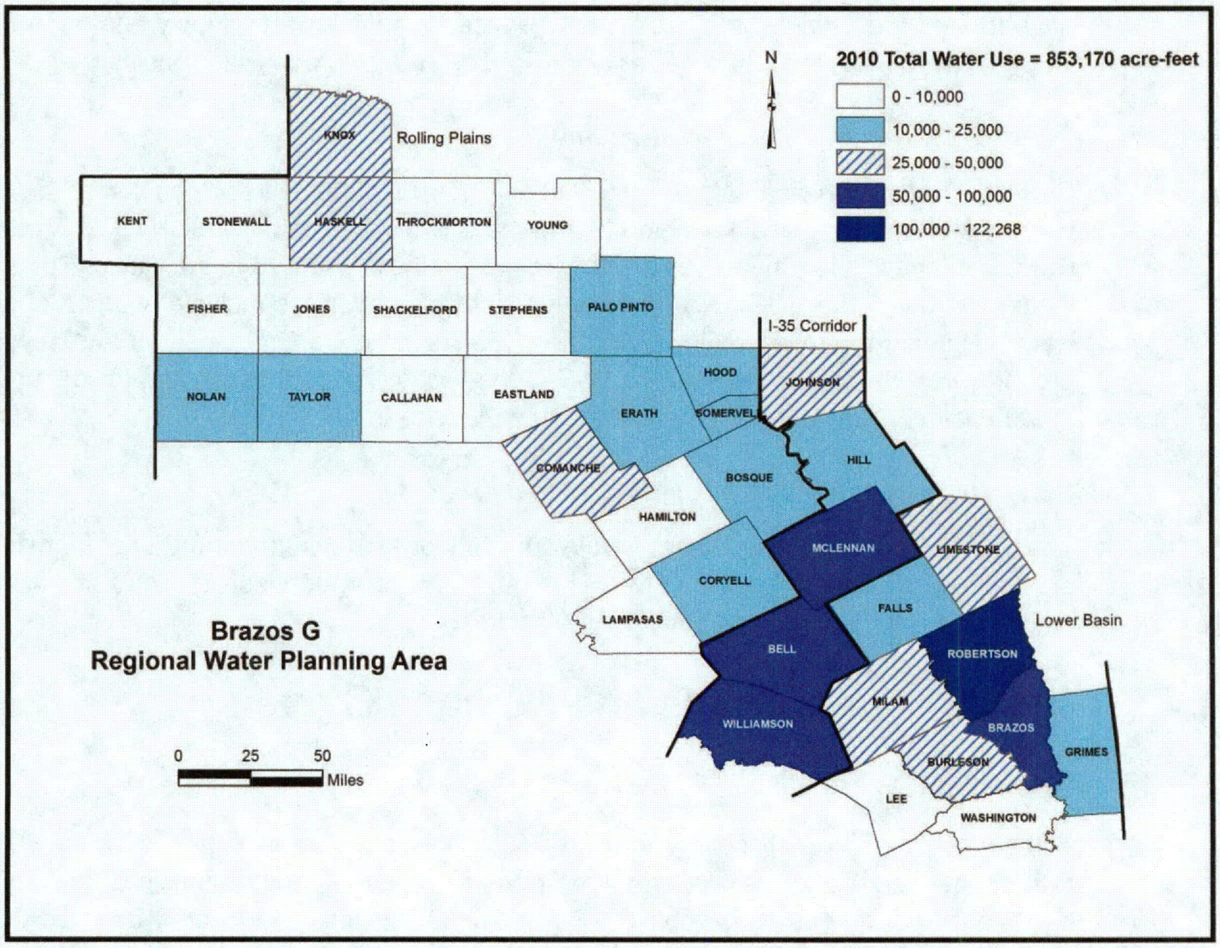


Figure 1-13. BGRWPA Historical Water Use by Type

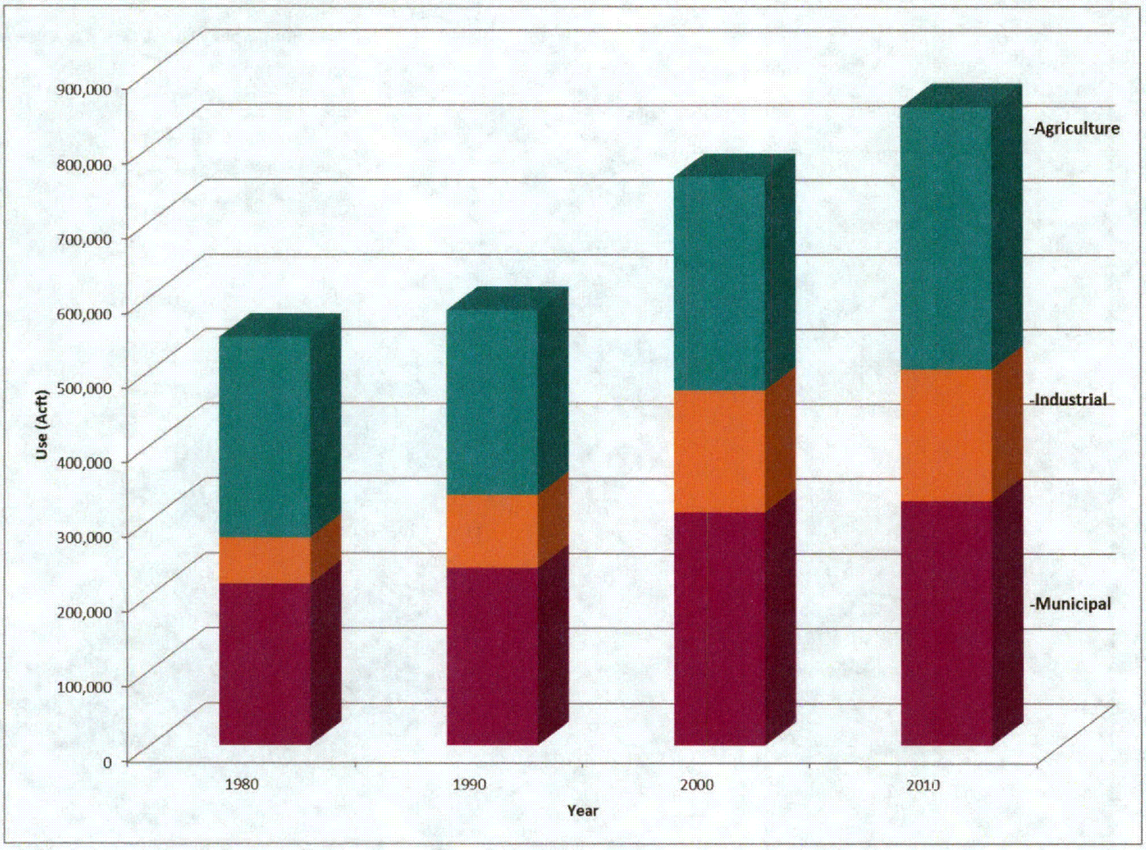
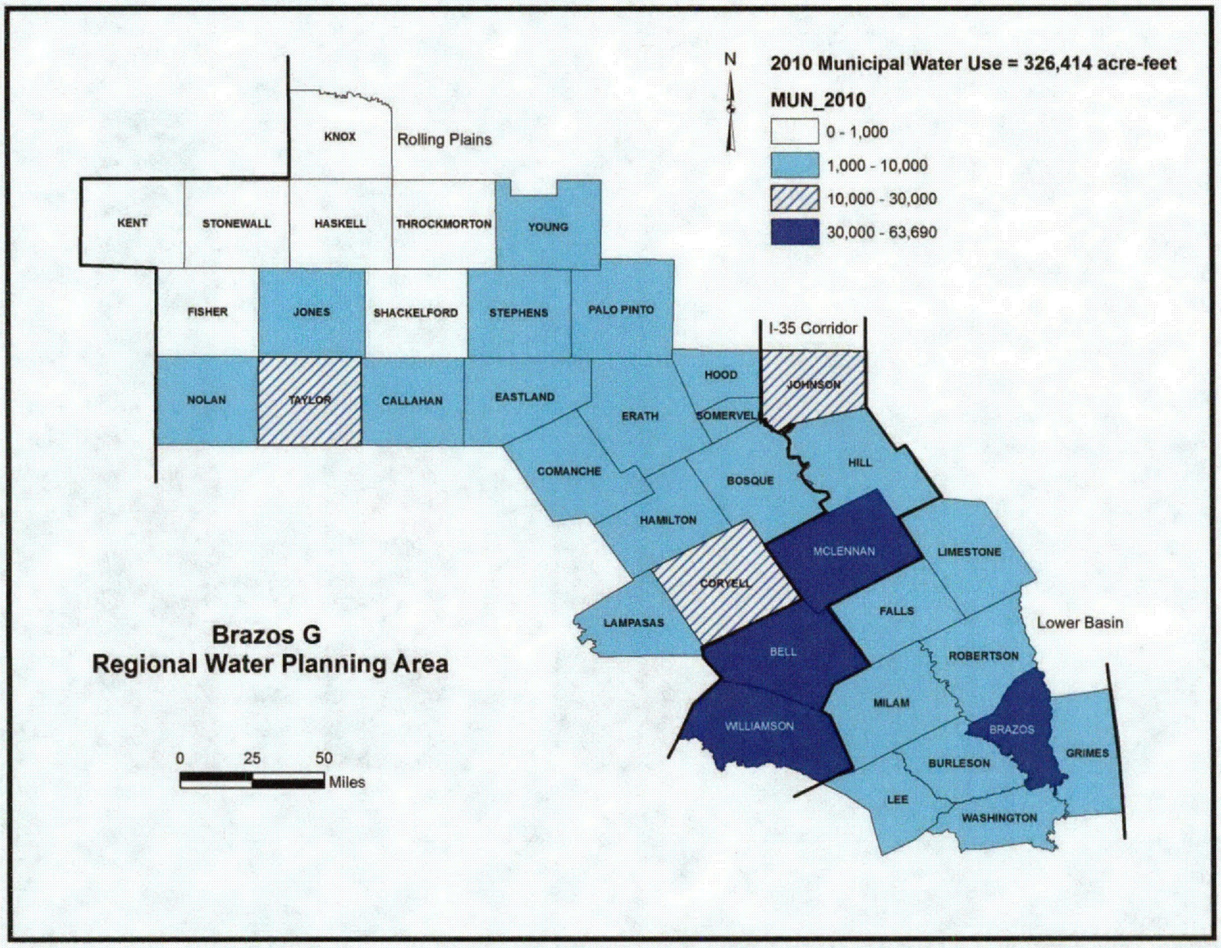


Table 1-8. BGRWPA Historical Water Use (acft/yr)

Category	1980	1990	2000	2010
Municipal Use	215,744	236,955	311,291	326,414
Manufacturing Use	21,124	32,240	60,522	46,131
Steam-Electric Use	28,686	57,657	97,921	76,545
Mining Use	11,413	6,944	4,382	53,383
Irrigation Use	229,387	200,954	232,911	298,754
Livestock Use	38,915	46,770	53,222	51,943
Total Use	545,269	581,520	760,249	853,170
Percent of State Total	**3.74**	**3.99**	**4.69**	**6.16**
Source: Texas Water Development Board				

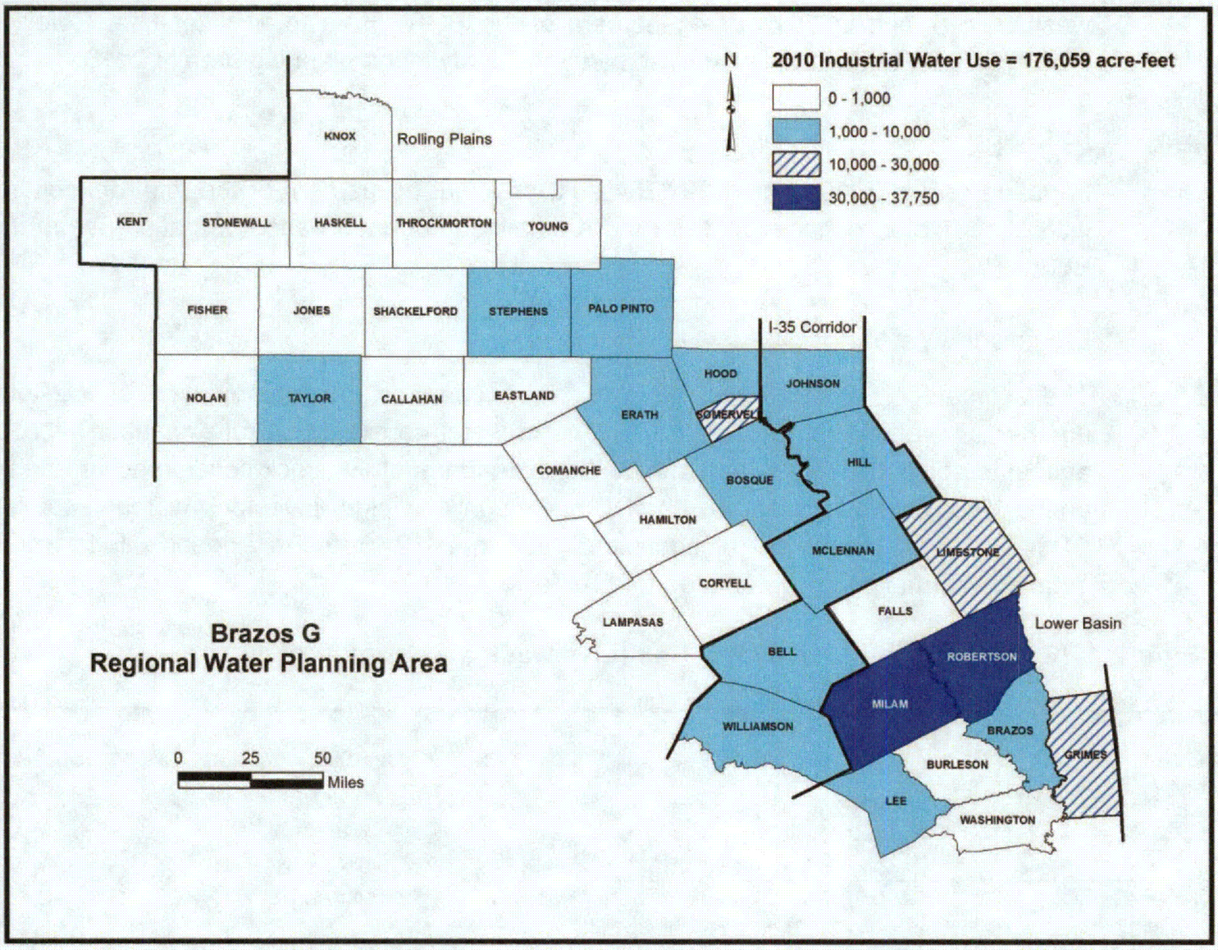
Figure 1-14. 2010 Municipal Water Use



1.7.3 Industrial Use

Industrial use consists of water used for manufacturing, for steam-electric cooling during power generation, and for mining operations. Projections for industrial use take into account expected growth of industries, population changes, available mineral reserves, and production rates. In 2010, industrial use was 176,059 acft, or about 21 percent of the total water used in the BGRWPA. Refer to Figure 1-15 for 2010 industrial water use by county.

Figure 1-15. 2010 Industrial Water Use (Manufacturing, Steam-Electric Cooling, and Mining)



Manufacturing

Manufacturing use is water used for producing finished goods. Manufacturing use was 46,131 acft in 2010, or 26 percent of total industrial water usage that year.

Steam-Electric Cooling

This category is water used during the power-generation process and is typically losses due to forced evaporation during cooling. Water that is diverted and not consumed (i.e., return flow) is not included in the power-generation total. Water use for steam-electric cooling in 2010 was 76,545 acft, or 43 percent of total industrial water use.

Mining

Mining use is water consumed for exploration and production of oil and gas, and for mining of lignite, sand, gravel, and such. Mining use in 2010 was 53,383 acft, or 30 percent of the total industrial water use.

1.7.4 Agricultural Use

Agricultural use is water used for irrigation and for watering livestock. Agricultural use was 350,697 acft in 2010 or 41 percent of the BGRWPA's total water use. Refer to Figure 1-16 for agricultural water use by each county in the planning area in 2010.

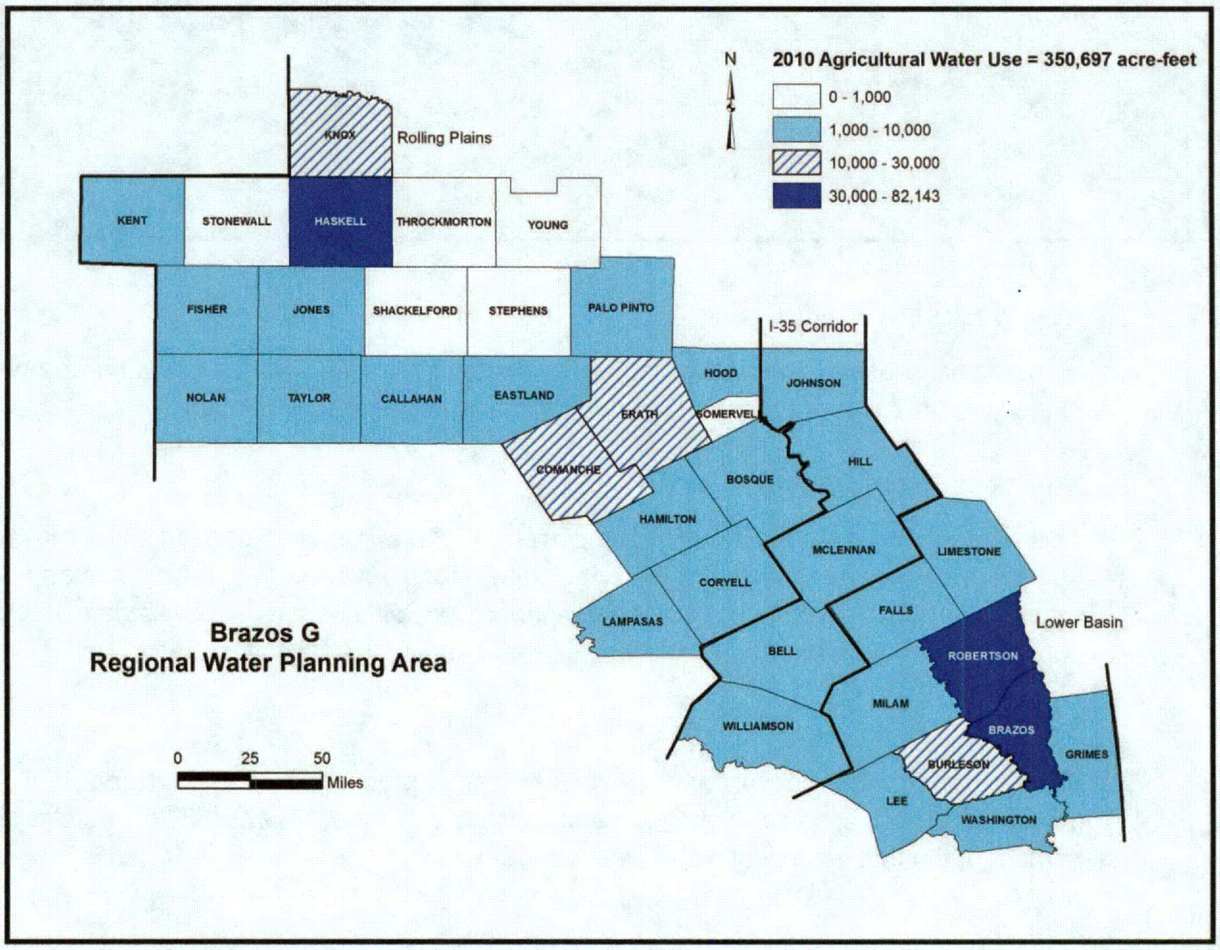
Irrigation

Irrigation use in 2010 totaled 298,754 acft, or about 85 percent of the total agricultural water use. Refer to Appendix F for more detailed information about irrigation use in the BGRWPA.

Livestock Watering

The estimate of use for livestock watering is based on a determination of the total number of livestock in the region. A uniform water-consumption rate for each type of animal is applied to this total number. The categories of livestock considered are cattle and calves; poultry; sheep and lambs; and hogs and pigs. Livestock watering totaled 51,943 acft, or 15 percent of agricultural use in 2010. Refer to Appendix F for more detailed information on water used for livestock.

Figure 1-16. 2010 Agricultural Water Use (Livestock and Irrigation)



1.7.5 Non-Consumptive Use

Non-consumptive use is water that is diverted and then returned to the river basin with minimal change in volume and temperature, or is used but never leaves the river system. The majority of non-consumptive water use in the BGRWPA is associated with recreational use and the return flow from power generation. Water-related recreational activities include boating, camping, fishing, and swimming. Recreational use in the BGRWPA is supported by numerous state parks and by public facilities for boating and camping at various lakes and reservoirs.

Navigation is another form of non-consumptive use. Other than small watercraft used primarily for recreation on lakes and rivers, the BGRWPA includes no use of water for navigation. No water management strategy considered by the BGRWPG will affect navigation, either in the BGRWPA or in adjacent regions.

Power generation demands large amounts of water for cooling equipment. Twenty steam-electric power-generating facilities were operating in the BGRWPA in 2008 (BEG, 2008). Most of the diverted water was returned to the Brazos River Basin. Water that is lost to evaporation during the cooling process is considered industrial use, and is discussed in Section 1.7.3.

1.8 Natural Resources

1.8.1 Regional Vegetation

The BGRWPA lies within several different ecoregions, or vegetational areas[11] which are relatively homogenous areas in terms of geography, hydrology, and land use. Figure 1-17 shows the locations of the five ecoregions in the BGRWPA: the Rolling Plains, Blackland Prairies, Post Oak Savannah, Cross Timbers and Prairies, and Edwards Plateau. A general description for each ecoregion is provided below. More detailed information is provided in Appendix E.

Rolling Plains

The Rolling Plains are part of the Great Plains of the central United States. The Rolling Plains region covers about 24 million acres of gently rolling to moderately rough terrain. The region is bordered on the west by the Caprock Escarpment, on the south by the Edwards Plateau, and on the east by the Cross Timbers and Prairies region. Annual precipitation averages about 22 to 30 inches, and elevations range from 800 to 3,000 feet above sea level. The eastern part of the Rolling Plains is called the Reddish Prairie. Soils vary from coarse sands in outwash terraces near streams to tight clays or red-bed clays and shales.

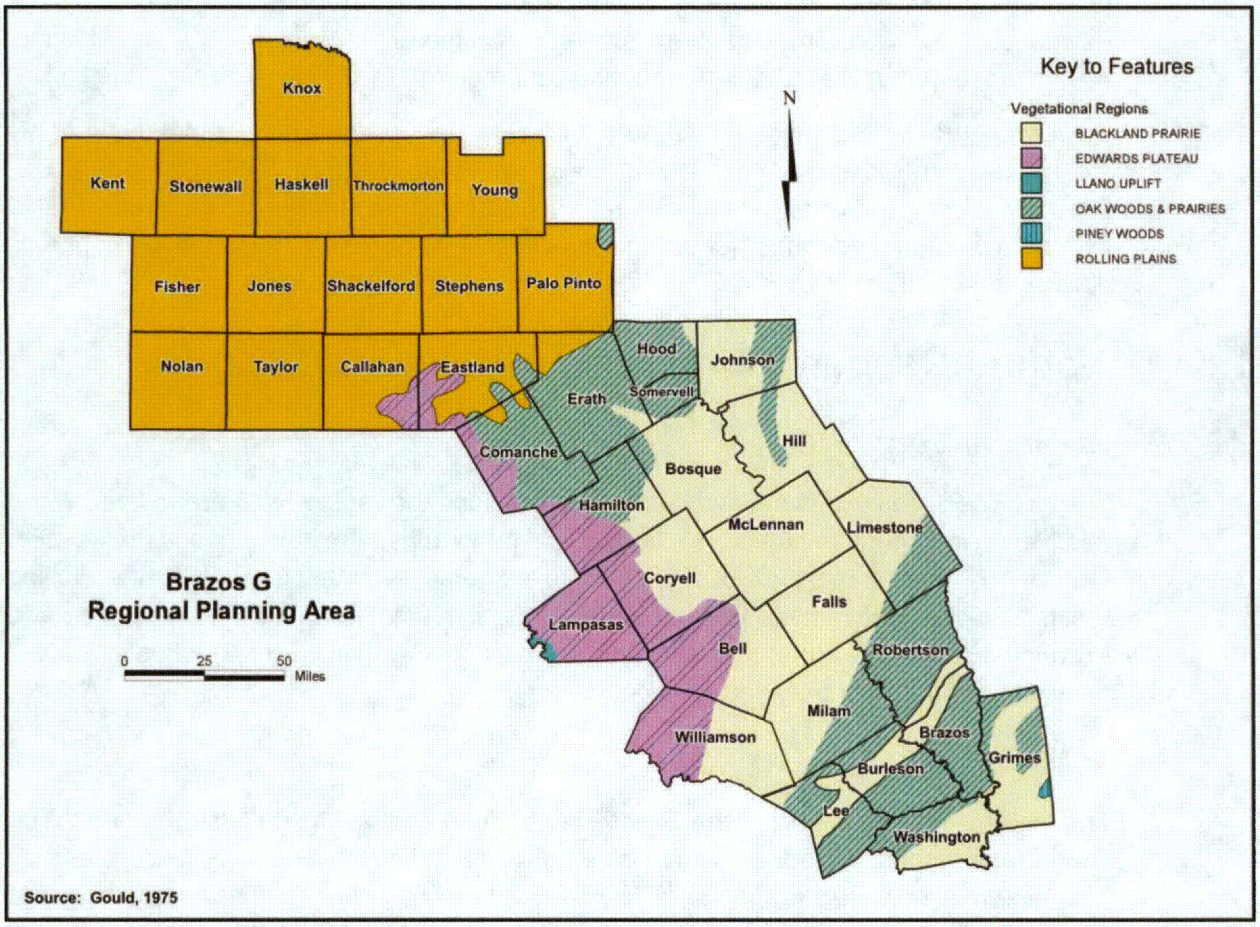
Blackland Prairies

The Blackland Prairies region consists of nearly level to gently rolling topography. It covers about 11.5 million acres from Grayson and Red River Counties in northeast

[11] Gould, F.W., *The Grasses of Texas*, Texas A&M University Press, College Station, Texas, 1975.

Texas to Bexar County in the south-central part of the State where it merges with the brush land of the Rio Grande Plains. Annual precipitation is 30 to 45 inches, and elevations range from 300 to 800 feet above sea level. The term blackland comes from the uniformly dark-colored, calcareous clays in the Alfisols (fertile mineral soils). Soils in the Blackland Prairies are interspersed with gray-colored, acidic sandy loams. This highly fertile region has widely been used for agriculture, but it is increasingly used for ranching.[12] Experts estimate that less than one percent of the Blackland Prairies remain in a near-natural condition.[13]

Figure 1-17. Ecoregions of the Brazos G Area



Post Oak Savannah

The Post Oak Savannah covers about 8.5 million acres in east-central Texas and consists of closely associated and intermingled prairies and woodlands on slightly acidic sandy or clay loams. Topography in this region is gently rolling to hilly, with moderate to deeply dissected drainage paths. Soils in uplands are generally light-colored, acidic

---

[12] Gould, F.W. and Schuster, J.L. and Hatch, S.L., *Texas Plants B, An Ecological Summary*, Texas Agricultural Experiment Station, Texas A&M University, College Station, Texas, 1990.

[13] Smeins and Diamond, 1986.

sandy loams or sands, and soils in bottomlands are light-brown to dark-gray acidic sandy loams or clays. Much of this vegetational area is used for crops and grazing.

Cross Timbers and Prairies

The Cross Timbers and Prairies vegetational area covers about 17 million acres in north-central Texas. Geology in this area is diverse, and the topography varies from gently rolling to hilly to deeply dissected. Rapid surface drainage is typical throughout the region. Soils are typically brown, neutral-to-slightly acidic, sandy or clay loams.

Edwards Plateau

The Edwards Plateau area covers about 24 million acres. This includes a large portion of the Hill Country in west-central Texas, the Llano Uplift, and the Stockton Plateau. Average annual precipitation increases from west to east across this region. Limestone or caliche typically underlie the shallow, variably-textured soils, although granitic rock underlies soil in the Llano Uplift. Land use in this vegetational area is dominated by ranching of cattle, sheep, and goats. This region reportedly once was dominated by a grassland or an open savannah climax community, except in steep canyons and slopes where junipers and oaks were dominant. The widespread disturbance associated with grazing livestock eventually allowed brush and tree species to spread widely throughout the original grasslands and savannahs.

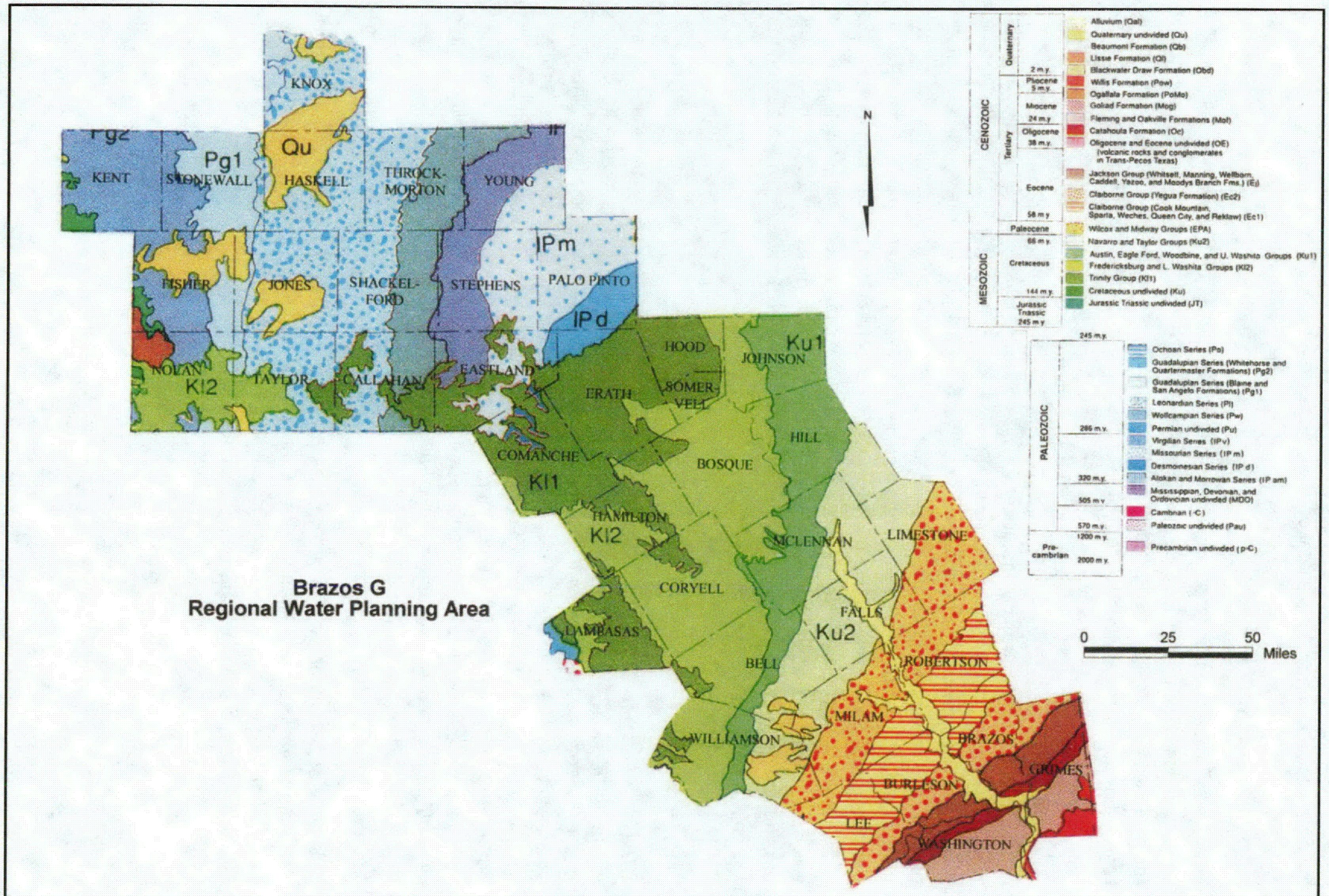
1.8.2 Regional Geology

Figure1-18 shows the varied geology of the planning area. Generally, the formations in the northwest part of the planning area are the older Blaine and San Angelo Formations of the Paleozoic era. The central part of the planning area is typically dominated by younger formations from the Cretaceous era, such as the Trinity Group; the Navarro and Taylor Groups; and the Austin, Eagle Ford, Woodbine, and U. Washita Groups. The youngest formations are in the southern part of the planning area. These formations include the Cook Mountain, Weches, Sparta, and Yegua, among others. Many areas near streams and rivers are dominated by alluvial deposits.

1.8.3 Soils

The soils of the upper Brazos River Basin are agriculturally and ecologically important. Throughout the Brazos G Area, soils are varied and are influenced by both geology and surface drainage. Figure 1-19 shows the locations of different orders of soil in the BGRWPA. These soil types are briefly described in the following subsections.

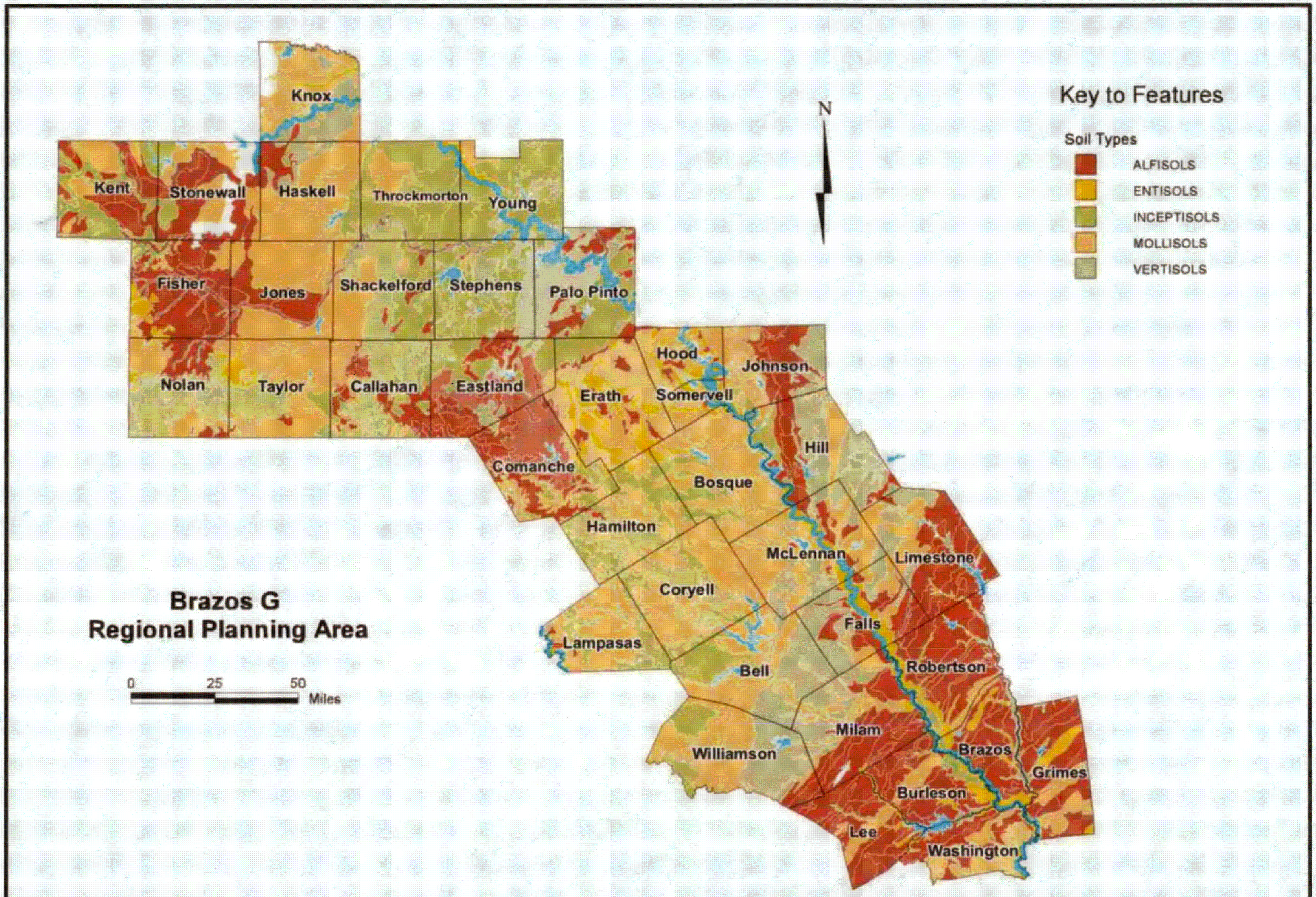
Figure 1-18. Geology of the Brazos G Area



Source: Bureau of Economic Geology, 1992

Prepared By: Hicks & Company, Inc.
Date: May 25th, 1999

Figure 1-19 Soils of the Brazos G Area



Source: NRCS STATSGO

Alfisols

Alfisols are mineral soils with a gray-to-brown surface horizon. These soils form under humid, cool-to-hot areas of native grasslands. They are productive and favor good crop yields.

Entisols

Entisols are typical of rangeland in west and southwest Texas. In this order, soils range from infertile sands and bedrock to highly productive soils on recent alluvium. A characteristic common to all Entisols is the lack of significant profile development.

Inceptisols

Inceptisols are thought to form relatively quickly from the alteration of parent material. Productivity varies among soils in this order, and it is affected by factors such as levels of organic matter and drainage. Typically, Inceptisols have slightly higher profile development than Entisols.

Mollisols

Mollisols are considered important agriculturally and are characterized by a thick, dark surface horizon. These soils develop under grassland-prairie vegetation typical of the central United States. Mollisols cover more land area in the United States than any other soil order.

Vertisols

Vertisols have a high clay content and therefore may develop deep cracks from shrinking during dry periods. The fine texture of Vertisols and their tendency to shrink excessively makes them generally unstable for building foundations and even for some agricultural uses.

1.8.4 Wetlands

Wetlands are defined by the U.S. Army Corps of Engineers as areas that, due to a combination of hydrologic and soil conditions, are capable of supporting hydrophytic vegetation. In the Brazos G Area, wetlands are found primarily in narrow strips along rivers and streams.

As a natural resource, wetlands are especially valued because of their location on the landscape, the wide variety of ecological functions they perform, and the uniqueness of their plant and animal communities. Many wetlands are also valued for their aesthetic qualities, as sites for educational research, as sites of historic and archaeological importance, and as locations for storing or conveying floodwaters. Wetlands provide high-quality habitats for wildlife, including foraging and nesting areas for birds and spawning and nursery areas for fish.

1.8.5 Water Resources

Rivers and reservoirs are important ecological resources for the Brazos G Area. These support diverse aquatic plants and animals as well as terrestrial wildlife living along the banks. Important rivers and creeks in the planning area include the Brazos, Leon, Bosque, Lampasas, Navasota, San Gabriel, South Wichita, Little, Clear Fork of the Brazos, and Yegua Creek. These rivers contribute to unique vegetational communities that provide habitat for wildlife. There are more than 40 species of aquatic amphibians, reptiles, and mammals in the planning area. Waterfowl heavily use the mature, hardwood, bottomland forests and forested wetlands often associated with rivers. Aquatic habitats include riffles and pools, which support both invertebrates and fish.

Reservoirs (Figure1-20) provide habitat for inland fish stocks and waterfowl. Many reservoirs in the planning area provide habitat for fish stocks and waterfowl including Lake Stamford, Hubbard Creek Reservoir, Possum Kingdom Lake, Lake Leon, Lake Proctor, Lake Whitney, Lake Stillhouse Hollow, Lake Belton, Lake Waco, and Lake Somerville.

Although few in number, the major springs and seeps in the planning area that produce frequent flows are often rich in wildlife habitat and ecological diversity. Springs represent a transition from groundwater to surface water. Where frequent springflow occurs, an abundance of moisture is provided, resulting in diverse vegetational communities unique to such areas. Typical vegetation includes willows, cottonwoods, hackberry, elms, rushes, sedges, and smartweed. These vegetational communities often provide optimal habitat for native wildlife.

1.8.6 Wildlife Resources

Biotic Provinces

Just as Texas has been divided into major ecoregions,[14] the State has also been classified into biotic provinces based on the distribution of topographic features, climate, vegetation types, and terrestrial vertebrates [15] (Figure 1-21). The BGRWPA includes the Kansan, Austroriparian, Balconian, and Texan biotic provinces.

[14] Gould, Op. Cit., 1975.

[15] Blair, 1950.

[redacted]

Figure 1-20. Water Resources of the Brazos G Area

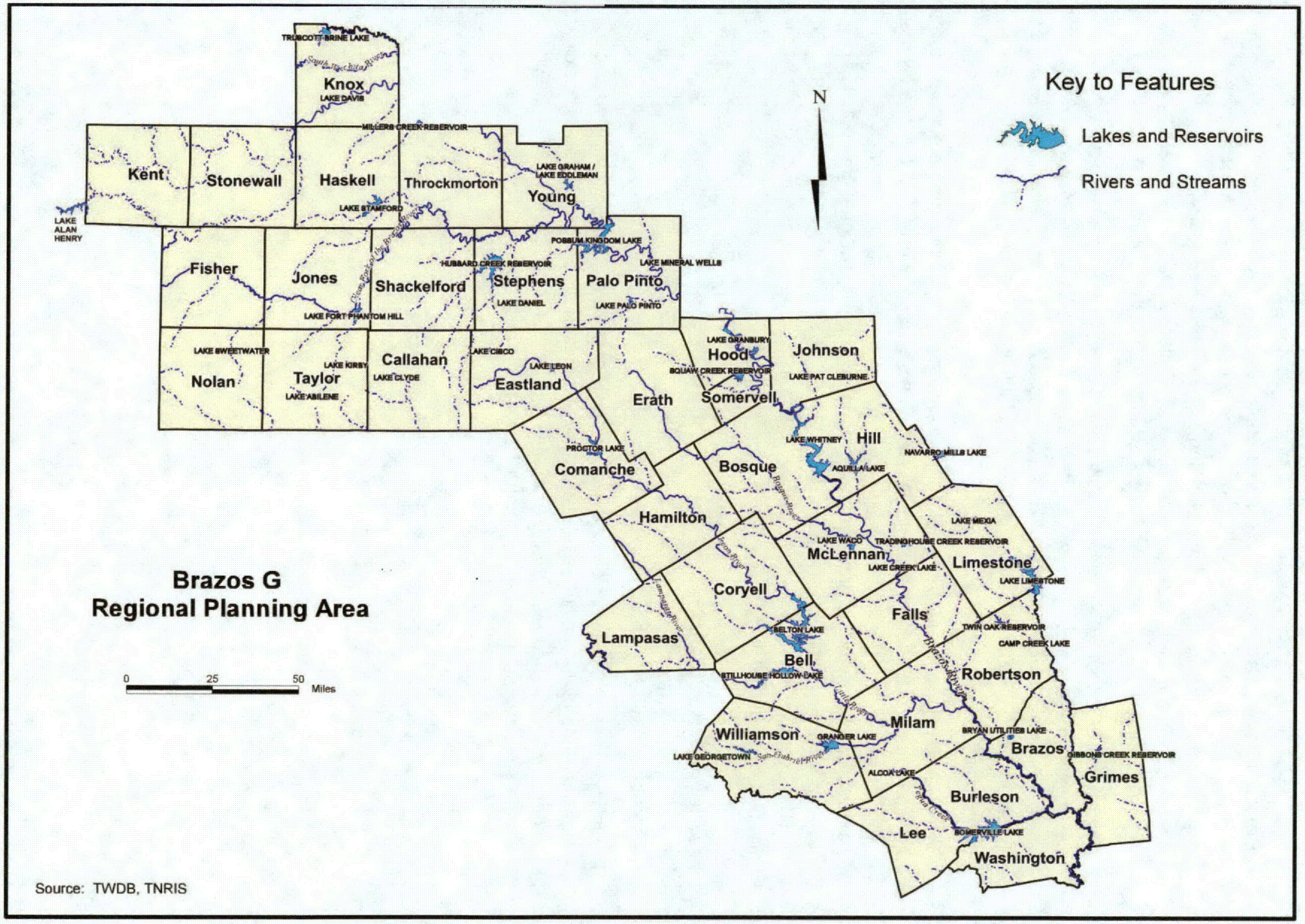
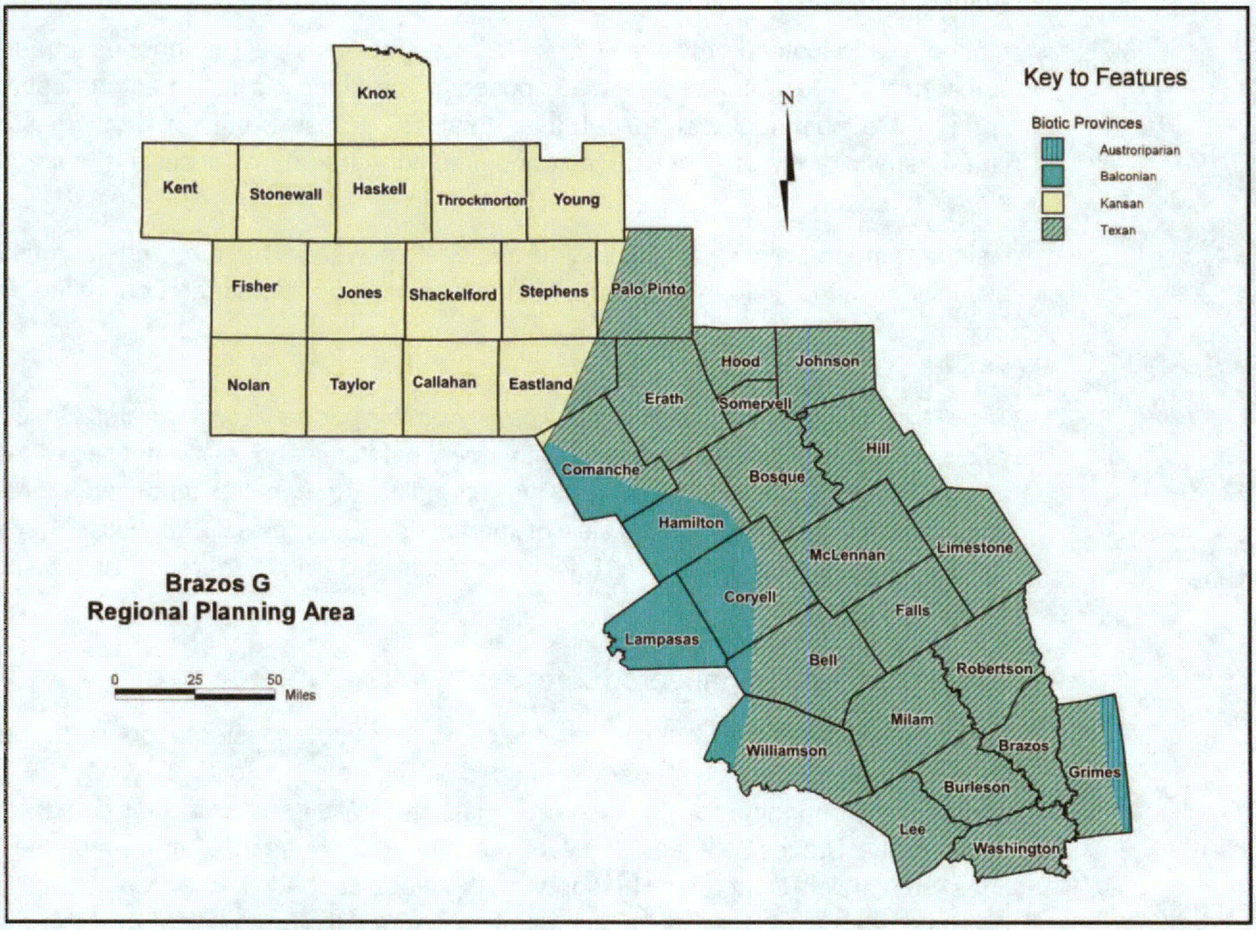


Figure 1-21. Biotic Provinces of the Brazos G Area



Kansan

The Kansan province runs southward from the Texas panhandle and across the Rolling Plains area of the Brazos G Area. It meets the Texan biotic province at the western boundary of the Cross Timbers and Prairies vegetational area. There is little available moisture in the province, and moisture that is available decreases from east to west. The plant associations vary. However, they fall into three general categories of associations: the mixed-grass plains, the mesquite-grass association, and the short-grass plains.

Austroriparian

The western fringe of the Austroriparian province extends into the southeastern rim of the Brazos G Area. This province comprises the pine and hardwood forests of the eastern Gulf Coastal plain. The province is limited to the west due to low moisture. However, vegetational communities found in the westward extensions of the province occur along drainageways where environmental conditions allow.

Balconian

The Balconian province includes most of the Edwards Plateau excluding the region west of the Pecos River. The Edwards Plateau is a physio-graphically discrete unit. It has a variety of wildlife, and its vegetation is different from that found in adjacent provinces.

The abundant vertebrate species are a mixture of Austroriparian, Tamaulipan, Chihuahuan, and Kansan.

Most of the Balconian province lies on Cretaceous limestone, but igneous intrusives and sediments of Precambrian age are exposed in the Llano Uplift. Limestone caverns and springs are common features of this province. Massive outcrops of limestone are characteristic of the stream canyons, and limestone fragments occur at the surface over almost the entire area.

Rainfall amounts typically decrease from east to west. The most characteristic plant association is the juniper-oak scrub. Mesquite is also distributed throughout the province.

Texan

The Texan biotic province has no true endemic species of vertebrates. In this area, western species tend to encroach into open habitats, and eastern species encroach along the many wooded drainageways extending through the landscape. The Texan province has supported 49 species of mammals, 39 species of snakes, 16 species of lizards, 2 types of land turtles, 18 types of toads and frogs (anurans), and 5 species of salamander (urodeles).

Threatened and Endangered Species

In planning water-management strategies, one major consideration is the potential impact on threatened and endangered species. There are a total of 16 species listed as threatened or endangered by the U. S. Fish and Wildlife Service that could potentially occur in the Brazos G Area. Some of the more widely seen of these are the golden-cheeked warbler (Dendroica chrysoparia), the black-capped vireo (Vireo atricapillus), and the bald eagle (Haliaeetus leucocephalus). Appendix E contains a complete list of threatened and endangered species in each county in the BGRWPA.

1.8.7 Agricultural Resources

Agriculture is a mainstay of the BGRWPA rural economy. Among livestock, cattle were the most significant component, approaching 1.66 million head with an additional 81,000 dairy cows in 2012. Over 17 million acres, or about 87 percent of BGRWPA's total area, were classified as farmland in 2012. Of the 17 million acres of farmland, about 4.3 million acres were classified as cropland, of which about 2.7 million acres were harvested. Refer to Appendix F for detailed listings of agricultural information for the BGRWPA.

The Texas Department of Agriculture has specified several Agricultural Statistics Districts for the purpose of keeping records. The districts within the BGRWPA are 2N and 2S (Rolling Plains), 3 (Cross Timbers), 4 (Blacklands), 5S (South East), 7 (Lampasas County), and 8N (South Central).

Rolling Plains

Counties in the Rolling Plains (Districts 2N and 2S) are Fisher, Haskell, Jones, Kent, Knox, Nolan, Stonewall, and Taylor. The major dryland products are extensive row-crops, such as cotton, and wheat. Irrigation comes from the Seymour Aquifer where available. Major crops include wheat and cotton. Hay and silage are also produced, but because of low rainfall, their acreage is much less than in other districts in the BGRWPA.

Cross Timbers

The Cross Timbers counties (District 3) are Callahan, Comanche, Eastland, Erath, Hood, Palo Pinto, Shackelford, Somervell, Stephens, Throckmorton, and Young. Combined, these counties lead the State in dairy production. This is due to several factors such as available groundwater from the Trinity Aquifer, soils suitable for forage production, topography conducive to dairy operation, and an existing infrastructure. The major crops produced in the Cross Timbers are hay and silage, with smaller amounts of peanuts, pecans, and vegetables irrigated from the Trinity Aquifer.

Blacklands

The Blacklands counties (District 4) are Bell, Bosque, Coryell, Falls, Hamilton, Hill, Johnson, Limestone, McLennan, Milam, and Williamson. Lampasas County (District 7) is included for the purposes of this analysis. The Blacklands is noted for dryland production of corn for grain, grain sorghum, wheat for grazing and grain, cotton, and hay. Irrigation in the Blacklands is limited by lack of sufficient groundwater supply.

South East and South Central Texas

South East and South Central Texas counties (District 5S and 8N) are Brazos, Burleson, Grimes, Lee, Robertson, and Washington. This subregion has limited row-crop agriculture because suitable topography and soils are limited. Hay and silage are the major agricultural products. The Brazos River Bottoms counties (Brazos, Burleson, and Robertson) produce most of the crops in the subregion, including corn for grain, grain sorghum, and cotton. The Brazos River Alluvium is the major source of groundwater for the Brazos River Bottoms.

1.9 Threats and Constraints to Water Supply

Projected population growth in the region, particularly along the IH-35 Corridor, will strain existing municipal supplies. The population of Williamson County within Region G, for example, is expected to increase more than four-fold by the year 2070 to about 1,523,206 people. Water will become even more valuable, especially in the western and central parts of the BGRWPA, due to limited options for new reservoirs and because the aquifers in these areas have limited potential for further development.

Other concerns include the high content of chloride in surface-water runoff from the upper Brazos River Basin. Water with high chloride content is more expensive to treat and therefore places capital constraints on suppliers who obtain surface water from affected streams and reservoirs.

As of July 27, 2015, the presence of zebra mussels, an invasive species impacting water quality in reservoirs and water supply infrastructure, has been identified in Lake Waco and Lake Belton.[16]

1.9.1 Susceptibility of Water Supplies to Drought

Groundwater

The 15 aquifers within the BGRWPA vary in drought resistance, but all tend to have more resistance than most surface-water reservoirs. Most of the thick, deep, and extensive sand aquifers with moderate to high transmissivity react very slowly to droughts. Their supplies are virtually drought-proof even during long droughts. These aquifers, such as the Carrizo-Wilcox and Gulf Coast Aquifers, store enormous amounts of water. Somewhat thinner, yet still extensive, sand aquifers with low to moderate transmissivity commonly are only slightly less drought-resistant. These aquifers include the Trinity, Woodbine, Queen City, Sparta, and Hickory.

During long droughts, shallow alluvial aquifers from which large withdrawals are made experience water level declines that are relatively large in comparison to total saturated thickness. Supplies from these aquifers, such as the Seymour and Brazos River Alluvium Aquifers, can be affected by drought but generally only by extended droughts. In extended droughts, available well yields are typically reduced, and pumps must run longer for a given level of supply.

In thin aquifers with shallow supplies, drought resistance may not be adequate. Such aquifers in the BGRWPA include the Dockum, Blaine, and Edwards-Trinity (Plateau). Also, shallow supplies in or near outcrop areas of aquifers, even of major aquifers, may have limited drought resistance.

Aquifers composed of limestone and/or dolomite commonly are the least drought-resistant. This is because these aquifers typically have only about one-tenth as much storage per cubic foot as sand aquifers. For limestone aquifers, the amount of well development is also an important factor in drought resistance. Thus, the Edwards (BFZ) Aquifer, with more developed well capacity than is available in extended droughts, is the least drought-resistant of all the aquifers in the BGRWPA. Depending on location and exact local conditions, springflows and some Edwards (BFZ) well supplies are substantially reduced in only moderate droughts. In contrast, the Marble Falls and Ellenburger-San Saba Aquifers, which are relatively undeveloped by wells, can more slowly discharge a part of their stored water during long droughts.

In the Brazos G Area, for supplies drawing from the Edwards (BFZ) Aquifer, drought planning is critical. All of the other aquifers in the region are drought resistant due to their inherent characteristics.

[16] Texas Parks and Wildlife Department, letter commenting on the Initially Prepared 2016 Brazos G Regional Water Plan, August 14, 2015 (see Chapter 10 and Appendix I).

Surface Water

Surface water supplies in the region vary greatly, as annual rainfall ranges from 20 to 24 inches in Kent County in the northwest, to 40 to 48 inches in Grimes County in the southeast. Evaporation rates show a similarly wide variation, with the highest rates occurring in the northwestern part of the region.

Drought originates from a deficiency of precipitation over an extended period of time, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought should be considered relative to some long-term average condition of balance between precipitation and evapotranspiration (i.e., evaporation plus transpiration). It is also related to the timing (i.e., principal season of occurrence, delays in the start of the rainy season, occurrence of rains in relation to principal crop growth stages) and the effectiveness of the rains. Other climatic factors such as high temperature, high wind, and low relative humidity are often associated with drought and can intensify its severity.

Hydrological drought is associated with the effects of periods of precipitation shortfalls on surface water supply. The frequency and severity of hydrological drought is often defined on a watershed or river basin scale. Although all droughts originate with a deficiency of precipitation, hydrologists are more concerned with how this deficiency affects the water supply. Firm yields of reservoirs are estimated based on water that would be available through a repeat of the historic drought of record, which includes the effects of reduced runoff and high evaporation rates during the drought period. Water supply from run-of-the-river diversions are estimated based on water that would be available[17] through a repeat of the drought of record as well, but without the benefit of using stored water. The water supply estimates throughout this water plan are reliable through a repeat of the drought of record and are therefore not particularly susceptible to drought-induced shortages. However, the northwestern counties of the Brazos G Area are currently suffering through a particularly dry spell and data indicate new record drought conditions may be occurring.

In 2009, 2011, 2012, and 2013 priority water rights calls were made in the Brazos Basin. In July 2013 TCEQ issued an Order for the Brazos Basin including Possum Kingdom Lake and below Possum Kingdom Lake. The Order suspended or modified approximately 900 water rights in the Brazos Basin in 21 counties. The Order required the owners of larger reservoirs affected by the Order to submit pass-through plans, detailing their response to the priority call. The priority call was rescinded on October 10, 2013.

On April 9, 2014 the TCEQ directed that a new Watermaster be appointed for the Brazos River Basin including Possum Kingdom Lake and the watershed below the reservoir. The purpose of the Watermaster is to maintain compliance with water rights by monitoring stream flows, reservoir levels and water use. It is also the responsibility of the Watermaster to mediate the curtailment of water use if a priority call is initiated.

[17] Estimates of municipal and industrial run-of-river diversions are for 100 percent reliability. For irrigation uses, run-of-river reliability less than 100 percent is often acceptable.

1.9.2 Identified Water Quality Problems

Water quality varies throughout the upper, middle and lower portions of the BGRWPA. Water quality is generally good in aquifers and in the tributaries of the Brazos River. However, high concentrations of chloride are found in the main stem of the Brazos River. Three factors affecting water quality in the Brazos G Area are wastewater disposal, high-density agricultural activities, and naturally-occurring saline contamination.[18] Except for the third factor, these threats are associated with the growth of both population and the economy, which are expected to continue in the future.

Water quality data collection and assessment studies have been conducted since 1991 through the Texas Clean Rivers Program (CRP). Through collaborative efforts with other agencies and basin residents, the BRA identifies and evaluates water quality and watershed management issues, establishes priorities for corrective actions, and implements activities to improve and protect the Brazos River basin. Identified surface water quality problems within the BGRWPA are summarized according to specific regions in the basin, and are based on information from the Texas Clean Rivers Program Basin Highlights Reports[19], which are updated periodically.

Upper Basin Region

The Upper Basin Region includes the Salt and Double Mountain Forks and the Clear Fork of the Brazos River. Water quality data reveal water quality in the upper basin is impacted by high total dissolved solids (primarily chloride) concentrations. While this region contributes only 14 to 18 percent of the total Brazos River flow, the area contributes 45 to 55 percent of the total dissolved minerals and about 75 to 85 percent of the dissolved salts.

Upper Central Basin Activity Region

The Upper Central Basin of the Brazos River includes eight lakes, five watersheds, and a variety of land uses interconnected throughout the watersheds. The Upper Central Basin Region generally covers from Bell County north to Hood County. Numerous watershed protection and management projects are being conducted in this region to address declining water quality due to impacts from industrial, agricultural, municipal, and natural causes. On-going activities and water quality issues in this area include:

- In 2002, the BRA began a special study on Lake Granbury to assess impacts from septic systems in the coves throughout the lake.
- The BRA currently monitors Aquilla Creek at FM 933 in this watershed. TCEQ has been monitoring Lake Aquilla as a result of its placement on the State's 303 (d) list for impairments due to high concentrations of atrazine.
- The Bosque River Watershed drains approximately 1,652 square miles and discharges into Lake Waco. Elevated bacteria, nutrient and algal growth are

---

[18] Texas Natural Resource Conservation Commission (TNRCC), *Summary Report: Regional Assessments of Water Quality Pursuant to the Texas Clean Rivers Act (Senate Bill 818)*, 1992.

[19] Brazos River Authority (BRA), Texas Clean Rivers Program, https://www.brazos.org/crpHome.asp..

concerns for this watershed, due to high non-point source pollution activity generally attributed to confined animal feeding operations. There are several on-going activities undertaken by the State, BRA, City of Waco, and local entities to monitor and reduce pollution in this watershed.

- A number of sites in the Leon River watershed show concerns for elevated bacteria and nutrient concentrations, as well as depressed dissolved oxygen.
- Lake Stillhouse Hollow experiences above average water quality conditions and the watershed of the reservoir remains primarily undeveloped. Discharging into the Lampasas River downstream of the reservoir, Salado Creek is experiencing concerns from elevated nutrient concentrations.

Lower Central Basin Activity Region

Portions of the Lower Central Basin are subject to non-point source discharges and nutrient loading from agricultural activities. Data indicate that Cottonwood Branch in Brazos County near Bryan has very high concentrations of nutrients and elevated bacteria levels. Lakes Limestone and Granger also show concerns for nutrient loading that is contributing to increased aquatic plant growth.

Lower Basin Activity Region

The BRA monitors eight sites in the Yegua Creek watershed, including two sites on Lake Somerville. The lake, which spans 11,460 acres, has experienced several fish kills. Lake Somerville has experienced both elevated and depressed pH levels, which may be attributed to fluctuations in blue-green algae populations.

1.9.3 Identified Threats to Agricultural and Natural Resources

Drought and water quality are the two primary threats to agricultural and natural resources in the Brazos G Area.

Threats to Agricultural Resources

Drought is the primary threat to agricultural resources in the Brazos G Area. During long droughts, surface water supplies for unconfined livestock are diminished. If the drought extends through the season for growing forages, production is reduced due to the lack of forageable food. Additional threats to livestock arise from the reduced water supply for rural water systems that are not interconnected or that are not supplied by a reliable source. This is especially true in the northwest part of the region. Water for confined livestock (e.g., dairy cattle and poultry) and for crop irrigation typically comes from groundwater.

Water quality can also pose a threat to agricultural resources. Increased levels of salts and total dissolved solids may damage certain crops and require additional water for irrigation. High levels of salts can accumulate and reduce the ability of crops to uptake soil moisture, and can create a hardpan effect on surface soils that impedes percolation of irrigated water. As water quality degrades, crop selection and production may be limited. An additional threat to crop production is the migration into agricultural land of municipal well fields to supply groundwater to growing cities. Groundwater Conservation

Districts and Underground Water Conservation Districts have been created in part to manage groundwater supplies that may have competing interests.

Threats to Natural Resources

The Brazos River Basin within the BGRWPA is a freshwater eco-region that is defined as primarily temperate coastal rivers and lakes habitat, with high ranking habitats for fish, reptiles and amphibian species.[20] Identified threats to these biological resources stem from the combined effects of land use disturbance, reduced stream flow from prolonged droughts as well as current and future water diversions from water supply projects, lower lake levels, and impacted quality of surface and groundwater. Declining flows can affect the availability and quality of aquatic habitats and streamside vegetation and also contribute to changes in water temperature and chemistry. As discussed in Section 1.9.2, water quality in the Brazos River Basin has been degraded by increased concentrations of chlorides, dissolved metals, ammonia, nitrates, and phosphates, pesticides, algae, and fecal coliform bacteria. Under lower flow conditions, greater effects from pesticide contamination could occur through higher concentrations of chlorinated hydrocarbons and organic-phosphates. A summary of potential effects that identified threats would have on biological resources is presented in Table 1-9. The water resources impacted by water quality concerns identified in Section 1.9.2 within the Brazos River Basin are presented in Table 1-10.

Reduced stream flows and reservoir levels, which are brought on by drought and increases in water use, pose the greatest potential threat to aquatic species in the region. Lower stream flows would alter the proportion of stream runs, riffles, pools, and backwater sloughs and decrease the wetted perimeter (total available habitat). These changes in habitat may benefit some species, primarily hardy, generalist species, but would negatively impact most species and result in reduced species richness. Riparian vegetation is also threatened by less over bank flooding and a shift to more mesic (drier) conditions with a decline in those species that are dependent on flooding processes (cottonwood, willow, and pecan) and an increase in species tolerating drier conditions (hackberry and mesquite).

[20] Abell, R.A, D.M. Olson, E. Dinerstein, P.T. Hurley, J.T. Diggs, W. Eichbaum, S. Walters, W. Wettengel, T. Allnutt, C.J. Loucks, and P. Hedao. 2000. Freshwater Eco-regions of North America – A Conservation Assessment. World Wildlife Fund. Island Press. Washington D.C. 320 pp.

Table 1-9. Summary of Regional Threats to Biological Resources in the Brazos River Basin

Threat	Potential Effects to Aquatic Organisms	Potential Effects to Riparian Vegetation
	Rivers & Streams	
Lower Streamflows	Decreased stream runs, riffles, pools, and backwater sloughs resulting in lower habitat diversity and species richness.	Less overbank flooding and shift to more mesic (drier) conditions with decline in species dependent on flooding processes and increase in species tolerating drier conditions.
Lower Water Quality	Lower habitat suitability; lower habitat diversity, species richness, and abundance; possible direct and indirect adverse effects from point and non-point source contaminants.	Potentially enhanced growth from higher concentrations of phosphorus, nitrates, and other nutrients; but increased growth could be suppressed by lower water tables from declining flows, increased salinities or exposure to contaminants.
	Reservoirs	
Lower Reservoir Levels	If prolonged, less available habitat resulting in lower species diversity & species abundance. If seasonal, potential positive effects through enhanced fishery production, depending on timing and duration of subsequent rising lake levels.	Increase in growth of shoreline herbaceous and woody vegetation during lower lake levels, but growth suppressed or reversed by rising lake levels and seasonal inundation.
Lower Water Quality	Lower habitat suitability; lower habitat diversity, species richness, and species abundance.	Potentially enhanced growth from higher concentrations of phosphorus, nitrates, and other nutrients; but growth suppressed or reversed through lower water tables from declining flows, increased salinities or exposure to contaminants.
	Bays & Estuaries	
Reduced freshwater inflows	Possible change in hydrological dynamics of estuary. Projected effects would be minimal due to limited coastal marsh habitats associated with the Brazos River Estuary.	Effects considered minimal due to limited coverage resulting from previous levee construction and river channelization.

Table 1-10. Location of Threats to Biological Resources Related to Water Quality in the Brazos Basin

Identified Threats	Upper Basin	Upper Central Basin	Lower Central Basin	Lower Basin
Increased Chlorides	Salt and Double Mountain Forks; Clear Fork; White River Lake	Upper Brazos River	Lake Limestone	
Fecal Coliform Bacteria	Millers Creek	Upper Brazos River; Possum Kingdom Lake; Lake Granbury; Lake Whitney; Bosque River; Lake Waco; Lake Proctor; Leon River; Lake Belton	Central Brazos River	Lower Brazos River
Dissolved Oxygen				Lower Brazos River

Table 1-10. Location of Threats to Biological Resources Related to Water Quality in the Brazos Basin

Identified Threats	Upper Basin	Upper Central Basin	Lower Central Basin	Lower Basin
Increased Nutrients[1]	Clear Fork of the Brazos; Deadman Creek; California Creek	Bosque River; Lake Waco; Lake Proctor, Leon River; Lake Belton; Salado Creek	Central Brazos River; Still Creek/Thompson Creek; Lake Limestone; Lake Granger	Lower Brazos River
Algae		Upper Brazos River; Bosque River; Lake Waco		Lower Brazos River
Pesticides & Heavy Metals	Upper Brazos River	Upper Brazos River; Aquilla Creek		
[1] Includes: Ammonia, Phosphorus, Nitrogen, Nitrate-Nitrogen				

1.10 Drought Preparations

Drought contingency plans are required by the State for wholesale water suppliers, irrigation districts, and retail water suppliers. In addition, water conservation plans are required for surface water right-holders that supply 1,000 acft/yr or more for non-irrigation use and 10,000 acft/yr for irrigation use. In addition, conservation plans are commonly included in the management plans of Groundwater Conservation Districts or Underground Water Conservation Districts.

Chapter 7 presents a more comprehensive discussion of drought preparation in the Brazos G Area.

1.11 Existing Programs and Goals

1.11.1 Groundwater Regulation

Priority Groundwater Management Areas (PGMAs)

The Texas Legislature authorized the TCEQ to identify and delineate priority groundwater management areas (PGMAs) as "those areas of the state that are experiencing or that are expected to experience, within the immediately following 25-year period, critical groundwater problems, including shortages of surface water or groundwater, land subsidence resulting from groundwater withdrawal, and contamination of groundwater supplies" (§Section 35.007, Chapter 35, Title 2, Texas Water Code).

Following a PGMA designation, TCEQ may recommend creating a groundwater conservation district (GCD) and citizens in the PGMA have two years to establish one. If a GCD is not established in the required timeframe, a GCD will be established that is consistent with the original TCEQ recommendation, which will be governed by a locally elected board of directors.

TCEQ designated two PGMA areas in the BGRWPA, the Central Texas-Trinity Aquifer PGMA and the Northern Trinity and Woodbine Aquifers PGMA, shown on Figure 1-22. TCEQ designated the Central Texas-Trinity Aquifer PGMA on October 31, 2008. Counties in this PGMA include Bosque, Coryell, Hill, McLennan, and Somervell. The Northern Trinity and Woodbine Aquifers PGMA was designated on February 11, 2009. This PGMA includes Collin, Cooke, Dallas, Denton, Ellis, Fannin, Grayson, Hood, Johnson, Montague, Parker, Tarrant, and Wise counties. Only Hood and Johnson Counties are in the Brazos G Area.

At the time of this plan, all affected counties in the PGMA areas are part of GCDs. In 2007 the Upper Trinity GCD was formed, which includes Hood County. In May 2009, Bosque County joined the Middle Trinity GCD. The Tablerock GCD, which included Coryell County, was dissolved by the Legislature; Coryell County joined the Middle Trinity GCD in 2009. In 2009, the Texas Legislature created the Prairielands GCD and the Southern Trinity GCD. The Prairieland GCD includes Johnson, Hill and Somervell counties. At this time, only McLennan County is part of the Southern Trinity GCD.

Groundwater Conservation Districts and Groundwater Management Areas

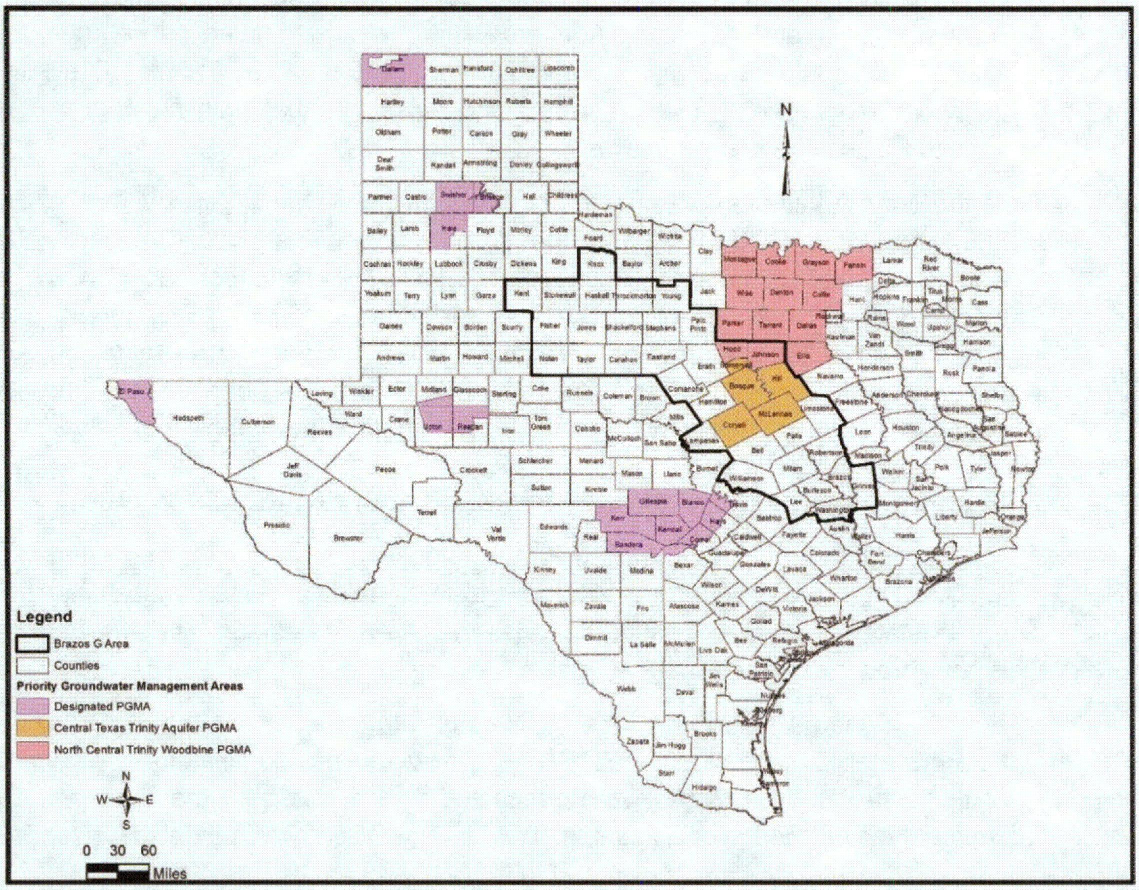
There are thirteen GCDs in the BGRPA, as shown on Figure 1-23 and listed in Table 1-11. All GCDs are required to develop and implement a management plan to manage groundwater resources. A list of the dates the GCDs' management plans were approved is shown on Table 1-11.

In 2001, Senate Bill 2 of the 77th Texas Legislature authorized the TWDB to designate Groundwater Management Areas (GMAs) that would include all major and minor aquifers of the state. Sixteen GMAs were delineated and adopted by the TWDB in 2002 and cover all major and minor aquifers in Texas. The BGRWPA intersects GMAs 6, 7, 8, 12, and 14. These GMAs are shown on Figure 1-23 and are listed in Table 1-12.

In 2005, House Bill 1763 of the 79th Texas Legislature required GCDs in groundwater management areas to meet and define the Desired Future Conditions (DFCs) of the groundwater resources within the groundwater management area. The legislation requires that the DFCs be defined by September 1, 2010 and every 5 years thereafter. This requires joint planning among the GCDs in each GMA to determine Desired Future Conditions.

Desired Future Conditions are defined by statute to be "the desired, quantified condition of groundwater resources (such as water levels, spring flows, or volumes) within a management area at one or more specified future times as defined by participating groundwater conservation districts within a groundwater management area as part of the joint groundwater planning process." The most common DFCs are based on the volume of groundwater in storage over time, water levels (limiting decline within the aquifer), water quality (limiting deterioration of quality) or spring flow (defining a minimum flow to sustain).

Figure 1-22. Priority Groundwater Management Areas



After the DFCs are determined by the GMAs, the TWDB performs quantitative analysis to determine the amount of groundwater available for production that does not cause the DFC to be violated. For aquifers where a Groundwater Availability Model (GAM) exists, the GAM is used to develop the MAG (Modeled Available Groundwater). The MAG estimated through this process is then used by RWPGs as the available groundwater for the planning period. For aquifers or local groundwater that may not be listed as a minor or major aquifer, the water availability is based on historical use and available hydrogeological records. Table 1-12 shows the status of the Desired Future Conditions development, and the status of the determination of Managed Available Groundwater for each GMA in the BGRWPA.

Figure 1-23. Groundwater Conservation Districts and Groundwater Management Areas Located Wholly or Partially within the Brazos G Area

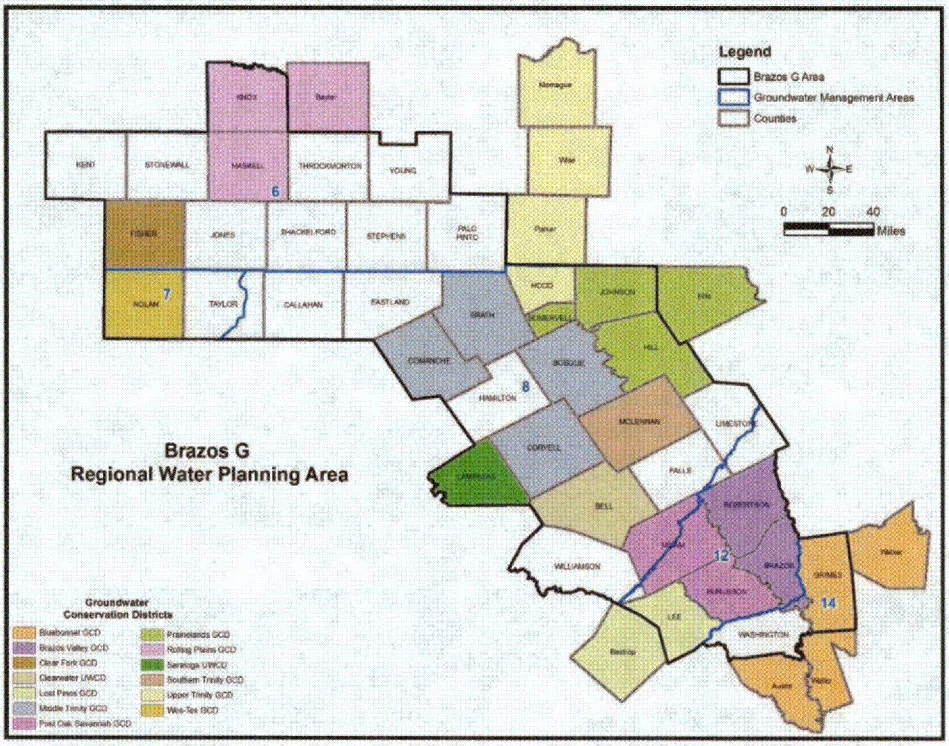


Table 1-11. GCD Management Plan Approval Dates

Name of GCD	Date Plan Approved
Bluebonnet Groundwater Conservation District	12/02/2013
Brazos Valley Groundwater Conservation District	6/07/2010
Clear Fork Groundwater Conservation District	10/20/2015
Clearwater Groundwater Conservation District	4/13/2011
Lost Pines Groundwater Conservation District	11/07/2012
Middle Trinity Groundwater Conservation District	5/14/2012
Post Oak Savannah Groundwater Conservation District	12/17/2012
Prairielands Groundwater Conservation District	7/30/2012
Rolling Plans Groundwater Conservation District	9/15/2015
Saratoga Groundwater Conservation District	10/16/2014
Southern Trinity Groundwater Conservation District	9/15/2015
Upper Trinity Groundwater Conservation District	9/15/2015
Wes-Tex Conservation District	2/10/2015

Table 1-12. Groundwater Conservation Districts, Aquifers, Desired Future Conditions (DFCs), and Modeled Available Groundwater (MAG) Status by GMA for the Brazos G Area (as of November 2015)

Groundwater Management Area 6			
Clear Fork GCD, Rolling Plains GCD			
Aquifer	**Major or Minor Aquifer?**	**Desired Future Conditions Status**	**Modeled Available Groundwater Status**
Seymour	Major	Adopted 7/22/2010, amended 7/19/2011	Adopted 12/9/2011
Dockum	Minor	Adopted 7/22/2010	Adopted 12/9/2011
Blaine	Minor	Adopted 7/22/2010, amended 7/19/2011	Adopted 12/9/2011
Groundwater Management Area 7			
Wes-Tex GCD			
Aquifer	**Major or Minor Aquifer?**	**Desired Future Conditions Status**	**Modeled Available Groundwater Status**
Edwards-Trinity(Plateau)	Major	Adopted 7/29/2010	Adopted 11/12/2012
Dockum	Minor	Adopted 7/29/2010	Adopted 2/22/2012
Groundwater Management Area 8			
Clearwater UWCD, Middle Trinity GCD, Post Oak Savannah GCD*, Prairielands GCD, Saratoga UWCD, Southern Trinity GCD, Upper Trinity GCD			
Aquifer	**Major or Minor Aquifer?**	**Desired Future Conditions Status**	**Modeled Available Groundwater Status**
Trinity	Major	Adopted 4/7/2011	Adopted 12/14/2011
Edwards (BFZ)	Major	Adopted 4/27/2011	Adopted 12/14/2011
Brazos River Alluvium	Minor	Adopted 4/27/2011, amended 6/23/2011	Adopted 12/9/2011
Ellenburger-San Saba	Minor	Adopted 4/27/2011	Adopted 12/30/2011
Hickory	Minor	Adopted 4/27/2011	Adopted 12/7/2011
Marble Falls	Minor	Adopted 4/27/2011	Adopted 12/9/2011
Woodbine	Minor	Adopted 4/27/2011, amended 6/23/2011	Adopted 6/29/2012

Table 1-12. Groundwater Conservation Districts, Aquifers, Desired Future Conditions (DFCs), and Modeled Available Groundwater (MAG) Status by GMA for the Brazos G Area (as of November 2015)

Aquifer	Major or Minor Aquifer?	Desired Future Conditions Status	Modeled Available Groundwater Status
Groundwater Management Area 12			
Brazos Valley GCD, Post Oak Savannah GCD*, Lost Pines GCD			
Carrizo-Wilcox	Major	Adopted 8/11/2010	Adopted 7/9/2012
Brazos River Alluvium	Minor	Adopted 8/11/2010	Adopted 7/9/2012
Queen City	Minor	Adopted 8/11/2010	Adopted 7/9/2012
Sparta	Minor	Adopted 8/11/2010	Adopted 7/9/2012
Yegua-Jackson	Minor	Adopted 6/30/2011	Adopted 7/9/2012
Groundwater Management Area 14			
Bluebonnet GCD			
Aquifer	**Major or Minor Aquifer?**	**Desired Future Conditions Status**	**Modeled Available Groundwater Status**
Carrizo-Wilcox	Major	Adopted 8/25/2010	Adopted 11/18/2011
Gulf Coast	Major	Adopted 8/25/2010	Adopted 11/18/2011
Brazos River Alluvium	Minor	Adopted 8/25/2010	Adopted 6/22/2011
Queen City	Minor	Adopted 8/25/2010	Adopted 7/9/2012
Sparta	Minor	Adopted 8/25/2010	Adopted 2/18/2011
Yegua-Jackson	Minor	Adopted 8/25/2010	Adopted 7/9/2012
* Post Oak Savannah GCD is in GMA 8 and GMA 12			

1.11.2 Texas Clean Rivers Act

In 1991, the 72nd Legislature passed the Texas Clean Rivers Act[21] to establish for the first time a watershed basis for water quality planning in Texas.[22,23] The Act requires each river basin in the State to be assessed for water quality and management strategies on an on-going basis. It also requires reports to be provided to the TCEQ every even-numbered year.[24] The Act provides specific guidelines for accomplishing the water quality assessments, including: (1) comprehensive assessments on a watershed basis with emphasis on non-point sources, nutrients, and toxic materials; (2) delegation of

[21] Senate Bill 818, amending the Texas Water Code, Sections 5.103, 5.105, 26.011; T.A.C. Sections 320.1-320.9

[22] TNRCC, Op. Cit., 1992.

[23] TNRCC, Op. Cit., 1999.

[24] BRA, "Planning and Environmental Division", [Online] Available URL: http://www.brazos.org/home.htm, 1999.

responsibility for assessments to river authorities; (3) formation of river basin steering committees; (4) discharge permitting on a basin-wide basis; and (5) assessment fees charged to wastewater permittees and water right holders.

The BRA is a partner with the TCEQ in the Clean Rivers Program for the BGRWPA. The program provides funding for BRA staff to assess water quality in the Brazos River Basin and to document local problems. Also, the program provides fee payers with site-specific information on water quality such as receiving water assessments and flow data. The 2004 Report[25] for the Brazos River Basin provides an assessment of water quality for the basin, drawing attention to: (1) the need for more long-term data on water quality, (2) a continued emphasis on the Basin Steering Committee for direction and comment on the water quality assessment program, (3) continued assistance in water quality monitoring from local partners in the Basin Monitoring Program, (4) emphasis on assessing and maintaining data, and (5) development of a geographical information system for the basin. The 2004 Report provides detailed findings about water quality and related items for selected sub-watersheds of the basin. The findings most relevant to the BGRWPA were summarized in Section 1.9.2.

1.11.3 Clean Water Act

The 1972 Federal Water Pollution Control Act, which as amended is called the Clean Water Act, is the federal law with the most impact on water quality protection in the BGRWPA. As amended in 1977 and again in 1987, the Clean Water Act: (1) establishes the framework for monitoring and controlling industrial and municipal point-source discharges through the National Pollutant Discharge Elimination System (NPDES), (2) authorizes federal assistance for the construction of municipal wastewater treatment facilities, and (3) requires cities to obtain permits for stormwater or non-point-source discharges.[26] The Clean Water Act also includes provisions to protect specific aquatic resources. Section 303 establishes a non-degradation policy for high quality waters and provides for establishment of state standards for receiving water quality. Section 401 allows states to enforce water quality requirements for federal projects such as dams. Section 404 provides safeguards for wetlands and other waters from the discharge of dredged or fill material. Section 305 calls for the TCEQ to prepare and submit a water quality inventory to the U.S. Environmental Protection Agency.[27] Other provisions protect particular types of ecosystems such as lakes (Section 314), estuaries (Section 320), and oceans (Section 403).[28] Several of these provisions are relevant to specific water quality concerns in the BGRWPA.

---

[25] BRA, Op. Cit., 2004.

[26] 33 USCA, Sections 1251 through 1387.

[27] TWDB, 1997.

[28] Adler, R.W., Landman, J. and Cameron, D., *The Clean Water Act: Twenty Years Later*, Island Press, Washington D.C., 1993.

1.11.4 Safe Drinking Water Act

The Safe Drinking Water Act, passed in 1974 and amended in 1986 and 1996, allows the U.S. Environmental Protection Agency to set standards for drinking water quality. These standards are divided into two categories: National Primary Drinking Water Regulations (primary standards that must be met by all public water suppliers) and National Secondary Water Regulations (secondary standards that are not enforceable, but are recommended). Primary standards protect water quality by limiting levels of contaminants that are known to adversely affect public health and that are anticipated to occur in water. Secondary standards have been set for contaminants that may affect cosmetic or aesthetic qualities of water (e.g., taste, odor, or color). For some constituents, the State of Texas has secondary standards that differ from the National standards.

1.11.5 Source Water Assessment and Protection Program

The TCEQ's Source Water Assessment and Protection (SWAP) Program can be an important part of water resource management. The SWAP Program, authorized by the Safe Drinking Water Act, assists local jurisdictions in preventing contamination of drinking water supplies. It identifies sources of public drinking water, determines potential contaminants, assesses water systems' susceptibility to contamination, and informs the public of the results. It is part of a comprehensive, integrated approach to clean ground and surface water undertaken by the TCEQ.

The centerpiece of the SWAP Program is a focus on prevention. Water can be easily contaminated, but it is difficult and expensive to clean up. Through the SWAP Program, by preventing contamination, jurisdictions are able to avoid the cost of removing contamination and maintain clean, reliable sources for drinking water.

The SWAP Program is designed to assist Texas communities in protecting their drinking water sources. Its goal is to increase public awareness of the importance of protecting drinking water sources and actions that can be taken to protect those sources. The SWAP Process involves seven steps:

1. Delineation (or mapping) of source water protection areas, any areas surrounding a drinking water source, whether from ground or surface water;
2. Conducting an inventory of actual or potential sources of contamination in the delineated area;
3. Conducting an analysis of the relative susceptibility of the water supply to those contamination sources and presenting the results to the public water supply in the form of a Source Water Susceptibility Assessment Report. These results provide insights into activities near your water sources and serve as the starting point for implementing source water protection.
4. Working with selected local communities to make information available to the public;
5. Voluntary application of best management practices to prevent contamination, such as land use practices, regulations and permits, structural

measures, good housekeeping practices, public education and emergency response planning;

6. Monitoring and continually assessing source water supplies; and,
7. Conducting triennial sampling and continually monitoring, assessing and conducting protection activities.

By conducting continual monitoring, assessment and protection activities, communities can minimize potential sources of contamination and protect source water supplies over the long-term.

1.11.6 State Water Availability Modeling Initiatives

TCEQ Water Availability Models (WAMs)

Water Availability Models (WAMs) are computer-based simulation models used to determine water available to surface water rights under Texas' priority system. These models are used to evaluate water availability for newly requested water rights or water right amendments. The models are also used for regional water planning. There are twenty individual WAMs that cover the twenty-three river basins in Texas, including coastal basins. The period of record most WAMs is approximately 1940 through 1997, although the hydrology has been extended for the Colorado WAM through 2013. There are two WAM scenarios used and maintained by TCEQ staff:

- Full Authorization (Run3) – In the Full Authorization scenario all water rights utilize their full authorized amounts. This scenario is used to evaluate perpetual water rights and amendments.
- Current Conditions (Run 8) – The Current Conditions scenario Includes return flows, current reservoir conditions and has water rights diversions based on historical use. This scenario is used to evaluate term water rights.

Most of the Brazos G Planning Area falls within the area covered by the Brazos WAM. Existing supplies and future water management strategies were evaluated using a modified WAM Run 3. The modified WAM Run 3 includes existing and future sediment conditions for reservoirs. Application of the Brazos WAM to determine current surface water supplies is described in Chapter 3 and application of the Brazos WAM to determine supplies available to potentially feasible water management strategies is described in Volume II.

TWDB Groundwater Availability Models (GAMs)

Groundwater Availability Models (GAMs) were developed under the direction of the TWDB. The GAMs cover most of the major and minor aquifers within Texas. Based on the agreed upon Desired Future Conditions (DFCs), the GAMs are run as described in Section 1.11.1 to develop the Modeled Available Groundwater (MAG) to be used as the maximum groundwater supply available from an aquifer within a county for use in the regional water plan.

1.12 Previous Water Supply Planning in the Brazos G Area

As discussed in previous sections, the Brazos G Area is a large diverse area with varying needs of water users in the different parts of the region. In response to these different needs, the region has a history of successful local water supply planning and development. These studies are too numerous to identify and list in entirety here. Some of the more recent studies include:

- Bosque County water treatment and distribution study to address water needs in Bosque County in the central Brazos River Basin. The study was completed in March 2004.[29]
- The Brazos River Authority and Tarrant Regional Water District sponsored a water supply study for Parker and Johnson Counties in the central Brazos River Basin to meet the growing needs of this area. Phase 1 of the study was completed in April 2004.[30]
- The West Central Brazos River Basin Regional Water Treatment and Distribution Facility Study evaluated water needs in the upper Brazos River Basin. This study was completed in August 2004.[31]
- Bell/Williamson Regional Water Supply Facility Plan included eight participants in southern Bell County and northern Williamson County. The study recommended the cooperation of these eight participants in development of infrastructure and water supply projects.
- The City of Abilene and the Cities of Midland and San Angelo (Region F) have formed the West Texas Water Partnership (WTWP) to identify and secure long-range water supplies for the three cities and the surrounding region. Results from ongoing studies will be reflected in future regional water plans.
- The Falls Hill Limestone and McLennan Counties Regional Water Facility Planning Study is an ongoing TWDB supported study to evaluate water management strategies for the 2016 Region G Water Plan. The primary focuses of the study are to address water quality issues, develop a regional water system to replace and/or supplement multiple current systems, provide reliable water supply and interconnect existing facilities.

Brief summaries of the *Brazos G Regional and State Water Plans* and several studies completed recently are presented in the following sections.

---

[29] Carter-Burgess, March 2004, Bosque County Regional Water Treatment and Distribution Facilities Plan, Final Report to the Brazos River Authority.

[30] Freese and Nichols, April 2004, Regional Water Supply and Wastewater Service Study for Johnson and Parker Counties, Phase I.

[31] Freese and Nichols, August 2004, West Central Brazos River Basin Regional Water Treatment and Distribution Facility Plan.

1.12.1 Brazos G Regional and State Water Plans

Since SB1 was passed in 1997, the Brazos G Regional Planning Group has completed three rounds of planning, with regional plans adopted in 2001, 2006 and 2011. These regional plans have been rolled up with 15 other regional plans into the State Water Plan in 2002, 2007 and 2012, respectively. Each successive plan has been updated to reflect the most relevant information at the time. This section provides a brief summary of each of the Brazos G Regional water Plans and the State Water Plans.

2001 Brazos G Regional Water Plan[32]

The 2001 Brazos G Regional Water Plan found that on a regional basis, there are sufficient water supplies to meet the projected demands. In year 2050, the region was projected to have a surplus of about 500,000 acre-feet per year, yet there were some entities that did not have enough water to meet projected needs. The highest growth areas were identified along the I-35 corridor in the central part of the region, straining existing groundwater supplies. Slower economic growth and implementation of previous long-term planning in the upper Brazos G Area resulted in fewer municipal needs in this part of the region. However, water quality concerns in the upper Brazos River Basin can limit water supplies.

The major recommended strategies in the 2001 plan included four new major reservoirs, reallocation of hydropower storage in Lake Whitney, coordinated operation of reservoir systems for the Brazos River Authority and the City of Abilene, chloride control in the upper Brazos River Basin, and further development of groundwater from the Carrizo-Wilcox Aquifer. Since the plan was completed, the California Creek Diversion Project, a recommended strategy in the 2001 plan for the City of Stamford to supplement supplies from Lake Stamford, has been constructed and is operational. Other smaller projects also have been completed or are in the design phase.

The recommended new major reservoirs include:

- Millican Reservoir (Bundic Dam Site)
- Little River Reservoir
- South Bend Reservoir (long-term strategy)
- Breckenridge Reservoir (long-term strategy)

2006 Brazos G Regional Water Plan[33]

In the 2006 plan, a comparison of total supplies available in the region with demand for all use categories in the region shows a surplus past the year 2050. These mask shortages that are projected to occur to individual water supply entities and water user groups. Shortages were shown for entities in 32 of the 37 counties in the Brazos G Area. Water management strategies that were evaluated included advanced water conservation, wastewater reuse, system operation of Brazos River Authority Reservoirs,

[32] Brazos G Regional Planning Group, 2001 Brazos G Regional Water Plan.

[33] Brazos G Regional Planning Group, 2006 Brazos G Regional Water Plan.

conjunctive use, desalination, aquifer storage and recovery, brush management, weather modification, six new on-channel and five new off-channel reservoirs, regional interconnection, Carrizo-Wilcox aquifer development and voluntary redistribution. The total supply from these recommended water supplies is over 590,000 acre-feet per year at an estimated cost of over $1 billion.

2011 Brazos G Regional Water Plan[34]

In the 2011 plan, a comparison of total supplies available in the region (developed groundwater supplies and firm surface water) with demand for all use categories in the region shows a surplus past the year 2040. These mask shortages that are projected to occur to individual water supply entities and water user groups. Shortages are projected for Williamson County starting at about the year 2020, while overall regional supplies are projected to exceed regional demands until past the year 2040. Even within most counties that have projected overall surpluses, there are individual entities that do not have sufficient supply to meet projected needs. Shortages were shown for entities in 31 of the 37 counties in the Brazos G Area. The recommended water management strategies included advanced water conservation, wastewater reuse, system operation of Brazos River Authority Reservoirs, conjunctive use, brush management, four new reservoirs, regional interconnection, additional groundwater development, voluntary redistribution, and multiple miscellaneous pipelines and treatment plan expansions. The total supply from these recommended water supplies is over 587,000 acre-feet per year at an estimated cost of over $3 billion.

Water for Texas 2002[35] was the first State Water Plan to be adopted by the TWDB after the passage of SB1 in 1997. It was estimated that by 2050, almost 900 cities statewide (representing 38 percent of the projected population) and other water users will need either to reduce demand (through conservation and/or drought management) or develop additional sources of water beyond those currently available to meet their needs during droughts. The proposed water management strategies had an estimated cost of $17.9 billion.

Water for Texas 2007[36]

The state was projected to grow from 21 million people in 2000 to approximately 46 million people in 2060. It was estimated that Texas would need 8.8 million acre-feet of water by 2060 to meet this growth. The 16 Regional Water Planning Groups identified 4,500 water management strategies to provide an additional 9.0 million acre-feet of water. The estimated cost of these strategies was approximately $30.7 billion. Without this investment there would be a potential $9.1 billion impact to businesses and workers by 2020 with increased impact of $98.4 billion by 2060.

---

[34] Brazos G Regional Planning Group, 2011 Brazos G Regional Water Plan.

[35] Texas Water Development Board, Water for Texas, 2002 Texas State Water Plan.

[36] Texas Water Development Board, Water for Texas, 2007 Texas State Water Plan.

Water for Texas 2012[37]

The 16 Regional Water Planning Groups (Planning Groups) identified a total of 2,569 water user groups. Of those groups, 895 (35 percent) in 2020 would have water supply needs if the state were facing drought conditions, increasing to 1,085 (42 percent) in 2060. The Water Planning groups recommended feasible water management strategies to meet most of those needs. Solutions proposed by the Planning Groups include strategies such as the use of currently developed surface water and groundwater sources, conservation, reuse, new interbasin transfers, and development of additional groundwater and surface water resources. 26 new reservoirs were recommended by the Planning Groups to meet identified needs of the water user groups. The Planning Groups estimated total capital costs over the next 50 years to meet needs for additional water supplies at $53 billion, including $27 billion to implement strategies for municipal water user groups. Meeting these costs will require a long-term financial commitment from local political subdivisions, regional authorities, and the State of Texas.

All three state water plans incorporated recommendations from the respective Brazos G Regional Water Plans.

1.12.2 Bosque County Regional Water Treatment and Distribution Facilities Plan

The *2001 Brazos G Regional Water Plan* identified several water users in Bosque County with shortages over the planning period. In an attempt to address this widely known shortage, the Brazos River Authority, Texas Water Development Board, and the Cities of Clifton and Meridian jointly sponsored a study to determine the regional water needs and to evaluate existing and proposed water facilities.

The study evaluated four alternatives to supply water to the different users, including individual treatment and delivery systems to a regional facility that would serve all participants. The study recommended the regional facility, which would include expansion of the City of Clifton's water treatment plant and interconnections to the other participants, including Clifton, Childress WSC, Meridian, Valley Mills and Walnut Springs.

1.12.3 Regional Water Supply and Wastewater Service Study for Johnson and Parker Counties, Phase I

The Brazos River Authority and Tarrant Regional Water District (TRWD) jointly commissioned a study to investigate the feasibility of developing regional water supply and wastewater treatment facilities to serve the unmet needs of the two counties. The first phase of an anticipated two-phase study was completed in April 2004. The primary objective of the first phase was to identify and evaluate raw water supply and water and wastewater treatment concepts of mutual interest to the Authority, TRWD and their primary wholesale customers. Subject to the Phase I identification of concepts deemed

[37] Texas Water Development Board, Water for Texas, 2012 Texas State Water Plan.

worthy of additional study, a Phase II study may further study those options that show promise from an engineering, economic, water quality and institutional standpoint.

Phase I of the study identified several water supply scenarios to serve water user groups with projected shortages in each county. The study focused on concepts that would blend the higher TDS water from the Brazos Basin with lower TDS water from the Trinity River Basin to reduce the need to desalinate the Brazos Basin water. The study concluded that a regional water treatment plant in northwest Johnson County treating a blend of BRA and TRWD water could economically serve a large area of northwest Johnson, southwest Tarrant and southeast Parker counties, including the new growth in Fort Worth's extraterritorial jurisdiction. A second option involved a plant in northeast Johnson County which could supply a large area with unmet needs including the rapidly growing areas around Mansfield and Burleson. Phase II of the study is intended to provide more detailed information required by stakeholders to allow them to further evaluate these concepts in relation to their own interests and potential participation in a regional system. Phase II has not been initiated to date.

1.12.4 West Central Brazos River Basin Regional Water Treatment and Distribution Facility Study

The Brazos River Authority, Texas Water Development Board, and the U.S. Economic Development Administration sponsored a water treatment and distribution study for water users in the upper Brazos River Basin. This study was initiated in response to the significant drought that occurred in the late 1990s and subsequent years, and developed a plan to meet demands 25 percent greater than projected needs in order to account for the future uncertainties of droughts.

The West Central Brazos River Basin Regional Water Treatment and Distribution Facility Plan evaluated the water needs in an 18-county area, assessed the economic impacts of water shortages and identified a plan to develop and efficiently utilize the water resources in the area. Specific concerns identified in the study included water quality of surface water sources, limited groundwater sources, and limited existing infrastructure to move water from areas with supply to areas with needs.

Recognizing the vulnerability of small surface lakes and the uncertainty of groundwater, this study focused on interconnecting existing supply sources and developing new supplies to provide a safe level of supply to water users and increase the reliability of existing sources to promote economic growth in the region. Collectively, over 25 potential water management strategies were evaluated to meet specific needs in the region. In addition, three general strategies (brush control, weather modification and salt water control) were reviewed as potential means to improve water quality and quantity in the region.

The study conducted numerous hydraulic analyses to evaluate the possibility of moving water through existing and improved infrastructure, including the West Central Brazos Distribution System in Stephens County (formerly the Kerr-McKee pipeline). Two scenarios demonstrated the greatest potential impact to the region:

- Interconnection between Abilene and North Central Texas MWA

- Interconnections among Shackelford WSC, Stephens County Rural WSC and the City of Throckmorton using the West Central Brazos Distribution System

Other major strategies recommended in this study include:

- Regional water treatment plant to treat water from Possum Kingdom Lake
- Connection from Lake Stamford to Throckmorton
- Turkey Peak Reservoir in Palo Pinto County
- Diverting water from the Clear Fork of the Brazos River to Hubbard Creek Lake and increasing the capacity to transport water to Abilene

Chapter 2

2

Projected Population and Water Demands

This page intentionally left blank.

2 Projected Population and Water Demands

2.1 Introduction

The TWDB publishes population and water demand projections, respectively, for each county in the state for use by the regional water planning groups. Population projections were developed for municipal Water User Groups (WUGs), which are defined as cities with a population greater than 500 in 2010, water supply corporations and special utility districts using volumes of 280 acft or more in 2010, and 'County-Other' to capture those people living outside the cities or WUG-sized water supply corporation/special utility districts for each county. In the Brazos G Area, population projections were completed for 234 municipal WUGs, including County-Other. Water demand projections were developed by type of use—specific municipal WUG demands for cities and other water utilities (along with a 'County-Other' for each county) and countywide demands for manufacturing, steam-electric, mining, irrigation, and livestock.

The TWDB has adopted several revisions to the population and water demand projections for the Brazos G Area, as forwarded by the Brazos G RWPG. Revisions have been made to the census-based population projections, and municipal, manufacturing, irrigation and steam-electric water demand projections. Revisions to the population and municipal water demand projections for cities resulted from requests from individual cities and changes to gpcd values. Water demand projections for manufacturing, irrigation and steam-electric use were revised to reflect input from industry and the Brazos G RWPG.

2.2 Population Projections

As shown in Figure 2-1, the population of the 37-county area is projected to increase from 1,972,449 in 2010 to 4,351,042 in 2070, an increase of 133 percent (2.2 percent annual growth). This is somewhat greater than the projected statewide population growth during the same period of 119 percent, (2.0 percent annually). In 2070, it is projected that 35 percent of the Brazos G Area population will live in Williamson County, 16 percent in Bell County, 7 percent in Johnson County, 8 percent in McLennan County, 10 percent in Brazos County, 3 percent in Coryell County, 4 percent in Taylor County, and 16 percent in each of the remaining counties. Projections and growth rates for each of the 37 counties and 233 cities, other utilities, and 'County-Other' in the region are presented in Table 2-1.

Growth in the Brazos G Area is concentrated along the IH-35 corridor, stretching from Williamson County in the south to Johnson County in the north. Growth is also taking place along US Highway 183 in Williamson and Lampasas Counties, Taylor and Jones Counties (Abilene area), and Brazos County (Bryan/College Station area). Williamson County is projected to be the fastest growing county between 2010 and 2070, growing at 2.4 percent annually. Bell, Brazos, Coryell, Hood, Johnson, and Young Counties are all projected to grow at more than 1.0 percent annually. A comparison of the annual growth rates for all the counties is shown in Figure 2-2.

Figure 2-1. Population Projections

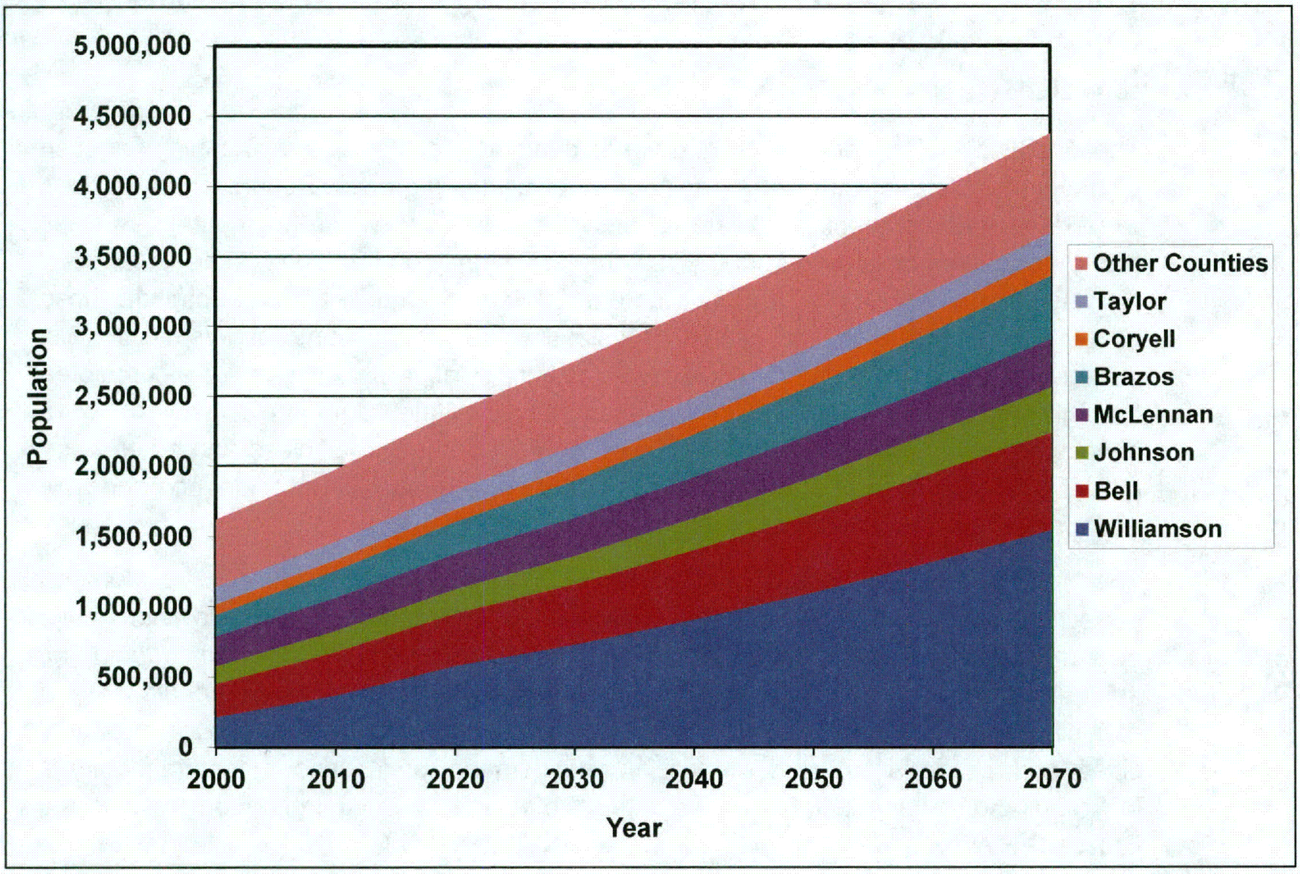


Table 2-1. Historical and Projected Population by City/County

City/County	Historical		Projections[1]						Annual Percent Growth	
	2000	2010	2020	2030	2040	2050	2060	2070	2000-2010	2010-2070
Bell County										
439 WSC	5,274	5,598	7,584	8,435	9,318	10,292	11,369	12,559	0.60%	1.36%
Armstrong WSC	1,980	2,143	2,283	2,416	2,561	2,710	2,856	3,000	0.79%	0.56%
Bartlett (P)	818	690	828	958	1,101	1,247	1,390	1,531	-1.69%	1.34%
Bell-Milam-Falls WSC (P)	1,980	2,153	2,301	2,442	2,596	2,754	2,909	3,061	0.84%	0.59%
Belton	14,623	18,216	21,841	25,287	29,041	32,897	36,680	40,404	2.22%	1.34%
Chisholm Trail SUD (P)	454	2,478	2,971	3,440	3,951	4,476	4,990	5,497	18.50%	1.34%
Dog Ridge WSC	3,534	2,623	3,145	3,642	4,182	4,737	5,282	5,818	-2.94%	1.34%
East Bell County WSC (P)	2,274	3,011	3,641	4,240	4,893	5,563	6,221	6,868	2.85%	1.38%
Elm Creek WSC (P)	1,445	1,947	2,376	2,784	3,229	3,686	4,134	4,575	3.03%	1.43%
Fort Hood CDP (P)	17,282	15,174	17,282	17,282	17,282	17,282	17,282	17,282	-1.29%	0.22%
Harker Heights	17,308	26,700	32,012	37,064	42,566	48,218	53,763	59,222	4.43%	1.34%
Holland	1,102	1,121	1,138	1,154	1,171	1,189	1,206	1,223	0.17%	0.15%
Jarrell-Schwertner WSC (P)	1,231	1,141	1,369	1,584	1,820	2,061	2,298	2,531	-0.76%	1.34%

Table 2-1. Historical and Projected Population by City/County

City/County	Historical		Projections[1]						Annual Percent Growth	
	2000	2010	2020	2030	2040	2050	2060	2070	2000-2010	2010-2070
Kempner WSC (P)	2,471	1,671	2,004	2,320	2,664	3,018	3,365	3,707	-3.84%	1.34%
Killeen	86,911	127,921	153,371	177,572	203,934	231,012	257,581	283,732	3.94%	1.34%
Little River-Academy	1,645	1,961	2,231	2,488	2,768	3,056	3,338	3,616	1.77%	1.03%
Moffat WSC	3,732	3,931	4,101	4,263	4,440	4,621	4,799	4,974	0.52%	0.39%
Morgans Point Resort	2,989	4,170	5,179	6,139	7,184	8,258	9,312	10,349	3.39%	1.53%
Nolanville	2,150	4,259	6,061	7,774	9,640	11,557	13,438	15,289	7.07%	2.15%
Pendleton WSC	2,431	2,592	2,075	2,174	2,283	2,395	2,504	2,612	0.64%	0.01%
Rodgers	1,117	1,218	1,305	1,388	1,478	1,570	1,661	1,750	0.87%	0.61%
Salado WSC	3,847	4,391	5,453	5,950	6,491	7,047	7,592	8,129	1.33%	1.03%
Temple	54,514	66,102	79,253	91,759	105,381	119,374	133,103	146,616	1.95%	1.34%
Troy	1,378	1,645	1,874	2,091	2,328	2,571	2,810	3,045	1.79%	1.03%
West Bell County WSC	5,456	4,263	5,112	5,456	5,456	5,456	5,456	5,456	-2.44%	0.41%
County-Other	28	3,116	5,166	10,545	16,824	23,205	29,347	35,261	60.19%	4.13%
Bell County Total	237,974	310,235	371,956	430,647	494,582	560,252	624,686	688,107	2.69%	1.34%
Bosque County										
Childress Creek WSC	2,091	2,382	2,656	2,901	3,027	3,105	3,155	3,186	1.31%	0.49%
Clifton	3,542	3,442	3,838	4,192	4,374	4,488	4,560	4,604	-0.29%	0.49%
Cross Country WSC (P)	178	660	736	803	838	860	874	882	14.00%	0.48%
Meridian	1,491	1,493	1,664	1,818	1,897	1,946	1,978	1,997	0.01%	0.49%
Valley Mills (P)	1,120	1,190	1,327	1,449	1,512	1,551	1,576	1,591	0.61%	0.49%
Walnut Springs	755	827	922	1,007	1,051	1,078	1,095	1,106	0.92%	0.49%
County-Other	8,027	8,218	9,167	10,014	10,448	10,719	10,891	10,996	0.24%	0.49%
Bosque County Total	17,204	18,212	20,310	22,184	23,147	23,747	24,129	24,362	0.57%	0.49%
Brazos County										
Bryan	65,660	76,201	88,434	93,544	119,410	138,980	159,588	181,797	1.50%	1.46%
College Station	57,404	83,714	102,140	132,690	141,952	164,492	188,719	215,545	3.85%	1.59%
Texas A&M University	10,486	10,143	11,851	12,000	12,000	12,000	12,000	12,000	-0.33%	0.28%
Wellborn SUD	6,550	8,106	9,309	10,667	12,073	13,793	15,636	17,668	2.15%	1.31%
Wickson Creek SUD (P)	5,743	8,004	9,752	11,724	13,767	16,266	18,943	21,895	3.38%	1.69%
County-Other	6,572	8,683	6,168	4,040	3,795	4,363	5,249	6,624	2.82%	-0.45%
Brazos County Total	152,415	194,851	227,654	264,665	302,997	349,894	400,135	455,529	2.49%	1.43%
Burleson County										
Caldwell	3,449	4,104	4,896	5,060	5,275	5,312	5,412	5,498	1.75%	0.49%
Deanville WSC	2,570	2,900	3,598	3,663	3,816	3,790	3,840	3,885	1.22%	0.49%
Milano WSC (P)	1,447	1,730	1,867	2,008	2,098	2,188	2,259	2,318	1.80%	0.49%
Snook	568	511	552	594	620	647	668	685	-1.05%	0.49%
Somerville	1,704	1,376	1,485	1,597	1,669	1,741	1,797	1,844	-2.12%	0.49%

Table 2-1. Historical and Projected Population by City/County

City/County	Historical		Projections[1]						Annual Percent Growth	
	2000	2010	2020	2030	2040	2050	2060	2070	2000-2010	2010-2070
Southwest Milam WSC (P)	293	741	800	860	899	938	968	993	9.72%	0.49%
County-Other	6,439	5,825	5,341	6,164	6,461	7,119	7,498	7,799	-1.00%	0.49%
Burleson County Total	16,470	17,187	18,539	19,946	20,838	21,735	22,442	23,022	0.43%	0.49%
Callahan County										
Baird	1,623	1,496	1,496	1,496	1,496	1,496	1,496	1,496	-0.81%	0.00%
Clyde	3,344	3,713	3,971	4,251	4,404	4,483	4,541	4,579	1.05%	0.35%
Coleman County WSC (P)	392	150	161	172	178	182	184	185	-9.16%	0.35%
Cross Plains	1,068	982	1,051	1,125	1,165	1,186	1,201	1,211	-0.84%	0.35%
Potosi WSC (P)	70	70	75	81	84	85	86	87	0.00%	0.36%
County-Other	6,408	7,133	7,728	8,379	8,734	8,919	9,056	9,142	1.08%	0.41%
Callahan County Total	12,905	13,544	14,482	15,504	16,061	16,351	16,564	16,700	0.48%	0.35%
Comanche County										
Comanche	4,482	4,335	4,499	4,678	4,799	4,956	5,090	5,217	-0.33%	0.31%
De Leon	2,433	2,246	2,331	2,424	2,486	2,568	2,637	2,703	-0.80%	0.31%
County-Other	7,111	7,393	7,672	7,976	8,182	8,450	8,679	8,894	0.39%	0.31%
Comanche County Total	14,026	13,974	14,502	15,078	15,467	15,974	16,406	16,814	-0.04%	0.31%
Coryell County										
Copperas Cove (P)	29,455	31,457	35,928	40,796	46,213	50,948	55,996	61,021	0.66%	1.11%
Coryell City Water Supply District	3,221	4,334	4,950	5,620	6,367	7,019	7,715	8,407	3.01%	1.11%
Elm Creek WSC (P)	320	358	408	464	525	579	637	694	1.13%	1.11%
Fort Hood CDP (P)	16,429	14,415	16,051	16,429	16,429	16,429	16,429	16,429	-1.30%	0.22%
Gatesville	15,591	15,751	17,990	20,427	23,139	25,510	28,038	30,554	0.10%	1.11%
Kempner WSC	3,409	2,712	3,097	3,517	3,984	4,392	4,827	5,260	-2.26%	1.11%
Multi-County WSC (P)	2370	2517	2874	3264	3697	4076	4480	4882	0.60%	1.11%
County-Other	4,183	3,844	4,807	7,254	10,398	13,148	16,077	18,993	-0.84%	2.70%
Coryell County Total	74,978	75,388	86,105	97,771	110,752	122,101	134,199	146,240	0.05%	1.11%
Eastland County										
Cisco	3,851	3,899	4,048	4,136	4,140	4,141	4,141	4,141	0.12%	0.10%
Eastland	3,769	3,960	4,111	4,201	4,205	4,205	4,205	4,205	0.50%	0.10%
Gorman	1,236	1,083	1,125	1,149	1,150	1,150	1,150	1,150	-1.31%	0.10%
Ranger	2,584	2,468	2,562	2,618	2,621	2,621	2,621	2,621	-0.46%	0.10%
Rising Star	835	835	867	886	887	887	887	887	0.00%	0.10%
Stephens Regional SUD (P)	13	121	126	129	129	129	129	129	24.99%	0.11%
County-Other	6,009	6,217	6,450	6,593	6,598	6,599	6,599	6,599	0.34%	0.10%
Eastland County Total	18,297	18,583	19,289	19,712	19,730	19,732	19,732	19,732	0.16%	0.10%
Erath County										

Table 2-1. Historical and Projected Population by City/County

City/County	Historical		Projections[1]						Annual Percent Growth	
	2000	2010	2020	2030	2040	2050	2060	2070	2000-2010	2010-2070
Dublin	3,754	3,654	4,063	4,525	4,915	5,287	5,639	5,964	-0.27%	0.82%
Stephenville	14,921	17,123	19,041	21,205	23,033	24,777	26,425	27,948	1.39%	0.82%
County-Other	14,326	17,113	19,031	21,193	23,020	24,763	26,410	27,932	1.79%	0.82%
Erath County Total	33,001	37,890	42,135	46,923	50,968	54,827	58,474	61,844	1.39%	0.82%
Falls County										
Bell-Milam-Falls WSC (P)	915	1,199	1,302	1,368	1,383	1,350	1,391	1,433	2.74%	0.30%
Burceville-Eddy (P)	2	4	4	4	4	4	4	4	7.18%	0.00%
East Bell County WSC (P)	612	300	325	342	346	337	348	358	-6.88%	0.30%
Golinda	336	413	448	471	476	465	479	493	2.08%	0.30%
Lott	724	759	824	866	875	855	880	907	0.47%	0.30%
Marlin	6,628	5,967	6,483	6,812	6,883	6,721	6,925	7,135	-1.05%	0.30%
Rosebud	1,493	1,412	1,534	1,612	1,628	1,590	1,638	1,688	-0.56%	0.30%
Tri-County SUD (P)	2,614	2,629	2,856	3,001	3,032	2,961	3,051	3,143	0.06%	0.30%
West Brazos WSC (P)	1,820	1,366	1,484	1,559	1,575	1,538	1,585	1,633	-2.83%	0.30%
County-Other	3,432	3,817	4,153	4,362	4,408	4,305	4,435	4,570	1.07%	0.30%
Falls County Total	18,576	17,866	19,413	20,397	20,610	20,126	20,736	21,364	-0.39%	0.30%
Fisher County										
Bitter Creek WSC (P)	1,150	839	845	845	845	845	845	845	-3.10%	0.01%
Roby	673	643	648	648	648	648	648	648	-0.45%	0.01%
Rotan	1,611	1,508	1,519	1,519	1,519	1,519	1,519	1,519	-0.66%	0.01%
County-Other	910	984	989	989	989	989	989	989	0.78%	0.01%
Fisher County Total	4,344	3,974	4,001	4,001	4,001	4,001	4,001	4,001	-0.89%	0.01%
Grimes County										
Dobbin-Plantersville WSC	1,560	1,976	2,363	2,737	3,021	3,321	3,570	3,787	2.39%	1.09%
G&W WSC	1,023	2,441	3,760	5,033	5,999	7,020	7,867	8,606	9.09%	2.12%
Navasota	6,789	7,049	7,291	7,525	7,703	7,891	8,047	8,183	0.38%	0.25%
Wickson Creek SUD (P)	2,792	3,090	3,368	3,636	3,839	4,054	4,232	4,388	1.02%	0.59%
County-Other	11,388	12,048	12,659	13,248	13,696	14,168	14,561	14,903	0.56%	0.36%
Grimes County Total	23,552	26,604	29,441	32,179	34,258	36,454	38,277	39,867	1.23%	0.68%
Hamilton County										
Hamilton	2,977	3,095	3,114	3,172	3,172	3,172	3,172	3,172	0.39%	0.04%
Hico	1,341	1,379	1,385	1,404	1,404	1,404	1,404	1,404	0.28%	0.03%
Multi-County WSC (P)	630	669	676	696	696	696	696	696	0.60%	0.07%
County-Other	3,281	3,374	3,387	3,431	3,431	3,431	3,431	3,431	0.28%	0.03%
Hamilton County Total	8,229	8,517	8,562	8,703	8,703	8,703	8,703	8,703	0.34%	0.04%
Haskell County										

Table 2-1. Historical and Projected Population by City/County

City/County	Historical		Projections[1]						Annual Percent Growth	
	2000	2010	2020	2030	2040	2050	2060	2070	2000-2010	2010-2070
Haskell	3,106	3,322	3,330	3,364	3,382	3,415	3,466	3,540	0.67%	0.11%
Rule	698	636	638	644	648	654	664	678	-0.93%	0.11%
Stamford (P)	43	33	34	34	34	34	35	36	-2.61%	0.15%
County-Other	2,246	1,908	1,911	1,931	1,940	1,961	1,988	2,031	-1.62%	0.10%
Haskell County Total	6,093	5,899	5,913	5,973	6,004	6,064	6,153	6,285	-0.32%	0.11%
Hill County										
Brandon-Irene WSC (P)	2,009	1,796	1,937	2,062	2,147	2,234	2,301	2,354	-1.11%	0.45%
Hill County WSC	2,467	2,913	3,141	3,344	3,482	3,624	3,731	3,818	1.68%	0.45%
Files Valley WSC (P)	1,963	2,449	2,641	2,812	2,927	3,047	3,137	3,210	2.24%	0.45%
Hillsboro	8,232	8,456	9,117	9,707	10,106	10,518	10,830	11,083	0.27%	0.45%
Hubbard	1,586	1,423	1,535	1,634	1,701	1,770	1,823	1,866	-1.08%	0.45%
Itasca	1,503	1,644	1,773	1,888	1,965	2,045	2,106	2,155	0.90%	0.45%
Johnson County SUD (P)	177	202	218	232	242	252	259	265	1.33%	0.45%
Parker WSC (P)	371	275	297	316	329	343	353	361	-2.95%	0.45%
White Bluff Community WS	1,000	1,875	2,022	2,153	2,241	2,333	2,402	2,458	6.49%	0.45%
Whitney	1,833	2,087	2,250	2,396	2,495	2,596	2,673	2,736	1.31%	0.45%
Woodrow-Osceola WSC	5,396	3,900	4,205	4,477	4,661	4,851	4,995	5,112	-3.19%	0.45%
County-Other	5,784	8,069	8,692	9,256	9,639	10,030	10,327	10,571	3.39%	0.45%
Hill County Total	32,321	35,089	37,828	40,277	41,935	43,643	44,937	45,989	0.83%	0.45%
Hood County										
Acton MUD (P)	12,222	13,689	19,725	31,885	39,831	43,891	48,381	53,347	1.14%	2.29%
Cresson (P)	82	227	372	512	612	698	764	815	10.72%	2.15%
Granbury	5,718	7,978	10,249	12,441	14,012	15,365	16,404	17,200	3.39%	1.29%
Oak Trail Shores Subdivision	2,985	3,049	3,113	3,175	3,219	3,257	3,286	3,308	0.21%	0.14%
Tolar	504	681	858	1,029	1,152	1,257	1,338	1,400	3.06%	1.21%
County-Other	17,508	22,875	26,999	22,057	19,285	19,679	18,612	16,269	2.71%	-0.57%
Hood County Total	39,019	48,499	61,316	71,099	78,111	84,147	88,785	92,339	2.20%	1.08%
Johnson County										
Acton MUD (P)	101	245	382	542	707	888	1,083	1,292	9.27%	2.81%
Alvarado	3,288	3,785	4,257	4,808	5,377	6,001	6,674	7,394	1.42%	1.12%
Bethany WSC	3,000	3,466	3,909	4,426	4,959	5,544	6,175	6,850	1.45%	1.14%
Bethesda WSC (P)	14,650	13,493	15,541	17,931	20,397	23,102	26,019	29,141	-0.82%	1.29%
Burleson (P)	17,514	29,111	35,167	42,845	50,022	54,635	60,711	68,170	5.21%	1.43%
Cleburne	26,005	29,337	32,501	36,195	40,006	44,185	48,693	53,517	1.21%	1.01%
Cresson (P)	60	108	154	208	263	324	389	459	6.05%	2.44%
Crowley	0	31	61	96	132	171	213	258		3.59%
Fort Worth	0	0	0	0	0	5,000	8,000	10,000		

Table 2-1. Historical and Projected Population by City/County

City/County	Historical		Projections[1]						Annual Percent Growth	
	2000	2010	2020	2030	2040	2050	2060	2070	2000-2010	2010-2070
Godley	879	1,009	1,133	1,278	1,427	1,591	1,767	1,956	1.39%	1.11%
Grandview	1,358	1,561	1,754	1,980	2,213	2,468	2,743	3,037	1.40%	1.12%
Johnson County SUD (P)	28,333	32,415	37,334	43,076	49,001	55,498	62,507	70,006	1.36%	1.29%
Joshua	4,528	5,910	7,222	8,754	10,335	12,069	13,939	15,940	2.70%	1.67%
Keene	5,003	6,106	7,154	8,377	9,639	11,023	12,516	14,113	2.01%	1.41%
Mansfield (P)	622	1,652	2,630	3,772	4,950	6,242	7,636	9,128	10.26%	2.89%
Mountain Peak SUD (P)	1,200	1,585	1,951	2,378	2,819	3,302	3,823	4,381	2.82%	1.71%
Parker WSC (P)	1,753	2,464	3,139	3,928	4,742	5,634	6,596	7,626	3.46%	1.90%
Rio Vista	656	873	1,080	1,321	1,570	1,843	2,137	2,452	2.90%	1.74%
Venus (P)	1,892	2,895	3,335	3,848	4,377	4,957	5,583	6,253	4.35%	1.29%
County-Other	15,969	14,888	15,131	14,810	15,224	13,937	13,843	13,994	-0.70%	-0.10%
Johnson County Total	126,811	150,934	173,835	200,573	228,160	258,414	291,047	325,967	1.76%	1.29%
Jones County										
Abilene (P)	5,488	5,145	5,457	5,776	6,000	6,192	6,351	6,481	-0.64%	0.39%
Anson	2,556	2,430	2,577	2,728	2,834	2,925	3,000	3,061	-0.50%	0.39%
Hamlin	2,248	2,124	2,253	2,385	2,477	2,557	2,622	2,676	-0.57%	0.39%
Hawley	646	634	673	712	740	763	783	799	-0.19%	0.39%
Hawley WSC (P)	5,006	4,682	4,966	5,256	5,460	5,635	5,780	5,898	-0.67%	0.39%
Stamford (P)	3,593	3,091	3,278	3,470	3,605	3,720	3,816	3,894	-1.49%	0.39%
County-Other	1,248	2,096	2,220	2,349	2,442	2,520	2,585	2,637	5.32%	0.38%
Jones County Total	20,785	20,202	21,424	22,676	23,558	24,312	24,937	25,446	-0.28%	0.39%
Kent County										
Jayton	513	534	528	540	540	540	540	540	0.40%	0.02%
County-Other	346	274	270	276	276	276	276	276	-2.31%	0.01%
Kent County Total	859	808	798	816	816	816	816	816	-0.61%	0.02%
Knox County										
Knox City	1,219	1,130	1,169	1,217	1,242	1,271	1,295	1,315	-0.76%	0.25%
Munday	1,527	1,300	1,345	1,400	1,429	1,463	1,490	1,512	-1.60%	0.25%
County-Other	1,507	1,289	1,333	1,386	1,415	1,449	1,475	1,498	-1.55%	0.25%
Knox County Total	4,253	3,719	3,847	4,003	4,086	4,183	4,260	4,325	-1.33%	0.25%
Lampasas County										
Copperas Cove (P)	137	575	1,061	1,588	1,994	2,410	2,778	3,109	15.42%	2.85%
Kempner	1,004	1,089	1,207	1,334	1,432	1,533	1,622	1,702	0.82%	0.75%
Kempner WSC (P)	3,081	7,958	8,817	9,747	10,465	11,199	11,849	12,433	9.95%	0.75%
Lampasas	6,786	6,681	7,402	8,183	8,786	9,402	9,947	10,438	-0.16%	0.75%
Lometa	782	856	949	1,049	1,126	1,205	1,275	1,338	0.91%	0.75%
County-Other	5,972	2,518	2,364	2,199	2,071	1,940	1,825	1,721	-8.27%	-0.63%

Table 2-1. Historical and Projected Population by City/County

City/County	Historical		Projections[1]						Annual Percent Growth	
	2000	2010	2020	2030	2040	2050	2060	2070	2000-2010	2010-2070
Lampasas County Total	17,762	19,677	21,800	24,100	25,874	27,689	29,296	30,741	1.03%	0.75%
Lee County										
Aqua WSC (P)	2,604	2,460	2,833	3,185	3,387	3,461	3,510	3,537	-0.57%	0.61%
Giddings	5,105	4,881	5,621	6,320	6,721	6,868	6,966	7,019	-0.45%	0.61%
Lee County WSC (P)	4,125	6,213	7,155	8,045	8,556	8,742	8,867	8,934	4.18%	0.61%
Lexington	1,178	1,177	1,355	1,524	1,620	1,656	1,679	1,692	-0.01%	0.61%
Southwest Milam WSC (P)	227	258	297	334	355	363	368	371	1.29%	0.61%
County-Other	2,418	1,623	1,870	2,103	2,238	2,285	2,319	2,336	-3.91%	0.61%
Lee County Total	15,657	16,612	19,131	21,511	22,877	23,375	23,709	23,889	0.59%	0.61%
Limestone County										
Coolidge	848	955	1,096	1,215	1,312	1,418	1,505	1,581	1.20%	0.84%
Groesbeck	4,291	4,328	4,377	4,419	4,453	4,490	4,520	4,547	0.09%	0.08%
Mart (P)	0	2	5	8	10	12	14	16		3.53%
Mexia	6,563	7,459	8,637	9,632	10,440	11,326	12,047	12,683	1.29%	0.89%
Thornton	524	526	529	532	534	536	538	540	0.04%	0.04%
Tri-County SUD (P)	1,059	1,080	1,108	1,132	1,151	1,172	1,189	1,204	0.20%	0.18%
County-Other	8,766	9,034	9,384	9,677	9,917	10,180	10,393	10,581	0.30%	0.26%
Limestone County Total	22,051	23,384	25,136	26,615	27,817	29,134	30,206	31,152	0.59%	0.48%
McLennan County										
Bellmead	9,214	9,901	10,457	11,100	11,668	12,239	12,808	13,367	0.72%	0.50%
Beverly Hills	2,113	1,995	2,142	2,312	2,462	2,613	2,764	2,911	-0.57%	0.63%
Bruceville-Eddy (P)	1,488	1,471	1,580	1,705	1,816	1,927	2,038	2,147	-0.11%	0.63%
Chalk Bluff WSC	2,700	2,646	2,646	2,646	2,646	2,646	2,646	2,646	-0.20%	0.00%
Coryell City Water Supply District (P)	469	631	763	915	1,049	1,184	1,319	1,451	3.01%	1.40%
Crawford	705	717	727	739	749	759	769	779	0.17%	0.14%
Cross County WSC (P)	2,372	2,409	2,439	2,474	2,505	2,536	2,567	2,598	0.15%	0.13%
Elm Creek WSC (P)	1,343	1,631	1,865	2,135	2,373	2,613	2,852	3,087	1.96%	1.07%
Gholson	922	1,061	1,174	1,305	1,420	1,536	1,652	1,765	1.41%	0.85%
Golinda	87	146	194	250	299	349	398	446	5.31%	1.88%
Hallsburg	518	507	545	588	626	665	703	740	-0.21%	0.63%
Hewitt	11,085	13,549	15,543	17,848	19,884	21,932	23,973	25,976	2.03%	1.09%
Lacy-Lakeview	5,764	6,489	7,076	7,755	8,354	8,957	9,558	10,148	1.19%	0.75%
Lorena	1,433	1,691	1,900	2,142	2,356	2,571	2,785	2,995	1.67%	0.96%
Mart (P)	2,273	2,207	2,370	2,558	2,724	2,891	3,057	3,221	-0.29%	0.63%
McGregor	4,727	4,987	5,198	5,442	5,657	5,874	6,090	6,302	0.54%	0.39%
Moody	1,400	1,371	1,472	1,589	1,692	1,796	1,899	2,001	-0.21%	0.63%
North Bosque WSC	1,350	1,950	2,436	2,998	3,494	3,993	4,490	4,978	3.75%	1.57%

Table 2-1. Historical and Projected Population by City/County

City/County	Historical		Projections[1]						Annual Percent Growth	
	2000	2010	2020	2030	2040	2050	2060	2070	2000-2010	2010-2070
Riesel	973	1,007	1,035	1,067	1,096	1,125	1,154	1,182	0.34%	0.27%
Robinson	7,845	10,509	12,665	15,157	17,358	19,572	21,779	23,945	2.97%	1.38%
Tri-County SUD (P)	112	141	165	193	217	242	267	291	2.33%	1.21%
Valley Mills (P)	3	13	22	32	41	50	59	68	15.79%	2.80%
Waco	113,726	124,805	133,769	144,132	153,286	162,493	171,668	180,673	0.93%	0.62%
West	2,692	2,807	2,901	3,009	3,105	3,201	3,297	3,391	0.42%	0.32%
West Brazos WSC (P)	1,614	1,208	1,297	1,400	1,491	1,583	1,674	1,763	-2.86%	0.63%
Western Hills WS	2,744	2,964	3,142	3,348	3,530	3,713	3,896	4,075	0.77%	0.53%
Woodway	8,733	8,452	9,075	9,795	10,431	11,070	11,708	12,333	-0.33%	0.63%
County-Other	25,112	27,641	27,613	27,582	27,558	27,531	27,503	27,478	0.96%	-0.01%
McLennan County Total	213,517	234,906	252,211	272,216	289,887	307,661	325,373	342,757	0.96%	0.63%
Milam County										
Bell-Milam-Falls WSC (P)	1,327	1,610	1,707	1,808	1,880	1,971	2,049	2,122	1.95%	0.46%
Buckholts	387	515	546	579	602	631	656	679	2.90%	0.46%
Cameron	5,634	5,552	5,884	6,233	6,481	6,796	7,065	7,318	-0.15%	0.46%
Milano WSC (P)	1,568	1,828	1,938	2,053	2,134	2,238	2,326	2,410	1.55%	0.46%
Rockdale	5,439	5,595	5,929	6,282	6,531	6,848	7,120	7,375	0.28%	0.46%
Southwest Milam WSC (P)	5,419	6,018	6,378	6,756	7,025	7,366	7,658	7,932	1.05%	0.46%
Thorndale	1,278	1,334	1,414	1,498	1,558	1,633	1,698	1,759	0.43%	0.46%
County-Other	3,186	2,305	2,438	2,584	2,685	2,817	2,929	3,034	-3.19%	0.46%
Milam County Total	24,238	24,757	26,234	27,793	28,896	30,300	31,501	32,629	0.21%	0.46%
Nolan County										
Bitter Creek WSC (P)	1,116	1,150	1,220	1,288	1,335	1,385	1,426	1,461	0.30%	0.40%
Roscoe	1,378	1,322	1,402	1,481	1,535	1,593	1,639	1,679	-0.41%	0.40%
Sweetwater	11,415	10,906	11,564	12,213	12,656	13,135	13,520	13,852	-0.46%	0.40%
County-Other	1,893	1,838	1,948	2,057	2,131	2,212	2,278	2,333	-0.29%	0.40%
Nolan County Total	15,802	15,216	16,134	17,039	17,657	18,325	18,863	19,325	-0.38%	0.40%
Palo Pinto County										
Graford	578	584	635	681	713	742	764	781	0.10%	0.49%
Mineral Wells (P)	14,770	14,644	15,907	17,072	17,858	18,585	19,139	19,577	-0.09%	0.49%
Possum Kingdom WSC	1,414	1,668	1,812	1,945	2,035	2,117	2,180	2,230	1.67%	0.49%
Stephens Regional SUD (P)	13	35	39	41	43	45	46	47	10.41%	0.49%
Strawn	739	653	710	762	797	829	854	873	-1.23%	0.49%
County-Other	9,512	10,527	11,432	12,270	12,834	13,357	13,756	14,071	1.02%	0.48%
Palo Pinto County Total	27,026	28,111	30,535	32,771	34,280	35,675	36,739	37,579	0.39%	0.48%
Robertson County										
Bremond	876	929	1,027	1,127	1,219	1,315	1,407	1,497	0.59%	0.80%

Table 2-1. Historical and Projected Population by City/County

City/County	Historical		Projections[1]						Annual Percent Growth	
	2000	2010	2020	2030	2040	2050	2060	2070	2000-2010	2010-2070
Calvert	1,426	1,192	1,192	1,192	1,192	1,192	1,192	1,192	-1.78%	0.00%
Franklin	1,470	1,564	1,728	1,896	2,052	2,214	2,369	2,519	0.62%	0.80%
Hearne	4,690	4,459	4,459	4,459	4,459	4,459	4,459	4,459	-0.50%	0.00%
Robertson County WSC	2,529	2,760	3,049	3,346	3,620	3,907	4,181	4,446	0.88%	0.80%
Tri-County SUD (P)	838	845	934	1,025	1,109	1,196	1,280	1,361	0.08%	0.80%
Wellborn SUD (P)	0	0	1,804	2,067	2,340	2,673	3,031	3,425		
Wickson Creek SUD (P)	0	0	275	297	319	341	363	385		
County-Other	4,171	4,873	3,890	4,741	5,491	6,228	6,892	7,487	1.57%	0.72%
Robertson County Total	16,000	16,622	18,358	20,150	21,801	23,525	25,174	26,771	0.38%	0.80%
Shackelford County										
Albany	1,921	2,034	2,302	2,463	2,450	2,465	2,466	2,466	0.57%	0.32%
Stephens Regional SUD (P)	13	13	14	14	14	14	14	14	0.00%	0.12%
County-Other	1,368	1,331	1,242	1,189	1,193	1,188	1,187	1,187	-0.27%	-0.19%
Shackelford County Total	3,302	3,378	3,558	3,666	3,657	3,667	3,667	3,667	0.23%	0.14%
Somervell County										
Glen Rose	2,122	2,444	2,730	3,050	3,281	3,459	3,610	3,731	1.42%	0.71%
County-Other	4,687	6,046	6,752	7,544	8,114	8,554	8,929	9,227	2.58%	0.71%
Somervell County Total	6,809	8,490	9,482	10,594	11,395	12,013	12,539	12,958	2.23%	0.71%
Stephens County										
Breckenridge	5,868	5,780	5,959	6,178	6,276	6,340	6,387	6,419	-0.15%	0.17%
Fort Belknapp WSC (P)	35	48	50	52	53	53	54	54	3.21%	0.20%
Possum Kingdom WSC (P)	141	73	76	79	80	81	81	82		
Stephens Regional SUD (P)	2,482	2,323	2,395	2,483	2,523	2,549	2,567	2,580	-0.66%	0.18%
County-Other	1,148	1,406	1,447	1,501	1,523	1,540	1,552	1,558	2.05%	0.17%
Stephens County Total	9,674	9,630	9,927	10,293	10,455	10,563	10,641	10,693	-0.05%	0.17%
Stonewall County										
Aspermont	1,021	919	926	928	928	928	928	928	-1.05%	0.02%
County-Other	672	571	575	576	576	576	576	576	-1.62%	0.01%
Stonewall County Total	1,693	1,490	1,501	1,504	1,504	1,504	1,504	1,504	-1.27%	0.02%
Taylor County										
Abilene (P)	110,438	111,918	119,722	125,260	129,837	133,464	136,172	138,230	0.13%	0.35%
Coleman County WSC (P)	140	95	102	107	111	114	116	118	-3.80%	0.36%
Hawley WSC (P)	677	484	518	542	562	578	589	598	-3.30%	0.35%
Merkel	2,637	2,590	2,771	2,899	3,005	3,089	3,152	3,199	-0.18%	0.35%
Potosi WSC (P)	3,430	4,605	4,927	5,154	5,343	5,492	5,603	5,688	2.99%	0.35%
Steamboat Mountain WSC	3,342	4,485	4,798	5,020	5,204	5,349	5,457	5,540	2.99%	0.35%
Tuscola	714	742	794	831	861	885	903	917	0.39%	0.35%

Table 2-1. Historical and Projected Population by City/County

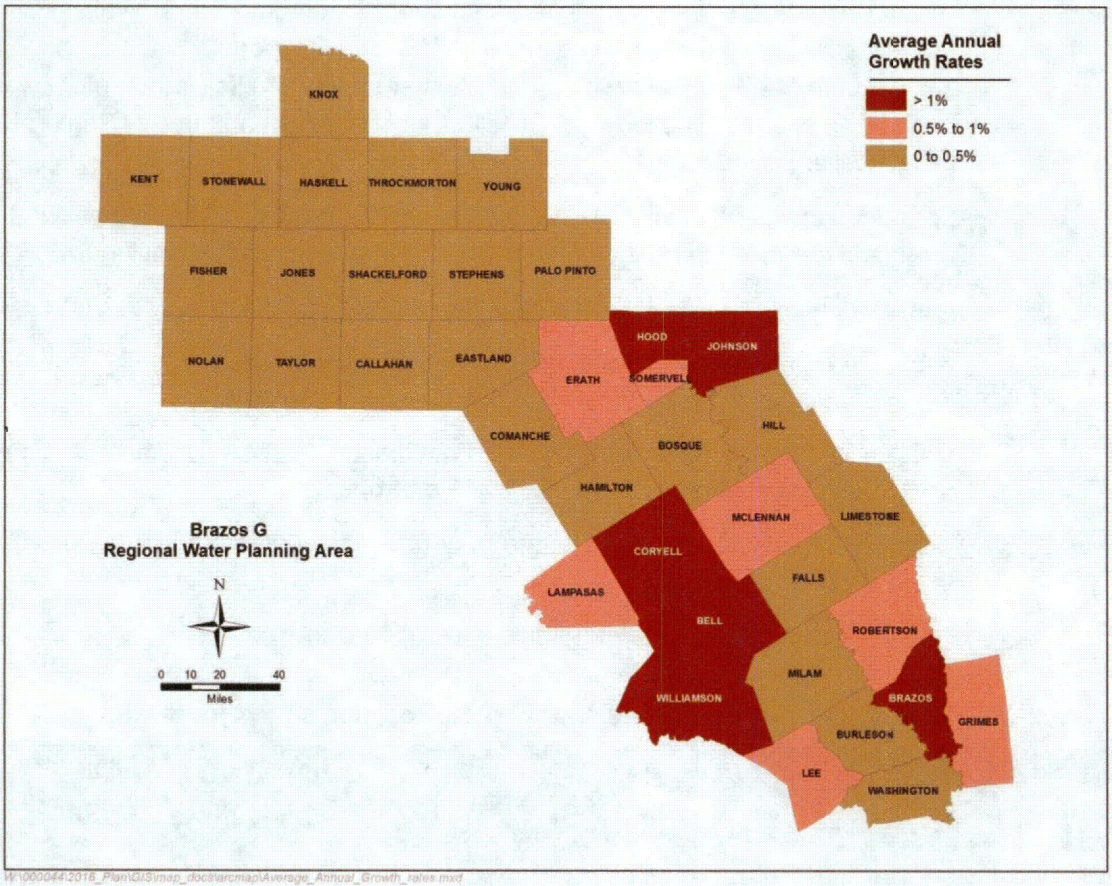
City/County	Historical		Projections[1]						Annual Percent Growth	
	2000	2010	2020	2030	2040	2050	2060	2070	2000-2010	2010-2070
Tye	1,158	1,242	1,329	1,391	1,441	1,482	1,512	1,534	0.70%	0.35%
County-Other	4,019	5,345	5,714	5,979	6,197	6,369	6,500	6,599	2.89%	0.35%
Taylor County Total	126,555	131,506	140,675	147,183	152,561	156,822	160,004	162,423	0.38%	0.35%
Throckmorton County										
Fort Belknapp WSC (P)	105	179	180	180	180	180	180	180	5.48%	0.01%
Stephens Regional SUD (P)	79	138	139	139	139	139	139	139	5.74%	0.01%
Throckmorton	905	828	831	831	831	831	831	831	-0.89%	0.01%
County-Other	761	496	496	496	496	496	496	496	-4.19%	0.00%
Throckmorton County Total	1,850	1,641	1,646	1,646	1,646	1,646	1,646	1,646	-1.19%	0.01%
Washington County										
Brenham	13,507	15,716	17,355	18,886	19,929	20,966	21,772	22,430	1.53%	0.59%
County-Other	16,866	18,002	18,844	19,630	20,166	20,698	21,112	21,450	0.65%	0.29%
Washington County Total	30,373	33,718	36,199	38,516	40,095	41,664	42,884	43,880	1.05%	0.44%
Williamson County										
Bartlett (P)	857	933	1,027	1,097	1,184	1,278	1,384	1,494	0.85%	0.79%
Bell-Milam-Falls WSC (P)	274	214	327	411	515	628	755	887	-2.44%	2.40%
Blockhouse MUD	4,452	6,175	6,417	6,417	6,417	6,417	6,417	6,417	3.33%	0.06%
Brushy Creek MUD	11,322	12,705	17,636	19,198	19,198	19,198	19,198	19,198	1.16%	0.69%
Cedar Park (P)	25,508	48,448	71,518	79,329	79,329	79,329	79,329	79,329	6.63%	0.83%
Chisholm Trail SUD (P)	11,202	15,519	23,739	29,821	37,396	45,554	54,804	64,369	3.31%	2.40%
Fern Bluff MUD	5,319	5,691	5,932	5,932	5,932	5,932	5,932	5,932	0.68%	0.07%
Florence	1,054	1,136	1,238	1,313	1,407	1,508	1,623	1,742	0.75%	0.72%
Georgetown	28,339	47,400	72,507	91,085	114,220	139,136	167,390	196,604	5.28%	2.40%
Granger	1,299	1,419	1,568	1,678	1,816	1,964	2,132	2,306	0.89%	0.81%
Hutto	1,250	14,698	31,492	43,919	59,394	76,060	94,959	114,500	27.95%	3.48%
Jarrell	614	984	1,446	1,787	2,212	2,670	3,189	3,726	4.83%	2.24%
Jarrell-Schwertner WSC (P)	2,720	2,216	3,389	4,258	5,339	6,504	7,825	9,191	-2.03%	2.40%
Jonah Water SUD	7,962	8,489	12,985	16,312	20,456	24,918	29,978	35,210	0.64%	2.40%
Leander	7,596	25,444	41,071	69,551	115,635	188,502	238,648	293,630	12.85%	4.16%
Liberty Hill	1,409	967	1,479	1,858	2,330	2,838	3,414	4,010	-3.69%	2.40%
Manville WSC (P)	5,273	6,093	9,320	11,708	14,682	17,885	21,517	25,272	1.46%	2.40%
Pflugerville	0	300	458	576	722	880	1,059	1,244		2.40%
Round Rock (P)	60,060	98,525	150,712	189,329	237,417	289,207	347,936	408,660	5.07%	2.40%
Southwest Milam (P)	1,245	1,210	1,850	2,325	2,915	3,551	4,273	5,018	-0.28%	2.40%
Taylor	13,575	15,191	17,209	18,702	20,561	22,563	24,834	27,182	1.13%	0.97%
Thorndale (P)	0	2	3	3	4	5	7	8		2.34%
Thrall	710	839	1,000	1,119	1,267	1,426	1,607	1,794	1.68%	1.27%

Table 2-1. Historical and Projected Population by City/County

City/County	Historical		Projections[1]						Annual Percent Growth	
	2000	2010	2020	2030	2040	2050	2060	2070	2000-2010	2010-2070
Williamson County MUD #10	4	3,047	4,660	5,855	7,342	8,944	10,760	12,638	94.17%	2.40%
Williamson County MUD #11	65	1,872	2,863	3,597	4,510	5,495	6,610	7,764	39.94%	2.40%
Williamson County MUD #9	2,058	2,709	4,143	5,205	6,527	7,951	9,566	11,236	2.79%	2.40%
Williamson-Travis County MUD #1 (P)	4,179	4,617	4,596	4,596	4,596	4,596	4,596	4,596	1.00%	-0.01%
County-Other	12,960	39,689	71,170	88,710	111,606	113,031	147,127	179,249	11.84%	2.54%
Williamson County Total	211,306	366,532	561,755	705,691	884,929	1,077,970	1,296,869	1,523,206	5.66%	2.40%
Young County										
Fort Belknapp WSC (P)	3,349	3,630	3,784	3,993	4,142	4,300	4,454	4,603	0.81%	0.40%
Graham	8,716	8,903	9,281	9,792	10,159	10,546	10,924	11,289	0.21%	0.40%
Newcastle	575	585	610	644	668	693	718	742	0.17%	0.40%
County-Other	1,349	1,686	1,757	1,852	1,923	1,996	2,067	2,136	2.26%	0.40%
Young County Total	13,989	14,804	15,432	16,281	16,892	17,535	18,163	18,770	0.57%	0.40%
Brazos G Total	1,619,716	1,972,449	2,371,064	2,720,696	3,097,007	3,494,544	3,918,197	4,351,042	1.99%	1.33%

Notes:
[1] Projections from Texas Water Development Board
(P) Partial

Figure 2-2. Projected Annual County Growth Rates in the Brazos G Regional Water Planning Area



2.2.1 Revisions to Population Projections

The TWDB and the Brazos G RWPG developed revisions to population projections for specific municipal WUGs in the Brazos G Area for the 2016 Plan. There are 15 new WUGs whose populations have grown sufficiently to be included as WUGs in the 2016 Plan, based on information provided by the TWDB, including Armstrong WSC (Bell County), Deanville WSC (Burleson County), Coryell City WSD (Coryell and McLennan County), Multi-County WSC (Coryell and Hamilton County), Golinda (Falls and McLennan County), Dobbin-Plantersville (Grimes County), G&W WSC (Grimes County), Hill County WSC (Hill County), Crowley (Johnson County), Buckholts (Milam County), Possum Kingdom WSC (Palo Pinto and Stephens County), Thorndale (Williamson County), Williamson County MUD #9, Williamson County MUD #10, and Williamson County MUD #11. In addition, two new WUGs from adjacent regions have service areas in Brazos G including Pflugerville (Williamson County) and Fort Worth (Johnson County). Texas A&M University is a new WUG in Brazos County which was previously considered as part of College Station's population. Approved population revisions are detailed in Table 2-2. WUGs with suggested revisions can be classified into three categories:

1. Requested changes based on correspondence with Municipal WUGs due to build-out projections and other planning documents.

2. Requested changes for consistency with Water Use Survey and calculated consumptive use based on gallons per capita per day (gpcd).
3. Two WUGs were removed including Decordova and Wells Branch MUD. Decordova was removed as a WUG and its population was associated with Acton MUD, which provides retail water supply. Wells Branch MUD was removed as a WUG in Brazos G since all of its service area is in the Region K portion of Williamson County.

Approved population revisions are detailed in Table 2-2. TWDB reviewed the list of WUGs and identified the cause of many of the differences which included:

A. Not all of the WUGs' systems were included in the Water Use Survey (WUS);
B. Some of the non-city WUGs' customers are inside city limits and those shared populations are accounted for in the Cities' populations;
C. A WUG may have overestimated population on the WUS using a higher persons per connection factor (resulting in lower gpcd);
D. The WUS population estimate may have included seasonal population (resulting in lower gpcd); and
E. In some cases, data entry errors were identified.

Table 2-2. TWDB Approved Revisions to the 2016 Population Projections

Plan	County	WUG	Draft and Revised (2016) Population Projection					
			2020	2030	2040	2050	2060	2070
Draft	BELL	439 WSC	5,875	6,139	6,426	6,721	7,010	7,295
Revised	BELL	439 WSC	7,584	8,435	9,318	10,292	11,369	12,559
Draft	BELL	COUNTY-OTHER	6,817	12,806	19,706	26,792	33,746	40,590
Revised	BELL	COUNTY-OTHER	5,166	10,545	16,824	23,205	29,347	35,261
Draft	BELL	PENDLETON WSC	2,730	2,861	3,004	3,151	3,295	3,437
Revised	BELL	PENDLETON WSC	2,075	2,174	2,283	2,395	2,504	2,612
Draft	BELL	SALADO WSC	4,856	5,298	5,780	6,275	6,761	7,239
Revised	BELL	SALADO WSC	5,453	5,950	6,491	7,047	7,592	8,129
Draft	BRAZOS	BRYAN	84,350	93,544	103,066	114,716	127,196	140,956
Revised	BRAZOS	BRYAN	88,434	93,544	119,410	138,980	159,588	181,797
Draft	BRAZOS	COLLEGE STATION	104,052	126,999	150,765	179,841	210,991	245,335
Revised	BRAZOS	COLLEGE STATION	102,140	132,690	141,952	164,492	188,719	215,545
Draft	BRAZOS	COUNTY-OTHER	8,340	9,731	11,326	13,278	15,369	17,675
Revised	BRAZOS	COUNTY-OTHER	6,168	4,040	3,795	4,363	5,249	6,624
Draft	BURLESON	CALDWELL	4,427	4,763	4,976	5,190	5,359	5,498
Revised	BURLESON	CALDWELL	4,896	5,060	5,275	5,312	5,412	5,498
Draft	BURLESON	COUNTY-OTHER	6,279	6,758	7,059	7,363	7,604	7,799
Revised	BURLESON	COUNTY-OTHER	5,341	6,164	6,461	7,119	7,498	7,799
Draft	BURLESON	DEANVILLE WSC	3,129	3,366	3,517	3,668	3,787	3,885

Table 2-2. TWDB Approved Revisions to the 2016 Population Projections

Plan	County	WUG	Draft and Revised (2016) Population Projection					
			2020	2030	2040	2050	2060	2070
Revised	BURLESON	DEANVILLE WSC	3,598	3,663	3,816	3,790	3,840	3,885
Draft	HOOD	ACTON MUD	15,163	16,586	17,606	18,484	19,158	19,675
Revised	HOOD	ACTON MUD	19,725	31,885	39,831	43,891	48,381	53,347
Draft	HOOD	COUNTY-OTHER	28,273	33,484	37,220	40,436	42,909	44,803
Revised	HOOD	COUNTY-OTHER	26,999	22,057	19,285	19,679	18,612	16,269
Draft	HOOD	DECORDOVA	3,288	3,872	4,290	4,650	4,926	5,138
Revised	HOOD	DECORDOVA	-	-	-	-	-	-
Draft	JOHNSON	BURLESON	33,528	38,685	44,006	49,841	56,135	62,871
Revised	JOHNSON	BURLESON	35,167	42,845	50,022	54,635	60,711	68,170
Draft	JOHNSON	COUNTY-OTHER	16,770	18,970	21,240	23,731	26,419	29,293
Revised	JOHNSON	COUNTY-OTHER	15,131	14,810	15,224	13,937	13,843	13,994
Draft	JOHNSON	FORT WORTH						
Revised	JOHNSON	FORT WORTH	-	-	-	5,000	8,000	10,000
Draft	ROBERTSON	COUNTY-OTHER	5,969	7,105	8,150	9,242	10,286	11,297
Revised	ROBERTSON	COUNTY-OTHER	3,890	4,741	5,491	6,228	6,892	7,487
Draft	ROBERTSON	WELLBORN SUD						
Revised	ROBERTSON	WELLBORN SUD	1,804	2,067	2,340	2,673	3,031	3,425
Draft	ROBERTSON	WICKSON CREEK SUD						
Revised	ROBERTSON	WICKSON CREEK SUD	275	297	319	341	363	385
Draft	WILLIAMSON	BLOCKHOUSE MUD	8,326	9,918	11,900	14,035	16,456	18,959
Revised	WILLIAMSON	BLOCKHOUSE MUD	6,417	6,417	6,417	6,417	6,417	6,417
Draft	WILLIAMSON	BRUSHY CREEK MUD	14,432	15,710	17,301	19,015	20,958	22,967
Revised	WILLIAMSON	BRUSHY CREEK MUD	17,636	19,198	19,198	19,198	19,198	19,198
Draft	WILLIAMSON	CEDAR PARK	63,308	80,974	101,850	108,018	108,018	108,018
Revised	WILLIAMSON	CEDAR PARK	81,639	85,666	89,688	89,688	89,688	89,688
Draft	WILLIAMSON	COUNTY-OTHER	70,474	86,753	108,150	147,510	199,135	252,514
Revised	WILLIAMSON	COUNTY-OTHER	71,170	88,710	111,606	113,031	147,127	179,249
Draft	WILLIAMSON	LEANDER	47,733	64,226	84,764	106,883	131,965	157,900
Revised	WILLIAMSON	LEANDER	41,071	69,551	115,635	188,502	238,648	293,630
Draft	WILLIAMSON	WELLS BRANCH MUD	1,073	1,348	1,691	2,060	2,479	2,911
Revised	WILLIAMSON	WELLS BRANCH MUD	-	-	-	-	-	-
Draft	WILLIAMSON	WILLIAMSON-TRAVIS COUNTY MUD#1	7,062	8,872	11,125	13,552	16,304	19,150
Revised	WILLIAMSON	WILLIAMSON-TRAVIS COUNTY MUD#1	4,596	4,596	4,596	4,596	4,596	4,596

2.3 Water Demand Projections

Water demand projections have been compiled for each type of consumptive water use (municipal, manufacturing, steam-electric, mining, irrigation, and livestock); projections for non-consumptive water uses, such as navigation, hydroelectric generation, environmental flows, and recreation, are not presented. As shown in Table 2-3, total water use for the area is projected to increase from 853,170 acft in 2010 to 1,478,731 acft in 2070, a 70 percent increase. The trend in total water use is shown in Figure 2-3. The six types of water use as percentages of total water use are shown for 2010 and 2070 in Figure 2-4. The projections indicate that municipal, manufacturing, mining and steam-electric water use as percentages of the total water use increase from 2010 to 2070, while irrigation, and livestock water use are projected to decrease as percentages of the total. A water demand projection summary sheet for each county, broken down by type of use, is presented in Section 4.

2.3.1 Revisions to Municipal Demand Projections

The TWDB and the Brazos G RWPG developed revisions to municipal demand projections for specific municipal WUGs in the Brazos G Area for the 2016 Plan. Any WUG with a population revision detailed in Table 2-2 would result in a demand revision as well. TWDB requested that water use in the 2016 regional water plans be based on estimates for gallons per capita daily (gpcd) from the 2011 Water Use Surveys, unless evidence suggested that another year or set of years (averaged) would be more appropriate.

2.3.2 Municipal Water Demand

Municipal water use is defined as water that is used by households (e.g., drinking, bathing, food preparation, dishwashing, laundry, flushing toilets, lawn watering and landscaping, swimming pools), commercial establishments, (e.g., restaurants, car washes, hotels, laundromats, and office buildings) and for fire protection, public recreation and sanitation. This type of water must meet safe-drinking water standards as specified by Federal and State laws and regulations.

Table 2-3. Brazos G Area Total Water Demand by Type of Use (acft/yr)

Water Use	Historical		Projections[1]					
	2000	2010	2020	2030	2040	2050	2060	2070
Municipal	311,291	326,414	403,550	451,228	503,717	561,807	627,029	694,265
Manufacturing	60,522	46,131	21,848	24,554	27,270	29,687	32,223	34,977
Steam-Electric	97,921	76,545	239,299	272,711	288,696	322,702	341,364	362,386
Mining	4,382	53,383	61,586	70,381	68,875	70,949	75,038	81,409
Irrigation	232,911	298,754	292,091	284,321	276,847	268,840	262,305	256,044
Livestock	53,222	51,943	49,650	49,650	49,650	49,650	49,650	49,650
Brazos G Total	760,249	853,170	1,068,024	1,152,845	1,215,055	1,303,635	1,387,609	1,478,731

1 Projections from Texas Water Development Board

Figure 2-3. Projected Total Water Demand

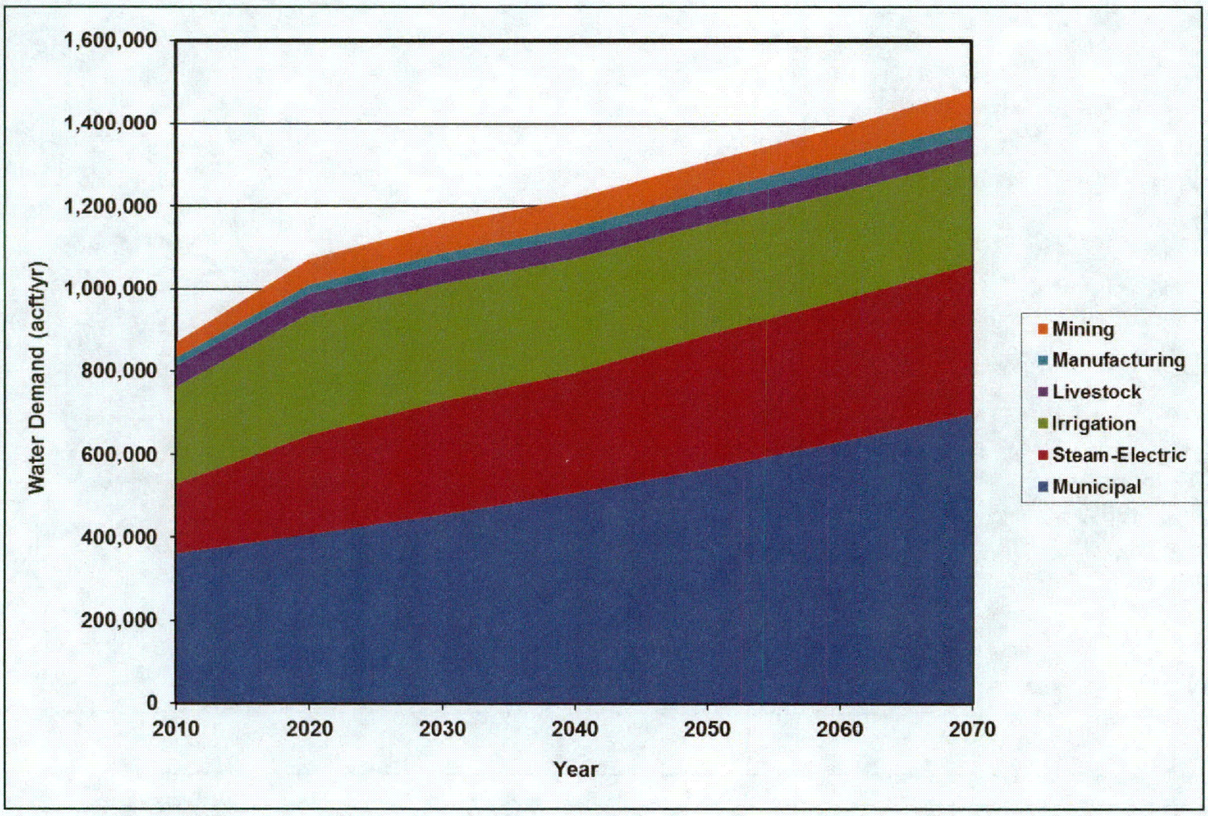
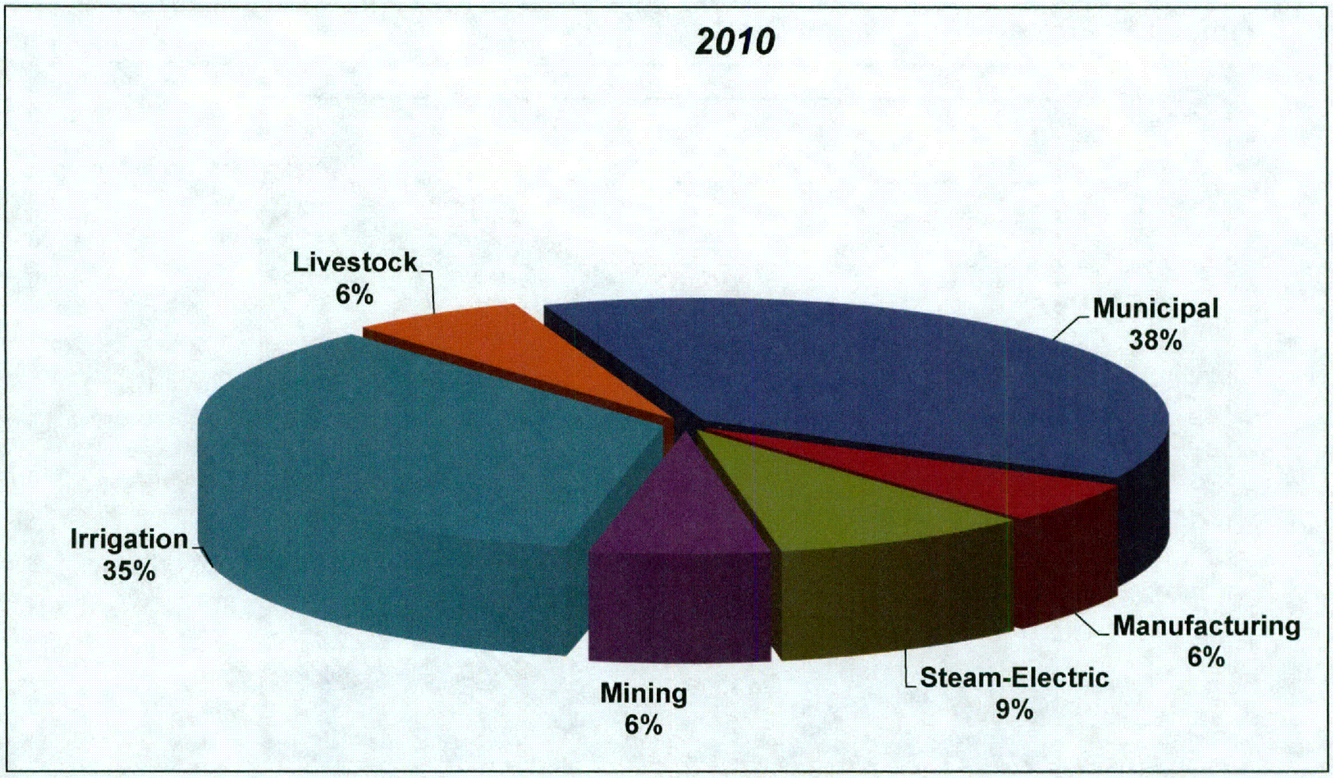
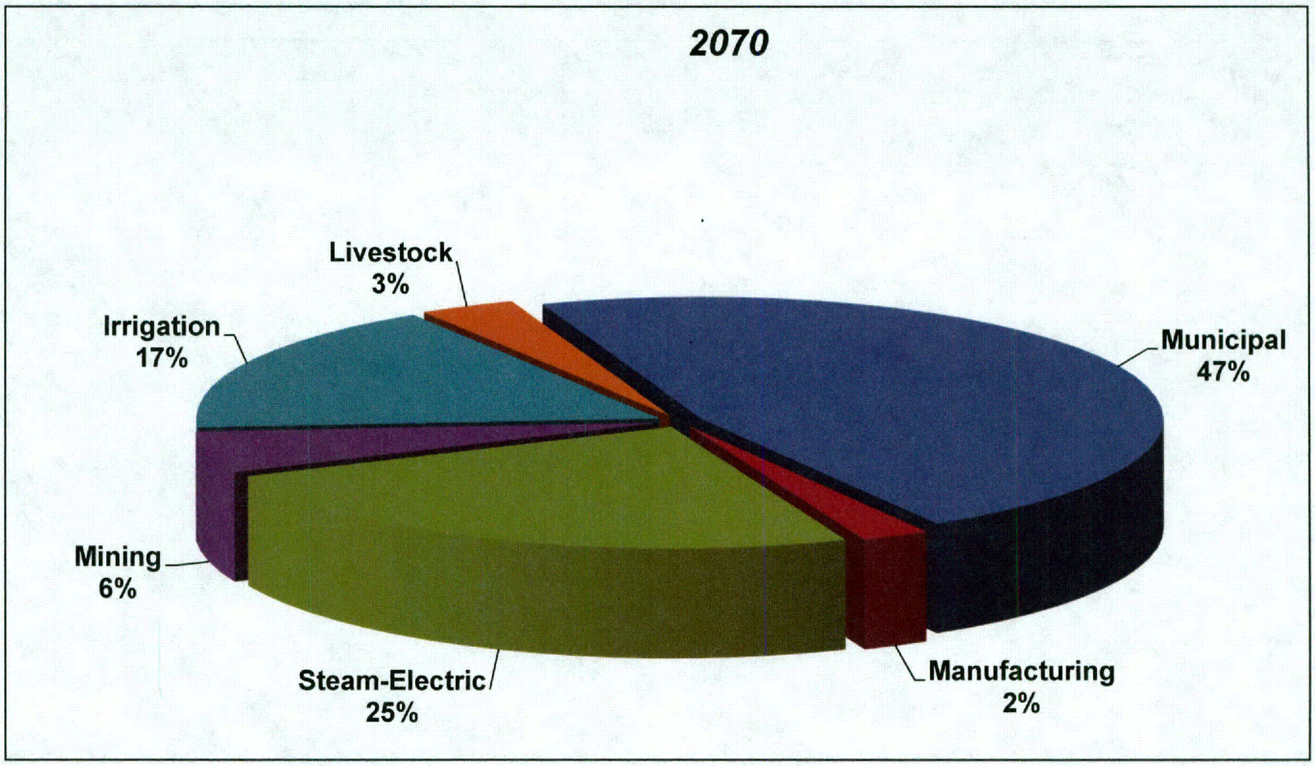


Figure 2-4. Total Water Demand by Type of Use in 2010 and 2070





Municipal water demand projections are computed by multiplying the projected population of an entity by the entity's projected per capita water use, adjusted downward for expected conservation savings due primarily to continued implementation of the 1991 State Water-Efficient Plumbing Act. Full implementation of the Act – retrofit of all existing fixtures with water-efficient fixtures and water-efficient fixtures installed in all new construction – was assumed to occur by Year 2045.

Table 2-4 presents projected per capita water use for water user groups in the Brazos G Area. These per capita water use rates reflect reductions due to implementation of the 1991 State Water-Efficient Plumbing Act. These reductions vary depending on the rural/urban nature of each Water User Group and projected growth, and range from 0 gallons per capita per day (gpcd) to 20 gpcd. Per capita water use varies widely in the Brazos G Area, ranging between 62 gpcd to 487 gpcd. The base year (2011) average gpcd for Brazos G was 146 gpcd. Lower per capita water uses are typically associated with smaller, rural water utilities where outside water use for lawns or landscaping is limited, or is supplemented with individual residential wells and/or stock tanks. Larger per capita water use is typically associated with areas having large suburban residential growth or established urban areas having significant commercial water use, or locations with high seasonal use but smaller year round population (e.g., Texas A&M University). The Conservation Task Force formed by the 78th Texas Legislature has recommended a statewide target per capita water use of 140 gpcd.[1]

Annual municipal water use for the region is projected to increase by 290,715 acft between 2020 and 2070, from 403,350 acft to 694,265 acft, a 72 percent increase. As can be seen in Figure 2-5 seven counties - Bell, Brazos, Coryell, Johnson, McLennan, Taylor, and Williamson - are projected to account for 84 percent of the total municipal water use in 2070. Municipal water use projections for all 37 counties and 234 cities, other utilities, and 'County-Other' in the region are presented in Table 2-5.

The 72 percent projected increase in municipal water demand over the 2020–2070 planning horizon is less than the projected population increase of 83 percent due to expected savings in per capita water use resulting from continued implementation of the 1991 State Water-Efficient Plumbing Act.

[1] Water Conservation Implementation Task Force, Report to the 79th Texas Legislature, Texas Water Development Board, Special Report, Austin, Texas, November 2004.

Table 2-4. Per Capita Water Use for Water User Groups in the Brazos G Regional Water Planning Area (gpcd)

Water User Group	Per Capita Use Rates (GPCD)							Reduction due to Plumbing Fixtures Act (2020 to 2070)
	Base (2011)	2020	2030	2040	2050	2060	2070	
439 WSC	133	123	120	118	117	117	117	6
ABILENE	172	162	158	155	153	153	153	9
ACTON MUD	139	130	125	123	123	123	122	8
ALBANY	258	248	244	241	240	239	239	9
ALVARADO	105	96	92	89	88	87	87	8
ANSON	137	127	123	119	118	118	118	9
AQUA WSC	156	147	143	141	140	140	140	7
ARMSTRONG WSC	168	159	154	151	150	149	149	9
ASPERMONT	250	241	236	233	233	232	232	9
BAIRD	153	144	139	135	135	135	135	9
BARTLETT	181	171	167	164	162	162	161	10
BELLMEAD	115	106	102	99	98	97	97	9
BELL-MILAM FALLS WSC	142	134	130	128	126	126	126	7
BELTON	165	156	152	150	149	148	148	7
BETHANY WSC	93	84	80	77	76	76	76	8
BETHESDA WSC	197	187	183	181	179	179	179	8
BEVERLY HILLS	115	105	101	97	96	96	96	9
BITTER CREEK WSC	128	118	114	110	110	110	110	9
BLOCKHOUSE MUD	126	118	115	114	113	113	113	5
BOSQUE COUNTY-OTHER	132	124	121	119	118	118	118	6
BRANDON-IRENE WSC	128	118	113	110	109	109	109	9
BRAZOS COUNTY-OTHER	142	131	130	130	129	128	128	3
BRECKENRIDGE	161	152	147	144	142	142	142	9
BREMOND	174	164	159	156	155	155	155	9
BRENHAM	219	210	206	203	202	202	202	8
BRUCEVILLE-EDDY	174	165	161	158	157	156	156	9
BRUSHY CREEK MUD	231	221	218	217	216	216	215	6
BRYAN	168	158	155	152	151	151	151	8
BUCKHOLTS	118	111	108	105	103	103	104	7
BURLESON	143	135	132	130	129	129	129	6
BURLESON COUNTY-OTHER	114	103	97	97	97	96	96	7

Table 2-4. Per Capita Water Use for Water User Groups in the Brazos G Regional Water Planning Area (gpcd)

Water User Group	Per Capita Use Rates (GPCD)							Reduction due to Plumbing Fixtures Act (2020 to 2070)
	Base (2011)	2020	2030	2040	2050	2060	2070	
CALDWELL	197	187	184	182	180	180	180	7
CALLAHAN COUNTY-OTHER	80	71	67	64	63	62	62	8
CALVERT	152	142	137	135	135	134	134	8
CAMERON	216	206	202	198	197	197	197	10
CEDAR PARK	197	190	188	187	187	186	186	3
CHALK BLUFF WSC	99	91	87	84	83	82	82	8
CHILDRESS CREEK WSC	147	138	134	132	130	130	130	8
CHISHOLM TRAIL SUD	174	166	164	163	162	162	162	4
CISCO	168	159	155	151	149	149	149	10
CLEBURNE	172	163	159	156	155	155	155	8
CLIFTON	173	163	159	156	154	154	154	9
CLYDE	82	73	69	66	64	64	64	9
COLEMAN COUNTY SUD	120	112	109	105	102	105	106	6
COLLEGE STATION	177	168	164	162	161	160	160	7
COMANCHE	113	103	99	96	94	94	94	10
COMANCHE COUNTY-OTHER	103	94	90	86	85	84	84	9
COOLIDGE	156	147	143	141	140	139	139	7
COPPERAS COVE	116	106	102	99	98	98	98	8
CORYELL CITY WATER SUPPLY DISTRICT	154	146	143	141	140	140	140	6
CORYELL COUNTY-OTHER	114	105	103	103	102	102	102	3
CRAWFORD	191	183	178	175	173	173	173	10
CRESSON	143	137	133	131	129	130	130	7
CROSS COUNTRY WSC	158	150	147	144	143	142	142	8
CROSS PLAINS	162	152	148	144	144	143	143	9
CROWLEY	141	146	130	129	131	130	128	18
DE LEON	95	85	81	78	76	76	76	9
DEANVILLE WSC	121	115	115	115	115	115	115	1
DOBBIN-PLANTERSVILLE WSC	76	69	67	66	65	65	65	4
DOG RIDGE WSC	135	124	120	117	116	115	115	9
DUBLIN	94	84	80	76	75	75	75	9
EAST BELL WSC	118	109	106	103	102	102	101	8

Table 2-4. Per Capita Water Use for Water User Groups in the Brazos G Regional Water Planning Area (gpcd)

Water User Group	Per Capita Use Rates (GPCD)							Reduction due to Plumbing Fixtures Act (2020 to 2070)
	Base (2011)	2020	2030	2040	2050	2060	2070	
EASTLAND	150	141	137	134	132	131	131	9
EASTLAND COUNTY-OTHER	90	81	77	73	72	71	71	9
ELM CREEK WSC	104	96	92	91	90	89	89	6
ERATH COUNTY-OTHER	134	125	121	119	118	117	117	8
FALLS COUNTY-OTHER	123	113	109	105	105	104	104	9
FERN BLUFF MUD	190	183	181	180	179	179	179	4
FILES VALLEY WSC	146	137	133	131	129	129	129	8
FISHER COUNTY-OTHER	113	104	99	96	96	95	95	9
FLORENCE	95	86	82	79	78	78	78	8
FORT BELKNAPP WSC	107	99	96	94	92	92	92	7
FORT HOOD	215	204	200	197	197	197	196	8
FORT WORTH	185	176	172	170	170	170	169	6
FRANKLIN	142	132	128	125	124	124	123	9
G & W WSC	112	104	101	100	99	99	99	5
GATESVILLE	229	220	216	213	212	212	212	8
GEORGETOWN	205	196	194	193	192	192	192	4
GHOLSON	126	118	114	112	110	110	110	8
GIDDINGS	188	178	174	171	170	170	170	8
GLEN ROSE	200	191	187	184	183	183	183	8
GODLEY	99	91	87	86	85	84	84	7
GOLINDA	95	88	85	83	81	80	81	7
GORMAN	88	79	74	71	70	70	70	9
GRAFORD	95	86	81	79	77	77	77	9
GRAHAM	266	256	252	249	247	247	247	10
GRANBURY	115	106	103	101	100	100	100	6
GRANDVIEW	102	93	89	86	85	85	84	8
GRANGER	130	121	117	114	112	112	112	9
GRIMES COUNTY-OTHER	136	126	122	118	118	117	117	9
GROESBECK	149	140	137	134	132	132	132	8
HALLSBURG	141	133	128	124	124	123	123	10
HAMILTON	162	153	149	146	144	144	144	10

Table 2-4. Per Capita Water Use for Water User Groups in the Brazos G Regional Water Planning Area (gpcd)

Water User Group	Per Capita Use Rates (GPCD)							Reduction due to Plumbing Fixtures Act (2020 to 2070)
	Base (2011)	2020	2030	2040	2050	2060	2070	
HAMILTON COUNTY-OTHER	121	111	107	103	103	103	103	9
HAMLIN	178	168	163	160	160	160	159	9
HARKER HEIGHTS	182	174	171	169	168	167	167	6
HASKELL	148	139	135	131	130	129	129	10
HASKELL COUNTY-OTHER	129	119	114	112	112	111	111	8
HAWLEY	109	99	95	92	90	90	91	9
HAWLEY WSC	78	69	65	63	61	61	61	8
HEARNE	161	152	147	143	143	142	142	9
HEWITT	165	156	152	149	148	148	148	8
HICO	125	116	112	109	107	106	106	10
HILL COUNTY WSC	128	121	119	117	117	116	116	5
HILL COUNTY-OTHER	106	99	98	97	96	96	96	4
HILLSBORO	200	190	186	183	182	182	182	9
HOLLAND	97	88	84	81	79	78	78	10
HOOD COUNTY-OTHER	102	93	88	88	88	87	87	6
HUBBARD	98	88	84	80	80	79	79	8
HUTTO	113	107	105	105	105	105	105	2
ITASCA	88	79	75	72	70	70	70	9
JARRELL	76	67	64	63	63	62	62	5
JARRELL-SCHWERTNER WSC	133	121	118	115	114	114	114	7
JAYTON	164	156	150	147	147	145	145	10
JOHNSON COUNTY SUD	124	115	111	109	108	108	108	7
JOHNSON COUNTY-OTHER	103	95	92	90	89	89	89	6
JONAH WATER SUD	137	126	123	121	120	120	120	6
JONES COUNTY-OTHER	119	112	110	108	107	107	107	5
JOSHUA	127	118	114	112	111	110	110	7
KEENE	70	61	60	60	60	60	60	1
KEMPNER	158	149	147	144	143	143	143	7
KEMPNER WSC	164	156	153	151	150	150	150	6
KENT COUNTY-OTHER	118	109	104	104	104	104	104	6
KILLEEN	122	113	110	108	107	107	107	6

Table 2-4. Per Capita Water Use for Water User Groups in the Brazos G Regional Water Planning Area (gpcd)

Water User Group	Per Capita Use Rates (GPCD)							Reduction due to Plumbing Fixtures Act (2020 to 2070)
	Base (2011)	2020	2030	2040	2050	2060	2070	
KNOX CITY	195	185	180	178	178	177	177	8
KNOX COUNTY-OTHER	102	92	87	85	84	84	84	8
LACY-LAKEVIEW	106	97	94	92	91	90	90	7
LAMPASAS	154	144	139	136	135	135	135	9
LAMPASAS COUNTY-OTHER	131	120	119	119	118	117	118	2
LEANDER	114	107	105	104	104	104	104	3
LEE COUNTY WSC	122	113	110	108	107	107	107	7
LEE COUNTY-OTHER	104	93	88	87	87	86	86	7
LEXINGTON	169	159	155	153	151	151	151	9
LIBERTY HILL	106	95	92	91	90	90	89	6
LIMESTONE COUNTY-OTHER	94	85	81	78	76	76	76	9
LITTLE RIVER-ACADEMY	160	151	147	144	143	143	143	8
LOMETA	177	168	164	161	160	160	159	9
LORENA	154	145	141	139	138	138	137	8
LOTT	91	81	77	74	73	72	72	9
MANSFIELD	252	245	242	241	240	240	240	5
MANVILLE WSC	148	139	136	135	134	134	134	5
MARLIN	254	244	239	236	235	235	235	9
MART	142	133	128	126	124	124	123	9
MCGREGOR	146	137	133	129	128	127	127	9
MCLENNAN COUNTY-OTHER	123	114	110	107	105	105	105	9
MERIDIAN	129	119	115	112	111	110	110	9
MERKEL	120	111	106	103	101	101	101	9
MEXIA	70	60	60	60	60	60	60	0
MILAM COUNTY-OTHER	122	110	108	108	107	107	107	3
MILANO WSC	110	101	98	95	94	94	94	8
MINERAL WELLS	155	146	142	139	137	137	137	9
MOFFAT WSC	113	104	101	98	97	96	96	8
MOODY	124	115	110	107	105	105	105	10
MORGANS POINT RESORT	111	103	99	98	97	97	97	6
MOUNTAIN PEAK SUD	290	280	277	275	274	274	273	7

Table 2-4. Per Capita Water Use for Water User Groups in the Brazos G Regional Water Planning Area (gpcd)

Water User Group	Per Capita Use Rates (GPCD)							Reduction due to Plumbing Fixtures Act (2020 to 2070)
	Base (2011)	2020	2030	2040	2050	2060	2070	
MULTI-COUNTY WSC	95	87	83	81	79	79	79	8
MUNDAY	180	170	165	162	162	162	162	8
NAVASOTA	184	175	171	168	166	166	166	9
NEWCASTLE	97	88	85	82	79	78	78	10
NOLAN COUNTY-OTHER	114	104	100	97	96	95	95	9
NOLANVILLE	212	204	201	199	199	199	199	5
NORTH BOSQUE WSC	235	227	224	222	221	221	221	6
OAK TRAIL SHORES SUBDIVISION	111	102	99	96	94	94	94	8
PALO PINTO COUNTY-OTHER	93	83	79	75	74	74	74	9
PARKER WSC	104	95	92	89	89	88	89	7
PENDLETON WSC	116	105	101	100	99	99	99	7
PFLUGERVILLE	155	148	147	146	146	146	146	2
POSSUM KINGDOM WSC	392	383	379	376	375	375	375	8
POTOSI WSC	146	138	135	133	132	131	131	7
RANGER	171	161	157	153	153	152	152	9
RIESEL	126	117	114	111	109	108	109	9
RIO VISTA	133	124	120	118	117	117	117	7
RISING STAR	112	103	99	96	94	94	94	9
ROBERTSON COUNTY WSC	81	72	68	66	64	64	64	8
ROBERTSON COUNTY-OTHER	111	101	96	96	95	95	95	6
ROBINSON	181	172	168	166	165	165	165	7
ROBY	175	167	163	160	158	157	157	10
ROCKDALE	184	175	170	167	165	165	165	9
ROGERS	127	118	114	111	109	109	109	9
ROSCOE	137	127	123	119	118	118	118	9
ROSEBUD	111	101	96	93	93	93	93	8
ROTAN	114	105	100	97	96	96	96	9
ROUND ROCK	152	143	141	139	139	139	138	5
RULE	133	125	119	116	116	116	116	9
SALADO WSC	292	283	280	277	276	276	276	6
SHACKELFORD COUNTY-OTHER	99	90	85	81	80	80	80	9

Table 2-4. Per Capita Water Use for Water User Groups in the Brazos G Regional Water Planning Area (gpcd)

Water User Group	Per Capita Use Rates (GPCD)							Reduction due to Plumbing Fixtures Act (2020 to 2070)
	Base (2011)	2020	2030	2040	2050	2060	2070	
SNOOK	307	298	293	289	288	289	288	10
SOMERVELL COUNTY-OTHER	117	109	106	104	102	102	102	7
SOMERVILLE	170	160	155	152	152	152	152	8
SOUTHWEST MILAM WSC	152	144	140	137	136	136	136	8
STAMFORD	237	227	223	219	218	218	218	9
STEAMBOAT MOUNTAIN WSC	84	76	73	72	70	70	70	6
STEPHENS COUNTY-OTHER	105	96	92	89	88	87	87	9
STEPHENS REGIONAL SUD	107	98	94	91	89	89	89	10
STEPHENVILLE	134	125	121	118	117	116	116	8
STONEWALL COUNTY-OTHER	116	106	101	101	99	99	99	6
STRAWN	182	172	169	165	164	163	163	10
SWEETWATER	153	143	138	135	134	134	134	9
TAYLOR	157	147	143	141	139	139	139	8
TAYLOR COUNTY-OTHER	113	103	99	95	95	95	95	8
TEMPLE	229	219	216	214	213	212	212	7
TEXAS A & M UNIVERSITY	487	476	472	469	468	468	468	8
THORNDALE	125	116	112	109	108	107	107	9
THORNTON	126	118	114	110	108	108	107	11
THRALL	89	79	76	74	73	72	72	7
THROCKMORTON	205	196	191	188	188	187	187	9
THROCKMORTON COUNTY-OTHER	96	86	81	81	81	81	81	5
TOLAR	134	125	121	119	118	117	117	8
TRI-COUNTY SUD	119	110	106	103	101	101	101	9
TROY	90	81	77	74	73	72	72	8
TUSCOLA	97	89	85	82	80	80	80	9
TYE	134	125	121	118	116	116	116	9
VALLEY MILLS	184	175	171	168	166	166	166	9
VENUS	174	167	165	163	163	162	162	5
WACO	220	211	207	204	202	202	202	9
WALNUT SPRINGS	103	94	90	87	85	86	86	8
WASHINGTON COUNTY-OTHER	124	115	111	108	106	106	106	9

Table 2-4. Per Capita Water Use for Water User Groups in the Brazos G Regional Water Planning Area (gpcd)

Water User Group	Per Capita Use Rates (GPCD)							Reduction due to Plumbing Fixtures Act (2020 to 2070)
	Base (2011)	2020	2030	2040	2050	2060	2070	
WELLBORN SUD	186	176	173	172	171	170	170	6
WEST	160	151	147	144	142	142	142	9
WEST BELL COUNTY WSC	149	138	134	131	131	130	130	7
WEST BRAZOS WSC	138	128	123	120	120	119	119	9
WESTERN HILLS WS	62	60	60	60	60	60	60	0
WHITE BLUFF COMMUNITY WS	198	192	190	189	188	188	188	4
WHITNEY	180	171	167	165	163	163	163	8
WICKSON CREEK SUD	99	91	89	87	86	86	85	5
WILLIAMSON COUNTY MUD #10	196	191	190	189	189	189	189	2
WILLIAMSON COUNTY MUD #11	185	180	178	178	178	178	178	2
WILLIAMSON COUNTY MUD #9	188	180	177	176	176	176	176	4
WILLIAMSON COUNTY-OTHER	148	139	135	134	133	133	133	6
WILLIAMSON-TRAVIS COUNTY MUD #1	126	116	113	112	111	111	111	5
WOODROW-OSCEOLA WSC	92	82	77	74	74	74	74	8
WOODWAY	352	342	338	334	333	333	333	10
YOUNG COUNTY-OTHER	119	109	104	102	102	101	101	8
Minimum	**62**	**60**	**60**	**60**	**60**	**60**	**60**	
Maximum	**487**	**476**	**472**	**469**	**468**	**468**	**468**	
Mean	**146**	**137**	**133**	**131**	**130**	**130**	**130**	

Figure 2-5. Municipal Water Demand Projections

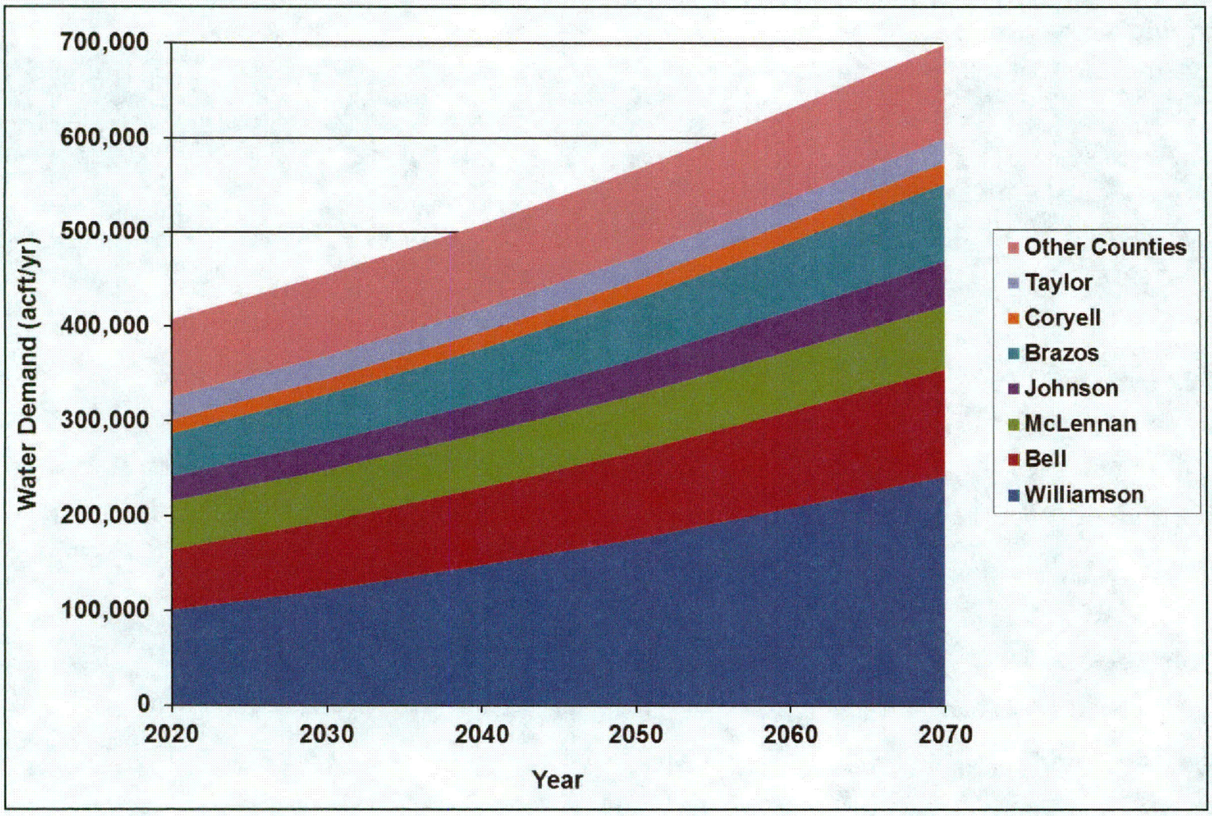


Table 2-5. Projected Municipal Water Demand by WUG/County in the Brazos G Area (acft/yr)

City/County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Bell County						
439 WSC	1,044	1,134	1,233	1,351	1,489	1,644
Armstrong WSC	406	418	434	454	478	502
Bartlett (P)	159	179	202	226	252	277
Bell-Milam-Falls WSC (P)	344	356	371	390	411	432
Belton	3,807	4,306	4,872	5,480	6,099	6,715
Chisholm Trail SUD (P)	553	632	721	814	906	998
Dog Ridge WSC	438	488	547	613	682	751
East Bell County WSC (P)	442	497	560	630	702	775
Elm Creek WSC (P)	254	288	327	370	413	457
Fort Hood CDP (P)	3,954	3,870	3,815	3,810	3,804	3,804
Harker Heights	6,224	7,079	8,042	9,061	10,087	11,106
Holland	112	108	106	105	106	107
Jarrell-Schwertner WSC (P)	186	209	235	264	294	324

Table 2-5. Projected Municipal Water Demand by WUG/County in the Brazos G Area (acft/yr)

City/County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Kempner WSC (P)	350	398	451	507	565	622
Killeen	19,467	21,902	24,713	27,748	30,864	33,969
Little River-Academy	377	409	447	490	534	578
Moffat WSC	479	481	487	500	517	536
Morgans Point Resort	595	684	787	897	1,009	1,121
Nolanville	1,382	1,749	2,154	2,575	2,991	3,401
Pendleton WSC	245	246	255	266	277	289
Rodgers	172	177	183	192	202	213
Salado WSC	1,726	1,863	2,017	2,182	2,348	2,514
Temple	19,485	22,186	25,212	28,415	31,644	34,842
Troy	169	180	193	209	228	247
West Bell County WSC	789	816	800	798	797	797
County-Other	870	1,716	2,711	3,733	4,719	5,668
Bell County Total	64,029	72,371	81,875	92,080	102,418	112,689
Bosque County						
Childress Creek WSC	410	436	446	453	459	464
Clifton	700	745	763	775	786	793
Cross Country WSC (P)	124	132	135	138	139	141
Meridian	222	234	238	241	244	246
Valley Mills (P)	259	276	284	288	293	295
Walnut Springs	97	101	102	103	105	106
County-Other	1,271	1,357	1,395	1,420	1,440	1,453
Bosque County Total	3,083	3,281	3,363	3,418	3,466	3,498
Brazos County						
Bryan	15,696	16,243	20,342	23,492	26,926	30,652
College Station	19,178	24,320	25,726	29,619	33,927	38,728
Texas A&M University	6,322	6,350	6,309	6,292	6,289	6,288
Wellborn SUD	1,837	2,070	2,318	2,634	2,982	3,368
Wickson Creek SUD (P)	991	1,155	1,332	1,558	1,809	2,088
County-Other	904	590	551	629	752	947
Brazos County Total	44,928	50,728	56,578	64,224	72,685	82,071
Burleson County						

Table 2-5. Projected Municipal Water Demand by WUG/County in the Brazos G Area (acft/yr)

City/County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Caldwell	1,027	1,043	1,073	1,073	1,091	1,108
Deanville WSC	465	471	490	487	493	499
Milano WSC (P)	212	220	224	231	237	243
Snook	184	195	201	209	216	221
Somerville	266	277	285	296	305	313
Southwest Milam WSC (P)	129	135	138	143	147	151
County-Other	615	673	703	771	809	841
Burleson County Total	2,898	3,014	3,114	3,210	3,298	3,376
Callahan County						
Baird	241	233	227	226	226	226
Clyde	324	327	325	323	326	329
Coleman County WSC (P)	20	21	21	21	21	22
Cross Plains	179	186	188	191	193	194
Potosi WSC (P)	12	13	13	13	13	13
County-Other	613	627	628	627	634	639
Callahan County Total	1,389	1,407	1,402	1,401	1,413	1,423
Comanche County						
Comanche	521	519	515	522	535	548
De Leon	223	220	216	219	224	230
County-Other	805	800	791	800	819	839
Comanche County Total	1,549	1,539	1,522	1,541	1,578	1,617
Coryell County						
Copperas Cove (P)	4,266	4,655	5,133	5,586	6,122	6,666
Coryell City Water Supply District	809	899	1,006	1,101	1,208	1,316
Elm Creek WSC (P)	44	48	54	58	64	70
Fort Hood CDP (P)	3,672	3,679	3,627	3,622	3,617	3,616
Gatesville	4,424	4,939	5,532	6,066	6,658	7,253
Kempner WSC	541	602	674	738	810	882
Multi-County WSC (P)	278	302	333	362	396	431
County-Other	564	838	1,195	1,507	1,840	2,172
Coryell County Total	14,598	15,962	17,554	19,040	20,715	22,406
Eastland County						

Table 2-5. Projected Municipal Water Demand by WUG/County in the Brazos G Area (acft/yr)

City/County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Cisco	719	716	701	693	691	691
Eastland	648	643	629	621	619	619
Gorman	99	95	91	90	90	90
Ranger	463	460	450	448	447	447
Rising Star	100	98	95	93	93	93
Stephens Regional SUD (P)	14	14	14	13	13	13
County-Other	583	565	542	529	527	527
Eastland County Total	2,626	2,591	2,522	2,487	2,480	2,480
Erath County						
Dublin	382	403	421	444	472	499
Stephenville	2,659	2,867	3,047	3,241	3,448	3,645
County-Other	2,665	2,880	3,066	3,264	3,472	3,671
Erath County Total	5,706	6,150	6,534	6,949	7,392	7,815
Falls County						
Bell-Milam-Falls WSC (P)	195	200	198	191	197	203
Burceville-Eddy (P)	1	1	1	1	1	1
East Bell County WSC (P)	40	41	40	39	40	41
Golinda	44	44	44	42	43	45
Lott	75	75	73	70	71	73
Marlin	1,771	1,827	1,820	1,772	1,823	1,878
Rosebud	173	174	170	165	170	175
Tri-County SUD (P)	350	355	348	335	344	354
West Brazos WSC (P)	213	215	212	206	212	218
County-Other	526	531	520	504	518	533
Falls County Total	3,388	3,463	3,426	3,325	3,419	3,521
Fisher County						
Bitter Creek WSC (P)	112	108	104	104	104	104
Roby	121	118	116	115	114	114
Rotan	178	170	165	164	163	163
County-Other	115	110	106	106	105	105
Fisher County Total	526	506	491	489	486	486
Grimes County						

Table 2-5. Projected Municipal Water Demand by WUG/County in the Brazos G Area (acft/yr)

City/County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Dobbin-Plantersville WSC	182	205	223	243	260	276
G&W WSC	436	568	669	779	871	952
Navasota	1,428	1,439	1,446	1,466	1,493	1,518
Wickson Creek SUD (P)	343	359	372	389	405	419
County-Other	1,789	1,804	1,810	1,865	1,911	1,955
Grimes County Total	4,178	4,375	4,520	4,742	4,940	5,120
Hamilton County						
Hamilton	534	529	517	511	510	510
Hico	180	176	171	168	167	167
Multi-County WSC (P)	66	65	63	62	62	62
County-Other	423	411	397	395	394	394
Hamilton County Total	1,203	1,181	1,148	1,136	1,133	1,133
Haskell County						
Haskell	519	509	498	496	502	513
Rule	89	86	84	85	86	88
Stamford (P)	9	9	9	9	9	9
County-Other	255	247	243	245	248	253
Haskell County Total	872	851	834	835	845	863
Hill County						
Brandon-Irene WSC (P)	256	262	265	273	281	287
Hill County WSC	425	444	457	473	486	497
Files Valley WSC (P)	405	419	428	441	453	463
Hillsboro	1,945	2,027	2,077	2,144	2,204	2,255
Hubbard	151	153	152	158	162	166
Itasca	156	158	158	161	165	168
Johnson County SUD (P)	29	29	30	31	32	33
Parker WSC (P)	32	33	33	34	35	36
White Bluff Community WS	434	458	474	491	505	517
Whitney	431	449	461	475	488	500
Woodrow-Osceola WSC	384	385	388	402	412	421
County-Other	968	1,011	1,042	1,077	1,105	1,131
Hill County Total	5,616	5,828	5,965	6,160	6,328	6,474

Table 2-5. Projected Municipal Water Demand by WUG/County in the Brazos G Area (acft/yr)

City/County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Hood County						
Acton MUD (P)	2,862	4,460	5,497	6,024	6,631	7,308
Cresson (P)	56	76	89	101	111	118
Granbury	1,216	1,432	1,586	1,725	1,837	1,925
Oak Trail Shores Subdivision	357	351	345	344	345	348
Tolar	120	139	153	166	176	184
County-Other	2,823	2,184	1,903	1,933	1,819	1,588
Hood County Total	7,434	8,642	9,573	10,293	10,919	11,471
Johnson County						
Acton MUD (P)	56	76	98	122	149	177
Alvarado	456	493	536	589	653	722
Bethany WSC	367	396	430	472	524	581
Bethesda WSC (P)	3,259	3,679	4,126	4,641	5,218	5,841
Burleson (P)	5,315	6,333	7,298	7,920	8,782	9,855
Cleburne	5,927	6,446	7,010	7,678	8,445	9,276
Cresson (P)	24	31	39	47	57	67
Crowley	10	14	19	25	31	37
Fort Worth	0	0	0	951	1,520	1,899
Godley	115	125	137	151	167	184
Grandview	182	197	214	234	260	287
Johnson County SUD (P)	4,808	5,379	5,999	6,728	7,557	8,457
Joshua	951	1,115	1,292	1,494	1,722	1,968
Keene	487	564	648	741	842	949
Mansfield (P)	721	1,024	1,337	1,681	2,055	2,455
Mountain Peak SUD (P)	613	737	868	1,013	1,172	1,342
Parker WSC (P)	333	402	475	559	652	753
Rio Vista	150	178	207	241	279	320
Venus (P)	624	710	801	904	1,016	1,137
County-Other	1,613	1,529	1,534	1,391	1,377	1,391
Johnson County Total	26,011	29,428	33,068	37,582	42,478	47,698
Jones County						
Abilene (P)	992	1,023	1,041	1,062	1,087	1,109

Table 2-5. Projected Municipal Water Demand by WUG/County in the Brazos G Area (acft/yr)

City/County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Anson	367	375	378	388	397	405
Hamlin	424	436	445	458	469	478
Hawley	75	76	76	77	79	81
Hawley WSC (P)	383	383	381	383	391	399
Stamford (P)	834	865	885	910	932	951
County-Other	279	289	296	303	310	316
Jones County Total	3,354	3,447	3,502	3,581	3,665	3,739
Kent County						
Jayton	92	91	89	89	88	88
County-Other	33	32	32	32	32	32
Kent County Total	125	123	121	121	120	120
Knox County						
Knox City	242	245	248	253	257	261
Munday	256	259	260	266	270	274
County-Other	138	135	134	137	139	141
Knox County Total	636	639	642	656	666	676
Lampasas County						
Copperas Cove (P)	126	182	222	265	304	340
Kempner	202	219	231	246	259	272
Kempner WSC (P)	1,539	1,669	1,770	1,882	1,987	2,084
Lampasas	1,193	1,278	1,343	1,421	1,500	1,573
Lometa	179	193	203	216	228	239
County-Other	317	292	275	256	240	227
Lampasas County Total	3,556	3,833	4,044	4,286	4,518	4,735
Lee County						
Aqua WSC (P)	466	511	536	544	551	555
Giddings	1,120	1,231	1,289	1,307	1,324	1,334
Lee County WSC (P)	908	991	1,035	1,048	1,060	1,067
Lexington	242	265	277	281	284	286
Southwest Milam WSC (P)	48	53	55	56	56	57
County-Other	195	207	218	222	224	226
Lee County Total	2,979	3,258	3,410	3,458	3,499	3,525

Table 2-5. Projected Municipal Water Demand by WUG/County in the Brazos G Area (acft/yr)

City/County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Limestone County						
Coolidge	180	195	207	222	235	247
Groesbeck	688	677	668	665	668	672
Mart (P)	1	2	2	2	2	3
Mexia	581	648	702	762	810	853
Thornton	70	68	66	65	65	65
Tri-County SUD (P)	136	134	133	133	134	136
County-Other	892	878	867	871	886	902
Limestone County Total	2,548	2,602	2,645	2,720	2,800	2,878
McLennan County						
Bellmead	1,241	1,269	1,296	1,339	1,397	1,457
Beverly Hills	252	261	268	281	297	312
Bruceville-Eddy (P)	292	307	322	338	357	376
Chalk Bluff WSC	269	258	249	245	244	244
Coryell City Water Supply District (P)	125	147	166	186	207	227
Crawford	149	147	147	147	149	151
Cross County WSC (P)	409	406	403	405	409	413
Elm Creek WSC (P)	200	221	241	262	285	308
Gholson	155	167	178	190	204	218
Golinda	19	24	28	32	36	40
Hallsburg	81	84	87	92	97	102
Hewitt	2,711	3,036	3,329	3,643	3,975	4,305
Lacy-Lakeview	772	817	859	908	966	1,025
Lorena	309	339	367	396	429	461
Mart (P)	352	368	383	401	423	445
McGregor	796	808	820	840	869	899
Moody	189	196	202	211	223	235
North Bosque WSC	619	751	870	990	1,112	1,233
Riesel	136	136	136	137	140	144
Robinson	2,437	2,855	3,229	3,618	4,020	4,418
Tri-County SUD (P)	21	23	25	28	31	33
Valley Mills (P)	5	7	8	10	11	13

Table 2-5. Projected Municipal Water Demand by WUG/County in the Brazos G Area (acft/yr)

City/County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Waco	31,576	33,377	35,005	36,840	38,861	40,887
West	490	495	500	509	523	538
West Brazos WSC (P)	186	193	201	212	224	236
Western Hills WS	212	226	238	250	262	274
Woodway	3,477	3,703	3,905	4,129	4,362	4,594
County-Other	3,533	3,409	3,306	3,249	3,236	3,233
McLennan County Total	51,013	54,030	56,768	59,888	63,349	66,821
Milam County						
Bell-Milam-Falls WSC (P)	255	264	269	279	290	300
Buckholts	68	70	71	73	76	79
Cameron	1,359	1,409	1,441	1,500	1,556	1,612
Milano WSC (P)	220	225	228	236	244	253
Rockdale	1,159	1,198	1,222	1,269	1,317	1,364
Southwest Milam WSC (P)	1,021	1,055	1,078	1,121	1,163	1,204
Thorndale	184	188	190	197	204	211
County-Other	300	313	324	339	351	364
Milam County Total	4,566	4,722	4,823	5,014	5,201	5,387
Nolan County						
Bitter Creek WSC (P)	162	164	165	170	175	179
Roscoe	200	204	205	211	217	222
Sweetwater	1,852	1,893	1,913	1,977	2,030	2,079
County-Other	228	231	232	237	243	249
Nolan County Total	2,442	2,492	2,515	2,595	2,665	2,729
Palo Pinto County						
Graford	61	62	63	64	66	67
Mineral Wells (P)	2,593	2,708	2,775	2,856	2,935	3,002
Possum Kingdom WSC	777	826	858	889	915	936
Stephens Regional SUD (P)	5	5	5	5	5	5
Strawn	137	144	147	152	156	159
County-Other	1,063	1,079	1,082	1,111	1,140	1,165
Palo Pinto County Total	4,636	4,824	4,930	5,077	5,217	5,334
Robertson County						

Table 2-5. Projected Municipal Water Demand by WUG/County in the Brazos G Area (acft/yr)

City/County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Bremond	189	201	213	229	244	260
Calvert	190	183	180	180	179	179
Franklin	256	272	288	307	328	348
Hearne	757	734	715	713	711	711
Robertson County WSC	246	256	267	282	300	319
Tri-County SUD (P)	115	121	128	136	145	154
Wellborn SUD (P)	356	401	450	511	578	653
Wickson Creek SUD (P)	28	30	31	33	35	37
County-Other	439	512	589	665	734	796
Robertson County Total	2,576	2,710	2,861	3,056	3,254	3,457
Shackelford County						
Albany	640	673	662	662	661	661
Stephens Regional SUD (P)	2	2	2	2	2	2
County-Other	125	113	108	107	107	107
Shackelford County Total	767	788	772	771	770	770
Somervell County						
Glen Rose	583	638	677	709	738	763
County-Other	822	892	941	982	1,022	1,056
Somervell County Total	1,405	1,530	1,618	1,691	1,760	1,819
Stephens County						
Breckenridge	1,012	1,020	1,013	1,011	1,017	1,022
Fort Belknapp WSC (P)	6	6	6	6	6	6
Possum Kingdom WSC (P)	33	34	34	34	34	35
Stephens Regional SUD (P)	262	260	255	253	254	255
County-Other	156	155	152	151	152	152
Stephens County Total	1,469	1,475	1,460	1,455	1,463	1,470
Stonewall County						
Aspermont	250	245	242	242	241	241
County-Other	68	65	65	64	64	64
Stonewall County Total	318	310	307	306	305	305
Taylor County						
Abilene (P)	21,750	22,165	22,507	22,884	23,303	23,652

Table 2-5. Projected Municipal Water Demand by WUG/County in the Brazos G Area (acft/yr)

City/County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Coleman County WSC (P)	13	13	13	13	14	14
Hawley WSC (P)	40	40	40	40	40	41
Merkel	343	345	347	350	357	362
Potosi WSC (P)	761	779	794	809	823	836
Steamboat Mountain WSC	410	413	417	422	429	435
Tuscola	79	79	79	79	81	82
Tye	186	188	190	193	197	199
County-Other	660	660	662	678	690	700
Taylor County Total	24,242	24,682	25,049	25,468	25,934	26,321
Throckmorton County						
Fort Belknapp WSC (P)	20	20	19	19	19	19
Stephens Regional SUD (P)	16	15	15	14	14	14
Throckmorton	182	178	175	175	174	174
County-Other	48	45	45	45	45	45
Throckmorton County Total	266	258	254	253	252	252
Washington County						
Brenham	4,079	4,359	4,542	4,747	4,922	5,070
County-Other	2,424	2,438	2,436	2,463	2,505	2,545
Washington County Total	6,503	6,797	6,978	7,210	7,427	7,615
Williamson County						
Bartlett (P)	197	205	217	232	251	270
Bell-Milam-Falls WSC (P)	49	60	74	89	107	126
Blockhouse MUD	845	828	819	814	812	811
Brushy Creek MUD	4,366	4,693	4,659	4,639	4,635	4,634
Cedar Park (P)	15,209	16,693	16,616	16,584	16,571	16,569
Chisholm Trail SUD (P)	4,412	5,471	6,818	8,280	9,948	11,678
Fern Bluff MUD	1,216	1,204	1,196	1,191	1,189	1,189
Florence	119	121	125	132	141	152
Georgetown	15,944	19,787	24,665	29,960	36,006	42,273
Granger	212	220	232	247	268	289
Hutto	3,767	5,189	6,992	8,937	11,144	13,428
Jarrell	109	129	156	187	222	259

Table 2-5. Projected Municipal Water Demand by WUG/County in the Brazos G Area (acft/yr)

City/County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Jarrell-Schwertner WSC (P)	461	561	690	833	1,000	1,174
Jonah Water SUD	1,830	2,239	2,768	3,350	4,023	4,722
Leander	4,905	8,145	13,470	21,914	27,724	34,098
Liberty Hill	158	192	237	286	343	402
Manville WSC (P)	1,452	1,789	2,220	2,691	3,233	3,794
Pflugerville	76	95	118	144	173	203
Round Rock (P)	24,148	29,808	37,049	44,943	53,991	63,377
Southwest Milam (P)	297	363	448	541	649	762
Taylor	2,840	3,006	3,241	3,522	3,869	4,232
Thorndale (P)	1	1	1	1	1	1
Thrall	89	95	105	116	130	145
Williamson County MUD #10	996	1,243	1,556	1,892	2,274	2,670
Williamson County MUD #11	577	719	900	1,095	1,315	1,544
Williamson County MUD #9	834	1,034	1,290	1,566	1,882	2,210
Williamson-Travis County MUD #1 (P)	599	584	576	572	571	570
County-Other	11,047	13,448	16,746	16,880	21,924	26,688
Williamson County Total	96,755	117,922	143,984	171,638	204,396	238,270
Young County						
Fort Belknapp WSC (P)	420	429	435	445	460	475
Graham	2,666	2,764	2,830	2,918	3,018	3,119
Newcastle	60	61	61	61	63	65
County-Other	214	215	219	227	234	242
Young County Total	3,360	3,469	3,545	3,651	3,775	3,901
Brazos G Total	**403,550**	**451,228**	**503,717**	**561,807**	**627,029**	**694,265**

Notes:
[1] Projections from Texas Water Development Board
(P) Partial

2.3.3 Manufacturing Water Demand

Manufacturing is an integral part of the economy of the Brazos G Area, and water is critical to the manufacturing process for many industries. It can be used in a variety of ways, including as a component of the final product, as a cooling agent during the manufacturing process, or for cleaning/wash-down of parts and/or products. In the Brazos G Area, industries that are major water users include food and kindred products, apparel, fabricated metal, machinery, stone and concrete production, and micro-chip production.

Manufacturing water demand was projected by the TWDB by taking industry-specific water demand coefficients, adjusted for water-use efficiencies (recycling/reuse), and applying them to growth trends for each industry. These growth trends assume expansion of existing capacity and building of new facilities; continuation of historical trends of interaction between oil price changes and industrial activity; and that the makeup of each county's manufacturing base remains constant throughout the 60-year planning horizon. The TWDB and the Brazos G RWPG developed revisions to the manufacturing demand projections for Milam County in the Brazos G Area for the 2016 Plan.

Manufacturing use is projected to increase 60 percent, from 21,848 acft in 2020 to 34,977 acft in 2070 (Table 2-6). The trend in manufacturing use by county is shown in Figure 2-6. Bosque, Johnson, McLennan, Brazos, and Williamson Counties account for 71 percent of the total use in 2070.

Table 2-6. Projected Manufacturing Water Demand in the Brazos G Area (acft/yr)

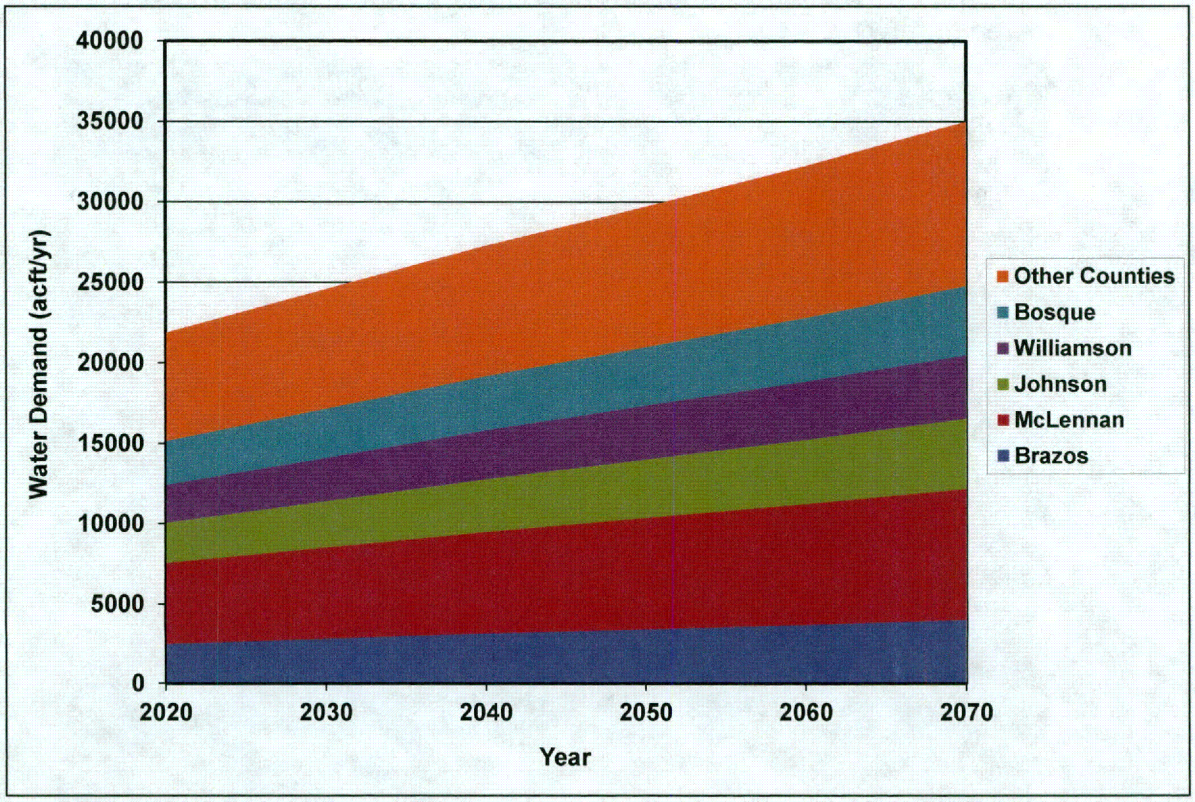
County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Bell	1,370	1,490	1,607	1,711	1,847	1,994
Bosque	2,739	3,058	3,372	3,643	3,959	4,302
Brazos	2,456	2,779	3,109	3,405	3,694	4,008
Burleson	139	161	183	203	221	241
Callahan	0	0	0	0	0	0
Comanche	36	39	41	43	46	49
Coryell	10	11	12	13	14	15
Eastland	72	77	82	85	91	97
Erath	80	88	96	103	112	122
Falls	1	1	1	1	1	1
Fisher	225	255	284	310	336	364
Grimes	361	408	455	497	539	585
Hamilton	5	6	7	8	9	10
Haskell	0	0	0	0	0	0
Hill	45	50	55	60	65	70
Hood	25	27	29	31	34	37
Johnson	2,517	2,903	3,295	3,646	3,994	4,375
Jones	0	0	0	0	0	0
Kent	0	0	0	0	0	0
Knox	0	0	0	0	0	0

Table 2-6. Projected Manufacturing Water Demand in the Brazos G Area (acft/yr)

County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Lampasas	185	199	213	226	243	261
Lee	13	14	15	16	17	18
Limestone	93	102	111	118	127	137
McLennan	5,087	5,724	6,373	6,955	7,532	8,157
Milam	12	12	12	14	14	14
Nolan	1,420	1,611	1,799	1,965	2,130	2,309
Palo Pinto	49	53	57	61	67	74
Robertson	133	154	176	197	214	232
Shackelford	0	0	0	0	0	0
Somervell	8	9	10	11	12	13
Stephens	9	10	11	12	13	14
Stonewall	0	0	0	0	0	0
Taylor	1,653	1,800	1,942	2,063	2,236	2,424
Throckmorton	0	0	0	0	0	0
Washington	692	757	822	879	951	1,029
Williamson	2,354	2,692	3,032	3,339	3,626	3,938
Young	59	64	69	72	79	87
Brazos G Total	**21,848**	**24,554**	**27,270**	**29,687**	**32,223**	**34,977**

[1] Projections from Texas Water Development Board

Figure 2-6. Manufacturing Water Demand Projections



2.3.4 Steam-Electric Water Demand

The steam-electric generation process uses water in boilers and for cooling. The projections for steam-electric water demand were developed by the TWDB and are based on power generation projections—determined by population and manufacturing growth—and on power generation capacity and fresh water use for that projected capacity. The TWDB and the Brazos G RWPG developed revisions to the steam-electric demand projections for Milam County in the Brazos G Area for the 2016 Plan. Grimes, Limestone, Milam, Robertson, and Somervell Counties account for 75 percent of total steam-electric water use in 2070. Steam-Electric water use is projected to increase 51 percent, from 239,299 acft in 2020 to 362,386 acft in 2070 (Table 2-7). This increase (Figure 2-7) in water use is attributable to the growing population in the State, and increased energy needs for manufacturing. Steam-electric water demands are expected to occur from expansion of existing plant capacity and new generating plants.

Table 2-7. Projected Steam-Electric Water Demand in the Brazos G Area (acft/yr)

County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Bell	4,220	4,934	5,804	6,865	8,157	9,693
Bosque	6,188	7,235	8,510	10,065	11,961	14,214
Brazos	503	406	460	312	405	384

Table 2-7. Projected Steam-Electric Water Demand in the Brazos G Area (acft/yr)

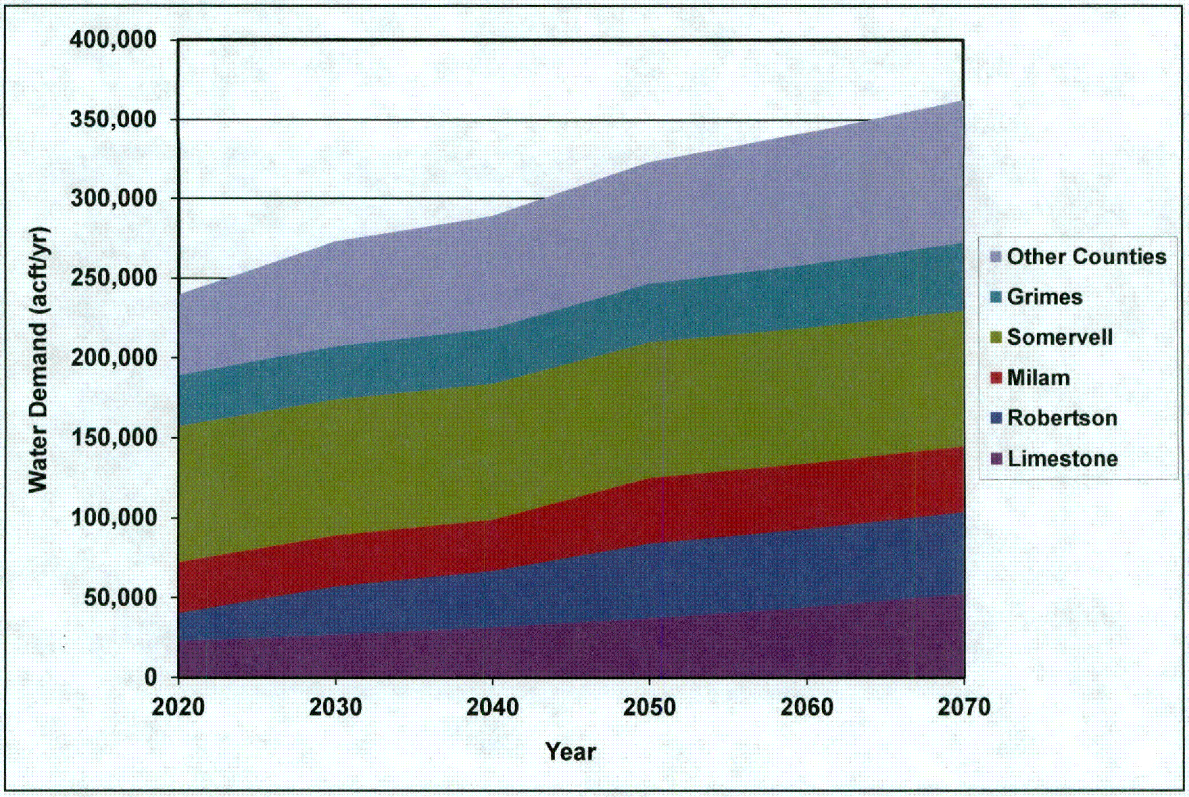
County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Burleson	0	0	0	0	0	0
Callahan	0	0	0	0	0	0
Comanche	0	0	0	0	0	0
Coryell	0	0	0	0	0	0
Eastland	0	0	0	0	0	0
Erath	0	0	0	0	0	0
Falls	0	0	0	0	0	0
Fisher	0	0	0	0	0	0
Grimes	31,760	33,160	34,660	36,660	39,660	42,905
Hamilton	0	0	0	0	0	0
Haskell	336	393	462	547	650	720
Hill	0	0	0	0	0	0
Hood	5,814	6,796	7,995	9,456	11,238	13,354
Johnson	7,000	7,000	7,000	7,000	7,000	7,000
Jones	333	294	396	364	484	518
Kent	0	0	0	0	0	0
Knox	0	0	0	0	0	0
Lampasas	0	0	0	0	0	0
Lee	0	0	0	0	0	0
Limestone	22,598	26,420	31,079	36,758	43,681	52,033
McLennan	6,990	8,914	9,683	11,155	11,929	12,756
Milam	32,023	32,023	32,023	40,989	40,989	40,989
Nolan	13,526	23,916	23,916	23,916	23,916	23,916
Palo Pinto	4,000	4,000	4,000	4,000	4,000	4,000
Robertson	17,461	30,380	35,512	46,984	49,133	51,381
Shackelford	0	0	0	0	0	0
Somervell	84,817	84,817	84,817	84,817	84,817	84,817
Stephens	0	0	0	0	0	0
Stonewall	0	0	0	0	0	0
Taylor	0	0	0	0	0	0
Throckmorton	0	0	0	0	0	0
Washington	0	0	0	0	0	0

Table 2-7. Projected Steam-Electric Water Demand in the Brazos G Area (acft/yr)

County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Williamson	0	0	0	0	0	0
Young	1,730	2,023	2,379	2,814	3,344	3,706
Brazos G Total	**239,299**	**272,711**	**288,696**	**322,702**	**341,364**	**362,386**

1 Projections adopted by the Texas Water Development Board, as requested by the BGRWPG (Appendix Q).

Figure 2-7. Steam-Electric Water Demand Projections



2.3.5 Mining Water Demand

Projections for mining water demand were developed by the TWDB and are based on projected production of mineral commodities, and historic rates of water use, moderated by water requirements of technological processes used in mining.

Mining use in the Brazos G Area is expected to increase 32 percent between 2020 and 2070, from 61,586 acft to 81,409 acft, largely due to the shale gas operations (Table 2-8). Robertson, Limestone, Williamson, Lee and Bell counties account for 78 percent of total mining water use in 2070 (Figure 2-8).

Table 2-8. Projected Mining Water Demand in the Brazos G Area (acft/yr)

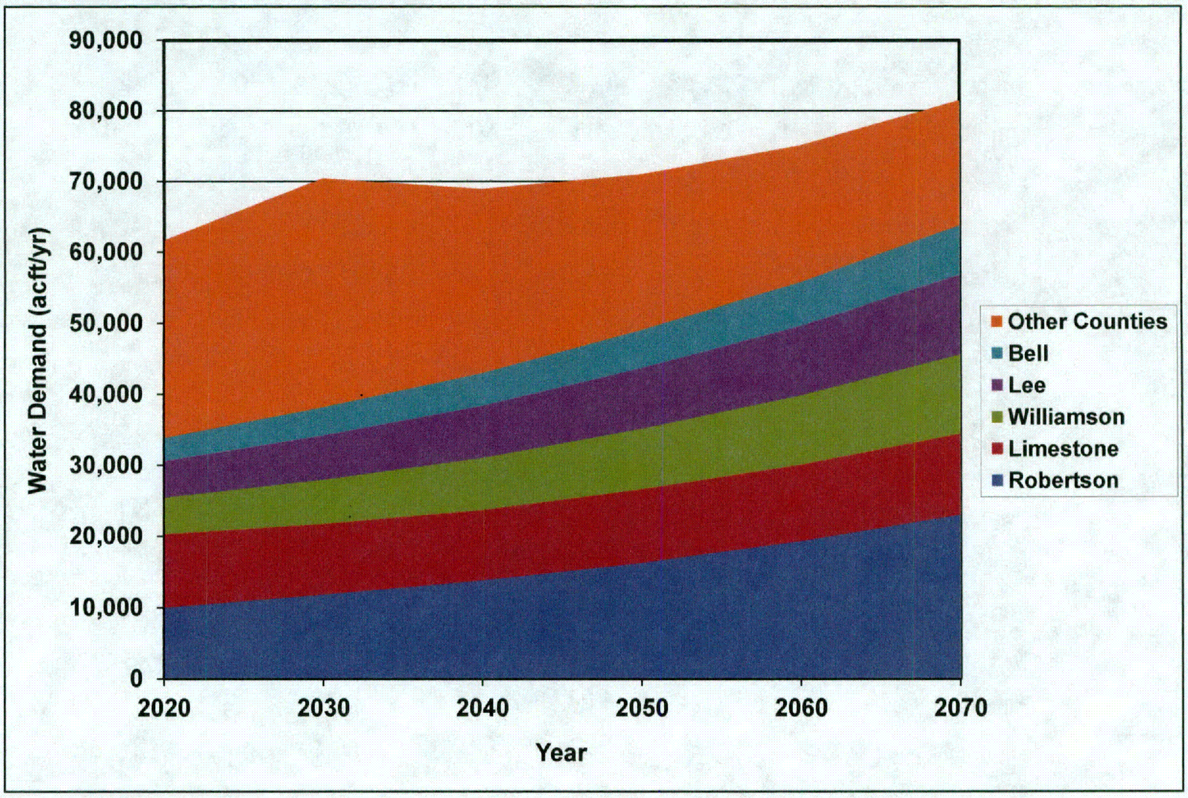
County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Bell	3,242	3,980	4,599	5,349	6,105	6,968
Bosque	1,972	2,071	1,892	1,872	1,833	1,821
Brazos	1,088	1,610	1,433	1,144	923	814
Burleson	995	1,923	1,512	1,100	686	428
Callahan	228	227	214	201	190	180
Comanche	444	525	363	276	188	128
Coryell	1,510	1,072	491	363	398	437
Eastland	1,164	1,173	929	714	518	432
Erath	505	536	376	304	232	177
Falls	225	246	259	286	307	331
Fisher	407	402	359	313	273	238
Grimes	323	602	471	340	209	128
Hamilton	393	236	101	0	0	0
Haskell	93	92	83	74	66	59
Hill	1,634	1,190	775	403	436	472
Hood	2,078	2,436	2,222	2,133	2,043	2,057
Johnson	4,126	2,788	1,515	1,013	1,161	1,336
Jones	239	234	218	199	183	169
Kent	38	38	35	32	29	26
Knox	15	15	14	14	14	14
Lampasas	198	221	241	261	286	313
Lee	3,180	7,289	7,767	8,304	8,904	9,631
Limestone	10,317	9,925	9,865	10,339	10,805	11,425
McLennan	2,538	3,000	3,060	3,508	3,832	4,216
Milam	14	14	14	14	14	14
Nolan	225	222	200	178	158	141
Palo Pinto	656	847	625	480	336	235
Robertson	9,913	11,753	13,768	16,222	19,217	22,940
Shackelford	562	747	558	442	328	243
Somervell	1,112	1,279	1,146	1,060	998	971
Stephens	5,064	5,141	4,458	3,825	3,257	2,773
Stonewall	584	576	512	446	388	338

Table 2-8. Projected Mining Water Demand in the Brazos G Area (acft/yr)

County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Taylor	391	391	366	346	329	315
Throckmorton	194	191	171	150	132	116
Washington	569	866	703	538	373	264
Williamson	5,163	6,247	7,364	8,555	9,782	11,186
Young	187	276	196	151	105	73
Brazos G Total	**61,586**	**70,381**	**68,875**	**70,949**	**75,038**	**81,409**

[1] Projections from Texas Water Development Board

Figure 2-8. Mining Water Demand Projections



2.3.6 Irrigation Water Demand

The irrigation water demand projections were developed by the TWDB and are based on specific assumptions regarding resource constraints, crop prices, crop yields, agricultural policy, and technological advances in irrigation systems. The TWDB and the Brazos G RWPG developed revisions to the irrigation demand projections for Haskell and Knox County in the Brazos G Area for the 2016 Plan.

Major crops grown in the region include feed grains, small grains, cotton, pecans, and peanuts. Table 2-9 shows that irrigation water demand will decrease 14 percent from 2020 to 2070, mostly attributable to technological advances in irrigation techniques as well as projected reductions in irrigated land. Figure 2-9 shows the trend in irrigation use, with Robertson, Haskell, Knox and Comanche counties accounting for 62 percent of total irrigation water use in 2070.

Table 2-9. Projected Irrigation Water Demand in the Brazos G Area (acft/yr)

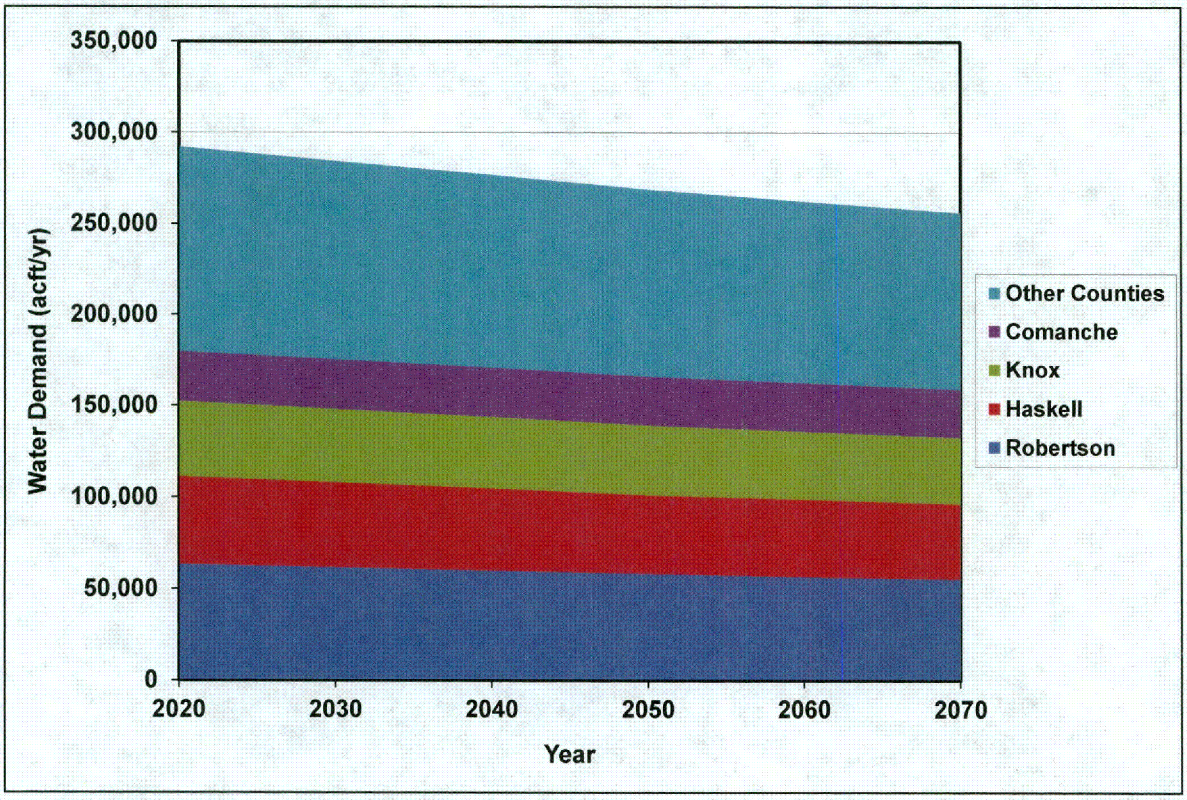
County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Bell	2,205	2,174	2,147	2,117	2,086	2,058
Bosque	2,128	2,094	2,060	2,029	1,998	1,968
Brazos	26,050	24,791	23,594	22,459	21,374	20,438
Burleson	22,855	21,904	21,057	20,115	19,216	18,469
Callahan	573	564	555	546	537	529
Comanche	27,458	27,175	26,894	26,617	26,342	26,076
Coryell	214	214	214	214	214	214
Eastland	6,819	6,829	6,837	6,840	6,843	6,850
Erath	6,383	6,290	6,198	6,107	6,018	5,933
Falls	4,301	4,163	4,027	3,898	3,772	3,658
Fisher	4,488	4,354	4,224	4,098	3,974	3,862
Grimes	0	0	0	0	0	0
Hamilton	507	504	495	471	448	436
Haskell	47,844	46,422	45,040	43,072	42,405	41,207
Hill	582	582	582	582	568	563
Hood	7,205	7,071	6,939	6,807	6,680	6,560
Johnson	141	141	141	141	141	141
Jones	2,870	2,784	2,701	2,620	2,542	2,471
Kent	1,235	1,198	1,166	1,134	1,102	1,073
Knox	41,033	40,025	39,041	38,082	37,147	36,278
Lampasas	387	382	377	372	370	366
Lee	459	446	434	421	409	398

Table 2-9. Projected Irrigation Water Demand in the Brazos G Area (acft/yr)

County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Limestone	0	0	0	0	0	0
McLennan	4,880	4,877	4,872	4,867	4,862	4,858
Milam	5,081	5,040	4,995	4,956	4,915	4,875
Nolan	7,413	7,217	7,024	6,842	6,663	6,497
Palo Pinto	3,138	3,097	3,063	3,022	2,981	2,944
Robertson	63,420	61,607	59,841	58,127	56,460	55,124
Shackelford	0	0	0	0	0	0
Somervell	83	82	82	81	80	79
Stephens	116	115	113	112	111	110
Stonewall	165	160	155	150	146	142
Taylor	1,557	1,519	1,481	1,444	1,406	1,373
Throckmorton	0	0	0	0	0	0
Washington	299	299	299	299	299	299
Williamson	151	151	151	151	151	151
Young	51	50	48	47	45	44
Brazos G Total	**292,091**	**284,321**	**276,847**	**268,840**	**262,305**	**256,044**

[1] Projections from Texas Water Development Board

Figure 2-9. Irrigation Water Demand Projections



2.3.7 Livestock Water Demand

In the 37-county Brazos G Area, the principal livestock type is dairy, with some beef cattle.

The Brazos G Area contains widespread cow-calf operators, with concentrated dairy production in Comanche and Erath Counties. The livestock water demand projections developed by the TWDB are based upon estimates of the maximum carrying capacity of the rangeland of the area and the estimated number of gallons of water per head of livestock per day. Additionally, economics of milk production and environmental impacts of the operations are major factors in the projections of the water demands for this category of livestock.

Livestock drinking water is obtained from wells, stock watering ponds, and streams. As can be seen in Table 2-10, it is projected that the annual livestock water demand will remain constant at 49,650 acft between 2020 and 2070.

Figure 2-10 shows the trend in livestock use, with Erath, Comanche, Lee, Falls and Milam counties accounting for 33 percent of total livestock water use in 2070.

Table 2-10. Projected Livestock Water Demand in the Brazos G Area (acft/yr)

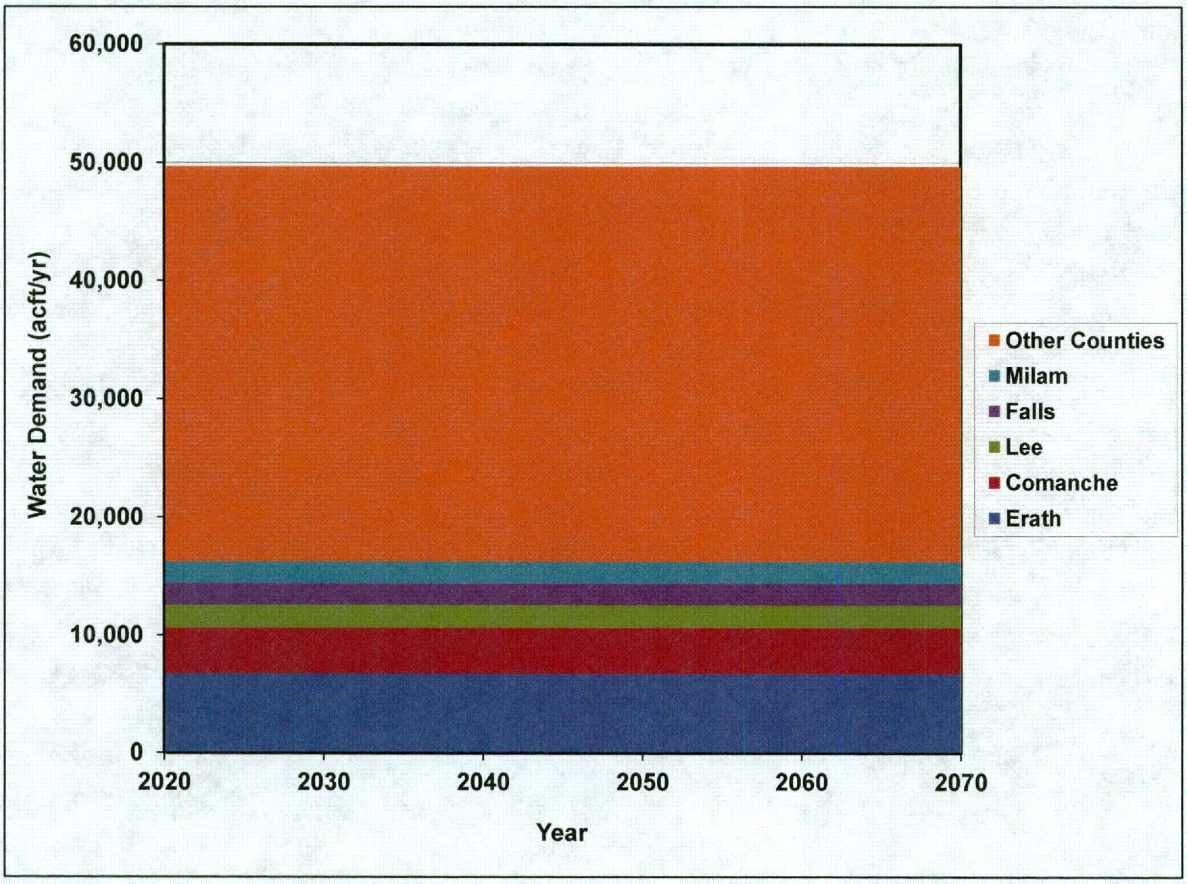
County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Bell	1,009	1,009	1,009	1,009	1,009	1,009
Bosque	989	989	989	989	989	989
Brazos	1,322	1,322	1,322	1,322	1,322	1,322
Burleson	1,508	1,508	1,508	1,508	1,508	1,508
Callahan	920	920	920	920	920	920
Comanche	3,895	3,895	3,895	3,895	3,895	3,895
Coryell	1,471	1,471	1,471	1,471	1,471	1,471
Eastland	1,127	1,127	1,127	1,127	1,127	1,127
Erath	6,702	6,702	6,702	6,702	6,702	6,702
Falls	1,878	1,878	1,878	1,878	1,878	1,878
Fisher	634	634	634	634	634	634
Grimes	1,503	1,503	1,503	1,503	1,503	1,503
Hamilton	1,677	1,677	1,677	1,677	1,677	1,677
Haskell	676	676	676	676	676	676
Hill	1,184	1,184	1,184	1,184	1,184	1,184
Hood	522	522	522	522	522	522
Johnson	1,613	1,613	1,613	1,613	1,613	1,613
Jones	853	853	853	853	853	853
Kent	320	320	320	320	320	320
Knox	987	987	987	987	987	987
Lampasas	1,232	1,232	1,232	1,232	1,232	1,232
Lee	1,935	1,935	1,935	1,935	1,935	1,935
Limestone	1,704	1,704	1,704	1,704	1,704	1,704
McLennan	1,584	1,584	1,584	1,584	1,584	1,584
Milam	1,822	1,822	1,822	1,822	1,822	1,822
Nolan	387	387	387	387	387	387
Palo Pinto	915	915	915	915	915	915
Robertson	1,612	1,612	1,612	1,612	1,612	1,612
Shackelford	840	840	840	840	840	840
Somervell	158	158	158	158	158	158
Stephens	486	486	486	486	486	486
Stonewall	458	458	458	458	458	458

Table 2-10. Projected Livestock Water Demand in the Brazos G Area (acft/yr)

County	Projected Demands[1]					
	2020	2030	2040	2050	2060	2070
Taylor	963	963	963	963	963	963
Throckmorton	672	672	672	672	672	672
Washington	1,661	1,661	1,661	1,661	1,661	1,661
Williamson	1,455	1,455	1,455	1,455	1,455	1,455
Young	976	976	976	976	976	976
Brazos G Total	**49,650**	**49,650**	**49,650**	**49,650**	**49,650**	**49,650**

[1] Projections from Texas Water Development Board

Figure 2-10. Livestock Water Demand Projections



2.3.8 Wholesale Water Providers

The TWDB's definition of a Wholesale Water Provider (WWP) is:

"A WWP is any person or entity, including river authorities and irrigation districts, that has contracts to sell more than 1,000 acft of water wholesale in any one year during the five years immediately preceding the adoption of the last Regional Water Plan. The Planning Groups shall include as wholesale water providers other persons and entities that enter, or that the Planning Group expects or recommends to enter, contracts to sell more than 1,000 acft/yr of wholesale water during the period covered by the plan."

Many entities within Brazos G obtain water supply through contracts with wholesale water suppliers. Table 2-11 provides a summary of the contractual demands for the identified Wholesale Water Providers within Brazos G. Additional information on the WWP contracts, supplies and needs can be found in Chapter 3, Table 3.1-3 and in Chapter 4, Section 4.3.

Table 2-11. Wholesale Water Providers Total Demands (acft/yr)

Wholesale Water Provider	Contracting Entities	2020	2030	2040	2050	2060	2070
Brazos River Authority[1]							
Lake Aquilla System	Table 3.1-3	11,403	11,403	11,403	11,403	11,403	11,403
Little River System	Table 3.1-3	251,643	251,643	251,643	251,643	251,643	251,643
Main Stem System	Table 3.1-3	247,595	247,595	247,595	247,595	247,595	247,595
Aquilla Water Supply District	Table 4.3-2	6,512	5,952	5,952	5,952	5,952	5,952
Bell County WCID No.1	Table 4.3-3	62,509	62,509	62,509	62,509	62,509	62,509
Bistone MWSD	Table 4.3-4	5,405	5,403	5,401	5,400	5,400	5,400
Bluebonnet WSC	Table 4.3-5	7,125	7,125	7,125	7,125	7,125	7,125
Central Texas WSC	Table 4.3-6	10,240	10,240	10,240	10,240	10,240	10,240
Eastland County WSD	Table 4.3-7	5,411	5,416	5,421	5,424	5,430	5,436
Heart of Texas Water Suppliers LLC	Table 4.3-8	5,600	5,600	5,600	5,600	5,600	5,600
North Central Texas MWA	Table 4.3-9	1,797	1,797	1,797	1,797	1,797	1,797
Palo Pinto County MWD No. 1	Table 4.3-10	9,414	9,515	9,570	9,641	9,712	9,771
Upper Leon MWD	Table 4.3-11	4,572	4,572	4,572	4,572	4,572	4,572
West Central Texas MWD	Table 4.3-12	27,900	27,900	27,900	27,900	27,900	27,900
City of Abilene[2]	Table 4.3-13	37,911	36,883	37,470	38,190	38,812	39,344
City of Anson[2]	Table 4.3-14	1,484	1,485	1,473	1,459	1,444	1,429
City of Bryan[2]	Table 4.3-15	19,634	18,990	24,084	30,345	37,058	44,602
City of Cedar Park[2]	Table 4.3-16	19,446	19,760	18,714	18,445	18,544	18,655
City of Cleburne[2,3]	Table 4.3-17	9,393	9,819	10,723	11,728	12,781	13,919
City of Gatesville[2]	Table 4.3-18	5,652	5,877	6,109	6,211	6,314	6,836
Johnson County SUD[2]	Table 4.3-19	10,983	11,746	12,574	13,540	14,635	15,821
Kempner WSC[2]	Table 4.3-20	4,400	4,539	4,816	5,087	5,343	5,584
City of Mineral Wells[2]	Table 4.3-21	5,084	5,230	5,320	5,391	5,462	5,521
City of Round Rock[2]	Table 4.3-22	28,761	35,287	43,219	52,111	62,404	73,086
City of Stamford[2]	Table 4.3-23	3,252	3,218	3,171	3,122	3,074	3,065

Table 2-11. Wholesale Water Providers Total Demands (acft/yr)

Wholesale Water Provider	Contracting Entities	2020	2030	2040	2050	2060	2070
City of Sweetwater[2]	Table 4.3-24	3,850	3,930	3,950	4,014	4,067	4,116
City of Temple[2]	Table 4.3-25	22,601	23,476	24,227	24,721	24,903	27,022
City of Waco[2,3]	Table 4.3-26	52,211	52,236	52,005	51,766	52,528	54,956
Total		**881,788**	**889,146**	**904,583**	**922,931**	**944,247**	**970,899**

1 - Contract volumes in Region G only
2 - Contract sales by WWPs include the city/WUG demands after conservation.
3 - Includes reuse contracts

This page intentionally left blank.

Chapter 3

3

Evaluation of Current Water Supplies

This page intentionally left blank.

3 Evaluation of Current Water Supplies

3.1 Surface Water Supplies

Streamflow in the Brazos River and its tributaries, along with reservoirs in the Brazos River Basin, comprise a vast supply of surface water in the Brazos G Area. Diversions and use of this surface water occurs throughout the entire region with over 1,000 water rights currently issued. These water rights provide authorization for an owner to divert, store and use the water, however, they do not guarantee that a dependable supply will be available from the water source. The availability of water to a water right is dependent on several factors including hydrologic conditions (i.e., rainfall, runoff, springflow), priority date of the water right, quantity of authorized storage, and any special conditions associated with the water right (i.e., instream flow conditions, maximum diversion rate).

3.1.1 Texas Water Right System

The State of Texas owns the surface water within the state watercourses and is responsible for the appropriation of these waters. Surface water is currently allocated by the Texas Commission on Environmental Quality (TCEQ) for the use and benefit of all people of the state. Historically, Texas water law is based on a combination of the riparian and prior appropriation doctrines. The riparian doctrine extends from the Spanish and Mexican governments that ruled Texas prior to 1836. After 1840, the riparian doctrine provided landowners the rights to make reasonable use of water for irrigation or for other consumptive uses. In 1889, the prior appropriation doctrine was first adopted by Texas, which is based on the concept of "first in time is first in right." Over the years, the combination of riparian and prior appropriation doctrines resulted in an essentially unmanageable system. Various types of water rights existed simultaneously and many rights were unrecorded. In 1967, the Texas Legislature passed the Water Rights Adjudication Act to merge the riparian water rights into the prior appropriation system, creating a unified water rights system. The adjudication process has taken many years, and is essentially complete. In the end, Certificates of Adjudication have been issued for entities recognized as having legitimate water rights. Today, individuals or groups seeking a new water right must submit an application to the TCEQ. The TCEQ determines if the water right will be issued and under what conditions. The water rights grant a certain quantity of water to be diverted and/or stored, a priority date, and often come with some restrictions on when and how the right may be utilized. Restrictions may include a maximum diversion rate and/or an instream flow restriction to protect existing water rights and provide environmental protection.

The priority date of a water right is essential to the operation of the water rights system. Each right is issued a priority date based on the date of first capture, or the appropriation date. The established priority system must be adhered to by all water right holders when diverting or storing water for use. A right holder must pass all water to downstream senior water rights when conditions are such that the senior water rights would not be satisfied otherwise.

3.1.2 Types of Water Rights

There are various types of water rights: Certificates of Adjudication, permits, term permits, and temporary permits. Certificates of Adjudication were issued in perpetuity for approved claims during the adjudication process. This type of water right was issued based on historical use rather than water availability. As a consequence, the amount of water to which rights exist exceeds the amount of water available during a drought for some streams. The TCEQ issues new permits only where drought flows are sufficient to meet the requested amount. Permits, like Certificates of Adjudication, are issued in perpetuity and may be bought and sold like other property interests. Term permits may be issued by the TCEQ in areas where waters are fully appropriated, but not yet being fully used. Term permits are usually issued for 10 years and may be renewed if, after 10 years, other water right holders are still not fully utilizing the water in the basin. Temporary permits are issued for up to 3 years. Temporary permits are issued mainly for road construction projects, where water is used to suppress dust, to compact soils, and to start the growth of new vegetation.

Water rights can include the right to divert and/or store the appropriated water. A run-of-the-river water right provides for the diversion of streamflows and does not include storage of water for use during dry periods. These rights have no authorization to store water, only the right to take water from the stream. A run-of-the-river right may be limited by streamflow, pumping rate, or diversion location.

Water rights, which include provisions for storage of water, allow a water right holder to impound streamflows for use at a later time. The storage provides water for use during dry periods, when water may not be available due to hydrologic conditions or because existing flows are required to be passed to downstream senior water rights.

While most water rights are diverted and used within the river basin of origin, water rights that divert from one river basin to another basin require an interbasin transfer permit. Several types of transfers that receive special consideration include emergency transfers, transfers of water from a river basin for use in an adjoining coastal basin (such as from the Brazos River Basin to the San Jacinto-Brazos Coastal Basin), diversions of less than 3,000 acft/yr, and diversions within any city or county that has any portion in the basin of origin.

3.1.3 Water Rights in the Brazos River Basin

The TCEQ maintains a database of all active water rights referred to as WRactive, which is available for download from the TCEQ website. The March 2015 version of this database was obtained from the TCEQ and the summary statistics that follow are based on the information contained in that particular version of the database. A total of 1,090 water rights exist in the Brazos River Basin, with a total authorized diversion of 2,584,000 acft/yr. It is important to note that a small percentage of the water rights make up a large percentage of the total authorized diversion volume. In the Brazos River Basin, 40 water rights (3.7 percent) make up 2,310,000 acft/yr (89 percent) of the authorized diversion volume. The remaining 1,050 water rights primarily consist of small irrigation rights distributed throughout the river basin. Figure 3.1-1 shows a comparison of significant water rights in the Brazos River Basin by number of rights and diversion volume.

The Brazos G Area includes the majority of the water rights in the Brazos River Basin. A total of 949 water rights exist in the Brazos G portion of the Brazos River Basin, with a total authorized diversion of 1,263,000 acft/yr. In the Brazos G portion of the Brazos River Basin, 28 water rights (2.9 percent) make up 1,040,000 acft/yr (82.3 percent) of the authorized diversion volume. The remaining 921 water rights primarily consist of small irrigation rights distributed throughout the area. Region H, located downstream of the Brazos G Area, has a total of only 38 water rights (3.5 percent) in the Brazos River Basin, but these include some very large rights and make up 1,164,000 acft/yr (45 percent) of the total authorized diversions. Other regions make up a small percentage of the remaining water rights and total authorized diversions in the basin, as shown in Figure 3.1-2. The authorized diversions in Region H generally consist of very large, senior priority, run-of-the-river water rights. In comparison, water rights in the Brazos G Area are larger in number and diversion volume; however, the water rights are generally junior in priority to those downstream in Region H. Therefore, in times of drought, when streamflows are low, diversions of water from streams in the Brazos G Area may be restricted for several of the water right holders. A comparison of the quantity of authorized diversions relative to the priority date of the water rights in Brazos G and Region H is presented in Figure 3.1-3. Major water rights are defined as having an authorized diversion of greater than 10,000 acft/yr or 5,000 acft of authorized storage. Figure 3.1-4 shows the location of major water rights in the Brazos River Basin. A list of all water rights, summarized from the TCEQ water right database for all rights in the Brazos G Area, is provided in Appendix G.

While Region H includes a large quantity of senior priority water rights, most of these water rights have very little storage associated with them and, therefore, may be described primarily as run-of-the-river water rights. The water rights in Brazos G are generally junior to those water rights in Region H; however, there is a substantial volume of reservoir storage associated with the water rights in Brazos G to provide a firm supply. The total authorized storage in the Brazos River Basin is approximately 4,115,000 acft, with 3,608,000 acft (87.7 percent) located in Brazos G. In Region H, the quantity of reservoir storage is 231,000 acft, or 5.6 percent of the total authorized storage volume in the river basin. The large quantity of reservoir storage in Brazos G provides for a firm supply of water during drought conditions, when streamflows are low and may be required to be passed through to downstream senior water rights in Region H. Figure 3.1-5 presents a comparison of the total authorized storage and annual diversion volume for the Brazos G Area and Region H.

Figure 3.1-1. Comparison of Water Rights in the Brazos River Basin

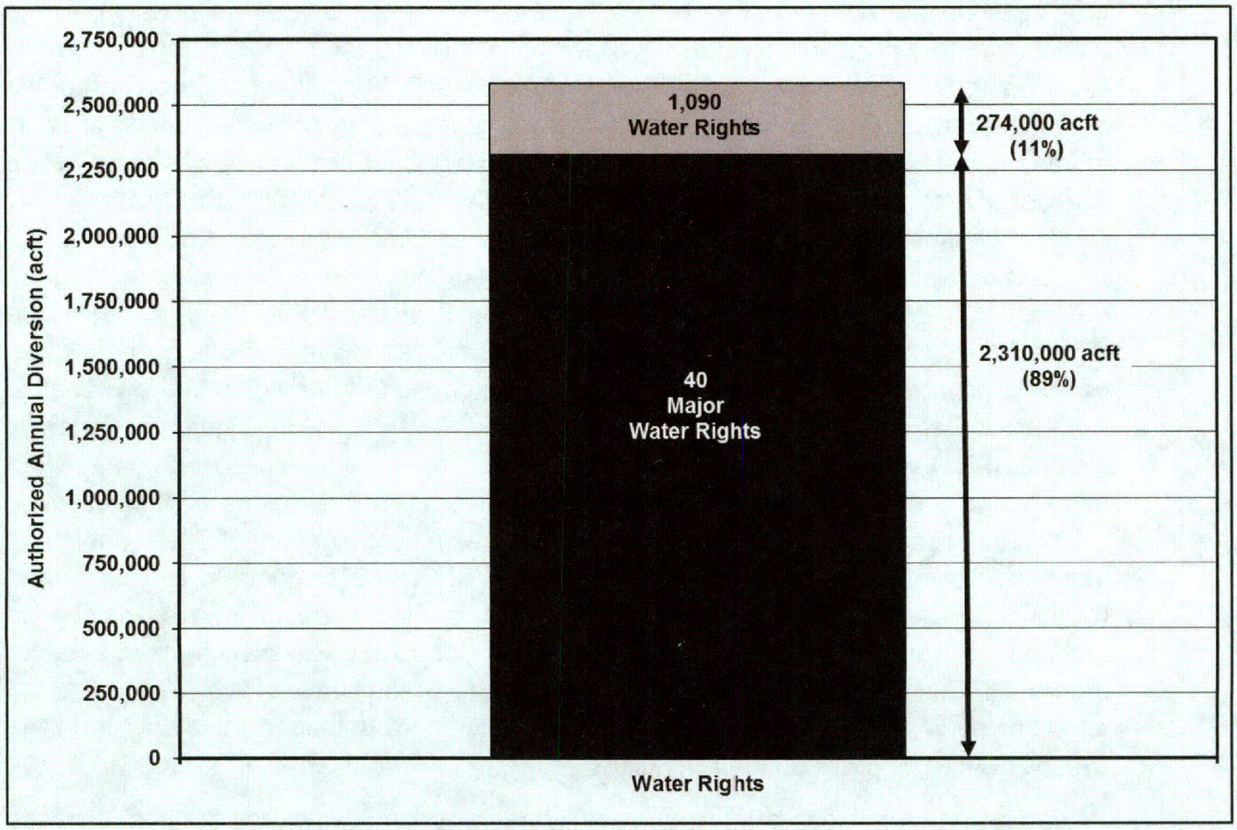


Figure 3.1-2. Comparison of Significant Water Rights in the Brazos River Basin by Number of Rights and Diversion Volume

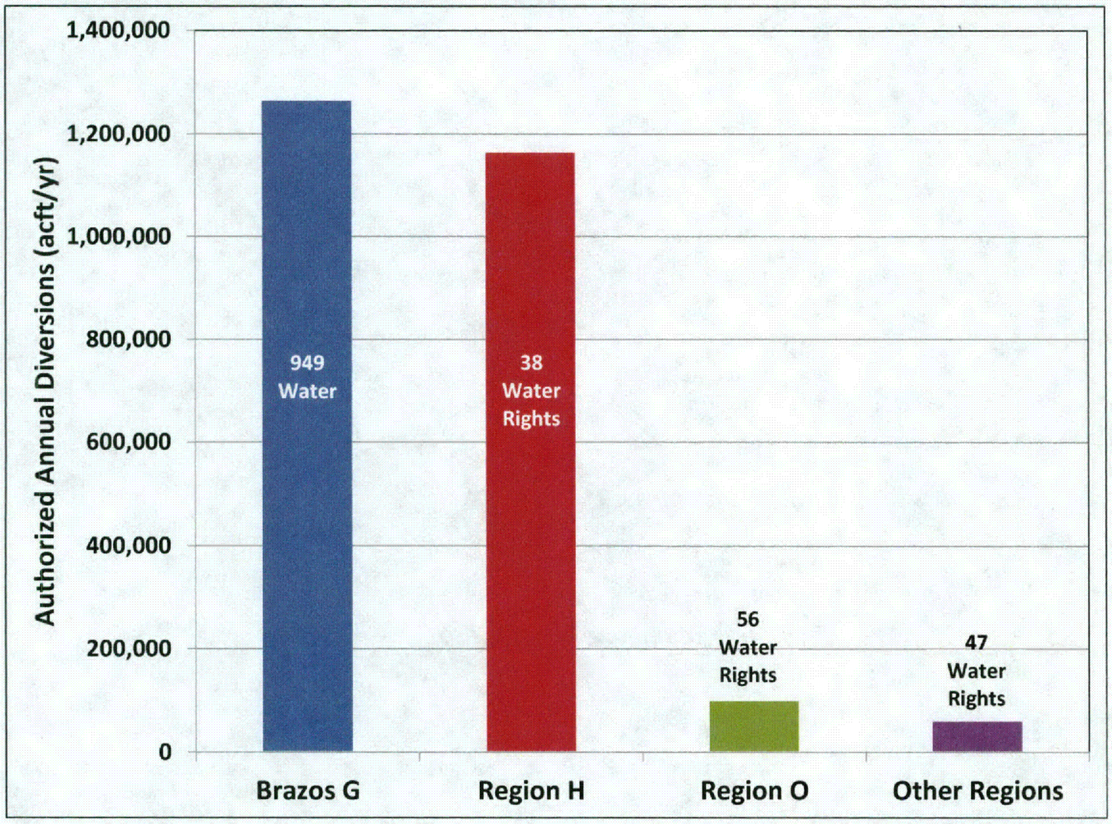
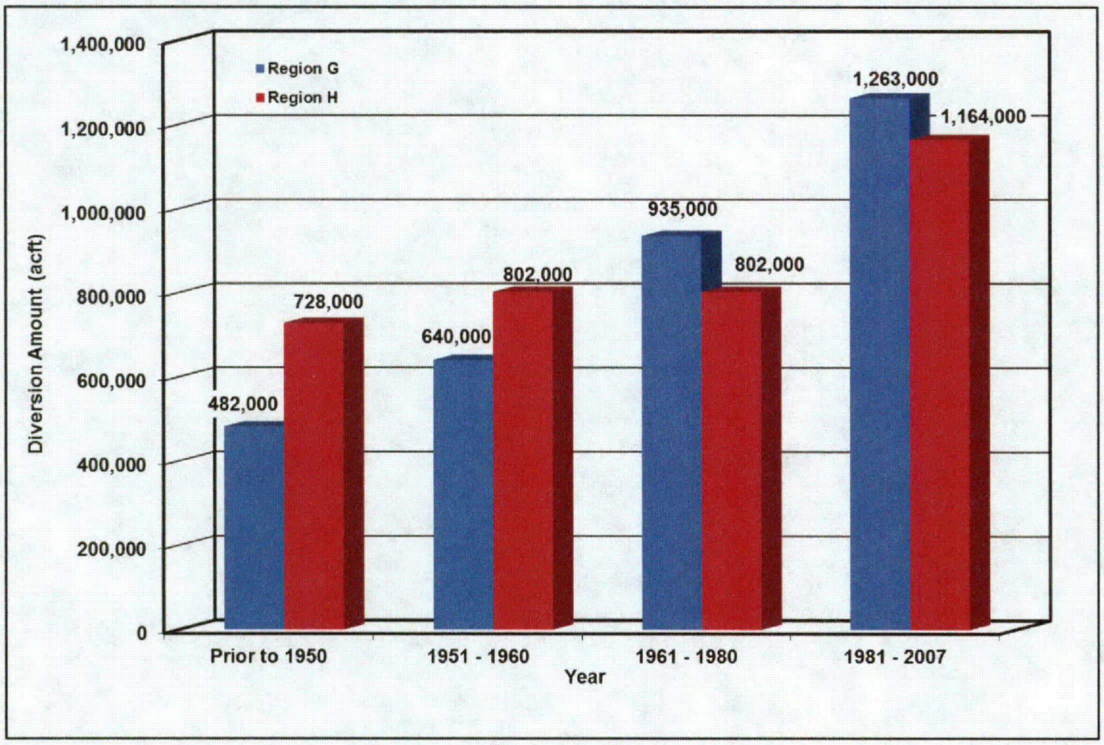
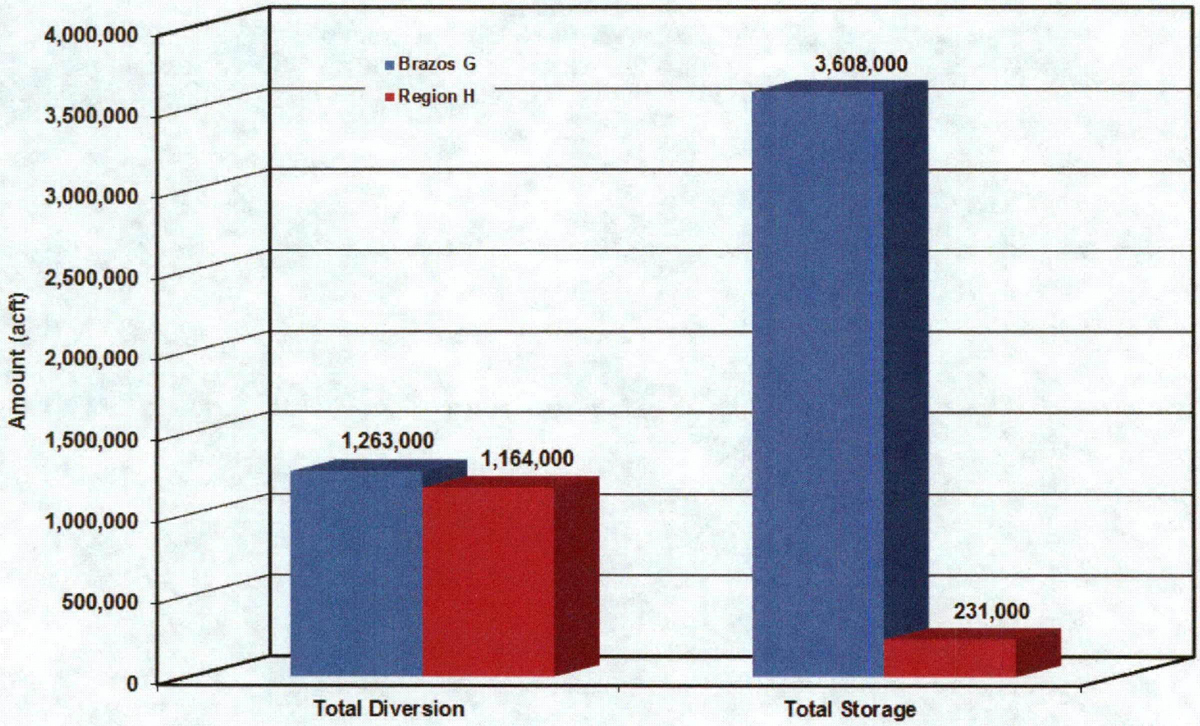


Figure 3.1-3. Comparison of Cumulative Diversion Volume and Priority Date for the Brazos G Area and Region H



This page intentionally left blank.

Figure 3.1-5. Comparison of Storage Diversion Volume for Brazos G and Region H



A total of 48 major reservoirs, with capacities greater than 5,000 acft, exist in the Brazos River Basin. The U.S. Army Corps of Engineers (USACE) owns several of these reservoirs, including Lake Georgetown, Lake Aquilla, Lake Granger, Lake Proctor, Lake Somerville, Lake Waco, Lake Belton, Lake Stillhouse Hollow, and Lake Whitney. These reservoirs were built for the primary purpose of flood control; however, they also included other benefits such as water supply and recreation. For purposes of water supply, the USACE has contracted conservation storage in each reservoir to the Brazos River Authority (BRA). The BRA owns the water right for each reservoir and manages the water supply conservation storage in each reservoir, except for Lake Waco, which is controlled by the City of Waco. Other major reservoirs in the basin that provide municipal, industrial, and irrigation water supply are owned by the BRA, City of Abilene, City of Mineral Wells, Palo Pinto County MWD No. 1, West Central Texas MWD, City of Cisco, City of Breckenridge, City of Sweetwater, City of Cleburne, and City of Stamford. A summary of major reservoirs in the Brazos River Basin is presented in Table 3.1-1 and the locations of the reservoirs are shown in Figure 3.1-4.

Table 3.1-1. Major Reservoirs[1] of the Brazos River Basin

Reservoir	Water Right Owner	Authorized Storage (acft)	Authorized Diversion (acft)	Priority Date	County	Planning Region
Abilene	City of Abilene	11,868	1,675	1/23/1918	Taylor	G
Alcoa Lake	Aluminum Company of America	15,650	14,000	12/12/1951	Milam	G

Table 3.1-1. Major Reservoirs[1] of the Brazos River Basin

Reservoir	Water Right Owner	Authorized Storage (acft)	Authorized Diversion (acft)	Priority Date	County	Planning Region
Alan Henry	City of Lubbock	115,937	35,200	10/5/1981	Garza	O
Allens Creek	Brazos River Authority/City of Houston	145,553	202,000	9/1/1999	Austin	H
Aquilla	Brazos River Authority	52,400	13,896	10/25/1976	Hill	G
Belton	Brazos River Authority	457,600	100,257	12/16/1963	Bell	G
Belton	U.S. Dept. of the Army[2]	12,000	10,000 2,000	8/24/1953 8/23/1954	Bell	G
Dow - Brazoria Reservoir	Dow Chemical[3]	21,973	--	4/7/1952	Brazoria	H
Dow - Harris Reservoir	Dow Chemical[3]	10,200	--	2/14/1942	Brazoria	H
Cisco	City of Cisco	45,110	1,971 1,000	4/16/1920 11/8/1954	Eastland	G
Daniel	City of Breckenridge	11,400	2,100	4/26/1946	Stephens	G
Dansby Power Plant	City of Bryan	15,227	850	5/30/1972	Brazos	G
Eagle Nest Lake	U.S. Dept. of the Interior	11,315	1,800	1/15/1948	Brazoria	H
Fort Phantom Hill	City of Abilene	73,960	30,690	3/25/1937	Jones	G
Georgetown	Brazos River Authority	37,100	13,610	2/12/1968	Williamson	G
Gibbons Creek Power	Texas Municipal Power Agency	26,824 5,260	9,740	2/22/1977 3/9/1989	Grimes	G
Graham/Eddleman	City of Graham	4,503 39,000 8,883	5,000 15,000	11/21/1927 11/15/1954 9/16/1957	Young	G
Granbury	Brazos River Authority	155,000	64,712	2/13/1964	Hood	G
Granger	Brazos River Authority	65,500	19,840	2/12/1968	Williamson	G
Hubbard Creek Lake	West Central Texas MWD	317,750	52,800 3,200	5/28/1957 8/14/1972	Stephens	G
Leon	Eastland Co WSD	28,000	1,265 2,438 2,597	5/17/1931 3/21/1952 3/25/1986		

Table 3.1-1. Major Reservoirs[1] of the Brazos River Basin

Reservoir	Water Right Owner	Authorized Storage (acft)	Authorized Diversion (acft)	Priority Date	County	Planning Region
Limestone	Brazos River Authority	225,400	65,074	5/6/1974	Robertson	G
Miller's Creek	North Central Texas MWA	30,696	5,000	10/1/1958	Baylor	B
Palo Pinto	Palo Pinto County MWD No. 1	44,100 24	16,000 2,500	7/3/1962 9/8/1964	Palo Pinto	G
Pat Cleburne Reservoir	City of Cleburne	25,600	5,760 240	8/6/1962 3/29/1976	Johnson	G
Possum Kingdom	Brazos River Authority	724,739	230,750	4/6/1938	Palo Pinto	G
Proctor	Brazos River Authority	59,400	19,658	12/16/1963	Comanche	G
Smithers Lake	Houston L&P	18,750	28,711	12/16/1955	Fort Bend	H
Somerville	Brazos River Authority	160,110	48,000	12/16/1963	Washington	G
Squaw Creek Reservoir	Luminant	151,500	23,180	4/25/1973	Somervell	G
Stamford	City of Stamford	60,000	10,000	6/8/1949	Haskell	G
Stillhouse Hollow	Brazos River Authority	235,700	67,768	12/16/1963	Bell	G
Sweetwater	City of Sweetwater	10,000	3,740	10/17/1927	Nolan	G
Tradinghouse Steam	Luminant	37,800	12,000 15,000	8/21/1926 9/16/1966	McLennan	G
Twin Oak Steam Electric	Luminant	30,319	13,200	7/1/1974	Robertson	G
Waco	City of Waco	104,100 87,962	39,100 19,100 900 20,770	1/10/1929 4/16/1985 2/21/1979 9/12/1986	McLennan	G
Whitney	Brazos River Authority	50,000	18,336	8/30/1982	Hill	G
White River Reservoir	White River MWD	33,160 5,072 6,665	6,000	9/22/1958 11/21/1960 8/16/1971	Crosby	O

1 – A major reservoir is defined as one with an authorized capacity equal to or greater than 5,000 acft

2 – The Dept. of the Army (Fort Hood) owns water rights in Lake Belton alongside the BRA.

3 – The Dow Chemical Company holds diversion rights from the Brazos River totaling 238,156 acft/yr with priority dates ranging from 1929 to 1976, which are used in conjunction with the two off-channel reservoirs.

A number of interbasin transfer permits exist in the Brazos River Basin. These permits include both authorizations for diversions from the Brazos River Basin to adjacent river basins and from adjacent river basins to the Brazos River Basin. Most of the interbasin transfer permits are obviously located along the basin divide. Examples of interbasin transfers that authorize diversions from an adjacent river basin to the Brazos River Basin include: Lake Meredith (Canadian River Basin) to the Lubbock and Plainview areas in Lubbock and Hale County; Oak Creek Reservoir (Colorado River Basin) to the City of Sweetwater in Nolan County; and Lake Travis (Colorado River Basin) to the City of Cedar Park in Williamson County. Interbasin transfers authorized for diversion from the Brazos River Basin to other river basins include: Lake Mexia in Limestone County to part of the City of Mexia that lies in the Trinity River Basin; Teague City Lake in Freestone County to part of the City of Teague that lies in the Trinity River Basin; and Lake Granbury in Hood County to part of Johnson County that lies in the Trinity River Basin. A summary of interbasin transfers (excluding transfers authorized to adjacent coastal basins) associated with the Brazos River Basin is presented in Table 3.1-2.

Table 3.1-2. Summary of Interbasin Transfers Associated with the Brazos River Basin[1]

River Basin of Origin	Location of Use			Description	Authorized Diversion (acft/yr)	Priority Date
	River Basin	Planning Region	County			
Brazos	Trinity	G	Johnson	Lake Granbury to Johnson County	2,600	11/7/86
Brazos	Trinity	G	Limestone	Lake Mexia to part of Mexia	N/A	N/A
Brazos	Trinity	C	Freestone	Teague City Lake to part of Teague	N/A	N/A
Brazos	Colorado	G	Lampasas	Brazos River to City of Lampasas	180	6/23/14
Brazos	Trinity	C	Multiple	Lake Possum Kingdom to Trinity Basin	5,240	4/6/38
Canadian	Brazos	O	Lubbock	Lake Meredith to Lubbock Co. Area	. 151,200	1/30/56
Colorado	Brazos	G	Fisher	Lake J B Thomas to Fisher Co.	N/A	N/A
Colorado	Brazos	G	Nolan	Oak Creek Res. to Lk Trammel/Sweetwater	3,000	N/A
Colorado	Brazos	G	Callahan	Lake Clyde to Clyde	200	2/2/65
Colorado	Brazos	G	Taylor	Lake O H Ivie to Abilene	15,000	2/2/78
Colorado	Brazos	G	Williamson	Lake Austin to Williamson Co.	N/A	N/A
Colorado	Brazos	G	Williamson	Lake Travis to Cedar Park	16,500	N/A
Colorado	Brazos	G	Williamson	Lake Travis to Leander	6,400	N/A
Colorado	Brazos	F	Fisher	Snyder to City of Rotan	N/A	N/A
Red	Brazos	B	Archer	Small Lakes to Megargel	N/A	N/A
Red	Brazos	B	Archer	Lake Cooper & Olney to Olney	35	8/11/80
Red	Brazos	O	Floyd	Lake MacKenzie to Floydada & Lockney	N/A	N/A

Table 3.1-2. Summary of Interbasin Transfers Associated with the Brazos River Basin[1]

River Basin of Origin	Location of Use			Description	Authorized Diversion (acft/yr)	Priority Date
	River Basin	Planning Region	County			
Trinity	Brazos	G	Grimes	Lake Livingston to Grimes County SE	N/A	6/27/98
Trinity	Brazos	C	Parker	Lake Weatherford to part of Weatherford	N/A	N/A

1 – Excludes transfers authorized to adjacent coastal basins.

3.1.4 Water Supply Contracts

Many entities within Brazos G obtain surface water through water supply contracts. These supplies are usually obtained from entities that own surface water rights, and the contracts specify the quantity of water each year to a buyer for an established unit price. The BRA is the largest provider of water supply contracts in Brazos G, and has contracted to sell 696,719 acft/yr from its system of reservoirs in the Brazos River Basin. The BRA contracts raw water to various entities for long-term supply as well as short-term supply for municipal, industrial, and irrigation uses. Other water right holders that contract large quantities of raw water supply to other entities include the West Central Texas MWD and the Palo Pinto County MWD No. 1. The West Central Texas MWD contracts raw water from Hubbard Creek Reservoir for municipal use to the Cities of Abilene, Albany, Anson, and Breckenridge. The City of Abilene provides water to several other surrounding cities and water supply corporations. The Palo Pinto County MWD No. 1 contracts raw water from Lake Palo Pinto for industrial use to Brazos Electric Co-op as well as for municipal use for the City of Mineral Wells and several smaller water supply corporations.

Table 3.1-3 provides a summary of the contracts held by the identified Wholesale Water Providers within Brazos G, and includes other demands that those entities meet currently, such as a portion of county-aggregated manufacturing demands, etc. Note that some of the supplies shown change between decades. These changes reflect either anticipated changes in contracted amounts (through cancellation or amendment) or "meets" contracts where a WWP agrees to meet the water supply needs of the customer without a fixed annual contractual amount. The contracts shown make up the bulk of the water contracts in the region; however, there are numerous smaller entities which often contract between each other for emergency supplies or various other reasons which are not summarized here. The list also excludes WWPs located primarily outside Brazos G such as the Lower Colorado River Authority and the Colorado River Municipal Water District. Supplies from these entities are discussed in Section 3.5.

Table 3.1-3. Water Supply Contracts Held by WWPs and Other Current Demands Supplied by WWPs (acft/yr)

Wholesale Water Supplier	Year					
	2020	2030	2040	2050	2060	2070
BRA (LAKE AQUILLA)						
Aquilla WSD	5,953	5,953	5,953	5,953	5,953	5,953
City of Cleburne	5,300	5,300	5,300	5,300	5,300	5,300
Lake Whitney Water Company	150	150	150	150	150	150
Total Contracts	**11,403**	**11,403**	**11,403**	**11,403**	**11,403**	**11,403**
BRA (LITTLE RIVER SYSTEM)						
439 WSC	1,409	1,409	1,409	1,409	1,409	1,409
ALCOA	5,000	5,000	5,000	5,000	5,000	5,000
Bell County WCID #1	62,509	62,509	62,509	62,509	62,509	62,509
Bluebonnet WSC	8,301	8,301	8,301	8,301	8,301	8,301
Brushy Creek MUD	4,000	4,000	4,000	4,000	4,000	4,000
Central Texas WSC	12,045	12,045	12,045	12,045	12,045	12,045
Chisholm Trail SUD	11,100	11,100	11,100	11,100	11,100	11,100
City of Belton	2,500	2,500	2,500	2,500	2,500	2,500
City of Gatesville	5,898	5,898	5,898	5,898	5,898	5,898
City of Georgetown	32,168	32,168	32,168	32,168	32,168	32,168
City of Harker Heights	3,535	3,535	3,535	3,535	3,535	3,535
City of Lampasas	3,500	3,500	3,500	3,500	3,500	3,500
City of McGregor	810	810	810	810	810	810
City of Round Rock	24,854	24,854	24,854	24,854	24,854	24,854
City of Temple	30,453	30,453	30,453	30,453	30,453	30,453
Coryell City WSD	300	300	300	300	300	300
Country Harvest	8	8	8	8	8	8
Dog Ridge WSC	1,500	1,500	1,500	1,500	1,500	1,500
East Williamson Co Water	13,000	13,000	13,000	13,000	13,000	13,000
Fort Gates WSC	200	200	200	200	200	200
High Gabriel WSC	310	310	310	310	310	310
Jarrell-Schwertner WSC	1,000	1,000	1,000	1,000	1,000	1,000
Jerry Glaze	100	100	100	100	100	100
Jonah Water SUD	2,439	2,439	2,439	2,439	2,439	2,439
Kempner WSC	8,900	8,900	8,900	8,900	8,900	8,900
Lake Proctor Irrigation Authority	3,743	3,743	3,743	3,743	3,743	3,743

Table 3.1-3. Water Supply Contracts Held by WWPs and Other Current Demands Supplied by WWPs (acft/yr)

Wholesale Water Supplier	Year					
	2020	2030	2040	2050	2060	2070
Moffat WSC	500	500	500	500	500	500
North Leon River Irrigation Corporation	2,909	2,909	2,909	2,909	2,909	2,909
Salado WSC	1,600	1,600	1,600	1,600	1,600	1,600
Sun City Georgetown	15	15	15	15	15	15
The Grove WSC	400	400	400	400	400	400
Upper Leon River MWD	6,437	6,437	6,437	6,437	6,437	6,437
Wildflower County Club	200	200	200	200	200	200
Total Contracts	**251,643**	**251,643**	**251,643**	**251,643**	**251,643**	**251,643**
BRA (MAIN STEM)						
Acton MUD	7,000	7,000	7,000	7,000	7,000	7,000
All Seasons Turf Grass	50	50	50	50	50	50
Basa Resources	1,000	1,000	1,000	1,000	1,000	1,000
Bosque Generating, L.P.	6,500	6,500	6,500	6,500	6,500	6,500
Brazos Electric Power Coop.	11,600	11,600	11,600	11,600	11,600	11,600
Carr-Thomas Ranch	50	50	50	50	50	50
Citation Oil & Gas Corp.[1]	175	175	175	175	175	175
City of Brenham	4,200	4,200	4,200	4,200	4,200	4,200
City of Cleburne	9,700	9,700	9,700	9,700	9,700	9,700
City of Graham	1,000	1,000	1,000	1,000	1,000	1,000
City of Granbury	10,800	10,800	10,800	10,800	10,800	10,800
City of Lorena	1,000	1,000	1,000	1,000	1,000	1,000
City of Lubbock[2]	961	961	961	961	961	961
City of Marlin	1,200	1,200	1,200	1,200	1,200	1,200
City of Richmond	2,932	2,932	2,932	2,932	2,932	2,932
City of Rosebud	100	100	100	100	100	100
City of Rosenberg	4,500	4,500	4,500	4,500	4,500	4,500
City of Sugarland	6,388	6,388	6,388	6,388	6,388	6,388
City of Stamford[2]	1,820	1,820	1,820	1,820	1,820	1,820
City of Whitney	750	750	750	750	750	750
Decordova Bend States Owners	400	400	400	400	400	400
Double Diamond, Inc.	1,000	1,000	1,000	1,000	1,000	1,000
Dow Pipeline Company	16,000	16,000	16,000	16,000	16,000	16,000

Table 3.1-3. Water Supply Contracts Held by WWPs and Other Current Demands Supplied by WWPs (acft/yr)

Wholesale Water Supplier	Year					
	2020	2030	2040	2050	2060	2070
Exelon Generating	10,000	10,000	10,000	10,000	10,000	10,000
Fort Griffin SUD	353	353	353	353	353	353
Fred T. Owen Jr.	60	60	60	60	60	60
Granbury Recreational Association	50	50	50	50	50	50
Gulf Coast Water Authority	41,155	41,155	41,155	41,155	41,155	41,155
Hill Country Harbor Village	250	250	250	250	250	250
Horizon Turf Grass	350	350	350	350	350	350
Johnson County SUD	9,210	9,210	9,210	9,210	9,210	9,210
Key Energy Services	44	44	44	44	44	44
King Ranch Turfgrass	1,300	1,300	1,300	1,300	1,300	1,300
Lenmo Inc.	2,000	2,000	2,000	2,000	2,000	2,000
LSF Development Corp	90	90	90	90	90	90
Monarch Utilities I, L.P.	600	600	600	600	600	600
Mt Lakes Ranch	200	200	200	200	200	200
North Ridge Corporation	235	235	235	235	235	235
NRG Texas, LLC	83,000	83,000	83,000	83,000	83,000	83,000
NRG Texas, LLC	21,837	21,837	21,837	21,837	21,837	21,837
Oak Grove Management	3,838	3,838	3,838	3,838	3,838	3,838
Parker County SUD	1,100	1,100	1,100	1,100	1,100	1,100
Pecan Grove MUD	3,800	3,800	3,800	3,800	3,800	3,800
Pecan Plantation Owners Association	750	750	750	750	750	750
Possum Kingdom WSC	750	750	750	750	750	750
Ranch Owner's Association	250	250	250	250	250	250
Rex R. Worrell[3]	300	300	300	300	300	300
SLC Water Supply	200	200	200	200	200	200
South Texas Water Company	5,625	5,625	5,625	5,625	5,625	5,625
Sportsmans World MUD	125	125	125	125	125	125
Stephens County RWSC	800	800	800	800	800	800
Sugar Tree, Inc.	500	500	500	500	500	500
Texas Municipal Power Agency	3,600	3,600	3,600	3,600	3,600	3,600
TPWD	1,200	1,200	1,200	1,200	1,200	1,200
TXU Electric	122,447	122,447	122,447	122,447	122,447	122,447

Table 3.1-3. Water Supply Contracts Held by WWPs and Other Current Demands Supplied by WWPs (acft/yr)

Wholesale Water Supplier	Year					
	2020	2030	2040	2050	2060	2070
Vulcan Construction Materials	1,000	1,000	1,000	1,000	1,000	1,000
Wellborn SUD	4,000	4,000	4,000	4,000	4,000	4,000
Western Company of Texas	1,000	1,000	1,000	1,000	1,000	1,000
White Bluff Property Owners	1,000	1,000	1,000	1,000	1,000	1,000
Total Contracts	**412,145**	**412,145**	**412,145**	**412,145**	**412,145**	**412,145**
1 – Contract has since expired and not renewed 2 – Contract represents a priority calls commitment 3 – Contract has since been amended to 240 acft/yr						
AQUILLA WATER SUPPLY						
Brandon-Irene WSC	287	287	287	287	287	287
Chatt WSC (Hill C-O)	86	86	86	86	86	86
Files Valley WSC	1,709	1,709	1,709	1,709	1,709	1,709
Hill County WSC	230	230	230	230	230	230
Hillsboro	4,200	3,640	3,640	3,640	3,640	3,640
Total Contracts	**6,512**	**5,952**	**5,952**	**5,952**	**5,952**	**5,952**
BELL COUNTY WCID #1						
439 Water Supply Corp	750	750	750	750	750	750
City of Belton	5,966	5,966	5,966	5,966	5,966	5,966
City of Copperas Cove	8,824	8,824	8,824	8,824	8,824	8,824
City of Harker Heights	5,265	5,265	5,265	5,265	5,265	5,265
City of Killeen	39,964	39,964	39,964	39,964	39,964	39,964
City of Nolanville	990	990	990	990	990	990
Bell County-Other	750	750	750	750	750	750
Total Contracts	**62,509**	**62,509**	**62,509**	**62,509**	**62,509**	**62,509**
BISTONE MWSD						
Bistone MWSD	146	144	142	141	141	141
City of Mexia	4,480	4,480	4,480	4,480	4,480	4,480
Mexia State School (Limestone C-O)	280	280	280	280	280	280
City of Coolidge	225	225	225	225	225	225
Whiterock WSC (Limestone C-O)	274	274	274	274	274	274
Total Contracts	**5,405**	**5,403**	**5,401**	**5,400**	**5,400**	**5,400**
BLUEBONNET WSC						
City of Bruceville-Eddy	938	938	938	938	938	938

Table 3.1-3. Water Supply Contracts Held by WWPs and Other Current Demands Supplied by WWPs (acft/yr)

Wholesale Water Supplier	Year					
	2020	2030	2040	2050	2060	2070
Elm Creek WSC	654	654	654	654	654	654
City of McGregor	2,139	2,139	2,139	2,139	2,139	2,139
Moffat WSC	869	869	869	869	869	869
City of Moody	401	401	401	401	401	401
Pendleton WSC	461	461	461	461	461	461
Spring Valley WSC (McLennan C-O)	301	301	301	301	301	301
City of Woodway	1,362	1,362	1,362	1,362	1,362	1,362
Total Contracts	**7,125**	**7,125**	**7,125**	**7,125**	**7,125**	**7,125**
CENTRAL TEXAS WSC						
Armstrong WSC	783	783	783	783	783	783
Bell County WCID No. 5 (Bell C-O)	67	67	67	67	67	67
Bell-Milam-Falls WSC	2,327	2,327	2,327	2,327	2,327	2,327
City of Belton	100	100	100	100	100	100
Dog Ridge WSC	840	840	840	840	840	840
EAST BELL WSC	691	691	691	691	691	691
City of Holland	331	331	331	331	331	331
Little Elm Valley WSC (Milam C-O)	548	548	548	548	548	548
City of Lott	234	234	234	234	234	234
City of Rodgers	468	468	468	468	468	468
City of Rosebud	500	500	500	500	500	500
Salem-Elm Ridge WSC (Milam C-O)	245	245	245	245	245	245
Town of Buckholts	244	244	244	244	244	244
Town of Oenaville and Belfalls (Bell C-O)	157	157	157	157	157	157
West Bell County WSC	1,660	1,660	1,660	1,660	1,660	1,660
Westphalia WSC (Falls C-O)	45	45	45	45	45	45
Jarrell-Schwertner WSC	1,000	1,000	1,000	1,000	1,000	1,000
Total Contracts	**10,240**	**10,240**	**10,240**	**10,240**	**10,240**	**10,240**
EASTLAND CO WSD						
City of Eastland	3,314	3,314	3,314	3,314	3,314	3,314
City of Ranger	2,025	2,025	2,025	2,025	2,025	2,025
Eastland County Manufacturing	72	77	82	85	91	97
Total Contracts	**5,411**	**5,416**	**5,421**	**5,424**	**5,430**	**5,436**

Table 3.1-3. Water Supply Contracts Held by WWPs and Other Current Demands Supplied by WWPs (acft/yr)

Wholesale Water Supplier	Year					
	2020	2030	2040	2050	2060	2070
HEART OF TEXAS SUPPLIERS, LLC						
City of Hutto	5,600	5,600	5,600	5,600	5,600	5,600
Total Contracts	**5,600**	**5,600**	**5,600**	**5,600**	**5,600**	**5,600**
NORTH CENTRAL TEXAS MWA						
City of Aspermont	118	118	118	118	118	118
City of Benjamin (Knox C-O)	13	13	13	13	13	13
City of Goree (Knox C-O)	63	63	63	63	63	63
City of Haskell	637	637	637	637	637	637
City of Knox City	260	260	260	260	260	260
City of Munday	268	268	268	268	268	268
City of O'Brian (Haskell C-O)	10	10	10	10	10	10
City of Rochester (Haskell C-O)	26	26	26	26	26	26
City of Rule	45	45	45	45	45	45
Weinert (Haskell C-O)	44	44	44	44	44	44
Baylor WSC (Region B)	147	147	147	147	147	147
Knox County Rural WSC (Knox C-O)	55	55	55	55	55	55
Rhineland WSC (Haskell C-O)	37	37	37	37	37	37
Paint Creek WSC (Haskell C-O)	74	74	74	74	74	74
Total Contracts	**1,797**	**1,797**	**1,797**	**1,797**	**1,797**	**1,797**
PALO PINTO CO MWD No. 1						
City of Mineral Wells[1]	5,164	5,265	5,320	5,391	5,462	5,521
Lake Palo Pinto Area WSC (Palo Pinto C-O)	250	250	250	250	250	250
Palo Pinto County Steam-Electric	4,000	4,000	4,000	4,000	4,000	4,000
Total Contracts	**9,414**	**9,515**	**9,570**	**9,641**	**9,712**	**9,771**
1- Includes municipal supply to portion of Mineral Wells located in Region C.						
UPPER LEON MWD						
City of Comanche	706	706	706	706	706	706
City of De Leon	307	307	307	307	307	307
City of Dublin	598	598	598	598	598	598
City of Gorman	169	169	169	169	169	169
City of Hamilton	921	921	921	921	921	921
City of Stephenville	1,862	1,862	1,862	1,862	1,862	1,862

Table 3.1-3. Water Supply Contracts Held by WWPs and Other Current Demands Supplied by WWPs (acft/yr)

Wholesale Water Supplier	Year					
	2020	2030	2040	2050	2060	2070
Comanche County WSC	9	9	9	9	9	9
Total Contracts	**4,572**	**4,572**	**4,572**	**4,572**	**4,572**	**4,572**
WEST CENTRAL TEXAS MWD						
City of Abilene	20,400	20,400	20,400	20,400	20,400	20,400
City of Albany	2,200	2,200	2,200	2,200	2,200	2,200
City of Anson	2,400	2,400	2,400	2,400	2,400	2,400
City of Breckenridge	2,900	2,900	2,900	2,900	2,900	2,900
Total Contracts	**27,900**	**27,900**	**27,900**	**27,900**	**27,900**	**27,900**
ABILENE						
City of Abilene	22,032	20,857	21,302	21,901	22,350	22,694
Blair WSC (Taylor C-O)	77	77	77	77	77	77
City of Baird	77	77	77	77	77	77
City of Clyde	307	307	307	307	307	307
City of Lawn (Taylor C-O)	77	77	77	77	77	77
City of Merkel	353	353	353	353	353	353
City of Tye	184	184	184	184	184	184
Eula WSC (Callahan C-O)	61	61	61	61	61	61
Hamby WSC (Taylor C-O)	308	308	308	308	308	308
Hawley WSC	307	307	307	307	307	307
Potosi WSC	307	307	307	307	307	307
Steamboat Mountain WSC	307	307	307	307	307	307
S.U.N. WSC (Taylor C-O)	230	230	230	230	230	230
View Caps WSC (Taylor C-O)	199	199	199	199	199	199
Taylor County Manufacturing	1,248	1,395	1,537	1,658	1,831	2,019
City of Clyde[1]	11,837	11,837	11,837	11,837	11,837	11,837
Total Contracts	**37,911**	**36,883**	**37,470**	**38,190**	**38,812**	**39,344**
1 – Contract purchased by Clyde will be used to meet Jones County SE needs						
ANSON						
City of Anson	367	375	378	388	397	405
HAWLEY WSC	350	343	328	304	280	257
City of Hamlin	767	767	767	767	767	767
Total Contracts	**1,484**	**1,485**	**1,473**	**1,459**	**1,444**	**1,429**

Table 3.1-3. Water Supply Contracts Held by WWPs and Other Current Demands Supplied by WWPs (acft/yr)

Wholesale Water Supplier	Year					
	2020	2030	2040	2050	2060	2070
BRYAN						
City of Bryan	15,203	14,670	18,726	21,795	25,027	28,509
Wellborn SUD	2,240	2,240	2,240	2,240	2,240	2,240
Wickson Creek SUD	1,710	1,534	1,366	1,241	1,129	1,041
City of College Station	385	450	1,656	4,973	8,566	12,716
Brazos County Manufacturing	95	95	95	95	95	95
Brazos County Steam Electric	1	1	1	1	1	1
Total Contracts	**19,634**	**18,990**	**24,084**	**30,345**	**37,058**	**44,602**
CEDAR PARK						
City of Cedar Park[1]	16,556	16,748	15,581	15,203	15,201	15,200
Indian Springs Subdivision (Williamson C-O)	13	13	13	13	13	13
Williamson-Travis Co. MUD No.1	989	989	989	989	989	989
Blockhouse MUD	1,098	1,098	1,098	1,098	1,098	1,098
Williamson County-Manufacturing	790	912	1,033	1,142	1,243	1,355
Total Contracts	**19,446**	**19,760**	**18,714**	**18,445**	**18,544**	**18,655**
1 – Includes municipal supply to portion of Cedar Park located in Region K.						
CLEBURNE						
City of Cleburne	5,720	5,761	6,274	6,929	7,636	8,393
Johnson County Steam Electric	1,344	1,344	1,344	1,344	1,344	1,344
Johnson County Manufacturing	2,329	2,714	3,105	3,455	3,801	4,182
Total Contracts	**9,393**	**9,819**	**10,723**	**11,728**	**12,781**	**13,919**
GATESVILLE						
City of Gatesville	4,216	4,329	4,435	4,422	4,397	4,791
Coryell City Water Supply District	934	1,046	1,172	1,287	1,415	1,543
Fort Gates WSC (Coryell C-O)	120	120	120	120	120	120
Mountain WSC (Coryell C-O)	280	280	280	280	280	280
Flat WSC (Coryell C-O)	102	102	102	102	102	102
Total Contracts	**5,652**	**5,877**	**6,109**	**6,211**	**6,314**	**6,836**
JOHNSON COUNTY SUD						
Johnson County SUD[1]	5,113	5,712	6,363	7,127	7,994	8,934
City of Alvarado	2,241	2,241	2,241	2,241	2,241	2,241
Bethany WSC	1,120	1,120	1,120	1,120	1,120	1,120

Table 3.1-3. Water Supply Contracts Held by WWPs and Other Current Demands Supplied by WWPs (acft/yr)

Wholesale Water Supplier	Year					
	2020	2030	2040	2050	2060	2070
Monarch Utilities (Johnson C-O)	282	282	282	282	282	282
City of Keene	1,120	1,120	1,120	1,120	1,120	1,120
City of Joshua	951	1,115	1,292	1,494	1,722	1,968
Sundance (Johnson C-O)	56	56	56	56	56	56
Blue Water Oaks (Johnson C-O)	31	31	31	31	31	31
Walnut Creek MHP (Johnson C-O)	68	68	68	68	68	68
Total Contracts	**10,983**	**11,746**	**12,574**	**13,540**	**14,635**	**15,821**
1 – Includes municipal supply to portion of Johnson County SUD located in Region C.						
KEMPNER WSC						
Kempner WSC[1]	2,465	2,590	2,851	3,106	3,348	3,577
City of Kempner	195	209	225	240	254	267
City of Copperas Cove	252	252	252	252	252	252
City of Lampasas	1,281	1,281	1,281	1,281	1,281	1,281
Salado WSC	183	183	183	183	183	183
Lampasas County-Mining	25	25	25	25	25	25
Total Contracts	**4,400**	**4,539**	**4,816**	**5,087**	**5,343**	**5,584**
1 – Includes municipal supply to portion of Kempner WSC located in Region K.						
MINERAL WELLS						
City of Mineral Wells[1]	2,859	3,005	3,095	3,166	3,237	3,296
City of Graford	92	92	92	92	92	92
Palo Pinto WSC (Palo Pinto C-O)	179	179	179	179	179	179
Santo SUD (Palo Pinto C-O)	331	331	331	331	331	331
Sturdivant-Progress WSC (Palo Pinto C-O)	307	307	307	307	307	307
North Rural WSC (Palo Pinto C-O)	324	324	324	324	324	324
Palo Pinto County Manufacturing	10	10	10	10	10	10
Parker County SUD (Region C)	294	294	294	294	294	294
Millsap WSC (Region C)	184	184	184	184	184	184
Parker County Other (Region C)	479	479	479	479	479	479
Parker County Manufacturing (Region C)	25	25	25	25	25	25
Total Contracts	**5,084**	**5,230**	**5,320**	**5,391**	**5,462**	**5,521**
1 – Includes municipal supply to portion of Mineral Wells located in Region C.						
ROUND ROCK						

Table 3.1-3. Water Supply Contracts Held by WWPs and Other Current Demands Supplied by WWPs (acft/yr)

Wholesale Water Supplier	Year					
	2020	2030	2040	2050	2060	2070
City of Round Rock	23,635	29,691	37,049	44,943	53,991	63,377
Williamson County MUD #9 (Vista Oaks MUD)	797	906	1,027	1,247	1,500	1,762
Fern Bluff MUD	1,153	1,043	943	930	930	930
Williamson County MUD #10	935	1,062	1,204	1,403	1,687	1,982
Williamson County MUD #11	542	616	707	862	1,037	1,218
Walsh Ranch MUD (Williamson C-O)	114	111	110	109	109	109
Paloma Lake MUD (Williamson C-O)	137	166	205	277	374	475
Round Rock Ranch PUD (Williamson C-O)	33	44	60	89	127	168
Williamson County (Williamson C-O)	110	132	164	221	299	379
Blessing MHP (Williamson C-O)	96	116	143	194	262	332
Tal Tex (Williamson C-O)	164	198	244	331	447	567
Williamson County-Mining	3	3	3	3	3	3
Williamson County-Manufacturing	1,042	1,200	1,359	1,503	1,638	1,784
Total Contracts	**28,761**	**35,287**	**43,219**	**52,111**	**62,404**	**73,086**
STAMFORD						
City of Stamford	803	769	722	673	625	616
City of Leuders (Jones C-O)	52	52	52	52	52	52
Ericksdahl WSC (Jones C-O)	37	37	37	37	37	37
Paint Creek WSC (Haskell C-O)	87	87	87	87	87	87
Sagerton WSC (Haskell C-O)	73	73	73	73	73	73
Haskell County SE	2,200	2,200	2,200	2,200	2,200	2,200
Total Contracts	**3,252**	**3,218**	**3,171**	**3,122**	**3,074**	**3,065**
SWEETWATER						
City of Sweetwater	1,813	1,893	1,913	1,977	2,030	2,079
Bitter Creek WSC	460	460	460	460	460	460
City of Blackwell	168	168	168	168	168	168
City of Bronte (Region F)	504	504	504	504	504	504
City of Roby	350	350	350	350	350	350
City of Trent	187	187	187	187	187	187
Nolan County Manufacturing	368	368	368	368	368	368
Total Contracts	**3,850**	**3,930**	**3,950**	**4,014**	**4,067**	**4,116**
TEMPLE						

Table 3.1-3. Water Supply Contracts Held by WWPs and Other Current Demands Supplied by WWPs (acft/yr)

Wholesale Water Supplier	Year					
	2020	2030	2040	2050	2060	2070
City of Temple	18,571	19,446	20,197	20,691	20,873	22,992
City of Little River-Academy	323	323	323	323	323	323
City of Morgans Point Resort	1,935	1,935	1,935	1,935	1,935	1,935
City of Troy	968	968	968	968	968	968
Arrowhead Hill (Bell C-O)	323	323	323	323	323	323
Bell County Manufacturing	481	481	481	481	481	481
Total Contracts	**22,601**	**23,476**	**24,227**	**24,721**	**24,903**	**27,022**
WACO						
City of Waco	30,114	29,344	28,224	27,059	26,921	28,333
City of Bellmead	0	0	0	0	0	0
City of Hewitt	383	558	877	1,198	1,519	1,833
City of Lacy-Lakeview	1,120	1,120	1,120	1,120	1,120	1,120
City of Woodway	431	657	859	1,083	1,316	1,548
City of Beverly Hills	252	261	268	281	297	312
City of West	1,120	1,120	1,120	1,120	1,120	1,120
City of Robinson	560	560	560	560	560	560
Bold Springs Water Supply (McLennan C-O)	560	560	560	560	560	560
Hilltop Water Supply (McLennan C-O)	97	97	97	97	97	97
Central Bosque WSC (McLennan C-O)	70	70	70	70	70	70
McLennan County Manufacturing	2,503	2,888	3,249	3,618	3,948	4,403
McLennan County Steam Electric (SCEA)	15,000	15,000	15,000	15,000	15,000	15,000
Total Contracts	**52,211**	**52,236**	**52,005**	**51,766**	**52,528**	**54,956**

3.2 Determination of Surface Water Availability

3.2.1 Modified TCEQ Water Availability Model of the Brazos River Basin (Brazos G WAM)

Determination of water availability for existing water rights is based on a rather complex function of location, hydrologic conditions, diversion volume, reservoir storage, and priority date. Computer models that are capable of analyzing these complex inter-relationships are typically employed to determine water availability for water rights. Water availability estimates for the Brazos G Area were developed using a computer model for the Brazos River Basin. The Water Rights Analysis Package (WRAP) computer model was developed at Texas A&M University for use as a water resources management tool. The model can be used to evaluate the reliability of existing water rights and to determine unappropriated streamflow potentially available for new water right permits. WRAP simulates the management and use of streamflow and reservoirs over a historical period of record, adhering to the prior appropriation doctrine governing water rights in Texas.

The TCEQ maintains a Water Availability Model (TCEQ WAM) for the Brazos River Basin that contains information on all water rights in the basin. The TCEQ WAM is the fundamental tool used to determine surface water availability throughout the Brazos River Basin for water rights permitting. Embedded within this model are certain assumptions that the TCEQ specifies when analyzing water right reliabilities. These assumptions are not necessarily the most appropriate to apply to the regional water planning process. For example, the TCEQ WAM utilizes permitted storage capacities for all reservoirs, whereas, water supply planning should be based upon current and future sedimentation conditions in the reservoirs.

The Brazos G RWPG has approved (and the TWDB has authorized) several assumptions to be incorporated into the TCEQ WAM for purposes of determining surface water availability. With these modifications, the TCEQ WAM is hereinafter referred to as the "Brazos G WAM." These assumptions include the following items.

- Inclusion of a certain level of current and future return flows by entities located throughout the basin. These return flows were based on historical return flow information as well as projected future rates assuming an aggressive plan for future reuse. The return flow amounts were reviewed and acknowledged by each entity and by the Brazos G RWPG before being included in the model. Table 3.2-1 lists the entities and the annual amount of return flows approved for use in the Brazos G WAM. Multiple entries for the same entity indicate multiple discharge locations.
- The TCEQ WAM assumes all diversions from storage occur lakeside and does not take into account BRA contracts located throughout the basin. Therefore the Brazos G WAM was modified with all BRA contracts located and modeled at their actual diversion locations and able to receive releases from multiple reservoirs when applicable.
- The Brazos G WAM uses Year 2020, or the most up to date reservoir survey as available, and estimated Year 2070 elevation-area-capacity information for all reservoirs authorized for greater than 5,000 acft storage capacity.
- The Brazos G WAM includes five subordination agreements as agreed to by the TWDB:
    - Possum Kingdom Reservoir is subordinated to Lake Alan Henry,
    - Possum Kingdom Reservoir is subordinated to the Fort Phantom Hill Reservoir Scalping water right located on the Clear Fork of the Brazos River,
    - Possum Kingdom Reservoir is subordinated to Hubbard Creek Reservoir,
    - Possum Kingdom Reservoir is subordinated to the City of Stamford's California Creek pump-back operation into Lake Stamford, and

- Lake Waco is subordinated to the City of Clifton's 1996 priority date water right.

These assumptions were used throughout the regional planning process for the analyses that were used to determine surface water availability for existing rights, and also for the analyses that were used to determine potential supplies from new water management strategies. The assignment of surface water availability to individual Water User Groups and Wholesale Water Providers is described in Chapter 4.

Table 3.2-1. Return Flows included in the Brazos G WAM

Facility	County	Current Returns (MGD)[1]	Confirmed Estimated 2070 Discharge (MGD)[2,3]
Bell County WCID	Bell	0.45	0.50
Bell County WCID	Bell	2.38	5.00
Bell County WCID	Bell	6.67	9.00
Bell County WCID	Bell	2.83	1.00
BRA SLRSS	Fort Bend	3.75	6.91
BRA/LCRA BCRWSS West	Williamson	13.94	26.03
BRA/LCRA BCRWSS East	Williamson	1.21	2.26
City of Angleton	Brazoria	1.82	2.65
City of Bellville	Austin	0.41	0.57
City of Breckenridge	Stephens	0.45	0.36
City of Brenham	Washington	1.85	1.69
City of Cameron	Milam	0.52	0.35
City of Copperas Cove	Coryell	0.72	0.77
City of Copperas Cove	Coryell	0.95	1.01
City of Copperas Cove	Coryell	0.42	0.44
City of Eastland	Eastland	0.23	0.18
City of Freeport	Brazoria	0.67	0.97
City of Gatesville	Coryell	0.59	0.63
City of Gatesville	Coryell	1.19	1.26
City of Georgetown	Williamson	1.20	1.00
City of Georgetown	Williamson	1.09	1.00
City of Graham	Young	0.76	0.48
City of Granbury	Hood	1.02	0.95
City of Harker Heights	Bell	1.76	2.40
City of Hearne	Robertson	0.49	0.52
City of Hillsboro	Hood	1.02	0.95
City of Hutto	Williamson	0.93	5.60

Table 3.2-1. Return Flows included in the Brazos G WAM

Facility	County	Current Returns (MGD)[1]	Confirmed Estimated 2070 Discharge (MGD)[2,3]
City of Lampasas	Lampasas	0.41	0.43
City of Leander	Williamson	0.92	1.71
City of Marlin	Falls	0.49	0.50
City of McGregor	McLennan	0.46	0.45
City of Mineral Wells	Parker	0.36	0.56
City of Mineral Wells	Palo Pinto	1.23	1.15
City of Navasota	Grimes	0.53	0.54
City of Richmond	Fort Bend	1.40	2.98
City of Richmond	Fort Bend	3.80	2.40
City of Rosenberg	Fort Bend	0.95	0.73
City of Rosenberg	Fort Bend	1.48	1.41
City of Stephenville	Erath	1.57	1.63
City of Sugarland	Fort Bend	3.71	6.83
City of Sugarland	Fort Bend	3.71	6.83
City of Taylor	Williamson	1.35	3.93
City of West Columbia	Brazoria	0.60	0.87
Fort Bend MUD 106	Fort Bend	0.99	1.82
Fort Bend MUD 112	Fort Bend	1.35	1.50
Pecan Grove MUD	Fort Bend	0.93	1.71
Prairie View A&M University	Waller	0.44	0.70
Texas A&M University	Brazos	0.30	0.17
	Total:	**76.30**	**113.33**
	Total (acft/yr):	**85,456**	**126,930**

1 – Current return flow estimates developed during the development of the 2016 Brazos G Plan and approved by the discharging entities.

2 – Initial estimate assumes 75% of Y2020 will continue to be discharged (assumed 25% reuse) and 50% of wastewater flows in excess of Y2020 levels will be discharged (50% reuse of any future increases in effluent). Final estimates were refined after consultation with local dischargers.

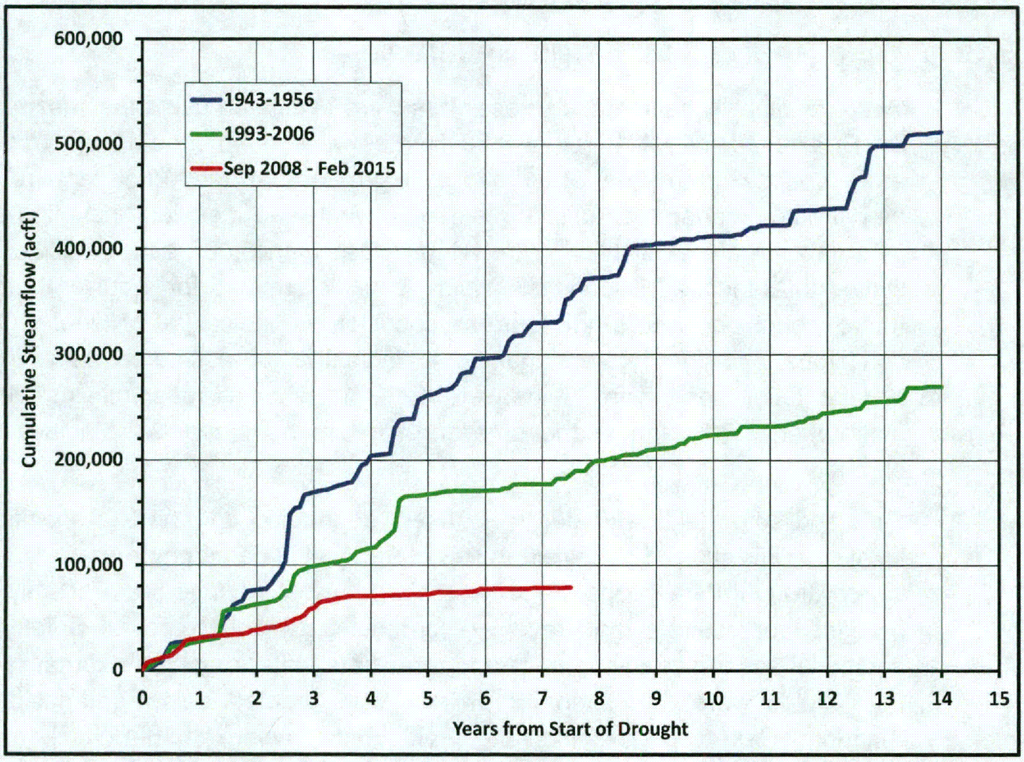
3 – Entities operating WWTPs but are not shown have requested that zero effluent be made available in the WAM because they plan to utilize (reuse) all future effluent.

The Brazos G WAM contains 77 primary control points that contain naturalized flow information, and 67 evaporation data sets used to calculate evaporation for the 650 reservoirs included in the model. The period of record for the TCEQ WAM is 1940-1997. This is also true for the Brazos G WAM, although Section 3.2.2 will discuss some updates made to more accurately reflect current drought conditions in the upper Brazos Basin. Water availability computations are performed at over 3,800 control points located throughout the river basin in the process of analyzing more than 1,700 water right records. The Brazos G WAM contains water right data available from the TCEQ for all water rights in the Brazos Basin as of September 2008 (obtained from the TCEQ on September 25, 2012). Water right applications submitted or approved after this date are not reflected in the model. A summary of yield data for major reservoirs analyzed in the Brazos G WAM is presented in Section 3.2.3.

3.2.2 Reliability of Surface Water Supplies and New Upper Basin Drought of Record

Hydrologic conditions are a primary factor that affects the reliability of water rights. Severe drought periods have been experienced in all areas of the Brazos River Basin. The drought of record for most areas of Brazos G occurred in the 1950s with other less severe drought periods occurring in the 1960s, 1970s, 1980s, and even recently in the 1990s. In some parts of the upper Brazos Basin, the recent drought of the 1990s has continued past the turn of the century, and in many places streamflow data indicate that its severity is greater than that of the drought that occurred in the 1950s. From 1993 through 2006, the region of Texas near Abilene experienced serious drought conditions. Streamflows in the Clear Fork of the Brazos River (Clear Fork) during this 14-year period were only 53 percent of the cumulative 14-year flows that occurred during the previous drought of record which occurred from 1943 through 1956. Figure 3.2-1 illustrates this with a comparison of cumulative gaged flows for the Clear Fork at Nugent gage during the drought of the 1950s and the drought from 1993 through 2006. The year 2007 saw an end to the latter drought period with most area streams returning to above normal flow conditions, and reservoir levels recovering from historically low conditions. The City of Abilene, located in this upper portion of the Brazos Basin, initiated a study to quantify the drought ending in 2007 and its effect on the supplies of the region. The drought primarily affected the upper parts of the Brazos Basin, specifically those reservoirs upstream of Possum Kingdom Reservoir located in the Clear Fork of the Brazos watershed, and others in close proximity. A new tool was developed to analyze the current drought, given that the period of record of the existing Brazos G WAM only extends through 1997.

Figure 3.2-1. Comparison of Cumulative Streamflows for Three Drought Periods for the Clear Fork at Nugent, TX Streamgage (08084000)



Several possible studies and tools were evaluated to determine their effectiveness at quantifying the current drought. The selected tool was a modified version of the existing Brazos G WAM. The hydrology of the Brazos G WAM for the Abilene study was extended through June of 2004 for the primary control points located within the drought-stricken area with the last control point in the model being the Brazos River at Palo Pinto. During the Brazos G Regional Planning Group Phase I studies preceding development of the 2011 Brazos G Plan, this tool developed for the City of Abilene was updated to include hydrology through June 2008 and renamed the Brazos G Mini-WAM. Naturalized flows were updated using the latest information for the 16 primary controls included in this segmented version of the Brazos G WAM, and 15 evaporation data sets were updated for inclusion into this model. All water rights and control points outside the updated drought study area were removed and not included in the analysis.

The modified Brazos G Mini-WAM was used to determine safe yields of reservoirs upstream of Possum Kingdom Reservoir (see Section 3.2.3). For some reservoirs, the drought ending in 2007 is more severe than the 1950s drought, resulting in lower estimates of yield and the need for entities in this part of the basin to consider 1-year and 2-year safe yields for water supply planning purposes.

Also included in Figure 3.2-1 is the gaged streamflow at Nugent for the current drought beginning in September 2008. When the current drought cumulative streamflows are compared to the other two droughts at the seven years mark from the beginning of the drought, total streamflow is 22 percent and 42 percent of the total streamflow for the 1950's and 2006 droughts, respectively. This comparison shows that the current drought is much more severe thus far but has not reached the duration of the previous droughts.

If the current drought continues, it is recommended that the Brazos G Mini-WAM be updated to include the current drought for the next regional planning cycle.

3.2.3 Yield Analysis for Large Reservoirs

Water availability estimates for reservoirs were evaluated using the Brazos G WAM and the Brazos G Mini-WAM. Two yield estimates were determined using updated elevation-area-capacity information for all reservoirs greater than 5,000 acft storage capacity and as-permitted capacities for all reservoirs where no detailed elevation-area-capacity information were available, typically those less than 5,000 acft capacity. Yields were limited to authorized diversions. Yields were determined for a current condition and a future condition, where the current condition is indicative of year 2020 sediment conditions and the future condition is indicative of estimated year 2070 reservoir sedimentation conditions. Yields were determined for all reservoirs greater than 5,000 acft authorized storage, and for smaller reservoirs that serve as the sole water supply for an entity.

Firm and safe yield estimates were used, depending on where a specific reservoir is located. Utilization of safe yield in lieu of firm yield is a common practice in west Texas where droughts are frequent and severe, and water managers are acutely aware that a drought more severe than recent recorded history could occur. Safe yield provides additional assurance of supply in an area where water resource alternatives are limited. Firm yields were calculated for all reservoirs located below and including Possum Kingdom Reservoir, except Lake Palo Pinto, where a 6-month safe yield was determined. All reservoirs upstream of Possum Kingdom were evaluated on a 1-year safe yield basis. A 1-year safe yield is defined as the amount of water that can be diverted from a reservoir during a repeat of the worst drought of record while still maintaining a reserve capacity equal to a 1-year supply. The period of record for the firm yield analyses using the Brazos G WAM was 1940 –1997. The period of record for the safe yields upstream of Possum Kingdom using the Brazos G Mini-WAM was 1940 – June 2008.

Two-year safe yields were calculated for Hubbard Creek Reservoir and Fort Phantom Hill Reservoir at the request of the reservoir owners, and approval of the TWDB. A 2-year safe yield is used to provide a greater assurance to reservoir owners that supplies are not over-estimated when considering droughts worse than the drought of record.

A summary of firm and safe yield estimates for major reservoirs and minor reservoirs used for municipal supply is presented in Table 3.2-2.

Table 3.2-2. Yields for Reservoirs in the Brazos G Area (acft/yr)

Water Right ID	Reservoir Name	Yield	
		2020	2070
BRA Reservoirs (Firm Yield)			
C5155	Possum Kingdom	230,750	224,692
C5156	Granbury	64,712	53,310
C5157	Whitney	18,336	18,336

Table 3.2-2. Yields for Reservoirs in the Brazos G Area (acft/yr)

Water Right ID	Reservoir Name	Yield	
		2020	2070
C5158	Aquilla	13,315	12,099
C5159	Proctor	17,742	16,957
C5160	Belton	110,562	108,722
C5161	Stillhouse Hollow	66,230	66,195
C5162	Georgetown	11,743	12,003
C5163	Granger[1]	17,017	14,192
C5164	Somerville	41,308	38,910
C5165	Limestone	65,364	55,677
Large Non-BRA Reservoirs (Firm Yield)			
C3758, C5272	Alcoa	14,000	14,000
C5311, C5307	Gibbons Creek	9,740	9,740
C4345	Lake Creek	9,835	9,810
C34403	Lake Davis[3]	160	70
C3470	Lake Leon	5,488	5,331
C40391	Lake Mineral Wells	2520	2406
C4031	Lake Palo Pinto[2]	12,879	11,799
C4106	Pat Cleburne	5,040	4,680
C4097	Squaw Creek	9,285	9,222
C4342	Tradinghouse	4,908	4,897
C5298	Twin Oaks	2,885	2,795
P5551, P5899	Waco	79,877	79,877
C3693	White Reservoir	1,099	0
Minor Non Mini-WAM Reservoirs (Firm Yield)			
P4135	Crawford	1	1
C3465	Eastland	460	450
C4024	Gordon	5	5
C4355	Marlin	1,550	1,550
P5000	Mart	0	-
P5085	Robinson	-	-
P5744	Somervell	-	-
C4019	Strawn	160	-
C3450	Throckmorton	325	325
Mini-WAM Reservoirs (Safe Yield)			

Table 3.2-2. Yields for Reservoirs in the Brazos G Area (acft/yr)

Water Right ID	Reservoir Name	Yield	
		2020	2070
C4142	Lake Abilene[1]	1,074	400
C4211	Lake Cisco	1,090	1,075
C4214	Lake Daniel	200	187
C4151, C4161, C4139, C4165	Fort Phantom Hill Reservoir[4]	11,650	10,320
C3458	Lake Graham-Eddleman	4,250	3,410
C4213	Hubbard Creek Reservoir[4]	27,010	26,317
C4150	Lake Kirby[1]	525	470
C4179	Lake Stamford	5,510	4,910
C4130	Lake Sweetwater[1]	1,120	1,115
C4128	Sweetwater_Trammel_RC4128[1]	545	-
C4152	Lytle Lake	230	-
C4180	City of Hamlin Lake	250	-
C4181	Anson North	202	-
C4194	Woodson	99	-
C4202	Baird	230	-
C4208	McCarty	380	-
C4207	Moran	85	-
C3462	Bryson	75	-
C3444	Millers Creek Reservoir[5]	1,300	200
Mini-WAM Reservoirs (Firm Yield)			
C4142	Lake Abilene[1]	1,675	1,100
C4211	Lake Cisco	1,315	1,311
C4214	Lake Daniel	290	269
C4151, C4161, C4139, C4165	Fort Phantom Hill Reservoir	21,799	21,630
C3458	Lake Graham-Eddleman	5,100	5,100
C4213	Hubbard Creek Reservoir	41,251	40,352
C4150	Lake Kirby[1]	935	880
C4179	Lake Stamford	8,640	7,910
C4130	Lake Sweetwater[1]	1,470	1,460
C4128	Sweetwater_Trammel_RC4128[1]	700	-
C4152	Lytle Lake	230	-
C4180	City of Hamlin Lake	300	-

Table 3.2-2. Yields for Reservoirs in the Brazos G Area (acft/yr)

Water Right ID	Reservoir Name	Yield	
		2020	2070
C4181	Anson North	300	-
C4194	Woodson	60	-
C4202	Baird	315	-
C4208	McCarty	550	-
C4207	Moran	175	-
C3462	Bryson	115	-
C3444	Millers Creek Reservoir[5]	3,000	600

1 – Reservoir not used for supply by owning entity.

2 – Yield volumes for Lake Palo Pinto are based on a 6-month safe yield calculation.

3 – Lake Davis is located upstream of Possum Kingdom Reservoir, but since it is not used for municipal supply, a firm yield was used to determine available supply and not safe yield.

4 – Yield volumes are based on a 2-year safe yield calculation. The 1-year safe yield estimate for Fort Phantom Hill Reservoir is 16,300 acft/yr and is 32,410 acft/yr for Hubbard Creek Reservoir.

5 – Not located in area covered by Brazos G Mini-WAM. Yield was calculated outside the WAM using extended stream flow records.

3.2.4 Reliability of Run-of-the-River and Small Reservoir Water Rights

The results of the Brazos G WAM simulations include water availability estimates for each water right located in the Brazos Basin. Summaries of water available to run-of-the-river water rights (including rights with small reservoirs) are presented in Appendix G. If the supply for a water right was determined by a firm or safe yield analysis then this number is shown in the appendix. Water availability for other rights is expressed in terms of the minimum annual supply, which is defined as the water available during the most severe drought year over the 58-year simulation period of 1940 to 1997. Water right reliabilities were calculated simulating both current and future reservoir sedimentation conditions. The minimum annual supplies for run-of-river water rights (based on minimum monthly diversions) were used to determine the supplies available by type of use and county for comparison with demands as described in Chapter 4.

In previous planning cycles another definition was by the Brazos G RWPG to define supply for irrigation water rights, which is commonly referred to as the 75/75 convention. The 75/75 convention defines a reliable irrigation supply as that quantity of which at least 75% can be diverted at least 75% of the time. Note that supplies as determined using the 75/75 convention would not be available during extreme droughts. Table 3.2-3 summarizes the 75/75 estimates from the 2011 Brazos G Water Plan as compared to the reliability of supplies for irrigation using the minimum annual reliability analysis. Utilization of the minimum annual reliability significantly reduces the estimates of available supply (by more than 113,000 acft/yr region-wide) and results in greater projected shortages for irrigation in numerous counties than the 75/75 convention.

Table 3.2-3. Comparison of Irrigation Reliability Analysis by County

County	75/75 Supply Reliability (acft/yr)	2070 Supply Reliability (acft/yr)
Bell	5,829	635
Bosque	11,140	131
Brazos	4,480	0
Burleson	8,840	0
Callahan	49	0
Comanche	19,117	3,511
Coryell	1,651	530
Eastland	2,404	75
Erath	5,230	98
Falls	8,188	174
Fisher	758	17
Grimes	1,678	0
Hamilton	4,070	47
Haskell	830	0
Hill	2,992	1,009
Hood	12,667	4,461
Johnson	1,079	187
Jones	2,570	646
Kent	345	0
Knox	2,951	70
Lampasas	1,253	103
Lee	181	20
Limestone	19	14
McLennan	8,868	1,337
Milam	8,823	42
Nolan	120	40
Palo Pinto	3,133	550
Robertson	9,081	535
Shackelford	85	0
Somervell	1,105	0
Stephens	3,541	0
Stonewall	11	8
Taylor	232	0
Throckmorton	12	8

Table 3.2-3. Comparison of Irrigation Reliability Analysis by County

County	75/75 Supply Reliability (acft/yr)	2070 Supply Reliability (acft/yr)
Washington	2,876	0
Williamson	1,087	66
Young	954	0
Total	**138,249**	**14,314**

3.2.5 Unappropriated Flows in the Brazos G Area

The Brazos G WAM calculates unappropriated flow each month for the 1940 – 1997 period at each modeled location in the basin. Unappropriated flow is the flow that could potentially be made available to a new water right permit. This unappropriated flow is computed assuming SB3 instream flow restrictions and full use of all existing water rights. The quantity of unappropriated flow varies throughout the river basin depending on location. Summaries of unappropriated flows from the Brazos G WAM were developed at the following locations:

- Brazos River at South Bend (BRSB23),
- Brazos River near Glen Rose (BRGR30),
- Brazos River near Aquilla (BRAQ33),
- Bosque River near Waco (BOWA40),
- Little River at Cameron (LRCA58),
- Brazos River near Bryan (BRBR59),
- Brazos River near Hempstead (BRHE68), and
- Brazos River at Richmond (BRRI70).

These locations effectively summarize flow conditions throughout the river basin and are located at current or discontinued USGS streamflow gaging stations, which are also primary control points in the Brazos G WAM. Table 3.2-4 summarizes the monthly and annual unappropriated flows at these selected locations for the future conditions run. Figures 3.2-2 through 3.2-9 illustrate the annual time series of unappropriated flows at each location. As Table 3.2-4 and Figures 3.2-2 through 3.2-9 demonstrate, locations further downstream on major streams tend to have more unappropriated flow than those upstream with less contributing drainage area. These data suggest that any new potential water rights requiring a firm supply would need to be permitted with storage. In order to provide a firm supply the right would have to operate to fill the reservoir and meet diversions during wet times, while relying on stored water to meet diversions during drought times. As shown in these figures, unappropriated flow is not available at the South Bend gage location for ten years, with three of these years occurring during the drought years of the 1950s. Conversely, unappropriated flow is potentially available in most years at Richmond in the lower basin, and often in large quantities. Unappropriated flow is not available at Richmond for three years during the severe drought of the 1950s, which is the lowest flow period during the 1940 to 1997 period for this gage.

Table 3.2-4. Summary of Unappropriated Flow at Selected Brazos G WAM Locations

Control Point	Unappropriated Flow Estimates								Max. No. of Consecutive Months with Zero Unappropriated Flow
	Monthly Unappropriated Flows (acft)				Annual Unappropriated Flows (acft)				
	Maximum	Minimum	Mean	Median	Maximum	Minimum	Mean	Median	
BRSB23	1,208,842	0	20,640	0	2,177,465	0	247,684	108,866	39
BRGR30	2,487,509	0	36,790	0	3,389,603	0	441,479	221,497	31
BRAQ33	2,742,890	0	56,843	0	3,904,733	0	682,119	475,177	31
BOWA40	525,111	0	19,150	0	947,992	0	230,129	179,294	33
LRCA58	1,374,049	0	62,291	0	3,611,680	0	747,492	553,871	41
BRBR59	4,141,594	0	168,753	0	9,109,566	0	2,025,035	1,640,037	31
BRHE68	4,783,453	0	213,478	0	11,041,229	0	2,561,741	2,210,633	31
BRRI70	5,134,010	0	247,730	1,653	11,919,416	0	2,972,757	2,492,537	27

Figure 3.2-2. Estimated Annual Unappropriated Flow at Brazos River at South Bend

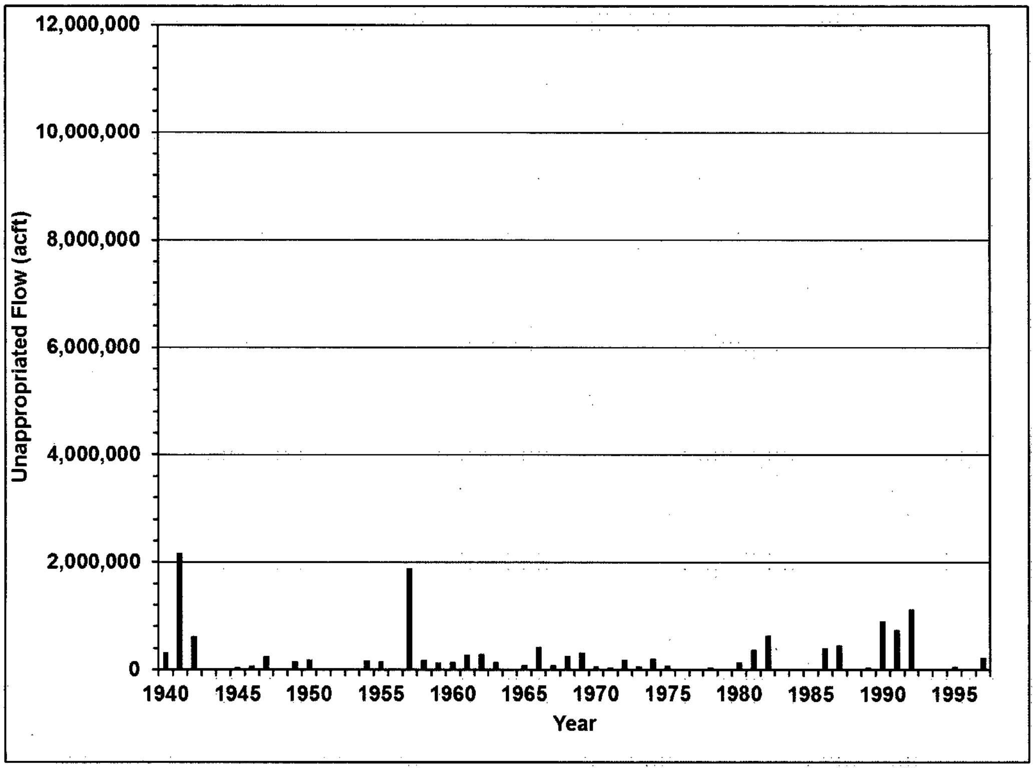


Figure 3.2-3. Estimated Annual Unappropriated Flow at Brazos River near Glen Rose

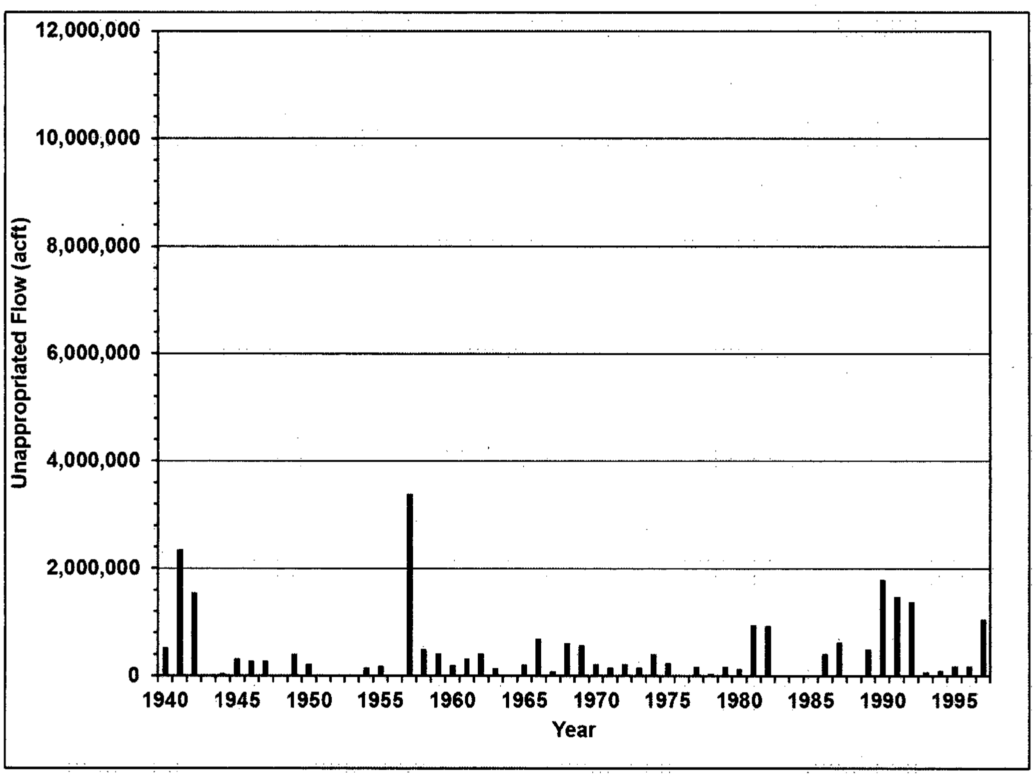


Figure 3.2-4. Estimated Annual Unappropriated Flow at Brazos River near Aquilla

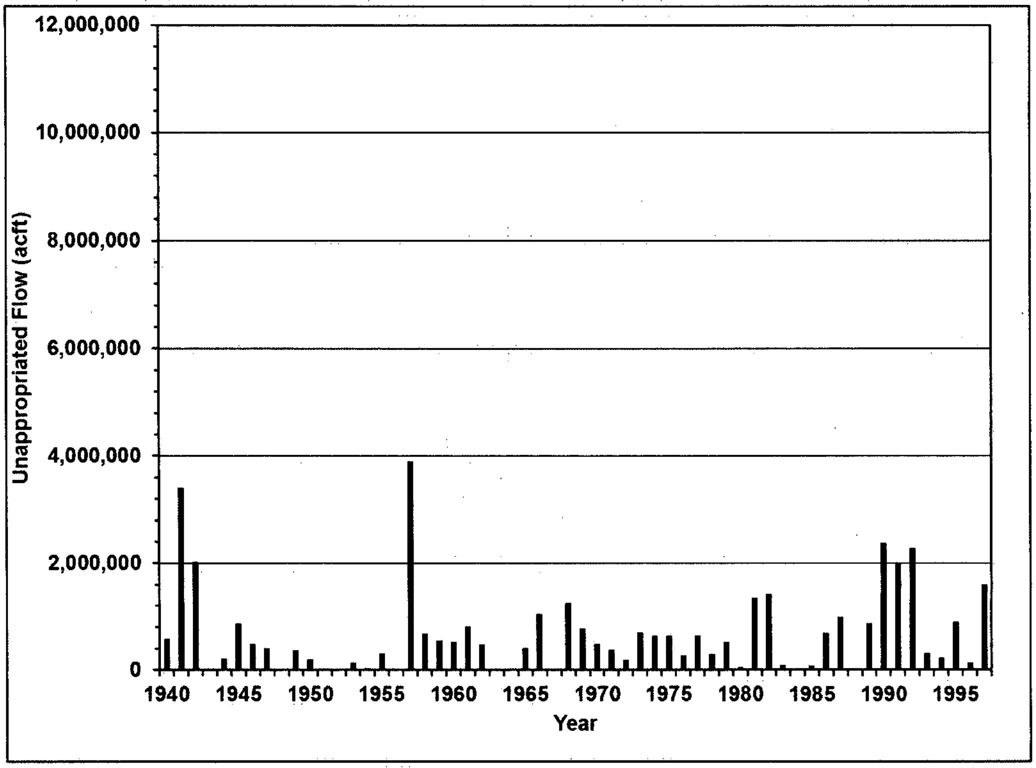


Figure 3.2-5. Estimated Annual Unappropriated Flow at Brazos River near Waco

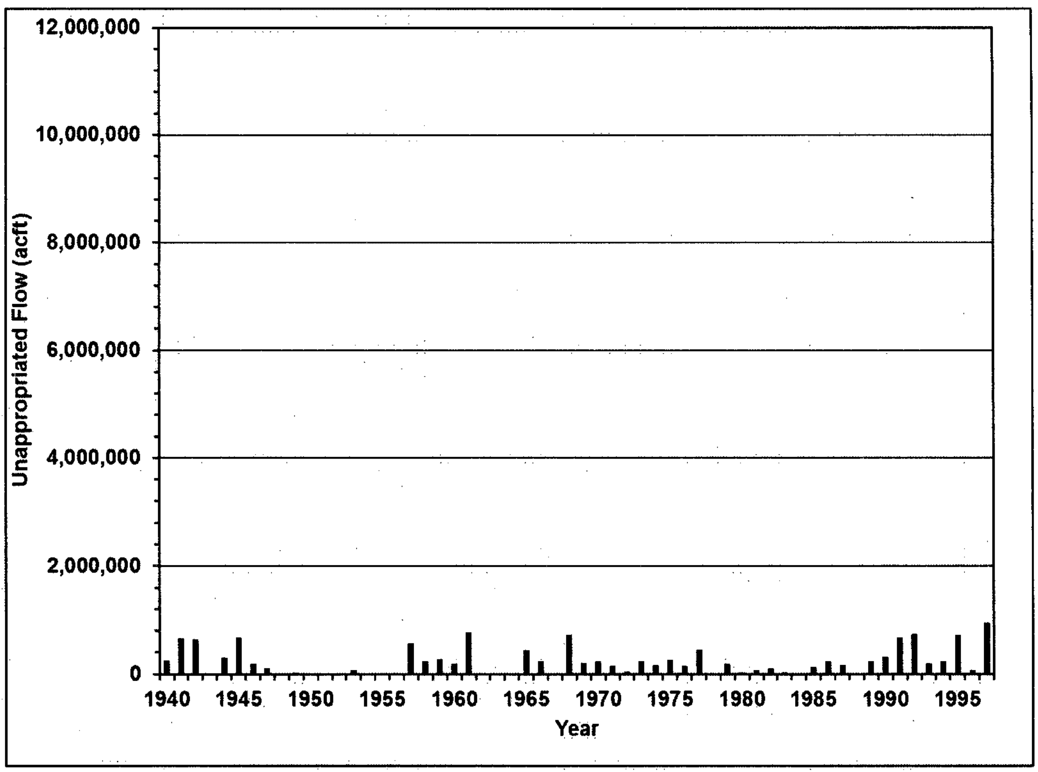


Figure 3.2-6. Estimated Annual Unappropriated Flow at Little River at Cameron

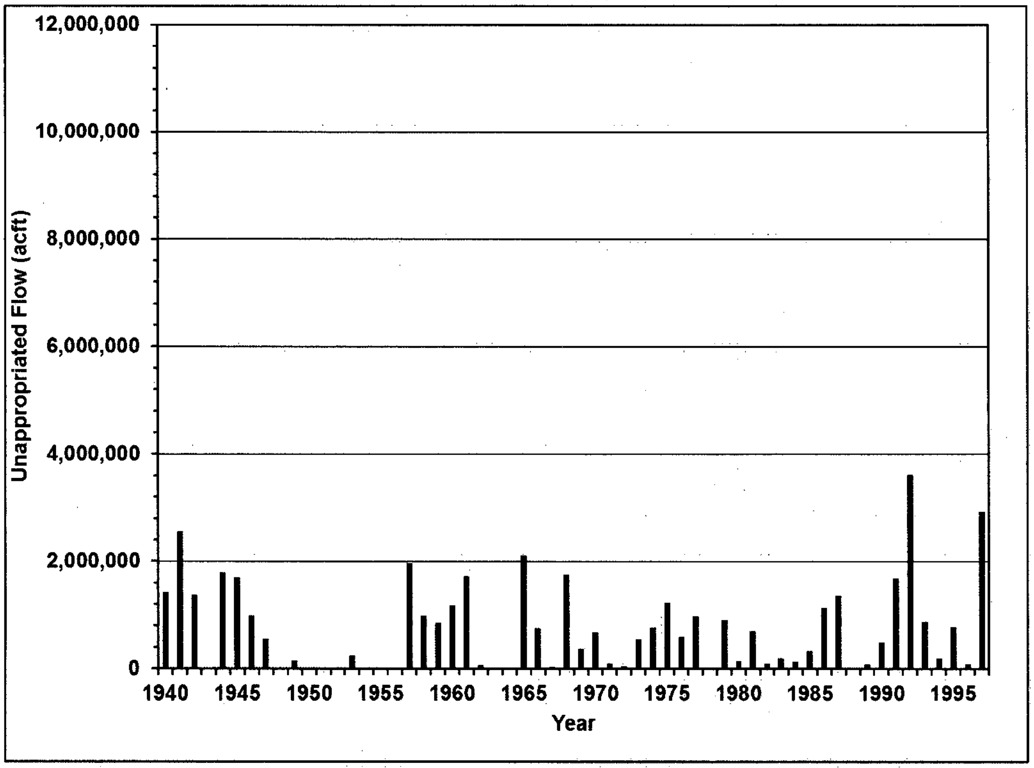


Figure 3.2-7. Estimated Annual Unappropriated Flow at Brazos River near Bryan

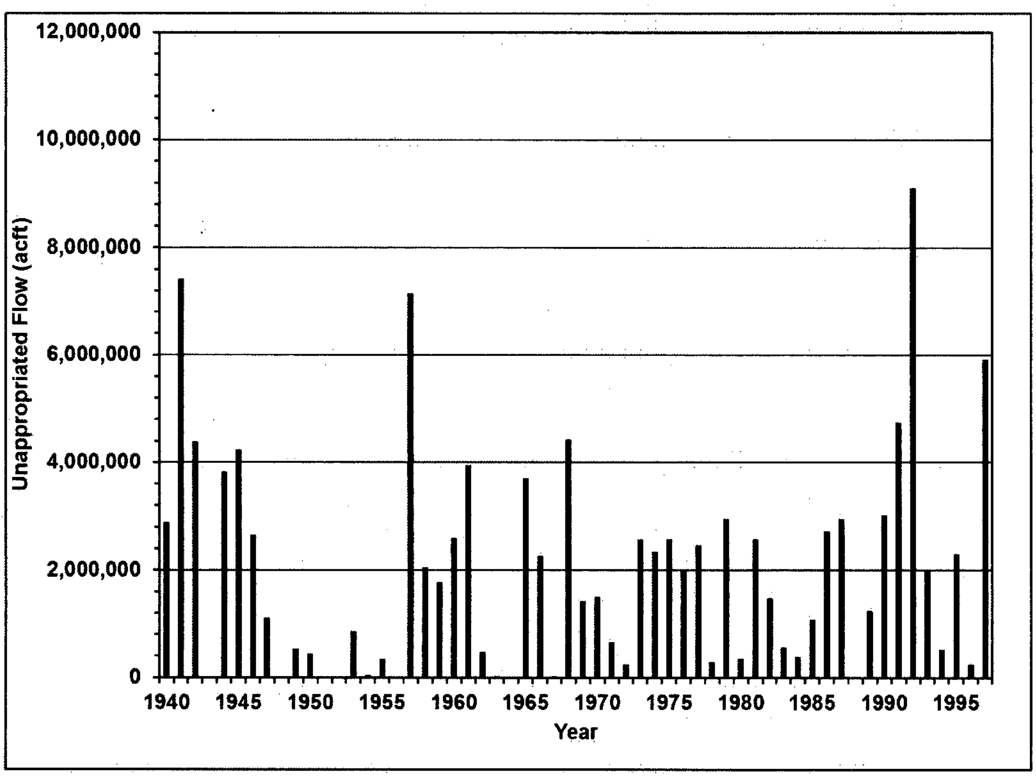


Figure 3.2-8. Estimated Annual Unappropriated Flow at Brazos River near Hempstead

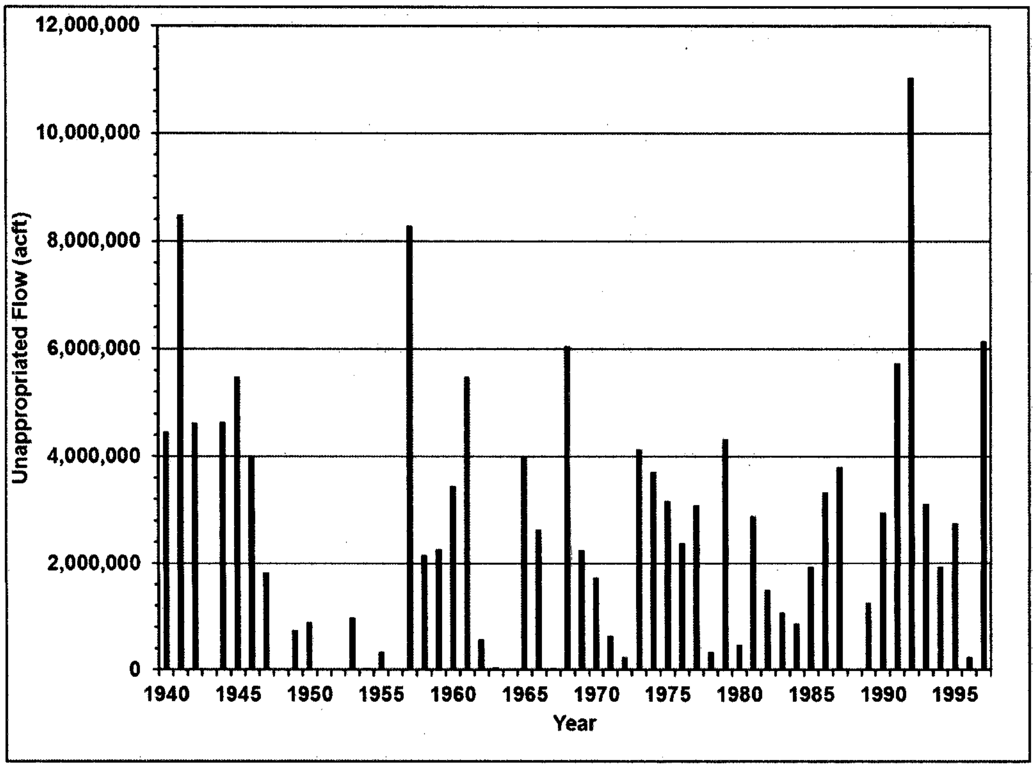
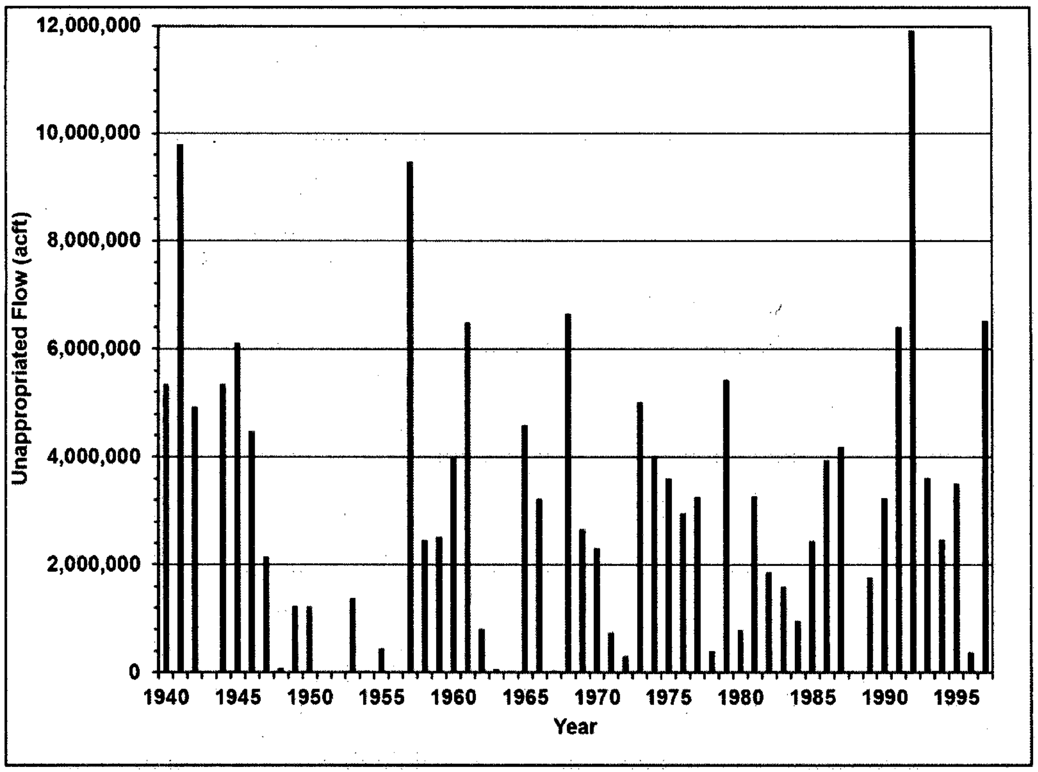


Figure 3.2-9. Estimated Annual Unappropriated Flow at Brazos River at Richmond



3.3 Water Quality Considerations Affecting Supply

The Brazos G WAM addresses the quantity of water available to existing water rights. However, water quality from some sources of water for existing water rights and contracts may limit the availability of water for certain beneficial uses. Water quality that does not meet criteria for designated uses such as public water supply, contact recreation, and aquatic life support is important to water supply considerations.

3.3.1 Point and Non-Point Source Pollution Water Quality

A number of stream segments and lakes in the Brazos G Area do not meet water quality standards due to point and/or nonpoint source pollution. The total maximum daily loads (TMDL) and individual water quality-based effluent limitations defined in 40 CFR 130.7 give TCEQ and USEPA the responsibility to identify water bodies that do not meet or are not expected to meet applicable water quality standards for designated uses.

As required under Sections 303(d) and 304(a) of the federal Clean Water Act, the 303(d) list identifies the water bodies in or bordering Texas for which effluent limitations are not stringent enough to implement water quality standards, and for which the associated pollutants are suitable for measurement by maximum daily load. Texas' 303(d) list is included as part of the Texas Integrated Report of Surface Water Quality[1].

One of three subcategories is assigned to each impaired parameter to provide information about water quality status and management activities on that water body. The categories are defined as:

- Category 5: The water body does not meet applicable water quality standards or is threatened for one or more designated uses by one or more pollutants.
- Category 5a - TMDLs are underway, scheduled, or will be scheduled for one or more parameters.
- Category 5b - A review of the standards for one or more parameters will be conducted before a management strategy is selected, including the possible revision to the water quality standards.
- Category 5c - Additional data or information will be collected and/or evaluated for one or more parameters before a management strategy is selected.

The Brazos G Area stream segments and lakes identified in Texas' 303(d) list are summarized in Table 3.3-1[2].

The TCEQ has the responsibility to identify and prioritize water bodies that may require a TMDL allocation to address the cause and source of water quality impairment. TMDLs have been established on the North Bosque River (Segment 1226) and the Upper North Bosque River (Segment 1255) for nutrient concentrations (phosphorus). TMDL studies of bacteria are currently underway for the Leon River below Lake Proctor (Segment 1221). Carters Creek, Country Club Branch, and the San Gabriel River, Segments

[1] 2013, TCEQ. 2012 Texas Integrated Report of Surface Water Quality.

[2] Texas Commission on Environmental Quality, 2008 Texas 303(d) List (March 19, 2008).

1209C, 1209D, and 1214 respectively, are categorized as 5a, meaning TMDLs are underway, scheduled, or will be scheduled for one or more parameters

These water quality issues are beyond the scope of regional water planning activities. The Brazos G RWPG encourages TCEQ and USEPA to take responsibility and pursue their obligation to restore water quality to meet intended uses.

3.3.2 Comparison of Supplies with Water Quality Standards

Numerous stream segments within the Brazos G Area are listed on the State's 303(d) list for bacteria levels which exceed the standards for contact recreation; however, bacteria, unlike salts, are easily managed through required conventional water treatment to meet drinking water standards. The principal water quality issues in the Brazos River Basin are generally associated with total dissolved solids (TDS), chloride (Cl), and sulfate (SO4) concentrations on the main stem of the Brazos River. The Salt Fork of the Brazos River watershed is the primary source of natural salt in the Brazos Basin, and although it contributes only 14 to 18 percent of the total flow of the Brazos River, it contributes 45 to 55 percent of total dissolved minerals and 75 to 85 percent of dissolved salts. The dissolved salts concentrations in the lakes and streams increase due to droughts and evaporation and are diluted during rain events. Water sources with TDS, Cl, and SO4 concentrations exceeding TCEQ Drinking Water Standards of 1,000 mg/L, 300 mg/L, and 300 mg/L respectively, are generally considered as low quality and may require higher cost advanced treatment methods for use as a municipal or industrial supply.

A summary of water bodies in Brazos G that have high TDS, chloride, and/or sulfate concentrations that may affect regional surface water supplies are summarized in Table 3.3-2. The largest impacts in terms of quantity of supply are associated with Possum Kingdom Lake, Lake Granbury, and Lake Whitney. These reservoirs have a combined 2070 firm yield of 296,368 acft/yr. While not listed by TCEQ for impairments, Lake Georgetown and Lake Granger water quality exhibit increasing trends in chloride, sulfate, and/or TDS[3]. Advanced treatment is being utilized by some of the water right and contract holders that divert water directly from these reservoirs in order to meet drinking water standards. Other contract holders divert stored water released from these reservoirs at locations farther downstream, at which point the water quality is improved as it blends with downstream tributary streamflow.

During Phase 1 of the development of the 2011 Brazos G Plan, the Brazos G RWPG completed a study[4] investigating updating the drought of record for reservoirs upstream of Possum Kingdom Reservoir, and investigating the water quality implications of low reservoir levels. The study found that water quality in three reservoirs – Fort Phantom Hill Reservoir, Lake Graham and Lake Stamford – would substantially degrade as reservoir levels dropped during drought to the level corresponding to safe yield storage, due to increased concentrations of various constituents. The water quality during such times would be so degraded as to require advanced treatment measures, such as reverse osmosis, to produce potable supplies of sufficient quality.

---

[3] Brazos River Authority, "Basin Highlights Report, 2009 Annual Water Quality Report."

[4] HDR, Inc., Updated Drought of Record and Water Quality Implications for Reservoirs Upstream of Possum Kingdom Reservoir, prepared for the Brazos G Regional Water Planning Group, April 2009.

Table 3.3-1. 2012 Texas 303(d) List (May 9, 2013) Brazos G Regional Planning Area

Segment Number	Segment Name	County	Category	Parameter of Concern	Year First Listed
1204A	Camp Creek	Johnson	5b	bacteria	2010
1208	Brazos River Above Possum Kingdom Lake	Young / Stonewall	5b	Bacteria	2008
1209	Navasota River Below Lake Limestone	Robertson	5b	Bacteria	2002
1209A	Country Club Lake	Brazos	5c	Toxicity in sediment	1999
1209B	Fin Feather Lake	Brazos	5c	Toxicity in sediment	2000
1209C	Carters Creek	Brazos	5a	Bacteria	1999
1209D	Country Club Branch	Brazos	5a	Bacteria	2006
1209E	Wickson Creek	Brazos	5b	Bacteria	2006
1209G	Cedar Creek	Robertson	5b	Bacteria	2002
1209H	Duck Creek	Robertson	5b	Bacteria	2006
			5c	Depressed dissolved oxygen	2012
1209I	Gibbons Creek	Grimes	5b	bacteria	2002
1209J	Shepherd Creek	Madison	5b	Bacteria	2002
1209K	Steele Creek	Limestone	5b	Bacteria	2002
1209L	Burton Creek	Brazos	5c	Bacteria	2006
1210A	Navasota River above Lake Mexia	Hill	5b	Bacteria	2002
1211A	Davidson Creek	Burleson	5b	Bacteria	2002
			5b	Depressed dissolved oxygen	2010
1212	Lake Somerville	Burleson / Washington	5c	pH	2002
1212A	Middle Yegua Creek	Lee / Williamson	5b	Bacteria	2010
1212B	East Yegua Creek	Lee / Milam	5b	Bacteria	2002
1213	Little River	Milam / Bell	5c	Bacteria	2006
1213A	Big Elm Creek	Milam	5c	Bacteria	2010
1214	San Gabriel River	Milam /	5a	Bacteria	2006

Table 3.3-1. 2012 Texas 303(d) List (May 9, 2013) Brazos G Regional Planning Area

Segment Number	Segment Name	County	Category	Parameter of Concern	Year First Listed
		Williamson	5b	Chloride	2008
			5b	Sulfate	2006
1216A	Trimmier Creek	Bell	5b	Bacteria	2010
1217B	Sulphur Creek	Lampasas	5c	Depressed dissolved oxygen	2010
1218	Nolan Creek / South Nolan Creek	Bell	5b	Bacteria	1996
1218C	Little Nolan Creek	Bell	5b	Bacteria	2010
1220A	Cowhouse Creek	Bell / Coryell	5b	Bacteria	2006
1221	Leon River below Proctor Lake	Comanche	5b	Bacteria	1996
1221A	Resley Creek	Comanche	5b	Bacteria	2004
			5b	Depressed dissolved oxygen	2006
1221B	South Leon River	Comanche	5b	Bacteria	2006
1221F	Walnut Creek	Erath	5b	Bacteria	2006
1222A	Duncan Creek	Comanche	5b	Bacteria	1999
1222B	Rush-Copperas Creek	Comanche	5b	Bacteria	2006
1222C	Sabana River	Comanche / Eastland	5c	Bacteria	2006
1222E	Sweetwater Creek	Comanche	5b	Bacteria	2006
1223	Leon River Below Leon Reservoir	Comanche / Eastland	5b	Bacteria	2006
			5c	Depressed dissolved oxygen	2008
1223A	Armstrong Creek	Erath	5b	Bacteria	2006
1226B	Green Creek	Erath	5b	Depressed dissolved oxygen	2006
1226E	Indian Creek	Erath	5b	Bacteria	2002
1226F	Sims Creek	Erath	5b	Bacteria	2002
1226H	Alarm Creek	Erath	5b	Bacteria	2010
1226K	Little Duffau Creek	Erath	5b	Bacteria	2006
1227	Nolan River	Hill / Johnson	5b	Sulfate	2002
			5b	TDS	2006
1232A	California Creek	Haskell / Jones	5b	Bacteria	2010

Table 3.3-1. 2012 Texas 303(d) List (May 9, 2013) Brazos G Regional Planning Area

Segment Number	Segment Name	County	Category	Parameter of Concern	Year First Listed
1232B	Deadman Creek	Jones	5b	Bacteria	2006
1241	Double Mountain Fork Brazos River	Stonewall / Kent	5b	Bacteria	2010
1242B	Cottonwood Branch	Brazos	5b	Bacteria	2006
1242C	Still Creek	Brazos	5b	Bacteria	2006
1242D	Thompsons Creek	Brazos	5b	Bacteria	2002
			5c	Depressed dissolved oxygen	2006
1242F	Pond Creek	Falls	5b	Bacteria	2010
1242I	Campbells Creek	Falls	5b	Bacteria	2002
1242J	Deer Creek	Falls	5b	Bacteria	2006
1242K	Mud Creek	Robertson	5b	Bacteria	2002
1242L	Pin Oak Creek	Robertson	5b	Bacteria	2002
1242M	Spring Creek	Robertson	5b	Bacteria	2002
1242O	Walnut Creek	Robertson	5b	Bacteria	2006
1242P	Big Creek	Falls	5b	Bacteria	2002
1244	Brushy Creek	Milam / Williamson	5b	Bacteria	2006
1246E	Wasp Creek	McLennan / Coryell	5b	Bacteria	2002
1247A	Willis Creek	Williamson	5b	Bacteria	2002
1248C	Mankins Branch	Williamson	5b	Bacteria	2004
1255	Upper North Bosque River	Erath	5b	Bacteria	1996
			5c	Depressed dissolved oxygen	2008
1255A	Goose Branch	Erath	5b	Bacteria	2002
1255B	North Fork Upper North Bosque River	Erath	5b	Bacteria	2002
1255C	Scarborough Creek	Erath	5b	Bacteria	2002
1255D	South Fork North Bosque River	Erath	5b	Bacteria	2010
1255E	Unnamed tributary of Goose Branch	Erath	5b	Bacteria	2002
1255F	Unnamed tributary of Scarborough Creek	Erath	5b	Bacteria	2002

Table 3.3-1. 2012 Texas 303(d) List (May 9, 2013) Brazos G Regional Planning Area

Segment Number	Segment Name	County	Category	Parameter of Concern	Year First Listed
1255G	Woodhollow Branch	Erath	5b	Bacteria	2002

Table 3.3-2. Water Bodies with Concerns for Meeting Public Water Quality Standards in the Brazos G Regional Water Planning Area

Water Body No.	Water Body Name	Public Water Supply Concern(s)				Texas Water Quality Standard		
		TDS	Chloride	Sulfate	Increased Costs for Demineralization	TDS (mg/L)	Chloride (mg/L)	Sulfate (mg/L)
1203	Lake Whitney	x	x	x	x	1,500	670	320
1205	Lake Granbury	x	x	x	x	2,500	1,000	600
1207	Possum Kingdom Lake	x	x	x	x	3,500	1,200	500
1235	Lake Stamford	x	x	x		2,100	580	400
1237	Lake Sweetwater			x		730	250	225
1242	Brazos River above Navasota River				x	1,000	350	200

3.3.3 Special Water Quality Studies and Activities in the Brazos River Basin

There are several special water quality studies that are on-going in the Brazos River Basin as described in the Brazos River Authority's 2014 Basin Highlights Report. A brief summary of these projects is described below.

Natural Salt Pollution Control

High concentrations of salt enter the Brazos River Basin from the semi-arid Upper Brazos Basin Region, consisting of salt and gypsum encrusted hills and canyon-like valleys. Major tributaries include the Salt and Double Mountain Forks of the Brazos River. Representatives from Stonewall, Kent, and Garza Counties have formed the Salt Fork Water Quality Corporation (SFWQC) to evaluate brine control to reduce salinity concentrations in the Brazos River. The project involves pumping brine water using shallow recovery wells in Stonewall and Kent counties, and is discussed in detail as a water management strategy in Chapter 7.3 in Volume II. In evaluating the project for the 2011 and 2016 Brazos G Plans, water quality modeling of TDS loads and concentrations in the Brazos Basin was conducted to estimate the project's potential effectiveness. The work shows that the project could potentially reduce TDS concentrations by an estimated 29 percent in Possum Kingdom Lake. Additional water quality modeling results are presented in Chapter 7.3 (Volume II). The planning stage of the project is on-going and includes an environmental site assessment; geophysical studies on Salt Croton Creek, Croton Creek, and Short Croton Creek; study of pipeline routing options; and financial analysis.

Watershed Protection Plan for Lake Granbury

In May 2002, a study of Escherichia coli for Lake Granbury commenced to address the concerns of the water quality in the canals and coves of Lake Granbury where there is little mixing of the water. In 2008, source identification projects were completed indicating various sources of bacteria contamination due to domestic, pet, livestock and wildlife waste. A Watershed Protection Plan has been completed based on the results of the sampling and source identification and will incorporate Best Management Practices to protect the water quality of the Lake.

Watershed Protection Plan for Lake Granger and San Gabriel River

The BRA and the Little River–San Gabriel Soil and Water Conservation District are developing a Watershed Protection Plan for Lake Granger and the San Gabriel River to address water quality issues of stream erosion, sedimentation and bacteria concentrations. The district has received funding to provide assistance to participants implementing best management practices on agricultural lands.

Watershed Protection Plan for Leon River

TCEQ began developing a TMDL for the river segment between Lake Procter and Hamilton in 2002 for bacteria concentrations. The BRA is working with stakeholders to develop a Watershed Protection Plan to assist TCEQ in selecting implementation strategies for the TMDL.

Little Brazos River Tributaries Bacteria Assessment

In 2002 a water quality data analysis determined that eight unclassified water bodies within the central watershed had bacteria concentrations exceeding state water quality standards for contact recreation. As a result these waterbodies were placed on the Texas §303(d) List of Impaired Waters. Three additional unclassified segments were added to the 2006 §303(d) List bringing the total number of water quality impairments (bacteria) on segment 1242 to eleven.

Five of the waterbodies impaired for bacteria are located within very close proximity of each other in Robertson County and share similar land use and water quality characteristics. They are all tributaries to the Little Brazos River (Segment 1242E). The five waterbodies in this project's study area are Campbells Creek (Segment 1242I), Mud Creek (Segment 1242K), Pin Oak Creek (Segment 1242L), Spring Creek (Segment 1242M), and Walnut Creek (Segment 1242O). The study area encompasses 327 square miles, almost entirely within Robertson County. The land use in the area is primarily agricultural with several small communities. In accordance with the Memorandum of Agreement Between the TCEQ and the TSSWCB Regarding TMDLs, Implementation

Plans, and Watershed Protection Plans, the TSSWCB has agreed to take the lead role in addressing the bacteria impairments for the five segments in the study area.[5] .

Clean Texas Marina and Clean Water Sticker Programs

Established in 2001, the Clean Texas Marina Program was established to provide technical assistance and pollution prevention programs to enhance water quality. Since 2004, the BRA has administered this program at Possum Kingdom Reservoir and Lake Granbury.

The Clean Water Sticker Program was established by the State Legislature to reduce sewage inputs into freshwater lakes. The BRA conducts inspections and certifications of pump out stations and boats with onboard sanitary facilities at Lake Granbury and Possum Kingdom Reservoir.

3.4 Groundwater Availability

Sixteen aquifers underlie parts of the Brazos G Area, including six of the major and ten of the minor aquifers in Texas[6]. The locations of the major and minor aquifers are shown in Chapter 1 of this report.

3.4.1 Method of Determination

When available, the amount of groundwater available for development is based on the TWDB's determination of Modeled Available Groundwater (MAG), which is based on Desired Future Conditions (DFC), as established by members of Groundwater Conservation Districts within a Groundwater Management Area (GMA). If a groundwater availability model (GAM) is available for an aquifer, it is to be used by the TWDB in making the MAG determination. Otherwise, the TWDB uses analytical methods.

In the Brazos G Area, an official MAG has been determined by the TWDB at the county level for each of the delineated aquifers. The groundwater management areas (GMA) are shown in Figure 3.4-1.

At a local level, municipal or county authorities in the North - Central Texas Trinity and Woodbine Aquifers and Central Texas -Trinity Aquifer in Priority Groundwater Management Areas (PGMAs) may require a groundwater availability certification for a new subdivision. If these authorities choose to require a certification, the developer of a new subdivision plat is to follow TCEQ Chapter 230 - Groundwater Availability Certification for Platting rules. It is unknown how many, if any, of these authorities in these PGMAs require subdivision certifications.

Table 3.4-1 summarizes groundwater availability by county and aquifer. A reference for the source of the estimates is included. The distribution of groundwater availability is summarized into western, central and eastern areas. As tabulated in Table 3.4-2 and shown in Figure 3.4-2, the groundwater in the Brazos G Area is not uniformly distributed, with about 15 percent occurring in the western area, about 33 percent in the central area,

---

[5] Brazos River Authority, 2015. https://www.brazos.org/Little_Brazos_Trib.asp; Accessed: March 9, 2015.

[6] Texas Water Development Board, Water for Texas, 1997.

and about 52 percent in the eastern area. Assignment of MAG to individual Water User Groups and Wholesale Water Providers is explained in Chapter 4.

Figure 3.4-1. Groundwater Management Areas in Brazos G

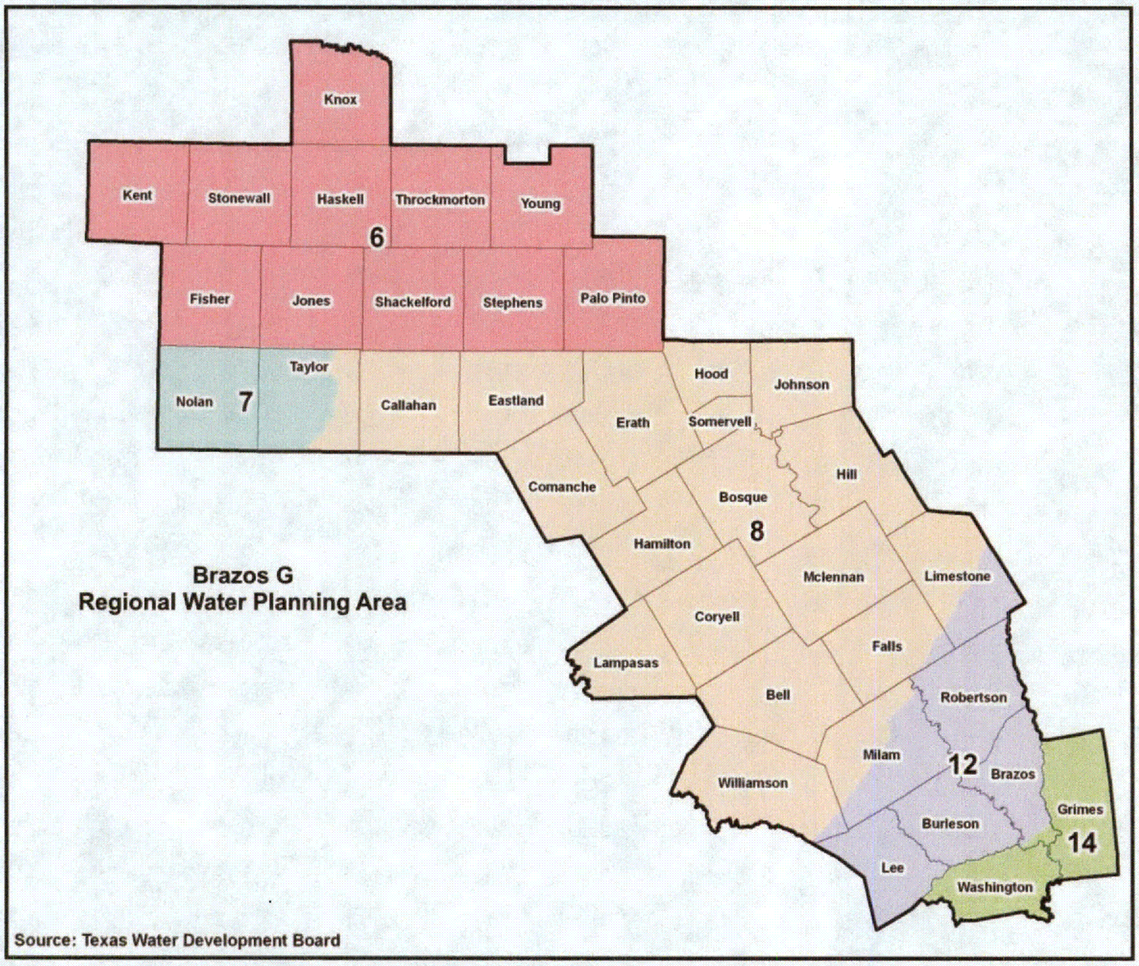


Table 3.4-1. Groundwater Availability Used in the 2016 Brazos G Regional Water Plan

County	Aquifer	Availability (acft/yr)					
		2020	2030	2040	2050	2060	2070
Bell	Edwards-BFZ (N. Segment)	6,469	6,469	6,469	6,469	6,469	6,469
	Trinity	7,068	7,068	7,068	7,068	7,068	7,068
	Subtotal	13,537	13,537	13,537	13,537	13,537	13,537
Bosque	Brazos River Alluvium	830	830	830	830	830	830
	Trinity	5,849	5,849	5,849	5,849	5,849	5,849
	Subtotal	6,679	6,679	6,679	6,679	6,679	6,679
Brazos	Brazos River Alluvium	12,500	12,500	12,500	12,500	12,500	12,500
	Carrizo-Wilcox	38,835	44,847	49,421	53,970	57,169	57,169
	Gulf Coast	1,189	1,189	1,189	1,189	1,189	1,189
	Queen City	604	634	587	533	529	529
	Sparta	5,941	7,308	7,305	7,307	7,307	7,307
	Yegua-Jackson	7,071	7,071	7,071	7,071	7,071	7,071
	Subtotal	66,140	73,549	78,073	82,570	85,765	85,765
Burleson	Brazos River Alluvium	22,056	22,056	22,056	22,056	22,056	22,056
	Carrizo-Wilcox	23,249	28,047	32,518	36,492	38,701	38,701
	Queen City	415	446	446	446	446	446
	Sparta	2,245	4,041	5,612	6,734	6,734	6,734
	Yegua-Jackson	12,923	12,923	12,923	12,923	12,923	12,923
	Subtotal	60,888	67,513	73,555	78,651	80,860	80,860
Callahan	Trinity	3,777	3,777	3,777	3,777	3,777	3,777
	Subtotal	3,777	3,777	3,777	3,777	3,777	3,777
Comanche	Trinity	32,235	32,235	32,235	32,235	32,235	32,235
	Subtotal	32,235	32,235	32,235	32,235	32,235	32,235
Coryell	Trinity	3,716	3,716	3,716	3,716	3,716	3,716
	Subtotal	3,716	3,716	3,716	3,716	3,716	3,716
Eastland	Trinity	4,720	4,720	4,720	4,720	4,720	4,720
	Subtotal	4,720	4,720	4,720	4,720	4,720	4,720
Erath	Trinity	32,926	32,926	32,926	32,926	32,926	32,926
	Subtotal	32,926	32,926	32,926	32,926	32,926	32,926
Falls	Brazos River Alluvium	16,684	16,684	16,684	16,684	16,684	16,684
	Carrizo-Wilcox	867	875	884	895	895	895
	Trinity	169	169	169	169	169	169
	Subtotal	17,720	17,728	17,737	17,748	17,748	17,748

Table 3.4-1. Groundwater Availability Used in the 2016 Brazos G Regional Water Plan

County	Aquifer	Availability (acft/yr)					
		2020	2030	2040	2050	2060	2070
Fisher	Blaine	5,062	5,062	5,062	5,062	5,062	5,062
	Dockum	2,880	2,880	2,880	2,880	2,880	2,880
	Seymour	2,935	2,931	2,920	2,915	2,733	2,733
	Subtotal	10,877	10,873	10,862	10,857	10,675	10,675
Grimes	Brazos River Alluvium	5,112	5,112	5,112	5,112	5,112	5,112
	Carrizo-Wilcox	11,791	11,791	11,791	11,791	11,791	11,791
	Gulf Coast	13,850	13,309	13,086	13,086	13,086	13,086
	Queen City	637	637	637	637	637	637
	Sparta	2,571	2,571	2,571	2,571	2,571	2,571
	Yegua-Jackson	3,278	3,278	3,278	3,278	3,278	3,278
	Navasota River Alluvium	2,216	2,216	2,216	2,216	2,216	2,216
	Subtotal	39,455	38,914	38,691	38,691	38,691	38,691
Hamilton	Trinity	2,144	2,144	2,144	2,144	2,144	2,144
	Subtotal:	2,144	2,144	2,144	2,144	2,144	2,144
Haskell	Seymour	46,180	44,575	42,358	42,524	43,617	43,617
	Subtotal	46,180	44,575	42,358	42,524	43,617	43,617
Hill	Brazos River Alluvium	632	632	632	632	632	632
	Trinity	3,147	3,147	3,147	3,147	3,147	3,147
	Woodbine	2,261	2,261	2,261	2,261	2,261	2,261
	Subtotal	6,040	6,040	6,040	6,040	6,040	6,040
Hood	Trinity	11,145	11,145	11,145	11,145	11,145	11,145
	Subtotal	11,145	11,145	11,145	11,145	11,145	11,145
Johnson	Trinity	12,871	12,871	12,871	12,871	12,871	12,871
	Woodbine	4,732	4,732	4,732	4,732	4,732	4,732
	Subtotal	17,603	17,603	17,603	17,603	17,603	17,603
Jones	Seymour	2,918	2,918	2,918	2,918	2,918	2,918
	Subtotal	2,918	2,918	2,918	2,918	2,918	2,918
Kent	Dockum	6,250	6,250	6,250	6,250	6,250	6,250
	Seymour	1,181	1,180	1,180	1,179	1,179	1,179
	Subtotal	7,431	7,430	7,430	7,429	7,429	7,429
Knox	Blaine	700	700	700	700	700	700
	Seymour	39,219	35,609	31,501	29,705	32,040	32,040
	Subtotal	39,919	36,309	32,201	30,405	32,740	32,740

Table 3.4-1. Groundwater Availability Used in the 2016 Brazos G Regional Water Plan

County	Aquifer	Availability (acft/yr)					
		2020	2030	2040	2050	2060	2070
Lampasas	Ellenburger-San Saba	2,593	2,593	2,593	2,593	2,593	2,593
	Hickory	113	113	113	113	113	113
	Marble Falls	2,837	2,837	2,837	2,837	2,837	2,837
	Trinity	3,117	3,117	3,117	3,117	3,117	3,117
	Subtotal	8,660	8,660	8,660	8,660	8,660	8,660
Lee	Carrizo-Wilcox	24,023	23,402	24,624	26,827	27,380	27,380
	Queen City	120	115	113	111	111	111
	Sparta	323	311	305	294	294	294
	Yegua-Jackson	635	635	635	635	635	635
	Subtotal	25,101	24,463	25,677	27,867	28,420	28,420
Limestone	Carrizo-Wilcox	12,294	12,424	12,604	12,906	12,906	12,906
	Trinity	69	69	69	69	69	69
	Woodbine	34	34	34	34	34	34
	Subtotal	12,397	12,527	12,707	13,009	13,009	13,009
McLennan	Brazos River Alluvium	15,023	15,023	15,023	15,023	15,023	15,023
	Trinity	20,690	20,690	20,690	20,690	20,690	20,690
	Woodbine	5	5	5	5	5	5
	Subtotal	35,718	35,718	35,718	35,718	35,718	35,718
Milam	Brazos River Alluvium	3,082	3,082	3,082	3,082	3,082	3,082
	Carrizo-Wilcox	23,923	20,206	19,112	21,359	22,319	22,319
	Queen City	53	56	56	56	56	56
	Trinity	288	288	288	288	288	288
	Subtotal	27,346	23,632	22,538	24,785	25,745	25,745
Nolan	Blaine	100	100	100	100	100	100
	Dockum	5,750	5,750	5,750	5,750	5,750	5,750
	Edwards-Trinity (Plateau)	693	693	693	693	693	693
	Subtotal	6,543	6,543	6,543	6,543	6,543	6,543
Palo Pinto	Trinity	12	12	12	12	12	12
	Subtotal	12	12	12	12	12	12
Robertson	Brazos River Alluvium	6,300	6,300	6,300	6,300	6,300	6,300
	Carrizo-Wilcox	45,435	45,814	46,238	46,582	46,583	46,583
	Queen City	-	-	-	-	-	-
	Sparta	300	400	500	616	616	616

Table 3.4-1. Groundwater Availability Used in the 2016 Brazos G Regional Water Plan

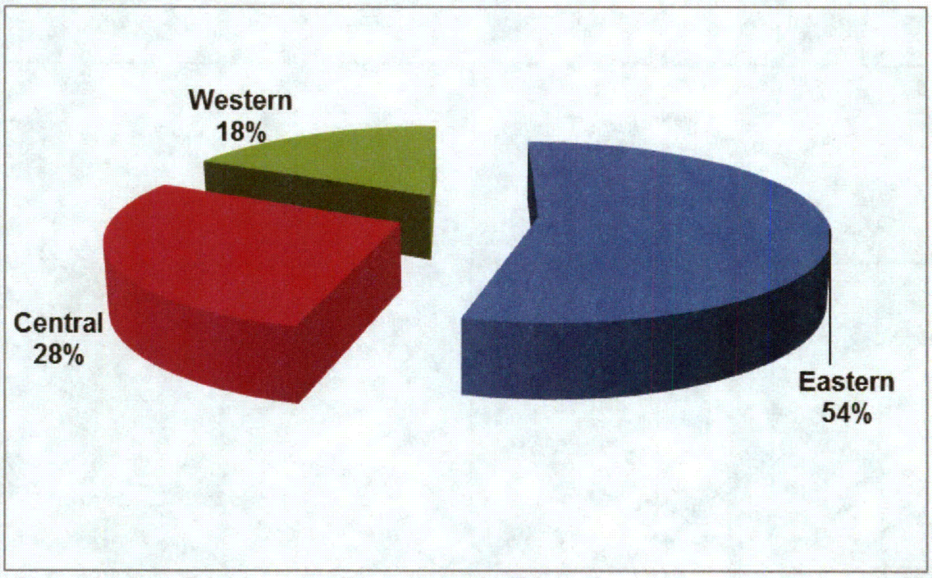
County	Aquifer	Availability (acft/yr)					
		2020	2030	2040	2050	2060	2070
	Subtotal	52,035	52,514	53,038	53,498	53,499	53,499
Shackelford	Other (Local) Aquifer	809	809	809	809	809	809
	Subtotal	809	809	809	809	809	809
Somervell	Trinity	2,485	2,485	2,485	2,485	2,485	2,485
	Subtotal	2,485	2,485	2,485	2,485	2,485	2,485
Stephens	Other (Local) Aquifer	705	705	705	705	705	705
	Subtotal	705	705	705	705	705	705
Stonewall	Blaine	8,700	8,700	8,700	8,700	8,700	8,700
	Seymour	233	230	224	215	214	214
	Subtotal	8,933	8,930	8,924	8,915	8,914	8,914
Taylor	Edwards-Trinity (Plateau)	489	489	489	489	489	489
	Trinity	431	431	431	431	431	431
	Subtotal	920	920	920	920	920	920
Throckmorton	Seymour	115	115	115	115	115	115
	Other (Local) Aquifer	364	364	364	364	364	364
	Subtotal	479	479	479	479	479	479
Washington	Brazos River Alluvium	5,770	5,770	5,770	5,770	5,770	5,770
	Gulf Coast	13,045	13,045	12,677	12,677	12,677	12,677
	Queen City	1	1	1	1	1	1
	Sparta	-	-	-	-	-	-
	Yegua-Jackson	149	149	149	149	149	149
	Subtotal	18,965	18,965	18,597	18,597	18,597	18,597
Williamson	Edwards-BFZ (N. Segment)	3,452	3,452	3,452	3,452	3,452	3,452
	Carrizo-Wilcox	7	7	7	7	7	7
	Hickory	15	15	15	15	15	15
	Trinity	1,582	1,582	1,582	1,582	1,582	1,582
	Other (Local) Aquifer	665	665	665	665	665	665
	Subtotal	5,721	5,721	5,721	5,721	5,721	5,721
Young	Other (Local) Aquifer	1,181	1,181	1,181	1,181	1,181	1,181
	Seymour	309	258	258	258	258	258
	Subtotal	1,490	1,439	1,439	1,439	1,439	1,439

Table 3.4-2. Groundwater Availability from the Brazos G Area Aquifers

Aquifer	2070 Groundwater Availability (acft/yr)	Typical Range in Well Yields (gpm)
Western Area		
Blaine	14,562	less than 25
Dockum	14,880	100 to 400
Edwards-Trinity (Plateau)	1,182	5 to 300
Other (Local) Aquifers	3,059	5 to 300
Seymour	83,074	100 to 1,000
Subtotal:	**116,757**	
Central Area		
Brazos River Alluvium	16,485	250 to 500
Edwards-BFZ (Northern Segment)	9,921	200 to 2,000
Ellenburger-San Saba	2,593	Unknown
Hickory	128	Unknown
Marble Falls	2,837	less than 100
Other (Local) Aquifers	665	5 to 300
Trinity	148,441	50 to 500
Woodbine	7,032	50 to 150
Subtotal:	**188,102**	
Eastern Area		
Brazos River Alluvium	71,504	250 to 500
Carrizo-Wilcox	217,751	100 to 3,000
Gulf Coast	26,952	300 to 800
Queen City	1,780	200 to 500
Sparta	17,522	200 to 600
Navasota River Alluvium	2,216	Unknown
Yegua-Jackson	24,056	50 to 300
Subtotal:	**361,781**	
Total:	**666,640**	

BFZ – Balcones Fault Zone.
ND indicates not determined.

Figure 3.4-2. Distribution of Groundwater by Area within Brazos G



3.4.2 Western Area

Only part of the western area is underlain by a major or minor aquifer, as shown in Figure 3.4-3. Together, the four aquifers, Blaine, Dockum, Edwards-Trinity (Plateau), and Seymour and the other (Local) aquifers, can supply up to 116,757 acft/yr. Of the four aquifers, the Seymour Aquifer has about 71 percent of the supplies and is scattered in six counties; however, about 90 percent of the supply is in Knox and Haskell Counties. The Dockum Aquifer exists only on the western fringe and can contribute about 13 percent of the groundwater supply in the area (Figure 3.4-4). Undifferentiated aquifers underlie some of the area, including all of Shackelford, Stephens, Throckmorton, and Young Counties. At best, the undifferentiated aquifers can provide only meager supplies for livestock and domestic uses.

Figure 3.4-3. Major and Minor Aquifers in the Western Area

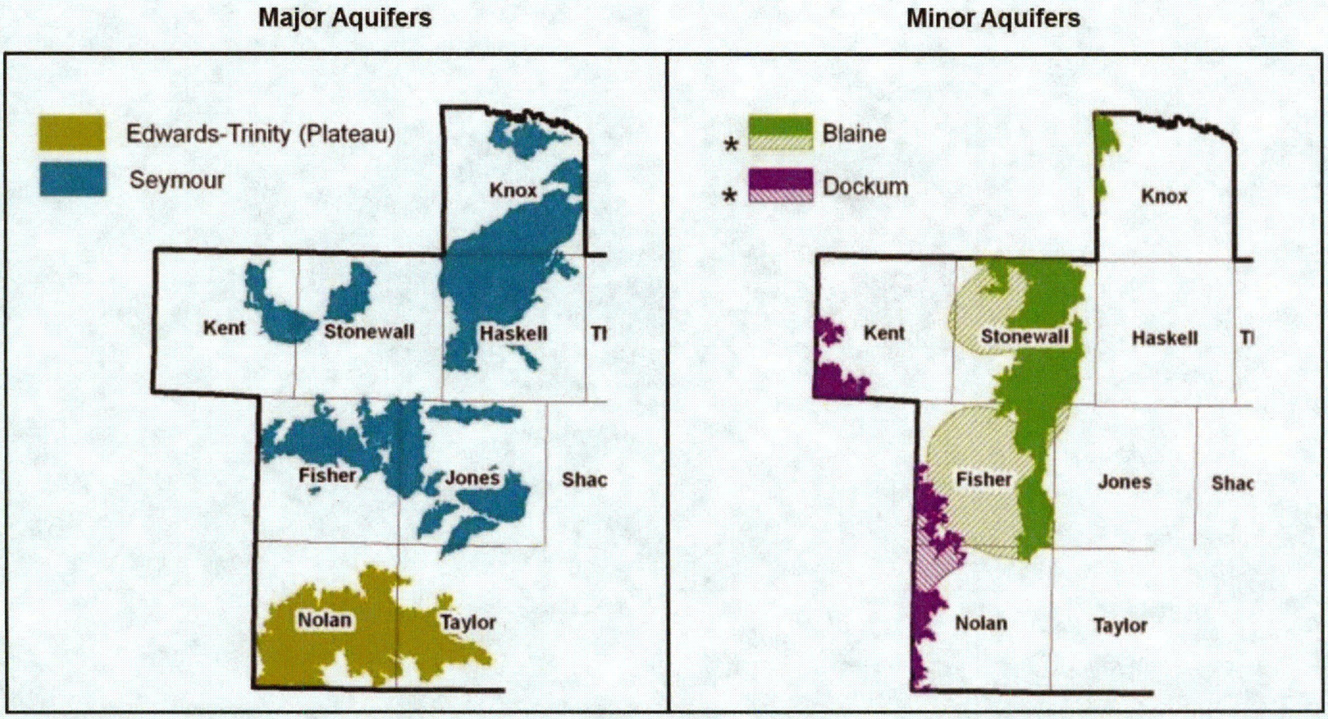
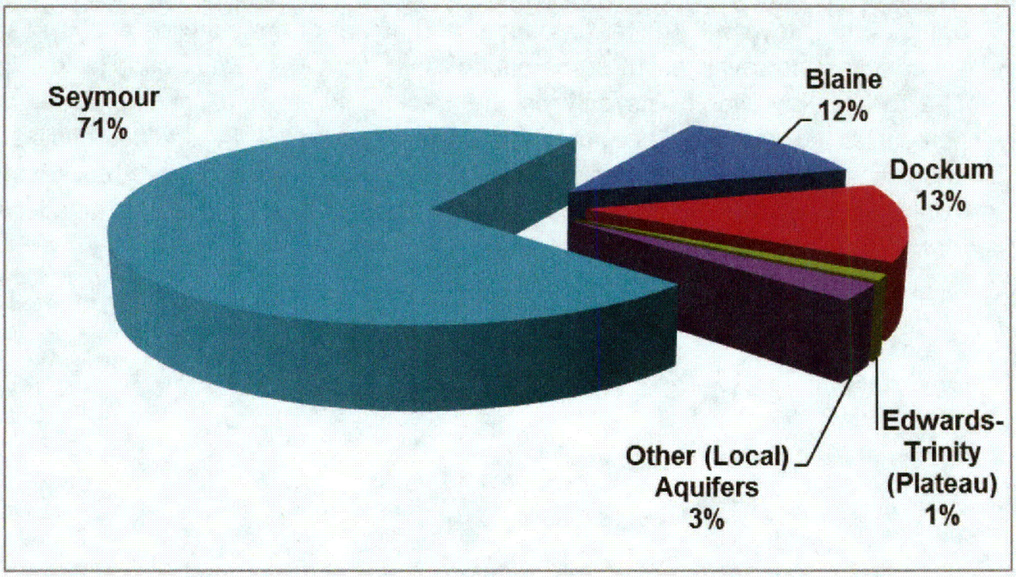


Figure 3.4-4. Groundwater Availability in the Western Area



3.4.3 Central Area

Major or minor aquifers exist in the southeastern two-thirds of the central area, as shown in Figure 3.4-5. Together, the eight aquifers (Brazos River Alluvium, Edwards-BFZ (Northern Segment), Ellenburger-San Saba, Hickory, Marble Falls, Trinity, Woodbine, and Other (Local) Aquifers) can provide up to 188,102 acft/yr. Of these aquifers, the

Trinity Aquifer is most extensive and has about 79 percent of the supplies (Figure 3.4-6). Although the Trinity Aquifer as a whole can provide 148,441 acft/yr, local areas have experienced very substantial drawdowns and probably will require many wells to be replaced with larger and deeper ones. The Edwards-BFZ (Northern Segment) exists only in parts of Bell and Williamson Counties and has about five percent of the area's groundwater supply.

Figure 3.4-5. Major and Minor Aquifers in the Central Area

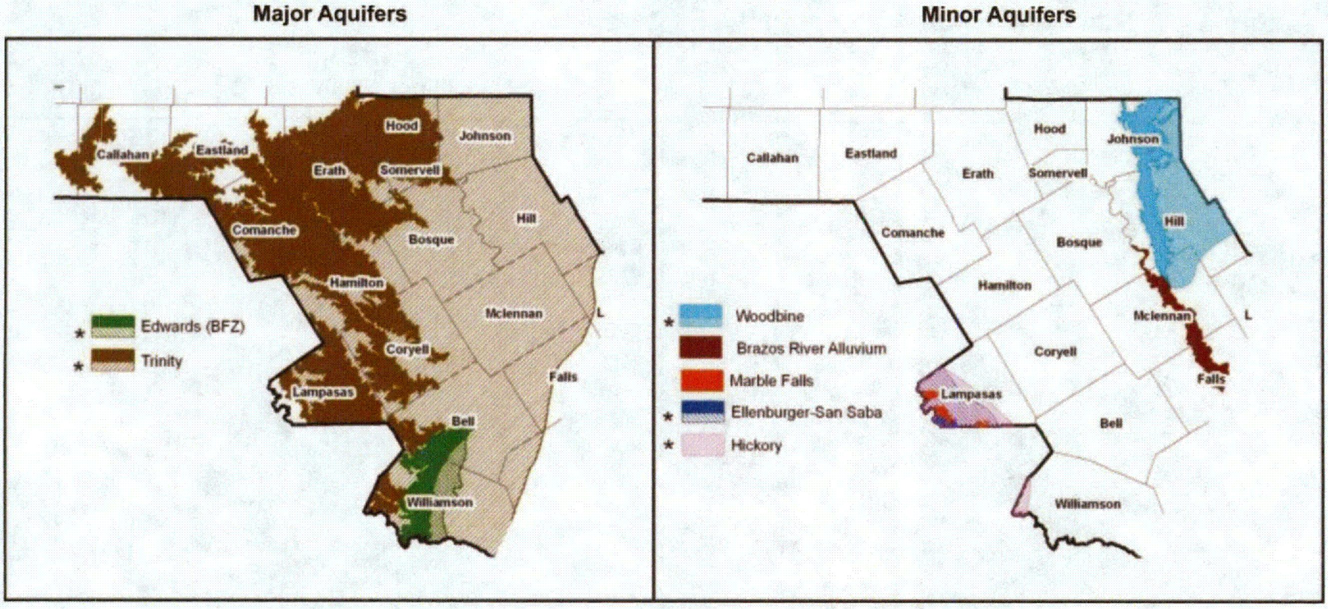
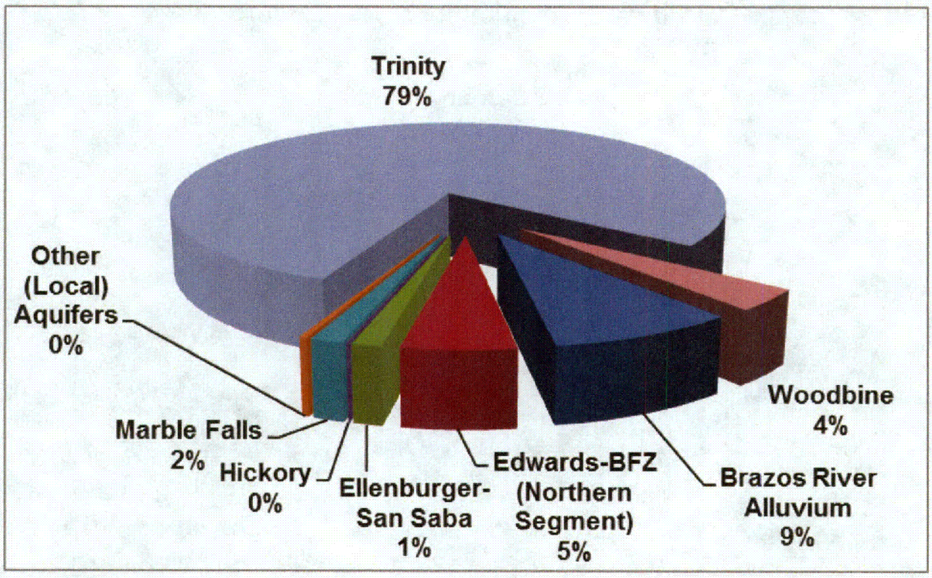


Figure 3.4-6. Groundwater Availability in the Central Area



3.4.4 Eastern Area

Major or minor aquifers exist throughout the eastern area except in the western fringe, as shown in Figure 3.4-7. Together, the seven aquifers (Brazos River Alluvium, Carrizo-Wilcox, Gulf Coast, Queen City, Sparta, Navasota River Alluvium and Yegua-Jackson) can provide up to 361,781 acft/yr. Of these aquifers, the Carrizo-Wilcox Aquifer is most extensive and has about 60 percent of the supplies (Figure 3.4-8). The Brazos River Alluvium has about 20 percent of the supplies.

Figure 3.4-7. Major and Minor Aquifers in the Eastern Area

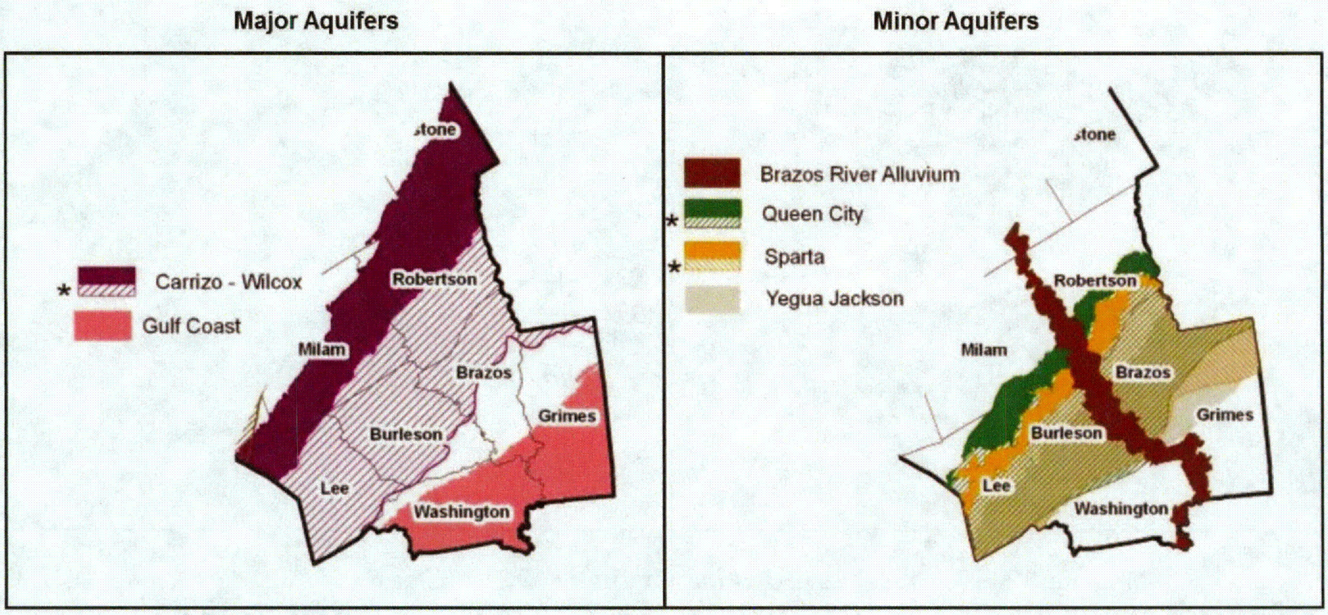
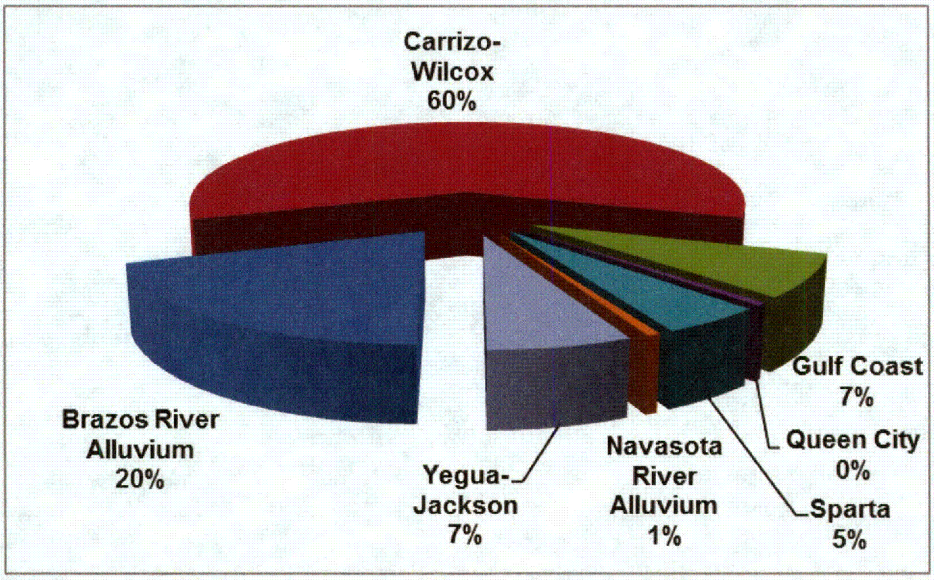


Figure 3.4-8. Groundwater Availability in the Eastern Area



3.5 Supplies from Other Regions

A limited number of entities within the Brazos G Area obtain water from sources owned by entities located outside of the region. These other sources are Benbrook Reservoir, Navarro Mills Reservoir, the Colorado River MWD System, Lake Livingston (Trinity River Authority), Lake Clyde, Lake Joe Pool (TRA), Richland Chambers and/or Cedar Creek Reservoirs (TRWD), and the Highland Lakes System (LCRA). Table 3.5-1 summarizes the current supplies from other regions to the Brazos G Area.

Table 3.5-1. Water Supplies from Other Regions

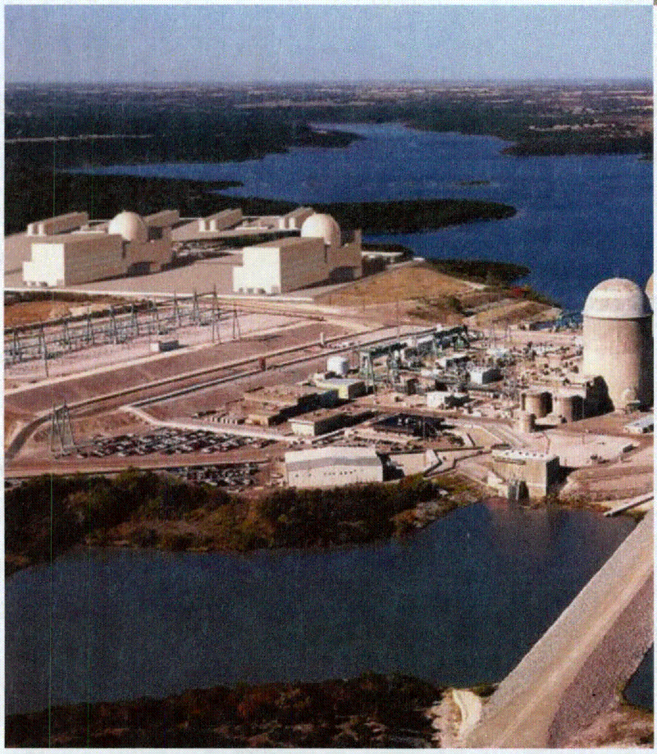
Receiving Entity	Source	Source Region	Amount Supplied (acft/yr)
Burleson	Lake Benbrook	C	Meets Contract
Mansfield	Lake Benbrook	C	Meets Contract
Hill County – Other	Navarro Mills Reservoir	C	353
Abilene	Colorado River MWD System	F	6,720[1]
Hubbard	Navarro Mills Reservoir	C	Meets Contract
Grimes County SE	Lake Livingston (TRA)	H	6,721
Cedar Park	Highland Lakes System[2]	K	18,000
Leander	Highland Lakes System	K	6,400
Lometa	Highland Lakes System	K	Meets Contract
Blockhouse MUD	Highland Lakes System	K	Included in Cedar Park
Wells Branch MUD	Highland Lakes System	K	Meets Contract
Williamson-Travis County MUD #1	Highland Lakes System	K	Included in Cedar Park
Clyde	Lake Clyde	F	500
Venus	Lake Joe Pool (TRA)	C	Meets Contract
Mountain Peak WSC	Lake Joe Pool (TRA)	C	1,120
Bethesda WSC	Richard Chambers / Cedar Creek Reservoirs	C	1,578
Grimes County SE	Lake Livingston (TRA) / Hunstville	H	6,721

1 – Current contract allows 10,900 acft/yr (16.54% of the one-year safe yield of O.H. Ivie Reservoir). Supply shown is constrained by treatment capacity.

2 – HB1437 provides for an additional 25,000 acft/yr of supply from the Highland Lakes System. These supplies are sold through a contract with the BRA with 20,928 acft/yr allocated to City of Round Rock and 600 acft/yr allocated to the City of Liberty Hill.

This page intentionally left blank.

Chapter 4



4

Comparison of Water Demands with Water Supplies to Determine Needs

This page intentionally left blank.

4 Comparison of Water Demands with Water Supplies to Determine Needs

4.1 Introduction

In this section, the demand projections from Chapter 2 and the supply projections from Chapter 3 are brought together to estimate projected water needs in the Brazos G Area through year 2070.

As a recap, Chapter 2 presents demand projections for six types of use: municipal, manufacturing, steam-electric, mining, irrigation, and livestock. The projections are for dry-year demands. Chapter 3 presents estimates of surface water and groundwater availability under drought of record conditions.

4.1.1 Methods to Estimate Available Water Supplies in the Region

Surface Water Supplies

Surface water in the region available to meet projected demands consists of firm yield of reservoirs, dependable supply of run-of-river water rights through drought of record conditions, and local on-farm sources. Contracts and/or rights to reservoir yields and supplies to run-of-river rights were allocated as supplies to their stated type of use: municipal, industrial (manufacturing, steam-electric, and mining), and irrigation. Additionally, municipal supply was further allocated among cities and other municipal water supply entities. This was done by obtaining water seller information (i.e., which contract/right holders – a wholesaler – are reselling water to other water supply entities) and water purchase contract limits between buyers and sellers. This information was obtained from TWDB files and follow-up queries to water supply entities. All water supply contracts were assumed to be renewed at their existing levels unless otherwise directed by local entities.

Water associated with a wholesaler that is not resold remains as an available supply to the wholesaler in the supply tables. In the case where a wholesaler's supply is deficient to meet its own demands and contractual commitments, it was assumed that contracts would not be met as well. In these cases, the supply available to each customer's contract was prorated down according to the contract amount.

It was assumed that all livestock demands would be met from local water sources (e.g., shallow groundwater and stock ponds).

In certain instances the entity's available water supply is constrained by lack of infrastructure. For example, an entity may hold a contract to divert water from a reservoir; however, the required pipeline has not been built. In this instance, the contract amount would not be included in the entity's available water supply or would be identified as a constrained supply.

In some instances, specific operational, contractual, or legal constraints required modifications to the general surface water allocation procedure. For example, provisions in the current contract between the City of Abilene and the West Central Texas Municipal

Water District for supplies to the City from Hubbard Creek Reservoir preclude the City from receiving its normal pro-rata share of the reservoir's allocated safe yield during times when the reservoir is significantly drawn down. However, the other member cities of the district (Anson, Albany, and Breckenridge) do not have similar provisions in their contracts with the district.

Groundwater Allocation

Total groundwater availability in the region was determined based on the specific methods identified for each aquifer as discussed in Section 3.4. Total groundwater availability is shown for each county, by aquifer, in Table 3.4-1. For each county, total available groundwater was allocated among the six user groups—municipal, manufacturing, steam-electric, mining, irrigation, and livestock—in the following manner:

Municipal Allocation

Municipal supplies were allocated to users from each aquifer as follows:

a. Municipal supply is based upon well capacities. For cases in which the total demand on that portion (i.e., county and river basin) of the aquifer exceeds the total Modeled Available Groundwater (MAG), the supply is prorated downward for every entity using that particular source.

b. For rural areas, it is assumed that the rural household (municipal type) demand would be met from aquifers underlying that river basin portion of the county. The rural supply is generally calculated as 125 percent of the year 2010 use from each particular aquifer. For cases in which the total demand on that portion (i.e., county and river basin) of the aquifer exceeds the MAG, supply is prorated downward for every entity using that particular source.

Industrial (Steam-Electric and Manufacturing) Allocation

Industrial supply from groundwater sources is associated with aquifers underlying the river basin portion of the county. The industrial supply is generally calculated as 130 percent of the year 2010 use from each particular aquifer. For cases in which the total demand on that portion (i.e., county and river basin) of the aquifer exceeds the MAG, supply is prorated downwards for every entity using that particular source.

Irrigation Allocation

Irrigation supply from groundwater sources is associated with aquifers underlying the river basin portion of the county. The irrigation supply is calculated as being equal to the projected demand in each decade. For cases in which the total demand on that portion (i.e., county and river basin) of the aquifer exceeds the MAG, supply is prorated downward for every entity using that particular source.

Mining Allocation

Mining supply from groundwater sources is associated with aquifers underlying the river basin portion of the county. The mining supply is calculated as being equal to the projected demand in each decade. For cases in which the total demand on that portion (i.e., county and river basin) of the aquifer exceeds the MAG, supply is prorated downward for every entity using that particular source.

In some specific instances, these general procedures were modified to more accurately reflect the interactions between water demands, supplies, and needs.

Constraints on Surface Water Supplies

In determining needs (shortages), an emphasis has been placed not only on a WUG's total raw water supply availability, but also on their infrastructure available to deliver and treat this supply.

Based on TCEQ records, the Normal Rated Design (NRD) of each surface water treatment plant of public water suppliers located in the Brazos G Area was used to determine the existing peaking capacities to treat and deliver surface water supplies. The average annual capacity (AAC) for the WTP was calculated as 50% of the NRD to account for peaking. For each WUG for which these data were available in the TCEQ database, the AAC was utilized to constrain the supply available from surface water sources, and was incorporated into the needs analysis for each WUG by utilizing a term referred to as "constrained supply." Constrained supply is defined as the amount of water available to a WUG considering the limiting effects of existing infrastructure. This methodology allows for water management strategies to be identified and developed that specifically address these constraints caused by limited infrastructure capacity. These strategies could include pipelines to existing reservoirs, treatment plant expansions, or other infrastructure required to deliver and treat water for the end user of the WUG. Generally, the only infrastructure constraint data that will be taken into account for the 2016 Plan is treatment capacity, as data on other types of infrastructure constraints are not readily available. Other constraints may have been added where the planning group was made aware of particular infrastructure capacity or lack of infrastructure. These infrastructure constraints were applied to the supply available for the WUG and to any contractual demands using that supply.

Twenty-two counties in the Brazos G Area have WUGs with potentially limiting surface water treatment capacity constraints. Of these, 11 counties contain WUGs that have their available supply constrained by treatment capacity, resulting in supply shortages in year 2060 in at least four counties. Constraints on surface water supplies are shown in the wholesale water provider tables in Chapter 4.3 and in the WUG supply-demand analyses presented in Appendix C.

Constraints on Groundwater Supplies

Similar to surface water availability, the groundwater supplies assume that the wells will be able to continue producing the supply into the foreseeable future. However, some of the MAGs adopted for use would allow substantial drawdown of aquifer levels, which would require that well pumps be lowered or, in some cases, that deeper replacement wells be drilled in order to continue to utilize the assumed supply available from the aquifer. This has been identified as a particularly crucial issue in the Trinity Aquifer, where the Modeled Available Groundwater adopted by the groundwater conservation districts allows for more than 400 feet of additional aquifer drawdown below current aquifer levels, and numerous WUGs depend largely on Trinity Aquifer supplies.

For groundwater supplies in the Trinity Aquifer, an additional analysis was performed using the Trinity Aquifer Groundwater Availability Model (Trinity GAM) to determine how future aquifer levels might constrain groundwater supplies to entities relying on Trinity Aquifer water. Pumping in the Trinity Aquifer GAM was modified to reflect expected future pumping as determined by water demands for municipal WUGs relying on the Trinity Aquifer. The resulting water levels were then compared to well data (location, depth, casing size) to determine if the expected future water levels would impact each WUG's wells. The wells potentially impacted by the future groundwater levels were identified, and the groundwater supply to the WUG was reduced correspondingly to reflect that the well would be no longer being useable in its present configuration. This groundwater supply is referred to as "constrained groundwater supply." Constraints on supplies from the Trinity Aquifer, assuming a MAG level of pumping, result in supply shortages in year 2070 to WUGs in five counties (Bosque, Hood, Johnson, Kent and McLennan). Constraints on groundwater supplies are shown in the tables in Appendix C.

4.2 Water Needs Projections for Water User Groups

If projected demands exceed projected supplies for a water user group, the difference or shortage, is identified as a "water need." This section contains a summary of the water needs (shortages) for each Water User Group (WUG) located in the Brazos G Area. Tables in Appendix C provide a detailed analysis of water needs for each water user group by county as well as a summary for the region as a whole. The following sections summarize the data presented in Appendix C.

4.2.1 Projected Municipal Shortages

Water shortages are projected for 85 municipal WUGs, which are listed in Table 4.2-1, along with the projected year 2040 and 2070 shortages, and the approximate decade that shortages are expected to begin. Multi-county WUGs are indicated with (P) in Table 4.2-1. Thirty of the 37 counties in the Brazos G Area are projected to have at least one municipal WUG shortage. The County-Other category includes water supply corporations, water districts, privately owned utilities, and small towns that generally supplied less than 280 acft of water in the year 2010 or served populations less than 500 persons. The County-Other category is projected to be water short in 10 counties: Bell, Comanche, Coryell, Erath, Hill, Hood, Knox, Nolan, Robertson and Williamson

Table 4.2-1. Municipal WUGs with Projected Water Shortages

WUG	County	Projected Shortages (acft/yr)		Decade of Need
		Year 2040	Year 2070	
439 WSC	BELL	242	(94)	2060
BARTLETT (P)	BELL	(166)	(241)	2020
BELTON	BELL	2,413	(41)	2070
CHISHOLM TRAIL SUD (P)	BELL	(467)	(746)	2020
ELM CREEK WSC (P)	BELL	15	(136)	2050
HARKER HEIGHTS	BELL	(939)	(3,171)	2040

Table 4.2-1. Municipal WUGs with Projected Water Shortages

WUG	County	Projected Shortages (acft/yr)		Decade of Need
		Year 2040	Year 2070	
KEMPNER WSC (P)	BELL	151	(29)	2070
LITTLE RIVER-ACADEMY	BELL	(59)	(190)	2030
NOLANVILLE	BELL	(858)	(2,188)	2020
SALADO WSC	BELL	219	(278)	2060
TEMPLE	BELL	(3,892)	(12,856)	2030
BELL COUNTY-OTHER	BELL	(718)	(3,738)	2040
CHILDRESS CREEK WSC	BOSQUE	3	(15)	2050
CROSS COUNTRY WSC (P)	BOSQUE	26	(141)	2050
VALLEY MILLS (P)	BOSQUE	10	(1)	2070
BRYAN	BRAZOS	(5,533)	(26,578)	2020
COLLEGE STATION	BRAZOS	(7,372)	(8,401)	2020
WELLBORN SUD (P)	BRAZOS	(625)	(2,588)	2030
COLEMAN COUNTY SUD	CALLAHAN	(10)	(11)	2020
POTOSI WSC (P)	CALLAHAN	(8)	(8)	2020
COMANCHE COUNTY-OTHER	COMANCHE	(135)	(183)	2020
CORYELL COUNTY-OTHER	CORYELL	234	(515)	2050
ELM CREEK WSC (P)	CORYELL	1	(18)	2050
GATESVILLE	CORYELL	(1,406)	(3,995)	2030
KEMPNER WSC (P)	CORYELL	211	(45)	2070
MULTI-COUNTY WSC (P)	CORYELL	(126)	(224)	2020
ERATH COUNTY-OTHER	ERATH	291	(315)	2060
TRI-COUNTY SUD (P)	FALLS	(55)	(61)	2020
WEST BRAZOS WSC (P)	FALLS	(110)	(118)	2020
ROTAN	FISHER	(60)	(84)	2020
MULTI-COUNTY WSC (P)	HAMILTON	(25)	(24)	2020
HASKELL	HASKELL	(193)	(442)	2020
HUBBARD	HILL	(32)	(69)	2030
ACTON MUD (P)	HOOD	1,675	(136)	2070
HOOD COUNTY-OTHER	HOOD	(77)	193	2020
CRESSON (P)	HOOD	(13)	(32)	2030
TOLAR	HOOD	12	(19)	2050
ACTON MUD (P)	JOHNSON	55	(24)	2070
BETHESDA WSC	JOHNSON	(1,692)	(3,137)	2020

Table 4.2-1. Municipal WUGs with Projected Water Shortages

WUG	County	Projected Shortages (acft/yr)		Decade of Need
		Year 2040	Year 2070	
BURLESON	JOHNSON	(3,425)	(5,982)	2020
CLEBURNE	JOHNSON	1,177	(2,373)	2060
CRESSON (P)	JOHNSON	(7)	(21)	2030
CROWLEY	JOHNSON	(17)	(35)	2020
FORT WORTH	JOHNSON	0	(1,573)	2050
GODLEY	JOHNSON	22	(25)	2060
JOHNSON COUNTY SUD	JOHNSON	2,194	2,601	2060
MANSFIELD	JOHNSON	(293)	(1,024)	2020
PARKER WSC (P)	JOHNSON	96	(182)	2060
RIO VISTA	JOHNSON	42	(71)	2060
VENUS	JOHNSON	(226)	(573)	2020
ABILENE (P)	JONES	(197)	(287)	2030
JAYTON	KENT	(89)	(88)	2020
KNOX CITY	KNOX	(118)	(226)	2020
MUNDAY	KNOX	(125)	(237)	2020
KEMPNER	LAMPASAS	(6)	(5)	2020
KEMPNER WSC (P)	LAMPASAS	(1,352)	(1,709)	2020
LAMPASAS	LAMPASAS	(227)	(505)	2020
COOLIDGE	LIMESTONE	(38	(140)	2040
GROESBECK	LIMESTONE	(668)	(672)	2020
MART (P)	LIMESTONE	(1)	(2)	2030
TRI-COUNTY SUD (P)	LIMESTONE	(20)	(23)	2020
CRAWFORD	MCLENNAN	(3)	(7)	2020
ELM CREEK WSC (P)	MCLENNAN	6	(76)	2050
HEWITT	MCLENNAN	(211)	(231)	2020
MART (P)	MCLENNAN	(181)	(243)	2020
NORTH BOSQUE WSC	MCLENNAN	(265)	(628)	2020
RIESEL	MCLENNAN	(11)	(19)	2020
ROBINSON	MCLENNAN	(720)	(1,909)	2030
TRI-COUNTY SUD (P)	MCLENNAN	(2)	(10)	2040
VALLEY MILLS (P)	MCLENNAN	4	(1)	2070
WACO	MCLENNAN	7,377	(1,348)	2070
WEST BRAZOS WSC (P)	MCLENNAN	(63)	(98)	2020

Table 4.2-1. Municipal WUGs with Projected Water Shortages

WUG	County	Projected Shortages (acft/yr)		Decade of Need
		Year 2040	Year 2070	
WOODWAY	MCLENNAN	(20)	(103)	2030
NOLAN COUNTY-OTHER	NOLAN	(108)	(125)	2020
SWEETWATER	NOLAN	(1,410)	(1,576)	2020
POSSUM KINGDOM WSC (P)	PALO PINTO	(137)	(215)	2020
ROBERTSON COUNTY-OTHER	ROBERTSON	168	(39)	2070
TRI-COUNTY SUD (P)	ROBERTSON	(16)	(42)	2020
GLEN ROSE	SOMERVELL	47	(39)	2060
POSSUM KINGDOM WSC (P)	STEPHENS	(6)	(7)	2020
FORT BELKNAPP WSC (P)	STEPHENS	(1)	(1)	2020
ABILENE (P)	TAYLOR	(8,918)	(11,027)	2030
COLEMAN COUNTY SUD	TAYLOR	(6)	(7)	2020
MERKEL	TAYLOR	6	(9)	2060
POTOSI WSC (P)	TAYLOR	(492)	(534)	2020
STEAMBOAT MOUNTAIN WSC	TAYLOR	(189)	(210)	2020
TYE	TAYLOR	(6)	(15)	2020
FORT BELKNAPP WSC (P)	THROCKMORTON	(2)	(2)	2020
BRENHAM	WASHINGTON	(400)	(928)	2030
BARTLETT (P)	WILLIAMSON	(178)	(231)	2020
BRUSHY CREEK MUD	WILLIAMSON	(920)	(1,848)	2020
CEDAR PARK	WILLIAMSON	(3,475)	(3,748)	2020
CHISHOLM TRAIL SUD (P)	WILLIAMSON	(4,599)	(9,624)	2020
WILLIAMSON COUNTY-OTHER	WILLIAMSON	(13,402)	(22,243)	2020
FERN BLUFF MUD	WILLIAMSON	(253)	(259)	2020
FLORENCE	WILLIAMSON	(65)	(92)	2020
GEORGETOWN	WILLIAMSON	(6,695)	(24,121)	2030
GRANGER	WILLIAMSON	(133)	(190)	2020
HUTTO	WILLIAMSON	(5,558)	(11,994)	2020
JONAH WATER SUD	WILLIAMSON	(819)	(2,977)	2030
LEANDER	WILLIAMSON	(8,273)	(28,901)	2030
ROUND ROCK	WILLIAMSON	(15,627)	(45,263)	2020
WILLIAMSON COUNTY MUD #10	WILLIAMSON	(352)	(688)	2020
WILLIAMSON COUNTY MUD #11	WILLIAMSON	(193)	(326)	2020

Table 4.2-1. Municipal WUGs with Projected Water Shortages

WUG	County	Projected Shortages (acft/yr)		Decade of Need
		Year 2040	Year 2070	
WILLIAMSON COUNTY MUD #9	WILLIAMSON	(263)	(448)	2020
FORT BELKNAPP WSC (P)	YOUNG	(39)	(79)	2020

(P) Indicates WUG is in multiple counties.

4.2.2 Projected Manufacturing Shortages

Eleven of the 37 counties in the Brazos G Area are projected to have manufacturing shortages. Table 4.2-2 lists the counties projected to have shortages in the Manufacturing Use category, projected year 2040 and 2070 shortages, and the approximate decade shortages are projected to begin.

Table 4.2-2. Counties with Projected Water Shortages for Manufacturing Use

County	Projected Shortages (acft/yr)		Decade of Need
	Year 2040	Year 2070	
BELL	(1,110)	(1,497)	2020
BOSQUE	(2,501)	(3,431)	2020
BRAZOS	(1,219)	(2,116)	2020
BURLESON	(44)	(102)	2030
FALLS	(1)	(1)	2020
FISHER	(79)	(159)	2020
LIMESTONE	(1)	0	2040
MCLENNAN	(2,204)	(2,834)	2020
NOLAN	(1,260)	(1,770)	2020
WASHINGTON	(192)	(399)	2020
WILLIAMSON	(11)	(11)	2020

4.2.3 Projected Steam-Electric Shortages

Table 4.2-3 lists the ten counties projected to have shortages in the Steam-Electric Use category, projected year 2040 and 2070 shortages, and the approximate decade shortages are projected begin.

Table 4.2-3. Counties with Projected Water Shortages for Steam-Electric Use

County	Projected Shortages (acft/yr)		Decade of Need
	Year 2040	Year 2070	
BELL	(5,804)	(9,693)	2020
BOSQUE	(2,262)	(8,345)	2030
BRAZOS	(197)	(121)	2020
GRIMES	(14,395)	(22,900)	2020
JOHNSON	(5,656)	(5,656)	2020
LIMESTONE	(9,017)	(30,893)	2030
MILAM	(76)	(6,757)	2030
NOLAN	(23,916)	(23,916)	2020
ROBERTSON	(2,012)	(18,478)	2020
SOMERVELL	(35,521)	(35,559)	2020

4.2.4 Projected Mining Shortages

Shortages are projected for mining use in most of the counties. Table 4.2-4 lists the thirty-three counties projected to have shortages in the Mining Use category, projected year 2040 and 2070 shortages, and the approximate decade shortages are projected to begin. Mining water use in Williamson County is primarily associated with dewatering for quarry operations.

Table 4.2-4. Counties with Projected Water Shortages for Mining Use

County	Projected Shortages (acft/yr)		Decade of Need
	Year 2040	Year 2070	
BELL	(4,599)	(6,968)	2020
BOSQUE	(1,763)	(1,692)	2020
BRAZOS	(1,433)	(814)	2020
BURLESON	(1,512)	(428)	2020
CALLAHAN	(214)	(180)	2020
COMANCHE	(337)	(102)	2020
CORYELL	(491)	(437)	2020
EASTLAND	(929)	(432)	2020
ERATH[1]	135	334	
FALLS	(259)	(331)	2020
FISHER	(359)	(238)	2020

Table 4.2-4. Counties with Projected Water Shortages for Mining Use

County	Projected Shortages (acft/yr)		Decade of Need
	Year 2040	Year 2070	
GRIMES	(438)	(95)	2020
HAMILTON	(89)	13	2020
HASKELL	(83)	(59)	2020
HOOD	(998)	(833)	2020
JOHNSON[2]	1,347	1,526	
JONES	(218)	(169)	2020
KNOX	(14)	(14)	2020
LAMPASAS	(216)	(288)	2020
LEE	(7,767)	(9,631)	2020
LIMESTONE	(9,056)	(10,616)	2020
MCLENNAN	(2,786)	(3,942)	2020
NOLAN	(200)	(141)	2020
ROBERTSON	(3,563)	(12,735)	2030
SHACKELFORD	(551)	(236)	2020
SOMERVELL	(441)	(266)	2020
STEPHENS	(3,458)	(1,773)	2020
STONEWALL	(337)	(163)	2020
TAYLOR	(366)	(315)	2020
THROCKMORTON	(171)	(116)	2020
WASHINGTON	(703)	(264)	2020
WILLIAMSON	(6,949)	(10,771)	2020
YOUNG	(196)	(73)	2020

1 - Projected shortage in 2030. Surplus in all other decades
2 - Projected shortage in 2020. Surplus in all other decades

4.2.5 Projected Irrigation Shortages

Table 4.2-5 lists the seventeen counties projected to have shortages in the Irrigation Use category, projected year 2040 and 2070 shortages, and the approximate decade shortages are projected to begin.

Table 4.2-5. Counties with Projected Water Shortages for Irrigation Use

County	Projected Shortages (acft/yr)		Decade of Need
	Year 2040	Year 2070	
BELL	(1,103)	(1,038)	2020
BOSQUE	(468)	(377)	2020
BRAZOS	(8,473)	(5,321)	2020
COMANCHE	(1,823)	(968)	2020
EASTLAND	(6,541)	(6,555)	2020
HAMILTON	(61)	(6)	2020
HASKELL	(3,197)	1,880	2020
KNOX	(8,505)	(5,105)	2020
LAMPASAS	(211)	(200)	2020
MCLENNAN	(2,325)	(2,363)	2020
NOLAN	(2,094)	(1,567)	2020
PALO PINTO	(2,513)	(2,394)	2020
ROBERTSON	(49,210)	(44,445)	2020
STEPHENS	(27)	(24)	2020
TAYLOR	(981)	(873)	2020
WILLIAMSON	(71)	(72)	2020
YOUNG	(48)	(44)	2020

4.2.6 Projected Livestock Shortages

There are no livestock shortages projected. As explained in Section 3, livestock demands were assumed to be met from stock tanks and locally-occurring groundwater.

4.3 Water Needs for Wholesale Water Providers

The TWDB's definition of a Wholesale Water Provider (WWP) is:

"A WWP is any person or entity, including river authorities and irrigation districts, that has contracts to sell more than 1,000 acft of water wholesale in any one year during the five years immediately preceding the adoption of the last Regional Water Plan. The Planning Groups shall include as wholesale water providers other persons and entities that enter or that the Planning Group expects or recommends to enter contracts to sell more than 1,000 acft of wholesale water during the period covered by the plan."

Under this definition, the list of WWPs for the Brazos G Area is as follows:

- Brazos River Authority,
- Aquilla Water Supply District,

- Bell County WCID No. 1,
- Bistone MWSD,
- Bluebonnet WSC,
- Central Texas WSC,
- Eastland County Water Supply District,
- Heart of Texas Water Suppliers LLC
- North Central Texas Municipal Water Authority,
- Palo Pinto County Municipal Water District No. 1,
- West Central Texas Municipal Water District,
- Upper Leon Municipal Water District,
- City of Abilene,
- City of Anson,
- City of Bryan
- City of Cedar Park,
- City of Cleburne,
- City of Gatesville
- Johnson County SUD
- Kempner WSC
- City of Mineral Wells
- City of Round Rock,
- City of Stamford,
- City of Sweetwater,
- City of Temple, and
- City of Waco

In addition, to these WWPs, there are other WWPs that provide water to Brazos G WUGs and WWPs from outside the Brazos G Area. These include the Lower Colorado River Authority (Region K), Colorado Municipal Water District (Region F), the Trinity River Authority (Region C), and the Cities of Fort Worth, Arlington, and Mansfield (Region C). Water supply plans will be developed for these entities by the regional water planning groups in the planning regions in which they are primarily located. Summaries for each WWP in the Brazos G Area, including a brief description, contracts for water sales, and supplies are provided in Tables 4.3-1 through 4.3-24. Projected demands are total contracts or projected demands of customer entities, whichever is greater, plus demands to be met from water management strategies recommended for that WWP.

4.3.1 Brazos River Authority

The largest provider of water in the Brazos G Area is the Brazos River Authority (BRA). The BRA also operates water and wastewater treatment systems, has programs to assess and protect water quality, does water supply planning and supports water conservation efforts in the Brazos River Basin. BRA provides water from three wholly owned and operated reservoirs: Lake Granbury, Possum Kingdom Lake, and Lake Limestone. BRA also contracts for conservation storage space and holds water rights in eight U.S. Army Corps of Engineers reservoirs in the region: Lakes Proctor, Belton, Stillhouse Hollow, Georgetown, Granger, Somerville, Whitney, and Aquilla. The BRA also contracts for storage space in Lake Waco on behalf of the City of Waco, which owns the water rights in Lake Waco. The total permitted capacity of the 11 reservoirs in the BRA system (Lake Waco excluded) is 2.22 million acft. BRA holds diversion rights in these reservoirs totaling more than 660,000 acft. In addition to these existing reservoirs, the BRA also holds water rights (shared with the City of Houston) to the proposed Allens Creek Reservoir in Region H. The water rights in Allens Creek Reservoir authorize an impoundment of 145,533 acft and diversions of 99,650 acft/yr.

BRA contracts to supply water to municipal, industrial and agricultural water customers in the BGRWPA and other regions. Although some BRA contracts may have an expiration date prior to 2070, all of these contracts are long term and considered perpetual through 2070 for regional water planning purposes. However, in reality, the BRA will consider contract renewals on a case by case basis as contracts expire. BRA's largest municipal customers include Bell County Water Control and Improvement District No. 1, the City of Round Rock, and the Central Texas Water Supply Corporation. For planning purposes, the overall BRA system has been divided into three separate systems: the Lake Aquilla system consisting of Lake Aquilla and its associated contracts; the Little River System consisting of Lake Proctor, Lake Belton, Stillhouse Hollow Reservoir, Lake Georgetown, and Lake Granger; and the Main Stem/Lower Basin System consisting of Possum Kingdom Reservoir, Lake Granbury, Lake Whitney, Lake Somerville, and Lake Limestone. The demands shown in Table 4.3-1 include all projected demands for water from the BRA in Brazos G, and Regions C, H, O and K, but they do not include water from the Lower Colorado River Authority to be supplied to entities in Williamson County or the yield impact of the subordination agreements that the BRA has with certain water purveyors in the basin.

Table 4.3-1. Projected Demands, Supplies and Balance for BRA

Projected Demands by System for Major Water Contract Holders *(contracts as of January 2013)*	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Lake Aquilla System						
Existing Contracts (Brazos G)	11,403	11,403	11,403	11,403	11,403	11,403
Existing Contracts (Region C)[1]	-	-	-	-	-	-
New Demands (Brazos G)	-	-	-	-	-	-
New Demands (Region C)	-	-	-	-	-	-
Total Demands Lake Aquilla System	11,403	11,403	11,403	11,403	11,403	11,403
Little River System						
Existing Contracts (Brazos G)	251,643	251,643	251,643	251,643	251,643	251,643
Existing Contracts (Region K)	-	-	-	-	-	-
New Demands (Brazos G)	20,036	23,549	25,352	31,631	50,785	50,285
New Demands (Region K)	-	-	-	-	-	-
Total Demands Little River System	271,679	275,192	276,995	283,274	302,428	301,928
Main Stem/Lower Basin						
Existing Contracts (Brazos G)	247,595	247,595	247,595	247,595	247,595	247,595
Existing Contracts (Region C)	1,100	1,100	1,100	1,100	1,100	1,100
Existing Contracts (Region H)	163,450	163,450	163,450	163,450	163,450	163,450
New Demands (Brazos G)	78,548	79,293	80,693	84,518	88,703	93,238
New Demands (Region C)	-	-	-	-	-	-
New Demands (Region H)[2]	25,000	25,000	25,000	25,000	25,000	25,000
Total Demands Main Stem/Lower Basin	515,693	516,438	517,838	521,663	525,848	530,383
Total Demand (Brazos G)	609,225	613,483	616,686	626,790	650,129	654,164
Total Demand (Region C)	1,100	1,100	1,100	1,100	1,100	1,100
Total Demand (Region K)	-	-	-	-	-	-
Total Demand (Region H)	188,450	188,450	188,450	188,450	188,450	188,450
Projected Total Demand	798,775	803,033	806,236	816,340	839,679	843,714

1 – BRA supplies from Lake Aquilla to Region C are included in Existing Contracts (Brazos G).
2 – New demands in Region H are proposed to be supplied from the pending BRA System Operations Permit. BRA demands to be met in Region H from the proposed Allens Creek Reservoir are not shown.

Supply Source	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Lake Aquilla System	13,315	13,072	12,829	12,585	12,342	12,099
Little River System	211,294	210,249	209,204	208,159	207,114	206,069
Main Stem/Lower Basin System	420,470	414,567	408,664	402,761	396,858	390,955
Total Supply	645,079	637,888	630,697	623,505	616,314	609,123

Projected Balance	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Lake Aquilla System	1,912	1,669	1,426	1,182	939	696
Little River System	(60,385)	(64,943)	(67,791)	(75,115)	(95,314)	(95,859)
Main Stem/Lower Basin System	(95,223)	(101,871)	(109,174)	(118,902)	(128,990)	(139,428)
Total Balance/(Shortage)	(153,696)	(165,145)	(175,539)	(192,835)	(223,365)	(234,591)

4.3.2 Aquilla Water Supply District

Aquilla Water Supply District is located in Hill County, and obtains raw water from Lake Aquilla through a contract with the BRA. The district supplies treated water to five wholesale customers. The City of Hillsboro is the district's largest customer with a contract to purchase up to 4,200 acft/yr. Projected demands, supplies and balances are shown in Table 4.3-2.

Table 4.3-2. Projected Demands, Supplies and Balance for Aquilla WSD

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	*2020*	*2030*	*2040*	*2050*	*2060*	*2070*
Brandon-Irene WSC	287	287	287	287	287	287
Chatt WSC (Hill C-O)	86	86	86	86	86	86
Files Valley WSC	1,709	1,709	1,709	1,709	1,709	1,709
Hill County WSC	230	230	230	230	230	230
Hillsboro	4,200	3,640	3,640	3,640	3,640	3,640
Total Demand	6,512	5,952	5,952	5,952	5,952	5,952

	Year (acft/yr)					
Supply Source	*2020*	*2030*	*2040*	*2050*	*2060*	*2070*
Lake Aquilla (BRA Contract)	5,953	5,953	5,953	5,953	5,953	5,953

	Year (acft/yr)					
Projected Balance	*2020*	*2030*	*2040*	*2050*	*2060*	*2070*
Balance/(Shortage)	(559)	1	1	1	1	1

4.3.3 Bell County Water Control and Improvement District No. 1

Bell County Water Control and Improvement District (WCID) No. 1 obtains and treats water for its customers from Lake Belton through contracts with the Brazos River Authority for 62,509 acft/yr. Bell County WCID No. 1 also diverts and treats water for Fort Hood using the Department of the Army's water right in Lake Belton, which, for planning purposes, is not listed as a supply for Bell County WCID No. 1. Projected demands, supplies and balances are shown in Table 4.3-3.

Table 4.3-3. Projected Demands, Supplies and Balance for Bell County WCID No. 1

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
439 Water Supply Corp	750	750	750	750	750	750
City of Belton	5,966	5,966	5,966	5,966	5,966	5,966
City of Copperas Cove	8,824	8,824	8,824	8,824	8,824	8,824
City of Harker Heights	5,265	5,265	5,265	5,265	5,265	5,265
City of Killeen	39,964	39,964	39,964	39,964	39,964	39,964
City of Nolanville	990	990	990	990	990	990
Bell County-Other	750	750	750	750	750	750
Bell County-Other (Recommended)	0	0	23	467	731	995
Total Fresh Water Demands	62,509	62,509	62,532	62,976	63,240	63,504
Reuse Water Demands						
City of Harker Heights (Recommended)	185	185	185	185	185	185
439 WSC (Recommended)						20
Bell County - Manufacturing (Recommended)	1,000	1,000	1,000	1,360	1,360	1,360
City of Killeen (Recommended)	2,488	2,488	2,488	2,488	2,488	2,488
Total Reuse Water Demands	3,173	3,173	3,173	3,173	3,173	3,193

Supply Source	*Year (acft/yr)*					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Fresh Water Supplies						
Lake Belton (BCWCID #1 BRA Contract)	62,509	62,202	61,602	58,420	57,623	56,364
Reuse Water Supplies						
Undeveloped Bell Co. WCID No.1 Reuse Supply	19,264	20,732	22,199	23,667	25,134	26,602

Projected Balance	*Year (acft/yr)*					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Fresh Water Balance/(Shortage)	0	(307)	(931)	(4,556)	(5,617)	(7,140)
Reuse Water Balance/(Shortage)	16,091	17,559	19,026	20,494	21,961	23,409

4.3.4 Bistone Municipal Water Supply District

Bistone Municipal Water Supply District (MWSD) owns and operates Lake Mexia in Limestone County with authorized diversions for municipal and industrial use of 2,887 acft. The MWSD serves the City of Mexia and other entities in Limestone County. The District's largest customer is the City of Mexia which receives 4,480 acft/yr. Other contract holders include Mexia State School, Coolidge and Whiterock WSC. Mexia State School contract is limited at 250,000 gallons per day. The City of Coolidge has the right to purchase 200,000 gallons per day. Whiterock WSC has a total contract right to purchase 245,000 gallons per day. Projected demands, supplies and balances are shown in Table 4.3-4.

Table 4.3-4. Projected Demands, Supplies and Balance for Bistone MWSD

Projected Demands	***Year (acft/yr)***					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
Bistone MWSD	146	144	142	141	141	141
City of Mexia	4,480	4,480	4,480	4,480	4,480	4,480
Mexia State School (Limestone C-O)	280	280	280	280	280	280
City of Coolidge	225	225	225	225	225	225
Whiterock WSC (Limestone C-O)	274	274	274	274	274	274
Total Demand	5,405	5,403	5,401	5,400	5,400	5,400

Supply Source	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Lake Mexia	1,135	1,028	921	814	707	600
Carrizo – Wilcox Aquifer	1,688	1,688	1,688	1,688	1,688	1,688
Total Supply	2,823	2,716	2,609	2,502	2,395	2,288

Projected Balance	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Balance/(Shortage)	(2,582)	(2,687)	(2,792)	(2,898)	(3,005)	(3,112)

4.3.5 Bluebonnet Water Supply Corporation

The Bluebonnet Water Supply Corporation (WSC) is located in Bell County. The WSC obtains raw water from Lake Belton through contracts with the BRA totaling 8,301 acft. The WSC sells treated water to eight entities in the BGRWPA. The largest customer is the City of McGregor, which has a contract for 2,139 acft/yr. Projected demands, supplies and balances are shown in Table 4.3-5.

Table 4.3-5. Projected Demands, Supplies and Balance for Bluebonnet WSC

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Bruceville-Eddy	938	938	938	938	938	938
Elm Creek WSC	654	654	654	654	654	654
City of McGregor	2,139	2,139	2,139	2,139	2,139	2,139
Moffat WSC	869	869	869	869	869	869
City of Moody	401	401	401	401	401	401
Pendleton WSC	461	461	461	461	461	461
Spring Valley WSC (McLennan C-O)	301	301	301	301	301	301
City of Woodway	1,362	1,362	1,362	1,362	1,362	1,362
Total Demand	7,125	7,125	7,125	7,125	7,125	7,125

Supply Source	*Year (acft/yr)*					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Lake Belton (BRA Contract)	7,365	7,090	7,022	6,829	6,736	6,589
Total Supply	7,365	7,090	7,022	6,829	6,736	6,589

Projected Balance	*Year (acft/yr)*					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Balance/(Shortage)	240	(35)	(103)	(296)	(389)	(536)

4.3.6 Central Texas Water Supply Corporation

The Central Texas Water Supply Corporation (WSC) provides water to a number of water supply corporations and cities in Bell, Williamson, Milam and Lampasas Counties. The Central Texas WSC obtains water under contract with the Brazos River Authority (BRA) from Lake Stillhouse Hollow, with a total contracted supply of 12,045 acft/yr, of which 8,332 acft/yr is reliable supply, and two Trinity Aquifer wells. Central Texas WSC provides supply from four separate three-party contracts (BRA, Central Texas WSC, and third party) to Belton, Lampasas, Kempner WSC and Rosebud, in addition to treating and transmitting water to Lampasas and Kempner WSC that those entities have contracted for (raw supply) directly from BRA. Those supplies for which Lampasas and Kempner WSC have contracted directly to BRA are not shown in this table. Projected demands, supplies and balances are shown in Table 4.3-6.

Table 4.3-6. Projected Demands, Supplies and Balance for Central Texas WSC

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
Armstrong WSC	783	783	783	783	783	783
Bell County WCID No. 5 (Bell C-O)	67	67	67	67	67	67
Bell-Milam-Falls WSC	2,327	2,327	2,327	2,327	2,327	2,327
City of Belton	100	100	100	100	100	100
Dog Ridge WSC	840	840	840	840	840	840
EAST BELL WSC	691	691	691	691	691	691
City of Holland	331	331	331	331	331	331
Little Elm Valley WSC (Milam C-O)	548	548	548	548	548	548
City of Lott	234	234	234	234	234	234
City of Rodgers	468	468	468	468	468	468
City of Rosebud	500	500	500	500	500	500
Salem-Elm Ridge WSC (Milam C-O)	245	245	245	245	245	245
Town of Buckholts	244	244	244	244	244	244
Town of Oenaville and Belfalls (Bell C-O)	157	157	157	157	157	157
West Bell County WSC	1,660	1,660	1,660	1,660	1,660	1,660
Westphalia WSC (Falls C-O)	45	45	45	45	45	45
Jarrell-Schwertner WSC	1,000	1,000	1,000	1,000	1,000	1,000
Bell County-Other (Recommended Strategy)			500	500	500	500
Total Demand	10,240	10,240	10,740	10,740	10,740	10,740

Supply Source	*Year (acft/yr)*					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Trinity Aquifer	2,421	2,421	2,421	2,421	2,421	2,421
Lake Stillhouse Hollow (BRA Contract)	9,644	9,195	9,106	8,636	8,518	8,332
Total Supply	12,065	11,616	11,527	11,057	10,939	10,753

Projected Balance	*Year (acft/yr)*					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Balance/(Shortage)	1,825	1,376	787	317	199	13

4.3.7 Eastland County Water Supply District

The Eastland County Water Supply District owns and operates Lake Leon and has a water right to divert 5,800 acft for municipal and industrial purposes and 500 acft for irrigation. The district currently provides treated water to entities in Eastland County through the Cities of Eastland and Ranger. Projected demands, supplies and balances are shown in Table 4.3-7.

Table 4.3-7. Projected Demands, Supplies and Balance for Eastland County WSD

Projected Demands	***Year (acft/yr)***					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Eastland	3,314	3,314	3,314	3,314	3,314	3,314
City of Ranger	2025	2025	2025	2025	2025	2025
Eastland County Manufacturing	72	77	82	85	91	97
Total Demand	5,411	5,416	5,421	5,424	5,430	5,436

Supply Source	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Run-of-the-River Right	345	344	342	341	339	338
Lake Leon	5,488	5,456	5,425	5,394	5,362	5,331
Total Supply	5,833	5,800	5,767	5,734	5,701	5,668

Projected Balance	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Balance/(Shortage)	422	384	346	310	271	232

4.3.8 Heart of Texas Water Suppliers LLC

Heart of Texas has a contract to provide 5,600 acft/yr to the City of Hutto. Heart of Texas has a well field in the Carrizo-Wilcox Aquifer (Hooper formation) in Williamson County; however, the current MAG for the Carrizo-Wilcox in Williamson County is only 7 acft/yr. Heart of Texas also holds permits with the Lost Pines Groundwater Conservation District in Lee County for 3,300 acft/yr. A well has been constructed in Lee County, but it has not yet been brought online and is not counted as a current source of supply. Projected demands, supplies and balances are shown in Table 4.3-8.

Table 4.3-8. Projected Demands, Supplies and Balance for Heart of Texas

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	*2020*	*2030*	*2040*	*2050*	*2060*	*2070*
City of Hutto	5,600	5,600	5,600	5,600	5,600	5,600
City of Hutto (Recommended Strategy)				1,910	4,117	6,401
Total Demand	5,600	5,600	5,600	7,510	9,717	12,001

Supply Source	*Year (acft/yr)*					
	2020	*2030*	*2040*	*2050*	*2060*	*2070*
Carrizo-Wilcox (Williamson County)	7	7	7	7	7	7
Carrizo-Wilcox (Lee County)	0	0	0	0	0	0
Total Supply	7	7	7	7	7	7

Projected Balance	*Year (acft/yr)*					
	2020	*2030*	*2040*	*2050*	*2060*	*2070*
Balance/(Shortage)	(5,593)	(5,593)	(5,593)	(7,503	(9,710_	(11,994)

4.3.9 North Central Texas Municipal Water Authority

North Central Texas Municipal Water District supplies treated water to entities in Knox, Haskell and Stonewall Counties. The district has water rights to divert 5,000 acft from Millers Creek Reservoir for municipal, industrial, and mining purposes. Projected demands, supplies and balances are shown in Table 4.3-9.

Table 4.3-9. Projected Demands, Supplies and Balance for North Central Texas MWA

Projected Demands	***Year (acft/yr)***					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Aspermont	118	118	118	118	118	118
City of Benjamin (Knox C-O)	13	13	13	13	13	13
City of Goree (Knox C-O)	63	63	63	63	63	63
City of Haskell	637	637	637	637	637	637
City of Knox City	260	260	260	260	260	260
City of Munday	268	268	268	268	268	268
City of O'Brian (Haskell C-O)	10	10	10	10	10	10
City of Rochester (Haskell C-O)	26	26	26	26	26	26
City of Rule	45	45	45	45	45	45
Weinert (Haskell C-O)	44	44	44	44	44	44
Baylor WSC (Region B)	147	147	147	147	147	147
Knox County Rural WSC (Knox C-O)	55	55	55	55	55	55
Rhineland WSC (Haskell C-O)	37	37	37	37	37	37
Paint Creek WSC (Haskell C-O)	74	74	74	74	74	74
Total Demand	1,797	1,797	1,797	1,797	1,797	1,797

Supply Source	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Millers Creek Reservoir	1,300	1,080	860	640	420	200

Projected Balance	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Balance/(Shortage)	(497)	(717)	(937)	(1,157)	(1,377)	(1,597)

4.3.10 Palo Pinto County Municipal Water District No. 1

Palo Pinto Municipal Water District owns and operates Lake Palo Pinto, which is used to supply water to entities in Palo Pinto and Parker Counties (Region C). The district has rights to 18,500 acft a year for municipal and steam electric power uses. Treated water is supplied to the City of Mineral Wells (and its customers) and Lake Palo Pinto Area Water Supply Corporation. The district is currently pursuing the Turkey Peak Dam project to increase its total reservoir storage capacity to the volume authorized in its water right permit. Projected demands, supplies and balances are shown in Table 4.3-10.

Table 4.3-10. Projected Demands, Supplies and Balance for Palo Pinto County MWD No. 1

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	*2020*	*2030*	*2040*	*2050*	*2060*	*2070*
City of Mineral Wells[1]	5,164	5,265	5,320	5,391	5,462	5,521
Lake Palo Pinto Area WSC (Palo Pinto C-O)	250	250	250	250	250	250
Palo Pinto County Steam-Electric	4,000	4,000	4,000	4,000	4,000	4,000
Palo Pinto County Irrigation (Recommended)	2,494	2,392	2,299	2,260	2,222	2,188
Total Demand	11,908	11,907	11,869	11,901	11,934	11,959

1 – Includes municipal supply to portion of Mineral Wells located in Region C.

Supply Source	*Year (acft/yr)*					
	2020	*2030*	*2040*	*2050*	*2060*	*2070*
Lake Palo Pinto	7,655	7,481	7,307	7,133	6,959	6,785

Projected Balance	*Year (acft/yr)*					
	2020	*2030*	*2040*	*2050*	*2060*	*2070*
Balance/(Shortage)	(4,253)	(4,426)	(4,562)	(4,768)	(4,975)	(5,174)

4.3.11 Upper Leon Municipal Water District

The Upper Leon Municipal Water District obtains water from Lake Proctor through contracts with the BRA totaling 6,437 acft. The MWD provides treated water to the Cities of Comanche, De Leon, Dublin, Gorman, Hamilton and Stephenville. Projected demands, supplies and balances are shown in Table 4.3-11.

Table 4.3-11. Projected Demands, Supplies and Balance for Upper Leon MWD

Projected Demands	***Year (acft/yr)***					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Comanche	706	706	706	706	706	706
City of De Leon	307	307	307	307	307	307
City of Dublin	598	598	598	598	598	598
City of Gorman	169	169	169	169	169	169
City of Hamilton	921	921	921	921	921	921
City of Stephenville	1,862	1,862	1,862	1,862	1,862	1,862
Comanche County WSC	9	9	9	9	9	9
Total Demand	4,572	4,572	4,572	4,572	4,572	4,572

Supply Source	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Lake Proctor (BRA Contract)	4,980	4,541	4,497	4,264	4,206	4,114

Projected Balance	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Balance/(Shortage)	408	(31)	(75)	(308)	(366)	(458)

4.3.12 West Central Texas Municipal Water District

The West Central Texas Municipal Water District (MWD) holds a water right in Hubbard Creek Reservoir that authorize it to divert up to 56,000 acft of water per year from the reservoir for municipal, industrial, irrigation, mining, domestic, and livestock use. The District provides raw water to its member cities of Abilene, Albany, Anson, and Breckenridge. The District has opted to utilize a 2-year safe yield as the basis for supply from Hubbard Creek Reservoir for the 2016 Brazos G Plan. The District has currently contracted with its member cities up to an allocation of 85% of the one-year safe yield supply. The District also holds a long-term contract with the Colorado River Municipal Water District (CRMWD) for 16 percent of the yield in O.H. Ivie Reservoir (~15,000 acft) and a supporting contract with the City of Abilene to provide this water to the city. Currently the City of Abilene has facilities to utilize up to 6,720 acft/yr (6 MGD) of the supply from O.H. Ivie Reservoir. The O.H. Ivie supply is shown on summaries for the City of Abilene. Projected demands, supplies and balances are shown in Table 4.3-12.

Table 4.3-12. Projected Demands, Supplies and Balance for West Central Texas MWD

Projected Demands	***Year (acft/yr)***					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Abilene	20,400	20,400	20,400	20,400	20,400	20,400
City of Albany	2,200	2,200	2,200	2,200	2,200	2,200
City of Anson	2,400	2,400	2,400	2,400	2,400	2,400
City of Breckenridge	2,900	2,900	2,900	2,900	2,900	2,900
Total Demand	27,900	27,900	27,900	27,900	27,900	27,900

Supply Source	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Hubbard Creek Reservoir	27,010	26,872	26,733	26,594	26,456	26,317

Projected Balance	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Balance/(Shortage)	(890)	(1,028)	(1,167)	(1,306)	(1,444)	(1,583)

4.3.13 City of Abilene

The City of Abilene has water rights for three reservoirs Lake Fort Phantom Hill, Lake Abilene, and Lake Kirby, all of which it owns and operates. Abilene obtains raw water supply from Lake Fort Phantom Hill. Lakes Abilene and Kirby are the original water supplies for Abilene but are no longer considered to provide reliable supply. The total permitted capacity of Lake Fort Phantom Hill is 73,960 acft. The City has the right to divert up to 30,690 acft/yr from the lake for municipal, industrial, and irrigation use. The City also uses surface water purchased from the West Central Texas Municipal Water District from Lake Hubbard, and Lake O.H. Ivie (operated by the CRMWD). The City currently has reverse osmosis facilities to utilize 6,720 acft/yr of the supply from O.H. Ivie. The City supplies treated water to 14 entities in the BGRWPA and Dyess Air Force Base, which is located in Abilene. The City also has a contract with the City of Hamlin to treat raw water from Hubbard Creek Reservoir that is purchased from the City of Anson. Projected demands, supplies and balances are shown in Table 4.3-13.

Table 4.3-13. Projected Demands, Supplies and Balance for City of Abilene

Projected Demands	***Year (acft/yr)***					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Abilene[1]	22,032	20,857	21,302	21,901	22,350	22,694
Blair WSC (Taylor C-O)	77	77	77	77	77	77
City of Baird	77	77	77	77	77	77
City of Clyde	307	307	307	307	307	307
City of Lawn (Taylor C-O)	77	77	77	77	77	77
City of Merkel	353	353	353	353	353	353
City of Tye	184	184	184	184	184	184
Eula WSC (Callahan C-O)	61	61	61	61	61	61
Hamby WSC (Taylor C-O)	308	308	308	308	308	308
Hawley WSC	307	307	307	307	307	307
Potosi WSC	307	307	307	307	307	307
Steamboat Mountain WSC	307	307	307	307	307	307
S.U.N. WSC (Taylor C-O)	230	230	230	230	230	230
View Caps WSC (Taylor C-O)	199	199	199	199	199	199
Taylor County Manufacturing	1,248	1,395	1,537	1,658	1,831	2,019
City of Merkel (Recommended Strategy)	0	0	0	0	4	9
City of Potosi (Recommended Strategy)	466	485	500	515	529	542
Steamboat Mountain WSC (Recommended Strategy)	182	185	189	194	203	210
City of Sweetwater (Recommended Strategy)	742	974	1,137	1,355	1,562	1,777
City of Tye (Recommended Strategy)	2	4	6	9	13	15
City of Winters (Region F Recommended Strategy)	100	100	100	100	100	100
Total Treated Water Demand	27,566	26,794	27,565	28,526	29,286	30,160
City of Clyde (for steam-electric supply)	11,837	11,837	11,837	11,837	11,837	11,837
West Texas Water Partnership (Recommended)		10,000	10,000	10,000	10,000	10,000
Taylor County Mining (Recommended)	379	371	340	322	306	293
Taylor County Irrigation (Recommended)	1,010	943	877	842	807	776
Nolan County Steam-Electric (Recommended)		10,000	9,299	7,901	6,702	5,384

Raw Water Only Demand	13,226	33,151	32,453	31,002	29,752	28,390
Total Demand	40,692	59,845	59,918	59,428	58,939	58,449

1 – Demands include any conservation applied to the City's demands as a municipal WUG.

Supply Source	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Lake Abilene[1]	0	0	0	0	0	0
Lake Kirby[2]	0	0	0	0	0	0
Lake O.H. Ivie (Colorado River MWD)[3]	4,811	4,668	4,525	4,383	4,240	4,097
Fort Phantom Hill[4]	10,000	9,792	9,584	9,376	9,168	8,960
West Central Texas MWD (Hubbard)[5]	19,510	19,372	19,233	19,094	18,956	18,817
Total Raw Water Supply	34,321	33,832	33,343	32,853	32,364	31,874
Treated Supply (Hubbard and Ft. Phantom)[6,7]	27,552	13,440	13,440	13,440	13,440	13,440
Total Treated Water Supply	32,363	18,108	17,965	17,823	17,680	17,537

1 – Lake Abilene is not considered a dependable supply by the City and is currently not used.

2 – Lake Kirby is not considered a dependable supply by the City and is used primarily to store water for the City's reuse customers. Reuse demands are not included in the water demand projections for the City.

3 – Updated yields with subordination, 16.54% of Ivie yield. Reduced by 15% for RO efficiency. Current treatment capacity (desalination) is approximately 6 MGD (6,720 acft/yr). Supply located in Region F.

4 – Abilene's portion of FPHR supply is based on a 2 year safe yield (10,320 acft/yr in 2070) for of the reservoir, less the 1 year safe yield of the City of Clyde's water right (1,360 acft/yr in 2070).

5 – The ongoing drought is not contained in the Brazos WAM and is not reflected in the yields presented. Abilene's supply from Hubbard Creek Reservoir will be reduced to zero (contractual stipulation) as lake levels decrease. As such, Brazos Basin supplies may be overstated.

6 – Supply has been constrained based on average annual capacity of the existing Northeast and Grimes treatment plants for 2010. The average annual capacity is determined as 50% of the normal rated design capacity (49.2 MGD). By 2020, the capacity of the Grimes treatment plant is reduced to zero for a total constrained supply of 13,440 AF.

7 – Abilene has a treatment contract with Hamlin to treat supplies for Hamlin using Anson supply from WCTMWD.

Projected Balance	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Treated Water Balance/(Shortage)	4,797	(8,686)	(9,600)	(10,703)	(11,707)	(12,623)
Total Raw Water Balance/(Shortage)	(6,471)	(26,114)	(26,575)	(26,575)	(26,575)	(26,575)

4.3.14 City of Anson

The City of Anson receives surface water supplies from West Central Texas MWD and Lake Anson North. Although the City owns Lake Anson North, the water resource is unreliable and is not considered a supply. The City has a 1.8 MGD WTP for its own demand. Anson sells supply to Hawley WSC and City of Hamlin and contracts with Abilene to provide treatment for these supplies. Projected demands, supplies and balances are shown in Table 4.3-14.

Table 4.3-14. Projected Demands, Supplies and Balance for City of Anson

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Anson[1]	367	375	378	388	397	405
HAWLEY WSC	350	350	350	350	350	350
City of Hamlin	767	767	767	767	767	767
Total Demand	1,484	1,492	1,495	1,505	1,514	1,522
1 – Demand includes any conservation applied to the City's demands as a municipal WUG.						

Supply Source	*Year (acft/yr)*					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
West Central Texas MWD	2,400	2,400	2,400	2,400	2,400	2,400
Anson North Lake[1]	202	202	202	202	202	202
Total Supplies	2,400	2,400	2,400	2,400	2,400	2,400
Constrained Supply (WTP Capacity)	2,128	2,128	2,128	2,128	2,128	2,128
1 – The City does not consider Anson North Lake a reliable supply and does not intend to use as a water source.						

Projected Balance	*Year (acft/yr)*					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Balance/(Shortage)	644	636	633	623	614	606

4.3.15 City of Bryan

The City of Bryan owns a total of twelve wells located in the Simsboro and Sparta formations of the Carrizo-Wilcox Aquifer with a production capacity of 43 MGD. The Brazos Valley Groundwater Conservation District has permitted the City to withdraw 33,540 acft/yr. The City supplies several neighboring communities as well as manufacturing and steam-electric entities. The City of College Station, Wellborn SUD and Wickson Creek SUD have agreements with Bryan to purchase or sell potable water through metered lines. These connections are typically only used during times of high demand or in emergency situations. The city has a bed and banks water right permit for reuse of the city's wastewater effluent. Projected demands, supplies and balances are shown in Table 4.3-15.

Table 4.3-15. Projected Demands, Supplies and Balance for City of Bryan

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Bryan[1]	15,203	14,670	18,726	21,795	25,027	28,509
Wellborn SUD	2,240	2,240	2,240	2,240	2,240	2,240
Wickson Creek SUD	1,710	1,534	1,366	1,241	1,129	1,041
City of College Station	385	450	1,656	4,973	8,566	12,716
Brazos County Manufacturing	95	95	95	95	95	95
Brazos County Steam Electric	1	1	1	1	1	1
Total Demand	19,634	18,990	24,084	30,345	37,058	44,602
Reuse Water Demands						
Grimes County Steam Electric (Recommended)	949	1,074	1,040	1,178	1,091	1,111
Brazos County Steam Electric (Recommended)	256	131	165	27	114	94
Total Reuse Demand	1,205	1,205	1,205	1,205	1,205	1,205
1 – Demand includes any conservation applied to the City's demands as a municipal WUG.						

Supply Source	*Year (acft/yr)*					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Carrizo – Wilcox Aquifer	16,042	18,525	19,398	19,398	19,398	19,398
Sparta Aquifer	750	769	769	769	769	769
Total Supply	16,792	19,294	20,167	20,167	20,167	20,167
Reuse Water Supplies						
Undeveloped Reuse Supply	6,645	8,340	10,035	11,730	13,425	15,120

Projected Balance	*Year (acft/yr)*					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Fresh Water Balance/(Shortage)	(2,841)	304	(3,917)	(10,178)	(16,891)	(24,436)
Reuse Water Balance/(Shortage)	5,440	7,135	8,830	10,525	12,220	13,915

4.3.16 City of Cedar Park

The City of Cedar Park is located in Williamson County and part of Travis County (Region K) and provides wholesale water to entities in Williamson and Travis Counties. The City is a participant in the Brushy Creek Regional Utility Authority to develop additional supplies from the Highland Lakes. Projected demands, supplies and balances are shown in Table 4.3-16.

Table 4.3-16. Projected Demands, Supplies and Balance for City of Cedar Park

Projected Demands	***Year (acft/yr)***					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Cedar Park[1]	14,124	14,169	12,814	12,440	12,440	12,440
City of Cedar Park (Region K)[1]	2,186	2,100	2,153	2,039	1,939	1,839
Indian Springs Subdivision (Williamson C-O)	13	13	13	13	13	13
Williamson-Travis Co. MUD No.1	989	989	989	989	989	989
Blockhouse MUD	1,098	1,098	1,098	1,098	1,098	1,098
Williamson County-Manufacturing	790	912	1,033	1,142	1,243	1,355
Total Demand	19,200	19,281	18,100	17,721	17,722	17,734
1 – Demand includes any conservation applied to the City's demands as a municipal WUG.						

Supply Source	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Highland Lakes System (LCRA)	18,000	18,000	18,000	18,000	18,000	18,000

Projected Balance	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Balance/(Shortage)	(1,200)	(1,281)	(100)	279	278	266

4.3.17 City of Cleburne

The City of Cleburne obtains its water supply from Lake Pat Cleburne, Lake Aquilla, and groundwater from the Trinity Aquifer. The City of Cleburne also has contracted supplies from Lake Whitney that are not yet connected. The City of Cleburne provides treated supplies for manufacturing use and wastewater reuse supplies for steam-electric customers in Johnson County. The city's water treatment plant has an average annual capacity of 11,200 acft/yr, which is sufficient for the current surface water supply. Projected demands, supplies and balances are shown in Table 4.3-17.

Table 4.3-17. Projected Demands, Supplies and Balance for City of Cleburne

Projected Demands	***Year (acft/yr)***					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Cleburne[1]	5,720	5,761	6,274	6,929	7,636	8,393
Johnson County-Manufacturing	2,329	2,714	3,105	3,455	3,801	4,182
Johnson County SE (Recommended)	3,415	3,275	3,135	3,135	3,135	3,135
Total Fresh Water Demands	11,464	11,750	12,514	13,519	14,572	15,710
Reuse Water Demands						
Johnson County-SE	1,344	1,344	1,344	1,344	1,344	1,344
Johnson County SE (Recommended Strategy)	2,031	2,031	2,031	2,031	2,031	2,031
Total Reuse Demands	3,375	3,375	3,375	3,375	3,375	3,375

1 – Demand includes any conservation applied to the City's demands as a municipal WUG.

Supply Source	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Fresh Water Supplies						
Trinity Aquifer	1,292	1,292	1,292	1,292	1,292	1,292
Lake Pat Cleburne	4,838	4,769	4,700	4,631	4,562	4,493
Lake Aquilla	5,300	5,300	5,300	5,300	5,300	5,300
Lake Whitney	9,700	9,628	9,556	9,484	9,412	9,340
Lake Whitney Constrained Supplies[1]	0	0	0	0	0	0
Total Fresh Water Supplies	11,430	11,361	11,292	11,223	11,154	11,085
Constrained Fresh Water Supply[2]	11,200	11,200	11,200	11,200	11,154	11,085
Reuse Water Supplies						
Johnson County SE	1,344	1,344	1,344	1,344	1,344	1,344
Undeveloped Reuse Supply	2,283	3,089	3,895	4,702	5,508	6,314
Total Reuse Supply	3,627	4,433	5,239	6,046	6,852	7,658

1 – No current infrastructure to take Lake Whitney supplies.
2 – Fresh water supply has been constrained based on average annual capacity of the existing treatment plant(s). The average annual capacity is determined as 50% of the normal rated design capacity (20 MGD).

Projected Balance	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Fresh Water Balance/(Shortage)	(264)	(550)	(1,314)	(2,319)	(3,418)	(4,625)
Reuse Water Balance/(Shortage)	252	1,058	1,864	2,671	3,477	4,283

4.3.18 City of Gatesville

The City of Gatesville is supplied by multiple contracts with BRA for a total of 5,898 acft/yr from Lake Belton. The City provides treated supplies to five municipal water user groups in Coryell County including supply for all the projected demand for Coryell City Water Supply District. The water supply plan for Coryell County-Other includes the City providing for the remaining water need. Projected wholesale demand on the City in 2070 is 3,931 acft. Projected demands, supplies and balances are shown in Table 4.3-18.

Table 4.3-18. Projected Demands, Supplies and Balance for City of Gatesville

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	*2020*	*2030*	*2040*	*2050*	*2060*	*2070*
City of Gatesville	4,216	4,329	4,435	4,422	4,397	4,791
Coryell City Water Supply District	934	1,046	1,172	1,287	1,415	1,543
Fort Gates WSC (Coryell C-O)	120	120	120	120	120	120
Mountain WSC (Coryell C-O)	280	280	280	280	280	280
Grove WSC (Coryell C-O)	0	0	0	0	0	0
Flat WSC (Coryell C-O)	102	102	102	102	102	102
Coryell County-Manufacturing	10	11	12	13	14	15
Coryell County-Other (Recommended)				93	171	515
Total Demand	5,662	5,888	6,121	6,317	6,499	7,366

1 – Demand includes any conservation applied to the City's demands as a municipal WUG.

Supply Source	*Year (acft/yr)*					
	2020	*2030*	*2040*	*2050*	*2060*	*2070*
BRA Contract	5,898	5,869	5,812	5,512	5,437	5,318
Total Supplies	5,898	5,869	5,812	5,512	5,437	5,318

Projected Balance	*Year (acft/yr)*					
	2020	*2030*	*2040*	*2050*	*2060*	*2070*
Balance/(Shortage)	236	(19)	(308)	(805)	(1,062)	(2,048)

4.3.19 Johnson County Special Utility District

Johnson County Special Utility District (SUD) is located in Johnson, Hill, Ellis (Region C) and Tarrant (Region C) counties. The SUD obtains its water supply from groundwater from the Trinity Aquifer, and a contract with the Brazos River Authority for water from Lake Granbury and a contract with the City of Mansfield (10,089 acft/yr) for water from the Tarrant Regional Water District. Supplies from Tarrant have been constrained based on availability from the District. Johnson County SUD also has a contract with Grand Prairie for 6,720 acft/yr, which will be implemented by 2020. The SUD has contracts to supply treated supplies to nine water user groups. Projected demands, supplies and balances are shown in Table 4.3-19.

Table 4.3-19. Projected Demands, Supplies and Balance for Johnson County SUD

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	*2020*	*2030*	*2040*	*2050*	*2060*	*2070*
Johnson County SUD (Region G)[1]	4,837	5,408	6,029	6,759	7,589	8,490
Johnson County SUD (Region C)[1]	295	323	356	391	431	470
City of Alvarado	2,241	2,241	2,241	2,241	2,241	2,241
Bethany WSC	1,120	1,120	1,120	1,120	1,120	1,120
Monarch Utilities (Johnson C-O)	282	282	282	282	282	282
City of Keene	1,120	1,120	1,120	1,120	1,120	1,120
City of Joshua[2]	951	1,115	1,292	1,494	1,722	1,968
Sundance (Johnson C-O)	56	56	56	56	56	56
Blue Water Oaks (Johnson C-O)	31	31	31	31	31	31
Walnut Creek MHP (Johnson C-O)	68	68	68	68	68	68
Johnson County-Mining	20	20	20	20	20	20
Total Demand	11,022	11,785	12,616	13,583	14,681	15,867

1 – Demand includes any conservation applied to the entity's demands as a municipal WUG.
2 – Contract to provide supplies to meet needs less assuming conservation has been applied to the entity.

Supply Source	*Year (acft/yr)*					
	2020	*2030*	*2040*	*2050*	*2060*	*2070*
City of Mansfield	6,884	6,302	5,631	4,717	4,260	3,858
BRA Contract (Lake Granbury)	9,210	9,210	9,210	9,210	9,210	9,210
Grand Prairie	0	0	0	0	0	0
Groundwater (Trinity)	2,081	2,081	2,081	2,081	2,081	2,081
Total Supplies	18,175	17,593	16,922	16,008	15,551	15,149
Constrained Supply (Total Treated)	16,626	16,044	15,373	14,459	14,002	13,600

Projected Balance	*Year (acft/yr)*					
	2020	*2030*	*2040*	*2050*	*2060*	*2070*
Balance/(Shortage)	5,604	4,259	2,757	876	(679)	(2,267)

4.3.20 Kempner Water Supply Corporation

Kempner WSC has service area in portions of Coryell, Bell, Burnet (Region C) and Lampasas Counties. The WSC receives surface water supplies from the Brazos River Authority out of Lake Stillhouse Hollow. Kempner WSC sells supplies to the cities of Kempner, Copperas Cove, Lampasas, as well as to Salado WSC and Lampasas County-Mining. Projected demands, supplies and balances are shown in Table 4.3-20.

Table 4.3-20. Projected Demands, Supplies and Balance for Kempner WSC

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	*2020*	*2030*	*2040*	*2050*	*2060*	*2070*
Kempner WSC [1]	2,336	2,444	2,684	2,918	3,143	3,356
Kempner WSC (Region K)	129	146	167	188	206	221
City of Kempner[2]	195	209	225	240	254	267
City of Copperas Cove	252	252	252	252	252	252
City of Lampasas	1,281	1,281	1,281	1,281	1,281	1,281
Salado WSC	183	183	183	183	183	183
Lampasas County-Mining	25	25	25	25	25	25
City of Lampasas (Recommended Strategy)	22	148	227	318	414	505
Total Demand	4,422	4,687	5,043	5,405	5,757	6,089
1 – Demand includes any conservation applied to the entity's demands as a municipal WUG. 2 – Contract to provide supplies to meet needs less assuming conservation has been applied to the entity.						

Supply Source	*Year (acft/yr)*					
	2020	*2030*	*2040*	*2050*	*2060*	*2070*
BRA Contract	4,822	4,694	4,649	4,408	4,348	4,253
Other Buyer's BRA Contracts	1,871	1,846	1,828	1,734	1,742	1,802
Total Supplies	6,694	6,540	6,477	6,142	6,091	6,056
Constrained Supply (WTP Capacity)	3,965	3,965	3,965	3,965	3,965	3,965

Projected Balance	*Year (acft/yr)*					
	2020	*2030*	*2040*	*2050*	*2060*	*2070*
Balance/(Shortage)	(458)	(723)	(1,078)	(1,440)	(1,792)	(2,125)

4.3.21 City of Mineral Wells

City of Mineral Wells obtains raw water from Lake Mineral Wells and additional surface water supplies from Palo Pinto MWD No. 1. The city supplies treated water to ten water user groups in Palo Pinto and Parker County (Region C). Projected demands, supplies and balances are shown in Table 4.3-21

Table 4.3-21. Projected Demands, Supplies and Balance for City of Mineral Wells

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Mineral Wells	2,523	2,677	2,775	2,856	2,935	3,002
City of Mineral Wells (Region C)	336	328	320	310	302	294
City of Graford	92	92	92	92	92	92
Palo Pinto WSC (Palo Pinto C-O)	179	179	179	179	179	179
Santo SUD (Palo Pinto C-O)	331	331	331	331	331	331
Sturdivant-Progress WSC (Palo Pinto C-O)	307	307	307	307	307	307
North Rural WSC (Palo Pinto C-O)	324	324	324	324	324	324
Palo Pinto County Manufacturing	10	10	10	10	10	10
Parker County SUD (Region C)	294	294	294	294	294	294
Millsap WSC (Region C)	184	184	184	184	184	184
Parker County Other (Region C)	479	479	479	479	479	479
Parker County Manufacturing (Region C)	25	25	25	25	25	25
Total Demand	5,084	5,230	5,320	5,391	5,462	5,521
1 – Demand includes any conservation applied to the City's demands as a municipal WUG.						

Supply Source	*Year (acft/yr)*					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Palo Pinto Co MWD No. 1 (Lake Palo Pinto)	5,164	5,265	5,320	5,391	5,462	5,521
Lake Mineral Wells[1]	2,520	2,497	2,474	2,452	2,429	2,406
Total Treated Supply	5,164	5,265	5,320	5,391	5,462	5,521
1 – The City does not have a WTP to utilize this resource for municipal demand.						

Projected Balance	*Year (acft/yr)*					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Balance/(Shortage)	80	35	0	0	0	0

4.3.22 City of Round Rock

The City of Round Rock obtains its water supply from groundwater from the Edwards-BFZ (Northern Segment) Aquifer and contracts with the Brazos River Authority for water from Lake Georgetown and Lake Stillhouse Hollow. Based on the available groundwater and surface water supply and existing contractual demands, the City of Round Rock is projected to have a shortage from 2030 through 2070. Round Rock is a participant in the Brushy Creek Regional Utility Authority project to obtain supplies from the Highland Lakes. The City's reuse project provides 4,320 acft/yr for parkland within the city limits, reducing potable demand for irrigation water. Projected demands, supplies and balances are shown in Table 4.3-22.

Table 4.3-22. Projected Demands, Supplies and Balance for City of Round Rock

Projected Demands	***Year (acft/yr)***					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Round Rock[1]	23,635	29,691	37,049	44,943	53,991	63,377
City of Round Rock (Region K)[1]	259	299	336	377	414	448
Williamson County MUD #9 (Vista Oaks MUD)[1,2]	797	906	1,027	1,247	1,500	1,762
Fern Bluff MUD[1,2]	1,153	1,043	943	930	930	930
Williamson County MUD #10[1]	935	1,062	1,204	1,403	1,687	1,982
Williamson County MUD #11[1]	542	616	707	862	1,037	1,218
Walsh Ranch MUD (Williamson C-O)	114	111	110	109	109	109
Paloma Lake MUD (Williamson C-O)	137	166	205	277	374	475
Round Rock Ranch PUD (Williamson C-O)	33	44	60	89	127	168
Williamson County (Williamson C-O)	110	132	164	221	299	379
Blessing MHP (Williamson C-O)	96	116	143	194	262	332
Tal Tex (Williamson C-O)	164	198	244	331	447	567
Williamson County-Mining	3	3	3	3	3	3
Williamson County-Manufacturing	1,042	1,200	1,359	1,503	1,638	1,784
Total Demand	29,019	35,586	43,555	52,488	62,818	73,534

1 – Demand includes any conservation applied to the entity's demands as a municipal WUG.
2 – Projected demands for Fern Bluff MUD and Williamson County MUD #9 are likely overstated.

Supply Source	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Stillhouse Hollow Reservoir (BRA Contract)	18,134	18,045	17,871	16,948	16,717	16,351
Lake Georgetown (BRA Contract)	6,720	6,687	6,622	6,280	6,195	6,059
Edwards-BFZ (Northern Segment) Aquifer	579	579	579	579	579	579
Manville WSC (Portion inside City Limits)	134	134	134	134	134	134
Reuse Supplies	4,320	4,320	4,320	4,320	4,320	4,320
LCRA – Lake Travis (Out of Region)	20,928	20,928	20,928	20,928	20,928	20,928
Constrained LCRA Supplies[3]	0	0	0	0	0	0
Total Supply	29,887	29,765	29,527	28,262	27,945	27,444

3 – Entities in Williamson County are implementing a strategy to access this supply by 2020.

Projected Balance	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Balance/(Shortage)	868	(5,821)	(14,028)	(24,227)	(34,874)	(46,089)

4.3.23 City of Stamford

The City of Stamford obtains supply from Lake Stamford and supplies water to several entities in Jones and Haskell Counties. The City of Stamford is authorized to store up to 60,000 acre-feet in Lake Stamford and to divert 10,000 acft/yr from the reservoir. The City also constructed a diversion structure on California Creek to divert from California Creek to Lake Stamford to augment supplies in the reservoir. The City has contracts to supply treated supplies to six water user groups. Projected demands, supplies and balances are shown in Table 4.3-23

Table 4.3-23. Projected Demands, Supplies and Balance for City of Stamford

Projected Demands	***Year (acft/yr)***					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Stamford[1]	803	769	722	673	625	616
City of Leuders (Jones C-O)	52	52	52	52	52	52
Ericksdahl WSC (Jones C-O)	37	37	37	37	37	37
Paint Creek WSC (Haskell C-O)	87	87	87	87	87	87
Sagerton WSC (Haskell C-O)	73	73	73	73	73	73
Total Treated Water Demand	1,052	1,018	971	922	874	865
Haskell County SE	2,200	2,200	2,200	2,200	2,200	2,200
Raw Water Only Demand	2,200	2,200	2,200	2,200	2,200	2,200
Total Demand	3,252	3,218	3,171	3,122	3,074	3,065
1 – Demand includes any conservation applied to the City's demands as a municipal WUG.						

Supply Source	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Lake Stamford	5,510	5,390	5,270	5,150	5,030	4,910
Treated Supply (WTP Capacity)	1,458	1,458	1,458	1,458	1,458	1,458

Projected Balance	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Treated Water Balance/(Shortage)	406	441	487	536	584	593
Raw Water Balance/(Shortage)	2,258	2,172	2,099	2,028	1,956	1,845

4.3.24 City of Sweetwater

The City of Sweetwater owns and operates the Oak Creek Reservoir in Coke County (Region F) in the Colorado River Basin. Oak Creek Reservoir has a zero firm or safe yield supply, which can be increased through a proposed subordination agreement with downstream water rights holders (recommended strategy in Region F). The City also operates a groundwater well field in the Dockum Aquifer. Although the City owns Lake Sweetwater, the water resource is unreliable and is not considered a supply. The City of Sweetwater provides wholesale water to entities in Nolan and Fisher Counties, and the City of Bronte in Region F. Projected demands, supplies and balances are shown in Table 4.3-24.

Table 4.3-24. Projected Demands, Supplies and Balance for City of Sweetwater

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	*2020*	*2030*	*2040*	*2050*	*2060*	*2070*
City of Sweetwater[1]	1,813	1,893	1,913	1,977	2,030	2,079
Bitter Creek WSC	460	460	460	460	460	460
City of Blackwell	168	168	168	168	168	168
City of Bronte (Region F)	504	504	504	504	504	504
City of Roby	350	350	350	350	350	350
City of Trent	187	187	187	187	187	187
Nolan County Manufacturing	368	368	368	368	368	368
Nolan County Manufacturing (Recommended)	838	991	1,134	1,288	1,442	1,608
Total Demand	4,688	4,921	5,084	5,302	5,509	5,724

1 – Demand includes any conservation applied to the City's demands as a municipal WUG.

Supply Source	*Year (acft/yr)*					
	2020	*2030*	*2040*	*2050*	*2060*	*2070*
Lake Trammel[1]	0	0	0	0	0	0
Lake Sweetwater[1]	0	0	0	0	0	0
Oak Creek Reservoir (Region F)	0	0	0	0	0	0
Dockum Aquifer	2,540	2,540	2,540	2,540	2,540	2,540
Total Supply	2,540	2,540	2,540	2,540	2,540	2,540

1 – The City does not consider Lake Sweetwater or Lake Trammel a reliable supply and does not intend to use either as a water source.

Projected Balance	*Year (acft/yr)*					
	2020	*2030*	*2040*	*2050*	*2060*	*2070*
Balance/(Shortage)	(2,149)	(2,381)	(2,544)	(2,762)	(2,969)	(3,184)

4.3.25 City of Temple

The City of Temple has a contract with the Brazos River authority to provide 30,453 acft/yr of raw water and an additional 10,100 acft/yr from a run-of-the-river water right (Certificate of Adjudication C2938). The BRA contract can yield a reliable supply of 23,524 acft/yr and the City's water right can provide a reliable supply up to 1,869 acft/yr (supplies from the right increase over time due to sedimentation in the upstream Lake Belton and increased wastewater treatment plant discharges). A few water supply corporations provide water to customers inside the city limits which has been accounted in the supply to the City. The City provides supply to the Cities of Little River-Academy, Morgans Point Resort, and Troy. The City's water treatment plants have an annual average capacity of 27,955 acft. The water supply plan for Little River-Academy includes Temple supplying an additional 180 acft/yr of treated water by 2030. The City has a contract to supply effluent from its wastewater treatment plan to a new generating station owned by Panda Power. Projected demands, supplies and balances are shown in Table 4.3-25.

Table 4.3-25. Projected Demands, Supplies and Balance for City of Temple

Projected Demands	*Year (acft/yr)*					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
City of Temple[1]	18,571	19,446	20,197	20,691	20,873	22,992
City of Little River-Academy	323	323	323	323	323	323
City of Morgans Point Resort	1,935	1,935	1,935	1,935	1,935	1,935
City of Troy	968	968	968	968	968	968
Arrowhead Hill (Bell C-O)	323	323	323	323	323	323
Bell County Manufacturing	481	481	481	481	481	481
Little River-Academy (Recommended)		180	180	180	180	180
Total Demand	22,601	23,656	24,407	24,901	25,083	27,202
Reuse Water Demands						
Bell County Steam-Electric (Panda Power)	8,407	8,407	8,407	8,407	8,407	8,407
Bell County Steam-Electric (Recommended)						1,300
Total Reuse Water Demand	8,407	8,407	8,407	8,407	8,407	9,707
1 – Demand includes any conservation applied to the City's demands as a municipal WUG.						

Supply Source	*Year (acft/yr)*					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Fresh Water Supplies						
Run-of-River Water Right	1,706	1,739	1,771	1,804	1,836	1,869
BRA Contract	23,890	22,432	22,956	22,232	22,096	23,524
Constrained Supply (WTP Capacity)	27,955	27,955	27,955	27,955	27,955	27,955
Little Elm Valley WSC[1]	50	50	50	50	50	50
Moffat WSC[1]	11	11	11	11	11	11
Pendleton WSC[1]	81	81	81	81	81	81
Total Fresh Water Supply	25,738	24,312	24,869	24,177	24,074	25,535
Reuse Water Supplies						

BRA TBRSS	14,092	14,092	14,092	14,092	14,092	14,092
1 – These entities provide to customers counted as part of the WUG population for Temple.						

Projected Balance	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Fresh Water Balance/(Shortage)	3,137	656	461	(724)	(1,009)	(1,668)
Reuse Water Balance/(Shortage)	5,685	5,685	5,685	5,685	5,685	4,385

4.3.26 City of Waco

The City of Waco obtains raw water from Lake Waco, from a diversion authorized from Lake Brazos, and a small amount of groundwater from the Trinity Aquifer. In 2003, the City, in cooperation with the BRA and the U.S. Army Corps of Engineers, implemented a project to raise the water level in Lake Waco to provide for additional supply. With this additional supply, the City has the right to divert 79,870 acft/yr from Lake Waco for municipal, industrial, and irrigation uses. The City provides treated water to multiple neighboring communities and water supply corporations. The Waco Metropolitan Area Regional Sewerage System (WMARSS) facility is operated by the City of Waco on behalf of the member cities of Bellmead, Hewitt, Lacy Lakeview, Lorena, Robinson and Woodway. Effluent from the WMARSS is used to supply steam-electric cooling supply, and multiple other reuse projects are planned to offset potable water use for manufacturing and landscape irrigation in McLennan County. Projected demands, supplies and balances are shown in Table 4.3-26.

Table 4.3-26. Projected Demands, Supplies and Balance for City of Waco

Projected Demands	***Year (acft/yr)***					
Major Water Contract Holders	***2020***	***2030***	***2040***	***2050***	***2060***	***2070***
Fresh Water Demands						
City of Waco[1]	30,114	29,344	28,224	27,059	26,921	28,333
City of Bellmead[2]	0	0	0	0	0	0
City of Hewitt[2]	383	558	877	1,198	1,519	1,833
City of Lacy-Lakeview	1,120	1,120	1,120	1,120	1,120	1,120
City of Woodway[2]	431	657	859	1,083	1,316	1,548
City of Beverly Hills[2]	252	261	268	281	297	312
City of West	1,120	1,120	1,120	1,120	1,120	1,120
City of Robinson	560	560	560	560	560	560
Bold Springs Water Supply (McLennan C-O)	560	560	560	560	560	560
Hilltop Water Supply (McLennan C-O)	97	97	97	97	97	97
Central Bosque WSC (McLennan C-O)	70	70	70	70	70	70
McLennan County Manufacturing	2,503	2,888	3,249	3,618	3,948	4,403
Cross County WSC (Recommended Strategy)				150	150	150
City of Mart (Recommended Strategy)	250	250	250	250	250	250
North Bosque WSC (Recommended Strategy)		200	200	200	200	200
City of Riesel (Recommended Strategy)	20	20	20	20	20	20
Total Fresh Water Demands	37,481	37,706	37,475	37,386	38,148	40,576
Reuse Water Demands						
McLennan County SE (SCEA)	15,000	15,000	15,000	15,000	15,000	15,000
City of Bellmead (Bellmead/Lacy-Lakeview)	1,120	1,120	1,120	1,120	1,120	1,120
City of Hallsburg (Waco East)	31	31	31	31	31	31
City of Hewitt (Bullhide Creek)	1,223	1,223	1,223	1,223	1,223	1,223
City of Lacy-Lakeview (Bellmead/Lacy-Lakeview)	1,120	1,120	1,120	1,120	1,120	1,120
City of Lorena (Bullhide Creek)	448	448	448	448	448	448
City of Mart (Waco East)	134	134	134	134	134	134
City of Riesel (Alternative: Waco East)	43	43	43	43	43	43

McLennan County Manufacturing (Flat Creek)	1,600	1,700	1,800	2,000	2,200	2,500
McLennan County Mining (North Reuse)	811	811	811	811	811	811
Total Reuse Water Demands	21,530	21,630	21,730	21,930	22,130	22,430

1 – Demand includes any conservation applied to the City's municipal demands as a WUG.
2 – Contract to provide supplies to meet needs less assumed conservation has been applied to the entity.

Supply Source	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Fresh Water Supplies						
Lake Waco (Municipal & Industrial)	79,877	79,877	79,877	79,877	79,877	79,877
Lake Brazos	5,600	5,600	5,600	5,600	5,600	5,600
Total Fresh Water Supplies	85,477	85,477	85,477	85,477	85,477	85,477
Constrained Fresh Water Supply[1]	50,400	50,400	50,400	50,400	50,400	50,400
Reuse Water Supplies (WMARSS)						
McLennan County SE (SCEA)	15,000	15,000	15,000	15,000	15,000	15,000
Undeveloped WMARSS Reuse Supply	12,035	13,902	15,769	17,636	19,503	21,370
Total Reuse Supply from WMARSS[2]	27,035	28,902	30,769	32,636	34,503	36,370

1 – Fresh water supply has been constrained based on average annual capacity of the existing Waco treatment plant. The average annual capacity is determined as 50% of the normal rated design capacity (90 MGD).

2 – Reuse supplies are based on projected WMARSS plant flows.

Projected Balance	***Year (acft/yr)***					
	2020	***2030***	***2040***	***2050***	***2060***	***2070***
Fresh Water Balance/(Shortage)	12,919	12,694	12,925	13,014	12,252	9,824
Reuse Water Balance/(Shortage)	5,505	7,272	9,039	10,706	12,373	13,940

4.3.27 WWP Summary

Table 4.3-27 summarizes the contractual demands by WWP as applied to use type (municipal, manufacturing, irrigation, mining or steam electric power) by county and by river basin. The volumes do not correlate to the contract amounts but to the available supply applied to meet current and projected needs. These volumes typically are less than the volumes assigned to recommended strategies for the WWPs or its customers.

Table 4.3-27. WWP Projected Contract Water Use by Type, County and Basin

Buyer/Use	County	Basin	Year					
			2020	2030	2040	2050	2060	2070
ABILENE								
MANUFACTURING	TAYLOR	BRAZOS	1,248	1,395	1,537	1,658	1,831	2,019
MUNICIPAL	CALLAHAN	BRAZOS	356	357	357	357	356	357
MUNICIPAL	CALLAHAN	COLORADO	94	93	93	93	94	93
MUNICIPAL	JONES	BRAZOS	210	209	209	208	207	205
MUNICIPAL	TAYLOR	BRAZOS	1,833	1,834	1,834	1,834	1,831	1,830
MUNICIPAL	TAYLOR	COLORADO	147	146	146	146	146	146
STEAM ELECTRIC	JONES	BRAZOS	8,247	11,837	11,837	11,837	11,837	11,837
		ABILENE TOTAL	**12,135**	**15,871**	**12,135**	**15,871**	**16,013**	**16,133**
ANSON								
MUNICIPAL	JONES	BRAZOS	1,014	1,013	1,013	1,012	1,011	1,009
MUNICIPAL	TAYLOR	BRAZOS	26	26	26	26	25	25
		ANSON TOTAL	**1,040**	**1,039**	**1,040**	**1,039**	**1,039**	**1,038**
AQUILLA WSD								
MUNICIPAL	ELLIS	TRINITY	268	347	399	448	502	556
MUNICIPAL	HILL	BRAZOS	4,420	4,272	4,251	4,236	4,220	4,203
MUNICIPAL	HILL	TRINITY	786	850	815	778	737	696
MUNICIPAL	NAVARRO	TRINITY	23	25	26	27	28	30
		AQUILLA WSD TOTAL	**5,497**	**5,494**	**5,497**	**5,494**	**5,491**	**5,489**
BELL COUNTY WCID #1								
MUNICIPAL	BELL	BRAZOS	53,678	53,414	52,899	50,166	49,482	48,400
MUNICIPAL	CORYELL	BRAZOS	8,571	8,451	8,335	7,873	7,749	7,571
MUNICIPAL	LAMPASAS	BRAZOS	253	330	361	374	385	386
		BELL COUNTY WCID #1 TOTAL	**62,502**	**62,195**	**62,502**	**62,195**	**61,595**	**58,413**
BISTONE MWSD								
MUNICIPAL	LIMESTONE	BRAZOS	1,486	1,411	1,340	1,272	1,200	1,128
MUNICIPAL	LIMESTONE	TRINITY	869	827	783	737	692	648
		BISTONE MWSD TOTAL	**2,355**	**2,238**	**2,355**	**2,238**	**2,123**	**2,009**

Table 4.3-27. WWP Projected Contract Water Use by Type, County and Basin

Buyer/Use	County	Basin	Year					
			2020	2030	2040	2050	2060	2070
BLUEBONNET WSC								
MUNICIPAL	BELL	BRAZOS	1,572	1,569	1,557	1,519	1,501	1,469
MUNICIPAL	CORYELL	BRAZOS	57	56	56	53	52	51
MUNICIPAL	FALLS	BRAZOS	3	3	3	3	2	2
MUNICIPAL	MCLENNAN	BRAZOS	5,276	5,245	5,188	5,036	4,964	4,849
BLUEBONNET WSC TOTAL			**6,908**	**6,873**	**6,908**	**6,873**	**6,804**	**6,611**
BRAZOS RIVER AUTHORITY								
IRRIGATION	BELL	BRAZOS	308	307	304	288	284	278
IRRIGATION	BRAZOS	BRAZOS	350	349	347	346	345	344
IRRIGATION	BURNET	BRAZOS	89	89	89	89	89	89
IRRIGATION	COMANCHE	BRAZOS	4,968	3,616	3,474	4,557	3,988	3,511
IRRIGATION	HILL	BRAZOS	1,000	1,000	1,000	1,000	1,000	1,000
IRRIGATION	HOOD	BRAZOS	4,060	4,060	4,060	4,060	4,060	4,060
IRRIGATION	PALO PINTO	BRAZOS	550	550	550	550	550	550
IRRIGATION	PARKER	BRAZOS	393	393	393	393	393	393
IRRIGATION	PARKER	TRINITY	107	107	107	107	107	107
IRRIGATION	WALLER	BRAZOS	50	50	50	50	50	50
IRRIGATION	WILLIAMSON	BRAZOS	67	67	67	66	66	66
MANUFACTURING	HOOD	BRAZOS	10,000	10,000	10,000	10,000	10,000	10,000
MANUFACTURING	PALO PINTO	BRAZOS	1,200	1,200	1,200	1,200	1,200	1,200
MINING	HILL	BRAZOS	1,000	952	843	901	878	855
MINING	HILL	TRINITY	0	32	124	50	56	63
MINING	PALO PINTO	BRAZOS	1,235	1,219	1,202	1,186	1,169	1,153
MINING	PARKER	BRAZOS	27	22	16	11	6	0
MINING	PARKER	TRINITY	17	13	10	7	3	0
MINING	STEPHENS	BRAZOS	1,000	1,000	1,000	1,000	1,000	1,000
MINING	STONEWALL	BRAZOS	175	175	175	175	175	175
MUNICIPAL	BELL	BRAZOS	25,590	24,087	24,655	24,554	24,939	26,345
MUNICIPAL	BRAZOS	BRAZOS	938	938	938	938	938	938
MUNICIPAL	BURNET	BRAZOS	201	239	273	304	333	358
MUNICIPAL	CORYELL	BRAZOS	5,401	5,266	5,096	4,662	4,715	4,456
MUNICIPAL	EASTLAND	BRAZOS	21	22	22	22	21	21
MUNICIPAL	ELLIS	TRINITY	18	19	20	20	20	20

Table 4.3-27. WWP Projected Contract Water Use by Type, County and Basin

Buyer/Use	County	Basin	Year					
			2020	2030	2040	2050	2060	2070
MUNICIPAL	FALLS	BRAZOS	1,300	1,300	1,300	1,300	1,300	1,300
MUNICIPAL	FORT BEND	BRAZOS	5,732	5,700	5,670	5,639	5,607	5,578
MUNICIPAL	FORT BEND	SAN JACINTO	30	31	30	30	30	30
MUNICIPAL	HILL	BRAZOS	202	199	198	196	194	193
MUNICIPAL	HILL	TRINITY	27	27	26	26	26	26
MUNICIPAL	HOOD	BRAZOS	7,695	7,709	7,705	7,691	7,679	7,669
MUNICIPAL	JOHNSON	BRAZOS	6,239	6,120	5,885	5,674	5,458	5,215
MUNICIPAL	JOHNSON	TRINITY	2,282	2,173	2,053	1,917	1,761	1,594
MUNICIPAL	LAMPASAS	BRAZOS	1,189	1,143	1,087	1,041	994	950
MUNICIPAL	LIMESTONE	BRAZOS	200	200	200	200	200	200
MUNICIPAL	MCLENNAN	BRAZOS	461	461	459	437	432	422
MUNICIPAL	PALO PINTO	BRAZOS	1,851	1,852	1,853	1,854	1,855	1,855
MUNICIPAL	PARKER	BRAZOS	561	561	561	561	561	561
MUNICIPAL	ROBERTSON	BRAZOS	182	182	182	182	182	182
MUNICIPAL	SHACKELFORD	BRAZOS	3	3	3	3	3	3
MUNICIPAL	STEPHENS	BRAZOS	435	435	433	434	434	434
MUNICIPAL	TARRANT	TRINITY	174	161	148	134	119	104
MUNICIPAL	THROCKMORTON	BRAZOS	25	23	24	22	22	22
MUNICIPAL	TRAVIS	COLORADO	225	203	177	146	123	102
MUNICIPAL	WASHINGTON	BRAZOS	3,909	3,909	3,909	3,909	3,909	3,909
MUNICIPAL	WILLIAMSON	BRAZOS	48,434	48,586	47,813	45,482	43,980	42,481
MUNICIPAL	YOUNG	BRAZOS	1,000	1,000	1,000	1,000	1,000	1,000
STEAM ELECTRIC	BOSQUE	BRAZOS	6,500	6,374	6,248	6,122	5,996	5,870
STEAM ELECTRIC	GRIMES	BRAZOS	2,520	2,460	2,399	2,339	2,278	2,218
STEAM ELECTRIC	GRIMES	SAN JACINTO	1,080	1,054	1,028	1,002	976	950
STEAM ELECTRIC	HOOD	BRAZOS	43,447	43,447	43,447	43,447	43,271	40,337
STEAM ELECTRIC	LIMESTONE	BRAZOS	21,837	21,530	21,223	20,916	20,609	20,302
STEAM ELECTRIC	MILAM	BRAZOS	2,683	4,329	4,352	4,673	4,609	4,508
STEAM ELECTRIC	PALO PINTO	BRAZOS	11,600	11,445	11,290	11,134	10,979	10,824
STEAM ELECTRIC	ROBERTSON	BRAZOS	25,000	24,819	24,638	24,457	24,275	24,094
STEAM ELECTRIC	SOMERVELL	BRAZOS	40,000	40,000	40,000	40,000	40,000	40,000
STEAM ELECTRIC	YOUNG	BRAZOS	14,000	14,000	14,000	14,000	14,000	14,000
BRAZOS RIVER AUTHORITY TOTAL			**309,588**	**307,208**	**309,588**	**307,208**	**305,356**	**302,504**

Table 4.3-27. WWP Projected Contract Water Use by Type, County and Basin

Buyer/Use	County	Basin	Year					
			2020	2030	2040	2050	2060	2070
BRYAN								
MANUFACTURING	BRAZOS	BRAZOS	95	95	95	95	95	95
MUNICIPAL	BRAZOS	BRAZOS	2,168	1,967	2,893	5,950	9,474	13,570
MUNICIPAL	GRIMES	BRAZOS	379	314	257	214	179	151
MUNICIPAL	GRIMES	TRINITY	51	43	35	29	25	21
MUNICIPAL	ROBERTSON	BRAZOS	140	100	62	21	17	15
STEAM ELECTRIC	BRAZOS	BRAZOS	1	1	1	1	1	1
		BRYAN TOTAL	**2,834**	**2,520**	**2,834**	**2,520**	**3,343**	**6,310**
CEDAR PARK								
MANUFACTURING	WILLIAMSON	BRAZOS	790	912	1,033	1,142	1,243	1,355
MUNICIPAL	TRAVIS	COLORADO	201	201	201	202	201	202
MUNICIPAL	WILLIAMSON	BRAZOS	1,886	1,886	1,886	1,885	1,886	1,885
MUNICIPAL	WILLIAMSON	COLORADO	10	9	8	7	6	5
		CEDAR PARK TOTAL	**2,887**	**3,008**	**2,887**	**3,008**	**3,128**	**3,236**
CENTRAL TEXAS WSC								
MUNICIPAL	BELL	BRAZOS	6,276	6,257	6,252	6,254	6,238	6,227
MUNICIPAL	FALLS	BRAZOS	1,375	1,360	1,330	1,287	1,273	1,259
MUNICIPAL	MILAM	BRAZOS	1,741	1,735	1,723	1,721	1,709	1,695
MUNICIPAL	WILLIAMSON	BRAZOS	848	888	935	978	1,020	1,059
		CENTRAL TEXAS WSC TOTAL	**10,240**	**10,240**	**10,240**	**10,240**	**10,240**	**10,240**
CLEBURNE								
IRRIGATION	JOHNSON	BRAZOS	102	100	99	97	96	94
IRRIGATION	JOHNSON	TRINITY	100	99	97	96	94	93
MANUFACTURING	JOHNSON	BRAZOS	2,329	2,714	3,105	3,455	3,801	4,182
STEAM ELECTRIC	JOHNSON	BRAZOS	1,344	1,344	1,344	1,344	1,344	1,344
		CLEBURNE TOTAL	**3,875**	**4,257**	**3,875**	**4,257**	**4,645**	**4,992**
EASTLAND COUNTY WSD								
MANUFACTURING	EASTLAND	BRAZOS	72	77	82	85	91	97
MUNICIPAL	EASTLAND	BRAZOS	5,219	5,219	5,219	5,219	5,219	5,219
		EASTLAND COUNTY WSD TOTAL	**5,291**	**5,296**	**5,291**	**5,296**	**5,301**	**5,304**
GATESVILLE								
MANUFACTURING	CORYELL	BRAZOS	10	11	12	13	14	15
MUNICIPAL	CORYELL	BRAZOS	1,311	1,401	1,508	1,603	1,710	1,818

Table 4.3-27. WWP Projected Contract Water Use by Type, County and Basin

Buyer/Use	County	Basin	Year					
			2020	2030	2040	2050	2060	2070
MUNICIPAL	MCLENNAN	BRAZOS	125	147	166	186	207	227
		GATESVILLE TOTAL	**1,446**	**1,559**	**1,446**	**1,559**	**1,686**	**1,802**
JOHNSON COUNTY SUD								
MINING	JOHNSON	BRAZOS	10	10	10	10	10	10
MINING	JOHNSON	TRINITY	10	10	10	10	10	10
MUNICIPAL	JOHNSON	BRAZOS	1,171	1,271	1,379	1,500	1,639	1,788
MUNICIPAL	JOHNSON	TRINITY	4,699	4,763	4,832	4,913	5,002	5,099
		JOHNSON COUNTY SUD TOTAL	**5,890**	**6,054**	**5,890**	**6,054**	**6,231**	**6,433**
KEMPNER WSC								
MINING	LAMPASAS	BRAZOS	25	25	25	25	25	25
MUNICIPAL	BELL	BRAZOS	183	183	183	183	183	183
MUNICIPAL	CORYELL	BRAZOS	245	243	242	241	240	240
MUNICIPAL	LAMPASAS	BRAZOS	1,346	1,348	1,351	1,354	1,352	1,347
		KEMPNER WSC TOTAL	**1,799**	**1,799**	**1,799**	**1,799**	**1,801**	**1,803**
MINERAL WELLS								
MANUFACTURING	PALO PINTO	BRAZOS	10	10	10	10	10	10
MANUFACTURING	PARKER	BRAZOS	1	1	0	0	0	1
MANUFACTURING	PARKER	TRINITY	24	24	25	25	25	24
MUNICIPAL	PALO PINTO	BRAZOS	1,158	1,158	1,158	1,158	1,158	1,158
MUNICIPAL	PARKER	BRAZOS	687	801	861	801	729	664
MUNICIPAL	PARKER	TRINITY	270	156	96	156	228	293
		MINERAL WELLS TOTAL	**2,150**	**2,150**	**2,150**	**2,150**	**2,150**	**2,150**
NORTH CENTRAL TEXAS MUNICIPAL WATER AUTHORITY								
MUNICIPAL	BAYLOR	BRAZOS	147	147	119	89	60	28
MUNICIPAL	HASKELL	BRAZOS	739	613	489	363	239	114
MUNICIPAL	KNOX	BRAZOS	467	388	308	230	152	72
MUNICIPAL	KNOX	RED	10	8	7	5	3	2
MUNICIPAL	STONEWALL	BRAZOS	85	71	56	42	28	13
		NORTH CENTRAL TEXAS MWA TOTAL	**1,448**	**1,227**	**1,448**	**1,227**	**979**	**729**
PALO PINTO COUNTY MWD No.1								
MUNICIPAL	PALO PINTO	BRAZOS	2,768	2,883	2,950	3,031	3,110	3,177
MUNICIPAL	PARKER	BRAZOS	346	332	320	310	302	294
STEAM ELECTRIC	PALO PINTO	BRAZOS	2,241	1,966	1,737	1,492	1,247	1,014

Table 4.3-27. WWP Projected Contract Water Use by Type, County and Basin

Buyer/Use	County	Basin	Year					
			2020	2030	2040	2050	2060	2070
		PALO PINTO COUNTY MWD No. 1 TOTAL	**5,355**	**5,181**	**5,355**	**5,181**	**5,007**	**4,833**
ROUND ROCK								
MANUFACTURING	WILLIAMSON	BRAZOS	565	651	780	924	1,059	1,205
MINING	WILLIAMSON	BRAZOS	3	3	3	3	3	3
MUNICIPAL	WILLIAMSON	BRAZOS	3,916	4,199	4,572	5,290	6,315	7,370
MUNICIPAL	WILLIAMSON	COLORADO	165	195	235	373	457	552
		ROUND ROCK TOTAL	**4,649**	**5,048**	**4,649**	**5,048**	**5,590**	**6,590**
STAMFORD								
MUNICIPAL	HASKELL	BRAZOS	160	160	160	160	160	160
MUNICIPAL	JONES	BRAZOS	89	89	89	89	89	89
STEAM ELECTRIC	HASKELL	BRAZOS	2,200	2,200	2,200	2,200	2,200	2,200
		STAMFORD TOTAL	**2,449**	**2,449**	**2,449**	**2,449**	**2,449**	**2,449**
SWEETWATER								
MANUFACTURING	NOLAN	BRAZOS	368	368	368	368	368	368
MUNICIPAL	FISHER	BRAZOS	538	533	528	525	521	519
MUNICIPAL	NOLAN	BRAZOS	272	277	282	285	289	291
MUNICIPAL	TAYLOR	BRAZOS	187	187	187	187	187	187
		SWEETWATER TOTAL	**1,365**	**1,365**	**1,365**	**1,365**	**1,365**	**1,365**
TEMPLE								
MANUFACTURING	BELL	BRAZOS	481	481	481	481	481	481
MUNICIPAL	BELL	BRAZOS	3,540	3,540	3,540	3,540	3,540	3,540
		TEMPLE TOTAL	**4,021**	**4,021**	**4,021**	**4,021**	**4,021**	**4,021**
UPPER LEON MWD								
MUNICIPAL	COMANCHE	BRAZOS	996	985	972	910	893	867
MUNICIPAL	EASTLAND	BRAZOS	169	168	166	156	153	149
MUNICIPAL	ERATH	BRAZOS	2,383	2,366	2,344	2,234	2,206	2,160
MUNICIPAL	HAMILTON	BRAZOS	673	665	654	599	584	562
		UPPER LEON MWD TOTAL	**4,221**	**4,184**	**4,221**	**4,184**	**4,136**	**3,899**
WACO								
MANUFACTURING	MCLENNAN	BRAZOS	2,503	2,888	3,249	3,618	3,948	4,403
MUNICIPAL	MCLENNAN	BRAZOS	4,448	4,858	5,386	5,944	6,514	7,075
STEAM ELECTRIC	MCLENNAN	BRAZOS	15,000	15,000	15,000	15,000	15,000	15,000
		WACO TOTAL	**21,951**	**22,746**	**21,951**	**22,746**	**23,635**	**24,562**

Table 4.3-27. WWP Projected Contract Water Use by Type, County and Basin

Buyer/Use	County	Basin	Year					
			2020	2030	2040	2050	2060	2070
WEST CENTRAL TEXAS MWD								
MUNICIPAL	JONES	BRAZOS	1,324	1,027	1,029	1,031	1,032	1,032
MUNICIPAL	SHACKELFORD	BRAZOS	448	460	465	466	466	466
MUNICIPAL	STEPHENS	BRAZOS	1,700	1,703	1,707	1,711	1,714	1,718
MUNICIPAL	TAYLOR	BRAZOS	6,852	344	383	442	451	446
WEST CENTRAL TEXAS MWD TOTAL			**10,324**	**3,534**	**10,324**	**3,534**	**3,584**	**3,650**

4.4 Water Supplied to Meet Demands Not in Brazos G

Existing or recommended water contracts in the Brazos G Area that are currently or projected to provide water to another region are included in the wholesale water provider summary tables (Table 4.3-1 through Table 4.3-26). These supplies have been coordinated with the adjacent regions.

4.5 Social and Economic Impacts of Not Meeting Projected Water Needs

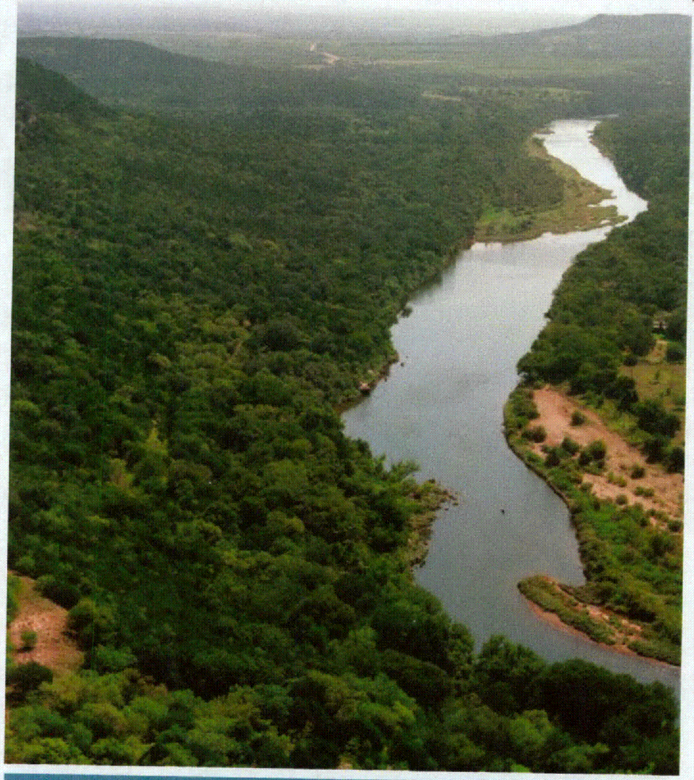
Section 357.7(4) of the rules for implementing Senate Bill 1 requires that the social and economic impacts of not meeting regional water supply needs be evaluated by regional water planning groups. TWDB has provided technical assistance by conducting the required analysis for the Brazos G Area using a methodology similar to that used for other regions.

The purpose of this element of Senate Bill 1 planning is to provide an estimate of the social and economic importance of meeting projected water needs or, conversely, to provide estimates of potential costs of not meeting the projected needs of each water user group. The social and economic effects of not meeting a projected water need can be viewed as the potential benefit to be gained from implementing a strategy to meet the particular need. The summation of all the impacts gives a view of the ultimate magnitude of the economic impacts of not meeting all of the projected needs.

The information provided by the TWDB is summarized in a report included in Appendix H.

This page intentionally left blank.

Chapter 5



5

County and WWP Plans

This page intentionally left blank.

5 County and WWP Plans

5.1 Bell County Water Supply Plan

Table 5.1-1 lists each water user group in Bell County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.1-1. Bell County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
439 WSC	242	(94)	Projected shortage – see plan below
Armstrong WSC	837	769	Projected surplus
City of Bartlett			See Williamson County
Bell-Milam Falls WSC	1,677	1,528	Projected surplus
City of Belton	2,413	(41)	Projected shortage – see plan below
Chisholm Trail SUD			See Williamson County
Dog Ridge WSC	1,076	806	Projected surplus
East Bell WSC	857	641	Projected surplus
Elm Creek WSC	23	(230)	Projected shortage – see plan below
Fort Hood	2,878	1,796	Projected surplus
City of Harker Heights	(938)	(3,170)	Projected shortage – see plan below
City of Holland	383	382	Projected surplus
Jarrell-Schwertner WSC			See Williamson County
Kempner WSC			See Lampasas County
City of Killeen	14,664	2,059	Projected surplus
Little River Academy	(59)	(190)	Projected shortage – see plan below
Moffat WSC	825	701	Projected surplus
Morgan's Point Resort	1,148	814	Projected surplus
City of Nolanville	(858)	(2,188)	Projected shortage – see plan below
Pendleton WSC	241	179	Projected surplus
City of Rogers	424	394	Projected surplus
Salado WSC	219	(278)	Projected shortage – see plan below
City of Temple	(4,373)	(13,337)	Projected shortage – see Chapter 5.38
City of Troy	987	933	Projected surplus
West Bell WSC	860	863	Projected surplus

Table 5.1-1. Bell County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1] 2040 (acft/yr)	2070 (acft/yr)	Comment
County-Other	(768)	(3,788)	Projected shortage – see plan below
Manufacturing	(1,110)	(1,497)	Projected shortage – see plan below
Steam-Electric	(5,804)	(9,693)	Projected shortage – see plan below
Mining	(4,599)	(6,968)	Projected shortage – see plan below
Irrigation	(1,103)	(1,038)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-1 and C-2, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.1.1 439 WSC

Description of Supply

439 WSC has a contract to purchase water from the Brazos River Authority from Lake Belton. 439 WSC contracts with Bell County WCID No. 1 to divert, treat, and deliver water from Lake Belton to the WSC, as well as purchase some allotment from Bell County WCID No. 1. Shortages are projected for 439 WSC beginning in 2060.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for 439 WSC.

a. Purchase reuse water from Bell County WCID#1

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: by 2070
- Project Cost: Costs to be borne by Bell County WCID No. 1
- Unit Cost: $930/acft

a. Water Supply from Bell County WCID No. 1

BRA provides this supply under contract to entity. BRA to develop any combinations of strategies as described in Section 5.38.2 to firm up this amount.

- Cost Source: BRA to firm up water supply
- Date to be Implemented: 2030
- Project Cost: cost borne by BRA
- Unit Cost: already contracted supplies

Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.1-2. Recommended Plan Costs by Decade for 439 WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*455*	*355*	*242*	*48*	*(47)*	*(94)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*455*	*355*	*242*	*48*	*(47)*	*(94)*
Reuse Supply from Bell County WCID No. 1						
Supply From Plan Element (acft/yr)	—	—	—	—	—	20
Annual Cost ($/yr)	—	—	—	—	—	$18,600
Unit Cost ($/acft)	—	—	—	—	—	$930
Projected Surplus/(Shortage) after Reuse (acft/yr)	*455*	*355*	*242*	*48*	*(47)*	*(74)*
Water Supply from Bell County WCID No.1						
Supply From Plan Element (acft/yr)	—	4	11	49	59	74
Annual Cost ($/yr)	—	$0	$0	$0	$0	$0
Unit Cost ($/acft)	—	$0	$0	$0	$0	$0

5.1.2 Armstrong WSC

Description of Supply

Armstrong WSC obtains its water supply from the Trinity Aquifer and surface water from Central Texas WSC. No shortages are projected and no change in water supply is recommended.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Armstrong WSC.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Unit Cost: $470/acft
- Annual Cost: maximum of $18,330 in 2030

Table 5.1-3. Recommended Plan Costs by Decade for Armstrong WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*865*	*853*	*837*	*817*	*793*	*769*
Conservation						
Supply From Plan Element (acft/yr)	14	39	32	29	30	32
Annual Cost ($/yr)	$6,580	$18,330	$15,040	$13,630	$14,100	$15,040
Projected Surplus/(Shortage) after Conservation (acft/yr)	*878*	*892*	*869*	*846*	*823*	*800*

5.1.3 Bell-Milam Falls WSC

Bell-Milam Falls WSC is located in multiple counties (Bell, Falls, Milam and Williamson) and obtains its water supply from the Trinity Aquifer and has a contract for surface water from Lake Stillhouse Hollow from Central Texas WSC. Totals shown in Table 5.1-1 represent cumulative totals for Bell-Milam Falls WSC. No shortages are projected and no changes to water supply are recommended for Bell-Milam Falls WSC. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.1.4 City of Belton

Description of Supply

The City of Belton has a contract to purchase water from the Brazos River Authority from Lake Belton. Belton contracts with Bell County WCID No. 1 to divert, treat, and deliver water from Lake Belton to the City. The City also has a contract with Central Texas WSC. Shortages are projected for the City of Belton in 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Belton.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Unit Cost: $470/acft
- Annual Cost: maximum of $178,130 in 2070

b. Water Supply from Bell County WCID No. 1

BRA provides this supply under contract to entity. BRA to develop any combinations of strategies as described in Section 5.38.2 to firm up this amount.

- Cost Source: BRA to firm up water supply
- Date to be Implemented: 2030

- Project Cost: cost borne by BRA
- Unit Cost: already contracted supplies

Table 5.1-4. Recommended Plan Costs by Decade for City of Belton

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*3,592*	*3,049*	*2,413*	*1,434*	*722*	*(41)*
Conservation						
Supply From Plan Element (acft/yr)	119	340	318	321	347	379
Annual Cost ($/yr)	$55,930	$159,800	$149,460	$150,870	$163,090	$178,130
Projected Surplus/(Shortage) after Conservation (acft/yr)	*3,711*	*3,390*	*2,731*	*1,755*	*1,069*	*338*
Water Supply from Bell County WCID No.1						
Supply From Plan Element (acft/yr)	—	29	87	390	466	586
Annual Cost ($/yr)	—	$0	$0	$0	$0	$0
Unit Cost ($/acft)	—	$0	$0	$0	$0	$0

5.1.5 Dog Ridge WSC

Dog Ridge WSC has surface water contracts with BRA and Central Texas WSC. No shortages are projected for Dog Ridge WSC and no changes in water supply are recommended. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.1.6 East Bell WSC

East Bell WSC obtains its water supply from the Trinity Aquifer and treated surface water from Central Texas WSC. This WUG is located in multiple counties (Bell and Falls) and the surplus/shortages shown in Table 5.1-1 represent the cumulative totals for East Bell WSC. Supplies are projected to be adequate to meet future demands and no change is recommended in water supplies. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.1.7 Elm Creek WSC

Description of Supply

Elm Creek WSC service area includes portions of Bell, Coryell, and McLennan Counties. Elm Creek WSC has a contract to purchase water from Bluebonnet WSC from Lake Belton. The surpluses and shortages shown in Table 5.1-5 represent the cumulative totals for Elm Creek WSC in the counties it serves. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Elm Creek WSC.

a. Water Supply from Bluebonnet WSC

BRA provides this supply under contract to entity. BRA to develop any combinations of strategies as described in Section 5.38.2 to firm up this amount.

- Cost Source: BRA to firm up water supply
- Date to be Implemented: 2050
- Project Cost: cost borne by BRA
- Unit Cost: already contracted supplies

Table 5.1-5. Recommended Plan Costs by Decade for Elm Creek WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*156*	*94*	*23*	*(63)*	*(144)*	*(230)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*156*	*94*	*23*	*(63)*	*(144)*	*(230)*
Water Supply from Bluebonnet WSC						
Supply From Plan Element (acft/yr)	—	—	—	63	144	230
Annual Cost ($/yr)	—	—	—	$0	$0	$0
Unit Cost ($/acft)	—	—	—	$0	$0	$0

5.1.8 Fort Hood

Description of Supply

The U.S. Department of the Army (Fort Hood) has a water right to store and divert 12,000 acft/yr in Lake Belton. The Fort Hood service area includes portions of Bell and Coryell Counties. Bell County WCID No. 1 and City of Gatesville divert, treat and deliver its Lake Belton supply to the Army base. No shortages are projected for Fort Hood and no changes in water supply are recommended. The surplus shown in Table 5.1-6 represents the cumulative totals for Fort Hood in the counties it serves.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Fort Hood.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Unit Cost: $470/acft
- Annual Cost: maximum of $1,002,980 in 2060

Table 5.1-6. Recommended Plan Costs by Decade for Fort Hood

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/ (Shortage) (acft/yr)	*3,430*	*3,139*	*2,878*	*2,520*	*2,163*	*1,796*
Conservation						
Supply From Plan Element (acft/yr)	293	842	1,376	1,946	2,134	2,133
Annual Cost ($/yr)	$137,710	$395,740	$646,720	$914,620	$1,002,980	$1,002,510
Projected Surplus/ (Shortage) after Conservation (acft/yr)	*3,723*	*3,981*	*4,254*	*4,466*	*4,297*	*3,929*

5.1.9 City of Harker Heights

Description of Supply

The City of Harker Heights has a contract to purchase water from the Brazos River Authority from Lake Stillhouse Hollow and Lake Belton. Harker Heights also contracts with Bell County WCID No. 1 to divert, treat, and deliver water from Lake Belton to the City.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the City of Harker Heights. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $112,338 in 2030
- Unit Cost: $474/acft

b. Purchase reuse water from Bell County WCID No. 1. The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020

- Project Cost: $1,615,000 (City's portion)
- Unit Cost: $930/acft

c. Water Supply from Bell County WCID No. 1

BRA provides this supply under contract to entity. BRA to develop any combinations of strategies as described in Section 5.38.2 to firm up this amount.

- Cost Source: BRA to firm up water supply
- Date to be Implemented: 2030
- Project Cost: cost borne by BRA
- Unit Cost: already contracted supplies

d. Firm up Supplies through BRA Little River Strategies

BRA provides this supply under contract to entity. BRA to develop any combinations of strategies as described in Section 5.38.2 to firm up this amount.

- Cost Source: BRA to firm up water supply
- Date to be Implemented: 2020
- Project Cost: cost borne by BRA
- Unit Cost: already contracted supplies

e. Purchase Water from City of Killeen

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2070
- Project Cost: $2,580,000
- Unit Cost: $1,791/acft (wholesale water rate from City of Killeen and transmission costs)

Table 5.1-7. Recommended Plan Costs by Decade for City of Harker Heights

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*932*	*26*	*(938)*	*(1,496)*	*(1,974)*	*(3,170)*
Conservation						
Supply From Plan Element (acft/yr)	262	836	1,367	1,499	1,656	1,819
Annual Cost ($/yr)	$124,188	$396,264	$647,958	$710,526	$784,944	$862,206
Projected Surplus/(Shortage) after Conservation	*1,195*	*862*	*429*	*4*	*(318)*	*(1,351)*
Bell County WCID No. 1 Reuse						
Supply From Plan Element (acft/yr)	185	185	185	185	185	185
Annual Cost ($/yr)	$172,050	$172,050	$37,185	$37,185	$37,185	$37,185
Unit Cost ($/yr)	$930	$930	$201	$201	$201	$201

Table 5.1-7. Recommended Plan Costs by Decade for City of Harker Heights

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) after Reuse (acft/yr)	*1,378*	*1,046*	*612*	*188*	*(134)*	*(1,167)*
Water Supply from Bell County WCID No. 1						
Supply From Plan Element (acft/yr)	—	26	76	344	412	518
Annual Cost ($/yr)	—	$0	$0	$0	$0	$0
Unit Cost ($/yr)	—	$0	$0	$0	$0	$0
Firm up Supplies through BRA Little River System Strategies-See section 5.38.2						
Supply From Plan Element (acft/yr)	1,645	1,671	1,621	891	276	347
Annual Cost ($/yr)	$0	$0	$0	$0	$0	$0
Unit Cost ($/yr)	$0	$0	$0	$0	$0	$0
Purchase from City of Killeen						
Supply From Plan Element (acft/yr)	—	—	—	—	—	302
Annual Cost ($/yr)	—	—	—	—	—	$540,882
Unit Cost ($/yr)	—	—	—	—	—	$1,791

5.1.10 City of Holland

The City of Holland has Trinity supplies and a contract to purchase water from the Central Texas WSC from Lake Stillhouse Hollow. No shortages are projected for the City of Holland and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.1.11 City of Killeen

Description of Supply

The City of Killeen has a contract to purchase water from Bell County WCID No. 1 to divert, treat, and deliver water from Lake Belton to the City. The city receives some 0.5 mgd of reuse supplies from Bell County WCID No. 1. No shortages are projected for the City of Killeen and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Bell County WCID No.1 is pursuing a strategy to provide reuse supplies for non-potable demands at Killeen. The strategy would supply 2,488 acft/yr for irrigation at golf courses, parks and cemeteries.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Killeen.

a. Water Supply from Bell County WCID No. 1

BRA provides this supply under contract to entity. BRA to develop any combinations of strategies as described in Section 5.38.2 to firm up this amount.

- Cost Source: BRA to firm up water supply
- Date to be Implemented: 2030
- Project Cost: cost borne by BRA
- Unit Cost: already contracted supplies

b. Purchase reuse water from Bell County WCID No. 1. The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers. The current use of 0.5 mgd of reuse supply is included as part of this strategy and not counted as current supply.

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost: construction costs to be borne by Bell County WCID No. 1
- Unit Cost: $811/acft

Table 5.1-8. Recommended Plan Costs by Decade for the City of Killeen

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*20,490*	*17,859*	*14,664*	*9,595*	*5,969*	*2,059*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*20,490*	*17,859*	*14,664*	*9,595*	*5,969*	*2,059*
Bell County WCID No. 1 Reuse						
Supply From Plan Element (acft/yr)	2,488	2,488	2,488	2,488	2,488	2,488
Annual Cost ($/yr)	$2,018,000	$2,018,000	$2,018,000	$2,018,000	$2,018,000	$2,018,000
Unit Cost ($/yr)	$811	$811	$811	$811	$811	$811
Projected Surplus/(Shortage) after Reuse	*22,985*	*20,354*	*17,159*	*12,090*	*8,464*	*4,554*
Water Supply from Bell County WCID No. 1						
Supply From Plan Element (acft/yr)	—	196	580	2,614	3,124	3,929
Annual Cost ($/yr)	—	$0	$0	$0	$0	$0
Unit Cost ($/yr)	—	$0	$0	$0	$0	$0

5.1.12 Little River Academy

Description of Supply

Little River Academy obtains its water supply from the Trinity Aquifer and a contract for treated supplies from City of Temple. Little River Academy is projected to have a shortage beginning in 2030.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for Little River Academy.

a. Conservation
- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $112,338 in 2030
- Unit Cost: $474/acft

b. Voluntary Redistribution from City of Temple
- Cost Source: City of Temple wholesale water rate
- Date to be Implemented: 2030
- Project Cost: assumes infrastructure in place to deliver supply
- Unit Cost: $977/acft/yr - wholesale water rate from City of Temple

Table 5.1-9. Recommended Plan Costs by Decade for Little River Academy

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*11*	*(21)*	*(59)*	*(102)*	*(146)*	*(190)*
Conservation						
Supply From Plan Element (acft/yr)	12	19	13	11	11	11
Annual Cost ($/yr)	$5,640	$8,930	$6,110	$5,170	$5,170	$5,170
Projected Surplus/(Shortage) after Conservation	*23*	*(2)*	*(46)*	*(91)*	*(135)*	*(179)*
Voluntary Redistribution from City of Temple						
Supply From Plan Element (acft/yr)	—	180	180	180	180	180
Annual Cost ($/yr)	—	$175,860	$175,860	$175,860	$175,860	$175,860
Unit Cost ($/yr)	—	$977	$977	$977	$977	$977

5.1.13 Moffat WSC

Moffat WSC has a contract to purchase water from the Brazos River Authority and Bluebonnet WSC from Lake Belton, as well as supplemental wells in the Trinity Aquifer. No shortages are projected for Moffat WSC and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.1.14 Morgan's Point Resort

Morgan's Point Resort contracts with the City of Temple for all of its water supply. No shortages are projected for Morgan's Point Resort and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.1.15 City of Nolanville

Description of Supply

The City of Nolanville contracts with Bell County WCID No. 1 to divert, treat, and deliver water from Lake Belton to the City. Exempt well use in the Trinity Aquifer inside the city limits meets a portion of the demand. Shortages are projected for Nolanville beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Nolanville.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $471,410 in 2070
- Unit Cost: $470/acft

b. Water Supply from Bell County WCID No. 1

BRA provides this supply under contract to entity. BRA to develop any combinations of strategies as described in Section 5.38.2 to firm up this amount.

- Cost Source: BRA to firm up water supply
- Date to be Implemented: 2030
- Project Cost: cost borne by BRA
- Unit Cost: already contracted supplies

c. Voluntary Redistribution of Bell County WCID No.1 supply

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020

- Project Cost: assumes infrastructure in place to deliver supply
- Unit Cost: $185.76/acft ($0.58/1,000 gallons)

Table 5.1-10. Recommended Plan Costs by Decade for City of Nolanville

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(72)*	*(444)*	*(858)*	*(1,330)*	*(1,758)*	*(2,188)*
Conservation						
Supply From Plan Element (acft/yr)	67	224	444	721	884	1,003
Annual Cost ($/yr)	$31,490	$105,280	$208,680	$338,400	$415,480	$471,410
Projected Surplus/(Shortage) after Conservation	*(5)*	*(220)*	*(415)*	*(609)*	*(875)*	*(1,185)*
Water Supply from Bell County WCID No. 1						
Supply From Plan Element (acft/yr)	—	5	14	65	77	97
Annual Cost ($/yr)	—	$0	$0	$0	$0	$0
Unit Cost ($/yr)	—	$0	$0	$0	$0	$0
Voluntary Redistribution of Bell County WCID No.1 supply						
Supply From Plan Element (acft/yr)	5	215	401	544	798	1,088
Annual Cost ($/yr)	$929	$39,939	$74,491	$101,055	$148,239	$202,110
Unit Cost ($/yr)	$186	$186	$186	$186	$186	$186

5.1.16 Pendleton WSC

Pendleton WSC has wells in the Trinity Aquifer and a contract to purchase water from Bluebonnet WSC from Lake Belton. No shortages are projected for Pendleton WSC and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.1.17 City of Rogers

The City of Rogers has wells in the Trinity Aquifer and purchases treated surface water from Central Texas WSC. No shortages are projected for the City of Rogers and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.1.18 Salado WSC

Description of Supply

Salado WSC currently obtains water from the Edwards Aquifer, and purchases treated supply from Kempner WSC. The entity also has a contract with the BRA that has yet to be utilized. A shortage is projected in 2060 for Salado WSC.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Salado WSC.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum $490,680 in 2070
- Unit Cost: $470/acft

Table 5.1-11. Recommended Plan Costs by Decade for Salado WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*510*	*373*	*219*	*54*	*(112)*	*(278)*
Conservation						
Supply From Plan Element (acft/yr)	97	255	431	624	830	1,044
Annual Cost ($/yr)	$45,590	$119,850	$202,570	$293,280	$390,100	$490,680
Projected Surplus/ (Shortage) after Conservation	*607*	*628*	*650*	*678*	*718*	*766*

5.1.19 City of Temple

The City of Temple obtains its water supply from surface water from Lake Belton through the BRA and run-of-the river water rights. The City supplies several neighboring communities with treated water. The City is projected to have a shortage of supplies through the planning period. Refer to Chapter 5.38 for the City's plan as a Wholesale Water Provider.

5.1.20 City of Troy

The City of Troy obtains its water from a contract with the City of Temple and wells located in the Trinity Aquifer. No shortages are projected for the City of Troy and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.1.21 West Bell County WSC

West Bell County WSC obtains its water through a contract with the Central Texas WSC. No shortages are projected for West Bell County WSC and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.1.22 Bell County-Other

Description of Supply

Bell County-Other entities obtain water supply from groundwater from the Trinity Aquifer and treated surface water from Bell County WCID No. 1, Central Texas WSC and City of Temple. Shortages are projected for County Other by 2040.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for Bell County-Other.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum $68,448 in 2070
- Unit Cost: $496/acft

b. Water Supply from Bell County WCID No. 1

BRA provides this supply under contract to entity. BRA to develop any combinations of strategies as described in Section 5.38.2 to firm up this amount.

- Cost Source: BRA to firm up water supply
- Date to be Implemented: 2030
- Project Cost: cost borne by BRA
- Unit Cost: already contracted supplies

c. Voluntary Redistribution from Central Texas WSC

- Cost Source: Central Texas WSC wholesale water rate
- Date to be Implemented: 2030
- Project Cost: assumes infrastructure in place to deliver supply
- Unit Cost: $250/acft/yr

d. Groundwater Development – Edwards BFZ

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2040
- Project Cost: $3,736,000
- Unit Cost: $183/acft

Table 5.1-12. Recommended Plan Costs by Decade for Bell County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*1,084*	*234*	*(768)*	*(1,828)*	*(2,824)*	*(3,788)*
Conservation						
Supply From Plan Element (acft/yr)	14	62	73	94	117	138
Annual Cost ($/yr)	$6,944	$30,752	$36,208	$46,624	$58,032	$68,448
Projected Surplus/(Shortage) after Conservation	*1,098*	*297*	*(695)*	*(1,734)*	*(2,707)*	*(3,649)*
Water Supply from Bell County WCID#1						
Supply From Plan Element (acft/yr)	—	4	11	49	59	74
Annual Cost ($/yr)	—	$0	$0	$0	$0	$0
Unit Cost ($/acft)	—	$0	$0	$0	$0	$0
Increase Contract with Bell County WCID No. 1						
Supply From Plan Element (acft/yr)	—	—	23	467	731	995
Annual Cost ($/yr)	—	—	$4,342	$86,782	$136,025	$185,036
Unit Cost ($/acft)	—	—	$185.76	$185.76	$185.76	$185.76
Voluntary Redistribution from Central Texas WSC						
Supply From Plan Element (acft/yr)	—	—	500	500	500	500
Annual Cost ($/yr)	—	—	$125,000	$125,000	$125,000	$125,000
Unit Cost ($/acft)	—	—	$250	$250	$250	$250
Groundwater Development – Edwards BFZ						
Supply From Plan Element (acft/yr)	—	—	2,081	2,081	2,081	2,081
Annual Cost ($/yr)	—	—	$380,626	$380,626	$103,626	$103,626
Unit Cost ($/acft)	—	—	$183	$183	$50	$50

5.1.23 Manufacturing

Description of Supply

Water supply for manufacturing in Bell County is obtained by purchase from a city or water supply corporation. Bell County Manufacturing is projected to have shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Bell County Manufacturing.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: Not determined

b. Groundwater Development – Edwards BFZ
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: $10,290,000
   - Unit Cost: Max of $883/acft/yr

c. Alternative: Reuse Supplies from Bell County WCID No. 1
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: 2020
   - Project Cost: costs to be borne by Bell County WCID No. 1
   - Unit Cost: $765/acft

Table 5.1-13. Recommended Plan Costs by Decade for Bell County – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/ (Shortage) (acft/yr)	*(873)*	*(993)*	*(1,110)*	*(1,214)*	*(1,350)*	*(1,497)*
Conservation						
Supply From Plan Element (acft/yr)	41	75	112	120	129	140
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/ (Shortage) after Conservation	*(832)*	*(919)*	*(998)*	*(1,094)*	*(1,221)*	*(1,357)*
Groundwater Development – Edwards BFZ						
Supply From Plan Element (acft/yr)	1,000	1,000	1,000	1,360	1,360	1,360
Annual Cost ($/yr)	$883,000	$883,000	$297,000	$403,351	$403,351	$403,351
Unit Cost ($/acft)	$883	$883	$297	$297	$297	$297
Alternative: Purchase Reuse Supplies from Bell County WCID No. 1						
Supply From Plan Element (acft/yr)	1,000	1,000	1,000	1,360	1,360	1,360
Annual Cost ($/yr)	$765,000	$765,000	$765,000	$1,040,400	$1,040,400	$1,040,400
Unit Cost ($/acft)	$765	$765	$765	$765	$765	$765

ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location.

5.1.24 Steam-Electric

Description of Supply

Steam-Electric is projected to have a shortage through the planning period. The City of Temple has also recently entered into an agreement with Panda Temple Power L.L.C. to supply up to 7.5 MGD to a proposed new generating facility.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Bell County Steam-Electric. Conservation was also considered, however much of the new demands would be new construction, and would incorporate water efficient technologies.

a. Reuse supplies from City of Temple
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: N/A
   - Unit Cost: $138/acft or $0.42/1000 gal

b. Purchase Additional Reuse Supplies from the City of Temple
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2070
   - Project Cost: N/A
   - Unit Cost: $138/acft or $0.42/1000 gal

Table 5.1-14. Recommended Plan Costs by Decade for Bell County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(4,220)*	*(4,934)*	*(5,804)*	*(6,865)*	*(8,157)*	*(9,693)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(4,220)*	*(4,934)*	*(5,804)*	*(6,865)*	*(8,157)*	*(9,693)*
Reuse Supplies from City of Temple						
Supply From Plan Element (acft/yr)	8,407	8,407	8,407	8,407	8,407	8,407
Annual Cost ($/yr)	$1,160,000	$1,160,000	$1,160,000	$1,160,000	$1,160,000	$1,160,000
Unit Cost ($/acft)	$138	$138	$138	$138	$138	$138
Projected Surplus/(Shortage) after Conservation (acft/yr)	*4,187*	*3,473*	*2,603*	*1,542*	*250*	*(1,286)*

Table 5.1-14. Recommended Plan Costs by Decade for Bell County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
Purchase Additional Reuse Supplies from the City of Temple						
Supply From Plan Element (acft/yr)	—	—	—	—	—	1,300
Annual Cost ($/yr)	—	—	—	—	—	$179,400
Unit Cost ($/acft)	—	—	—	—	—	$138

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.1.25 Mining

Description of Supply

Mining in Bell County has no current supply allocation and is projected to have a shortage through the planning period.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Bell County-Mining.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: 2020
   - Annual Cost: not determined

b. Groundwater Development – Edwards BFZ
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: $13,846,000

c. Groundwater Development – Trinity
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: $5,588,000

d. Leave Needs Unmet
   - Cost Source: Cost of not meeting needs – see Appendix H
   - Date to be Implemented: 2040

Table 5.1-15. Recommended Plan Costs by Decade for Bell County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(3,242)*	*(3,980)*	*(4,599)*	*(5,349)*	*(6,105)*	*(6,968)*
Conservation						
Supply From Plan Element (acft/yr)	97	199	322	374	427	488
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(3,145)*	*(3,781)*	*(4,277)*	*(4,975)*	*(5,678)*	*(6,480)*
Groundwater Development – Edwards BFZ						
Supply From Plan Element (acft/yr)	2,104	2,176	2,081	1,177	503	—
Annual Cost ($/yr)	$1,281,486	$1,281,486	$121,486	$121,486	$121,486	—
Unit Cost ($/acft)	$589	$589	$56	$56	$56	—
Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	582	582	582	582	260	120
Annual Cost ($/yr)	$514,267	$514,267	$46,267	$46,267	$20,540	$9,480
Unit Cost ($/acft)	$884	$884	$79	$79	$79	$79
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	459	1,023	1,614	3,216	4,915	6,360
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.1.26 Irrigation

Description of Supply

Bell County Irrigation is supplied by groundwater from the Trinity Aquifer and the Edwards Aquifer (BFZ), and run of the river water rights. Irrigation is projected to have shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Bell County-Irrigation.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: $230/acft

b. Groundwater Development – Edwards Aquifer
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2020
   - Project Cost: $13,384,000
   - Unit Cost: Max of $1,120 in 2020

c. Groundwater Development – Trinity Aquifer
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2070
   - Project Cost: $2,541,000
   - Unit Cost: $1,656

d. Alternative: BRA System Operation
   - Cost Source: Volume II, Chapter 7.11
     - Supply dependent on BRA obtaining the System Operations permit from TCEQ
   - Date to be Implemented: 2020
   - Project Cost: Infrastructure assumed sufficient
   - Unit Cost: $65.65/acft

Table 5.1-16. Recommended Plan Costs by Decade for Bell County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,157)*	*(1,127)*	*(1,103)*	*(1,088)*	*(1,061)*	*(1,038)*
Conservation						
Supply From Plan Element (acft/yr)	66	109	150	148	146	144
Annual Cost ($/yr)	$15,180	$25,070	$34,500	$34,040	$33,580	$33,120
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(1,091)*	*(1,019)*	*(953)*	*(940)*	*(915)*	*(894)*
Groundwater Development – Edwards Aquifer						
Supply From Plan Element (acft/yr)	1,091	1,019	953	940	915	754
Annual Cost ($/yr)	$1,222,446	$1,222,446	$101,446	$101,446	$101,446	$101,446
Unit Cost ($/acft)	$1,120	$1,120	$93	$93	$93	$93
Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	—	—	—	—	—	140
Annual Cost ($/yr)	—	—	—	—	—	$231,894
Unit Cost ($/acft)	—	—	—	—	—	$1,656

Table 5.1-16. Recommended Plan Costs by Decade for Bell County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Alternative: Purchase Supply from Brazos River Authority (System Operations)						
Supply From Plan Element (acft/yr)	1,200	1,200	1,200	1,200	1,200	1,250
Annual Cost ($/yr)	$78,780	$78,780	$78,780	$78,780	$78,780	$82,062
Unit Cost ($/acft)	$65.65	$65.65	$65.65	$65.65	$65.65	$65.65

5.1.27 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

5.2 Bosque County Water Supply Plan

Table 5.2-1 lists each water user group in Bosque County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.2-1. Bosque County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Childress Creek WSC	3	(15)	Projected shortage – see plan below
City of Clifton	270	206	Projected surplus
Cross Country WSC			See McLennan County
City of Meridian	249	241	Projected surplus
City of Valley Mills	14	(2)	Projected shortage – see plan below
City of Walnut Springs	93	89	Projected surplus
County-Other	124	66	Projected surplus
Manufacturing	(2,501)	(3,431)	Projected shortage – see plan below
Steam-Electric	(2,262)	(8,345)	Projected shortage – see plan below
Mining	(1,763)	(1,692)	Projected shortage – see plan below
Irrigation	(468)	(377)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-3 and C-4, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.2.1 Childress Creek WSC

Description of Supply

Childress Creek WSC obtains its water supply from groundwater from the Trinity Aquifer. Based on the available groundwater supply, the WSC is projected to have a shortage beginning in 2050 through year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for Childress Creek WSC. Associated costs are included for each strategy. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Rehab of Trinity Wells
   - Cost Source: Volume II, Section 12.1
   - Date to be Implemented: before 2050
   - Project Cost:$15,000
   - Unit Cost: $6/acft

b. Bosque County Regional Project
   - Cost Source: Volume II, Section 8.1
   - Date to be Implemented: before 2050
   - Project Cost:$5,074,000 for Childress Creek WSC portion
   - Unit Cost: $2,074/acft

Table 5.2-2. Recommended Plan Costs by Decade for Childress Creek WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*39*	*13*	*3*	*(4)*	*(10)*	*(15)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*39*	*13*	*3*	*(4)*	*(10)*	*(15)*
Rehab Trinity Wells						
Supply From Plan Element (acft/yr)	—	—	—	161	161	161
Annual Cost ($/yr)	—	—	—	$966	$966	$966
Unit Cost ($/acft)	—	—	—	$6	$6	$6
Bosque County Regional Project						
Supply From Plan Element (acft/yr)	203	203	203	203	203	203
Annual Cost ($/yr)	$421,000	$421,000	$214,000	$214,000	$52,000	$52,000
Unit Cost ($/acft)	$2,074	$2,074	$1,054	$1,054	$256	$256

5.2.2 City of Clifton

Description of Supply

The City of Clifton obtains its water supply from groundwater from the Trinity Aquifer and from surface water from the North Bosque River. The City of Clifton owns water rights on the North Bosque River and diverts water into a 500 acft off-channel reservoir. The project was planned to provide for additional phases to enlarge the project as demand increases. Currently, Meridian can receive up to 112 acft of treated water from Clifton and retains 10 percent of the storage volume in the off-channel reservoir. Based on the estimated availability of groundwater to the City and the firm yield of the new surface water supply project, the City of Clifton has a surplus in 2070. The ability to expand the project results in the City being a potential regional provider of water to other Bosque County entities.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for County-Other entities. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Section 2
   - Date to be Implemented: before 2020
   - Annual Cost: maximum of $36,531 in 2040; Unit cost of $474/acft

b. Bosque County Regional Project – includes expansion of the Clifton OCR and WTP
   - Cost Source: Volume II, Section 8.1
   - Date to be Implemented: before 2050
   - Project Cost:$5,135,000 for the City's portion
   - Unit Cost: $1,076/acft

Table 5.2-3. Recommended Plan Costs by Decade for City of Clifton

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*333*	*288*	*270*	*258*	*247*	*206*
Conservation						
Supply From Plan Element (acft/yr)	21	74	77	71	71	71
Annual Cost ($/yr)	$9,752	$35,012	$36,531	$33,745	$33,607	$33,654
Projected Surplus/(Shortage) after Conservation	*354*	*362*	*347*	*330*	*318*	*277*
Bosque County Regional Project						
Supply From Plan Element (acft/yr)	397	397	397	397	397	397
Annual Cost ($/yr)	$427,000	$427,000	$263,000	$263,000	$54,000	$54,000
Unit Cost ($/acft)	$1,076	$1,076	$662	$662	$136	$136

5.2.3 City of Meridian

Description of Supply

The City of Meridian obtains its water supply from groundwater from the Trinity Aquifer and has a contract to purchase treated water from the City of Clifton. No shortages are projected for the City of Meridian.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for County-Other entities. Associated costs are included for each strategy. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Bosque County Regional Project – includes expansion of the Clifton OCR and WTP

- Cost Source: Volume II, Section 8.1
- Date to be Implemented: 2020
- Project Cost:$3,220,000 for the City's portion
- Unit Cost: $1,223/acft

b. Alternative: Meridian Off-Channel Reservoir

- Cost Source: Volume II, Section 4.9
- Date to be Implemented: before 2050
- Project Cost:$21,702,000
- Unit Cost: $3,961/acft

Table 5.2-4. Recommended Plan Costs by Decade for City of Meridian

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/ (Shortage) (acft/yr)	*265*	*253*	*249*	*246*	*243*	*241*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/ (Shortage) after Conservation	*265*	*253*	*249*	*246*	*243*	*241*
Bosque County Regional Project						
Supply From Plan Element (acft/yr)	224	224	224	224	224	224
Annual Cost ($/yr)	$274,000	$274,000	$143,000	$143,000	$40,000	$40,000
Unit Cost ($/acft)	$1,223	$1,223	$638	$638	$179	$179
Alternative: Meridian Off-Channel Reservoir						
Supply From Plan Element (acft/yr)	615	615	615	615	615	615
Annual Cost ($/yr)	$2,436,000	$2,436,000	$1,128,000	$1,128,000	$750,000	$750,000
Unit Cost ($/acft)	$3,961	$3,961	$1,834	$1,834	$1,220	$1,220

5.2.4 City of Valley Mills

Description of Supply

The City of Valley Mills service area is primarily in Bosque County but also serves a small portion of McLennan County. The City obtains all of its water supply from groundwater from the Trinity Aquifer. Based on the groundwater supply available, the City of Valley Mills is projected to have a shortage in the year 2070. The surplus/shortages shown in Table 5.2-1 represent the cumulative totals for the City of Valley Mills.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for County-Other entities. Associated costs are included for each strategy. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Conservation

- Cost Source: Volume II, Section 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $23,000 in 2040; Unit Cost of $474/acft

b. Bosque County Regional Project – includes expansion of the Clifton OCR and WTP

- Cost Source: Volume II, Section 8.1
- Date to be Implemented: 2020
- Project Cost:$4,730,000 for the City's portion
- Unit Cost: $2,126/acft

Table 5.2-5. Recommended Plan Costs by Decade for City of Valley Mills

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*42*	*23*	*14*	*8*	*2*	*(2)*
Conservation						
Supply From Plan Element (acft/yr)	10	31	48	47	48	48
Annual Cost ($/yr)	$4,744	$14,607	$22,969	$22,245	$22,562	$22,674
Projected Surplus/(Shortage) after Conservation	*52*	*54*	*63*	*55*	*50*	*46*
Bosque County Regional Project						
Supply From Plan Element (acft/yr)	182	182	182	182	182	182
Annual Cost ($/yr)	$387,000	$387,000	$194,000	$194,000	$43,000	$43,000
Unit Cost ($/acft)	$2,126	$2,126	$1,065	$1,065	$236	$236

5.2.5 City of Walnut Springs

Description of Supply

The City of Walnut Springs obtains its water supply from groundwater from the Trinity Aquifer. No shortages are projected for the City of Walnut Springs.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for County-Other entities. Associated costs are included for each strategy. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Alternative: Bosque County Regional Project – includes expansion of the Clifton OCR and WTP
   - Cost Source: Volume II, Section 8.1
   - Date to be Implemented: 2020
   - Project Cost:$4,213,000 for the City's portion
   - Unit Cost: $5,344/acft

Table 5.2-6. Recommended Plan Costs by Decade for City of Walnut Springs

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*98*	*94*	*93*	*92*	*90*	*89*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*98*	*94*	*93*	*92*	*90*	*89*
Alternative: Bosque County Regional Project						
Supply From Plan Element (acft/yr)	64	64	64	64	64	64
Annual Cost ($/yr)	$342,000	$342,000	$170,000	$170,000	$35,000	$35,000
Unit Cost ($/acft)	$5,344	$5,344	$2,656	$2,656	$547	$547

5.2.6 County-Other

Bosque County-Other entities obtain water supply from groundwater from the Trinity Aquifer. No shortages are projected for County Other and no changes in water supply are recommended. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.2.7 Manufacturing

Description of Supply

Water supply for manufacturing in Bosque County is obtained by purchase from a city or water supply corporation, from private wells operated by the manufacturing entity, or by limited surface water supplies.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Bosque County Manufacturing. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Section 2
   - Date to be Implemented: before 2020
   - Annual Cost: not determined

b. Purchase from City of Clifton
   - Cost Source: based on cost for Bosque County Regional Project Volume II, Section 8.1
   - Date to be Implemented: before 2020
   - Project Cost: TBD
   - Unit Cost: $1,076/acft

c. Purchase from City of Meridian
   - Cost Source: based on cost for Bosque County Regional Project Volume II, Section 8.1
   - Date to be Implemented: before 2020
   - Project Cost: TBD
   - Unit Cost: $1,223/acft

d. BRA Systems Operations to Bosque County
   - Cost Source: BRA System Operations Supply (Volume II, Section 7.11)
     - Dependent on BRA being granted System Operations permit from TCEQ
   - Date to be Implemented: 2020
   - Project Cost: Not enough information to cost delivery
   - Unit Cost: $65.65/acft (BRA wholesale rate only)

Table 5.2-7. Recommended Plan Costs by Decade for Bosque County – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,868)*	*(2,187)*	*(2,501)*	*(2,772)*	*(3,088)*	*(3,431)*
Conservation						
Supply From Plan Element (acft/yr)	82	153	236	255	277	301
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation	*(1,786)*	*(2,034)*	*(2,265)*	*(2,517)*	*(2,811)*	*(3,130)*
Purchase from City of Clifton						
Supply From Plan Element (acft/yr)	426	426	426	426	426	426
Annual Cost ($/yr)	$458,000	$458,000	$458,000	$458,000	$458,000	$458,000
Unit Cost ($/acft)	$1,076	$1,076	$1,076	$1,076	$1,076	$1,076
Purchase from City of Meridian						
Supply From Plan Element (acft/yr)	330	330	330	330	330	330
Annual Cost ($/yr)	$404,000	$404,000	$404,000	$404,000	$404,000	$404,000
Unit Cost ($/acft)	$1,223	$1,223	$1,223	$1,223	$1,223	$1,223
BRA System Operations						
Supply From Plan Element (acft/yr)	1,035	1,280	1,510	1,765	2,060	2,375
Annual Cost ($/yr)	$67,948	$84,032	$99,132	$115,872	$135,239	$155,919
Unit Cost ($/acft)	$66	$66	$66	$66	$66	$66

ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location

5.2.8 Steam-Electric

Description of Supply

The water supply for Steam-Electric use in Bosque County consists of surface water contracts with the Brazos River Authority. Steam-Electric is projected to have a shortage from the year 2030 through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Bosque County Steam-Electric. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Section 2
- Date to be Implemented: 2030
- Annual Cost: not determined

b. BRA System Operation to Bosque County

- Cost Source: BRA System Operations Supply (Volume II, Section 7.11)
    - Dependent on BRA being granted System Operations permit from TCEQ
- Date to be Implemented: before 2030
- Project Cost: Infrastructure assumed sufficient
- Unit Cost: $65.65/acft (Current BRA System Rate)

Table 5.2-8. Recommended Plan Costs by Decade for Bosque County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*312*	*(861)*	*(2,262)*	*(3,943)*	*(5,965)*	*(8,345)*
Conservation						
Supply From Plan Element (acft/yr)	0	362	596	705	837	995
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*312*	*(499)*	*(1,667)*	*(3,239)*	*(5,128)*	*(7,350)*
BRA System Operation						
Supply From Plan Element (acft/yr)	—	500	1,670	3,240	5,130	7,350
Annual Cost ($/yr)	—	$32,825	$109,636	$212,706	$336,785	$482,528
Unit Cost ($/acft)	—	$65.65	$65.65	$65.65	$65.65	$65.65

ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location.

5.2.9 Mining

Description of Supply

Mining operations in Bosque County are supplied by Trinity Groundwater. Demands for Mining are projected to increase significantly resulting in shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Bosque County-Mining. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Section 2
- Date to be Implemented: before 2020
- Annual Cost: not determined

b. Leave needs unmet

- Cost Source: Cost of not meeting needs – see Appendix H
- Date to be Implemented: 2020

Table 5.2-9. Recommended Plan Costs by Decade for Bosque County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,843)*	*(1,942)*	*(1,763)*	*(1,743)*	*(1,704)*	*(1,692)*
Conservation						
Supply From Plan Element (acft/yr)	59	104	132	131	128	127
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(1,784)*	*(1,839)*	*(1,631)*	*(1,612)*	*(1,576)*	*(1,565)*
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	1,780	1,840	1,635	1,615	1,580	1,565
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.2.10 Irrigation

Bosque County Irrigation is projected to have a surplus of water through the year 2070. No changes in water supply are recommended.

Description of Supply

Bosque County Irrigation is supplied by Trinity Groundwater and run of the river water rights. Irrigation is projected to have shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Bosque County-Irrigation. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Section 2
   - Date to be Implemented: before 2020
   - Unit Cost: $230/acft

b. Groundwater Development – Trinity Aquifer
   - Cost Source: Volume 2, Section 12.1
   - Date to be Implemented: before 2020
   - Project Cost: $11,048,000
   - Unit Cost: $2,119

Table 5.2-10. Recommended Plan Costs by Decade for Bosque County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(536)*	*(502)*	*(468)*	*(438)*	*(407)*	*(377)*
Conservation						
Supply From Plan Element (acft/yr)	64	105	144	142	140	138
Annual Cost ($/yr)	$14,683	$24,081	$33,166	$32,667	$32,168	$31,685
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(473)*	*(398)*	*(324)*	*(295)*	*(267)*	*(239)*
Groundwater Development						
Supply From Plan Element (acft/yr)	475	475	475	475	475	475
Annual Cost ($/yr)	$1,006,457	$1,006,457	$81,457	$81,457	$81,457	$81,457
Unit Cost ($/acft)	$2,119	$2,119	$171	$171	$171	$171

5.2.11 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

This page intentionally left blank.

5.3 Brazos County Water Supply Plan

Table 5.3-1 lists each water user group in Brazos County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.3-1. Brazos County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Bryan	(5,533)	(26,578)	Projected shortage – see Chapter 5.38
City of College Station	(7,372)	(8,401)	Projected shortage – see plan below
Texas A & M University	7,323	7,344	Projected surplus
Wellborn SUD	(358)	(2,524)	Projected shortage – see plan below
Wickson Creek SUD	1,502	366	Projected surplus
County-Other	424	28	Projected surplus
Manufacturing	(1,219)	(2,116)	Projected shortage – see plan below
Steam-Electric	(197)	(121)	Projected shortage – see plan below
Mining	(1,433)	(814)	Projected shortage – see plan below
Irrigation	(8,473)	(5,321)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-5 and C-6, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.3.1 City of Bryan

The recommended water supply plan for the City of Bryan is included in Chapter 5.38 with the wholesale water providers.

5.3.2 City of College Station

Description of Supply

The City of College Station obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer. The city's utility does not provide service to the entire city limits. Portions of the city demand are currently served by City of Bryan and Wellborn SUD. The city also provides water supply for Brazos County Manufacturing. Shortages are projected beginning in year 2020 for the City of College Station.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for the City of College Station. Associated costs are included for each strategy.

a. Conservation
- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $2,335,000 in 2070
- Unit Cost: $474/acft

b. Groundwater Development – Yegua-Jackson Aquifer
- Cost Source: Volume II, Chapter 9.2
- Date to be Implemented: 2020
- Project Cost: $32,957,000
- Unit Cost: $656/acft

c. College Station Reuse
- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost: $1,705,000
- Unit Cost: $1,680/acft

d. College Station ASR
- Cost Source: Volume II, Chapter 10.2
- Date to be Implemented: 2020
- Project Cost: $63,850,000
- Unit Cost: $3,069/acft

e. Alternative: BRA System Operation
- Cost Source: Volume II, Chapter 7.11
  - Dependent on BRA being granted System Operations permit from TCEQ
- Date to be Implemented: 2020
- Project Cost: $37,109,000
- Unit Cost: $1,065/acft assuming wholesale water rate plus transmission

f. Alternative: College Station Direct Potable Reuse
- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost: $56,192,000
- Unit Cost: $3,484/acft

Table 5.3-2. Recommended Plan Costs by Decade for City of College Station

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(4,973)*	*(8,024)*	*(7,372)*	*(7,673)*	*(8,085)*	*(8,401)*
Conservation						
Supply From Plan Element (acft/yr)	679	2,585	3,465	3,823	4,332	4,926
Annual Cost ($/yr)	$322,000	$1,225,000	$1,642,000	$1,812,000	$2,053,000	$2,335,000
Projected Surplus/ (Shortage) after Conservation (acft/yr)	*(4,295)*	*(5,438)*	*(3,907)*	*(3,850)*	*(3,753)*	*(3,475)*
College Station Reuse Project						
Supply From Plan Element (acft/yr)	103	103	103	103	103	103
Annual Cost ($/yr)	$173,000	$173,000	$30,000	$30,000	$30,000	$30,000
Unit Cost ($/acft)	$1,680	$1,680	$291	$291	$291	$291
Projected Surplus/ (Shortage) after Conservation (acft/yr)	*(4,192)*	*(5,335)*	*(3,804)*	*(3,747)*	*(3,650)*	*(3,372)*
Groundwater Development – Yegua-Jackson Aquifer						
Supply From Plan Element (acft/yr)	4,452	5,565	5,565	5,565	5,565	5,565
Annual Cost ($/yr)	$2,923,000	$3,499,000	$1,572,000	$1,231,000	$1,231,000	$1,231,000
Unit Cost ($/acft)	$656	$629	$282	$221	$221	$221
College Station ASR Project						
Supply From Plan Element (acft/yr)	2,800	2,800	2,800	2,800	2,800	2,800
Annual Cost ($/yr)	$8,592,000	$8,592,000	$3,249,000	$3,249,000	$3,249,000	$3,249,000
Unit Cost ($/acft)	$3,068	$3,068	$1,160	$1,160	$1,160	$1,160
Alternative: BRA System Operation						
Supply From Plan Element (acft/yr)	6,000	6,000	6,000	6,000	6,000	6,000
Annual Cost ($/yr)	$6,390,000	$6,390,000	$3,282,000	$3,282,000	$3,282,000	$3,282,000
Unit Cost ($/acft)	$1,065	$1,065	$547	$547	$547	$547
Alternative: College Station Direct Potable Reuse						
Supply From Plan Element (acft/yr)	2,800	2,800	2,800	2,800	2,800	2,800
Annual Cost ($/yr)	$9,755,000	$9,755,000	$5,053,000	$5,053,000	$5,053,000	$5,053,000
Unit Cost ($/acft)	$3,484	$3,484	$1,805	$1,805	$1,805	$1,805

5.3.3 Texas A&M University

Description of Supply

Texas A&M University obtains its water supply from groundwater from the Sparta and Carrizo Aquifers. This supply is projected to be sufficient through the planning period.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for Texas A&M University. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: $1,255,000 in 2070
- Unit Cost: $470/acft

Table 5.3-3. Recommended Plan Costs by Decade for Texas A&M University

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*5,253*	*6,760*	*7,323*	*7,340*	*7,343*	*7,344*
Conservation						
Supply From Plan Element (acft/yr)	416	942	1,418	1,869	2,289	2,670
Annual Cost ($/yr)	$196,000	$443,000	$666,000	$878,000	$1,076,000	$1,255,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*5,669*	*7,701*	*8,741*	*9,209*	*9,632*	*10,014*

5.3.4 Wellborn SUD

Description of Supply

Wellborn SUD is located in Brazos and Robertson counties and currently obtains water from the Carrizo-Wilcox Aquifer and through contracts with BRA and the City of Bryan. Wellborn SUD has sufficient supplies but is constrained by its treatment plant capacity resulting in shortages beginning in 2040.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for Wellborn SUD. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: $335,000 in 2070
- Unit Cost: $470/acft

b. Expand Water Treatment Plant (2 MGD)

- Cost Source: Volume II, Chapter 12

- Date to be Implemented: 2040
- Project Cost: $13,153,000
- Unit Cost: Max of $912 (2020)

Table 5.3-4. Recommended Plan Costs by Decade for Wellborn SUD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*451*	*106*	*(358)*	*(1,010)*	*(1,728)*	*(2,524)*
Conservation						
Supply From Plan Element (acft/yr)	78	279	508	563	633	713
Annual Cost ($/yr)	$37,000	$131,000	$239,000	$265,000	$297,000	$335,000
Projected Surplus/ (Shortage) after Conservation (acft/yr)	*529*	*385*	*150*	*(447)*	*(1,095)*	*(1,811)*
Expand Water Treatment Plant (2 MGD)						
Supply From Plan Element (acft/yr)	—	—	2,240	2,240	2,240	2,085
Annual Cost ($/yr)	—	—	$2,042,000	$2,042,000	$941,000	$941,000
Unit Cost ($/acft)	—	—	$912	$912	$420	$420

5.3.5 Wickson Creek SUD

Wickson Creek SUD is located in multiple counties (Grimes, Robertson, and Brazos). The balances shown in Table 5.3-1 represent the cumulative totals for Wickson Creek SUD. Supplies are obtained from the Sparta and Carrizo Aquifers. The entity also provides supply to Brazos and Grimes County Manufacturing. No shortages are projected for Wickson Creek SUD and no change in water supply is recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.3.6 County-Other

Brazos County-Other entities obtain water supply from groundwater from the Carrizo and Sparta Aquifers. This supply is projected to be sufficient through the planning period and no change in water supply is recommended. Conservation was considered; however, the WUGs current per capita use rate is below the selected target rate of 140 gpcd.

5.3.7 Manufacturing

Water supply for manufacturing in Brazos County is obtained from nearby WUGs and Sparta wells operated by the manufacturing entity. Manufacturing is projected to have a shortage of water beginning in the year 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Manufacturing. Associated costs are included for each strategy.

a. Conservation
- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: not determined

b. Groundwater Development – Gulf Coast Aquifer
- Cost Source: Volume II, Chapter 12.1
- Date to be Implemented: 2020
- Project Cost: $8,932,000
- Unit Cost: $1,815

c. Purchase from Texas A&M University

While Texas A&M University has ample groundwater supplies to provide water to manufacturing interests, the university may have no intention of providing those supplies. Alternatives include purchase of water from College Station, Bryan, Wellborn SUD or Wickson SUD. Whichever entities do provide supply, the source most likely will be from the Carrizo-Wilcox Aquifer System, which is the primary supply for entities in this region.
- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: Not enough information to cost delivery
- Unit Cost: $977/acft (Texas A&M wholesale rate only)

Table 5.3-5. Recommended Plan Costs by Decade for Brazos County – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,800)*	*(886)*	*(1,219)*	*(1,513)*	*(1,802)*	*(2,116)*
Conservation						
Supply From Plan Element (acft/yr)	74	139	218	238	259	281
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(1,726)*	*(747)*	*(1,001)*	*(1,275)*	*(1,543)*	*(1,835)*
Groundwater Development – Gulf Coast Aquifer						
Supply From Plan Element (acft/yr)	530	530	530	530	530	530
Annual Cost ($/yr)	$961,727	$961,727	$248,727	$248,727	$248,727	$248,727
Unit Cost ($/acft)	$1,815	$1,815	$469	$469	$469	$469
Purchase Water from Texas A&M University						
Supply From Plan Element (acft/yr)	1,200	300	500	800	1,100	1,400
Annual Cost ($/yr)	$1,172,400	$293,100	$488,500	$781,600	$1,074,700	$1,367,800
Unit Cost ($/acft)	$977	$977	$977	$977	$977	$977

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.3.8 Steam-Electric

Description of Supply

Supplies for Steam-Electric demand in Brazos County are obtained through groundwater from the Sparta Aquifer and Bryan Utilities Lake. Brazos County Steam-Electric is projected to have shortages beginning in year 2020 and continuing through year 2070.

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Brazos County Steam-Electric.

a. Conservation:
   - Date to be Implemented: 2020
   - Annual Cost: Not determined

b. Purchase reuse water from the City of Bryan at Bryan Utilities Lake:
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: 2020
   - Project Cost: $8,989,000
   - Unit Cost:$1547/acft

Table 5.3-6. Recommended Plan Costs by Decade for Brazos County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(271)*	*(151)*	*(197)*	*(49)*	*(142)*	*(121)*
Conservation						
Supply From Plan Element (acft/yr)	15	20	32	22	28	27
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(256)*	*(131)*	*(165)*	*(27)*	*(114)*	*(94)*
Reuse Supply from City of Bryan						
Supply From Plan Element (acft/yr)	256	131	165	27	114	94
Annual Cost ($/yr)	$396,032	$202,657	$50,160	$8,208	$34,656	$28,576
Unit Cost ($/acft)	$1,547	$1,547	$304	$304	$304	$304
Projected Surplus/(Shortage) after Reuse(acft/yr)	—	—	—	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.3.9 Mining

Description of Supply

There are currently no water supplies allocated to Mining operations in Brazos County. Demands for Mining are projected to increase significantly resulting in shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Brazos County-Mining. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: not determined

b. Leave needs unmet

- Cost Source: Cost of not meeting needs – see Appendix H
- Date to be Implemented: 2020

Table 5.3-7. Recommended Plan Costs by Decade for Brazos County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,088)*	*(1,610)*	*(1,433)*	*(1,144)*	*(923)*	*(814)*
Conservation						
Supply From Plan Element (acft/yr)	33	81	100	80	65	57
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(1,055)*	*(1,530)*	*(1,333)*	*(1,064)*	*(858)*	*(757)*
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	1,100	1,600	1,400	1,100	900	800
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.3.10 Irrigation

Description of Supply

Brazos County Irrigation is supplied by Sparta, Gulf Coast, Yegua-Jackson and Brazos River Alluvium groundwater and from run-of-river diversion rights from the Brazos River and contracts with BRA. Shortages are projected for irrigation beginning in year 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Brazos County-Irrigation. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $380,000 in 2040
- Unit Cost: $230/acft

b. BRA System Operations

- Cost Source: Volume II, Chapter 7.11
  - Dependent on BRA being granted System Operations permit from TCEQ
- Date to be Implemented: 2020
- Project Cost: Infrastructure assumed sufficient
- Unit Cost: $65.65/acft

Table 5.3-8. Recommended Plan Costs by Decade for Brazos County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(10,934)*	*(9,669)*	*(8,473)*	*(7,340)*	*(6,256)*	*(5,321)*
Conservation						
Supply From Plan Element (acft/yr)	782	1,240	1,652	1,572	1,496	1,431
Annual Cost ($/yr)	$180,000	$285,000	$380,000	$362,000	$344,000	$329,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(10,152)*	*(8,430)*	*(6,822)*	*(5,768)*	*(4,760)*	*(3,891)*
BRA System Operation						
Supply From Plan Element (acft/yr)	10,200	8,500	6,900	5,800	4,800	3,900
Annual Cost ($/yr)	$669,630	$558,025	$452,985	$380,770	$315,120	$256,035
Unit Cost ($/acft)	$65.65	$65.65	$65.65	$65.65	$65.65	$65.65

5.3.11 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

5.4 Burleson County Water Supply Plan

Table 5.4-1. lists each water user group in Burleson County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the water users are presented in the following subsections.

Table 5.4-1. Burleson County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1] 2040 (acft/yr)	Surplus/(Shortage)[1] 2070 (acft/yr)	Comment
City of Caldwell	1,279	1,244	Projected surplus
Deanville WSC	211	202	Projected surplus
Milano WSC			See Milam County
City of Snook	274	254	Projected surplus
City of Somerville	606	578	Projected surplus
Southwest Milam WSC			See Milam County
County-Other	170	32	Projected surplus
Manufacturing	(44)	(102)	Projected shortage – see plan below
Steam-Electric	0	0	No projected demand
Mining	(1,512)	(428)	Projected shortage – see plan below
Irrigation	1,905	4,493	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-7 and C-8, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.4.1 City of Caldwell

Description of Supply

The City of Caldwell obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer. This supply is projected to be sufficient through the planning period.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for the City of Caldwell. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $116,000 in 2070
- Unit Cost: $470/acft

Table 5.4-2. Recommended Plan Costs by Decade for City of Caldwell

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*1,325*	*1,309*	*1,279*	*1,279*	*1,261*	*1,244*
Conservation						
Supply From Plan Element (acft/yr)	40	121	203	240	242	246
Annual Cost ($/yr)	$19,000	$57,000	$96,000	$113,000	$114,000	$116,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*1,365*	*1,430*	*1,482*	*1,519*	*1,503*	*1,490*

5.4.2 Deanville WSC

The Deanville WSC obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer. This supply is projected to be sufficient through the planning period and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.4.3 City of Snook

Description of Supply

The City of Snook obtains its water supply from groundwater from the Sparta Aquifer. No shortages are projected through the planning period.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Snook. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $45,000 in 2070
- Unit Cost: $496/acft

Table 5.4-3. Recommended Plan Costs by Decade for City of Snook

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*291*	*280*	*274*	*266*	*259*	*254*
Conservation						
Supply From Plan Element (acft/yr)	11	26	42	59	76	91
Annual Cost ($/yr)	$5,000	$13,000	$21,000	$29,000	$38,000	$45,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*302*	*306*	*316*	*325*	*335*	*345*

5.4.4 City of Somerville

Description of Supply

The City of Somerville obtains its water supply from groundwater from the Sparta Aquifer. This supply is projected to be sufficient through the planning period.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Somerville.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: $12,000 in 2030
- Unit Cost: $470/acft

Table 5.4-4. Recommended Plan Costs by Decade for City of Somerville

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*625*	*614*	*606*	*595*	*586*	*578*
Conservation						
Supply From Plan Element (acft/yr)	8	26	23	23	23	24
Annual Cost ($/yr)	$4,000	$12,000	$11,000	$11,000	$11,000	$11,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*633*	*640*	*629*	*618*	*609*	*602*

5.4.5 County-Other

Burleson County-Other entities obtain water supply from groundwater from the Queen City and Carrizo-Wilcox Aquifers. This supply is projected to be sufficient through the planning period and no change in water supply is recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.4.6 Manufacturing

Description of Supply

Water supply for manufacturing in Burleson County is obtained from Sparta wells operated by the various manufacturing entities. Manufacturing is projected to have a shortage of water beginning in the year 2030.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Manufacturing. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: not determined

b. Groundwater Development – Sparta Aquifer

- Cost Source: Volume II, Chapter 12.1
- Date to be Implemented: 2030
- Project Cost: $932,000
- Unit Cost: Max of $1,265 (2030)

c. Alternative: Purchase supplies from City of Caldwell

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2030
- Project Cost: Not enough information to cost delivery
- Unit Cost: $500/acft

Table 5.4-5. Recommended Plan Costs by Decade for Burleson County – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*(22)*	*(44)*	*(64)*	*(82)*	*(102)*
Conservation						
Supply From Plan Element (acft/yr)	4	8	13	14	15	17
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*4*	*(14)*	*(31)*	*(50)*	*(67)*	*(85)*

Table 5.4-5. Recommended Plan Costs by Decade for Burleson County – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
Groundwater Development – Sparta Aquifer						
Supply From Plan Element (acft/yr)	—	50	50	50	85	85
Annual Cost ($/yr)	—	$107,534	$107,534	$35,534	$35,534	$35,534
Unit Cost ($/acft)	—	$1,265	$1,265	$418	$418	$418
Alternative: Purchase Water from City of Caldwell						
Supply From Plan Element (acft/yr)	—	50	50	50	85	85
Annual Cost ($/yr)	—	$25,000	$25,000	$25,000	$42,500	$42,500
Unit Cost ($/acft)	—	$500	$500	$500	$500	$500

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.4.7 Steam-Electric

No Steam-Electric demand exists or is projected for the county.

5.4.8 Mining

Description of Supply

There are currently no water supplies allocated to Mining operations in Burleson County. Demands for Mining are projected to increase significantly resulting in shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Burleson County-Mining. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: 2020
   - Annual Cost: not determined

b. Groundwater Development – Sparta Aquifer
   - Cost Source: Volume II, Chapter 12.1
   - Date to be Implemented: 2020
   - Project Cost: $5,466,000
   - Unit Cost: Max of $678 (2020)

c. Leave needs unmet

- Cost Source: Cost of not meeting needs – see Appendix H
- Date to be Implemented: 2020

Table 5.4-6. Recommended Plan Costs by Decade for Burleson County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(995)*	*(1,923)*	*(1,512)*	*(1,100)*	*(686)*	*(428)*
Conservation						
Supply From Plan Element (acft/yr)	30	96	106	77	48	30
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(965)*	*(1,827)*	*(1,406)*	*(1,023)*	*(638)*	*(398)*
Groundwater Development – Sparta Aquifer						
Supply From Plan Element (acft/yr)	740	740	740	740	740	740
Annual Cost ($/yr)	$501,602	$501,602	$42,602	$42,602	$42,602	$42,602
Unit Cost ($/acft)	$678	$678	$58	$58	$58	$58
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	250	1,100	700	300	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.4.9 Irrigation

Burleson County Irrigation is supplied by Carrizo, Yegua-Jackson and Brazos River Alluvium groundwater and from run-of-river diversion rights from the Brazos River. No shortages are projected for irrigation and no changes in water supply are recommended.

5.4.10 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

5.5 Callahan County Water Supply Plan

Table 5.5-1 lists each water user group in Callahan County and their corresponding surplus or shortage in years 2040 and 2070. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections.

Table 5.5-1. Callahan County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)1		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Baird	80	81	Projected surplus
City of Clyde	261	257	Projected surplus
Coleman County SUD	(16)	(18)	Projected shortage
City of Cross Plains	223	217	Projected surplus
Potosi WSC			See Taylor County for Plan
County-Other	20	9	Projected surplus
Manufacturing	0	0	No projected demand
Steam-Electric	0	0	No projected demand
Mining	(214)	(180)	Projected shortage
Irrigation	188	214	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-9 and C-10, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.5.1 City of Baird

Description of Supply

The City of Baird obtains its water supply from surface water supplied from Lake Baird and from the City of Abilene. From 2020 through 2070, the City's contractual purchase from the City of Abilene is 77 acft/yr and the total amount of surface water availability from Lake Baird is 230 acft/yr. Baird also receives reuse water from the City of Clyde in trade for potable water. Supplies are sufficient to meet demands through 2070. Conservation is recommended to reduce the City's gallons per capita per day (gpcd) in 2020 to a goal of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended for the City of Baird. Associated costs are included for each strategy.

a. Conservation:

- Cost Source: Volume II, Section 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $3,173 in 2020
- Unit Cost: $496/acft

Table 5.5-2. Recommended Plan Costs by Decade for the City of Baird

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*66*	*74*	*80*	*81*	*81*	*81*
Conservation						
Supply from Plan Element (acft/yr)	6	—	—	—	—	—
Annual Cost ($/yr)	$3,173	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*72*	*74*	*80*	*81*	*81*	*81*

5.5.2 City of Clyde

The City of Clyde uses surface water from local sources which is projected to supply 500 acft/yr from 2020 through 2070. Clyde also has a contractual purchase plan of 307 acft/yr from the City of Abilene that can cover the city's projected demands. Clyde also has an arrangement with the City of Baird to receive potable water in trade for reuse water. No current or future shortages are projected. Clyde also has contractual sales to Eula WSC of 221 acft/yr through 2070. Clyde has recently acquired a 2,500 acft/yr water right for supplies from Fort Phantom Hill Reservoir; however, the full amount of the water right is not firm and supply will be less than 2,500 acft/yr. In addition, this supply cannot be applied until infrastructure is in place to deliver and treat the water. No change in water supply is recommended. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.5.3 Coleman County SUD

Description of Supply

Coleman County SUD obtains its water supply from the City of Coleman via Lake Brownwood in Region F. Shortages are projected beginning in 2020. This WUG is located in multiple counties (Callahan and Taylor). The values shown in Table 5.5-1 represent the cumulative totals for Coleman County WSC in these two counties.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, and in coordination with Region F, the following water supply plan is recommended for Coleman County SUD. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Subordination Lake Coleman (Region F):

- Cost Source: 2016 Region F Water Plan
- Date to be Implemented: 2020
- Total Project Cost: no cost
- Unit Cost: none

Table 5.5-3. Recommended Plan Costs by Decade for the City of Baird

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(16)*	*(16)*	*(16)*	*(16)*	*(17)*	*(18)*
Conservation						
Supply from Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(16)*	*(16)*	*(16)*	*(16)*	*(17)*	*(18)*
Subordination Lake Coleman (Region F)						
Supply from Plan Element (acft/yr)	17	18	18	18	18	18
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

5.5.4 City of Cross Plains

Description of Supply

The City of Cross Plains uses locally available groundwater for all of its water supply and a surplus is projected. Conservation is recommended to reduce the City's gpcd between 2020 and 2070 to a goal of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended for the City of Cross Plains. Associated costs are included for each strategy.

a. Conservation:

- Cost Source: Volume II, Section 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $4,750 in 2020
- Unit Cost: $496/acft

Table 5.5-4. Recommended Plan Costs by Decade for the City of Cross Plains

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*232*	*225*	*223*	*220*	*218*	*217*
Conservation						
Supply from Plan Element (acft/yr)	5	10	5	5	5	4
Annual Cost ($/yr)	$2,369	$4,750	$2,631	$2,486	$2,311	$2,029
Projected Surplus/(Shortage) after Conservation (acft/yr)	*236*	*234*	*228*	*225*	*222*	*221*

5.5.5 County-Other

The water supply entities comprising County-Other mostly rely on groundwater systems and show a projected surplus. Currently there is a contractual purchase of 61 acft/yr through 2070 from the City of Abilene to Eula WSC. No changes in water supply are recommended for Callahan County-Other. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.5.6 Manufacturing

No Manufacturing demand exists or is projected for the county.

5.5.7 Steam-Electric

No Steam-Electric demand exists or is projected for the county.

5.5.8 Mining

Description of Supply

Mining activities are projected to increase in Callahan County requiring local water management strategies to meet the projected water demand. Conservation is recommended to reduce the Mining demand between 2020 and 2070. Available Trinity Aquifer supplies in Callahan County will also be used to meet the projected demands.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended for Mining in Callahan County. Associated costs are included for each strategy.

a. Conservation:

- Cost Source: Volume II, Section 2
- Date to be Implemented: before 2020
- Annual Cost: not determined

b. Trinity Groundwater:

- Cost Source: Volume II, Section 12
- Date to be Implemented: before 2020
- Project Cost: $1,695,000
- Annual Cost: maximum of $155,732 in 2020

Table 5.5-5. Recommended Plan Costs by Decade for the Callahan County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(228)*	*(227)*	*(214)*	*(201)*	*(190)*	*(180)*
Conservation						
Supply from Plan Element (acft/yr)	7	11	15	14	13	13
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(221)*	*(216)*	*(199)*	*(187)*	*(177)*	*(167)*
Trinity Groundwater						
Supply from Plan Element (acft/yr)	221	216	199	187	177	167
Annual Cost ($/yr)	$155,732	$155,732	$13,732	$13,732	$13,732	$13,732
Unit Cost ($/acft)	$692	$692	$61	$61	$61	$61

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.5.9 Irrigation

Irrigation water use shows a projected surplus and no changes in water supply are recommended.

5.5.10 Livestock

No Livestock shortage exists or is projected for the county.

This page intentionally left blank.

5.6 Comanche County Water Supply Plan

Table 5.6-1 lists each water user group in Comanche County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.6-1. Comanche County Surplus/(Shortage)

Comanche County Surplus/(Shortage) Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Comanche	147	38	Projected surplus
City of De Leon	85	42	Projected surplus
County Other	(135)	(183)	Projected shortage – see plan below
Manufacturing	0	0	Demand equals supply
Steam-Electric	0	0	No projected demand
Mining	(337)	(102)	Projected shortage – see plan below
Irrigation	(1,823)	(968)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-11 and C-12, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.6.1 City of Comanche

The City of Comanche receives its water from the Upper Leon MWD (Lake Proctor surface water), which has an agreement to meet Comanche's water needs. Therefore, no shortage is projected for the City of Comanche and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.6.2 City of De Leon

The City of DeLeon receives its water from the Upper Leon MWD (Lake Proctor surface water), which has an agreement to meet DeLeon's water needs. Therefore, no shortage is projected for the City of DeLeon and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.6.3 County-Other

Description of Supply

The water supply entities for County-Other show a projected shortage from 2020 through 2070. Currently water supplies are provided from locally available Trinity Aquifer and contract purchases from Upper Leon MWD. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for County-Other. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: before 2020
- Unit Cost: $496/acft
- Annual Cost: maximum of $22,670 in 2030

b. Trinity Aquifer Development

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2020
- Project Cost: $2,033,000
- Unit Cost: $924/acft

Table 5.6-2. Recommended Plan Costs by Decade for Comanche County-Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(149)*	*(144)*	*(135)*	*(144)*	*(163)*	*(183)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*(149)*	*(144)*	*(135)*	*(144)*	*(163)*	*(183)*
Trinity Aquifer Development						
Supply From Plan Element (acft/yr)	161	161	161	161	242	242
Annual Cost ($/yr)	$149,000	$149,000	$36,000	$36,000	$110,000	$110,000
Unit Cost ($/acft)	$924	$924	$223	$223	$455	$455

5.6.4 Manufacturing

Comanche County Manufacturing demand is met with supplies from City of Comanche. No shortages are projected and no changes in water supply are recommended.

5.6.5 Steam-Electric

There is no projected demand for Comanche County Steam-Electric.

5.6.6 Mining

Description of Supply

Mining operations in Comanche County are supplied by limited amounts of Trinity Aquifer groundwater. Supply shortages are expected for Mining beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Comanche County-Mining (Table 5.6-3). Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Section 2
   - Date to be Implemented: before 2020
   - Annual Cost: not determined

b. Trinity Aquifer Development
   - Cost Source: Volume II, Section 12
   - Date to be Implemented: before 2020
   - Project Cost: $4,475,000
   - Unit Cost: Max of $871/acft (2020)

Table 5.6-3. Recommended Plan Costs by Decade for Comanche County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(418)*	*(499)*	*(337)*	*(250)*	*(162)*	*(102)*
Conservation						
Supply From Plan Element (acft/yr)	14	26	26	19	13	9
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(404)*	*(473)*	*(311)*	*(230)*	*(149)*	*(93)*
Trinity Aquifer Development						
Supply From Plan Element (acft/yr)	404	473	311	320	149	93
Annual Cost ($/yr)	$411,796	$411,796	$36,796	$36,796	$36,796	$36,796
Unit Cost ($/acft)	$871	$871	$78	$78	$78	$78

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.6.7 Irrigation

Description of Supply

Comanche County Irrigation is supplied by Trinity Aquifer groundwater, run of the river water rights and BRA contracts. More than 10,000 acft/yr of irrigation water rights are not available during drought of record conditions. Irrigation is projected to have shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Comanche County-Irrigation (Table 5.6-4). Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Section 2
   - Date to be Implemented: before 2020
   - Annual Cost: $230/acft

b. Groundwater Development – Trinity Aquifer
   - Cost Source: Volume II, Section 12
   - Date to be Implemented: before 2020
   - Project Cost: $11,015,000
   - Unit Cost: $1,666/acft

Table 5.6-4. Recommended Plan Costs by Decade for Comanche County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(893)*	*(1,962)*	*(1,823)*	*(463)*	*(757)*	*(968)*
Conservation						
Supply From Plan Element (acft/yr)	824	1,359	1,883	1,863	1,844	1,825
Annual Cost ($/yr)	$189,460	$312,513	$432,993	$428,534	$424,106	$419,824
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(69)*	*(603)*	*60*	*1,400*	*1,087*	*857*
Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	69	603	—	—	—	—
Annual Cost ($/yr)	$1,004,806	$1,004,806	—	—	—	—
Unit Cost ($/acft)	$1,666	$1,666	—	—	—	—

5.6.8 Livestock

No shortages are projected for Comanche County Livestock and no changes in water supply are recommended.

5.7 Coryell County Water Supply Plan

Table 5.7-1 lists each water user group in Coryell County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.7-1. Coryell County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1] 2040 (acft/yr)	2070 (acft/yr)	Comment
City of Copperas Cove	3,593	1,203	Projected surplus
Coryell City Water Supply District	255	241	Projected surplus
Elm Creek WSC			See Bell County
Fort Hood			See Bell County
City of Gatesville	(1,406)	(3,995)	Projected shortage – see 5.38
Kempner WSC			See Lampasas County
Multi-County WSC	(151)	(248)	Projected shortage – see plan below
County-Other	234	(515)	Projected shortage – see plan below
Manufacturing	0	0	Demand equals supply
Steam-Electric	0	0	Demand equals supply
Mining	(491)	(437)	Projected shortage – see plan below
Irrigation	566	566	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-13 and C-14, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.7.1 City of Copperas Cove

The City of Copperas Cove contracts for treated surface water from Bell County WCID No.1 and currently reuses a portion of its supply for non potable uses. No shortages are projected for the City of Copperas Cove and no changes in water supply are recommended. Kempner WSC also has service area within the city limits and therefore shows a portion of supply to the City of Copperas Cove. This city is located in Coryell and Lampasas Counties. The quantity shown in Table 5.7-1 represents the cumulative totals for the City of Copperas Cove. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.7.2 Coryell City Water Supply District

Description of Supply

Coryell City Water Supply District holds a contract for supply from BRA treated by the City of Gatesville to meet demands. No shortages are projected for Coryell City Water

Supply District and no changes in water supply are recommended. This WUG is located in Coryell and McLennan Counties. The quantity shown in Table 5.7-1 represents the cumulative totals for Coryell City Water Supply District.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the Coryell City Water Supply District.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $15,850 in 2020
- Unit Cost: $470/acft

Table 5.7-2. Recommended Plan Costs by Decade for Coryell City Water Supply District

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*234*	*245*	*255*	*250*	*247*	*241*
Conservation						
Supply From Plan Element (acft/yr)	34	21	9	1	—	—
Annual Cost ($/yr)	$15,850	$9,955	$4,240	$470	—	—
Projected Surplus/(Shortage) after Conservation	*268*	*266*	*264*	*251*	*247*	*241*

5.7.3 City of Gatesville

The City of Gatesville is projected to have a shortage through the year 2070. Refer to Chapter 5.38 for Gatesville's plan as a Wholesale Water Provider.

5.7.4 Multi-Country WSC

Description of Supply

Multi-County WSC contracts for treated surface water from the City of Hamilton. This WUG is located in Coryell and Hamilton Counties. The quantity shown in Table 5.7-1 represents the cumulative totals for Multi-County WSC.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the Multi-County WSC. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Purchase additional water from City of Hamilton
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Unit Cost: assumed $250/acft
   - Annual Cost: $25,000

b. Coryell County Off-Channel Reservoir
   - Cost Source: Volume II, Chapter 4.3
     - Strategy potentially dependent on BRA securing System Operations permit from TCEQ
   - Date to be Implemented: 2030
   - Project Cost: $42,246,000
   - Unit Cost: $1,405/acft

Table 5.7-3. Recommended Plan Costs by Decade for Multi-County WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(99)*	*(122)*	*(151)*	*(179)*	*(213)*	*(248)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*(99)*	*(122)*	*(151)*	*(179)*	*(213)*	*(248)*
Purchase from City of Hamilton						
Supply From Plan Element (acft/yr)	100	100	—	—	—	—
Annual Cost ($/yr)	$25,000	$25,000	—	—	—	—
Unit Cost ($/acft)	$250	$250	—	—	—	—
Coryell County Off-Channel Reservoir						
Supply From Plan Element (acft/yr)	—	3,135	3,135	3,135	3,135	3,135
Annual Cost ($/yr)	—	$4,405,000	$4,405,000	$3,194,000	$3,194,000	$1,463,000
Unit Cost ($/yr)	—	$1,405	$1,405	$1,019	$1,019	$467

5.7.5 County-Other

Description of Supply

Water supply for county-other entities is obtained from Trinity Aquifer groundwater and a treated surface water contract with the City of Gatesville. Shortages are projected for Coryell County-Other starting by 2020. Local officials have requested that the Coryell County Reservoir be evaluated and recommended as a water management strategy to meet future needs in Coryell County. The project would likely be developed in cooperation with the Brazos River Authority. Some users included in Coryell County-Other receive water from BRA contracts.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the entities in Coryell County-Other. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Groundwater Development – Trinity Aquifer
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2050
   - Project Cost: $4,428,000
   - Unit Cost: Max of $931/acft (2050)

b. Alternative: Purchase from Gatesville (Coryell County OCR)
   - Cost Source: Volume II, Chapter 4.3
     - Strategy potentially dependent on BRA securing System Operations permit from TCEQ
   - Date to be Implemented: 2050
   - Project Cost: N/A
   - Unit Cost: $1,309/acft

Table 5.7-4. Recommended Plan Costs by Decade for Coryell County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*870*	*594*	*234*	*(93)*	*(171)*	*(515)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*870*	*594*	*234*	*(93)*	*(171)*	*(515)*
Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	—	—	—	100	200	525
Annual Cost ($/yr)	—	—	—	$488,806	$488,806	$136,806
Unit Cost ($/yr)	—	—	—	$931	$931	$261
Alternative: Purchase from Gatesville (Coryell County Off-Channel Reservoir)						
Supply From Plan Element (acft/yr)	—	—	—	100	200	525
Annual Cost ($/yr)	—	—	—	$130,900	$261,800	$687,225
Unit Cost ($/yr)	—	—	—	$1,309	$1,309	$1,309

5.7.6 Manufacturing

Coryell County Manufacturing holds a contract with Gatesville to meet needs. No shortage is projected and no changes in water supply are recommended.

5.7.7 Steam-Electric

Coryell County has no current or projected future demand for Steam-Electric; therefore, no recommendations have been made.

5.7.8 Mining

Description of Supply

Mining demand in Coryell County is projected to peak in 2020, and slowly decrease until 2070. There are no supplies allocated to Coryell County Mining. Shortages are projected beginning in 2020.

Recommended Strategy

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Coryell County-Mining. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: Not determined.

b. Groundwater Development – Trinity Aquifer
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: $20,220,000
   - Unit Cost: Max of $1,236/acft (2020)

Table 5.7-5. Recommended Plan Costs by Decade for Coryell County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,510)*	*(1,072)*	*(491)*	*(363)*	*(398)*	*(437)*
Conservation						
Supply From Plan Element (acft/yr)	45	54	34	25	28	31
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(1,465)*	*(1,018)*	*(457)*	*(338)*	*(370)*	*(406)*

Table 5.7-5. Recommended Plan Costs by Decade for Coryell County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Groundwater Development - Trinity						
Supply From Plan Element (acft/yr)	1,500	1,500	500	500	500	500
Annual Cost ($/yr)	$1,853,751	$1,853,751	$159,751	$159,751	$159,751	$159,751
Unit Cost ($/acft)	$1,236	$1,236	$107	$107	$107	$107

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location.

5.7.9 Irrigation

No shortages are projected for Coryell County Irrigation and no changes in water supply are recommended.

5.7.10 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

5.8 Eastland County Water Supply Plan

Table 5.8-1 lists each water user group in Eastland County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.8-1. Eastland County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Cisco	236	237	Projected surplus
City of Eastland	2,565	2,575	Projected surplus
City of Gorman	75	59	Projected surplus
City of Ranger	1,575	1,578	Projected surplus
City of Rising Star	5	7	Projected surplus
Stephens Regional SUD			See Stephens County
County-Other	61	76	Projected surplus
Manufacturing	38	38	Projected surplus
Steam-Electric	0	0	No projected demand
Mining	(929)	(432)	Projected shortage – see plan below
Irrigation	(2,257)	(2,271)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-15 and C-16, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.8.1 City of Cisco

The City of Cisco uses surface water from Lake Cisco which has a 2070 safe yield of 1,075 acft/yr. Cisco also has a contract sale to supply water to Westbound WSC with 147 acft/yr through 2070. No shortages are projected for the City of Cisco and no changes in water supply are recommended.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Cisco.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Unit Cost: $496/acft
- Annual Cost: maximum of $33,426 in 2030

Table 5.8-2. Recommended Plan Costs by Decade for City of Cisco

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*223*	*224*	*236*	*241*	*240*	*237*
Conservation						
Supply From Plan Element (acft/yr)	23	67	52	44	42	42
Annual Cost ($/yr)	$11,463	$33,426	$25,675	$21,629	$20,637	$20,637
Projected Surplus/(Shortage) after Conservation	*246*	*291*	*288*	*285*	*282*	*279*

5.8.2 City of Eastland

The City of Eastland receives its surface water from a contract with Eastland County Water Supply District. This contract supplies 3,314 acft/yr through 2070. Eastland has contracts to supply water to Westbound WSC and City of Carbon for a total of 120 acft/yr through 2070. No shortages are projected for the City of Eastland and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.8.3 City of Gorman

The City of Gorman purchases treated water from Upper Leon River Municipal Water District and no current or future shortage is projected. Therefore, no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.8.4 City of Ranger

The City of Ranger is supplied with surface water from a contract with Eastland County Water Supply District. This contract is scheduled to supply 2,025 acft/yr through 2070. No shortages are projected for the City of Ranger and no changes in water supply are recommended.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Ranger.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Unit Cost: $496/acft
- Annual Cost: maximum of $22,670 in 2030

Table 5.8-3. Recommended Plan Costs by Decade for City of Ranger

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*1,562*	*1,565*	*1,575*	*1,577*	*1,578*	*1,578*
Conservation						
Supply From Plan Element (acft/yr)	15	46	39	37	36	36
Annual Cost ($/yr)	$7,293	$22,670	$19,331	$18,339	$17,843	$17,843
Projected Surplus/(Shortage) after Conservation	*1,577*	*1,611*	*1,614*	*1,614*	*1,614*	*1,614*

5.8.5 City of Rising Star

The City of Rising Star uses locally available Trinity Aquifer groundwater for its water supply. No shortages are projected for the City of Rising Star and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.8.6 County-Other

The water supply entities for County-Other show a projected surplus from 2020 through 2070. Currently contract purchases through 2070 exist with the City of Cisco (147 acft/yr), the City of Clyde (221 acft/yr), and Eastland County WSC through the City of Eastland (120 acft/yr). Entities in County-Other also rely on Trinity Aquifer groundwater to meet needs. No changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.8.7 Manufacturing

Eastland County Manufacturing is supplied with surface water from Lake Eastland and Lake Leon. Manufacturing shows a projected surplus and no changes in water supply is recommended.

5.8.8 Steam-Electric

No Steam-Electric demand exists or is projected for the county.

5.8.9 Mining

Description of Supply

Mining demand in Eastland County is projected to increase beginning in 2020, peak in 2030 and slowly decrease until 2070. Current groundwater allocations in Eastland County exceed the MAG and would not be available for Mining operations. Additional supplies for mining operations could be used from available Trinity Aquifer groundwater supplies in Erath County, which is adjacent to Eastland County and has a surplus of Trinity Aquifer groundwater.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Eastland County-Mining.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: not determined

b. Groundwater Development – Trinity Aquifer (Erath County)
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: $8,202,000
   - Unit Cost: Max of $560 in 2020

Table 5.8-4. Recommended Plan Costs by Decade for Eastland County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,164)*	*(1,173)*	*(929)*	*(714)*	*(518)*	*(432)*
Conservation						
Supply From Plan Element (acft/yr)	35	59	65	50	36	30
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(1,129)*	*(1,114)*	*(864)*	*(664)*	*(482)*	*(402)*
Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	1,150	1,150	900	700	500	500
Annual Cost ($/yr)	$758,354	$758,354	$70,354	$70,354	$70,354	$70,354
Unit Cost ($/acft)	$560	$560	$52	$52	$52	$52

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.8.10 Irrigation

Description of Supply

Eastland County Irrigation is supplied by Trinity Groundwater, and run of the river water rights. Irrigation has 2,255 acft/yr in run of river rights which are not available during a drought of record. Irrigation is projected to have shortages beginning in 2020. Current Irrigation needs in Eastland County exceed the MAG. Additional supplies needed are being accounted against the available Trinity Aquifer supplies in adjacent Erath County.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Eastland County-Irrigation.

a. Conservation
   - Cost Source: Volume II, Section 4B.2
   - Date to be Implemented: before 2020
   - Annual Cost: $230/acft

b. Groundwater Development – Trinity Aquifer (Erath County)
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: $24,210,000
   - Unit Cost: Max of $1,255/acft in 2020

Table 5.8-5. Recommended Plan Costs by Decade for Eastland County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,238)*	*(2,248)*	*(2,257)*	*(2,260)*	*(2,263)*	*(2,271)*
Conservation						
Supply From Plan Element (acft/yr)	205	341	479	479	479	480
Annual Cost ($/yr)	$47,051	$78,534	$110,076	$110,124	$110,172	$110,285
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(2,033)*	*(1,907)*	*(1,778)*	*(1,781)*	*(1,784)*	*(1,791)*
Groundwater Development – Trinity Aquifer (Erath County)						
Supply From Plan Element (acft/yr)	2,033	1,907	1,778	1,781	1,784	1,791
Annual Cost ($/yr)	$2,213,162	$2,213,162	$182,162	$182,162	$182,162	$182,162
Unit Cost ($/acft)	$1,089	$1,089	$90	$90	$90	$90

5.8.11 Livestock

All of the livestock demand for Eastland County is met with local water supplies. No strategy is necessary or recommended.

This page intentionally left blank.

5.9 Erath County Water Supply Plan

Table 5.9-1 lists each water user group in Erath County and their corresponding surplus or shortage in years 2040 and 2070.

Table 5.9-1. Erath County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Dublin	97	15	Projected surplus
City of Stephenville	3,086	2,286	Projected surplus
County-Other	291	(315)	Projected shortage
Manufacturing	0	1	Projected surplus
Steam-Electric	0	0	No projected demand
Mining	135	334	Projected shortage in 2030
Irrigation	825	1,088	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-17 and C-18, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.9.1 City of Dublin

The City of Dublin obtains its water supply from the Upper Leon Municipal Water District (Upper Leon MWD). The Upper Leon MWD has contracted for surface water from Lake Proctor and treats and delivers it to the City of Dublin. The City of Dublin and Upper Leon MWD have contracted for adequate quantities of water to provide a firm supply and meet Dublin's needs through the year 2070. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd. The City provides supply for Manufacturing and for County-Other.

5.9.2 City of Stephenville

The City of Stephenville obtains its water supply from groundwater from the Trinity Aquifer. The City also has a contract with Upper Leon MWD for 1,862 acft/yr of supplies from Lake Proctor. The City has recently purchase property and begun development of a well field for emergency supply. The City has adequate water supplies to meet their needs through the year 2070. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.9.3 County-Other

Description of Supply

The water supply entities comprising County-Other mostly rely on groundwater systems for water supply and show projected shortages beginning by 2060. Some surface water supplies are provided through the City of Dublin and City of Gordon. Available Trinity aquifer in Erath County will also be used to meet the projected demands.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended for the Erath County-Other. Associated costs are included for each strategy. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Groundwater Well Development:

- Cost Source: Volume II, Chapter 12.1
- Date to be Implemented: before 2060
- Project Cost: $1,463,000
- Annual Cost: maximum of $247,000 in 2070

Table 5.9-2. Recommended Plan Costs by Decade for Erath County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*692*	*477*	*291*	*93*	*(116)*	*(315)*
Conservation						
Supply from Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*692*	*477*	*291*	*93*	*(116)*	*(315)*
Groundwater Well Development						
Supply from Plan Element (acft/yr)	—	—	—	—	121	363
Annual Cost ($/yr)	—	—	—	—	$82,000	$247,000
Unit Cost ($/acft)	—	—	—	—	$678	$681

5.9.4 Manufacturing

Manufacturing is projected to have a surplus of water and no changes in water supply are recommended.

5.9.5 Steam-Electric

No Steam-Electric demand exists or is projected for the county.

5.9.6 Mining

Mining is projected to have a shortage in 2030 but a surplus of water in other decades from available groundwater supplies. Conservation will be applied as a recommended strategy to reduce the Mining demand in 2030.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended for Mining in Erath County:

a. Conservation:

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2030
- Annual Cost: not determined

Table 5.9-3. Recommended Plan Costs by Decade for the Erath County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*6*	*(25)*	*135*	*207*	*279*	*334*
Conservation						
Supply from Plan Element (acft/yr)	—	27	—	—	—	—
Annual Cost ($/yr)	—	ND	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*6*	*1*	*135*	*207*	*279*	*334*

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.9.7 Irrigation

Irrigation is projected to have a surplus of water from available groundwater and surface water supplies and no changes in water supply are recommended.

5.9.8 Livestock

No shortages are projected for Livestock use and no changes in water supply are recommended.

This page intentionally left blank.

5.10 Falls County Water Supply Plan

Table 5.10-1 lists each water user group in Falls County and their corresponding surplus or shortage in years 2040 and 2070. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections.

Table 5.10-1. Falls County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Bell-Milam Falls WSC			See Bell County for Plan
Bruceville-Eddy			See McLennan County for Plan
East Bell County WSC			See Bell County for Plan
City of Golinda	2	0	Projected surplus
City of Lott	161	161	Projected surplus
City of Marlin	930	872	Projected surplus– see plan below
City of Rosebud	430	425	Projected surplus
Tri-County SUD	(94)	(137)	Projected shortage – see plan below
West Brazos WSC	(173)	(216)	Projected shortage – see plan below
County-Other	90	68	Projected surplus
Manufacturing	(1)	(1)	Projected shortage – see plan below
Steam-Electric	0	0	No projected demand
Mining	(259)	(331)	Projected shortage – see plan below
Irrigation	2,478	2,847	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-19 and C-20, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.10.1 City of Golinda

The City of Golinda is in both Falls and McLennan County. There are three water providers that have service area within the city limits including Golinda WSC, Sudduth Water Systems and West Brazos WSC. Some exempt well use is estimated within the City. No change in water supply is recommended. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.10.2 City of Lott

The City of Lott obtains its water supply from the Central Texas WSC, which treats and delivers water from Lake Stillhouse Hollow. The City of Lott has contracted with Central

Texas WSC for 234 acft/yr of supply, which exceeds its 2070 water demand of 73 acft/yr. No change in water supply is recommended. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.10.3 City of Marlin

Description of Supply

The City of Marlin obtains its water supply from surface water from local reservoirs and the Brazos River. The City owns and operates two existing reservoirs—Marlin City Lake and New Marlin Reservoir—that impound runoff from Big Sandy Creek. The City also owns water rights and authorizes diversion of 4,000 acft/yr from the Brazos River and has contracted with the Brazos River Authority for 1,200 acft/yr from the BRA System. Currently, the City utilizes surface water from the two existing reservoirs as its primary supply and diverts water from Brazos River only in an emergency to supplement the supply in the two existing reservoirs.

Water Supply Plan

The supplies projected are adequate to meet the City's water demand through 2070. Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended for the City of Marlin. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020 – use rate exceeds 140 gpcd
- Annual Cost: maximum of $355,000 in 2070
- Unit Cost: $474/acft

b. Brushy Creek Reservoir (Volume II, Chapter 4.1)

- Cost Source: Volume II, Chapter 4.1
- Date to be Implemented: 2020
- Total Project Cost: $20,836,000
- Annual Cost: $1,743,000 (includes NRCS share of project)

Table 5.10-2. Recommended Plan Costs by Decade for the City of Marlin

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*979*	*923*	*930*	*978*	*927*	*872*
Conservation						
Supply From Plan Element (acft/yr)	86	226	357	480	619	756
Annual Cost ($/yr)	$40,333	$105,891	$167,336	$225,048	$290,278	$354,582
Projected Surplus/(Shortage) after Conservation (acft/yr)	*1,065*	*1,149*	*1,287*	*1,458*	*1,546*	*1,628*
Brushy Creek Reservoir						
Supply From Plan Element (acft/yr)	1,450	1,450	1,450	1,450	1,450	1,450
Annual Cost ($/yr)	$697,000	$697,000	$296,000	$296,000	$141,000	$141,000
Unit Cost ($/acft)	$481	$481	$204	$204	$97	$97

5.10.4 City of Rosebud

The City of Rosebud obtains its water supply from the Central Texas WSC, which treats and delivers water from Lake Belton. The City of Rosebud has contracted with Central Texas WSC for 500 acft/yr of supply and from BRA for 100 act/yr, which exceeds its 2070 projected water demand of 175 acft/yr. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd. No change in water supply is recommended.

5.10.5 Tri-County SUD

Description of Supply

Tri-County SUD obtains its water supply from the Trinity and Carrizo-Wilcox Aquifers, and does not have adequate water supplies to meet its projected water demands. This WUG is located in multiple counties (Limestone, McLennan, Robertson, and Falls). The needs shown in Table 5.10-1 represents the cumulative totals for Tri-County SUD in all counties it serves.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Tri-County SUD. Associated costs are included for each strategy. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Groundwater Development – Carrizo Wilcox Aquifer (Limestone Co):

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2020
- Project Cost: $1,445,000
- Annual Cost: maximum of $268,000 in 2020

Table 5.10-3. Recommended Plan Costs by Decade for Tri-County SUD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(82)*	*(93)*	*(94)*	*(92)*	*(114)*	*(137)*
Conservation						
Supply from Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(82)*	*(93)*	*(94)*	*(92)*	*(114)*	*(137)*
Groundwater Development – Carrizo Wilcox						
Supply from Plan Element (acft/yr)	202	202	202	202	202	202
Annual Cost ($/yr)	$268,000	$268,000	$147,000	$147,000	$147,000	$147,000
Unit Cost ($/acft)	$1,329	$1,329	$729	$729	$729	$729

5.10.6 West Brazos WSC

Description of Supply

This WUG is located in multiple counties (McLennan and Falls) and relies on Trinity Aquifer groundwater to meet demands. The Trinity Aquifer in Falls County has current pumping that exceeds the MAG. The shortages shown in Table 5.10-4 represent the cumulative totals for West Brazos WSC in both counties.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended to meet the projected shortage of West Brazos WSC. Associated costs are included for each strategy. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Groundwater Development – Carrizo Wilcox Aquifer:

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2020
- Project Cost: $2,752,000
- Unit Cost: maximum of $1,446 (2020)

Table 5.10-4. Recommended Plan Costs by Decade for West Brazos WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(157)*	*(167)*	*(173)*	*(178)*	*(197)*	*(216)*
Conservation						
Supply from Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(157)*	*(167)*	*(173)*	*(178)*	*(197)*	*(216)*
Groundwater Development – Carrizo Wilcox Aquifer						
Supply from Plan Element (acft/yr)	202	202	202	202	202	216
Annual Cost ($/yr)	$292,010	$292,010	$69,010	$69,010	$69,010	$69,010
Unit Cost ($/acft)	$1,446	$1,446	$342	$342	$342	$319

5.10.7 County-Other

Description of Supply

Various entities are dealing with elevated levels of arsenic in groundwater supplies and have been pursuing water management strategies through the FHLM WSC. Through a TWDB sponsored study coordinated by FHLM WSC, these entities have considered a regional brackish RO WTP in Limestone County, Carrizo-Wilcox Regional Groundwater in Limestone County, Tehuacana Reservoir, and supplies from City of Marlin (Brushy Creek Reservoir), and City of Waco. The recommended strategy is to provide for arsenic treatment for individual entities. This strategy does not provide new supply. Surpluses are projected through the year 2070. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for Falls County-Other.

a. Upgrade Treatment for Arsenic

Entities within County-Other for which Arsenic treatment is recommended include Moore WS.

- Cost Source: Volume II, Chapter 12.5
- Date to be Implemented: 2020
- Project Cost: $220,000
- Unit Cost: $2,177/acft

Table 5.10-5. Recommended Plan Costs by Decade for the Falls County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*89*	*81*	*90*	*105*	*87*	*68*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*89*	*81*	*90*	*105*	*87*	*68*
Upgrade Treatment for Arsenic						
Supply From Plan Element (acft/yr)	53	53	53	53	53	53
Annual Cost ($/yr)	$115,000	$115,000	$97,000	$97,000	$97,000	$97,000
Unit Cost ($/yr)	$2,177	$2,177	$1,830	$1,830	$1,830	$1,830

5.10.8 Manufacturing

Description of Supply

Manufacturing is projected to have a one acre foot need for water through the year 2070. The location for this manufacturing demand within the county has not been determined. The City of Marlin has the largest population of the WUGs in Falls County and has current supply and would be a likely location and water supplier for the manufacturing demand.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended to meet the projected shortage of Falls County Manufacturing. Associated costs are included for each strategy. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Purchase water from City of Marlin:

   - Cost Source: $4.67 per 1000 gal. Volume II, Chapter 12
   - Date to be Implemented: before 2020
   - Annual Cost: maximum of $1,522 in 2070

Table 5.10-6. Recommended Plan Costs by Decade for Falls County – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1)*	*(1)*	*(1)*	*(1)*	*(1)*	*(1)*
Conservation						
Supply from Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(1)*	*(1)*	*(1)*	*(1)*	*(1)*	*(1)*
Purchase from City of Marlin						
Supply from Plan Element (acft/yr)	1	1	1	1	1	1
Annual Cost ($/yr)	$1,522	$1,522	$1,522	$1,522	$1,522	$1,522
Unit Cost ($/acft)	$1,522	$1,522	$1,522	$1,522	$1,522	$1,522

5.10.9 Steam-Electric

No Steam-Electric demand exists or is projected for the county.

5.10.10 Mining

Description of Supply

Mining is projected to have a shortage of water through the year 2070. Conservation will be applied as a recommended strategy to reduce the Mining demand.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended to meet the projected shortage of Falls County Mining. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: Costs to implement conservation technologies will vary based on each location and have not been determined.

b. Reallocation from Falls County – Irrigation:

- Cost Source: Unknown – the exact location of the projected Mining demands in Falls County is unknown, but could logically be located near the supplies located in the county, and development of a cost is not feasible.
- Date to be Implemented: before 2020
- Annual Cost: not determined

Table 5.10-7. Recommended Plan Costs by Decade for Falls County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage)	*(225)*	*(246)*	*(259)*	*(286)*	*(307)*	*(331)*
Conservation						
Supply from Plan Element (acft/yr)	7	12	18	20	21	23
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(218)*	*(234)*	*(241)*	*(266)*	*(286)*	*(308)*
Reallocation of Supplies from Falls County Irrigation						
Supply from Plan Element (acft/yr)	218	234	241	266	286	308
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Unit Cost ($/acft)	ND	ND	ND	ND	ND	ND

ND – Not determined.

5.10.11 Irrigation

Irrigation is projected to have a surplus of water through the year 2070 and no changes in water supply are recommended.

5.10.12 Livestock

Livestock is projected to have a no additional need for water through the year 2060 and no changes in water supply are recommended.

5.11 Fisher County Water Supply Plan

Table 5.11-1 lists each water user group in Fisher County and their corresponding surplus or shortage in years 2040 and 2070. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections.

Table 5.11-1. Fisher County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Bitter Creek WSC			See Nolan County for Plan
City of Roby	268	270	Projected surplus
City of Rotan	(60)	(84)	Projected shortage – see plan below
County-Other	50	51	Projected surplus
Manufacturing	(79)	(159)	Projected shortage – see plan below
Steam-Electric	0	0	Demand equals supply
Mining	(359)	(238)	Projected shortage – see plan below
Irrigation	1,066	1,428	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-19 and C-20, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.11.1 City of Roby

Description of Supply

Water supplies are obtained from the Seymour Aquifer and the City of Sweetwater. No shortage is projected for the City of Roby throughout the planning period.

Water Supply Plan

The supplies projected are adequate to meet the City's water demand through 2070. Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Roby.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $7,133 in 2040
- Unit Cost: $496/acft

Table 5.11-2. Recommended Plan Costs by Decade for the City of Roby

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*263*	*266*	*268*	*269*	*270*	*270*
Conservation						
Supply From Plan Element (acft/yr)	5	13	14	13	12	12
Annual Cost ($/yr)	$2,460	$6,448	$6,944	$6,448	$5,952	$5,952
Projected Surplus/(Shortage) after Conservation (acft/yr)	*268*	*280*	*283*	*283*	*283*	*283*

5.11.2 City of Rotan

Description of Supply

The City of Rotan is currently purchasing water under contract from the City of Snyder. Shortages are projected by 2020. The city also provides supply for Manufacturing demand. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB and in coordination with Region F, the following water management strategies are recommended to meet water needs for the City of Rotan.

a. Water Supply from City of Snyder to meet Contract

- Cost Source: Costs applied to CRMWD to meet contracts (2016 Region F Water Supply Plan)
- Date to be Implemented: 2020
- Project Cost: none, existing infrastructure assumed sufficient
- Annual Cost: already contracted supplies

Table 5.11-3. Recommended Plan Costs by Decade for City of Rotan

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(89)*	*(50)*	*(60)*	*(67)*	*(76)*	*(84)*
Conservation						
Supply from Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(89)*	*(50)*	*(60)*	*(67)*	*(76)*	*(84)*
Water Supply from City of Snyder						
Supply from Plan Element (acft/yr)	89	50	60	67	76	84
Annual Cost ($/yr)	$0	$0	$0	$0	$0	$0
Unit Cost ($/acft)	$0	$0	$0	$0	$0	$0

5.11.3 County-Other

Entities in Fisher County-Other receive supplies from the Seymour Aquifer and are projected to have a surplus of water through the year 2070. No changes in water supply are recommended. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.11.4 Manufacturing

Description of Supply

Manufacturing obtains most of its supply from the Dockum Aquifer in combination with minimal supplies from Hamlin and Rotan. Manufacturing is projected to have a shortage of water through the year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended to meet the projected shortage for Fisher County Manufacturing.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: not determined

b. Groundwater Development - Dockum Aquifer (Brackish)

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $10,081,000
- Unit Cost: Max of $14,040 (2020)

Table 5.11-3. Recommended Plan Costs by Decade for Fisher County – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(20)*	*(50)*	*(79)*	*(105)*	*(131)*	*(159)*
Conservation						
Supply from Plan Element (acft/yr)	7	13	20	22	24	25
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(14)*	*(38)*	*(59)*	*(84)*	*(108)*	*(134)*
Groundwater Development - Dockum Aquifer (Brackish)						
Supply from Plan Element (acft/yr)	50	50	140	140	140	140
Annual Cost ($/yr)	$702,011	$702,011	$1,517,030	$1,517,030	$1,066,030	$1,066,030
Unit Cost ($/acft)	$14,040	$14,040	$10,836	$10,836	$7,614	$7,614

ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location and have not been determined.

5.11.5 Steam-Electric

No Steam-Electric demand exists nor is projected for the county.

5.11.6 Mining

Description of Supply

Mining is projected to have a shortage of water through the year 2070. Conservation will be applied as a recommended strategy to reduce the Mining demand.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected shortage of Fisher County Mining.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: Costs to implement industrial conservation technologies will vary based on each location and have not been determined.

b. Groundwater Development - Dockum Aquifer (Brackish)

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $3,035,000
- Unit Cost: Max of $696/acft (2020)

Table 5.11-4. Recommended Plan Costs by Decade for Fisher County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(407)*	*(402)*	*(359)*	*(313)*	*(273)*	*(238)*
Conservation						
Supply from Plan Element (acft/yr)	12	20	25	22	19	17
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(395)*	*(382)*	*(334)*	*(291)*	*(254)*	*(221)*
Groundwater Development – Dockum Aquifer (Brackish)						
Supply from Plan Element (acft/yr)	400	400	400	400	400	400
Annual Cost ($/yr)	$278,431	$278,431	$23,431	$23,431	$23,431	$23,431
Unit Cost ($/acft)	$696	$696	$59	$59	$59	$59

ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location.

5.11.7 Irrigation

Irrigation uses water supplies from the Blaine and Seymour Aquifers and run-of-the river water rights. Irrigation in Fisher County is projected to have a surplus of water through the year 2070 and no change in water supply is recommended.

5.11.8 Livestock

Livestock is projected to have a no additional need for water through the year 2070 and no changes in water supply are recommended.

This page intentionally left blank.

5.12 Grimes County Water Supply Plan

Table 5.12-1 lists each water user group in Grimes County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.12-1.Grimes County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Dobbin-Plantersville WSC	154	101	Projected surplus
G&W WSC	0	0	Demand equals supply
City of Navasota	643	502	Projected surplus
Wickson Creek SUD			See Brazos County
County-Other	211	66	Projected surplus
Manufacturing	59	0	Projected surplus
Steam-Electric	(14,738)	(23,243)	Projected shortage – see plan below
Mining	(438)	(95)	Projected shortage – see plan below
Irrigation	585	585	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-23 and C-24, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.12.1 Dobbin-Plantersville WSC

Dobbin Plantersville WSC provides water supply in Grimes and Montgomery counties. The majority of the demand for the entity is in Montgomery County which is part of Region H. This section will only deal with the supply, demands and strategies that are within Grimes County and the Brazos G Area. Dobbin-Plantersville WSC obtains water supply in Grimes County from the Gulf Coast Aquifer and is projected to have a surplus of water through the year 2070. No changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.12.2 G&W WSC

G&W WSC provides water supply in Grimes and Waller counties. The majority of the demand for the entity is in Waller County which is part of Region H. This section will only deal with the supply, demands and strategies that are within Grimes County and the Brazos G Area. G & W WSC obtains water supply in Grimes County from the Gulf Coast Aquifer and supplies in Region H sufficient to meet its demands in Grimes County. No changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.12.3 City of Navasota

Description of Supply

The City of Navasota obtains its water supply from groundwater from the Gulf Coast Aquifer. The existing production capacity of the wells and groundwater availability is adequate to supply the needs of the City of Navasota through the year 2070. The city provides a portion of supply to Grimes County Manufacturing.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for City of Navasota.

a. Conservation:

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: $110,000 in 2070
- Unit Cost: $470/acft

Table 5.12-2. Recommended Plan Costs by Decade for City of Navasota

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*661*	*650*	*643*	*623*	*572*	*502*
Conservation						
Supply From Plan Element (acft/yr)	55	158	238	229	231	235
Annual Cost ($/yr)	$26,000	$74,000	$112,000	$107,000	$109,000	$110,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*716*	*807*	*881*	*851*	*803*	*737*

5.12.4 County-Other

Entities comprising Grimes County-Other obtain water supply from groundwater in the county. County-Other entities are projected to have a surplus of supply through 2070. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.12.5 Manufacturing

Description of Supply

Water supplies for manufacturing in Grimes County is obtained from nearby WUGs, run of river water rights, and Gulf Coast Aquifer wells operated by the manufacturing entity. Manufacturing is projected to have a shortage of water beginning in the year 2060.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet water needs for Grimes County Manufacturing.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2060
- Annual Cost: not determined

Table 5.12-3 Recommended Plan Costs by Decade for Grimes County – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*154*	*107*	*59*	*17*	*(0)*	*(0)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	38	41
Annual Cost ($/yr)	—	—	—	—	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*154*	*107*	*59*	*17*	*38*	*41*

5.12.6 Steam-Electric

Description of Supply

Grimes County Steam-Electric obtains water supply Gibbons Creek Reservoir, Lake Livingston, reuse supplies from the City of Huntsville, and groundwater from the Gulf Coast Aquifer. Grimes County Steam-Electric is projected to have shortages beginning in year 2020 and continuing through year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Grimes County Steam-Electric.

a. Conservation:

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: Not determined

b. Gibbons Creek Reservoir Expansion:

- Cost Source: Volume II, Chapter 7.4
- Date to be Implemented: 2020
- Total Project Cost: $12,979,000

- Unit Cost: $359/acft

c. Purchase reuse water from the Cities of College Station and Bryan:
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: none
   - Unit Cost: $304/acft

d. Groundwater Development – Gulf Coast Aquifer
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: $22,459,000
   - Unit Cost: Max of $423/acft (2020)

e. Groundwater Development – Brackish Carrizo-Wilcox Aquifer
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: $8,182,000
   - Unit Cost: Max of $2,971/acft/yr (2020)

Table 5.12-4. Recommended Plan Costs by Decade for Grimes County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/ (Shortage) (acft/yr)	*(11,666)*	*(13,152)*	*(14,738)*	*(16,825)*	*(19,911)*	*(23,243)*
Conservation						
Supply From Plan Element (acft/yr)	953	1,658	2,426	2,566	2,776	3,003
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/ (Shortage) after Conservation (acft/yr)	*(10,713)*	*(11,494)*	*(12,312)*	*(14,259)*	*(17,135)*	*(20,239)*
Reuse Supply from Bryan and College Station						
Supply From Plan Element (acft/yr)	1,529	2,310	3,128	5,075	7,951	11,056
Annual Cost ($/yr)	$464,816	$702,240	$950,912	$1,542,800	$2,417,104	$3,361,024
Unit Cost ($/acft)	$304	$304	$304	$304	$304	$304
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(8,841)*	*(8,841)*	*(8,841)*	*(8,841)*	*(8,841)*	*(8,840)*
Gibbons Creek Reservoir Expansion						
Supply From Plan Element (acft/yr)	2,605	2,605	2,605	2,605	2,605	2,605
Annual Cost ($/yr)	$934,000	$934,000	$934,000	$934,000	$125,000	$125,000
Unit Cost ($/acft)	$359	$359	$359	$359	$48	$48

Table 5.12-4. Recommended Plan Costs by Decade for Grimes County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
Groundwater Development – Gulf Coast						
Supply From Plan Element (acft/yr)	6,236	6,236	6,236	6,236	6,236	6,236
Annual Cost ($/yr)	$2,639,903	$2,639,903	$895,903	$895,903	$895,903	$895,903
Unit Cost ($/acft)	$423	$423	$144	$144	$144	$144
Groundwater Development – Carrizo Wilcox						
Supply From Plan Element (acft/yr)	343	343	343	343	343	343
Annual Cost ($/yr)	$1,018,979	$1,018,979	$350,979	$350,979	$350,979	$350,979
Unit Cost ($/acft)	$2,971	$2,971	$1,023	$1,023	$1,023	$1,023

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location.

5.12.7 Mining

Description of Supply

Mining operations in Grimes County are supplied by groundwater from the Gulf Coast Aquifer. Demands for Mining are projected to increase resulting in shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Grimes County-Mining.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: not determined

b. Groundwater Development - Carrizo Wilcox Aquifer
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: $5,805,000
   - Unit Cost: Max of $1,764 /acft (2020)

Table 5.12-5. Recommended Plan Costs by Decade for Grimes County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(290)*	*(569)*	*(438)*	*(307)*	*(176)*	*(95)*
Conservation						
Supply From Plan Element (acft/yr)	10	30	33	24	15	9
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(281)*	*(539)*	*(405)*	*(284)*	*(162)*	*(86)*
Groundwater Development – Carrizo Wilcox						
Supply From Plan Element (acft/yr)	300	550	550	300	300	100
Annual Cost ($/yr)	$529,113	$881,856	$395,856	$71,856	$71,856	$71,856
Unit Cost ($/acft)	$1,764	$1,603	$720	$131	$131	$131

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.12.8 Irrigation

Grimes County Irrigation is projected to have a surplus of water through the year 2070. No changes in water supply are recommended.

5.12.9 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

5.13 Hamilton County Water Supply Plan

Table 5.13-1 lists each water user group in Hamilton County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.13-1. Hamilton County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Hamilton	137	52	Projected surplus
City of Hico	212	216	Projected surplus
County-Other	175	178	Projected surplus
Multi-County WSC			See Coryell County
Manufacturing	0	0	Demand equals supply
Steam-Electric	0	0	No projected demand
Mining	(89)	13	Projected shortage – see plan below
Irrigation	(61)	(6)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-25 and C-26, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.13.1 City of Hamilton

Description of Supply

The City of Hamilton obtains its water supply from Lake Proctor through the Upper Leon Municipal Water District with a contract for 921 acft/yr of supply. The City of Hamilton sells a portion of its supply to Multi-County WSC and to Manufacturing in Bosque County and Hamilton County. The City's available supply exceeds the 2070 demands.

Water Supply Plan

Although, the City has sufficient supplies, working within the planning criteria established by the Brazos G RWPG and TWDB, conservation is recommended as the current per capita use rate is above the selected target of 140 gpcd.

a. Conservation

- Cost Source: Volume II, Section 2
- Date to be Implemented: before 2020 – use rate exceeds 140 gpcd
- Unit Cost: $474/acft
- Annual Cost: $14,963 in 2030

Table 5.13-2. Recommended Plan Costs by Decade for City of Hamilton

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*140*	*136*	*137*	*88*	*75*	*52*
Conservation						
Supply From Plan Element (acft/yr)	18	32	20	14	13	13
Annual Cost ($/yr)	$8,434	$14,963	$9,275	$6,431	$5,957	$5,957
Projected Surplus/(Shortage) after Conservation (acft/yr)	*157*	*168*	*157*	*102*	*87*	*65*

5.13.2 City of Hico

The City of Hico obtains its water supply from groundwater from the Trinity Aquifer. The existing production capacity of the wells and groundwater availability is adequate to supply the needs of the City of Hico through the year 2070. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd. No change in water supply is recommended.

5.13.3 County-Other

Entities in Hamilton County-Other receive groundwater from the Trinity Aquifer. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd. No future shortages are projected and no changes in water supply are recommended.

5.13.4 Manufacturing

Hamilton County Manufacturing is supplied by City of Hamilton and Trinity groundwater. No future shortages are projected and no changes in water supply are recommended.

5.13.5 Steam-Electric

There is no projected water demand for Steam-Electric in Hamilton County.

5.13.6 Mining

Description of Supply

Mining operations in Hamilton County are supplied by Trinity Groundwater. Demands for Mining are projected to increase significantly resulting in shortages beginning in 2020.

Recommended Strategy

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following plan is recommended for Hamilton County Mining. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: not determined

b. Groundwater Development – Trinity Aquifer

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $2,734,000
- Unit Cost: Max of $680/acft (2020)

Table 5.13-3. Recommended Plan Costs by Decade for Hamilton County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(381)*	*(224)*	*(89)*	*13*	*13*	*13*
Conservation						
Supply From Plan Element (acft/yr)	12	12	7	—	—	—
Annual Cost ($/yr)	ND	ND	ND	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(369)*	*(212)*	*(81)*	*13*	*13*	*13*
Groundwater Well Development - Trinity						
Supply From Plan Element (acft/yr)	370	370	370	—	—	—
Annual Cost ($/yr)	$251,735	$251,735	$22,735	—	—	—
Unit Cost ($/acft)	$680	$680	$61	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.13.7 Irrigation

Description of Supply

Irrigation demands are currently met with Trinity groundwater and run of river rights. An increase of Irrigation demand is projected for Hamilton County and shortages are projected beginning in 2020.

Recommended Strategy

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following plan is recommended for Hamilton County Irrigation. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Unit Cost: $230/acft

b. Groundwater Development –Trinity Aquifer

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $1,173,000
- Unit Cost: Max of $1,779/acft (2020)

Table 5.13-4. Recommended Plan Costs by Decade for Hamilton County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(71)*	*(69)*	*(61)*	*(39)*	*(17)*	*(6)*
Conservation						
Supply From Plan Element (acft/yr)	16	25	34	33	32	30
Annual Cost ($/yr)	$3,680	$5,750	$7,820	$7,590	$7,360	$6,900
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(55)*	*(44)*	*(27)*	*(6)*	*15*	*24*
Groundwater Well Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	60	60	60	60	—	—
Annual Cost ($/yr)	$106,733	$106,733	$8,733	$8,733	—	—
Unit Cost ($/acft)	$1,779	$1,779	$146	$146	—	—

5.13.8 Livestock

Livestock water supply is projected to meet demands through 2070 and no change in water supply is recommended.

5.14 Haskell County Water Supply Plan

Table 5.14-1 lists each water user group in Haskell County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.14-1. Haskell County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Haskell	(193)	(442)	Projected shortage – see plan below
City of Rule	55	38	Projected surplus
City of Stamford			See Jones County
County-Other	198	67	Projected surplus
Manufacturing	0	0	Demand equals supply
Steam-Electric	1,738	1,480	Projected surplus
Mining	(83)	(59)	Projected shortage – see plan below
Irrigation	(3,197)	1,880	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-27 and C-28, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.14.1 City of Haskell

Description of Supply

Surface water supplies are obtained from a contract with North Central Texas Municipal Water Authority (NCTMWA). While the contract exceeds the City's projected demands, the current supplies from the NCTMWA are not sufficient to meet demands through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet the projected water shortage for the City of Haskell.

a. Millers Creek Reservoir Augmentation strategy by NCTMWA. This will provide supply at least up to the current amount contracted from NCTMWA.
   - Cost Source: Volume II, Chapter 7.5
     - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit

- Date to be Implemented: 2020
- Project Cost: none (cost would be borne by NCTMWA)
- Unit Cost: none (supply already purchased from NCTMWA)

b. Alternative: Lake Creek Reservoir. This strategy would be developed by NCTMWA to augment existing supplies.

- Cost Source: Volume II, Chapter 4.10
  - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
- Date to be Implemented: 2020
- Project Cost: none (cost would be borne by NCTMWA)
- Unit Cost: none (supply already purchased from NCTMWA)

Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.14-2. Recommended Plan Costs by Decade for City of Haskell

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(58)*	*(126)*	*(193)*	*(269)*	*(353)*	*(442)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(58)*	*(126)*	*(193)*	*(269)*	*(353)*	*(442)*
Millers Creek Reservoir Augmentation						
Supply From Plan Element (acft/yr)	176	254	332	410	488	566
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—
Alternative: Lake Creek Reservoir						
Supply From Plan Element (acft/yr)	176	254	332	410	488	566
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

5.14.2 City of Rule

Description of Supply

The City of Rule obtains supply from the Seymour Aquifer and from a 45 acft/yr contract with NCTMWA. Although supplies from NCTMWA have been reduced due to projected availability of supplies, the City's supplies are projected to be adequate to meet demands through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Rule. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Millers Creek Reservoir Augmentation strategy by NCTMWA. This will provide supply at least up to the current amount contracted from NCTMWA.
   - Cost Source: Volume II, Chapter 7.5
     - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
   - Date to be Implemented: 2020
   - Project Cost: none (cost would be borne by NCTMWA)
   - Unit Cost: none (supply already purchased from NCTMWA)

b. Alternative: Lake Creek Reservoir. This strategy would be developed by NCTMWA to augment existing supplies.
   - Cost Source: Volume II, Chapter 4.10
     - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
   - Date to be Implemented: 2020
   - Project Cost: none (cost would be borne by NCTMWA)
   - Unit Cost: none (supply already purchased from NCTMWA)

Table 5.14-3. Recommended Plan Costs by Decade for City of Rule

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*71*	*64*	*55*	*49*	*45*	*38*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*71*	*64*	*55*	*49*	*45*	*38*
Millers Creek Reservoir Augmentation						
Supply From Plan Element (acft/yr)	12	18	23	29	34	40
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

Table 5.14-3. Recommended Plan Costs by Decade for City of Rule

Plan Element	2020	2030	2040	2050	2060	2070
Alternative: Lake Creek Reservoir						
Supply From Plan Element (acft/yr)	12	18	23	29	34	40
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

5.14.3 County-Other

Description of Supply

Supplies for Haskell County other are obtained from the Seymour Aquifer and contract purchases from the City of Stamford and NCTMWA. Although supplies from NCTMWA have been reduced due to projected availability of supplies, County-Other supplies are projected to be adequate to meet demands through 2070. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for entities included in County-Other.

a. Millers Creek Reservoir Augmentation strategy by NCTMWA. This will provide supply at least up to the current amount contracted from NCTMWA.
    - Cost Source: Volume II, Chapter 7.5
        - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
    - Date to be Implemented: 2020
    - Project Cost: none (cost would be borne by NCTMWA)
    - Unit Cost: none (supply already purchased from NCTMWA)

b. Alternative: Lake Creek Reservoir. This strategy would be developed by NCTMWA to augment existing supplies.
    - Cost Source: Volume II, Chapter 4.10
    - Date to be Implemented: 2020
    - Project Cost: none (cost would be borne by NCTMWA)
    - Unit Cost: none (supply already purchased from NCTMWA)

Table 5.14-4. Recommended Plan Costs by Decade for Haskell County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*280*	*242*	*198*	*155*	*114*	*67*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*280*	*242*	*198*	*155*	*114*	*67*
Millers Creek Reservoir Augmentation						
Supply From Plan Element (acft/yr)	53	76	100	123	146	170
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—
Alternative: Lake Creek Reservoir						
Supply From Plan Element (acft/yr)	53	76	100	123	146	170
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

5.14.4 Manufacturing

No Manufacturing demand exists or is projected for the county.

5.14.5 Steam-Electric

Haskell County Steam-Electric has a contract with City of Stamford for water supply. Steam-Electric shows a projected surplus through 2070 and no changes in water supply are recommended.

5.14.6 Mining

Description of Supply

Mining operations in Haskell County are projected to have a need beginning in 2020.

Recommended Strategy

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Haskell County-Mining.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: not determined

b. Reallocation from Haskell County – Steam Electric (Stamford Supply):

- Cost Source: Capital cost unknown, as mining demands vary geographically.
- Date to be Implemented: 2020
- Unit Costs: $250/acft assumed

Table 5.14-5. Recommended Plan Costs by Decade for Haskell County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(93)*	*(92)*	*(83)*	*(74)*	*(66)*	*(59)*
Conservation						
Supply From Plan Element (acft/yr)	3	5	6	5	5	4
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(90)*	*(87)*	*(77)*	*(69)*	*(61)*	*(55)*
Reallocation from Haskell County – Steam Electric (Stamford Supply)						
Supply From Plan Element (acft/yr)	90	87	77	69	61	55
Annual Cost ($/yr)	$22,500	$21,750	$19,250	$17,250	$15,250	$13,750
Unit Cost ($/acft)	$250	$250	$250	$250	$250	$250

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.14.7 Irrigation

Description of Supply

Haskell County Irrigation is supplied by Seymour Groundwater. Irrigation is projected to have shortages beginning in 2020.

Recommended Strategy

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Haskell County-Irrigation.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: $230/acft

b. Reallocation from Haskell County – Steam Electric (Stamford Supply):

- Cost Source: Capital cost unknown, as Irrigation demands vary geographically.
- Date to be Implemented: 2020
- Unit Cost: assumed $250/acft

Table 5.14-6. Recommended Plan Costs by Decade for Haskell County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,225)*	*(2,388)*	*(3,197)*	*(1,065)*	*682*	*1,880*
Conservation						
Supply From Plan Element (acft/yr)	1,435	2,321	3,153	3,015	2,968	2,884
Annual Cost ($/yr)	$330,124	$533,853	$725,144	$693,459	$682,721	$663,433
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(790)*	*(67)*	*(44)*	*1,951*	*682*	*1,880*
Reallocation from Haskell County – Steam Electric (Stamford Supply)						
Supply From Plan Element (acft/yr)	790	67	44	—	—	—
Annual Cost ($/yr)	$197,500	$16,750	$11,000	—	—	—
Unit Cost ($/acft)	$250	$250	$250	—	—	—

5.14.8 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

This page intentionally left blank.

5.15 Hill County Water Supply Plan

Table 5.15-1 lists each water user group in Hill County and their corresponding surplus or shortage in years 2040 and 2070. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections. Water supply plans are also presented for some entities that need pumping/conveyance facilities to utilize their existing water resources, or to become a regional provider.

Table 5.15-1. Hill County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Brandon-Irene WSC[2]	93	50	Projected surplus
Files Valley WSC[2]	679	496	Projected surplus
City of Hillsboro	1,554	1,373	Projected surplus
City of Hubbard	(32)	(69)	Projected shortage – see plan below
City of Itasca	83	73	Projected surplus
Hill County WSC	415	375	Projected surplus
Johnson County SUD			See Johnson County for Plan
Parker WSC			See Johnson County for Plan
White Bluff Community WS	126	83	Projected surplus
City of Whitney	139	100	Projected surplus
Woodrow-Osceola WSC	217	184	Projected surplus
County-Other	247	63	Projected surplus
Manufacturing	0	0	Demand equals supply
Steam-Electric	0	0	No projected demand
Mining	223	477	Projected surplus
Irrigation	832	851	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-29 and C-30, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

2 – Balance includes totals from Brazos G and Region C.

5.15.1 Brandon-Irene WSC

Brandon-Irene WSC is located in Hill, Ellis and Navarro County, however most of its demand is located in Hill County. Brandon-Irene WSC obtains its water from the Trinity Aquifer and surface water through a contract with Aquilla WSD. The WSC also provides supply to the City of Bynum in Hill County. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Surpluses are projected through 2070 for Brandon Irene WSC, and no changes in water supply are recommended.

5.15.2 Files Valley WSC

Description of Supply

Files Valley WSC is located in Hill and Ellis (Region C) counties, however most of its demands is located in Hill County. The WSC has a contract for 1,709 acft/yr of treated surface water from Lake Aquilla through Aquilla Water Supply District. Files Valley WSC also provides water to Parker WSC and Milford. Balance and strategies represented in Table 5.15-2 are for the entire WSC in both counties and regions.

Water Supply Plan

Although the City has sufficient supplies, working within the planning criteria established by the Brazos G RWPG and TWDB and in coordination with Region C, the following plan is recommended to meet projected needs.

a. Conservation:

- Cost Source: 2016 Region C Water Plan (Appendix K)
- Date to be Implemented: 2020
- Project Cost: $2,010
- Unit Cost: $169/acft

b. Purchase Water from Waxahachie

- Cost Source: 2016 Region C Water Plan (Appendix K)
- Date to be Implemented: 2030
- Project Cost: $23,452,400
- Unit Cost: $570/acft

Table 5.15-2. Recommended Plan Costs by Decade for the Files Valley WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*618*	*722*	*679*	*625*	*564*	*496*
Conservation						
Supply From Plan Element (acft/yr)	1	2	2	3	5	7
Annual Cost ($/yr)	$169	$338	$0	$0	$0	$0
Projected Surplus/(Shortage) after Conservation (acft/yr)	*619*	*724*	*681*	*628*	*569*	*503*
Purchase Water from Waxahachie (Region C)						
Supply From Plan Element (acft/yr)	—	55	59	63	68	72
Annual Cost ($/yr)	—	$31,000	$34,000	$36,000	$39,000	$41,000
Unit Cost ($/acft)	—	$570	$570	$570	$570	$570

5.15.3 City of Hillsboro

Description of Supply

The City of Hillsboro purchases its water supply from the Aquilla WSD and has surpluses projected through 2070. No change in water supply is recommended.

Water Supply Plan

Although the City has sufficient supplies, working within the planning criteria established by the Brazos G RWPG and TWDB, conservation is recommended for the City as the current per capita use rate is above the selected target rate. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020 – use rate exceeds 140 gpcd
- Annual Cost: maximum of $245,040 in 2070
- Unit Cost: $474/acft

Table 5.15-3. Recommended Plan Costs by Decade for the City of Hillsboro

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*1,888*	*1,606*	*1,554*	*1,486*	*1,425*	*1,373*
Conservation						
Supply From Plan Element (acft/yr)	79	230	385	495	506	517
Annual Cost ($/yr)	$37,526	$109,198	$182,668	$234,424	$239,672	$245,040
Projected Surplus/(Shortage) after Conservation (acft/yr)	*1,968*	*1,836*	*1,939*	*1,981*	*1,931*	*1,890*

5.15.4 City of Hubbard

Description of Supply

The City of Hubbard obtains its water supply the Trinity Aquifer and from Lake Navarro Mills through the Post Oak Special Utility District (SUD). The Post Oak SUD purchases treated water from the City of Corsicana and delivers it to the City of Hubbard. The existing contractual arrangements and conveyance capacity of the system are adequate; however Corsicana's supplies are constrained causing a shortage on Hubbard.

Water Supply Plan

Although the City has sufficient supplies, working within the planning criteria established by the Brazos G RWPG and TWDB and in coordination with Region C, the following plan is recommended to meet projected needs. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Water Supply from Post Oak SUD

- Cost Source: 2016 Region C Water Plan (Appendix K)
- Date to be Implemented: 2030
- Project Cost: no cost to Hubbard
- Unit Cost: $570/acft

Table 5.15-4. Recommended Plan Costs by Decade for the City of Hubbard

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*29*	*(25)*	*(32)*	*(44)*	*(57)*	*(69)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*29*	*(25)*	*(32)*	*(44)*	*(57)*	*(69)*
Water Supply from Post Oak SUD (Region C)						
Supply From Plan Element (acft/yr)	—	25	32	44	57	69
Annual Cost ($/yr)	—	$14,000	$18,000	$25,000	$32,000	$39,000
Unit Cost ($/acft)	—	$570	$570	$570	$570	$570

5.15.5 City of Itasca

The City of Itasca obtains its water supply from the Trinity Aquifer. The production capacity of the wells and groundwater availability are adequate to supply the demands of the City of Itasca through the year 2070. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd. No change in water supply is recommended.

5.15.6 Hill County WSC

Hill County WSC obtains its water supply from the Trinity Aquifer and a surface water contract with Aquilla Water Supply District. The existing contract and production capacity of the wells and groundwater availability are adequate to supply the needs of the WSC through the year 2070. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd. No change in water supply is recommended.

5.15.7 White Bluff Community WS

Description of Supply

White Bluff Community WS obtains its water supply from the Trinity Aquifer. The existing production capacity of the wells and groundwater availability are adequate to supply the needs of the WUG through the year 2070.

Water Supply Plan

Although the WUG has sufficient supplies, working within the planning criteria established by the Brazos G RWPG and TWDB, conservation is recommended as the current per capita use rate is above the selected target rate. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd. Associated costs are included for each strategy.

a. Conservation:

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: By year 2020 - use rate exceeds 140 gpcd
- Annual Cost: maximum of $65,242 in 2070
- Unit Cost: $474/acft

Table 5.15-5. Recommended Plan Costs by Decade for White Bluff Community WS

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*166*	*142*	*126*	*109*	*95*	*83*
Conservation						
Supply From Plan Element (acft/yr)	24	63	103	125	128	132
Annual Cost ($/yr)	$12,066	$31,494	$50,907	$62,069	$63,646	$65,242
Projected Surplus/(Shortage) after Conservation (acft/yr)	*190*	*205*	*229*	*234*	*223*	*214*

5.15.8 City of Whitney

Description of Supply

The City of Whitney obtains its water supply from the Trinity Aquifer. The City of Whitney has also contracted with the Brazos River Authority for 750 acft/yr of supply from Lake Whitney; however, the City has not constructed the required infrastructure to utilize this supply. The production capacity of the City's existing wells and groundwater availability are adequate to supply the needs of the City of Whitney through the year 2070.

Water Supply Plan

Although the City has sufficient supplies, working within the planning criteria established by the Brazos G RWPG and TWDB, conservation is recommended as the current per capita use rate is above the selected target rate. Associated costs are included for each strategy.

a. Conservation:

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: By year 2020 - use rate exceeds 140 gpcd
- Annual Cost: maximum of $33,626 in 2070
- Unit Cost: $474/acft

Table 5.15-6. Recommended Plan Costs by Decade for City of Whitney

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*169*	*151*	*139*	*125*	*112*	*100*
Conservation						
Supply From Plan Element (acft/yr)	17	50	70	68	69	71
Annual Cost ($/yr)	$7,857	$23,644	$33,054	$32,182	$32,621	$33,626
Projected Surplus/(Shortage) after Conservation (acft/yr)	*185*	*201*	*209*	*193*	*181*	*171*

5.15.9 Woodrow-Osceola WSC

Woodrow-Osceola WSC obtains its water supply from the Trinity Aquifer. The existing production capacity of the wells and groundwater availability are adequate to supply the demands of the WSC through the year 2070. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd. No change in water supply is recommended.

5.15.10 County-Other

Description of Supply

Entities in Hill County-Other use Trinity Aquifer groundwater and surface water from Aquilla Water Supply District and Brandon-Irene WSC. The WUG is projected to have a surplus of water in the year 2070. Various entities are dealing with elevated levels of arsenic in groundwater supplies and have been pursuing water management strategies through the FHLM WSC. Through a TWDB sponsored study coordinated by FHLM WSC, these entities have considered a regional brackish RO WTP in Limestone County, Carrizo-Wilcox Regional Groundwater in Limestone County, Tehuacana Reservoir, and supplies from City of Marlin (Brushy Creek Reservoir), and City of Waco. The recommended strategy is to provide for arsenic treatment for individual entities. This strategy does not provide new supply.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following plan is recommended to meet projected needs. Associated costs are included for each strategy. Conservation was considered but the current per capita use is below the targeted gpcd of 140.

a. Upgrade Treatment for Arsenic

Entities within County-Other for which Arsenic treatment is recommended include Birome WSC and City of Mount Calm.

- Cost Source: Volume II, Chapter 12.5
- Date to be Implemented: 2020
- Project Cost: $1,042,000
- Unit Cost: $1,453/acft

Table 5.15-7. Recommended Plan Costs by Decade for Hill County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	492	297	247	185	124	63
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*492*	*297*	*247*	*185*	*124*	*63*
Upgrade Treatment for Arsenic						
Supply From Plan Element (acft/yr)	250	250	250	250	250	250
Annual Cost ($/yr)	$364,000	$364,000	$277,000	$277,000	$277,000	$277,000
Unit Cost ($/acft)	$1,453	$1,453	$1,108	$1,108	$1,108	$1,108

5.15.11 Manufacturing

Hill County Manufacturing is projected to have sufficient water supplies through the year 2070 and no changes in water supply are recommended.

5.15.12 Steam-Electric

No Steam-Electric demand exists nor is any projected for the county.

5.15.13 Mining

Description of Supply

Supplies for Mining in Hill County include groundwater and a BRA contract for 1,000 acre feet/yr for Western Company of Texas. Mining is projected to have shortages in 2020 – 2030.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following plan is recommended for Hill County Mining. Associated costs are included for each strategy.

a. Conservation:
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: not determined

b. Groundwater Development from the Woodbine Aquifer (Trinity Basin):
   - Cost Source: Volume II, Chapter 12.1
   - Date to be Implemented: By year 2020
   - Project Cost: $4,684,000
   - Unit Cost: $767/acft

Table 5.15-8. Recommended Plan Costs by Decade for Mining – Hill County

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(603)*	*(175)*	*223*	*579*	*529*	*477*
Conservation						
Supply From Plan Element (acft/yr)	49	60	—	—	—	—
Annual Cost ($/yr)	ND	ND	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(554)*	*(116)*	*223*	*579*	*529*	*477*
Groundwater Well Development						
Supply From Plan Element (acft/yr)	560	560	—	—	—	—
Annual Cost ($/yr)	$429,460	$429,460	—	—	—	—
Unit Cost ($/acft)	$767	$767	—	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.15.14 Irrigation

Irrigation is projected to have a surplus of water through the year 2070 and no changes in water supply are recommended.

5.15.15 Livestock

Livestock water supply is projected to meet demands through the year 2070 and no changes in water supply are recommended.

5.16 Hood County Water Supply Plan

Table 5.16-1 lists each water user group in Hood County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.16-1. Hood County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1] 2040 (acft/yr)	Surplus/(Shortage)[1] 2070 (acft/yr)	Comment
Acton MUD	1,731	(159)	Projected shortage – see plan below
City of Cresson[2]	(12)	(59)	Projected shortage – see plan below
City of Granbury	520	158	Projected surplus
Oak Trail Shores Subdivision	226	223	Projected surplus
City of Tolar	12	(19)	Projected shortage – see plan below
County-Other	(77)	193	Projected shortage – see plan below
Manufacturing	9,996	9,988	Projected surplus
Steam-Electric	35,602	27,133	Projected surplus
Mining	(998)	(833)	Projected shortage – see plan below
Irrigation	591	970	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-25 and C-26, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

2 – Balance is total between Brazos G and Region C for WUG.

5.16.1 Acton MUD

Description of Supply

The Acton MUD service area includes portions of Hood and Johnson Counties. Acton MUD obtains its water supply from groundwater from the Trinity Aquifer and a contract with the Brazos River Authority for water from Lake Granbury. Treated surface water is constrained by its allocated portion of the SWATS plant capacity, co-owned with Johnson County SUD through the Brazos Regional Public Utility Agency. The City of Granbury and Acton MUD are in the process of transferring Granbury's portion of the SWATS plant capacity to Acton MUD. The transfer will be completed in stages over several years. A shortage is projected for Acton MUD in 2070, caused by a need to increase its share of the SWATS plant. The surpluses and shortage shown in Table 5.16-1 represent the cumulative totals for Acton MUD in Hood and Johnson Counties.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for Acton MUD.

a. Reallocate SWATS Capacity:

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2070
- Project Cost: None
- Annual Cost: $552/acft for operation and maintenance

Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.16-2. Recommended Plan Costs by Decade for Acton MUD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*4,408*	*2,790*	*1,731*	*1,180*	*546*	*(159)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/ (Shortage) after Conservation (acft/yr	*4,408*	*2,790*	*1,731*	*1,180*	*546*	*(159)*
Reallocate SWATS Capacity						
Supply From Plan Element (acft/yr)	—	—	—	—	—	200
Annual Cost ($/yr)	—	—	—	—	—	$110,400
Unit Cost ($/acft)	—	—	—	—	—	$552

5.16.2 City of Cresson

Description of Supply

This WUG is located in Johnson, Hood and Parker (Region C) counties. The surplus/shortages shown in Table 5.16-1 represent the cumulative totals for the City of Cresson in Brazos G and Region C counties. Supplies for the City of Cresson are from the Trinity and Paluxy aquifers and are not adequate to meet the City's projected needs.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB and in coordination with Region C, the following water management strategies are recommended to meet the projected water shortage for City of Cresson.

a. Groundwater Development – Trinity Aquifer

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2040
- Project Cost: $771,000
- Unit Cost: Max of $1,556/acft/yr (2040)

Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.16-3. Recommended Plan Costs by Decade for City of Cresson

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	22	3	(12)	(27)	(44)	(59)
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/ (Shortage) after Conservation	22	3	(12)	(27)	(44)	(59)
Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	—	—	60	60	60	60
Annual Cost ($/yr)	—	—	$93,379	$93,379	$34,379	$34,379
Unit Cost ($/acft)	—	—	$1,556	$1,556	$573	$573

5.16.3 City of Granbury

The City of Granbury obtains its water supply from groundwater from the Trinity Aquifer and a contract with the Brazos River Authority for water from Lake Granbury. The City is in the process of constructing a new surface water treatment plant that is scheduled to be complete in 2017. The City has adequate supplies to meet its projected demands. Note that groundwater supply is constrained between 2040 and 2070 based on projected drawdowns in the Trinity Aquifer. Conservation was considered but the current per capita use is below the targeted gpcd of 140. No changes in water supply are recommended.

5.16.4 Oak Trail Shores Subdivision

Oak Trail Shores Subdivision receives supply from Trinity Aquifer groundwater and surface water through Monarch Utilities, which has a 600 acft/yr contract with the Brazos River Authority. The WUG treats the surface water through its 1 MGD WTP. Current supplies are sufficient to meet the WUG's projected demands. Conservation was considered but the current per capita use is below the targeted gpcd of 140. No change in water supply is recommended.

5.16.5 City of Tolar

Description of Supply

The City of Tolar receives supply from the Trinity Aquifer. Based on increased drawdown projected for the Trinity Aquifer, Tolar is projected to have shortages beginning in 2050.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet the projected water shortage for the City of Tolar.

a. Rehab Trinity Wells

- Cost Source: Volume II, Chapter 5.12
- Date to be Implemented: By year 2050
- Project Cost: $20,000
- Annual Cost: maximum of $2,200 in 2070

Alternative strategies considered to meet this need include purchase of treated water from the City of Granbury. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.16-4. Recommended Plan Costs by Decade for Hood County - Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*45*	*26*	*12*	*(1)*	*(11)*	*(19)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*45*	*26*	*12*	*(1)*	*(11)*	*(19)*
Rehab Trinity Wells						
Supply From Plan Element (acft/yr)	—	—	—	12	12	24
Annual Cost ($/yr)	—	—	—	$1,100	$1,100	$2,200
Unit Cost ($/acft)	—	—	—	$91	$91	$91

5.16.6 County-Other

Description of Supply

Entities in Hood County-Other receive groundwater from the Trinity Aquifer and surface water supplies through contracts with Acton MUD. Future population in County-Other is expected to decrease over time as those people begin to be served by retail water utilities. Shortages are projected only from 2020 through 2050.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet water needs for County-Other entities.

a. Trinity Aquifer Development
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2020
   - Project Cost: $6,164,000
   - Unit Cost: $703/acft

b. Alternative: Purchase Additional Supply from Acton MUD
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: NA
   - Unit Cost: $977/acft

Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.16-5. Plan Costs by Decade for Hood County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(968)*	*(344)*	*(77)*	*(121)*	*(22)*	*193*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/ (Shortage) after Conservation	*(968)*	*(344)*	*(77)*	*(121)*	*(22)*	*193*
Trinity Aquifer Development						
Supply From Plan Element (acft/yr)	968	968	968	968	968	968
Annual Cost ($/yr)	$680,500	$680,500	$542,000	$542,000	$542,000	$542,000
Unit Cost ($/acft)	$703	$703	$560	$560	$560	$560
Alternative: Purchase Additional Supply from Acton MUD						
Supply From Plan Element (acft/yr)	968	344	77	121	22	—
Annual Cost ($/yr)	$946,000	$336,000	$75,000	$118,000	$22,000	—
Unit Cost ($/acft)	$977	$977	$977	$977	$977	—

5.16.7 Manufacturing

Hood County Manufacturing is projected to have a surplus of water through the year 2070. No changes in water supply are recommended.

5.16.8 Steam-Electric

Steam-Electric water demand in Hood County is associated with the DeCordova Power Plant owned and operated by Luminant (formerly Texas Utilities Company (TXU)). The DeCordova Power Plant is supplied by water from Lake Granbury. Luminant has contracted with the Brazos River Authority for water from the BRA system in sufficient quantity to exceed its needs through the year 2070. In consideration of the projected increased need for steam-electric generation water associated with the proposed new generating units at the Comanche Peak Station in Somervell County, 27,133 acft/yr of this excess supply is now transferred to Somervell County (see Chapter 5.30.4 Somervell County Steam-Electric). No other changes in water supply are recommended.

5.16.9 Mining

Description of Supply

Mining operations in Hood County are supplied by Trinity Groundwater. Demands for Mining are projected to increase significantly, resulting in shortages beginning in 2020.

Recommended Strategy

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Hood County-Mining.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: not determined

b. Groundwater Development – Trinity Aquifer (approximately nine 75 gpm wells)
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2020
   - Project Cost: $6,197,000
   - Unit Cost: Max of $508/acft (2020)

Table 5.16-6. Recommended Plan Costs by Decade for Hood County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(854)*	*(1,212)*	*(998)*	*(909)*	*(819)*	*(833)*
Conservation						
Supply From Plan Element (acft/yr)	62	122	156	149	143	144
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(792)*	*(1,090)*	*(843)*	*(760)*	*(676)*	*(689)*
Groundwater Well Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	1,120	1,120	1,120	1,120	1,120	1,120
Annual Cost ($/yr)	$569,308	$569,308	$49,308	$49,308	$49,308	$49,308
Unit Cost ($/acft)	$508	$508	$44	$44	$44	$44

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.16.10 Irrigation

Hood County Irrigation is projected to have a surplus of water through the year 2070. No changes in water supply are recommended.

5.16.11 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

This page intentionally left blank.

5.17 Johnson County Water Supply Plan

Table 5.17-1 lists each water user group in Johnson County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.17-1. Johnson County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Acton MUD			See Hood County
City of Alvarado	2,015	1,829	Projected surplus
Bethany WSC	1,124	973	Projected surplus
Bethesda WSC[2]	(2,560)	(4,475)	Projected shortage – see plan below
City of Burleson[2]	(3,933)	(7,778)	Projected shortage – see plan below
City of Cleburne	1,177	(2,373)	Projected shortage – see 5.38
City of Cresson			See Hood County
City of Crowley[3]	(17)	(35)	Projected shortage – see plan below
City of Fort Worth[3]	0	(1,573)	Projected shortage – see plan below
City of Godley	22	(25)	Projected shortage – see plan below
City of Grandview	155	82	Projected surplus – see 5.38
Johnson County SUD[2]	2,757	(2,267)	Projected shortage – see 5.38
City of Joshua	0	0	Supply equals Demand
City of Keene	893	519	Projected surplus
City of Mansfield[3]	(293)	(1,024)	Projected shortage – see plan below
Mountain Peak SUD[3]	982	533	Projected surplus
Parker WSC	102	(179)	Projected shortage – see plan below
City of Rio Vista	42	(71)	Projected shortage (2060 and 2070)
City of Venus[2]	(237)	(604)	Projected shortage – see plan below
County-Other	166	309	Projected surplus
Manufacturing	92	92	Projected surplus
Steam-Electric	(5,656)	(5,656)	Projected shortage – see plan below
Mining	1,347	1,526	Projected surplus – see plan below
Irrigation	152	143	Projected surplus
Livestock	0	0	Supply equals Demand

1 – From Tables C-33 and C-34, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.
2 – Balance is total between Brazos G and Region C for WUG.
3 – Balance is only for portion of WUG in Brazos G.

5.17.1 City of Alvarado

The City of Alvarado obtains its water supply from the Trinity Aquifer and treated surface water from Johnson County SUD. No shortages are projected for the City of Alvarado and no change in water supply is recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.17.2 Bethany WSC

Bethany WSC obtains its water supply from the Trinity Aquifer and treated surface water from Johnson County SUD. No shortages are projected for Bethany WSC and no change in water supply is recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.17.3 Bethesda WSC

Description of Supply

Bethesda WSC is located in Johnson and Tarrant (Region C) counties and obtains its water supply from the Trinity Aquifer and surface water from Tarrant Regional Water District (TRWD) through the Fort Worth System. Bethesda WSC is projected to have a shortage from 2020 to 2070. Balance and strategies represented in Table 5.17-1 are for the entire WSC in both counties and regions.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, and in coordination with Region C, the following water management strategies are recommended to meet the projected water shortage for Bethesda WSC.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Unit Cost: $470/acft
   - Annual Cost: maximum of $597,370 in 2070

b. Purchase Additional Supplies from Fort Worth
   - Cost Source: 2016 Region C Water Plan (Appendix K)
   - Date to be Implemented: 2020
   - Project Cost: none
   - Unit Cost: $639/acft ($1.96/1,000 gal)

c. Purchase Water Supplies from Arlington

- Cost Source: 2016 Region C Water Plan (Appendix K)
- Date to be Implemented: 2020
- Project Cost: $18,698,000
- Unit Cost: $1,518/acft

Table 5.17-2. Recommended Plan Costs by Decade for Bethesda WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,486)*	*(1,981)*	*(2,560)*	*(3,139)*	*(3,778)*	*(4,475)*
Conservation						
Supply From Plan Element (acft/yr)	161	465	832	1,101	1,237	1,388
Annual Cost ($/yr)	$75,754	$218,556	$391,040	$517,536	$581,247	$652,409
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(1,325)*	*(1,516)*	*(1,728)*	*(2,038)*	*(2,542)*	*(3,087)*
Purchase additional supplies from Fort Worth						
Supply From Plan Element (acft/yr)	1,067	1,461	1,941	2,410	2,928	3,496
Annual Cost ($/yr)	$682,000	$934,000	$1,240,000	$1,540,000	$1,871,000	$2,234,000
Unit Cost ($/acft)	$639	$639	$639	$639	$639	$639
Purchase additional supplies from Arlington						
Supply From Plan Element (acft/yr)	1,416	1,619	1,833	2,072	2,336	2,614
Annual Cost ($/yr)	$2,149,000	$2,458,000	$1,685,000	$1,904,000	$2,147,000	$2,402,000
Unit Cost ($/acft)	$1,518	$1,518	$919	$919	$919	$919

5.17.4 City of Burleson

Description of Supply

The City of Burleson obtains its water supply from Tarrant Regional Water District (TRWD) through the Fort Worth System. Burleson is projected to have a shortage from 2020 to 2070. Balance and strategies represented in Table 5.17-1 are for the entire city in both counties and regions. Conservation was considered but the current per capita use is below the targeted gpcd of 140.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for the City of Burleson. Conservation was considered; however, the entity's current per capita use rate in Brazos G is below the selected target rate of 140 gpcd.

a. Conservation in Region C
   - Cost Source: 2016 Region C Water Plan (Appendix K)
   - Date to be Implemented: 2020
   - Capital Cost:$37,638
   - Unit Cost: $287/acft

b. Purchase Additional Supplies from Fort Worth
   - Cost Source: 2016 Region C Water Plan (Appendix K)
   - Date to be Implemented: 2020
   - Project Cost: $21,780,000
   - Unit Cost: $1,039/acft

Table 5.17-3.Recommended Plan Costs by Decade for the City of Burleson

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,796)*	*(2,840)*	*(3,933)*	*(5,126)*	*(6,417)*	*(7,778)*
Conservation in Region C						
Supply From Plan Element (acft/yr)	11	15	15	27	41	55
Annual Cost ($/yr)	$3,150	$3,150	$0	$0	$0	$0
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(1,785)*	*(2,825)*	*(3,918)*	*(5,099)*	*(6,376)*	*(7,723)*
Purchase from Fort Worth						
Supply From Plan Element (acft/yr)	3,109	4,358	5,670	7,089	8,625	10,244
Annual Cost ($/yr)	$3,230,000	$4,528,000	$4,026,000	$5,033,000	$6,124,000	$7,273,000
Unit Cost ($/acft)	$1,039	$1,039	$710	$710	$710	$710

5.17.5 City of Cleburne

The City of Cleburne is projected to have a shortage beginning in 2060. Refer to Chapter 5.38 for the City's plan as a Wholesale Water Provider.

5.17.6 City of Crowley

Description of Supply

The City of Crowley is mostly located in Tarrant County; however, a portion of the city limits is within Johnson County. The City obtains its water supply from the Trinity Aquifer in Tarrant County and is projected to have a shortage in Johnson County. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, and through coordination with Region C, the following water management strategy is recommended to meet water needs for the portion of the city within Johnson County. The full water plan for City of Crowley is discussed in the 2016 Region C Water Plan.

a. Purchase additional supplies from Fort Worth

- Cost Source: 2016 Region C Water Plan (Appendix K)
- Date to be Implemented: 2020
- Project Cost: $11,558,000
- Unit Cost: $1,033/acft

Table 5.17-4. Recommended Plan Costs by Decade for the City of Crowley (Brazos G)

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(9)*	*(12)*	*(17)*	*(23)*	*(29)*	*(35)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(9)*	*(12)*	*(17)*	*(23)*	*(29)*	*(35)*
Purchase from Fort Worth						
Supply From Plan Element (acft/yr)	9	12	17	23	29	35
Annual Cost ($/yr)	$9,000	$12,000	$18,000	$24,000	$30,000	$36,000
Unit Cost ($/acft)	$1,033	$1,033	$1,033	$1,033	$1,033	$1,033

5.17.7 City of Fort Worth

Description of Supply

The City of Fort Worth is a wholesale water provider in Region C in Tarrant County; however, a portion of the city limits is within Johnson County in Brazos G. The City obtains its water supply from surface water supplies located in Region C and is projected to have a shortage in Johnson County.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, and through coordination with Region C, the following water management strategies are recommended to meet water needs for the portion of the city within Johnson County. The full water plan for City of Fort Worth is discussed in the 2016 Region C Water Plan.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2050
- Unit Cost: $470/acft
- Annual Cost: maximum of $97,290 in 2070

b. Purchase additional supplies from Tarrant Regional Water District

- Cost Source: 2016 Region C Water Plan (Appendix K)
- Date to be Implemented: 2050
- Project Cost: $0 Existing infrastructure assumed sufficient
- Unit Cost: $316/acft/yr (TRWD Wholesale Water Rate)

Table 5.17-5. Recommended Plan Costs by Decade for the City of Fort Worth (Brazos G)

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*0*	*0*	*(759)*	*(1,238)*	*(1,573)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	167	265	331
Annual Cost ($/yr)	—	—	—	$78,490	$124,550	$155,570
Projected Surplus/(Shortage) after Conservation (acft/yr)	*0*	*0*	*0*	*(592)*	*(973)*	*(1,242)*
Purchase from Tarrant Regional Water District						
Supply From Plan Element (acft/yr)	—	—	—	592	973	1,242
Annual Cost ($/yr)	—	—	—	$187,117	$307,468	$392,472
Unit Cost ($/acft)	—	—	—	$316	$316	$316

5.17.8 City of Godley

Description of Supply

The City of Godley obtains its water supply from groundwater from the Trinity Aquifer. Based on the available groundwater supply, the City of Godley is projected to have shortages beginning in 2060.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet water needs for the City of Godley. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Groundwater Development – Woodbine Aquifer

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2060
- Project Cost: $375,000
- Unit Cost: $1,474/acft

Table 5.17-6. Recommended Plan Costs by Decade for the City of Godley

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*44*	*34*	*22*	*8*	*(8)*	*(25)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*44*	*34*	*22*	*8*	*(8)*	*(25)*
Groundwater Development – Woodbine Aquifer						
Supply From Plan Element (acft/yr)	—	—	—	—	30	30
Annual Cost ($/yr)	—	—	—	—	$44,206	$44,206
Unit Cost ($/acft)	—	—	—	—	$1,474	$1,474

5.17.9 City of Grandview

The City of Grandview obtains its water supply from groundwater from the Woodbine Aquifer and is projected to have a surplus of water through the year 2070 and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.17.10 Johnson County SUD

Johnson County SUD is projected to have a surplus through until 2060. This WUG is located in multiple counties (Johnson, Tarrant (Region C), Ellis (Region C), and Hill). The balance shown in Table 5.17-1 represent the cumulative totals for Johnson County SUD. Refer to Chapter 5.38 for Johnson County SUD's plan as a Wholesale Water Provider.

5.17.11 City of Joshua

The City of Joshua obtains its water supply from Johnson County SUD. The demand is projected to equal the supply and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.17.12 City of Keene

The City of Keene obtains its water supply from groundwater from the Trinity Aquifer and a contract with the Johnson County SUD. No shortages are projected for the City of Keene and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.17.13 City of Mansfield

Description of Supply

The City of Mansfield is located in Tarrant, Ellis and Johnson counties with a majority of its population and demand in Tarrant County. The City obtains its water supply from surface water from the Tarrant Regional Water District (TRWD), principally located in Region C. Table 5.17-7 includes the balance for the Johnson County (Brazos G) portion only. More information on City of Mansfield is discussed in the 2016 Region C Water Plan. Conservation was considered but the current per capita use is below the targeted gpcd of 140. The City of Mansfield is projected to have shortages starting in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, and in coordination with Region C, the following water management strategy is recommended for the City of Mansfield.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Unit Cost: $470/acft
- Annual Cost: maximum of $481,280 in 2070

Table 5.17-7. Recommended Plan Costs by Decade for City of Mansfield (Brazos G)

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(43)*	*(144)*	*(293)*	*(490)*	*(738)*	*(1,024)*
Conservation						
Supply From Plan Element (acft/yr)	43	144	293	490	738	1,024
Annual Cost ($/yr)	$20,210	$67,680	$137,710	$230,300	$346,860	$481,280
Projected Surplus/(Shortage) after Conservation	*0*	*0*	*0*	*0*	*0*	*0*

5.17.14 Mountain Peak SUD

Description of Supply

Mountain Peak SUD is located in Johnson and Ellis counties, with a majority of its population and demand in Ellis County (Region C). The WUG obtains its water supply from the Trinity Aquifer in Johnson and Ellis counties and surface water from the City of Midlothian, which is primarily used for peaking in the summer. No shortage is projected for Mountain Peak SUD, surpluses are projected through 2070. Table 5.17-8 includes the balance for the Johnson County (Brazos G) portion only. More information on Mountain Peak SUD is discussed in the 2016 Region C Water Plan.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB and in coordination with Region C, the following water management strategy is recommended for Mountain Peak SUD. Conservation was considered but the current per capita use is below the targeted gpcd of 140.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Unit Cost: $470/acft
- Annual Cost: maximum of $261,066 in 2070

Table 5.17-8. Recommended Plan Costs by Decade for Mountain Peak SUD (Brazos G)

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*1,195*	*1,100*	*982*	*847*	*696*	*533*
Conservation						
Supply From Plan Element (acft/yr)	34	99	184	288	413	555
Annual Cost ($/yr)	$16,001	$46,439	$86,383	$135,451	$194,144	$261,066
Projected Surplus/(Shortage) after Conservation	*1,229*	*1,199*	*1,166*	*1,136*	*1,109*	*1,089*

5.17.15 Parker WSC

Description of Supply

Parker WSC is located in Hill and Johnson counties and obtains its water supply from the Trinity Aquifer and surface water supplies from Files Valley WSC. Based on the existing supply available from groundwater, a shortage begins in 2060. The surplus/shortages shown in Table 5.17-1 represent the cumulative totals for Parker WSC. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet water needs for Parker WSC.

a. Woodbine Aquifer Development (Trinity Basin)

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2060
- Project Cost: $1,128,000
- Unit Cost: $737

Table 5.17-9. Recommended Plan Costs by Decade for Parker WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*245*	*175*	*102*	*17*	*(77)*	*(179)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*245*	*175*	*102*	*17*	*(77)*	*(179)*
Groundwater Development – Woodbine Aquifer						
Supply From Plan Element (acft/yr)	0	0	0	0	180	180
Annual Cost ($/yr)	—	—	—	—	$132,617	$132,617
Unit Cost ($/acft)	—	—	—	—	$737	$737

5.17.16 City of Rio Vista

Description of Supply

The City of Rio Vista obtains its water supply from groundwater from the Trinity Aquifer. Based on the existing supply available from groundwater, a shortage begins in 2060. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet water needs for the City of Rio Vista.

a. Groundwater Development – Woodbine Aquifer (Trinity Basin)

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2060
- Project Cost: $753,000
- Unit Cost: Max of $1,179/acft (2020)

Table 5.17-10. Recommended Plan Costs by Decade for City of Rio Vista

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*99*	*71*	*42*	*8*	*(30)*	*(71)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*99*	*71*	*42*	*8*	*(30)*	*(71)*
Groundwater Development – Woodbine Aquifer						
Supply From Plan Element (acft/yr)	—	—	—	—	75	75
Annual Cost ($/yr)	—	—	—	—	$88,411	$88,411
Unit Cost ($/acft)	—	—	—	—	$1,179	$1,179

5.17.17 City of Venus

Description of Supply

The City of Venus obtains its water supply from the Woodbine Aquifer and surface water from the City of Midlothian in Region C. The city has a projected shortage starting in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB and in coordination with Region C, the following water management strategies are recommended to meet water needs for the City of Venus.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $73,510 in 2070
- Unit Cost: $470/acft

b. Purchase Water from Midlothian

- Cost Source: 2016 Region C Water Plan (Appendix K)
- Date to be Implemented: 2020
- Project Cost: NA
- Unit Cost: $815/acft

c. Alternative: Groundwater Development – Woodbine Aquifer (Trinity Basin)

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $1,503,000
- Unit Cost: Max of $589/acft (2020)

Table 5.17-11. Recommended Plan Costs by Decade for City of Venus

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(24)*	*(117)*	*(237)*	*(355)*	*(478)*	*(604)*
Conservation						
Supply From Plan Element (acft/yr)	30	91	116	128	141	158
Annual Cost ($/yr)	$14,197	$42,948	$54,331	$59,992	$66,492	$74,450
Projected Surplus/(Shortage) after Conservation	6	(26)	(122)	(228)	(337)	(446)
Purchase Water from Midlothian						
Supply From Plan Element (acft/yr)	—	26	122	228	337	446
Annual Cost ($/yr)	—	$21,000	$99,000	$186,000	$275,000	$363,000
Unit Cost ($/yr)	—	$815	$815	$815	$815	$815
Alternative: Groundwater Development – Woodbine Aquifer						
Supply From Plan Element (acft/yr)	—	150	150	450	450	450
Annual Cost ($/yr)	—	$88,411	$88,411	$207,234	$207,234	$91,234
Unit Cost ($/yr)	—	$589	$589	$461	$461	$203

5.17.18 County-Other

Entities in Johnson County-Other obtain water supply from the Trinity and Woodbine Aquifers as well as treated surface water from Johnson County SUD. A surplus of supply is projected for Johnson County-Other through 2070. No changes in water supply are recommended. Conservation was considered; however, the current per capita use rate for the entities in County-Other are below the selected target rate of 140 gpcd.

5.17.19 Manufacturing

Johnson County Manufacturing is supplied by the Trinity Aquifer, and the cities of Burleson, Cleburne and Hillsboro. No shortage is projected for Johnson County Manufacturing and no changes in water supply are recommended.

5.17.20 Steam-Electric

Description of Supply

Johnson County Steam-Electric currently receives 1,344 acft/yr of reuse and potable water supplies from the City of Cleburne. Johnson County Steam-Electric is projected to have shortages through year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Johnson County Steam-Electric.

a. Conservation
    - Cost Source: Volume II, Chapter 2
    - Date to be Implemented: 2020
    - Annual Cost: Not determined

b. Purchase reuse water from the City of Cleburne
    - Cost Source: Volume II, Chapter 3
    - Date to be Implemented: 2020
    - Project Cost: $14,059,000
    - Unit Cost: $736/acft

c. Purchase water from the City of Cleburne (Lake Aquilla Augmentation)
    - Cost Source: Volume II, Chapter 3
    - Date to be Implemented: 2020
    - Project Cost: $79,627,000
    - Unit Cost: Max of $926/acft (2020)

Table 5.17-12. Recommended Plan Costs by Decade for Johnson County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(5,656)*	*(5,656)*	*(5,656)*	*(5,656)*	*(5,656)*	*(5,656)*
Conservation						
Supply From Plan Element (acft/yr)	210	350	490	490	490	490
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation	*(5,446)*	*(5,306)*	*(5,166)*	*(5,166)*	*(5,166)*	*(5,166)*
Purchase reuse water from the City of Cleburne						
Supply From Plan Element (acft/yr)	2,031	2,031	2,031	2,031	2,031	2,031
Annual Cost ($/yr)	$1,495,000	$1,495,000	$319,000	$319,000	$319,000	$319,000
Projected Surplus/(Shortage) after Reuse (acft/yr)	*(3,415)*	*(3,275)*	*(3,135)*	*(3,135)*	*(3,135)*	*(3,135)*
Purchase water from the City of Cleburne (Lake Aquilla Augmentation)						
Supply From Plan Element (acft/yr)	3,415	3,275	3,135	3,135	3,135	3,135
Annual Cost ($/yr)	$3,162,000	$3,033,000	$1,483,000	$1,483,000	$1,483,000	$1,483,000
Unit Cost ($/acft)	$926	$926	$473	$473	$473	$473

ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location

5.17.21 Mining

Description of Supply

Johnson County Mining obtains its water supply from the Trinity Aquifer and Johnson County SUD. Johnson County Mining is projected to have a shortage in 2020 and surpluses from 2030 through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Johnson County Mining.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: Not determined

b. Groundwater Development – Woodbine Aquifer (Trinity Basin)

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $4,684,000
- Unit Cost: $383/acft

Table 5.17-13. Recommended Plan Costs by Decade for Johnson County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,264)*	*74*	*1,347*	*1,849*	*1,701*	*1,526*
Conservation						
Supply From Plan Element (acft/yr)	124	—	—	—	—	—
Annual Cost ($/yr)	ND	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*(1,140)*	*74*	*1,347*	*1,849*	*1,701*	*1,526*
Groundwater Development – Woodbine Aquifer						
Supply From Plan Element (acft/yr)	1,140	—	—	—	—	—
Annual Cost ($/yr)	$437,051	—	—	—	—	—
Unit Cost ($/acft)	$383	—	—	—	—	—

ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location

5.17.22 Irrigation

Johnson County Irrigation obtains its water supply from the Trinity Aquifer and run of the river supplies. No shortage is projected for Johnson County Irrigation and no changes in water supply are recommended.

5.17.23 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

This page intentionally left blank.

5.18 Jones County Water Supply Plan

Table 5.18-1 lists each water user group in Jones County and their corresponding surplus or shortage in years 2040 and 2070. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections.

Table 5.18-1. Jones County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Abilene	9,115	11,314	See Taylor County
City of Anson	633	606	Projected surplus - see Chapter 5.38
City of Hamlin	320	287	Projected surplus
City of Hawley	0	0	Demand equals supply
Hawley WSC	160	136	Projected surplus
City of Stamford	315	249	Projected surplus - see Chapter 5.38
County-Other	57	37	Projected surplus
Manufacturing	44	44	Projected surplus
Steam-Electric	11,441	11,319	Projected surplus
Mining	(218)	(169)	Projected shortage – see plan below
Irrigation	(91)	139	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-35 and C-36, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.18.1 City of Anson

The recommended water supply plan for the City of Anson is included in Chapter 5.38 as a wholesale water provider.

5.18.2 City of Hamlin

Description of Supply

The City of Hamlin receives surface water supplies from the City of Anson and Lake Hamlin. No shortages are projected for the City of Hamlin.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Hamlin.

Conservation was considered but the current per capita use is below the targeted gpcd of 140.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Unit Cost: $470/acft
- Annual Cost: maximum of $27,260 in 2070

Table 5.18-2. Recommended Plan Costs by Decade for City of Hamlin

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*341*	*329*	*320*	*307*	*296*	*287*
Conservation						
Supply From Plan Element (acft/yr)	14	43	57	57	58	58
Annual Cost ($/yr)	$6,580	$20,210	$26,790	$26,790	$27,260	$27,260
Projected Surplus/(Shortage) after Conservation	*355*	*372*	*377*	*364*	*354*	*346*

5.18.3 City of Hawley

The City of Hawley is supplied with water from Hawley WSC. No shortages are projected and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.18.4 Hawley WSC

Hawley WSC is located in multiple counties (Taylor, and Jones). The balance shown in Table 5.18-1 represents the cumulative totals for Hawley WSC. Hawley WSC is supplied with water from the City of Abilene and City of Anson. Hawley WSC provides supply to meet the current and projected demands for the City of Hawley. No shortages are projected for Hawley WSC through 2070 and no change in water supply is recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.18.5 City of Stamford

The recommended water supply plan for the City of Stamford is included in Chapter 5.38 as a wholesale water provider.

5.18.6 County-Other

Entities in County-Other receive supplies through the City of Stamford and the Seymour Aquifer. County Other is projected to have a surplus of water through the year 2070 and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.18.7 Manufacturing

There is no projected demand for Manufacturing in Jones County and no changes in water supply are recommended.

5.18.8 Steam-Electric

Supply for Jones County Steam-Electric can be met through a contract with the City of Abilene from Fort Phantom Hill Reservoir. No shortages are projected for Steam-Electric, and no changes in water supply are recommended.

5.18.9 Mining

Description of Supply

Jones County Mining obtains its water supply from run-of-the river water rights which are not reliable in the drought of record. Jones County Mining is projected to have a shortage between 2020 and 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Jones County-Mining.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2030
- Annual Cost: not determined

b. Leave needs unmet

- Cost Source: Cost of not meeting needs – see Appendix H
- Date to be Implemented: 2020

Table 5.18-3. Recommended Plan Costs by Decade for Jones County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(239)*	*(234)*	*(218)*	*(199)*	*(183)*	*(169)*
Conservation						
Supply From Plan Element (acft/yr)	7	12	15	14	13	12
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(232)*	*(222)*	*(203)*	*(185)*	*(170)*	*(157)*

Table 5.18-3. Recommended Plan Costs by Decade for Jones County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	232	222	203	185	170	157
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/yr)	—	—	—	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.18.10 Irrigation

Description of Supply

Jones County Irrigation is supplied by the Seymour Aquifer. Irrigation is projected to have a shortage of water beginning in 2020 through 2050.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Jones County-Mining.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: $42,090
- Unit Cost: $230/acft

b. Leave needs unmet

New supplies for irrigation would be cost prohibitive to develop and most farms would switch to dry-land crops or allow fields to go fallow during a prolonged drought.

- Cost Source: Cost of not meeting needs – see Appendix H
- Date to be Implemented: 2020

Table 5.18-4. Recommended Plan Costs by Decade for Jones County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(260)*	*(174)*	*(91)*	*(10)*	*68*	*139*
Conservation						
Supply From Plan Element (acft/yr)	86	139	189	183	—	—
Annual Cost ($/yr)	$19,780	$31,970	$43,470	$42,090	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(173)*	*(34)*	*98*	*174*	*68*	*139*

Table 5.18-4. Recommended Plan Costs by Decade for Jones County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	173	34	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/yr)	—	—	—	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.18.11 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

This page intentionally left blank.

5.19 Kent County Water Supply Plan

Table 5.19-1 lists each water user group in Kent County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of each water user group supply is presented in the following subsections.

Table 5.19-1. Kent County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Jayton	(89)	(88)	Projected shortage – see plan below
County-Other	13	13	Projected surplus
Manufacturing	0	0	No projected demand
Steam-Electric	0	0	No projected demand
Mining	424	433	Projected surplus
Irrigation	278	371	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-37 and C-38, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.19.1 City of Jayton

Description of Supply

Water supply for the City of Jayton is from the Seymour and Dockum Aquifers. It is estimated that Jayton has sufficient supplies through 2070. However, the TCEQ has recently mandated that the City put in reverse osmosis treatment for its groundwater supply due to high levels of chlorides, sulfates and total dissolved solids. Shortages are projected from a treatment constraint and are projected through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended to meet for the City of Jayton. Associated costs are included for each strategy. Conservation was considered but the current per capita use is below the targeted gpcd of 140.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: $3,800
- Unit Cost: $474/acft

b. New Water Treatment Plant (0.4 MGD)
- Cost Source: Volume II, Chapter 12.2
- Date to be Implemented: before 2020
- Annual Cost: $549,000

Table 5.19-1. Kent County Surplus/(Shortage)

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(92)*	*(91)*	*(89)*	*(89)*	*(88)*	*(88)*
Conservation						
Supply From Plan Element (acft/yr)	3	6	4	4	3	3
Annual Cost ($/yr)	$1,608	$2,994	$2,046	$2,046	$1,572	$1,572
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(89)*	*(85)*	*(85)*	*(85)*	*(85)*	*(85)*
New Water Treatment Plant (0.4 MGD)						
Supply From Plan Element (acft/yr)	224	224	224	224	224	224
Annual Cost ($/yr)	$549,000	$549,000	$253,000	$253,000	$253,000	$253,000
Unit Cost ($/acft)	$2,451	$2,451	$1,129	$1,129	$1,129	$1,129

5.19.2 County-Other

Water supply for County-Other is from local groundwater, and the Seymour and Dockum Aquifers. No shortages are projected, surpluses are projected through 2070, and no changes in water supply are recommended. Conservation was considered but the current per capita use is below the targeted gpcd of 140.

5.19.3 Manufacturing

No Manufacturing demand exists or is projected for the county.

5.19.4 Steam-Electric

No Steam-Electric demand exists or is projected for the county.

5.19.5 Mining

No shortages are projected for Mining, surpluses are projected through 2070, and no changes in water supply are recommended.

5.19.6 Irrigation

No shortages are projected for Irrigation, surpluses are projected through 2070, and no changes in water supply are recommended.

5.19.7 Livestock

No shortages are projected for Livestock, the demand equals the supply, and no changes in water supply are recommended.

5.20 Knox County Water Supply Plan

Table 5.20-1 lists each water user group in Knox County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of each water user group supply is presented in the following subsections.

Table 5.20-1. Knox County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1] 2040 (acft/yr)	Surplus/(Shortage)[1] 2070 (acft/yr)	Comment
Knox City	(118)	(226)	Projected shortage – see plan below
City of Munday	(125)	(237)	Projected shortage – see plan below
County-Other	71	16	Projected surplus
Manufacturing	0	0	No projected demand
Steam-Electric	0	0	No projected demand
Mining	(14)	(14)	Projected shortage – see plan below
Irrigation	(8,505)	(5,105)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-39 and C-40, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.20.1 Knox City

Description of Supply

Knox City obtains surface water via a contract with North Central Texas Municipal Water Authority (NCTMWA) and exempt groundwater use in the city limits from the Blaine Aquifer. Current supplies are insufficient to meet projected demands through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for Knox City.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: $27,280 in 2070
- Unit Cost: $496/acft

b. Millers Creek Reservoir Augmentation strategy by NCTMWA. This will provide supply at least up to the current amount contracted from NCTMWA.

- Cost Source: Volume II, Chapter 7.5
  - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
- Date to be Implemented: 2020
- Project Cost: none (cost would be borne by NCTMWA)
- Unit Cost: none (supply already purchased from NCTMWA)

c. Alternative: Lake Creek Reservoir. This strategy would be developed by NCTMWA to augment existing supplies.

- Cost Source: Volume II, Chapter 4.10
  - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
- Date to be Implemented: 2020
- Project Cost: none (cost would be borne by NCTMWA)
- Unit Cost: none (supply already purchased from NCTMWA)

Table 5.20-2. Recommended Plan Costs by Decade for Knox City

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(48)*	*(83)*	*(118)*	*(154)*	*(190)*	*(226)*
Conservation						
Supply From Plan Element (acft/yr)	9	25	45	54	54	55
Annual Cost ($/yr)	$4,464	$12,400	$22,320	$26,784	$26,784	$27,280
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(39)*	*(57)*	*(72)*	*(101)*	*(136)*	*(171)*
Millers Creek Reservoir Augmentation						
Supply From Plan Element (acft/yr)	72	104	136	167	199	231
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—
Alternative: Lake Creek Reservoir						
Supply From Plan Element (acft/yr)	72	104	136	167	199	231
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

5.20.2 City of Munday

Description of Supply

City of Munday obtains surface water via a contract with North Central Texas Municipal Water Authority (NCTMWA) and exempt groundwater use in the city limits from the Seymour Aquifer. Current supplies are insufficient to meet projected demands through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Munday.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: 2020
   - Annual Cost: $27,280 in 2070
   - Unit Cost: $496/acft

b. Millers Creek Reservoir Augmentation strategy by NCTMWA. This will provide supply at least up to the current amount contracted from NCTMWA.
   - Cost Source: Volume II, Chapter 7.5
     - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
   - Date to be Implemented: 2020
   - Project Cost: none (cost would be borne by NCTMWA)
   - Unit Cost: none (supply already purchased from NCTMWA)

c. Alternative: Lake Creek Reservoir. This strategy would be developed by NCTMWA to augment existing supplies.
   - Cost Source: Volume II, Chapter 4.10
     - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
   - Date to be Implemented: 2020
   - Project Cost: none (cost would be borne by NCTMWA)
   - Unit Cost: none (supply already purchased from NCTMWA)

Table 5.20-3. Recommended Plan Costs by Decade for the City of Munday

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(55)*	*(91)*	*(125)*	*(164)*	*(200)*	*(237)*
Conservation						
Supply From Plan Element (acft/yr)	8	26	36	37	36	37
Annual Cost ($/yr)	$3,968	$12,896	$17,856	$18,352	$17,856	$18,352
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(47)*	*(65)*	*(89)*	*(127)*	*(164)*	*(200)*
Millers Creek Reservoir Augmentation						
Supply From Plan Element (acft/yr)	74	107	140	173	205	238
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—
Alternative: Lake Creek Reservoir						
Supply From Plan Element (acft/yr)	74	107	140	173	205	238
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

5.20.3 County-Other

Entities in Knox County-Other obtain water supply from the Seymour and Blaine Aquifers and surface water via contracts with NCTMWA. Water supply surplus are adequate through 2070.

Conservation was also considered; however, the County-Other's current per capita use rate is below the selected target of 140 gpcd.

5.20.4 Manufacturing

No Manufacturing demand exists or is projected for the county.

5.20.5 Steam-Electric

No Steam-Electric demand exists or is projected for the county.

5.20.6 Mining

Description of Supply

No water supplies are currently allocated for Mining operations in Knox County. Water supply shortages are projected for Mining beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for Mining.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: not determined

a. Groundwater Development – Blaine Aquifer

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $223,000
- Unit Cost: Max of $1,388 (2020)

Table 5.20-4. Recommended Plan Costs by Decade for Knox County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(15)*	*(15)*	*(14)*	*(14)*	*(14)*	*(14)*
Conservation						
Supply From Plan Element (acft/yr)	—	1	1	1	1	1
Annual Cost ($/yr)	—	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(15)*	*(14)*	*(13)*	*(13)*	*(13)*	*(13)*
Groundwater Development – Blaine Aquifer						
Supply From Plan Element (acft/yr)	15	15	15	15	15	15
Annual Cost ($/yr)	$20,815	$20,815	$1,815	$1,815	$1,815	$1,815
Unit Cost ($/acft)	$1,388	$1,388	$121	$121	$121	$121

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.20.7 Irrigation

Description of Supply

Knox County Irrigation obtains water supplies from the Seymour and the Blaine Aquifer as well as surface water supplies from Lake Davis and run-of-the river water rights. Irrigation shortages are projected through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for Irrigation.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020

- Annual Cost: $628,590 in 2030
- Unit Cost: $230/acft

b. Groundwater Development – Blaine Aquifer

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $2,436,000
- Unit Cost: Max of $482/acft (2020)

c. Groundwater Development – Seymour Aquifer

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $9,817,000
- Unit Cost: Max of $571/acft (2020)

d. Reallocate supplies from Stonewall County – Blaine Aquifer

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2030
- Project Cost: Capital cost unknown, as demands vary geographically.
- Unit Cost: Assumed $250/acft

e. Brush Control (unquantifiable costs and savings)

Table 5.20-5. Recommended Plan Costs by Decade for Knox County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(3,121)*	*(5,515)*	*(8,505)*	*(9,283)*	*(5,956)*	*(5,105)*
Conservation						
Supply From Plan Element (acft/yr)	1,231	2,001	2,733	2,666	2,600	2,539
Annual Cost ($/yr)	$283,130	$460,230	$628,590	$613,180	$598,000	$583,970
Projected Surplus/(Shortage) after Conservation (acft/yr)	(1,890)	(3,514)	(5,773)	(6,618)	(3,356)	(2,566)
Groundwater Development – Blaine Aquifer						
Supply From Plan Element (acft/yr)	461	461	461	461	461	461
Annual Cost ($/yr)	$222,054	$222,054	$18,054	$18,054	$18,054	$18,054
Unit Cost ($/acft)	$482	$482	$39	$39	$39	$39
Groundwater Development – Seymour Aquifer						
Supply From Plan Element (acft/yr)	1,571	1,345	1,193	1,116	1,041	1,041
Annual Cost ($/yr)	$896,747	$896,747	$72,747	$72,747	$72,747	$72,747
Unit Cost ($/acft)	$571	$571	$46	$46	$46	$46

Table 5.20-5. Recommended Plan Costs by Decade for Knox County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Reallocate Supplies from Stonewall County – Blaine Aquifer						
Supply From Plan Element (acft/yr)	—	1,709	4,120	5,042	1,855	1,065
Annual Cost ($/yr)	—	$427,250	$1,030,000	$1,260,500	$463,750	$266,250
Unit Cost ($/acft)	—	$250	$250	$250	$250	$250

5.20.8 Livestock

No shortages are projected for Livestock, the demand equals the supply, and no changes in water supply are recommended.

This page intentionally left blank.

5.21 Lampasas County Water Supply Plan

Table 5.21-1 lists each water user group in Lampasas County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.21-1. Lampasas County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Copperas Cove			See Coryell County for Plan
City of Kempner	(6)	(5)	Projected shortage – see plan below
Kempner WSC[2]	(1,076)	(1,868)	Projected shortage – see Chapter 5.38
City of Lampasas	(227)	(505)	Projected shortage – see plan below
City of Lometa	0	0	Demand equals supply
County-Other	102	150	Projected surplus
Manufacturing	0	0	Demand equals supply
Steam-Electric	0	0	Demand equals supply
Mining	(216)	(288)	Projected shortage – see plan below
Irrigation	(211)	(200)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-41 and C-42, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.
2 – Balance includes totals in Brazos G and Region C

5.21.1 City of Kempner

Description of Supply

The City of Kempner obtains its water supply from surface water from Kempner WSC. Shortages are projected for Kempner in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Kempner WSC.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $4,607 in 2030
- Unit Cost: $470/acft

Table 5.21-2. Recommended Plan Costs by Decade for City of Kempner

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(7)*	*(10)*	*(6)*	*(6)*	*(5)*	*(5)*
Conservation						
Supply From Plan Element (acft/yr)	7	10	6	6	5	5
Annual Cost ($/yr)	$3,222	$4,607	$3,024	$2,630	$2,180	$2,393
Projected Surplus/(Shortage) after Conservation	*0*	*0*	*0*	*0*	*0*	*0*

5.21.2 Kempner WSC

Kempner WSC has service area in portions of Coryell, Bell, Lampasas and Burnet (Region K) Counties. The WSC receives surface water supplies from the Brazos River Authority out of Lake Stillhouse Hollow. Kempner WSC sells supplies to the cities of Kempner, Copperas Cove, Lampasas, as well as to Salado WSC and Lampasas County-Mining. Shortages are projected for Kempner WSC in 2020. Refer to Chapter 5.38 for the WSC's plan as a Wholesale Water Provider.

5.21.3 City of Lampasas

Description of Supply

The City of Lampasas has contracted for water supply from BRA and Kempner WSC. Its treated water supply is limited to its contract with Kempner WSC at 1,281 acft/yr. The City also has additional run of river rights. The City provides supply for Lampasas County-Manufacturing demands. Shortages are projected beginning in 2040.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the City of Lampasas.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $12,485 in 2030
- Unit Cost: $470/acft

b. Increase treatment contract with Kempner WSC to deliver BRA contracted supplies

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2040
- Project Cost: Existing Infrastructure assumed specific
- Unit Cost: $500/acft

Table 5.21-3. Recommended Plan Costs by Decade for City of Lampasas

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(49)*	*(148)*	*(227)*	*(318)*	*(414)*	*(505)*
Conservation						
Supply From Plan Element (acft/yr)	27	—	—	—	—	—
Annual Cost ($/yr)	$12,485	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*(22)*	*(148)*	*(227)*	*(318)*	*(414)*	*(505)*
Increase treated water contract Kempner WSC						
Supply From Plan Element (acft/yr)	22	148	227	318	414	505
Annual Cost ($/yr)	$11,000	$74,000	$113,500	$159,000	$207,000	$252,500
Unit Cost ($/yr)	$500	$500	$500	$500	$500	$500

5.21.4 City of Lometa

Description of Supply

The City of Lometa water system is owned by the Lower Colorado River Authority, and is supplied water from the LCRA Highland Lakes System. A portion of the population in the city limits relies on exempt groundwater pumping from the Ellenburger Aquifer. The city has a sufficient quantity of water supply to meet its projected needs through the year 2070. No shortage is projected for the City of Lometa.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Lometa.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $13,712 in 2070
- Unit Cost: $470/acft

Table 5.21-4. Recommended Plan Costs by Decade for the City of Lometa

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*0*	*0*	*0*	*0*	*0*
Conservation						
Supply From Plan Element (acft/yr)	7	21	26	27	28	29
Annual Cost ($/yr)	$3,346	$9,951	$12,418	$12,705	$13,186	$13,712
Projected Surplus/(Shortage) after Conservation	7	21	26	27	28	29

5.21.5 County-Other

Entities included in Lampasas County-Other obtain water supply from the Trinity Aquifer and Marble Falls Aquifer. Surpluses are projected through 2070 and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.21.6 Manufacturing

Lampasas County Manufacturing obtains its water supply the City of Lampasas and run-of-river rights. Based on the available surface water supply, Lampasas County Manufacturing is projected to have adequate supplies through year 2070, and no changes in water supply are recommended.

5.21.7 Steam-Electric

No Steam-Electric demand is projected for Lampasas County.

5.21.8 Mining

Description of Supply

Lampasas County Mining currently obtains its water supply from Kempner WSC. Mining is projected to have shortages starting in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for Lampasas County-Mining.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: not determined

b. Groundwater Development – Trinity Aquifer

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $2,219,000
- Unit Cost: $204,252

Table 5.21-5. Recommended Plan Costs by Decade for Lampasas County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(173)*	*(196)*	*(216)*	*(236)*	*(261)*	*(288)*
Conservation						
Supply From Plan Element (acft/yr)	6	11	17	18	20	22
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(167)*	*(185)*	*(199)*	*(218)*	*(241)*	*(266)*
Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	185	185	225	225	275	275
Annual Cost ($/yr)	$204,252	$204,252	$18,252	$18,252	$18,252	$18,252
Unit Cost ($/acft)	$743	$743	$66	$66	$66	$66

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location.

5.21.9 Irrigation

Description of Supply

Lampasas County Irrigation is supplied by the Trinity and Marble Falls Aquifers and run of the river water rights. Irrigation is projected to have shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Lampasas County-Irrigation.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: $230/acft

b. Groundwater Development – Trinity Aquifer

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $3,049,000
- Unit Cost: Max of $887/ acft(2020)

Table 5.21-6. Recommended Plan Costs by Decade for Lampasas County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(221)*	*(216)*	*(211)*	*(206)*	*(204)*	*(200)*
Conservation						
Supply From Plan Element (acft/yr)	12	19	26	26	26	26
Annual Cost ($/yr)	$2,670	$4,393	$6,070	$5,989	$5,957	$5,893
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(209)*	*(197)*	*(184)*	*(180)*	*(178)*	*(174)*
Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	210	210	210	210	210	210
Annual Cost ($/yr)	$278,636	$278,636	$22,636	$22,636	$22,636	$22,636
Unit Cost ($/acft)	$1,327	$1,327	$108	$108	$108	$108

5.21.10 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

5.22 Lee County Water Supply Plan

Table 5.22-1 lists each water user group in Lee County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections. Unmet needs exist for Lee County-Mining, whose primary source of supply is unknown. There is currently approximately 12,000 acft of Carrizo-Wilcox groundwater available under the MAG in Lee County; however, this supply has been permitted for use in Hays County through the Hays-Forestar project. Refer to the 2016 South Central Texas (Region L) Regional Water Plan for more information.

Table 5.22-1. Lee County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Aqua WSC[2]	0	0	Demand equals supply
City of Giddings	443	395	Projected surplus
Lee County WSC[3]	2,445	2,160	Projected surplus
City of Lexington	390	381	Projected surplus
Southwest Milam WSC			See Milam County
County-Other	8	0	Projected surplus
Manufacturing	0	0	Demand equals supply
Steam-Electric	0	0	No Projected Demand
Mining	(7,767)	(9,631)	Projected shortage – see plan below
Irrigation	62	98	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-43 and C-44, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

2 – Balance includes totals for Brazos G and Region K

3 – Balance includes totals for Brazos G only

5.22.1 Aqua WSC

Description of Supply

Aqua WSC is located in Lee and Bastrop (Region K) Counties with a majority of its demand in Bastrop County. Aqua WSC obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer. Based on the existing supply available from groundwater, demands are projected to match supplies from year 2020 through year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, and in coordination with Region K, the following water management strategy is recommended for Aqua WSC.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $6,829 in 2020
- Unit Cost: $496/acft

Table 5.22-2. Recommended Plan Costs by Decade for Aqua WSC (Brazos G)

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*0*	*0*	*0*	*0*	*0*
Conservation						
Supply From Plan Element (acft/yr)	14	12	5	1	1	0
Annual Cost ($/yr)	$6,829	$5,718	$2,406	$618	$278	$162
Projected Surplus/(Shortage) after Conservation (acft/yr)	*14*	*12*	*5*	*1*	*1*	*0*

5.22.2 City of Giddings

Description of Supply

The City of Giddings obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer. There are surpluses projected through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Giddings.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $115,707 in 2070
- Unit Cost: $496/acft

Table 5.22-3. Recommended Plan Costs by Decade for City of Giddings

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*614*	*502*	*443*	*424*	*406*	*395*
Conservation						
Supply From Plan Element (acft/yr)	39	131	231	230	232	233
Annual Cost ($/yr)	$19,176	$65,196	$114,817	$114,060	$114,869	$115,707
Projected Surplus/(Shortage) after Conservation	*653*	*633*	*674*	*654*	*637*	*628*

5.22.3 Lee County WSC

Lee County WSC is located in Lee, Bastrop (Region K) and Fayette (Region K) counties. The majority of water demand is located in Lee County. The WSC obtains its water supply from groundwater from the Queen City Aquifer. Balance and strategies represented in Table 5.22-1 are for the entire WSC in all counties and regions. No shortages are projected for the planning period. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.22.4 City of Lexington

Description of Supply

The City of Lexington obtains its water supply from the Carrizo-Wilcox Aquifer. No shortages are projected for the City of Lexington, surpluses are projected through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Lexington.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $12,899 in 2030
- Unit Cost: $496/acft

Table 5.22-4. Recommended Plan Costs by Decade for City of Lexington

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*425*	*402*	*390*	*386*	*383*	*381*
Conservation						
Supply From Plan Element (acft/yr)	8	26	23	21	21	21
Annual Cost ($/yr)	$3,807	$12,899	$11,384	$10,568	$10,267	$10,248
Projected Surplus/(Shortage) after Conservation	*432*	*428*	*413*	*407*	*403*	*401*

5.22.5 County-Other

Entities in Lee County-Other receive supplies from the Carrizo-Wilcox Aquifer. County-Other is projected to have a surplus of water through the year 2070 and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.22.6 Manufacturing

Manufacturing is supplied from City of Giddings and is projected to have a surplus of water through the year 2070 and no changes in water supply are recommended.

5.22.7 Steam-Electric

No Steam-Electric demand exists nor is projected for the county.

5.22.8 Mining

Description of Supply

Mining operations in Lee County are projected to have demand, but currently have no supply sources. Shortages for Mining are projected between 2020 and 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Lee County-Mining.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: 2020
   - Annual Cost: not determined

b. Leave needs unmet
   - Cost Source: Cost of not meeting needs – see Appendix H
   - Date to be Implemented: 2020

Table 5.22-5. Recommended Plan Costs by Decade for Lee County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(3,180)*	*(7,289)*	*(7,767)*	*(8,304)*	*(8,904)*	*(9,631)*
Conservation						
Supply From Plan Element (acft/yr)	95	364	543	581	623	674
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(3,085)*	*(6,925)*	*(7,223)*	*(7,723)*	*(8,281)*	*(8,957)*
Leave needs unmet						
Supply From Plan Element (acft/yr)	3,085	6,925	7,223	7,723	8,281	8,957
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.22.9 Irrigation

Lee County Irrigation is supplied from run-of-the river water rights and Carrizo-Wilcox Aquifer. Irrigation is projected to have a surplus of water through the year 2070 and no changes in water supply are recommended.

5.22.10 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

This page intentionally left blank.

5.23 Limestone County Water Supply Plan

Table 5.23-1 lists each water user group in Limestone County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.23-1. Limestone County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Coolidge	38	(140)	Projected shortage – see plan below
City of Groesbeck	(668)	(672)	Projected shortage – see plan below
City of Mart			See McLennan County
City of Mexia[2]	1,082	497	Projected Surplus
City of Thornton	206	207	Projected Surplus
Tri-County SUD			See Falls County
County-Other	399	330	Projected surplus
Manufacturing	0	0	Demand equals supply
Steam-Electric	(9,017)	(30,893)	Projected shortage – see plan below
Mining	(9,056)	(10,616)	Projected shortage – see plan below
Irrigation	14	14	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-45 and C-46, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

2 – Mexia balance after Region C strategy applied to provide additional supply to Wortham.

5.23.1 City of Coolidge

Description of Supply

The City of Coolidge has a contract from Post Oak SUD in Region C and also has a contract for 225 acft/yr from Bistone MWSD, which obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer and surface water from Lake Mexia. However, Bistone MWSD does not have sufficient supplies to meet the contracted demand.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, and in coordination with Region C, the following water management strategies are recommended to meet the projected water shortage for the City of Coolidge.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost:$2,502 Maximum in 2020
- Unit Cost: $496/acft

b. Increase supplies from Post Oak SUD

- Cost Source: 2016 Region C Water Plan (see Appendix K)
- Date to be Implemented: 2040
- Project Cost: None. Contracted supplies with existing infrastructure

c. Bistone MWSD to firm up contracts through Carrizo-Wilcox Aquifer Development

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: Infrastructure assumed appropriate

Table 5.23-2. Recommended Plan Costs by Decade for City of Coolidge

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*71*	*(12)*	*(38)*	*(70)*	*(105)*	*(140)*
Conservation						
Supply From Plan Element (acft/yr)	5	4	1	—	—	—
Annual Cost ($/yr)	$2,502	$2,213	$496	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*76*	*(7)*	*(37)*	*(70)*	*(105)*	*(140)*
Increase supplies from Post Oak SUD						
Supply From Plan Element (acft/yr)	—	—	—	—	—	13
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—
Bistone MWSD to firm up contracts through Carrizo-Wilcox Aquifer Development						
Supply From Plan Element (acft/yr)	104	109	113	118	123	127
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

5.23.2 City of Groesbeck

Description of Supply

The City of Groesbeck obtains its water supply from the Navasota River. The City owns senior water rights (priority date of 1921) on the Navasota River and has limited storage available from Springfield Lake. The City recently purchased a quarry to temporarily store water supply to manage the most recent drought. However; until a permanent solution is identified, the City of Groesbeck is projected to have shortages with future droughts.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for the City of Groesbeck.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost:$793
- Unit Cost: $496/acft

b. Groesbeck Off-Channel Reservoir

- Cost Source: Volume II, Chapter 4.4
  - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
- Date to be Implemented: 2020
- Project Cost:$11,909,000
- Unit Cost: $617/acft

Table 5.23-3. Recommended Plan Costs by Decade for City of Groesbeck

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(688)*	*(677)*	*(668)*	*(665)*	*(668)*	*(672)*
Conservation						
Supply From Plan Element (acft/yr)	2	—	—	—	—	—
Annual Cost ($/yr)	$793	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(686)*	*(677)*	*(668)*	*(665)*	*(668)*	*(672)*
Groesbeck OCR						
Supply From Plan Element (acft/yr)	1,755	1,755	1,755	1,755	1,755	1,755
Annual Cost ($/yr)	$1,082,835	$1,082,835	$1,082,835	$1,082,835	$212,355	$212,355
Unit Cost ($/acft)	$617	$617	$617	$617	$121	$121

5.23.3 City of Mexia

The City of Mexia has a contract for 4,480 acft/yr from Bistone MWSD, which obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer and surface water from Lake Mexia. The city provides supply to the City of Wortham (Region C) and to other entities in Limestone County-Other. Region C has recommended that the contract with Wortham (157 acft/yr) be increased to 336 acft/yr by 2070 to meet projected shortages for Wortham. The city is projected to have surplus supply through 2070 and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.23.4 City of Thornton

The City of Thornton obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer. No shortages are projected for the City of Thornton, and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.23.5 County-Other

Description of Supply

Entities in County-Other are projected to have a surplus of water through the year 2070 and no changes in water supply are recommended. Various entities are dealing with elevated levels of arsenic in groundwater supplies and have been pursuing water management strategies through the FHLM WSC. Through a TWDB sponsored study coordinated by FHLM WSC, these entities have considered a regional brackish RO WTP in Limestone County, Carrizo-Wilcox Regional Groundwater in Limestone County, Tehuacana Reservoir, and supplies from City of Marlin (Brushy Creek Reservoir), and City of Waco. The recommended strategy is to provide for arsenic treatment for individual entities. This strategy does not provide new supply. Surpluses are projected through the year 2070.

Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for Limestone County-Other.

a. Upgrade Treatment for Arsenic

Entities within County-Other for which Arsenic treatment is recommended include Prairie Hill WSC.

- Cost Source: Volume II, Chapter 12.5
- Date to be Implemented: 2020
- Project Cost: $1,115,000
- Unit Cost: $1,414/acft

Table 5.23-4. Recommended Plan Costs by Decade for the Limestone County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*396*	*399*	*399*	*384*	*357*	*330*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*396*	*399*	*399*	*384*	*357*	*330*
Upgrade Treatment for Arsenic						
Supply From Plan Element (acft/yr)	268	268	268	268	268	268
Annual Cost ($/yr)	$379,000	$379,000	$286,000	$286,000	$286,000	$286,000
Unit Cost ($/yr)	$1,414	$1,414	$1,067	$1,067	$1,067	$1,067

5.23.6 Manufacturing

Limestone County Manufacturing obtains its water supply the cities of Coolidge, Groesbeck, Mexia and Bistone MWSD. Based on the available surface water supply, Limestone County Manufacturing is projected to have sufficient supplies through 2070.

5.23.7 Steam-Electric

Description of Supply

Steam-Electric water demand in Limestone County is associated with the NRG (formerly Reliant Energy) power plant located at Lake Limestone. NRG has contracted with the Brazos River Authority for water supply from Lake Limestone. Additional Steam-Electric demands are projected for Limestone County and are anticipated to come online before 2040. Based on the available surface water supply, Limestone County Steam-Electric is projected to have shortages from 2030 through the year 2070.

Recommended Strategy

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Limestone County-Mining.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: not determined

b. Reallocation of surplus McLennan County Steam-Electric supplies

- Cost Source: Unknown – the exact location of the projected Steam-Electric demands in Limestone County is unknown, but could be located near supplies in McLennan County.
- Date to be Implemented: 2030
- Project Cost: Capital cost unknown, as demands vary geographically.
- Unit Cost: assumed $250/acft

c. Reduce Demand through Alternative Cooling Technology

Steam-Electric cooling is often water-intensive, and the water demands provided by the TWDB reflect this. Alternative technologies that utilize air cooling or other less water intensive methods could be substituted. Costs shown are for the additional costs for implementation of these more advanced technologies for cooling.

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2060
- Project Cost: Unable to determine with available information

Table 5.23-5. Recommended Plan Costs by Decade for Limestone County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*78*	*(4,051)*	*(9,017)*	*(15,003)*	*(22,234)*	*(30,893)*
Conservation						
Supply From Plan Element (acft/yr)	678	1,321	2,176	2,573	3,058	3,642
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*78*	*(2,730)*	*(6,842)*	*(12,430)*	*(19,176)*	*(27,250)*
Reallocation of supplies from McLennan County Steam-Electric						
Supply From Plan Element (acft/yr)	—	2,730	6,842	12,430	17,963	17,129
Annual Cost ($/yr)	—	$682,500	$1,710,500	$3,107,500	$4,490,750	$4,282,250
Unit Cost ($/acft)	—	$250	$250	$250	$250	$250
Reduce Demand through Alternative Cooling Technology						
Supply From Plan Element (acft/yr)	—	—	—	—	1,213	10,121
Annual Cost ($/yr)	—	—	—	—	ND	ND
Unit Cost ($/acft)	—	—	—	—	ND	ND

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.23.8 Mining

Description of Supply

Mining operations in Limestone County are supplied by Carrizo-Wilcox groundwater. Demands for Mining exceed current supplies resulting in shortages beginning in 2020.

Recommended Strategy

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Limestone County-Mining.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: not determined

b. Carrizo-Wilcox Aquifer Development (Brazos-Basin)
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2020
   - Project Cost: $31,546,000
   - Unit Cost: Max of $603 /acft (2020)

c. Carrizo-Wilcox Aquifer Development (Trinity-Basin)
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2020
   - Project Cost: $5,871,000
   - Unit Cost: Max of $607 /acft (2020)

d. Leave needs unmet
   - Cost Source: Cost of not meeting needs – see Appendix H
   - Date to be Implemented: 2020

Table 5.23-6. Recommended Plan Costs by Decade for Limestone County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(9,508)*	*(9,116)*	*(9,056)*	*(9,530)*	*(9,996)*	*(10,616)*
Conservation						
Supply From Plan Element (acft/yr)	310	496	691	724	756	800
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(9,198)*	*(8,619)*	*(8,365)*	*(8,806)*	*(9,239)*	*(9,816)*
Carrizo Aquifer Development (Brazos Basin)						
Supply From Plan Element (acft/yr)	4,510	4,535	4,610	4,806	4,699	4,592
Annual Cost ($/yr)	$2,898,125	$2,898,125	$257,125	$257,125	$257,125	$257,125
Unit Cost ($/acft)	$603	$603	$54	$54	$54	$54

Table 5.23-6. Recommended Plan Costs by Decade for Limestone County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Carrizo Aquifer Development (Trinity Basin)						
Supply From Plan Element (acft/yr)	888	888	888	888	888	888
Annual Cost ($/yr)	$538,837	$538,837	$47,837	$47,837	$47,837	$47,837
Unit Cost ($/acft)	$607	$607	$54	$54	$54	$54
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	3,800	3,197	2,867	3,112	3,652	4,336
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location.

5.23.9 Irrigation

Irrigation is projected to have a surplus of water through the year 2070 and no changes in water supply are recommended.

5.23.10 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

5.24 McLennan County Water Supply Plan

Table 5.24-1 lists each water user group in McLennan County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.24-1. McLennan County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Bellmead	206	45	Projected surplus
City of Beverly Hills	0	0	Demand equals supply
City of Bruceville-Eddy	1,040	929	Projected surplus
Chalk Bluff WSC	466	471	Projected surplus
Coryell City Water Supply District			See Coryell County
City of Crawford	(3)	(7)	Projected shortage – see plan below
Cross Country WSC	109	(138)	Projected shortage – see plan below
Elm Creek WSC			See Bell County
City of Gholson	749	709	Projected surplus
City of Golinda			See Falls County
City of Hallsburg	0	0	Projected surplus
City of Hewitt	(211)	(231)	Projected shortage – see plan below
City of Lacy-Lakeview	261	95	Projected surplus
City of Lorena	95	1	Projected surplus
City of Mart	(182)	(245)	Projected shortage – see plan below
City of McGregor	2,004	1,759	Projected surplus
City of Moody	404	347	Projected surplus
North Bosque WSC	(265)	(628)	Projected shortage – see plan below
City of Riesel	(11)	(19)	Projected shortage – see plan below
City of Robinson	(720)	(1,909)	Projected shortage – see plan below
Tri-County SUD			See Falls County
Valley Mills			See Bosque County
City of Waco	12,925	9,827	Projected surplus – see Chapter 5.38
City of West	888	850	Projected surplus
West Brazos WSC			See Falls County
Western Hills WS	306	270	Projected surplus
City of Woodway	(20)	(103)	Projected shortage – see plan below
County-Other	301	340	Projected surplus

Table 5.24-1. McLennan County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Manufacturing	(2,204)	(2,834)	Projected shortage – see plan below
Steam-Electric	20,224	17,129	Projected surplus
Mining	(2,786)	(3,942)	Projected shortage – see plan below
Irrigation	(2,325)	(2,363)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-47 and C-48, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.24.1 City of Bellmead

Description of Supply

The City of Bellmead obtains its water supply from the Trinity Aquifer. The City of Bellmead also has contracted with the City of Waco for supplemental surface water supply from Lake Waco, but has no plans to utilize the contract. No shortages are projected for the City of Bellmead; however, the City of Waco and the City of Bellmead are considering alternate water supply in order to reduce Bellmead's dependence on Trinity Aquifer groundwater. The purchase of supplemental reuse water from WMARSS is recommended to reduce demands on Trinity Aquifer.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Bellmead.

a. Purchase reuse water from WMARSS (Bellmead/Lacy-Lakeview Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers.

   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: by 2020
   - Project Cost:$2,884,000 (City's portion)
   - Unit Cost: $324/acft

Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.24-2. Recommended Plan Costs by Decade for City of Bellmead

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*261*	*233*	*206*	*163*	*105*	*45*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*261*	*233*	*206*	*163*	*105*	*45*
WMARSS Bellmead/Lacy Lakeview Reuse						
Supply From Plan Element (acft/yr)	1,120	1,120	1,120	1,120	1,120	1,120
Annual Cost ($/yr)	$362,500	$362,500	$121,000	$121,000	$121,000	$121,000
Unit Cost ($/acft)	$324	$324	$108	$108	$108	$108
Projected Surplus/(Shortage) after Reuse (acft/yr)	*1,381*	*1,353*	*1,326*	*1,283*	*1,225*	*1,165*

5.24.2 City of Beverly Hills

The City of Beverly Hills obtains its water supply from surface water from the City of Waco. No shortages are projected for the City of Beverly Hills and no change in water supply is recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.24.3 City of Bruceville-Eddy

Description of Supply

The City of Bruceville-Eddy obtains its water supply from the Trinity Aquifer and has a contract for surface water from Lake Belton from Bluebonnet WSC for supplemental water supplies. No shortages are projected for the City of Bruceville-Eddy. This WUG is located in multiple counties (McLennan and Falls). The surpluses shown in Table 5-24.1 represent the cumulative totals for the City of Bruceville-Eddy.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Bruceville-Eddy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Unit Cost: $474/acft
- Annual Cost: maximum of $18,486 in 2070

b. Water Supply from Bluebonnet WSC

- Cost Source: BRA to firm up water supply
- Date to be Implemented: 2030
- Project Cost: assumes infrastructure in place to deliver supply
- Unit Cost: $500/acft (wholesale water rate from Bluebonnet WSC)

Table 5.24-3. Recommended Plan Costs by Decade for City of Bruceville-Eddy

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*1,084*	*1,064*	*1,040*	*999*	*968*	*929*
Conservation						
Supply From Plan Element (acft/yr)	11	33	38	36	38	40
Annual Cost ($/yr)	$5,214	$15,168	$17,538	$17,064	$17,538	$18,486
Projected Surplus/(Shortage) after Conservation	*1,095*	*1,097*	*1,078*	*1,035*	*1,006*	*969*
Water Supply from Bluebonnet WSC						
Supply From Plan Element (acft/yr)	—	5	14	39	51	71
Annual Cost ($/yr)	—	$2,500	$7,000	$19,500	$25,500	$35,500
Unit Cost ($/acft)	—	$500	$500	$500	$500	$500

5.24.4 Chalk Bluff WSC

Chalk Bluff WSC obtains its water supply from the Trinity Aquifer. No shortages are projected for the Chalk Bluff WSC. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.24.5 City of Crawford

Description of Supply

The City of Crawford obtains its water supply from the Trinity Aquifer and run-of-the-river diversion from Tonk Creek into Rock Quarry Lake. A small shortage is projected beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Crawford.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $13,746 in 2070
- Unit Cost: $474/acft

Table 5.24-4. Recommended Plan Costs by Decade for City of Crawford

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(5)*	*(3)*	*(3)*	*(3)*	*(5)*	*(7)*
Conservation						
Supply From Plan Element (acft/yr)	7	16	27	28	28	29
Annual Cost ($/yr)	$3,318	$7,584	$12,798	$13,272	$13,272	$13,746
Projected Surplus/(Shortage) after Conservation	*2*	*13*	*24*	*25*	*23*	*22*

5.24.6 Cross Country WSC

Description of Supply

Cross Country WSC obtains its water supply from groundwater from the Trinity Aquifer. Based on the available groundwater supply, Cross Country WSC is projected to have a shortage from 2050 through the year 2070. This WUG is located in multiple counties (McLennan and Bosque). The surplus/shortages shown in Table 5.24-1 represent the cumulative totals for Cross Country WSC.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the Cross Country WSC.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $14,000 in 2070
- Unit Cost: $474/acft

b. Purchase water from City of Waco

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2050
- Project Cost: $2,579,000
- Unit Cost: assumed unit cost of $3,273/acft ($10.15/1,000 gallons) for wholesale treated water, including transmission costs

Table 5.24-5. Recommended Plan Costs by Decade for Cross Country WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*114*	*109*	*109*	*(127)*	*(132)*	*(138)*
Conservation						
Supply From Plan Element (acft/yr)	20	24	14	10	8	8
Annual Cost ($/yr)	$9,759	$11,954	$6,820	$5,178	$4,157	$4,100
Projected Surplus/(Shortage) after Conservation	*133*	*133*	*122*	*(117)*	*(124)*	*(130)*
Purchase from Waco						
Supply From Plan Element (acft/yr)	—	—	—	150	150	150
Annual Cost ($/yr)	—	—	—	$491,000	$491,000	$275,000
Unit Cost ($/yr)	—	—	—	$3,273	$3,273	$1,833

5.24.7 City of Gholson

The City of Gholson obtains its water supply from groundwater from the Trinity Aquifer through Gholson WSC. A surplus is projected through the year 2070; and, there are no changes recommended to the water supply. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.24.8 City of Hallsburg

The City of Hallsburg obtains its water supply from groundwater from the Trinity Aquifer through H&H WSC. The WSC has sufficient supplies to meet the city's projected demands.

Water Supply Plan

To reduce demands on the Trinity Aquifer in McLennan County, the following water supply management strategy is an alternative for the City of Hallsburg.

a. Alternative: Purchase reuse water from WMARSS (Waco East Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost: $250,970 (City's portion)
- Unit Cost: $869/acft

Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.24-6. Recommended Plan Costs by Decade for City of Hallsburg

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*0*	*0*	*0*	*0*	*0*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*0*	*0*	*0*	*0*	*0*	*0*
Alternative: WMARSS Waco East Reuse						
Supply From Plan Element (acft/yr)	31	31	31	31	31	31
Annual Cost ($/yr)	$26,939	$26,939	$5,921	$5,921	$5,921	$5,921
Unit Cost ($/acft)	$869	$869	$191	$191	$191	$191
Projected Surplus/(Shortage) after Reuse (acft/yr)	*31*	*31*	*31*	*31*	*31*	*31*

5.24.9 City of Hewitt

Description of Supply

The City of Hewitt obtains its water supply from groundwater from the Trinity Aquifer, and has a contract with the City of Waco for a supplemental supply from Lake Waco. Conservation and purchase of supplemental reuse water from WMARSS is recommended to reduce demands on water supplied from the Trinity Aquifer and by the City of Waco. The City of Waco contract is structured to "meet" the water needs of Hewitt. The shortages for Hewitt shown in Table 5.24-7 are artificially created to allow conservation savings to reduce the supplies needed from the City of Waco.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the City of Hewitt. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: maximum of $112,338 in 2030
   - Unit Cost: $474/acft

b. Purchase reuse water from WMARSS (Bulhide Creek Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers.

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost: $4,657,000
- Unit Cost: $381/acft

Table 5.24-7. Recommended Plan Costs by Decade for City of Hewitt

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(87)*	*(237)*	*(211)*	*(204)*	*(216)*	*(231)*
Conservation						
Supply From Plan Element (acft/yr)	87	237	211	204	216	231
Annual Cost ($/yr)	$41,000	$112,000	$100,000	$97,000	$102,000	$109,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*0*	*0*	*0*	*0*	*0*	*0*
WMARSS – Bullhide Creek Reuse						
Supply From Plan Element (acft/yr)	1,223	1,223	1,223	1,223	1,223	1,223
Annual Cost ($/yr)	$470,000	$470,000	$183,000	$183,000	$183,000	$183,000
Unit Cost ($/yr)	$381	$381	$149	$149	$149	$149
Projected Surplus/(Shortage) after Reuse (acft/yr)	*1,223*	*1,223*	*1,223*	*1,223*	*1,223*	*1,223*

5.24.10 City of Lacy-Lakeview

Description of Supply

The City of Lacy-Lakeview obtains its water supply from the City of Waco. Based on the current contracted amount, the City of Lacy-Lakeview is projected to have a surplus of supplies. Supplemental reuse water from WMARSS is recommended to reduce demands on water supplied by the City of Waco.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Lacy-Lakeview.

a. Purchase reuse water from WMARSS (Bellmead/Lacy-Lakeview Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers.

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: before 2020
- Project Cost:$2,884,000 (City's portion)
- Unit Cost: $324/acft

Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.24-8. Recommended Plan Costs by Decade for the City of Lacy-Lakeview

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*348*	*303*	*261*	*212*	*154*	*95*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*348*	*303*	*261*	*212*	*154*	*95*
WMARSS – Bellmead/Lacy-Lakeview Reuse						
Supply From Plan Element (acft/yr)	1,120	1,120	1,120	1,120	1,120	1,120
Annual Cost ($/yr)	$362,500	$362,500	$121,000	$121,000	$121,000	$121,000
Unit Cost ($/yr)	$324	$324	$108	$108	$108	$108
Projected Surplus/(Shortage) after Reuse (acft/yr)	*1,468*	*1,423*	*1,381*	*1,332*	*1,274*	*1,215*

5.24.11 City of Lorena

Description of Supply

The City of Lorena obtains its water supply from a contract with the Brazos River Authority (treated by the City of Robinson) and the Trinity Aquifer. No shortages are projected for the City of Lorena; however, purchase of supplemental reuse water from WMARSS is recommended to reduce demands on groundwater from the Trinity Aquifer.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Lorena.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $5,000 in 2020
- Unit Cost: $474/acft

b. Purchase reuse water from WMARSS (Bullhide Creek Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost:$2,884,000 (City's portion)
- Unit Cost: $324/acft

Table 5.24-9. Recommended Plan Costs by Decade for the City of Lorena

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*153*	*123*	*95*	*66*	*33*	*1*
Conservation						
Supply From Plan Element (acft/yr)	10	3	—	—	—	—
Annual Cost ($/yr)	$4,700	$1,400	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*163*	*126*	*95*	*66*	*33*	*1*
WMARSS – Bullhide Creek Reuse						
Supply From Plan Element (acft/yr)	448	448	448	448	448	448
Annual Cost ($/yr)	$171,000	$171,000	$67,000	$67,000	$67,000	$67,000
Unit Cost ($/yr)	$381	$381	$149	$149	$149	$149
Projected Surplus/(Shortage) after Conservation (acft/yr)	*611*	*574*	*543*	*514*	*481*	*449*

5.24.12 City of Mart

Description of Supply

The City of Mart obtains its water supply from the Trinity Aquifer and Lake Mart. Based on the available groundwater supply and little or no firm yield from Lake Mart, the City of Mart is projected to have a shortage through the year 2070. The City is located in multiple counties (McLennan and Limestone). The surplus/shortages shown in Table 5.24-1 represent the cumulative totals for the City of Mart.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Mart.

a. Purchase Water Supply from City of Waco

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $5,275,000
- Unit Cost: $3,028/acft for wholesale treated water, including transmission costs

b. Alternative: Purchase reuse water from WMARSS (Waco East Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost:$1,085,000 (City's portion)
- Unit Cost: $869/acft

Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.24-10. Recommended Plan Costs by Decade for the City of Mart

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(150)*	*(167)*	*(182)*	*(200)*	*(222)*	*(245)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(150)*	*(167)*	*(182)*	*(200)*	*(222)*	*(245)*
Purchase Water Supply from City of Waco						
Supply From Plan Element (acft/yr)	250	250	250	250	250	250
Annual Cost ($/yr)	$757,000	$757,000	$316,000	$316,000	$316,000	$316,000
Unit Cost ($/yr)	$3,028	$3,028	$1,264	$1,264	$1,264	$1,264
Alternative: WMARSS – Waco East Reuse						
Supply From Plan Element (acft/yr)	134	134	134	134	134	134
Annual Cost ($/yr)	$116,000	$116,000	$26,000	$26,000	$26,000	$26,000
Unit Cost ($/yr)	$869	$869	$191	$191	$191	$191

5.24.13 City of McGregor

The City of McGregor obtains its water supply from the Trinity Aquifer and from surface water from Lake Belton via Bluebonnet WSC. No shortages are projected for the City of McGregor and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.24.14 City of Moody

The City of Moody obtains its water supply from the Trinity Aquifer and from surface water from Lake Belton via a contract with the Brazos River Authority. Bluebonnet WSC treats and delivers water to the City from Lake Belton. No shortages are projected for the City of Moody, and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.24.15 North Bosque WSC

Description of Supply

North Bosque WSC obtains its water supply from the Trinity Aquifer. Based on the available groundwater supply, North Bosque WSC is projected to have a shortage through the year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for North Bosque WSC. Associated costs are included for each strategy.

a. Conservation
    - Cost Source: Volume II, Chapter 2
    - Date to be Implemented: before 2020
    - Annual Cost: maximum of $224,000 in 2070
    - Unit Cost: $474/acft

b. Purchase Water Supply from City of Waco
    - Cost Source: Volume II, Chapter 12
    - Date to be Implemented: 2020
    - Project Cost: $2,203,000
    - Unit Cost: $2,325/acft for wholesale treated water, including transmission costs

Table 5.24-11. Recommended Plan Costs by Decade for North Bosque WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(14)*	*(146)*	*(265)*	*(385)*	*(507)*	*(628)*
Conservation						
Supply From Plan Element (acft/yr)	33	99	183	280	390	452
Annual Cost ($/yr)	$16,476	$49,108	$90,667	$138,754	$193,295	$224,365
Projected Surplus/(Shortage) after Conservation (acft/yr)	*20*	*(47)*	*(82)*	*(105)*	*(117)*	*(175)*
Purchase Water Supply from City of Waco						
Supply From Plan Element (acft/yr)	—	200	200	200	200	200
Annual Cost ($/yr)	—	$465,000	$465,000	$281,000	$281,000	$281,000
Unit Cost ($/yr)	—	$2,325	$2,325	$1,405	$1,405	$1,405

5.24.16 City of Riesel

Description of Supply

The City of Riesel obtains its water supply from the Trinity Aquifer. Based on the available groundwater supply, the City of Riesel is projected to have a shortage through the year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Riesel. Associated costs are included for each strategy.

a. Additional Purchase from RMS WSC
    - Cost Source: Volume II, Chapter 12
    - Date to be Implemented: 2020
    - Annual Cost: $19,540
    - Unit Cost: $977/acft (RMS WSC wholesale water rate)
b. Alternative: Purchase reuse water from WMARSS (Waco East Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers.
    - Cost Source: Volume II, Chapter 3
    - Date to be Implemented: 2020
    - Project Cost:$348,000 (City's portion)
    - Unit Cost: $869/acft

Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.24-12. Recommended Plan Costs by Decade for City of Riesel

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(11)*	*(11)*	*(11)*	*(12)*	*(15)*	*(19)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*(11)*	*(11)*	*(11)*	*(12)*	*(15)*	*(19)*
Purchase Water Supply from RMS WSC						
Supply From Plan Element (acft/yr)	20	20	20	20	20	20
Annual Cost ($/yr)	$19,540	$19,540	$19,540	$19,540	$19,540	$19,540
Unit Cost ($/yr)	$977	$977	$977	$977	$977	$977
Alternative: WMARSS East Reuse						
Supply From Plan Element (acft/yr)	43	43	43	43	43	43
Annual Cost ($/yr)	$37,000	$37,000	$8,000	$8,000	$8,000	$8,000
Unit Cost ($/yr)	$869	$869	$191	$191	$191	$191

5.24.17 City of Robinson

Description of Supply

The City of Robinson obtains its water supply from the Trinity Aquifer, the Brazos River and the City of Waco. Western Brazos WSC also serves some customers within the city limits of Robinson, which is considered a supply for the City's demand. The city also has a 140 acft/yr contract to provide treated supply to the City of Lorena, which utilizes Lorena's contract with the BRA. Based on the constrained supply amounts, the City of Robinson is projected to have shortages. Although the City has sufficient raw water supply to meet its future needs, the City's water treatment plant has an annual average capacity of 1,125 acft.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Robinson. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum $312,000 in 2070
- Unit Cost: $474/acft

b. Expand Water Treatment Plant (4 MGD)

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2030
- Project Cost: $13,153,000
- Unit Cost: Max of $912/acft

Table 5.24-13. Recommended Plan Costs by Decade for City of Robinson

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*72*	*(346)*	*(720)*	*(1,109)*	*(1,511)*	*(1,909)*
Conservation						
Supply From Plan Element (acft/yr)	91	316	507	549	605	663
Annual Cost ($/yr)	$43,000	$150,000	$240,000	$260,000	$287,000	$314,000
Projected Surplus/(Shortage) after Conservation	*163*	*(30)*	*(213)*	*(560)*	*(907)*	*(1,246)*
Expand WTP (4 MGD)						
Supply From Plan Element (acft/yr)	—	2,240	2,240	2,240	2,240	2,240
Annual Cost ($/yr)	—	$2,042,000	$2,042,000	$941,000	$941,000	$941,000
Unit Cost ($/yr)	—	$912	$912	$420	$420	$420

5.24.18 City of Waco

The City of Waco obtains its water supply from surface water from Lake Waco, for which it owns water rights. The City supplies several neighboring communities with treated water. A portion of the city's treated wastewater is also contracted to irrigation and industrial customers in the County. The City is projected to have a surplus of supplies through the planning period. Refer to Chapter 5.38 for the City's plan as a Wholesale Water Provider.

5.24.19 City of West

Description of Supply

The City of West obtains its water supply from the Trinity Aquifer and the City of Waco. Surpluses are projected through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of West.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum $10,870 in 2030
- Unit Cost: $474/acft

Table 5.24-14. Recommended Plan Costs by Decade for City of West

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*898*	*893*	*888*	*879*	*865*	*850*
Conservation						
Supply From Plan Element (acft/yr)	15	23	13	7	6	6
Annual Cost ($/yr)	$7,110	$10,902	$6,162	$3,318	$2,844	$2,844
Projected Surplus/(Shortage) after Conservation	*913*	*916*	*901*	*886*	*871*	*856*

5.24.20 Western Hills WS

Western Hills WS obtains its water supply from the Trinity Aquifer. Based on the available groundwater supply, Western Hills WS is projected to have a surplus of supply through 2070. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.24.21 City of Woodway

Description of Supply

The City of Woodway obtains its water supply from the Trinity Aquifer, from Lake Waco from the City of Waco, and from Lake Belton from Bluebonnet WSC. The City provides 2 acft/yr for McLennan County Manufacturing. The supply contracts are adequate to meet demands; however under drought conditions, Bluebonnet WSC may not be able to provide the full contract amount to all of its customers, including Woodway.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Woodway.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: 2020
   - Annual Cost: maximum $896,000 in 2070
   - Unit Cost: $474/acft

b. Water Supply from Bluebonnet WSC
   - Cost Source: BRA to firm up water supply
   - Date to be Implemented: 2030
   - Project Cost: assumes infrastructure in place to deliver supply
   - Unit Cost: $500/acft (wholesale water rate from Bluebonnet WSC)

Table 5.24-15. Recommended Plan Costs by Decade for City of Woodway

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*(7)*	*(20)*	*(57)*	*(74)*	*(103)*
Conservation						
Supply From Plan Element (acft/yr)	208	512	832	1,180	1,541	1,906
Annual Cost ($/yr)	$98,592	$242,688	$394,368	$559,320	$730,434	$903,444
Projected Surplus/(Shortage) after Conservation	*208*	*506*	*812*	*1,123*	*1,466*	*1,804*
Water Supply from Bluebonnet WSC						
Supply From Plan Element (acft/yr)	—	7	20	57	74	103
Annual Cost ($/yr)	—	$3,500	$10,000	$28,500	$37,000	$51,500
Unit Cost ($/acft)	—	$500	$500	$500	$500	$500

5.24.22 County-Other

Description of Supply

McLennan County-Other entities obtain water supply from groundwater from the Trinity Aquifer and surface water from Lake Belton and Lake Waco. Entities in County-Other provide additional supply to the cities of Hallsburg and Riesel, and provide supply to industrial customers in McLennan County. Various entities are dealing with elevated levels of arsenic in groundwater supplies and have been pursuing water management strategies through the FHLM WSC. Through a TWDB sponsored study coordinated by FHLM WSC, these entities have considered a regional brackish RO WTP in Limestone County, Carrizo-Wilcox Regional Groundwater in Limestone County, Tehuacana Reservoir, and supplies from City of Marlin (Brushy Creek Reservoir), and City of Waco. The recommended strategy is to provide for arsenic treatment for individual entities. This strategy does not provide new supply. Surpluses are projected through the year 2070.

Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for McLennan County-Other.

a. Upgrade Treatment for Arsenic

Entities within County-Other for which Arsenic treatment is recommended include EOL WSC, LTG WSC, MS WSC, and RMS WSC. This is a treatment strategy and does not increase the supply available to these entities. Total treatment is estimated at 917 acft/yr.

- Cost Source: Volume II, Chapter 12.5
- Date to be Implemented: 2020
- Project Cost: $3,811,000
- Unit Cost: $1,021/acft

Table 5.24-16. Recommended Plan Costs by Decade for the McLennan County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*84*	*204*	*301*	*344*	*349*	*340*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*84*	*204*	*301*	*344*	*349*	*340*
Upgrade Treatment for Arsenic						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	$936,000	$936,000	$617,000	$617,000	$617,000	$617,000
Unit Cost ($/yr)	$1,021	$1,021	$673	$673	$673	$673

5.24.23 Manufacturing

Description of Supply

Water supply for manufacturing in McLennan County is obtained by purchase from a city or water supply corporation, from Trinity Aquifer wells operated by the manufacturing entity, and from run-of-river rights and Lake Waco. McLennan County Manufacturing is projected to have shortages beginning in 2020. However, purchase of supplemental reuse water from WMARSS is recommended to reduce demands on water supplied by the run-of-river rights, Lake Waco and groundwater from the Trinity Aquifer

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for McLennan County Manufacturing.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: Not determined

b. WMARSS Flat Creek Reuse Project

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost: None. City of Waco is the project sponsor. Entity will purchase from the City.
- Unit Cost: $205/acft

Table 5.24-17. Recommended Plan Costs by Decade for McLennan County – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,664)*	*(1,916)*	*(2,204)*	*(2,417)*	*(2,664)*	*(2,834)*
Conservation						
Supply From Plan Element (acft/yr)	153	286	446	487	527	571
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(1,511)*	*(1,630)*	*(1,758)*	*(1,930)*	*(2,137)*	*(2,263)*
Purchase Reuse Supplies from WMARSS – Flat Creek Project						
Supply From Plan Element (acft/yr)	1,600	1,700	1,800	2,000	2,200	2,500
Annual Cost ($/yr)	$328,000	$349,000	$189,000	$210,000	$231,000	$263,000
Unit Cost ($/acft)	$205	$205	$105	$105	$105	$105
Projected Surplus/(Shortage) after Reuse (acft/yr)	*89*	*70*	*42*	*70*	*63*	*237*

ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location.

5.24.24 Steam-Electric

McLennan County Steam-Electric obtains its water supply from Tradinghouse Reservoir and from WMARSS reuse. No shortage is projected for McLennan County Steam-Electric and no changes in water supply are recommended.

5.24.25 Mining

Description of Supply

Mining operations in McLennan County are supplied by Brazos River Alluvium groundwater. Demands for Mining are projected to increase significantly resulting in shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for McLennan County-Mining. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: not determined

b. WMARSS Flat Creek Reuse Project
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: before 2030
   - Project Cost: None. City of Waco is the project sponsor. Entity will purchase from the City.
   - Unit Cost: $205

c. Brazos River Alluvium Development
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2030
   - Project Cost: $7,185,000
   - Unit Cost: Max of $364/acft (2020)

d. Alternative: BRA System Operation to McLennan County
   - Cost Source: BRA System Operations Supply (Volume II, Chapter 7.11)
     - Supply dependent on BRA obtaining the System Operations permit from TCEQ
   - Date to be Implemented: before 2030
   - Project Cost: Infrastructure assumed sufficient
   - Unit Cost: $65.65/acft

Table 5.24-18. Recommended Plan Costs by Decade for McLennan County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,264)*	*(2,726)*	*(2,786)*	*(3,234)*	*(3,558)*	*(3,942)*
Conservation						
Supply From Plan Element (acft/yr)	76	150	214	246	268	295
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(2,188)*	*(2,576)*	*(2,572)*	*(2,989)*	*(3,290)*	*(3,647)*
WMARSS Flat Creek Reuse Project						
Supply From Plan Element (acft/yr)	811	811	811	811	811	811
Annual Cost ($/yr)	$166,000	$166,000	$85,000	$85,000	$85,000	$85,000
Unit Cost ($/acft)	$205	$205	$105	$105	$105	$105
Projected Surplus/(Shortage) after Reuse (acft/yr)	*(1,377)*	*(1,765)*	*(1,761)*	*(2,178)*	*(2,479)*	*(2,836)*
Brazos River Alluvium						
Supply From Plan Element (acft/yr)	1,800	1,800	1,800	2,500	2,500	2,900
Annual Cost ($/yr)	$656,028	$656,028	$53,028	$291,311	$291,311	$708,732
Unit Cost ($/acft)	$364	$364	$29	$117	$117	$244
Alternative: BRA System Operation						
Supply From Plan Element (acft/yr)	—	—	—	1,050	1,050	1,050
Annual Cost ($/yr)	—	—	—	$68,933	$68,933	$68,933
Unit Cost ($/acft)	—	—	—	$65.65	$65.65	$65.65

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.24.26 Irrigation

Description of Supply

McLennan County Irrigation is supplied by groundwater from the Trinity Aquifer and the Brazos River Alluvium, and run of the river water rights. Irrigation is projected to have shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for McLennan County-Irrigation.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: $230/acft

b. Groundwater Development – Brazos River Alluvium
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2020
   - Project Cost: $16,763,000
   - Unit Cost: Max of $696/acft (2020)

c. Alternative – Groundwater Development – Trinity Aquifer
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2020
   - Project Cost: $11,477,000
   - Unit Cost: Max of $1,047 (2020)

d. Alternative – BRA System Operation to McLennan County
   - Cost Source: BRA System Operations Supply (Volume II, Chapter 7.11)
     - Supply dependent on BRA obtaining the System Operations permit from TCEQ
   - Date to be Implemented: 2020
   - Project Cost: Infrastructure assumed sufficient
   - Unit Cost: $65.65/ acft

Table 5.24-19. Recommended Plan Costs by Decade for McLennan County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,299)*	*(2,313)*	*(2,325)*	*(2,338)*	*(2,350)*	*(2,363)*
Conservation						
Supply From Plan Element (acft/yr)	146	244	341	341	340	340
Annual Cost ($/yr)	$34,000	$56,000	$78,000	$78,000	$78,000	$78,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(2,152)*	*(2,069)*	*(1,984)*	*(1,997)*	*(2,010)*	*(2,023)*
Groundwater Development – Brazos River Alluvium						
Supply From Plan Element (acft/yr)	2,200	2,200	2,200	2,200	2,200	2,200
Annual Cost ($/yr)	$1,531,732	$1,531,732	$123,732	$123,732	$123,732	$123,732
Unit Cost ($/acft)	$696	$696	$56	$56	$56	$56

Table 5.24-19. Recommended Plan Costs by Decade for McLennan County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Alternative: Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	1,000	1,000	1,000	1,000	1,000	1,000
Annual Cost ($/yr)	$1,047,405	$1,047,405	$86,405	$86,405	$86,405	$86,405
Unit Cost ($/acft)	$1,047	$1,047	$86	$86	$86	$86
Alternative: BRA System Operations						
Supply From Plan Element (acft/yr)	1,200	1,200	1,200	1,200	1,200	1,200
Annual Cost ($/yr)	$78,780	$78,780	$78,780	$78,780	$78,780	$78,780
Unit Cost ($/acft)	$65.65	$65.65	$65.65	$65.65	$65.65	$65.65

5.24.27 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

This page intentionally left blank.

5.25 Milam County Water Supply Plan

Table 5.25-1 lists each water user group in Milam County and their corresponding surplus or shortage in years 2040 and 2070. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections.

Table 5.25-1.Milam County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Town of Buckholts	173	165	Projected surplus
Bell-Milam Falls WSC			See Bell County
City of Cameron	1,188	1,017	Projected surplus
Milano WSC	17	4	Projected surplus
City of Rockdale	174	308	Projected surplus
Southwest Milam WSC	198	103	Projected surplus
City of Thorndale	39	18	Projected surplus
County-Other	632	592	Projected surplus
Manufacturing	2	0	Projected surplus
Steam-Electric	(78)	(6,757)	Projected shortage – see plan below
Mining	0	0	Demand equals supply
Irrigation	12	439	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-49 and C-50, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.25.1 Town of Buckholts

The Town of Buckholts obtains its water supply from Central Texas WSC. No shortages are projected for the planning period. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.25.2 City of Cameron

Description of Supply

The City of Cameron obtains its water supply from run-of-the-river rights. The city provides supply to entities in Milam County-Other and to Manufacturing. No shortages are projected for the City of Cameron. The City has informed the Brazos G RWPG that it intends to develop a supply from the Carrizo-Wilcox Aquifer to replace its surface water supplies, which the City considers to be unreliable. Current uses have fully utilized the

MAG in Milam County and there is no remaining MAG in the Carrizo-Wilcox Aquifer in Milam County to accommodate including that strategy in the 2016 Brazos G Plan.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Cameron.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Unit Cost: $496/acft
- Annual Cost: maximum of $230,338 in 2070

Table 5.25-2. Recommended Plan Costs by Decade for City of Cameron

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*1,270*	*1,220*	*1,188*	*1,129*	*1,073*	*1,017*
Conservation						
Supply From Plan Element (acft/yr)	58	163	269	389	448	464
Annual Cost ($/yr)	$29,006	$80,883	$133,608	$192,894	$222,241	$230,338
Projected Surplus/(Shortage) after Conservation	*1,328*	*1,383*	*1,457*	*1,518*	*1,521*	*1,481*

5.25.3 Milano WSC

Milano WSC obtains its water supply from the Carrizo-Wilcox Aquifer. This WUG is located in multiple counties (Milam and Burleson). The surplus shown in Table 5.25-1 represents the cumulative total for Milano WSC. No shortages are projected for Milano WSC and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.25.4 City of Rockdale

Description of Supply

The City of Rockdale obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer. No shortages are projected for the City of Rockdale through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Rockdale.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $103,000 in 2030
- Unit Cost: $496/acft

Table 5.25-3. Recommended Plan Costs by Decade for City of Rockdale

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*841*	*662*	*174*	*320*	*355*	*308*
Conservation						
Supply From Plan Element (acft/yr)	43	128	198	195	200	207
Annual Cost ($/yr)	$21,000	$64,000	$98,000	$97,000	$99,000	$103,000
Projected Surplus/(Shortage) after Conservation	*883*	*790*	*372*	*515*	*555*	*515*

5.25.5 Southwest Milam WSC

Description of Supply

Southwest Milam WSC obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer. This WUG is located in multiple counties (Milam, Lee, Williamson, and Burleson). The surplus/shortages shown in Table 5.25-4 represent the cumulative totals for Southwest Milam WSC. Southwest Milam WSC is projected to have a surplus from 2020 through the year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Southwest Milam WSC.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $103,000 in 2030
- Unit Cost: $496/acft

Table 5.25-4. Recommended Plan Costs by Decade for Southwest Milam WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*884*	*591*	*198*	*309*	*262*	*103*
Conservation						
Supply From Plan Element (acft/yr)	33	1	—	—	—	—
Annual Cost ($/yr)	$16,368	$496	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*916*	*592*	*198*	*309*	*262*	*103*

5.25.6 City of Thorndale

The City of Thorndale is located in Milam and partially in Williamson County. The city obtains its water supply from Southwest Milam WSC and from run of river water rights. No shortages are projected for the City of Thorndale and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.25.7 County-Other

Entities in County-Other receive supplies through the City of Cameron and Central Texas WSC. County Other is projected to have a surplus of water through the year 2070 and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.25.8 Manufacturing

Manufacturing receives supplies from City of Cameron. Manufacturing is projected to have sufficient water supplies through the year 2070 and no changes in water supply are recommended.

5.25.9 Steam-Electric

Description of Supply

Milam County Steam-Electric obtains its water supply from Lake Alcoa, Lake Granger from BRA and the Carrizo-Wilcox Aquifer. Based on the available surface water supply and the MAG limitations, Milam County Steam-Electric is projected to have a shortage beginning in year 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Milam County-Steam Electric.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2030
- Annual Cost: not determined

b. Little River Off-Channel Reservoir

- Cost Source: Volume II, Chapter 4.7
  - Strategy could be supplied by the BRA System Operation, dependent on permit approval by TCEQ
- Date to be Implemented: 2050
- Project Cost: $175,291,000
- Unit Cost: $710/acft

During the Brazos G regional water planning process, water management strategies such as additional development of Carrizo-Wilcox Aquifer groundwater and the Lake Granger Augmentation Project were preferred options to include in the 2016 Brazos G Regional Water Plan. When confronted by the Modeled Available Groundwater (MAG) limitations of these two options, the BGRWPG has little alternative but to make the Little River Off-Channel Reservoir a recommended strategy.

Table 5.25-5. Recommended Plan Costs by Decade for Milam County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*1,096*	*(34)*	*(78)*	*(7,223)*	*(6,646)*	*(6,757)*
Conservation						
Supply From Plan Element (acft/yr)	0	1,601	2,242	2,869	2,869	2,869
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*1,096*	*1,567*	*2,164*	*(4,353)*	*(3,777)*	*(3,888)*
Little River Off-Channel Reservoir						
Supply From Plan Element (acft/yr)	—	—	—	4,353	4,000	4,000
Annual Cost ($/yr)	—	—	—	$3,090,600	$2,840,000	$2,840,000
Unit Cost ($/acft)	—	—	—	$710	$710	$710

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.25.10 Mining

Milam County Mining obtains its water supply from the Carrizo-Wilcox Aquifer, used for mine reclamation. Milam County Mining is projected to have adequate supplies between 2020 and 2070.

5.25.11 Irrigation

Milam County Irrigation is supplied by groundwater from the Carrizo-Wilcox, Queen City and Brazos River Alluvium Aquifers as well as run of the river water rights. Irrigation is projected to have a surplus of water through the year 2070 and no changes in water supply are recommended.

5.25.12 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

5.26 Nolan County Water Supply Plan

Table 5.26-1 lists each water user group in Nolan County and their corresponding surplus or shortage in years 2040 and 2070. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections.

Table 5.26-1. Nolan County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1] 2040 (acft/yr)	2070 (acft/yr)	Comment
Bitter Creek WSC	406	392	Projected surplus
City of Roscoe	79	62	Projected surplus
City of Sweetwater	(1,410)	(1,576)	Projected shortage – see plan below
County-Other	(108)	(125)	Projected shortage – see plan below
Manufacturing	(1,260)	(1,770)	Projected shortage – see plan below
Steam-Electric	(23,916)	(23,916)	Projected shortage – see plan below
Mining	(200)	(141)	Projected shortage – see plan below
Irrigation	(2,094)	(1,567)	Projected shortage – see plan below
Livestock	0	0	Demand equals Supply

1 – From Tables C-51 and C-52, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.26.1 Bitter Creek WSC

The Bitter Creek WSC obtains its water supply from the Dockum Aquifer and purchases treated water from the City of Sweetwater. This WUG is located in multiple counties (Nolan and Fisher). The surplus shown in Table 5.26-1 represents the cumulative totals for Bitter Creek WSC in both counties. No current or future shortages are projected and no changes in water supply uses are projected or recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.26.2 City of Roscoe

The City of Roscoe obtains surface water from local sources and groundwater from the Dockum Aquifer. A surplus is projected for the City of Roscoe through 2070. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.26.3 City of Sweetwater

The recommended water supply plan for the City of Sweetwater is included in Chapter 5.38 with the wholesale water providers.

5.26.4 County-Other

Description of Supply

Entities in Nolan County-Other obtain their water from the City of Sweetwater and the Edwards-Trinity Aquifer. The supplies from Sweetwater are associated with Oak Creek Reservoir which has zero yield without subordination. Sweetwater strategies will firm up this contract amount. Shortages are projected through 2070. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet water needs for County-Other.

a. Water Supply from Sweetwater

- Cost Source: Costs applied to City of Sweetwater (Volume II, Chapter 6.2)
- Date to be Implemented: 2020
- Project Cost: Existing infrastructure assumed sufficient
- Unit Cost: $1,031/acft (Sweetwater Wholesale Rate)

Table 5.26-2. Recommended Plan Costs by Decade for Nolan County – Other

Plan Element	2020	2030	2040	2050	2070	2070
Projected Surplus/(Shortage) (acft/yr)	*(104)*	*(107)*	*(108)*	*(113)*	*(119)*	*(125)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(104)*	*(107)*	*(108)*	*(113)*	*(119)*	*(125)*
Additional Water from Sweetwater to meet Contract						
Supply From Plan Element (acft/yr)	168	168	168	168	168	168
Annual Cost ($/yr)	$173,208	$173,208	$173,208	$173,208	$173,208	$173,208
Unit Cost ($/acft)	$1,031	$1,031	$1,031	$1,031	$1,031	$1,031

5.26.5 Manufacturing

Description of Supply

Nolan County Manufacturing obtains its water supply from the City of Sweetwater and from the Edwards-Trinity (Plateau) Aquifer. Manufacturing is projected to have a shortage beginning in year 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Nolan County-Manufacturing.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: 2020
   - Annual Cost: not determined

b. Additional Water Supply from Sweetwater
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: N/A. Infrastructure assumed sufficient
   - Unit Cost: $1031/acft

Table 5.26-3. Recommended Plan Costs by Decade for Nolan County – Manufacturing

Plan Element	2020	2030	2040	2050	2070	2070
Projected Surplus/(Shortage) (acft/yr)	*(881)*	*(1,072)*	*(1,260)*	*(1,426)*	*(1,591)*	*(1,770)*
Conservation						
Supply From Plan Element (acft/yr)	43	81	126	138	149	162
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(838)*	*(991)*	*(1,134)*	*(1,288)*	*(1,442)*	*(1,608)*
Purchase from Sweetwater						
Supply From Plan Element (acft/yr)	838	991	1,134	1,288	1,442	1,608
Annual Cost ($/yr)	$863,978	$1,021,721	$1,169,154	$1,327,928	$1,486,702	$1,657,848
Unit Cost ($/yr)	$1,031	$1,031	$1,031	$1,031	$1,031	$1,031

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.26.6 Steam-Electric

Description of Supply

Nolan County Steam-Electric is projected to have a shortage beginning in year 2020. Conservation is not a viable option as these are new demands where conservation measures are anticipated to already be reflected in the demands.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Nolan County-Steam Electric.

a. Purchase from Abilene

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2030
- Project Cost: Not enough information to cost delivery
- Unit Cost: $100/acft (Abilene wholesale rate only)

b. Reallocate Supplies from Jones County-SE

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: Capital cost unknown, as demands vary geographically.
- Unit Cost: Assumed $250/acft as purchase price of supply

c. Reduce Demand through Alternative Cooling Technology

Steam-Electric cooling is often water-intensive, and the water demands provided by the TWDB reflect this. Alternative technologies that utilize air cooling or other less water intensive methods could be substituted. Costs shown are for the additional costs for implementation of these more advanced technologies for cooling.

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2060
- Project Cost: Undetermined. Technologies will vary.

Table 5.26-4. Recommended Plan Costs by Decade for Nolan County – Steam-Electric

Plan Element	2020	2030	2040	2050	2070	2070
Projected Surplus/(Shortage) (acft/yr)	*(13,526)*	*(23,916)*	*(23,916)*	*(23,916)*	*(23,916)*	*(23,916)*
Conservation Table 5.26-1. Nolan County Surplus/(Shortage)						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(13,526)*	*(23,916)*	*(23,916)*	*(23,916)*	*(23,916)*	*(23,916)*
Purchase from Abilene						
Supply From Plan Element (acft/yr)	—	9,999	9,298	7,901	6,602	5,383
Annual Cost ($/yr)	—	$1,000,000	$929,800	$790,100	$670,200	$538,400
Unit Cost ($/yr)	—	$100	$100	$100	$100	$100
Reallocate from Jones County- Steam Electric						
Supply From Plan Element (acft/yr)	8,247	11,837	11,837	11,837	11,837	11,837
Annual Cost ($/yr)	$2,062,000	$2,959,000	$2,959,000	$2,959,000	$2,959,000	$2,959,000
Unit Cost ($/yr)	$250	$250	$250	$250	$250	$250

Table 5.26-4. Recommended Plan Costs by Decade for Nolan County – Steam-Electric

Plan Element	2020	2030	2040	2050	2070	2070
Reduce Demand through Alternative Cooling Technology						
Supply From Plan Element (acft/yr)	5,279	5,279	5,279	5,279	5,477	6,696
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Unit Cost ($/yr)	ND	ND	ND	ND	ND	ND

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.26.7 Mining

Description of Supply

Nolan County Mining obtains its water supply from the Dockum and Edwards-Trinity (Plateau) Aquifers. Based on the available groundwater supply, Nolan County Mining is projected to have a shortage between 2020 and 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Nolan County-Mining.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: 2020
   - Annual Cost: not determined

b. Development of Groundwater - Edwards-Trinity (Plateau)
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: $2,448,000
   - Unit Cost: Max of $1,018/acft (2020)

Table 5.26-5. Recommended Plan Costs by Decade for Nolan County – Mining

Plan Element	2020	2030	2040	2050	2070	2070
Projected Surplus/(Shortage) (acft/yr)	*(225)*	*(222)*	*(200)*	*(178)*	*(158)*	*(141)*
Conservation						
Supply From Plan Element (acft/yr)	7	11	14	12	11	10
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(218)*	*(211)*	*(186)*	*(166)*	*(147)*	*(131)*

Table 5.26-5. Recommended Plan Costs by Decade for Nolan County – Mining

Plan Element	2020	2030	2040	2050	2070	2070
Development of Edwards-Trinity (Plateau)						
Supply From Plan Element (acft/yr)	220	220	220	220	220	220
Annual Cost ($/yr)	$223,861	$223,861	$18,861	$18,861	$18,861	$18,861
Unit Cost ($/acft)	$1,018	$1,018	$86	$86	$86	$86

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.26.8 Irrigation

Description of Supply

Nolan County Irrigation obtains its water supply from the Dockum and Edwards Trinity Aquifer and run-of-river diversions from the Brazos River. Based on the available supply, Nolan County Irrigation is projected to have a shortage between 2020 and 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Nolan County-Irrigation.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: $113,000 in 2040
- Unit Cost: $230/acft

b. Leave Needs Unmet

New supplies for irrigation would be cost prohibitive to develop and most farms would switch to dry-land crops or allow fields to go fallow during a prolonged drought.

- Cost Source: Cost of not meeting needs – will be provided by TWDB
- Date to be Implemented: 2020

Table 5.26-6. Recommended Plan Costs by Decade for Nolan County – Irrigation

Plan Element	2020	2030	2040	2050	2070	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,483)*	*(2,287)*	*(2,094)*	*(1,912)*	*(1,733)*	*(1,567)*
Conservation						
Supply From Plan Element (acft/yr)	222	361	492	479	466	455
Annual Cost ($/yr)	$51,150	$82,996	$113,086	$110,156	$107,274	$104,602
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(2,261)*	*(1,926)*	*(1,602)*	*(1,433)*	*(1,267)*	*(1,112)*
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	2,261	1,926	1,602	1,433	1,267	1,112
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

5.26.9 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

This page intentionally left blank.

5.27 Palo Pinto County Water Supply Plan

Table 5.27-1 lists each water user group in Palo Pinto County and their corresponding surplus or shortage in years 2040 and 2070. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections.

Table 5.27-1. Palo Pinto County Surplus/(Shortage)

Water User Group	Table 5.27-1. Palo Pinto County Surplus/(Shortage)		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Graford	29	25	Projected surplus
City of Mineral Wells	0	0	See Chapter 5.38
Possum Kingdom WSC	(142)	(221)	Projected shortage – see plan below
Stephens Regional SUD			See Stephens County
City of Strawn	63	51	Projected surplus
County-Other	1,407	1,324	Projected surplus
Manufacturing	1,154	1,137	Projected surplus
Steam-Electric	9,028	7,839	Projected surplus
Mining	589	930	Projected surplus
Irrigation	(2,513)	(2,394)	Projected shortage – see plan below
Livestock	0	0	Demand equals Supply

1 – From Tables C-53 and C-54, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.27.1 City of Graford

The City of Graford obtains surface water from Keechi Creek and purchases treated water from the City of Mineral Wells. Projections indicate a surplus for the City of Graford and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.27.2 City of Mineral Wells

The recommended water supply plan for the City of Mineral Wells is included in Chapter 5.38 with the wholesale water providers.

5.27.3 Possum Kingdom WSC

Description of Supply

Possum Kingdom WSC is split between Stephens and Palo Pinto County. The WSC receives supply from the Brazos River Authority. Water shortages are projected between 2020 and 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the Possum Kingdom WSC.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: $203,360 in 2070
- Unit Cost: $496/acft

b. Leave needs unmet

Advanced conservation eliminates the WSC's projected water shortages, except for a small shortage in 2020 prior to full implantation of the advanced conservation strategy. It is recommended that this shortage be addressed through drought management, or planning to simply not meet that portion of the entity's demands during a drought.

- Cost Source: Cost of not meeting needs – see Appendix H
- Date to be Implemented: 2020

Table 5.27-2. Recommended Plan Costs by Decade for Possum Kingdom WSC

Plan Element	2020	2030	2040	2050	2070	2070
Projected Surplus/(Shortage) (acft/yr)	*(60)*	*(110)*	*(142)*	*(173)*	*(199)*	*(221)*
Conservation						
Supply From Plan Element (acft/yr)	53	126	198	271	342	410
Annual Cost ($/yr)	$26,288	$62,496	$98,208	$134,416	$169,632	$203,360
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(7)*	*16*	*56*	*98*	*143*	*189*
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	7	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

5.27.4 City of Strawn

Description of Supply

The City of Strawn is supplied by surface water from Lake Tucker and Trinity Aquifer and is projected to have surplus supplies through 2070. The city is participating in a joint drought response groundwater project with the cities of Mingus, Gordon and Barton WSC for Trinity supplies in Erath County.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Strawn.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: $10,912 in 2070
- Unit Cost: $496/acft

Table 5.27-3. Recommended Plan Costs by Decade for City of Strawn

Plan Element	2020	2030	2040	2050	2070	2070
Projected Surplus/(Shortage) (acft/yr)	*73*	*66*	*63*	*58*	*54*	*51*
Conservation						
Supply From Plan Element (acft/yr)	5	16	22	22	22	22
Annual Cost ($/yr)	$2,480	$7,936	$10,912	$10,912	$10,912	$10,912
Projected Surplus/(Shortage) after Conservation (acft/yr)	*78*	*82*	*85*	*80*	*76*	*73*

5.27.5 County-Other

Entities in Palo Pinto County-Other obtain their water from Palo Pinto County MWD No. 1, City of Mineral Wells, City of Strawn and from Possum Kingdom Reservoir through BRA, and run-of-the-river diversions. Conservation was considered but the current per capita use is below the targeted gpcd of 140. Projections indicate a surplus of supply through the planning period and no changes in water supply are recommended.

5.27.6 Manufacturing

Palo Pinto County Manufacturing obtains its water supply from the City of Mineral Wells, Brazos River Authority and the Trinity Aquifer. Palo Pinto County Manufacturing shows a projected surplus and no changes in water supply are recommended.

5.27.7 Steam-Electric

Palo Pinto County Steam-Electric obtains its water supply from Palo Pinto County MWD No. 1 and from the Brazos River Authority. Steam-Electric is projected to have surplus supplies through the planning period and no change to water supply is recommended.

5.27.8 Mining

Palo Pinto County Mining obtains its water supply from Trinity Aquifer, Palo Pinto County MWD No. 1 and from the Brazos River Authority and run-of-the river water rights. Mining is projected to have adequate supplies through the planning period and no change to water supply is recommended.

5.27.9 Irrigation

Description of Supply

Palo Pinto County Irrigation obtains its water supply from run of the river water rights and the BRA. Based on the available supply, Palo Pinto County Irrigation is projected to have a shortage between 2020 and 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Palo Pinto County-Irrigation.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: $49,220 in 2040
- Unit Cost: $230/acft

b. Purchase Supply from Palo Pinto County Municipal Water District No. 1

- Cost Source: Volume II, Chapter 4.13 (Lake Palo Pinto Enlargement)
- Date to be Implemented: 2020
- Project Cost: Not enough information to cost delivery
- Unit Cost: $479/acft (Wholesale Rate Only)

c. Alternative: Leave needs unmet

New supplies for irrigation would be cost prohibitive to develop and most farms would switch to dry-land crops or allow fields to go fallow during a prolonged drought.

- Cost Source: Cost of not meeting needs – see Appendix H
- Date to be Implemented: 2020

d. Alternative: BRA System Operation

- Cost Source: Volume II, Chapter 7.11
  - Supply dependent on BRA obtaining the System Operations permit from TCEQ
- Date to be Implemented: 2020
- Project Cost: Infrastructure assumed sufficient
- Unit Cost: $65.65/acft

Table 5.27-4. Recommended Plan Costs by Decade for Palo Pinto County – Irrigation

Plan Element	2020	2030	2040	2050	2070	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,588)*	*(2,547)*	*(2,513)*	*(2,472)*	*(2,431)*	*(2,394)*
Conservation						
Supply From Plan Element (acft/yr)	94	155	214	212	209	206
Annual Cost ($/yr)	$21,620	$35,650	$49,220	$48,760	$48,070	$47,380
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(2,494)*	*(2,392)*	*(2,299)*	*(2,260)*	*(2,222)*	*(2,188)*
Purchase Supply from Palo Pinto County MWD No. 1						
Supply From Plan Element (acft/yr)	2,494	2,392	2,299	2,260	2,222	2,188
Annual Cost ($/yr)	$1,194,626	$1,145,768	$1,101,221	$1,082,540	$1,064,338	$1,048,052
Unit Cost ($/acft)	$479	$479	$479	$479	$479	$479
Alternative: Leave Needs Unmet						
Supply From Plan Element (acft/yr)	2,494	2,392	2,299	2,260	2,222	2,188
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—
Alternative: Purchase Supply from Brazos River Authority (System Operations)						
Supply From Plan Element (acft/yr)	2,494	2,392	2,299	2,260	2,222	2,188
Annual Cost ($/yr)	$163,731	$157,035	$150,929	$148,369	$145,874	$143,642
Unit Cost ($/acft)	$65.65	$65.65	$65.65	$65.65	$65.65	$65.65

5.27.10 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

This page intentionally left blank.

5.28 Robertson County Water Supply Plan

Table 5.28-1 lists each water user group in Robertson County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.28-1. Robertson County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Bremond	178	131	Projected surplus
City of Calvert	349	350	Projected surplus
City of Franklin	340	280	Projected surplus
City of Hearne	2,127	2,131	Projected surplus
Robertson County WSC	244	192	Projected surplus
Tri-County SUD			See Falls County
Wellborn SUD			See Brazos County
Wickson Creek SUD			See Brazos County
County-Other	168	(39)	Projected shortage – see plan below
Manufacturing	75	19	Projected surplus
Steam-Electric	(2,012	(18,478)	Projected shortage – see plan below
Mining	(3,563)	(12,735)	Projected shortage – see plan below
Irrigation	(49,210)	(44,445)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-55 and C-56, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.28.1 City of Bremond

Description of Supply

The City of Bremond obtains its water supply from the Carrizo-Wilcox Aquifer. No shortages are projected for the City of Bremond.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Bremond.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $12,000 in 2070
- Unit Cost: $470/acft

Table 5.28-2. Recommended Plan Costs by Decade for City of Bremond

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*202*	*190*	*178*	*162*	*147*	*131*
Conservation						
Supply From Plan Element (acft/yr)	6	20	22	23	23	25
Annual Cost ($/yr)	$3,000	$9,000	$10,000	$11,000	$11,000	$12,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*208*	*209*	*200*	*185*	*170*	*156*

5.28.2 City of Calvert

Description of Supply

The City of Calvert obtains its water supply from the Carrizo-Wilcox Aquifer. No shortages are projected for the City of Calvert.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Calvert.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: $1,000
- Unit Cost: $470/acft

Table 5.28-3. Recommended Plan Costs by Decade for City of Calvert

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*339*	*346*	*349*	*349*	*350*	*350*
Conservation						
Supply From Plan Element (acft/yr)	3	—	—	—	—	—
Annual Cost ($/yr)	$1,000	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*342*	*346*	*349*	*349*	*350*	*350*

5.28.3 City of Franklin

The City of Franklin obtains its water supply from the Carrizo-Wilcox Aquifer. No shortages are projected for the City of Franklin. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.28.4 City of Hearne

Description of Supply

The City of Hearne obtains its water supply from the Carrizo-Wilcox Aquifer. The City also provides supply to Robertson County Manufacturing. No shortages are projected for the City of Hearne.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Hearne.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: $16,000 in 2030
- Unit Cost: $470/acft

Table 5.28-4. Recommended Plan Costs by Decade for City of Hearne

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*2,085*	*2,108*	*2,127*	*2,129*	*2,131*	*2,131*
Conservation						
Supply From Plan Element (acft/yr)	22	35	16	14	12	12
Annual Cost ($/yr)	$10,000	$16,000	$8,000	$7,000	$6,000	$6,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*2,107*	*2,142*	*2,142*	*2,142*	*2,142*	*2,142*

5.28.5 Robertson County WSC

Robertson County WSC obtains its water supply from the Carrizo-Wilcox Aquifer. The entity also provides supply to Robertson County Manufacturing. No shortages are projected for the Robertson County WSC. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.28.6 County-Other

Description of Supply

Robertson County-Other entities obtain water supply from groundwater from the Carrizo-Wilcox Aquifer. A shortage of supply is projected in 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet the projected water shortage for County-Other.

a. Groundwater Development

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2070
- Project Cost: $825,000
- Unit Cost: $1,079/acft

Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.28-5. Recommended Plan Costs by Decade for County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*318*	*245*	*168*	*92*	*23*	*(39)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*318*	*245*	*168*	*92*	*23*	*(39)*
Groundwater Development – Carrizo Wilcox						
Supply From Plan Element (acft/yr)	—	—	—	—	—	81
Annual Cost ($/yr)	—	—	—	—	—	$87,000
Unit Cost ($/acft)	—	—	—	—	—	$1,079

5.28.7 Manufacturing

Water supply for manufacturing in Robertson County is obtained by purchase from a city or water supply corporation, or from Carrizo-Wilcox wells operated by the manufacturing entity. Manufacturing is projected to have a surplus of water through the year 2070 and no changes in water supply are recommended.

5.28.8 Steam-Electric

Description of Supply

Robertson County Steam-Electric entities obtain water supply from the Carrizo-Wilcox Aquifer, contracts with the Brazos River Authority for water from Lake Limestone, and various run-of-river rights. Based on the available groundwater and surface water supply, Robertson County Steam-Electric is projected to have shortages beginning in year 2040 and continuing through year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Steam-Electric.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: not determined

b. Purchase depressurization water from Walnut Creek Mine

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2050
- Project Cost: Not enough information to cost delivery
- Unit Cost: $500/acft (Water purchase rate only)

c. BRA System Operation to Robertson County

- Cost Source: BRA System Operations Supply (Volume II, Chapter 7.11)
  - Supply dependent on BRA obtaining the System Operations permit from TCEQ
- Date to be Implemented: 2050
- Project Cost: Infrastructure assumed sufficient
- Unit Cost: $65.65/acft

Table 5.28-6. Recommended Plan Costs by Decade for Robertson County – Steam Electric

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*16,438*	*3,319*	*(2,012)*	*(13,683)*	*(16,031)*	*(18,478)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	2,486	3,289	3,439	3,597
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*16,438*	*3,319*	*474*	*(10,394)*	*(12,592)*	*(14,882)*
Purchase Water from Walnut Creek Mine						
Supply From Plan Element (acft/yr)	—	—	—	9,000	9,000	9,000
Annual Cost ($/yr)	—	—	—	$4,500,000	$4,500,000	$4,500,000
Unit Cost ($/acft)	—	—	—	$500	$500	$500

Table 5.28-6. Recommended Plan Costs by Decade for Robertson County – Steam Electric

Plan Element	2020	2030	2040	2050	2060	2070
BRA System Operation						
Supply From Plan Element (acft/yr)	—	—	—	2,000	4,000	6,000
Annual Cost ($/yr)	—	—	—	$131,300	$262,600	$393,900
Unit Cost ($/acft)	—	—	—	$65.65	$65.65	$65.65

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.28.9 Mining

Description of Supply

Mining operations in Robertson County are supplied by Carrizo-Wilcox Groundwater. Demands for Mining are projected to increase significantly resulting in shortages beginning in 2030.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Robertson County-Mining.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: 2030
   - Annual Cost: not determined
b. Leave needs unmet
   - Cost Source: Cost of not meeting needs – see Appendix H
   - Date to be Implemented: 2030

Table 5.28-7. Recommended Plan Costs by Decade for Robertson County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*292*	*(1,548)*	*(3,563)*	*(6,017)*	*(9,012)*	*(12,735)*
Conservation						
Supply From Plan Element (acft/yr)	—	588	964	1,136	1,345	1,606
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*292*	*(960)*	*(2,599)*	*(4,881)*	*(7,667)*	*(11,129)*

Table 5.28-7. Recommended Plan Costs by Decade for Robertson County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	—	1,000	2,600	5,000	7,700	11,200
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.28.10 Irrigation

Description of Supply

Robertson County Irrigation is supplied by Carrizo-Wilcox, Queen City, Sparta and Brazos River Alluvium groundwater as well as run of the river water rights. Current pumping in the Brazos River Alluvium greatly exceeds the MAG for Robertson County reducing available groundwater to meet projected demands. Irrigation is projected to have shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Robertson County-Irrigation.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $963,000 in 2040

b. Groundwater Development – Carrizo Wilcox Aquifer

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $128,018,000
- Unit Cost: Max of $726 /acft (2020)

c. Leave needs unmet

New supplies for irrigation would be cost prohibitive to develop and most farms would switch to dry-land crops or allow fields to go fallow during a prolonged drought.

- Cost Source: Cost of not meeting needs – see Appendix H
- Date to be Implemented: 2020

Table 5.28-8. Recommended Plan Costs by Decade for Robertson County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(52,989)*	*(51,076)*	*(49,210)*	*(47,448)*	*(45,781)*	*(44,445)*
Conservation						
Supply From Plan Element (acft/yr)	1,903	3,080	4,189	4,069	3,952	3,859
Annual Cost ($/yr)	$438,000	$708,000	$963,000	$936,000	$909,000	$888,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(51,086)*	*(47,995)*	*(45,021)*	*(43,379)*	*(41,829)*	*(40,586)*
Groundwater Development – Carrizo Wilcox Aquifer						
Supply From Plan Element (acft/yr)	15,764	16,143	16,222	15,172	8,912	1,179
Annual Cost ($/yr)	$11,713,251	$11,713,251	$992,251	$992,251	$992,251	$992,251
Unit Cost ($/acft)	$726	$726	$61	$61	$61	$61
Allow needs to remain unmet						
Supply From Plan Element (acft/yr)	35,322	31,852	28,799	28,207	32,917	39,407
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

5.28.11 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

5.29 Shackelford County Water Supply Plan

Table 5.29-1 lists each water user group in Shackelford County and their corresponding surplus or shortage in years 2040 and 2070. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections.

Table 5.29-1. Shackelford County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2030 (acft/yr)	2060 (acft/yr)	
City of Albany	183	185	Projected surplus
Stephens County Rural SUD			See Stephens County for Plan
County-Other	0	0	Demand equals supply
Manufacturing	50	50	Projected surplus
Steam-Electric	0	0	No projected demand
Mining	(551)	(236)	Projected shortage –see plan below
Irrigation	0	0	Demand equals supply
Livestock	0	0	Demand equals supply

1 – From Tables C-57 and C-58, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.29.1 City of Albany

Description of Supply

Water supply for the City of Albany is from Hubbard Creek Reservoir, owned by the West Central Texas MWD and from Lake McCarty. Although the City has sufficient supplies, conservation is recommended as the current per capita use rate is above the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for City of Albany. Associated costs are included for each strategy.

a. Conservation:

- Cost Source: Volume II, Chapter 5.2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $126,615 in 2070
- Unit Cost $474/acft

Table 5.29-2. Recommended Plan Costs by Decade for the City of Albany

Plan Element	2010	2020	2030	2040	2050	2060
Projected Surplus/(Shortage) (acft/yr)	*188*	*167*	*183*	*184*	*185*	*185*
Conservation						
Supply From Plan Element (acft/yr)	32	85	133	181	225	267
Annual Cost ($/yr)	$15,293	$40,258	$63,028	$85,617	$106,876	$126,615
Projected Surplus/(Shortage) after Conservation (acft/yr)	*220*	*251*	*316*	*364*	*410*	*452*

5.29.2 County-Other

Description of Supply

Projections indicate sufficient water supply for County-Other; however, a change in water supply is recommended. Shackleford WSC provides water to rural entities in the area and is not large enough to be classified as a WUG and is aggregated with County-Other. Even though Shackelford County-Other shows a surplus for the planning horizon, they are currently participating in a project referred to as the Midway Group. This project is comprised of multiple entities from Shackleford, Stephens and Throckmorton Counties that aim to serve the rural portions of their counties.

Water Supply Plan

Participate in the Midway Group project with Stephens Regional SUD, the City of Throckmorton and other potential participants. This project was described as part of the West Central Brazos Water Distribution System (WCBWDS) in the 2006 Brazos G Regional Water Plan. Working within the planning criteria established by the Brazos G RWPG and the TWDB, the following water supply plan is recommended for Shackelford County-Other. Associated costs are included for each strategy.

a. Water Supply from Midway Group and WCBWDS:

- Cost Source: Volume II, Chapter 8.4
    - Supply dependent on BRA obtaining the System Operations permit from TCEQ
- Date to be Implemented: 2020
- Project Cost: $21,148,000 at full implementation.
- Unit Cost: $2,492/acft

Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.29-3. Recommended Plan Costs by Decade for Shackelford County – Other

Plan Element	2010	2020	2030	2040	2050	2060
Projected Surplus/(Shortage) (acft/yr)	*423*	*423*	*423*	*423*	*423*	*423*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	423	423	423	423	423	423
Water Supply from Midway Group and WCBWDS						
Supply From Plan Element (acft/yr)	250	250	250	250	250	250
Annual Cost ($/yr)	$623,000	$623,000	$307,000	$307,000	$307,000	$307,000
Unit Cost ($/acft)	$2,492	$2,492	$1,228	$1,228	$1,228	$1,228

5.29.3 Manufacturing

Projections indicate a surplus of water for Manufacturing and no changes in water supply are recommended.

5.29.4 Steam-Electric

No Steam-Electric demand exists or is projected for the county.

5.29.5 Mining

Description of Supply

Surface water for Mining in Shackelford County is obtained from Fort Griffin SUD and run of river water rights. Projections indicate an increase in water demand for Mining and shortages projected beginning in 2020. Changes in water supply are recommended.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Mining. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Unit Cost: not determined

b. Groundwater Development (Other Aquifer):

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $8,095,000
- Unit Cost: Max of $1,044/acft (2020)

Table 5.29-4. Recommended Plan Costs by Decade for Shackelford County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(555)*	*(740)*	*(551)*	*(435)*	*(321)*	*(236)*
Conservation						
Supply From Plan Element (acft/yr)	17	37	39	31	23	17
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Unit Cost ($/acft)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(538)*	*(703)*	*(512)*	*(404)*	*(298)*	*(219)*
Groundwater Well Development						
Supply From Plan Element (acft/yr)	710	710	710	710	710	710
Annual Cost ($/yr)	$741,015	$741,015	$60,015	$60,015	$60,015	$60,015
Unit Cost ($/acft)	$1,044	$1,044	$85	$85	$85	$85

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.29.6 Irrigation

No Irrigation demand exists or is projected for the county. There are some irrigation rights located along the Clear Fork of the Brazos River; however, there is no surface water availability for those rights during a repeat of the drought of record.

5.29.7 Livestock

No future shortages are projected in the Livestock category and no changes in water supply are recommended.

5.30 Somervell County Water Supply Plan

Table 5.30-1 lists each water user group in Somervell County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.30-1. Somervell County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1] 2040 (acft/yr)	Surplus/(Shortage)[1] 2070 (acft/yr)	Comment
City of Glen Rose	47	(39)	Projected shortage – see plan below
County-Other	459	344	Projected surplus
Manufacturing	10	7	Projected surplus
Steam-Electric	(35,521)	(35,559)	Projected shortage – see plan below
Mining	(441)	(266)	Projected shortage – see plan below
Irrigation	22	25	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-59 and C-60, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.30.1 City of Glen Rose

Description of Supply

The City of Glen Rose obtains its water supply from groundwater from the Trinity Aquifer. Based on the available groundwater supply, the City of Glen Rose is projected to have a shortage from 2060 through year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for City of Glen Rose.

a. Conservation:
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: $1,200,000

b. Alternative: Purchase Supply from Somervell County Water Supply Project – the project will treat raw water from the Wheeler Branch Off-Channel Reservoir and transmit the treated water to customers of the Somervell County Water District. Phases 1-4 of the project are complete and are located in the immediate vicinity of Glen Rose.

- Cost Source: Volume II, Chapter 8.3
- Date to be Implemented: by 2060
- Annual Cost: $52,950 (based on current cost of service for highest rate tier ($3.25/1000 gal) published by the Somervell County WSD[1])

Table 5.30-2. Recommended Plan Costs by Decade for City of Glen Rose

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*141*	*86*	*47*	*15*	*(14)*	*(39)*
Conservation						
Supply From Plan Element (acft/yr)	24	73	128	167	172	178
Annual Cost ($/yr)	$11,515	$34,834	$60,577	$78,949	$81,471	$84,327
Projected Surplus/(Shortage) after Conservation (acft/yr)	*165*	*160*	*175*	*182*	*158*	*139*
Alternative: Somervell County Water Supply Project Phases 1-4						
Supply From Plan Element (acft/yr)	—	—	—	—	50	50
Annual Cost ($/yr)	—	—	—	—	$52,950	$52,950
Unit Cost ($/acft)	—	—	—	—	$1,059	$1,059

5.30.2 County-Other

Description of Supply

Somervell County-Other obtains its water supply from groundwater from the Trinity Aquifer, and there are surpluses projected through 2060. However, the Somervell County Water District has recently completed the Wheeler Branch Off-Channel Reservoir, and is implementing infrastructure to utilize that resource throughout the county. Phases 1 – 4 are complete and supply 1,400 acft/yr of supply. Remaining phases will supply an additional 600 acft/yr.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for County-Other entities.

a. Somervell County Water Supply Project – the project will treat raw water from the Wheeler Branch Off-Channel Reservoir and transmit the treated water to customers of the Somervell County Water District.
   - Cost Source: Volume II, Chapter 8.3
   - Date to be Implemented: approximately 2040 for Phases 7A and 9 – 17
   - Total Project Cost (Phases 7A and 9 – 17): $35,249,000
   - Annual Cost: $3,556,000

[1] http://www.scwd.com/uploads/1/2/8/1/12818560/scwd_service_policy_5-14.pdf

Costs are shown for the additional supply of water made available by the remaining phases, which are planned for completion by 2035. Costs shown are for new infrastructure only, and do not include existing debt service for existing phases of the project or for costs for supply from Wheeler Branch Reservoir.

Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.30-3. Recommended Plan Costs by Decade for Somervell County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*578*	*508*	*459*	*418*	*378*	*344*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*578*	*508*	*459*	*418*	*378*	*344*
Somervell County Water Supply Project Phases 7A and 9 – 17						
Supply From Plan Element (acft/yr)	600	600	600	600	600	600
Annual Cost ($/yr)	$3,556,000	$3,556,000	$3,556,000	$606,000	$606,000	$606,000
Unit Cost ($/acft)	$5,928	$5,928	$5,928	$1,010	$1,010	$1,010

5.30.3 Manufacturing

Somervell County Manufacturing obtains its water supply from groundwater from the Trinity Aquifer. There are surpluses projected through 2070 and no changes recommended to the water supply.

5.30.4 Steam-Electric

Description of Supply

Somervell County Steam-Electric obtains water supply Squaw Creek Reservoir and from the Brazos River Authority through Lake Granbury. Somervell County Steam-Electric is projected to have shortages beginning in year 2020 and continuing through year 2070. Local groundwater currently supplies potable water for plant staff and high-quality process water for boiler feed at the Comanche Peak Steam Electric Station. When the Somervell County Water Supply Project is developed, some potable water and process water for the Comanche Peak Station will be obtained from the project.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Somervell County Steam-Electric.

a. Transfer Steam-Electric Supplies from Hood County
    - Cost Source: zero cost for strategy as these supplies are already contracted from the BRA to Luminant
    - Date to be Implemented: 2020
    - Annual Cost: None

b. BRA System Operation
    - Cost Source: Volume II, Chapter 7.11 and Chapter 12 Costs include Luminant Infrastructure necessary to transport the water.
        - Supply dependent on BRA obtaining the System Operations permit from TCEQ
    - Date to be Implemented: 2020
    - Annual Cost: $22.87 million at full implementation
    - Unit Cost: $285/acft

c. Somervell County Water Supply Project – the project treats raw water from the Wheeler Branch Off-Channel Reservoir and transmits the treated water to customers of the Somervell County Water District. Potable water for plant staff and high-quality process water for boiler feed at the Comanche Peak Steam Electric Station is currently provided from local groundwater. The Somervell County Water Supply Project will provide some potable water and process water for the plant. Phases 1-4 of the project are complete and are located in the immediate vicinity of the plant.
    - Cost Source: Volume II, Chapter 8.3
    - Date to be Implemented: by 2060
    - Annual Cost: $317,700 (based on current cost of service for highest rate tier ($3.25/1000 gal) published by the Somervell County WSD[2]) for Phases 1 – 4

      $185,840 (based on unit costs of Phases 9 – 17 after debt service retired)

Conservation was not applied to this plan because the shortage results from the construction of new steam-electric facilities, which are assumed to be built with technologies minimizing water use as much as practicable.

[2] http://www.scwd.com/uploads/1/2/8/1/12818560/scwd_service_policy_5-14.pdf

Table 5.30-4. Recommended Plan Costs by Decade for Somervell County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(35,496)*	*(35,508)*	*(35,521)*	*(35,534)*	*(35,546)*	*(35,559)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(35,496)*	*(35,508)*	*(35,521)*	*(35,534)*	*(35,546)*	*(35,559)*
Transfer Steam-Electric Supplies from Hood County to Somervell County						
Supply From Plan Element (acft/yr)	27,133	27,133	27,133	27,133	27,133	27,133
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—
BRA System Operation						
Supply From Plan Element (acft/yr)	76,120	76,120	76,120	76,120	76,120	76,120
Annual Cost ($/yr)	$22,866,000	$22,866,000	$12,142,000	$12,142,000	$12,142,000	$12,142,000
Unit Cost ($/acft)	$285	$285	$160	$160	$160	$160
Somervell County Water Supply Project Phases 1-4						
Supply From Plan Element (acft/yr)	300	300	300	300	300	300
Annual Cost ($/yr)	$317,700	$317,700	$317,700	$317,700	$317,700	$317,700
Unit Cost ($/acft)	$1,059	$1,059	$1,059	$1,059	$1,059	$1,059
Somervell County Water Supply Project Phases 7A and 9-17						
Supply From Plan Element (acft/yr)	—	—	184	184	184	184
Annual Cost ($/yr)	—	—	$1,090,752	$185,840	$185,840	$185,840
Unit Cost ($/acft)	—	—	$5,928	$1,010	$1,010	$1,010

5.30.5 Mining

Description of Supply

Mining operations in Somervell County are supplied by Trinity Groundwater. Demands for Mining are projected to increase significantly resulting in shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Somervell County-Mining.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: not determined

b. Groundwater Development – Trinity Aquifer

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2020
- Project Cost: $3,502,000
- Unit Cost: Max of $583/acft (2020)

Table 5.30-5. Recommended Plan Costs by Decade for Somervell County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(407)*	*(574)*	*(441)*	*(355)*	*(293)*	*(266)*
Conservation						
Supply From Plan Element (acft/yr)	33	64	80	74	70	68
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(374)*	*(510)*	*(361)*	*(281)*	*(223)*	*(198)*
Groundwater Well Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	550	550	550	550	550	550
Annual Cost ($/yr)	$320,542	$320,542	$27,542	$27,542	$27,542	$27,542
Unit Cost ($/acft)	$583	$583	$50	$50	$50	$50

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.30.6 Irrigation

Somervell County Irrigation is projected to have a surplus of water through the year 2070. No changes in water supply are recommended.

5.30.7 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

5.31 Stephens County Water Supply Plan

Table 5.31-1 lists each water user group in Stephens County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.31-1. Stephens County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Breckenridge	878	869	Projected surplus
Possum Kingdom WSC			See Palo Pinto County
Fort Belknap WSC			See Young County
Stephens Regional SUD	170	172	Projected surplus
County-Other	55	55	Projected surplus
Manufacturing	0	0	Demand equals supply
Steam-Electric	0	0	Demand equals supply
Mining	(3,458)	(1,773)	Projected shortage – see plan below
Irrigation	(27)	(24)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-61 and C-62, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.31.1 City of Breckenridge

Description of Supply

The City of Breckenridge obtains water from Hubbard Creek Reservoir through the West Central Texas Municipal Water District and from Lake Daniel. Projections indicate a surplus of water for the City of Breckenridge, and no change in supply is recommended.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Breckenridge.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum of $25,296 in 2030
- Unit Cost: $496/acft

b. Water Supply from Midway Group and WCBWDS:

- Cost Source: Volume II, Chapter 8.4
  - Supply dependent on BRA obtaining the System Operations permit from TCEQ
- Date to be Implemented: 2020
- Project Cost: $21,148,000 (Full Implementation)
- Unit Cost: $2,492/acft

Table 5.31-2. Recommended Plan Costs by Decade for City of Breckenridge

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*879*	*871*	*878*	*880*	*874*	*869*
Conservation						
Supply From Plan Element (acft/yr)	30	51	29	17	15	15
Annual Cost ($/yr)	$14,880	$25,296	$14,384	$8,432	$7,440	$7,440
Projected Surplus/(Shortage) after Conservation	*909*	*922*	*906*	*896*	*889*	*884*
Water Supply from Midway Group and WCBWDS						
Supply From Plan Element (acft/yr)	550	550	550	550	550	550
Annual Cost ($/yr)	$1,370,600	$1,370,600	$675,400	$675,400	$675,400	$675,400
Unit Cost ($/acft)	$2,492	$2,492	$1,228	$1,228	$1,228	$1,228

5.31.2 Stephens Regional SUD

Description of Supply

Stephens Regional SUD is located in multiple counties (Eastland, Shackelford, Palo Pinto, Throckmorton and Stephens). The surplus shown in Table 5.31-1 represents the cumulative totals for Stephens Regional SUD in all the counties it serves. The current supply comes through the Brazos River Authority for supply from Possum Kingdom Reservoir. The WUG also provides supply to the City of Woodson (Throckmorton County-Other). Even though Stephens Regional SUD shows a surplus for the planning horizon, they are currently participating in a project referred to as the Midway Group. This project is comprised of multiple entities in multiple counties that aim to serve the rural portions of their counties.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the Stephens Regional SUD. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Water Supply from Midway Group and WCBWDS

- Cost Source: Volume II, Chapter 8.4
    - Supply dependent on BRA obtaining the System Operations permit from TCEQ
- Date to be Implemented: 2020
- Project Cost: $21,148,000 (Full Implementation)
- Unit Cost: $2,492/acft

Table 5.31-3. Recommended Plan Costs by Decade for Stephens Regional SUD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*162*	*165*	*170*	*174*	*173*	*172*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*162*	*165*	*170*	*174*	*173*	*172*
Water Supply from Midway Group and WCBWDS						
Supply From Plan Element (acft/yr)	400	400	400	400	400	400
Annual Cost ($/yr)	$996,800	$996,800	$491,200	$491,200	$491,200	$491,200
Unit Cost ($/acft)	$2,492	$2,492	$1,228	$1,228	$1,228	$1,228

5.31.3 County-Other

Water supply for county-other entities is obtained from local groundwater. Projections indicate adequate water supply and no changes are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.31.4 Manufacturing

The City of Breckenridge provides supply to meet Stephens County Manufacturing. No shortage is projected and no changes in water supply are recommended.

5.31.5 Steam-Electric

Stephens County has no current or projected future demand for Steam-Electric.

5.31.6 Mining

Description of Supply

Mining operations in Stephens County obtain supply from Possum Kingdom Reservoir through the Brazos River Authority. Mining demand in Stephens County is projected to peak in 2030, and slowly decrease until 2070. A shortage of supplies is projected beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Stephens County-Mining.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: not determined

b. Leave needs unmet

- Cost Source: Cost of not meeting needs – see Appendix H
- Date to be Implemented: 2020

Table 5.31-4. Recommended Plan Costs by Decade for Stephens County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(4,064)*	*(4,141)*	*(3,458)*	*(2,825)*	*(2,257)*	*(1,773)*
Conservation						
Supply From Plan Element (acft/yr)	152	257	312	268	228	194
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(3,912)*	*(3,884)*	*(3,146)*	*(2,557)*	*(2,029)*	*(1,579)*
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	3,912	3,884	3,146	2,557	2,029	1,579
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location.

5.31.7 Irrigation

Description of Supply

Stephens County Irrigation obtains supply from local groundwater and run-of the river water rights which are not firm during a drought of record. Irrigation is projected to have a shortage of supply through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Stephens County-Irrigation.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: $230/acft

b. Groundwater Development – Other Aquifer

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $640,000
- Unit Cost: Max of $2,254/acft (2020)

Table 5.31-5. Recommended Plan Costs by Decade for Stephens County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(30)*	*(29)*	*(27)*	*(26)*	*(25)*	*(24)*
Conservation						
Supply From Plan Element (acft/yr)	4	6	8	8	8	8
Annual Cost ($/yr)	$920	$1,380	$1,840	$1,840	$1,840	$1,840
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(26)*	*(23)*	*(19)*	*(18)*	*(17)*	*(16)*
Groundwater Development – Other Aquifer						
Supply From Plan Element (acft/yr)	26	26	26	26	26	26
Annual Cost ($/yr)	$58,592	$58,592	$4,592	$4,592	$4,592	$4,592
Unit Cost ($/acft)	$2,254	$2,254	$177	$177	$177	$177

5.31.8 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

This page intentionally left blank.

5.32 Stonewall County Water Supply Plan

Table 5.32-1 lists each water user group in Stonewall County and their corresponding surplus or shortage in years 2040 and 2070. A brief description of each water user group has been developed and is presented in the following subsections.

Table 5.32-1. Stonewall County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Aspermont	93	59	Projected surplus
County-Other	28	29	Projected surplus
Manufacturing	0	0	No projected demand
Steam-Electric	0	0	No projected demand
Mining	(337)	(163)	Projected shortage – see plan below
Irrigation	72	85	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-63 and C-64, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.32.1 City of Aspermont

Description of Supply

The City of Aspermont is supplied from North Central Texas Municipal Water Authority (NCTMWA) and from local groundwater sources, primarily from the Seymour Aquifer. There is a projected surplus through 2070 and no changes in water supply are recommended. Although the City has sufficient supplies, conservation is recommended as the current per capita use rate is above the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for City of Aspermont. Associated costs are included for each strategy.

a. Conservation:

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $45,253 in 2070
- Unit Cost: $474/acft

b. Millers Creek Reservoir Augmentation strategy by NCTMWA. This will provide supply at least up to the current amount contracted from NCTMWA.

- Cost Source: Volume II, Chapter 7.5
    - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
- Date to be Implemented: 2020
- Project Cost: none (cost would be borne by NCTMWA)
- Unit Cost: none (supply already purchased from NCTMWA)

c. Alternative: Lake Creek Reservoir. This strategy would be developed by NCTMWA to augment existing supplies.

- Cost Source: Volume II, Chapter 4.10
    - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
- Date to be Implemented: 2020
- Project Cost: none (cost would be borne by NCTMWA)
- Unit Cost: none (supply already purchased from NCTMWA)

Table 5.32-2. Recommended Plan Costs by Decade for the City of Aspermont

Plan Element	2010	2020	2030	2040	2050	2060
Projected Surplus/(Shortage) (acft/yr)	*139*	*119*	*93*	*79*	*73*	*59*
Conservation						
Supply From Plan Element (acft/yr)	13	30	48	66	82	95
Annual Cost ($/yr)	$6,215	$14,363	$22,671	$31,472	$38,957	$45,253
Projected Surplus/(Shortage) after Conservation (acft/yr)	*152*	*149*	*140*	*146*	*155*	*154*
Millers Creek Reservoir Augmentation						
Supply From Plan Element (acft/yr)	33	47	62	76	90	105
Annual Cost ($/yr)	—	—	—	—	—	—
	—	—	—	—	—	—
Alternative: Lake Creek Reservoir						
Supply From Plan Element (acft/yr)	33	47	62	76	90	105
Annual Cost ($/yr)	—	—	—	—	—	—
	—	—	—	—	—	—

5.32.2 County-Other

The water supply entities for Stonewall County-Other show a projected surplus and no changes in water supply are recommended.

5.32.3 Manufacturing

No Manufacturing demand exists or is projected for the county.

5.32.4 Steam-Electric

No Steam-Electric demand exists or is projected for the county.

5.32.5 Mining

Description of Supply

Surface water for Mining in Stonewall County is obtained from contracts with BRA and run of river water rights. Projections indicate an increase in water demand for Mining and shortages projected beginning in 2020. Changes in water supply are recommended.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for Mining. Associated costs are included for each strategy.

a. Conservation:

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Unit Cost: not determined

b. Groundwater Development (Blaine Aquifer):

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $3,434,000
- Unit Cost: Max of $790/acft (2020)

Table 5.32-3. Recommended Plan Costs by Decade for Stonewall County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(409)*	*(401)*	*(337)*	*(271)*	*(213)*	*(163)*
Conservation						
Supply From Plan Element (acft/yr)	18	29	36	31	27	24
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(391)*	*(372)*	*(301)*	*(240)*	*(186)*	*(139)*
Groundwater Well Development – Blaine Aquifer						
Supply From Plan Element (acft/yr)	400	400	400	400	400	400
Annual Cost ($/yr)	$316,023	$316,023	$27,023	$27,023	$27,023	$27,023
Unit Cost ($/acft)	$790	$790	$68	$68	$68	$68

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.32.6 Irrigation

Stonewall County Irrigation shows a projected surplus and no changes in water supply are recommended.

5.32.7 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

5.33 Taylor County Water Supply Plan

Table 5.33-1 lists each water user group in Taylor County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.33-1. Taylor County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1] 2040 (acft/yr)	Surplus/(Shortage)[1] 2070 (acft/yr)	Comment
City of Abilene	(26,575)	(26,575)	Projected shortage – see Chapter 5.38
Coleman County WSC			See Callahan County
Hawley WSC			See Jones County
City of Merkel	6	(9)	Projected shortage – see plan below
Potosi WSC	(500)	(542)	Projected shortage – see plan below
Steamboat Mountain WSC	(189)	(210)	Projected shortage – see plan below
City of Tuscola	0	0	Demand equals supply
City of Tye	(6)	(15)	Projected shortage – see plan below
County-Other	416	378	Projected surplus
Manufacturing	0	0	Demand equals supply
Steam-Electric	0	0	Demand equals supply
Mining	(366)	(315)	Projected shortage – see plan below
Irrigation	(981)	(873)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-65 and C-66, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.33.1 City of Abilene

Description of Supply

The City of Abilene obtains its water supply from surface water from Fort Phantom Hill, Hubbard Creek and O.H. Ivie (Region F) Reservoirs. Abilene also has a wastewater reuse system for non-potable use, with water stored in Lake Kirby. The City supplies several neighboring communities and projected demands indicate shortages through 2070. This WUG is located in multiple counties (Taylor and Jones). Refer to Chapter 5.38 for the City's plan as a Wholesale Water Provider.

5.33.2 City of Merkel

Description of Supply

The City of Merkel obtains surface water from local sources and from the City of Abilene. A shortage is projected starting in year 2060 for the City of Merkel.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet water needs for the City of Merkel. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Water Supply from Abilene

- Cost Source: Assumed Treated Wholesale Rate
- Date to be Implemented: before 2060
- Project Cost: $0 (Current infrastructure assumed to be adequate)
- Unit Cost: $100/acft

Table 5.33-2. Recommended Plan Costs by Decade for the City of Merkel

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*10*	*8*	*6*	*3*	*(4)*	*(9)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*10*	*8*	*6*	*3*	*(4)*	*(9)*
Purchase from Abilene						
Supply From Plan Element (acft/yr)	—	—	—	—	4	9
Annual Cost ($/yr)	—	—	—	—	$400	$900
Unit Cost ($/yr)	—	—	—	—	$100	$100

5.33.3 Potosi WSC

Description of Supply

The Potosi WSC purchases water from the City of Abilene, and shows a projected shortage. This WUG is located in multiple counties (Taylor and Callahan). The shortages shown in Table 5.33-1 represent the cumulative totals for Potosi WSC.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet water needs for Potosi

WSC. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Purchase Additional Water Supply from Abilene

- Cost Source: Assumed Treated Wholesale Rate
- Date to be Implemented: before 2020
- Project Cost: $0 (Current infrastructure assumed to be adequate)
- Unit Cost: $100/acft

Table 5.33-3. Recommended Plan Costs by Decade for Potosi WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(466)*	*(485)*	*(500)*	*(515)*	*(529)*	*(542)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(466)*	*(485)*	*(500)*	*(515)*	*(529)*	*(542)*
Purchase from City of Abilene						
Supply From Plan Element (acft/yr)	466	485	500	515	529	542
Annual Cost ($/yr)	$46,600	$48,500	$50,000	$51,500	$52,900	$54,200
Unit Cost ($/acft)	$100	$100	$100	$100	$100	$100

5.33.4 Steamboat Mountain WSC

Description of Supply

Steamboat Mountain WSC purchases water from the City of Abilene, and shows a projected shortage.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet water needs for Steamboat Mountain WSC.

a. Water Supply from Abilene

- Cost Source: Assumed Treated Wholesale Rate
- Date to be Implemented: before 2020
- Project Cost: $0 (Current infrastructure assumed to be adequate)
- Unit Cost: $100/acft

Table 5.33-4. Recommended Plan Costs by Decade for Steamboat Mountain WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(182)*	*(185)*	*(189)*	*(194)*	*(203)*	*(210)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*(182)*	*(185)*	*(189)*	*(194)*	*(203)*	*(210)*
Purchase from City of Abilene						
Supply From Plan Element (acft/yr)	182	185	189	194	203	210
Annual Cost ($/yr)	$18,200	$18,500	$18,900	$19,400	$20,300	$21,000
Unit Cost ($/acft)	$100	$100	$100	$100	$100	$100

5.33.5 City of Tuscola

The City of Tuscola purchases water from Steamboat Mountain WSC and shows a supply equal to demand. No changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.33.6 City of Tye

Description of Supply

The City of Tye purchases water from the City of Abilene, and shows a small need throughout the planning period.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Tye. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Water Supply from Abilene

- Cost Source: Assumed Treated Wholesale Rate
- Date to be Implemented: before 2020
- Project Cost: $0 (Current infrastructure assumed to be adequate)
- Unit Cost: $100/acft

Table 5.33-5. Recommended Plan Costs by Decade for the City of Tye

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2)*	*(4)*	*(6)*	*(9)*	*(13)*	*(15)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*(2)*	*(4)*	*(6)*	*(9)*	*(13)*	*(15)*
Purchase from Abilene						
Supply From Plan Element (acft/yr)	2	4	6	9	13	15
Annual Cost ($/yr)	$200	$400	$600	$900	$1,300	$1,500
Unit Cost ($/yr)	$100	$100	$100	$100	$100	$100

5.33.7 County-Other

The water supply entities for Taylor County-Other show a projected surplus and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.33.8 Manufacturing

The water supply for Manufacturing equals demand and no changes in water supply are recommended.

5.33.9 Steam-Electric

The water supply entities for Taylor County Steam-Electric show no projected demand.

5.33.10 Mining

Description of Supply

Mining operations in Taylor County have no supplies currently allocated, and demands for Mining are projected to show shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Taylor County-Mining. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: not determined

b. Purchase from Abilene

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2020
- Project Cost: Not enough information to cost delivery
- Unit Cost: $100/acft (BRA wholesale rate only)

Table 5.33-6. Recommended Plan Costs by Decade for Taylor County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(391)*	*(391)*	*(366)*	*(346)*	*(329)*	*(315)*
Conservation						
Supply From Plan Element (acft/yr)	12	20	26	24	23	22
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(379)*	*(371)*	*(340)*	*(322)*	*(306)*	*(293)*
Purchase from Abilene						
Supply From Plan Element (acft/yr)	379	371	340	322	306	293
Annual Cost ($/yr)	$37,900	$37,100	$34,000	$32,200	$30,600	$29,300
Unit Cost ($/acft)	$100	$100	$100	$100	$100	$100

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.33.11 Irrigation

Description of Supply

Taylor County Irrigation is supplied by groundwater from the Edwards-Trinity and Trinity Aquifers. Irrigation is projected to have shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Taylor County-Irrigation.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: $230/acft

b. Purchase from Abilene

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2020
- Project Cost: Not enough information to cost delivery
- Unit Cost: $100/acft (BRA wholesale rate only)

Table 5.33-7. Recommended Plan Costs by Decade for Taylor County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,057)*	*(1,019)*	*(981)*	*(944)*	*(906)*	*(873)*
Conservation						
Supply From Plan Element (acft/yr)	47	76	104	101	98	96
Annual Cost ($/yr)	$10,743	$17,469	$23,844	$23,248	$22,637	$22,105
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(1,010)*	*(943)*	*(877)*	*(842)*	*(807)*	*(776)*
Purchase from Abilene						
Supply From Plan Element (acft/yr)	1,010	943	877	842	807	776
Annual Cost ($/yr)	$101,000	$94,300	$87,700	$84,200	$80,700	$77,600
Unit Cost ($/acft)	$100	$100	$100	$100	$100	$100

5.33.12 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

This page intentionally left blank.

5.34 Throckmorton County Water Supply Plan

Table 5.34-1 lists each water user group in Throckmorton County and their corresponding surplus or shortage in years 2040 and 2070. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections.

Table 5.34-1. Throckmorton County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Fort Belknap WSC			See Young County for Plan
Stephens Regional SUD			See Stephens County for Plan
City of Throckmorton	150	151	Projected surplus
County-Other	54	54	Projected surplus
Manufacturing	0	0	No projected demand
Steam-Electric	0	0	No projected demand
Mining	(171)	(116)	Projected shortage –see plan below
Irrigation	8	8	No projected demand
Livestock	0	0	Demand equals supply

1 – From Tables C-67 and C-68, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.34.1 City of Throckmorton

Description of Supply

The City of Throckmorton obtains water from Lake Throckmorton and shows a projected surplus through 2070. Should Lake Throckmorton become unreliable, the City is connected to Graham through Fort Belknapp WSC.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and the TWDB, the following water supply plan is recommended for the City of Throckmorton. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: $21,000 maximum in 2070
- Unit Cost: $474/acft

b. Water Supply from Throckmorton Reservoir:

- Strategy to develop new raw supply, only. Delivery and treatment would be required when supplies are needed.
- Cost Source: Volume II, Chapter 4.12
  - o Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
- Date to be Implemented: 2020
- Project Cost: $28,041,000
- Unit Cost: $1,760/acft

c. Water Supply from Midway Group and WCBWDS:

- Cost Source: Volume II, Chapter 8.4
  - o Supply dependent on BRA obtaining the System Operations permit from TCEQ
- Date to be Implemented: 2020
- Annual Cost: $481,000 ($2,492/acft or $7.65/kgal)

Table 5.34-2. Recommended Plan Costs by Decade for the City of Throckmorton

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*143*	*147*	*150*	*150*	*151*	*151*
Conservation						
Supply From Plan Element (acft/yr)	8	20	32	45	44	44
Annual Cost ($/yr)	$3,641	$9,645	$15,369	$21,179	$20,705	$20,705
Projected Surplus/(Shortage) after Conservation (acft/yr)	*151*	*167*	*182*	*195*	*195*	*195*
Water Supply from Throckmorton Reservoir						
Supply From Plan Element (acft/yr)	1,125	1,125	1,125	1,125	1,125	1,125
Annual Cost ($/yr)	$1,979,000	$1,979,000	$1,979,000	$1,979,000	$233,000	$233,000
Unit Cost ($/acft)	$1,760	$1,760	$1,760	$1,760	$207	$207
Water Supply from Midway Group and WCBWDS						
Supply From Plan Element (acft/yr)	193	193	193	193	193	193
Annual Cost ($/yr)	$481,000	$481,000	$237,000	$237,000	$237,000	$237,000
Unit Cost ($/acft)	$2,492	$2,492	$1,228	$1,228	$1,228	$1,228

5.34.2 County-Other

The entities in Throckmorton County-Other receive treated surface water supplies from Stephens Regional SUD and show a projected surplus through 2070. Conservation was considered but the current per capita use is below the targeted gpcd of 140. No change is recommended in water supplies.

5.34.3 Manufacturing

No Manufacturing demand exists or is projected for the county.

5.34.4 Steam-Electric

No Steam-Electric demand exists or is projected for the county.

5.34.5 Mining

Description of Supply

Mining in Throckmorton County currently has no associated supplies. Projections indicate an increase in water demand for Mining and shortages projected beginning in 2020. Changes in water supply are recommended.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Mining. Associated costs are included for each strategy.

a. Conservation:
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Unit Cost: not determined

b. Groundwater Development (Other Aquifer):
   - Cost Source: Volume II, Chapter 12.1
   - Date to be Implemented: before 2020
   - Project Cost: $2,344,000
   - Unit Cost: Max of $1,072/acft (2020)

Table 5.34-3. Recommended Plan Costs by Decade for Throckmorton County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(194)*	*(191)*	*(171)*	*(150)*	*(132)*	*(116)*
Conservation						
Supply From Plan Element (acft/yr)	6	10	12	11	9	8
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(188)*	*(181)*	*(159)*	*(140)*	*(123)*	*(108)*
Groundwater Well Development						
Supply From Plan Element (acft/yr)	200	200	200	200	200	200
Annual Cost ($/yr)	$214,373	$214,373	$17,373	$17,373	$17,373	$17,373
Unit Cost ($/acft)	$1,072	$1,072	$87	$87	$87	$87

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.34.6 Irrigation

No Irrigation demand is projected for the county.

5.34.7 Livestock

No projected shortage exists and no change in water supply is recommended.

5.35 Washington County Water Supply Plan

Table 5.35-1 lists each water user group in Washington County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.35-1. Washington County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Brenham	(400)	(928)	Projected shortage – see plan below
County-Other	114	5	Projected surplus
Manufacturing	(192)	(399)	Projected shortage – see plan below
Steam-Electric	0	0	Demand equals supply
Mining	(703)	(264)	Projected shortage – see plan below
Irrigation	151	151	Projected surplus
Livestock	0	0	Demand equals supply

1 – From Tables C-3 and C-4, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.35.1 City of Brenham

Description of Supply

The City of Brenham obtains its water supply through a contract with the Brazos River Authority for 4,200 acft/yr of water supply from Lake Somerville. The supply is currently restrained by water treatment plant capacity to 3,909 acft/yr, creating shortages before 2030. The city is also considering reuse strategies.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Brenham.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Unit Cost: $496/acft
- Annual Cost: maximum of $770,288 in 2070

Table 5.35-2. Recommended Plan Costs by Decade for City of Brenham

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*63*	*(217)*	*(400)*	*(605)*	*(780)*	*(928)*
Conservation						
Supply From Plan Element (acft/yr)	190	531	889	1,272	1,508	1,553
Annual Cost ($/yr)	$94,240	$263,376	$440,944	$630,912	$747,968	$770,288
Projected Surplus/(Shortage) after Conservation	*253*	*315*	*490*	*667*	*728*	*625*

5.35.2 County-Other

Washington County-Other is projected to have a surplus through the year 2070 and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.35.3 Manufacturing

Description of Supply

Water supply for manufacturing in Washington County is obtained by from the Gulf Coast Aquifer. Washington County Manufacturing is projected to have shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Washington County Manufacturing.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: Not determined

b. Gulf Coast Aquifer Development

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $3,380,000
- Unit Cost: Max of $1,209/acft (2020)

Table 5.35-3. Recommended Plan Costs by Decade for Washington County – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(62)*	*(127)*	*(192)*	*(249)*	*(321)*	*(399)*
Conservation						
Supply From Plan Element (acft/yr)	21	38	58	62	67	72
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation	*(41)*	*(89)*	*(134)*	*(187)*	*(254)*	*(326)*
Gulf Coast Aquifer Development						
Supply From Plan Element (acft/yr)	41	89	134	187	254	326
Annual Cost ($/yr)	$393,990	$393,990	$131,990	$131,990	$131,990	$131,990
Unit Cost ($/acft)	$1,209	$1,209	$405	$405	$405	$405

ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location.

5.35.4 Steam-Electric

No Steam-Electric demand exists nor is projected for the county.

5.35.5 Mining

Description of Supply

Mining operations in Washington County are supplied by Brazos River Alluvium groundwater. Demands for Mining are projected to increase significantly resulting in shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Washington County-Mining.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: not determined

b. Gulf Coast Aquifer Development

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2020
- Project Cost: $6,245,000
- Unit Cost: Max of $695/acft (2020)

Table 5.35-4. Recommended Plan Costs by Decade for Washington County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(569)*	*(866)*	*(703)*	*(538)*	*(373)*	*(264)*
Conservation						
Supply From Plan Element (acft/yr)	17	43	49	38	26	18
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(552)*	*(823)*	*(654)*	*(500)*	*(347)*	*(246)*
Gulf Coast Aquifer Development						
Supply From Plan Element (acft/yr)	552	823	654	500	347	246
Annual Cost ($/yr)	$571,931	$571,931	$47,931	$47,931	$47,931	$47,931
Unit Cost ($/acft)	$695	$695	$58	$58	$58	$58

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.35.6 Irrigation

Irrigation is projected to have a surplus of water from available groundwater and surface water supplies and no changes in water supply are recommended.

5.35.7 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

5.36 Williamson County Water Supply Plan

Table 5.36-1 lists each water user group in Williamson County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.36-1.Williamson County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1] 2040 (acft/yr)	Surplus/(Shortage)[1] 2070 (acft/yr)	Comment
City of Bartlett	(344)	(472)	Projected shortage – see plan below
Bell-Milam Falls WSC			See Bell County
Blockhouse MUD	279	287	Projected surplus
Brushy Creek MUD	(920)	(1,848)	Projected shortage – see plan below
City of Cedar Park	(4,082)	(4,348)	Projected shortage – see 5.38
Chisholm Trail SUD[2]	(5,070)	(10,401)	Projected shortage – see plan below
Fern Bluff MUD	(253)	(259)	Projected shortage – see plan below
City of Florence	(65)	(92)	Projected shortage – see plan below
City of Georgetown	(6,695)	(24,121)	Projected shortage – see plan below
City of Granger	(133)	(190)	Projected shortage – see plan below
City of Hutto	(5,558)	(11,994)	Projected shortage – see plan below
Jarrell	0	0	Demand equals supply
Jarrell-Schwertner WSC	1,020	263	Projected surplus
Jonah Water SUD	(819)	(2,977)	Projected shortage – see plan below
City of Leander[2]	(12,090)	(33,576)	Projected shortage – see plan below
City of Liberty Hill	56	56	Projected surplus
Manville WSC[3]	2,335	814	Projected surplus
City of Pflugerville[3]	0	0	Demand equals supply
City of Round Rock[2]	(14,028)	(46,089)	Projected shortage – see 5.38
Southwest Milam WSC			See Milam County
City of Taylor	0	0	Demand equals supply
City of Thorndale			See Milam County
Thrall	0	0	Demand equals supply
Williamson-Travis County MUD #1	212	218	Projected surplus
Williamson-Travis County MUD #10	(352)	(688)	Projected shortage – see plan below
Williamson-Travis County MUD #11	(193)	(326)	Projected shortage – see plan below
WILLIAMSON COUNTY MUD #9	(263)	(448)	Projected shortage – see plan below
County-Other	(13,402)	(22,243)	Projected shortage – see plan below

Table 5.36-1.Williamson County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Manufacturing	(11)	(11)	Projected shortage – see plan below
Steam-Electric	0	0	No projected demand
Mining	(6,949)	(10,771)	Projected shortage – see plan below
Irrigation	(71)	(72)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-71 and C-72, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

2 – Balance is total between Brazos G and Region K for WUG.

3 – Balance is only for portion of WUG in Brazos G.

5.36.1 City of Bartlett

Description of Supply

The City of Bartlett obtains its water supply from groundwater from the Trinity Aquifer. Based on the available groundwater supply, the City of Bartlett is projected to have shortages through the year 2070. This WUG is located in multiple counties (Williamson and Bell). The shortages shown in Table 5.36-1 represent the cumulative totals for the City of Bartlett.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Bartlett.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $24,310 in 2020
- Unit Cost: $470/acft

b. Advanced Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2050
- Annual Cost: maximum of $31,960 in 2070
- Unit Cost: $470/acft

c. Brackish Trinity Development

- Cost Source: Volume II, Chapter 12

- Date to be Implemented: before 2020
- Project Cost: $10,428,000
- Unit Cost: Max of $2,827 in 2020

Table 5.36-2. Recommended Plan Costs by Decade for City of Bartlett

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(281)*	*(309)*	*(344)*	*(383)*	*(428)*	*(472)*
Conservation						
Supply From Plan Element (acft/yr)	12	40	61	62	68	73
Annual Cost ($/yr)	$5,640	$18,800	$28,670	$29,140	$31,960	$34,310
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(269)*	*(269)*	*(283)*	*(321)*	*(360)*	*(399)*
Advanced Conservation						
Supply From Plan Element (acft/yr)	—	—	—	6	35	68
Annual Cost ($/yr)	—	—	—	$2,820	$16,450	$31,960
Projected Surplus/(Shortage) after Advanced Conservation (acft/yr)	*(269)*	*(269)*	*(283)*	*(315)*	*(325)*	*(331)*
Brackish Trinity Development						
Supply From Plan Element (acft/yr)	323	323	323	323	645	645
Annual Cost ($/yr)	$912,000	$912,000	$476,000	$476,000	$1,387,000	$1,387,000
Unit Cost ($/acft)	$2,827	$2,827	$1,476	$1,476	$2,150	$2,150

5.36.2 Blockhouse MUD

Blockhouse MUD obtains its water supply from the City of Cedar Park. No shortages are projected for Blockhouse MUD and no changes in water supply are recommended. Conservation and advanced conservation were considered; however, the entity's current per capita use rate is below the selected target rate of 120 gpcd in 2070.

5.36.3 Brushy Creek MUD

Description of Supply

Brushy Creek MUD obtains its water supply from a contract with the Brazos River Authority for water from Stillhouse Hollow Reservoir and from local groundwater. Brushy Creek MUD has a projected shortage through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Brushy Creek MUD.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Unit Cost: $470/acft
- Annual Cost: maximum of $762,810 in 2070

b. Advanced Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Unit Cost: $470/acft
- Annual Cost: maximum of $201,693 in 2070

c. Groundwater Development – Edwards Aquifer (BFZ)

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2050
- Project Cost: $182,000
- Unit Cost: $1,919/acft

Table 5.36-3. Recommended Plan Costs by Decade for Brushy Creek MUD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(58)*	*(98)*	*(920)*	*(1,428)*	*(1,764)*	*(1,848)*
Conservation						
Supply From Plan Element (acft/yr)	197	589	947	1,282	1,600	1,623
Annual Cost ($/yr)	$92,590	$276,830	$445,090	$602,540	$752,000	$762,810
Projected Surplus/(Shortage) after Conservation	*139*	*491*	*27*	*(146)*	*(164)*	*(225)*
Advanced Conservation						
Supply From Plan Element (acft/yr)	39	81	111	135	152	430
Annual Cost ($/yr)	$18,342	$37,853	$52,226	$63,131	$71,213	$201,693
Projected Surplus/(Shortage) after Advanced Conservation	178	572	138	(11)	(12)	205
Edwards Aquifer Development						
Supply From Plan Element (acft/yr)	—	—	—	11	12	12
Annual Cost ($/yr)	—	—	—	$23,028	$23,028	$9,028
Unit Cost ($/acft)	—	—	—	$1,919	$1,919	$752

5.36.4 City of Cedar Park

The recommended water supply plan for the City of Cedar Park is included in Section 5.38 with the wholesale water providers.

5.36.5 Chisholm Trail SUD

Description of Supply

Chisholm Trail SUD has service area in Williamson and Burnet (Region K) County. The entity obtains its water supply from groundwater from the Edwards-BFZ (Northern Segment) Aquifer and contracts with the Brazos River Authority for water from Lake Stillhouse Hollow. Based on the available groundwater and surface water supply, Chisholm Trail SUD is projected to have a shortage starting in 2020. This WUG is located in multiple counties (Williamson and Bell). The City of Georgetown has recently taken over operations of the utility and is expected to be the primary supplier of future water needs for the utility. Balance and strategies represented in Table 5.36-4 represent the cumulative totals for Chisholm Trail SUD in both counties and regions.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, and in coordination with Region K, the following water management strategy is recommended for the Chisholm Trail SUD.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Unit Cost: $470/acft
   - Annual Cost: maximum of $808,400 in 2070

b. Advanced Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Unit Cost: $470/acft
   - Annual Cost: maximum of $808,400 in 2070

c. Increase Water Treatment Plant
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: $31,675,000
   - Unit Cost: $656

d. Reallocation from City of Georgetown
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2020
   - Project Cost: Infrastructure assumed to be sufficient

- Unit Cost: Wholesale water rate of $977/acft assumed

Table 5.36-4. Recommended Plan Costs by Decade for Chisholm Trail SUD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,392)*	*(3,577)*	*(5,070)*	*(6,685)*	*(8,512)*	*(10,401)*
Conservation						
Supply From Plan Element (acft/yr)	213	758	1,069	1,263	1,494	1,736
Annual Cost ($/yr)	$100,145	$356,046	$502,374	$593,766	$701,952	$816,153
Projected Surplus/(Shortage) after Conservation	*(2,179)*	*(2,820)*	*(4,001)*	*(5,422)*	*(7,019)*	*(8,665)*
Additional Conservation						
Supply From Plan Element (acft/yr)	—	—	6	503	1,159	1,967
Annual Cost ($/yr)	—	—	$3,037	$236,106	$543,669	$922,431
Projected Surplus/(Shortage) after Advanced Conservation	*(2,179)*	*(2,820)*	*(4,001)*	*(4,919)*	*(5,860)*	*(6,698)*
Increase Water Treatment Plant						
Supply From Plan Element (acft/yr)	3,527	3,334	3,639	4,604	5,931	7,489
Annual Cost ($/yr)	$2,314,000	$2,187,000	$1,099,000	$1,390,000	$1,791,000	$2,262,000
Unit Cost ($/yr)	$656	$656	$302	$302	$302	$302
Reallocation from City of Georgetown						
Supply From Plan Element (acft/yr)	—	—	400	400	—	—
Annual Cost ($/yr)	—	—	$391,000	$391,000	—	—
Unit Cost ($/yr)	—	—	$977	$977	—	—

5.36.6 Fern Bluff MUD

Description of Supply

Fern Bluff MUD obtains its water supply from the City of Round Rock, for which shortages are projected. Conservation is recommended to reduce the demand to eliminate anticipated shortages. The contract with Round Rock is sufficient to meet the remaining demands of Fern Bluff MUD.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for Fern Bluff MUD.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $122,670 in 2050

- Unit Cost: $470/acft

Table 5.36-5. Recommended Plan Costs by Decade for Fern Bluff MUD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(63)*	*(161)*	*(253)*	*(261)*	*(259)*	*(259)*
Conservation						
Supply From Plan Element (acft/yr)	63	161	253	261	259	259
Annual Cost ($/yr)	$29,610	$75,670	$118,910	$122,670	$121,730	$121,730
Projected Surplus/(Shortage) after Conservation	*0*	*0*	*0*	*0*	*0*	*0*

5.36.7 City of Florence

Description of Supply

The City of Florence obtains its water supply from groundwater from the Trinity Aquifer. Based on the City's available groundwater supply, the City of Florence is projected to have a shortage through the year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Florence.

a. Edwards Aquifer Development
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Annual Cost: $26,226
   - Unit Cost: $1,093/acft

b. Trinity Aquifer Development
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Annual Cost: Maximum of $701,000 in 2020
   - Unit Cost: Maximum of $5,795/acft in 2020

Conservation and advanced conservation were considered; however, the entity's current per capita use rate is below the selected target rate of 120 gpcd in 2070.

Table 5.36-6. Recommended Plan Costs by Decade for the City of Florence

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(59)*	*(61)*	*(65)*	*(72)*	*(81)*	*(92)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*(59)*	*(61)*	*(65)*	*(72)*	*(81)*	*(92)*
Groundwater Development - Edwards						
Supply From Plan Element (acft/yr)	—	—	—	—	13	24
Annual Cost ($/yr)	—	—	—	—	$26,226	$26,226
Unit Cost ($/yr)	—	—	—	—	$1,093	$1,093
Groundwater Development –Trinity (Bell County)						
Supply From Plan Element (acft/yr)	121	121	121	121	121	121
Annual Cost ($/yr)	$701,000	$701,000	$261,000	$261,000	$261,000	$261,000
Unit Cost ($/yr)	$5,795	$5,795	$2,158	$2,158	$2,158	$2,158

5.36.8 City of Georgetown

Description of Supply

The City of Georgetown obtains its water supply from groundwater from the Edwards-BFZ (Northern Segment) Aquifer and contracts with the Brazos River Authority for water from Lake Georgetown and Stillhouse Hollow Reservoir. Based on the available treatment capacity of the city's water treatment plant, the City of Georgetown is projected to have a shortage from 2030 through the year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for The City of Georgetown. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: maximum of $224,000 in 2070
   - Unit Cost: $474/acft

b. Advanced Conservation
   - Cost Source: Volume II, Chapter 2

- Date to be Implemented: before 2020
- Unit Cost: $470/acft
- Annual Cost: maximum of $201,693 in 2070

c. Increase Treatment Plant Capacity

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2020
- Project Cost: $44,534,000
- Unit Cost: $576/acft

The City of Georgetown has provided information regarding a potential strategy to pump flows from the South Fork of the San Gabriel River into Lake Georgetown through an existing 30-inch pipeline that could be repurposed for the diversion. Based upon an analysis of data from 1967 to 2007, an average annual diversion of about 4,000 acft/yr might be possible. The level of analysis available at this time precludes including this strategy in the 2016 Brazos G Regional Water Plan; however, this strategy warrants future consideration. Future evaluations of the project would need to include an analysis of the flows available for diversion constrained by downstream senior water rights and the resulting improvement to the firm yield of Lake Georgetown over the period of record in the Brazos WAM (1940-1997), costs for the river intake and associated infrastructure, and an evaluation of potential environmental impacts to the South Fork of the San Gabriel River.

Table 5.36-7. Recommended Plan Costs by Decade for City of Georgetown

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*1,600*	*(2,194)*	*(6,695)*	*(11,781)*	*(17,840)*	*(24,121)*
Conservation						
Supply From Plan Element (acft/yr)	734	2,507	5,068	8,141	9,756	11,442
Annual Cost ($/yr)	$344,980	$1,178,290	$2,381,960	$3,826,270	$4,585,320	$5,377,740
Projected Surplus/(Shortage) after Conservation	*2,334*	*313*	*(1,627)*	*(3,640)*	*(8,084)*	*(12,679)*
Advanced Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	1,612	4,404
Annual Cost ($/yr)	—	—	—	—	$757,640	$2,069,880
Projected Surplus/(Shortage) after Advanced Conservation	2,334	313	(1,627)	(3,640)	(6,472)	(8,275)
Increase Water Treatment Capacity (21 MGD expansion)						
Supply From Plan Element (acft/yr)	—	11,626	11,626	11,626	11,626	11,304
Annual Cost ($/yr)	—	$6,917,000	$6,917,000	$3,186,000	$3,186,000	$3,186,000
Unit Cost ($/yr)	—	$576	$576	$266	$266	$266

5.36.9 City of Granger

Description of Supply

The City of Granger obtains its water supply from groundwater from the Trinity Aquifer. Based on the available groundwater supply, the City of Granger is projected to have a shortage through the year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Granger.

a. BRA Supply (Lake Granger) through the East Williamson County Water Supply Project

- Cost Source: Volume II, Chapter 8.2
- Date to be Implemented: 2020
- Project Cost $42,127,000
- Unit Cost: $1,173/acft

Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.36-8. Recommended Plan Costs by Decade for City of Granger

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(113)*	*(121)*	*(133)*	*(148)*	*(169)*	*(190)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*(113)*	*(121)*	*(133)*	*(148)*	*(169)*	*(190)*
BRA Supply (Lake Granger) through the EWCWSP						
Supply From Plan Element (acft/yr)	200	200	200	200	200	200
Annual Cost ($/yr)	$234,600	$234,600	$150,800	$150,800	$150,800	$150,800
Unit Cost ($/yr)	$1,173	$1,173	$754	$754	$754	$754

5.36.10 City of Hutto

Description of Supply

The City of Hutto obtains its water supply from Heart of Texas Water Suppliers LLC, Manville WSC and City of Taylor. The contractual supply from the Heart of Texas totals 5,600 acft/yr, but the current supply from is limited by the MAG in Williamson County. Based on the available supplies, the City of Hutto is projected to have shortages through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Hutto. Associated costs are included for each strategy.

a. Increase Supply from Heart of Texas WSC

   Heart of Texas Water Suppliers LLC does not currently have sufficient supply to meet the contractual requirements with Hutto. Limited groundwater is available under the MAG in Williamson County. It is anticipated that additional supplies will be developed by Heart of Texas WSC in Lee County to meet needs.

   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2020
   - Project Cost: (cost to be borne by Heart of Texas WSC)
   - Unit Cost: $977

b. Alternative: Little River Off-Channel Reservoir

- Cost Source: Volume II, Chapter 4.7
  - Strategy could be supplied by the BRA System Operation, dependent on permit approval by TCEQ
- Date to be Implemented: before 2030
- Project Cost: $487,611,000
- Unit Cost: $1,038/acft

During the Brazos G regional water planning process, water management strategies such as additional development of Carrizo-Wilcox Aquifer groundwater and the Lake Granger Augmentation Project were preferred options to include in the 2016 Brazos G Regional Water Plan. When confronted by the Modeled Available Groundwater (MAG) limitations of these two options, the BGRWPG has little alternative but to make the Little River Off-Channel Reservoir a recommended or alternative strategy.

Conservation and advanced conservation were considered; however, the entity's current per capita use rate is below the selected target rate of 120 gpcd in 2070.

Table 5.36-9. Recommended Plan Costs by Decade for City of Hutto

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,256)*	*(3,678)*	*(5,481)*	*(7,426)*	*(10,193)*	*(12,477)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*(2,256)*	*(3,678)*	*(5,481)*	*(7,426)*	*(10,193)*	*(12,477)*
Increase Supplies from Heart of Texas WSC (Volume II, Chapter 12)						
Supply From Plan Element (acft/yr)	5,593	5,593	5,593	7,503	9,710	11,994
Annual Cost ($/yr)	$5,464,000	$5,464,000	$5,464,000	$ 7,330,000	$9,487,000	$11,718,000
Unit Cost ($/yr)	$977	$977	$977	$977	$977	$977
Alternative: Little River Off-Channel Reservoir (BRA)						
Supply From Plan Element (acft/yr)	—	378	2,181	4,001	6,215	8,499
Annual Cost ($/yr)	—	$392,000	$2,264,000	$1,848,000	$2,871,000	$2,975,000
Unit Cost ($/yr)	—	$1,038	$1,038	$462	$462	$350

5.36.11 City of Jarrell

Description of Supply

The City of Jarrell obtains its supply from the Jerrell-Schwertner WSC through groundwater wells located within and near the City. The current groundwater supplies equal projected demand through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Granger.

a. BRA Supply (Lake Granger) through the East Williamson County Water Supply Project
   - Cost Source: Volume II, Chapter 8.2
   - Date to be Implemented: 2020
   - Project Cost $42,127,000
   - Unit Cost: $1,173/acft

Conservation and advanced conservation whereas considered; however, the entity's current per capita use rate is below the selected target rate of 140 120 gpcd in 2070.

Table 5.36-10. Recommended Plan Costs by Decade for City of Jarrell

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*0*	*0*	*0*	*0*	*0*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*0*	*0*	*0*	*0*	*0*	*0*
BRA Supply (Lake Granger) through the EWCWSP						
Supply From Plan Element (acft/yr)	100	100	100	100	100	100
Annual Cost ($/yr)	$117,300	$117,300	$75,400	$75,400	$75,400	$75,400
Unit Cost ($/yr)	$1,173	$1,173	$754	$754	$754	$754

5.36.12 Jarrell-Schwertner WSC

Jarrell-Schwertner WSC obtains its water supply from the Edwards-BFZ (Northern Segment) Aquifer, and Central Texas WSC. The WSC also has a contract with BRA for supplies from Stillhouse Hollow Lake. Based on the available water supply, Jarrell-Schwertner WSC is projected to have a surplus throughout the planning period. This WUG is located in multiple counties (Williamson and Bell). The surplus/shortages shown in Table 5.36-1 represent the cumulative totals for Jarrell-Schwertner WSC.

5.36.13 Jonah Water SUD

Description of Supply

Jonah Water SUD obtains its water supply from groundwater from the Edwards-BFZ (Northern Segment) Aquifer and a contract with the BRA for treated supply through the East Williamson County WTP. Based on the available groundwater and surface water supply, Jonah Water SUD is projected to have a shortage from 2030 through the year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Jonah Water SUD.

a. BRA Supply (Lake Granger) through the East Williamson County Water Supply Project
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost $42,127,000
   - Unit Cost: Max of 1,173/acft

Conservation and advanced conservation were considered; however, the entity's current per capita use rate is below the selected target rate of 120 gpcd in 2070.

Table 5.36-11. Recommended Plan Costs by Decade for Jonah Water SUD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*155*	*(266)*	*(819)*	*(1,525)*	*(2,229)*	*(2,977)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*155*	*(266)*	*(819)*	*(1,525)*	*(2,229)*	*(2,977)*
BRA Supply (Lake Granger) through the EWCWSP						
Supply From Plan Element (acft/yr)	3,000	3,000	3,000	3,000	3,000	3,000
Annual Cost ($/yr)	$3,519,000	$3,519,000	$2,262,000	$2,262,000	$2,262,000	$2,262,000
Unit Cost ($/acft)	$1,173	$1,173	$754	$754	$754	$754

5.36.14 City of Leander

Description of Supply

The City of Leander is located in Williamson and Travis (Region K) County and obtains its water supply from groundwater from the Edwards-BFZ (Northern Segment) Aquifer and contracts with the Lower Colorado River Authority for water from the Highland Lakes (Lake Travis and Lake Buchanan). Based on the available groundwater and surface water supply, the City of Leander is projected to have a shortage from the year 2030 through the year 2070. Leander is a participant in the Brushy Creek RUA project with Cedar Park and Round Rock and will obtain future supplies from the Highland Lakes. Balance and strategies represented in Table 5.36-12 represent the cumulative totals for Leander in both counties and regions.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB and in coordination with Region K, the following water management strategy is recommended for the City of Leander.

a. Brushy Creek RUA Water Supply Project
   - Cost Source: Volume II, Chapter 7.2
   - Date to be Implemented: 2020
   - Project Cost $142,186,000 (city's portion of project shared with Liberty Hill)
   - Unit Cost: $1,128

b. Contract Amendment with LCRA
   - Cost Source: 2016 Region K Water Plan
   - Date to be Implemented: 2050
   - Project Cost: None. Existing infrastructure assumed sufficient
   - Unit Cost: $ 151/acft

Conservation and advanced conservation were considered; however, the entity's current per capita use rate is below the selected target rate of 120 gpcd in 2070.

Table 5.36-12. Recommended Plan Costs by Decade for the City of Leander

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*361*	*(4,653)*	*(12,090)*	*(20,936)*	*(26,947)*	*(33,576)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*361*	*(4,653)*	*(12,090)*	*(20,936)*	*(26,947)*	*(33,576)*
Brushy Creek RUA Water Supply Project						
Supply From Plan Element (acft/yr)[1]	17,600	17,600	17,600	17,600	17,600	17,600
Annual Cost ($/yr)	$27,072,000	$27,072,000	$15,480,000	$15,480,000	$15,480,000	$15,480,000
Unit Cost ($/acft)	$1,128	$1,128	$645	$645	$645	$645
Contract Amendment with LCRA (Region K)						
Supply From Plan Element (acft/yr)	—	—	—	3,336	9,347	15,976
Annual Cost ($/yr)	—	—	—	$504,000	$1,411,000	$2,412,000
Unit Cost ($/acft)	—	—	—	$151	$151	$151

1- The total supply from the strategy is 24,000 acft/y of which the City is currently using 6,400 acft/yr.

5.36.15 Liberty Hill

Description of Supply

The City of Liberty Hill obtains its water supply from groundwater from the Trinity Aquifer. They also have a BRA contract for 600 acft/yr out of the Highland Lakes (HB1437). Liberty Hill is a participant in the Brushy Creek RUA project with Leander, Cedar Park and Round Rock and will obtain future supplies from the Highland Lakes. The City of Liberty Hill is projected to have a surplus through the year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB and in coordination with Region K, the following water management strategy is recommended for the City of Leander.

a. Brushy Creek RUA Water Supply Project

- Cost Source: Volume II, Chapter 7.2
- Date to be Implemented: 2020
- Project Cost $142,186,000 (city's portion of project shared with Leander)
- Unit Cost: $1,128

Conservation and advanced conservation were considered; however, the entity's current per capita use rate is below the selected target rate of120 gpcd in 2070.

Table 5.36-13. Recommended Plan Costs by Decade for the City of Liberty Hill

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*361*	*(4,653)*	*(12,090)*	*(20,936)*	*(26,947)*	*(33,576)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*361*	*(4,653)*	*(12,090)*	*(20,936)*	*(26,947)*	*(33,576)*
Brushy Creek RUA Water Supply Project						
Supply From Plan Element (acft/yr)	600	600	600	600	600	600
Annual Cost ($/yr)	$677,000	$677,000	$387,000	$387,000	$387,000	$387,000
Unit Cost ($/acft)	$1,128	$1,128	$645	$645	$645	$645

5.36.16 Manville WSC

Manville WSC is mostly located in Travis County (Region C); however a portion of the service area is in Williamson County. The WSC obtains its water supply from groundwater from the Edwards and Trinity Aquifers as well as other minor aquifers. No shortages are projected for Manville WSC in Brazos G. The full water plan for Manville WSC is discussed in the 2016 Region K Water Plan.

Conservation and advanced conservation were considered; however, the entity's current per capita use rate is below the selected target rate of 120 gpcd in 2070.

5.36.17 City of Pflugerville

Description of Supply

The City of Pflugerville obtains its supply from the Edwards (BFZ) Aquifer in Region K and from the Lower Colorado River Authority. No shortages are projected for the City of Pflugerville. The majority of the City is located in Region K and more details about supplies, needs and strategies are discussed in the 2016 Region K Water Plan.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB and in coordination with Region K, the following water management strategy is recommended for the City of Pflugerville.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $3,760 in 2070
- Unit Cost: $470/acft

Table 5.36-14. Recommended Plan Costs by Decade for the City of Pflugerville (Brazos G)

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*0*	*0*	*0*	*0*	*0*
Conservation						
Supply From Plan Element (acft/yr)	3	5	5	6	7	8
Annual Cost ($/yr)	$1,410	$2,350	$2,350	$2,820	$3,290	$3,760
Projected Surplus/(Shortage) after Conservation	*3*	*5*	*5*	*6*	*7*	*8*

5.36.18 City of Round Rock

The recommended water supply plan for the City of Round Rock is included in Section 5.38 with the wholesale water providers.

5.36.19 City of Taylor

Description of Supply

The City of Taylor obtains its water supply from a contract with the Brazos River Authority for water from Lake Granger through the East Williamson County WTP. No shortages are projected for the City of Taylor.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for The City of Taylor.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $32,250 in 2070
- Unit Cost: $470/acft

Table 5.36-15. Recommended Plan Costs by Decade for the City of Taylor

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*0*	*0*	*0*	*0*	*0*
Conservation						
Supply From Plan Element (acft/yr)	75	73	17	—	—	—
Annual Cost ($/yr)	$35,250	$34,310	$7,990	—	—	—
Projected Surplus/(Shortage) after Conservation	*75*	*73*	*17*	*0*	*0*	*0*

5.36.20 City of Thrall

The City of Thrall obtains its water supply from groundwater from a minor aquifer and treated surface water from City of Taylor. Based on the available supplies, the City of Thrall is projected to have a adequate supplies through the year 2070. No change in water supply is recommended. Conservation and advanced conservation were considered; however, the entity's current per capita use rate is below the selected target rate of 120 gpcd in 2070.

5.36.21 Williamson-Travis County MUD #1

Williamson-Travis County MUD #1 has demand in Williamson and Travis (Region K) counties and obtains its water supply from the City of Cedar Park. Balance information in Table 5.36-1 represents the cumulative totals for Williamson-Travis County MUD#1 in both counties and regions. Surpluses are projected through the year 2070 and no changes in water supply are recommended.

Conservation and advanced conservation were considered; however, the entity's current per capita use rate is below the selected target rate of120 gpcd in 2070.

5.36.22 Williamson County MUD #10

Description of Supply

Williamson County MUD #10 obtains its water supply from the City of Round Rock. While the contract will supply enough water to meet the needs of Williamson County MUD #10, conservation is recommended to reduce the demand.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for Williamson County MUD #10.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $323,360 in 2070
- Unit Cost: $470/acft

Table 5.36-16. Recommended Plan Costs by Decade for Williamson County MUD #10

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(61)*	*(181)*	*(352)*	*(489)*	*(587)*	*(688)*
Conservation						
Supply From Plan Element (acft/yr)	61	181	352	489	587	688
Annual Cost ($/yr)	$28,670	$85,070	$165,440	$229,830	$275,890	$323,360
Projected Surplus/(Shortage) after Conservation	*0*	*0*	*0*	*0*	*0*	*0*

5.36.23 Williamson County MUD #11

Description of Supply

Williamson County MUD #11 obtains its water supply from the City of Round Rock. While the contract will supply enough water to meet the needs of Williamson County MUD #11, conservation is recommended to reduce the demand.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Williamson County MUD #11.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $155,320 in 2070
- Unit Cost: $470/acft

Table 5.36-17. Recommended Plan Costs by Decade for Williamson County MUD #11

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(35)*	*(103)*	*(193)*	*(233)*	*(278)*	*(326)*
Conservation						
Supply From Plan Element (acft/yr)	35	103	193	233	278	326
Annual Cost ($/yr)	$16,450	$48,410	$90,710	$109,510	$130,660	$153,220
Projected Surplus/(Shortage) after Conservation	*0*	*0*	*0*	*0*	*0*	*0*

5.36.24 Williamson County MUD #9

Description of Supply

Williamson County MUD #9 obtains its water supply from the City of Round Rock. While the contract will supply enough water to meet the needs of Williamson County MUD #9, conservation is recommended to reduce the demand.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Williamson County MUD #9.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $210,560 in 2070
- Unit Cost: $470/acft

Table 5.36-18. Recommended Plan Costs by Decade for Williamson County MUD #9

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(37)*	*(128)*	*(263)*	*(319)*	*(382)*	*(448)*
Conservation						
Supply From Plan Element (acft/yr)	37	128	263	319	382	448
Annual Cost ($/yr)	$17,390	$60,160	$123,610	$149,930	$179,540	$210,560
Projected Surplus/(Shortage) after Conservation	*0*	*0*	*0*	*0*	*0*	*0*

5.36.25 County-Other

Description of Supply

Entities in Williamson County-Other obtain water supply from groundwater from the Trinity and Edwards (BFZ) Aquifers as well as other minor aquifers. Williamson County-Other also obtains a portion of its water supply from the City of Round Rock, the City of Taylor, City of Austin, and run-of-river rights. A portion of County-Other demand is located in Region K portion of Williamson County. Based on the available groundwater and surface water supply, Williamson County-Other is projected to have a shortage from 2020 through year 2070. Balance and strategies represented in Table 5.36-19 represent the cumulative totals for Williamson County-Other in both regions.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, and in coordination with Region K, the following water management strategies are recommended for Williamson County - Other.

a. Advanced Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Unit Cost: $470/acft
   - Annual Cost: maximum of $201,693 in 2070

b. Purchase from the BRA (Lake Granger) through the East Williamson County Water Supply Project
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Annual Cost: Maximum of $2,697,900 in 2020
   - Unit Cost: Maximum of $1,173/acft in 2020

c. Little River OCR

- Cost Source: Volume II, Chapters 7.4 and 12
  - Strategy could be supplied by the BRA System Operation, dependent on permit approval by TCEQ
- Date to be Implemented: 2030
- Project Cost: $487,611,000
- Unit Cost: $1,038/acft

During the Brazos G regional water planning process, water management strategies such as additional development of Carrizo-Wilcox Aquifer groundwater and the Lake Granger Augmentation Project were preferred options to include in the 2016 Brazos G Regional Water Plan. When confronted by the Modeled Available Groundwater (MAG) limitations of these two options, the BGRWPG has little alternative but to make the Little River Off-Channel Reservoir a recommended strategy.

d. Purchase from SAWS Vista Ridge Project

- Cost Source: Volume II, Chapters 12 and Region L (Appendix K)

  This project will contract to purchase 5,700 acft/yr from Vista Ridge Project sponsored by San Antonio Water Systems.
- Date to be Implemented: 2020
- Project Cost: none. Project costs to be borne by SAWS
- Unit Cost: $2,177/acft

Conservation and advanced conservation were considered; however, the entity's current per capita use rate is below the selected target rate of 120 gpcd in 2070.

Table 5.36-19. Recommended Plan Costs by Decade for Williamson County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(7,973)*	*(10,262)*	*(13,402)*	*(13,242)*	*(17,890)*	*(22,243)*
Advanced Conservation (Volume II, Chapter 2)						
Supply From Plan Element (acft/yr)	—	—	56	567	1,432	2,594
Annual Cost ($/yr)	—	—	$26,320	$266,490	$673,040	$1,219,180
Projected Surplus/(Shortage) after Advanced Conservation	*(7,973)*	*(10,262)*	*(13,346)*	*(12,675)*	*(16,458)*	*(19,649)*
Purchase from the BRA (Lake Granger) through the EWCWSP						
Supply From Plan Element (acft/yr)	2,300	2,300	2,300	2,300	2,300	2,300
Annual Cost ($/yr)	$2,697,900	$2,697,900	$1,734,200	$1,734,200	$1,734,200	$1,734,200
Unit Cost ($/yr)	$1,173	$1,173	$754	$754	$754	$754
Little River OCR						
Supply From Plan Element (acft/yr)	—	2,267	5,352	5,346	8,466	11,658

Table 5.36-19. Recommended Plan Costs by Decade for Williamson County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Annual Cost ($/yr)	—	$2,353,000	$5,555,000	$2,470,000	$3,911,000	$4,080,000
Unit Cost ($/yr)	—	$1,038	$1,038	$462	$462	$350
Purchase from SAWS Vista Ridge Project (Region L)						
Supply From Plan Element (acft/yr)	5,700	5,700	5,700	5,700	5,700	5,700
Annual Cost ($/yr)	$12,409,000	$12,409,000	$12,409,000	$12,409,000	$12,409,000	$12,409,000
Unit Cost ($/yr)	$2,177	$2,177	$2,177	$2,177	$2,177	$2,177

5.36.26 Manufacturing

Description of Supply

Williamson County Manufacturing obtains its water supply from groundwater from the Edwards-BFZ (Northern Segment) Aquifer as well as other minor aquifers. Williamson County Manufacturing also obtains a portion of its water supply from run-of-river rights. Based on the available groundwater and surface water supply, Williamson County Manufacturing is projected to have a shortage through the year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet water needs for Williamson County Manufacturing.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: Not determined

Table 5.36-20. Recommended Plan Costs by Decade for Williamson County – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(11)*	*(10)*	*(11)*	*(11)*	*(11)*	*(11)*
Conservation						
Supply From Plan Element (acft/yr)	71	135	212	234	254	276
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation	*60*	*125*	*201*	*223*	*243*	*265*

ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location.

5.36.27 Steam-Electric

There is no Steam-Electric demand or supply in Williamson County.

5.36.28 Mining

Description of Supply

Williamson County Mining obtains its water supply from groundwater from the Edwards-BFZ (Northern Segment) Aquifer and run-of-river rights. Based on the available groundwater and surface water supply, Williamson County Mining is projected to have a shortage through the year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Williamson County-Mining. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: not determined

b. Leave needs unmet
   - Cost Source: Cost of not meeting needs – see Appendix H
   - Date to be Implemented: 2020

Table 5.36-21. Recommended Plan Costs by Decade for Williamson County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(4,748)*	*(5,832)*	*(6,949)*	*(8,140)*	*(9,367)*	*(10,771)*
Conservation						
Supply From Plan Element (acft/yr)	155	312	515	599	685	783
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(4,593)*	*(5,520)*	*(6,433)*	*(7,541)*	*(8,682)*	*(9,988)*
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	4,593	5,520	6,433	7,541	8,682	9,988
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.36.29 Irrigation

Description of Supply

Williamson County Irrigation is supplied by groundwater from the Trinity and Edwards Aquifers and surface water from run of the river water rights. Irrigation is projected to have shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Williamson County-Irrigation.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: $230/acft

b. Groundwater Development – Edwards Aquifer
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2020
   - Project Cost: $1,220,000
   - Unit Cost: Max of $1,679 acft/yr (2020)

Table 5.36-22. Recommended Plan Costs by Decade for Williamson County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(71)*	*(71)*	*(71)*	*(72)*	*(72)*	*(72)*
Conservation						
Supply From Plan Element (acft/yr)	5	8	11	11	11	11
Annual Cost ($/yr)	$1,150	$1,840	$2,530	$2,530	$2,530	$2,530
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(66)*	*(63)*	*(60)*	*(61)*	*(61)*	*(62)*
Groundwater Development – Edwards Aquifer						
Supply From Plan Element (acft/yr)	66	63	60	61	61	62
Annual Cost ($/yr)	$110,800	$110,800	$8,800	$8,800	$8,800	$8,800
Unit Cost ($/acft)	$1,679	$1,679	$133	$133	$133	$133

5.36.30 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

5.37 Young County Water Supply Plan

Table 5.37-1 lists each water user group in Young County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.37-1. Young County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Fort Belknapp WSC	(41)	(81)	Projected shortage – see plan below.
City of Graham	379	88	Projected surplus
City of Newcastle	0	0	Demand equals supply
County-Other	82	15	Projected surplus
Manufacturing	0	0	Demand equals supply
Steam-Electric	11,869	10,542	Projected surplus
Mining	(196)	(73)	Projected shortage – see plan below.
Irrigation	(48)	(44)	Projected shortage – see plan below.
Livestock	0	0	Demand equals supply

1 – From Tables C-59 and C-60, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.37.1 Fort Belknapp WSC

Description of Supply

Fort Belknap WSC obtains water from the City of Graham and shows no projected shortages. This WUG is located in multiple counties (Young, Palo Pinto, Throckmorton, and Stephens). The surplus shown in Table 5.37-1 represents the cumulative totals for Fort Belknap WSC.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet the projected water shortage for Fort Belknapp WSC. Conservation was considered, but the entity's per capita use is less than the target per capita of 140 gpcd.

a. Purchase Additional Water from City of Graham:

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2020
- Unit Cost: $880/acft ($2.70/kgal) assumed treated wholesale rate. Existing infrastructure is assumed sufficient for additional supply
- Annual Cost: $74,800

Table 5.37-2. Recommended Plan Costs by Decade for Fort Belknapp WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(27)*	*(36)*	*(41)*	*(51)*	*(66)*	*(81)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(27)*	*(36)*	*(41)*	*(51)*	*(66)*	*(81)*
Purchase Additional Water from City of Graham						
Supply From Plan Element (acft/yr)	85	85	85	85	85	85
Annual Cost ($/yr)	$74,800	$74,800	$74,800	$74,800	$74,800	$74,800
Unit Cost ($/acft)	$880	$880	$880	$880	$880	$880

5.37.2 City of Graham

Description of Supply

The City of Graham obtains surface water from Lakes Graham and Eddleman and a contract with BRA for 1,000 acft/yr. There is some estimated exempt groundwater pumping within the city limits. The City has contracts to sell treated and raw water supply totaling 848 acft/yr to Newcastle, Bryson, Fort Belknapp WSC, entities in Young County-Other, Young County Manufacturing and Young County Steam-Electric. No future shortages are projected and no changes in water supply are recommended.

Water Supply Plan

Although the City has sufficient supplies, working within the planning criteria established by the Brazos G RWPG and TWDB, conservation is recommended for the City as the current per capita use rate is above the selected target rate of 140 gpcd.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020 – use rate exceeds 140 gpcd
- Annual Cost: $597,224 in 2070
- Unit Cost: $474/acft

Table 5.37-3. Recommended Plan Costs by Decade for City of Graham

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*539*	*444*	*379*	*291*	*190*	*88*
Conservation						
Supply From Plan Element (acft/yr)	140	354	568	795	1,029	1,260
Annual Cost ($/yr)	$66,267	$167,589	$269,394	$376,678	$487,688	$597,224
Projected Surplus/(Shortage) after Conservation (acft/yr)	*679*	*798*	*947*	*1,086*	*1,219*	*1,348*

5.37.3 City of Newcastle

The City of Newcastle receives all of its water supply from the City of Graham. No future shortages are projected for the City of Newcastle and no changes in water supply are recommended. Conservation was considered, but the entity's per capita use is less than the target per capita of 140 gpcd.

5.37.4 County-Other

Entities in Young County-Other receive water supply from City of Graham and groundwater. A portion of Young County-Other is located in Region B. No future shortages are projected and no changes in water supply are recommended. Conservation was considered, but the entity's per capita use is less than the target per capita of 140 gpcd.

5.37.5 Manufacturing

Young County Manufacturing is supplied by Graham and entities in Young County-Other. No future shortages are projected and no changes in water supply are recommended.

5.37.6 Steam-Electric

No future shortages are projected and no changes in water supply are recommended.

5.37.7 Mining

Description of Supply

Mining is projected to have shortages beginning in 2020. No supplies have been allocated to Mining in Young County.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following plan is recommended for Young County Mining. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: not determined

b. Groundwater Development – Undifferentiated "Other" Aquifers

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2020
- Project Cost: $3,089,000
- Unit Cost: Max of $1,048/acft

Table 5.37-4. Recommended Plan Costs by Decade for Young County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(187)*	*(276)*	*(196)*	*(151)*	*(105)*	*(73)*
Conservation						
Supply From Plan Element (acft/yr)	6	14	14	11	7	5
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(181)*	*(262)*	*(182)*	*(140)*	*(98)*	*(68)*
Groundwater Development – Undifferentiated "Other" Aquifers						
Supply From Plan Element (acft/yr)	270	270	260	260	260	260
Annual Cost ($/yr)	$282,900	$282,900	$22,900	$22,900	$22,900	$22,900
Unit Cost ($/acft)	$1,048	$1,048	$85	$85	$85	$85

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.37.8 Irrigation

Description of Supply

An increase of Irrigation demand is projected for Young County, but no supplies are currently allocated and a shortage is projected beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following plan is recommended for Young County Irrigation. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: $690
- Unit Cost: $273/acft

b. Groundwater Development – Undifferentiated "Other" Aquifers

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $1,172,000
- Unit Cost: $2,148/acft

Table 5.37-5. Recommended Plan Costs by Decade for Young County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(51)*	*(50)*	*(48)*	*(47)*	*(45)*	*(44)*
Conservation						
Supply From Plan Element (acft/yr)	2	3	3	3	3	3
Annual Cost ($/yr)	$460	$690	$690	$690	$690	$690
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(49)*	*(48)*	*(45)*	*(44)*	*(42)*	*(41)*
Groundwater Development – Undifferentiated "Other" Aquifers						
Supply From Plan Element (acft/yr)	50	50	50	50	50	50
Annual Cost ($/yr)	$107,418	$107,418	$8,418	$8,418	$8,418	$8,418
Unit Cost ($/acft)	$2,148	$2,148	$168	$168	$168	$168

5.37.9 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

This page intentionally left blank.

5.38 Wholesale Water Provider Supply Plans

Table 5.38-1 lists each wholesale water provider in the Brazos G Area and its corresponding surplus or shortage in years 2040 and 2070. A brief summary of the wholesale water provider (WWP) and the plan for the selected WWPs are presented in the following sub chapters. For each wholesale water provider with a projected shortage, a water supply plan has been developed and is presented in the following sub chapters. **Note that shortages shown reflect full contractual commitments compared to existing supplies.**

Table 5.38-1.Wholesale Water Provider Surplus/(Shortage)

Wholesale Water Provider	Surplus/(Shortage)[1,2] 2040 (acft/yr)	2070 (acft/yr)	Comment
Brazos River Authority (Lake Aquilla System)	1,426	696	Projected shortage – see plan below
Brazos River Authority (Little River System)	(67,791)	(95,859)	Projected shortage – see plan below
Brazos River Authority (Main Stem System)[3]	(109,174)	(139,428)	Projected shortage – see plan below
Aquilla Water Supply District	1	1	Projected surplus
Bell County WCID No. 1	(988)	(6,951)	Projected shortage – see plan below
Bistone MWSD	(2,792)	(3,112)	Projected shortage – see plan below
Bluebonnet WSC	(103)	(536)	Projected shortage – see plan below
Central Texas WSC	787	13	Projected surplus
Eastland County WSD	346	232	Projected surplus
Heart of Texas	(5,593)	(5,593)	Projected shortage – see plan below
North Central Texas MWA	(937)	(1,597)	Projected shortage – see plan below
Palo Pinto County MWD No. 1	(4,562)	(5,174)	Projected shortage – see plan below
Upper Leon MWD	(75)	(458)	Projected shortage – see plan below
West Central Texas MWD	(1,167)	(1,583)	Projected shortage – see plan below
City of Abilene	(27,176)	(27,206)	Projected shortage – see plan below
City of Anson	633	606	Projected surplus
City of Bryan	(5,533)	(26,578)	Projected shortage – see plan below
City of Cedar Park	(4,082)	(4,348)	Projected shortage – see plan below
City of Cleburne	(1,314)	(4,625)	Projected shortage – see plan below
City of Gatesville	(1,405)	(4,510)	Projected shortage – see plan below
Johnson County SUD	7,019	1,966	Projected surplus
Kempner WSC	(1,076)	(1,868)	Projected shortage – see plan below
City of Mineral Wells	0	0	Projected surplus
City of Round Rock	(14,028)	(46,089)	Projected shortage – see plan below
City of Stamford	2,099	1,845	Projected surplus

Table 5.38-1.Wholesale Water Provider Surplus/(Shortage)

Wholesale Water Provider	Surplus/(Shortage)[1,2]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Sweetwater	(2,544)	(3,184)	Projected shortage – see plan below
City of Temple	(4,554)	(13,518)	Projected shortage – see plan below
City of Waco	6,114	(2,730)	Projected surplus

1 - From Chapter 4.3 – Water Needs for Wholesale Water Providers

2 - Shortages shown above often include shortages from other WWPs. The shortages shown for individual WWPs should not be summed to a regional total.

3 - Includes demands from Region H.

5.38.1 Brazos River Authority (Lake Aquilla System)

Description of Supply

The Brazos River Authority (Lake Aquilla System) obtains water supply from Lake Aquilla. Based on the available surface water supply, the Lake Aquilla System is projected to have a surplus of 1,912 acft/yr in the year 2020 decreasing to 696 acft/yr by year 2070. Table 3.1-3 in Chapter 3 includes additional information on contracts and water supplies for the Lake Aquilla System. Due to the estimated reliable supply, surpluses are expected through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG, the following water supply plan is recommended for the Lake Aquilla System:

a. Lake Aquilla Reallocation (Volume II, Chapter 7.6)

- Cost Source: Volume II, Chapter 7.6
- Date to be Implemented: Before 2020
- Total Project Cost: $21,887,000
- Unit Cost: Max of $865/acft

Table 5.38-2. Recommended Plan Costs by Decade for BRA Lake Aquilla System

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*1,912*	*1,669*	*1,426*	*1,182*	*939*	*696*
Lake Aquilla Reallocation (Volume II, Chapter 7.6)						
Supply From Plan Element (acft/yr)	2,400	2,400	2,400	2,400	2,400	2,400
Annual Cost ($/yr)	$2,075,000	$2,075,000	$244,800	$244,800	$244,800	$244,800
Unit Cost ($/yr)	$865	$865	$102	$102	$102	$102

5.38.2 Brazos River Authority (Little River System)

Description of Supply

The Brazos River Authority Little River System obtains its water supply from Lake Proctor, Lake Belton, Stillhouse Hollow Reservoir, Lake Georgetown, and Lake Granger. Based on the available surface water supply and recommended water management strategies, the Brazos River Authority Little River System is projected to have a shortage of 90,223 acft/yr in the year 2040 and 123,386 acft/yr in the year 2070. Shortages for the BRA Little River System are based on a comparison of supplies and current contractual commitments, not projected demands for those entities holding contracts with the BRA. In addition, the shortages projected include other demands over and above current contractual commitments totaling approximately 50,285 acft/yr in year 2070.

Supplies from Lake Granger are allocated to meet BRA system demands, except for 13,015 acft/yr specifically allocated to the East Williamson County Water Treatment Plant (EWCWTP), which supplies water to the City of Taylor and is intended to supply other entities in eastern Williamson County and Bell County. Currently, 7,003 acft/yr of that supply is allocated to meet the City of Taylor's projected demands, with the remaining 6,012 acft/yr from the EWCWTP available for other users as a water management strategy. Table 3.1-3 in Chapter 3 includes additional information on contracts and water supplies for the Little River System.

Note that the shortages shown are based on full contractual supplies. Actual full use of those contracts is unlikely to occur until later years of the planning period and the shortages shown are more likely to occur later than shown here. The BRA has an existing System Order that allows BRA to divert from each individual reservoir an annual amount greater than the reservoir's authorized diversion and assign the difference to another reservoir in the system. While this does not increase the authorized supply from the BRA system, it provides operational flexibility within the BRA's system.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG, the following water supply plan is recommended to meet the projected shortages for BRA's Little River System:

a. Lake Granger Augmentation

- Cost Source: Volume II, Chapter 7.7
- Date to be Implemented: 2020
- Total Project Cost: $722,227,000

This strategy is recommended with a zero supply because the groundwater supply necessary to develop the project is not available under the MAG. Should additional MAG become available; this supply can be updated accordingly.

b. Little River OCR

- Cost Source: Volume II, Chapter 4.8
- Date to be Implemented: Before 2030

- Total Project Cost: $248,761,000 (Reservoir Only)
- Unit Cost: Max of $413 / acft in 2020

During the Brazos G regional water planning process, water management strategies such as additional development of Carrizo-Wilcox Aquifer groundwater and the Lake Granger Augmentation Project were preferred options to include in the 2016 Brazos G Regional Water Plan. When confronted by the Modeled Available Groundwater (MAG) limitations of these two options, the BGRWPG has little alternative but to make the Little River Off-Channel Reservoir a recommended or alternative strategy.

c. BRA System Operation
   - Cost Source: Volume II, Chapter 7.11
   - Date to be Implemented: by 2020
   - Total Project Cost: $23,581,674. Includes, engineering and legal costs necessary to obtain the water right permit and environmental studies.
   - Unit Cost: $20/acft

d. Lake Granger ASR
   - Cost Source: Volume II, Chapter 10.4
   - Date to be Implemented: before 2020
   - Total Project Cost: $99,820,000 (sum of 3 phases)
   - Unit Cost: Max of $1,291/acft in 2030

e. Belton to Stillhouse Pipeline – this strategy is for operational purposes and does not provide additional supply
   - Cost Source: Volume II, Chapter 7.1
   - Date to be Implemented: Before 2020
   - Total Project Cost: $38,069,000
   - Unit Cost: not applicable

f. Alternative: Lake Granger Augmentation Phase 1
   - Cost Source: Volume II, Chapter 7.7
   - Date to be Implemented: before 2020
   - Total Project Cost: $85,170,000
   - Unit Cost: Max of $584 / acft in 2020

g. Alternative: Lake Granger Augmentation Phase 2
   - Cost Source: Volume II, Chapter 7.7
   - Date to be Implemented: Sometime in the 2020 decade
   - Total Project Cost: $637,057,000
   - Unit Cost: Max of $1,611/ acft in 2020

h. Alternative: Storage Reallocation of Federal Reservoirs (Granger)
   - Cost Source: Volume II, Chapter 7.7
   - Date to be Implemented: Sometime in the 2020 decade
   - Total Project Cost: $28,710,000
   - Unit Cost: Max of $1,552 / acft in 2020

i. Alternative: Storage Reallocation of Federal Reservoirs (Stillhouse Hollow)
   - Cost Source: Volume II, Chapter 7.8
   - Date to be Implemented: 2020
   - Total Project Cost: $36,553,000
   - Unit Cost: Max of $1,177/ acft in 2020

j. Alternative: Sediment Reduction Program
   - Cost Source: Volume II, Chapter 7.10
   - Date to be Implemented: Sometime in the 2020 decade
   - Total Project Cost: not determined for Little River Watershed
   - Unit Cost: Not determined

Table 5.38-3. Recommended Plan Costs by Decade for the BRA Little River System

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(60,385)*	*(64,943)*	*(67,791)*	*(75,115)*	*(95,314)*	*(95,859)*
Lake Granger Augmentation (Volume II, Chapter 7.7)						
Supply From Plan Element (acft/yr)	0	0	0	0	0	0
Annual Cost ($/yr)	$79,502,171	$79,336,899	$79,172,211	$79,006,939	$23,439,965	$23,353,650
Unit Cost ($/yr)	ND	ND	ND	ND	ND	ND
Little River OCR (Volume II, Chapter 4.7)						
Supply From Plan Element (acft/yr)	—	56,150	56,150	56,150	56,150	56,150
Annual Cost ($/yr)	—	$23,189,950	$23,189,950	$23,189,950	$23,189,950	$4,548,150
Unit Cost ($/yr)	—	$413	$413	$413	$413	$81
BRA System Operations (Volume II, Chapter 7.11)						
Supply From Plan Element (acft/yr)	10,260	12,413	12,519	11,146	13,638	14,853
Annual Cost ($/yr)	$205,200	$248,260	$251,820	$229,920	$272,760	$297,060
Unit Cost ($/yr)	$20	$20	$20	$20	$20	$20
Lake Granger ASR (Volume II, Chapter 10.4)						
Supply From Plan Element (acft/yr)	9,050	9,050	9,050	9,050	9,050	9,050
Annual Cost ($/yr)	$7,874,000	$11,686,000	$11,686,000	$3,334,000	$3,334,000	$3,334,000
Unit Cost ($/yr)	$870	$1,291	$1,291	$368	$368	$368

Table 5.38-3. Recommended Plan Costs by Decade for the BRA Little River System

Plan Element	2020	2030	2040	2050	2060	2070
Belton to Stillhouse Pipeline (Volume II, Chapter 7.1)						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	$4,620,000	$4,620,000	$1,428,000	$1,428,000	$1,428,000	$1,428,000
Unit Cost ($/yr)	—	—	—	—	—	—
Alternative: Lake Granger Augmentation Phase 1 (Volume II, Chapter 7.7)						
Supply From Plan Element (acft/yr)	8,509	8,226	7,944	7,661	7,379	7,096
Annual Cost ($/yr)	$4,969,256	$4,803,984	$4,639,296	$4,474,024	$2,250,595	$2,164,280
Unit Cost ($/yr)	$584	$584	$584	$584	$305	$305
Alternative: Lake Granger Augmentation Phase 2						
Supply From Plan Element (acft/yr)	46,265	46,265	46,265	46,265	46,265	46,265
Annual Cost ($/yr)	$74,532,915	$74,532,915	$74,532,915	$74,532,915	$21,189,370	$21,189,370
Unit Cost ($/yr)	$1,611	$1,611	$1,611	$1,611	$458	$458
Alternative: Storage Reallocation of Federal Reservoirs (Granger)						
Supply From Plan Element (acft/yr)	1,940	1,940	1,940	1,940	1,940	1,940
Annual Cost ($/yr)	$3,011,000	$3,011,000	$609,000	$609,000	$609,000	$609,000
Unit Cost ($/yr)	$1,552	$1,552	$314	$314	$314	$314
Alternative: Storage Reallocation of Federal Reservoirs (Lake Stillhouse Hollow)						
Supply From Plan Element (acft/yr)	2,643	2,643	2,643	2,643	2,643	2,643
Annual Cost ($/yr)	$3,110,000	$3,110,000	$51,000	$51,000	$51,000	$51,000
Unit Cost ($/yr)	$1,177	$1,177	$19	$19	$19	$19
Alternative: Sediment Reduction Program						
Supply From Plan Element (acft/yr)	Not Determined for Little River Watershed Reservoirs					
Annual Cost ($/yr)						
Unit Cost ($/yr)						

5.38.3 Brazos River Authority (Main Stem/Lower Basin System)

Description of Supply

The Brazos River Authority (Main Stem/Lower Basin System) obtains water supply from Possum Kingdom Reservoir, Lake Granbury, Lake Whitney, Lake Somerville, and Lake Limestone. Based on the available surface water supply, the Brazos River Authority Main Stem/Lower Basin System is projected to have a shortage of 96,417 acft/yr in the year 2040 and 141,083 acft/yr in the year 2070, including the projected demands on the BRA Main Stem/Lower Basin System from Region H and supplies to Region C. Table 3.1-3 in Chapter 3 includes additional information on contracts and water supplies for the Main Stem/Lower Basin System.

Note that the shortages shown are based on full contractual supplies. Actual full use of those contracts is unlikely to occur until later years of the planning period and the shortages shown are more likely to occur later than shown here. The BRA has an existing System Order that allows BRA to divert from each individual reservoir an annual amount greater than the reservoir's authorized diversion and assign the difference to another reservoir in the system. While this does not increase the authorized supply from the BRA system, it provides operational flexibility within the BRA's system.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG, the following water supply plan is recommended to meet the projected shortages for the Main Stem System:

a. BRA System Operation
   - Cost Source: Volume II, Chapter 7.11
   - Date to be Implemented: by 2020
   - Total Project Cost: $23,581,674. Includes, engineering and legal costs necessary to obtain the water right permit and environmental studies.
   - Unit Cost: $20/acft

b. Chloride Control Project
   - Cost Source: Volume II, Chapter 7.3
   - Date to be Implemented: before 2030
   - Total Project Cost: $172,652,000
   - Unit Cost: Not determined. Cost benefits result from reduced treatment costs downstream. Cost benefits range from $115/acft in the upper basin to $45/acft in the lower basin. Estimated total annual treatment cost reduction across the basin for 11,202 acft/yr of municipal use is $25,653,000.

c. Alternative: Storage Reallocation of Federal Reservoirs (Whitney)
   - Cost Source: Volume II, Chapter 7.9
   - Date to be Implemented: Sometime in the 2020 decade
   - Total Project Cost: $89,948,000
   - Unit Cost: Max of $361 / acft in 2020

d. Alternative: Sediment Reduction Program (Lake Limestone watershed)
   - Cost Source: Volume II, Chapter 7.10
   - Date to be Implemented: before 2020
   - Total Project Cost: $1,075,000
   - Annual Cost: Max of $288,000 in 2020
   - Unit Cost: Max of $324/acft in 2030

Table 5.38-4. Recommended Plan Costs by Decade for the BRA Main Stem System

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	(95,223)	(101,871)	(109,174)	(118,902)	(128,990)	(139,428)
BRA System Operations (Volume II, Chapter 7.11)[1]						
Supply From Plan Element (acft/yr)	118,264	117,241	119,213	122,010	125,267	129,803
Annual Cost ($/yr)	$1,904,460	$2,037,420	$21,834,480	—	—	—
Unit Cost ($/yr)	$20	$20	$20	$20	$20	$20
Chloride Control Project (Volume II, Chapter 7.3)						
Supply From Plan Element (acft/yr)	—	2,475	2,475	2,475	2,475	2,475
Annual Cost ($/yr)[2]	—	$14,447,000	$14,447,000	$0	$0	$0
Unit Cost ($/yr)	—	N/A	N/A	N/A	N/A	N/A
Alternative: Storage Reallocation of Federal Reservoirs (Whitney)						
Supply From Plan Element (acft/yr)	20,842	20,842	20,842	20,842	20,842	20,842
Annual Cost ($/yr)	$7,527,000	$7,527,000	$79,000	$79,000	$79,000	$79,000
Unit Cost ($/yr)	$361	$361	$4	$4	$4	$4
Alternative: Sediment Reduction Program						
Supply From Plan Element (acft/yr)	0	177	355	532	710	888
Annual Cost ($/yr)	$288,000	$288,000	$148,000	$148,000	$148,000	$148,000
Unit Cost ($/yr)	N/A	$1,627	$417	$278	$208	$167

1 – Includes supply to be made available for Region G and Region H needs.
2 – Project consultants have prepared a pro forma analysis indicating that revenue from salt sales would cover all O&M costs.

5.38.4 Aquilla Water Supply District

Description of Supply

Aquilla WSD obtains raw water from Lake Aquilla through a contract with the BRA. The district supplies treated water to five wholesale customers. Table 4.3-2 in Chapter 4 includes additional information on contracts and water supplies for Aquilla WSD. A shortage is projected in 2020 for the District due to a short term contract with Hillsboro.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet the projected water shortage for Aquilla WSD.

a. Lake Aquilla Augmentation (Volume II, Chapter 5.1)
   - Cost Source: Volume II, Chapter 5.1
   - Date to be Implemented: Before 2020

- Total Project Cost: $5,714,856
- Unit Cost: Max of $926/acft

Table 5.38-5. Recommended Plan Costs by Decade for Aquilla WSD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(559)*	*1*	*1*	*1*	*1*	*1*
Lake Aquilla Augmentation (Volume II, Chapter 5.1)						
Supply From Plan Element (acft/yr)	750	750	750	750	750	750
Annual Cost ($/yr)	$695,000	$695,000	$695,000	$695,000	$695,000	$695,000
Unit Cost ($/yr)	$926	$926	$926	$926	$926	$926

5.38.5 Bell County WCID No. 1

Description of Supply

Bell County WCID No. 1 obtains its water supply from Lake Belton through BRA contracts (62,509 acft/yr). The district's fresh water customers have year 2070 projected demands of 62,509 acft/yr, compared to the district's total supply from the BRA of 56,634 acft/yr (the full 62,509 acft/yr is not currently firm). Table 4.3-3 in Chapter 4 includes additional information on contracts and water supplies for Bell County WCID No.1. Therefore, the district has needs projected for its customers starting in 2030. BRA strategies for the Little River System will firm up contracts to provide the full amount of supply during drought of record conditions.

Bell County WCID is pursuing TCEQ Reclaimed Water Type I permits to utilize treated wastewater from wastewater treatment plants (WWTP) 1 and 2 and the South WWTP. The District has evaluated several wastewater reuse options as part of its Master Plan update. The reuse portion of the Master Plan identifies both near-term potential customers as well as other future customers that would utilize the total available reuse supply generated through the District's regional wastewater system.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet the projected water shortage for Bell County WCID No.1.

a. Firm up Supplies through BRA Little River System Strategies-See Section 5.38.2
   - Cost Source: Section 5.38.2
   - Date to be Implemented: 2020
   - Total Project Cost: borne by BRA
   - Unit Cost: already contracted supplies

b. Voluntary Redistribution from Killeen's Contract

Projections indicate that Killeen will have a surplus of supply under their current contract with Bell County WCID No.1. This recommended strategy would reduce the contracted amount to Killeen, while still providing a surplus of supply to Killeen and would enable Bell County WCID No. 1 to provide this supply to Bell County-Other entities. This strategy would require that Killeen be willing to restructure their contract with Bell County WCID No. 1.

- Cost Source: No Cost
- Date to be Implemented: 2040
- Total Project Cost: N/A
- Unit Cost: N/A

Table 5.38-6. Recommended Plan Costs by Decade for Bell County WCID No.1

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*(307)*	*(931)*	*(4,556)*	*(5,617)*	*(7,140)*
Firm up Supplies through BRA Little River System Strategies-See Section 5.38.2						
Supply From Plan Element (acft/yr)	—	307	908	4,089	4,886	6,145
Annual Cost ($/yr)	—	$0	$0	$0	$0	$0
Unit Cost ($/yr)	—	$0	$0	$0	$0	$0
Voluntary Redistribution from Killeen Contract						
Supply From Plan Element (acft/yr)	0	0	23	467	731	995
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/yr)	—	—	—	—	—	—

Reuse Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected reuse water shortage for Bell County WCID No.1:

a. North Reuse
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: 2020
   - Total Project Cost: $12,146,000
   - Unit Cost: Max of $765 / acft in 2020

b. South Reuse
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: 2020
   - Total Project Cost: $6,529,000
   - Unit Cost: Max of $930 / acft in 2020

Table 5.38-7. Recommended Plan Costs by Decade for Bell County WCID No. 1 for Reuse Supplies

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(3,173)*	*(3,173)*	*(3,173)*	*(3,173)*	*(3,173)*	*(3,193)*
Bell County WCID #1-North Reuse (Volume II, Chapter 3)						
Supply From Plan Element (acft/yr)	1,945	1,945	1,945	1,945	1,945	1,945
Annual Cost ($/yr)	$1,472,625	$1,472,625	$456,225	$456,225	$456,225	$456,225
Unit Cost ($/yr)	$765	$765	$237	$237	$237	$237
Bell County WCID #1-South Reuse (Volume II, Chapter 3)						
Supply From Plan Element (acft/yr)	748	748	748	748	748	748
Annual Cost ($/yr)	$696,000	$696,000	$150,000	$150,000	$150,000	$150,000
Unit Cost ($/yr)	$930	$930	$201	$201	$201	$201

5.38.6 Bistone Municipal Water Supply District

Description of Supply

Bistone MWSD obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer and surface water from Lake Mexia. Bistone MWSD has contracts to provide 5,259 acft/yr to nearby water user groups and is projected to have supply shortages through 2070. Table 4.3-4 in Chapter 4 includes additional information on contracts and water supplies for Bistone MWSD.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet the projected water shortages for Bistone MWSD:

a. Additional Carrizo Groundwater Development

- Cost Source: (Volume II, Chapter 12)
- Date to be Implemented: before 2020
- Total Project Cost: Max of $817/yr in 2020
- Unit Cost: Max of $2.50/acft in 2020

Table 5.38-8. Recommended Plan Costs by Decade for Bistone MWSD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,582)*	*(2,687)*	*(2,792)*	*(2,898)*	*(3,005)*	*(3,112)*
Carrizo Groundwater Development (Volume II, Chapter 12)						
Supply From Plan Element (acft/yr)	2,582	2,687	2,792	2,898	3,005	3,112
Annual Cost ($/yr)	$817	$817	$244	$244	$244	$244
Unit Cost	$2.51	$2.51	$0.75	$0.75	$0.75	$0.75

5.38.7 Bluebonnet Water Supply Corporation

Description of Supply

Bluebonnet Water Supply Corporation (WSC) obtains raw water from Lake Belton through contracts with the BRA totaling 8,301 acft; however the firm supply of those contracts is 7,365 in 2020 and decrease over the planning period. The WSC has projected shortages starting in 2030. BRA strategies for the Little River System will firm up contracts to provide the full amount of supply during drought of record conditions. Table 4.3-5 in Chapter 4 includes additional information on contracts and water supplies for Bluebonnet WSC.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet the projected water shortages for Bluebonnet WSC:

a. Firm up Supplies through BRA Little River System Strategies-see Section 5.38.2

- Cost Source: Section 5.38.2
- Date to be Implemented: 2020
- Total Project Cost: borne by BRA
- Unit Cost: already contracted supplies

Table 5.38-9. Recommended Plan Costs by Decade for Bluebonnet WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*240*	*(35)*	*(103)*	*(296)*	*(389)*	*(536)*
Firm up Supplies through BRA Little River System Strategies-see Section 5.38.2						
Supply From Plan Element (acft/yr)	—	35	103	296	389	536
Annual Cost ($/yr)	—	$0	$0	$0	$0	$0
Unit Cost ($/yr)	—	$0	$0	$0	$0	$0

5.38.8 Central Texas Water Supply Corporation

Description of Supply

Central Texas WSC obtains its water supply from Lake Stillhouse Hollow through contracts with the BRA totaling 12,045 acft; however the firm supply of those contracts is 9,645 in 2020 and decrease over the planning period. Central Texas WSC also has recently constructed two wells in the Trinity Aquifer in Bell County that are counted as current supply as they will be online prior to 2020. Based on the available surface water and groundwater supply, currently contracted supplies, and projected demands for its current customers, Central Texas WSC is not projected to have shortages through 2070, assuming that all demands can be treated and delivered through current infrastructure. Table 4.3-6 in Chapter 4 includes additional information on contracts and water supplies for Central Texas WSC.

BRA strategies for the Little River System will firm up contracts to provide full amount of supply during drought of record.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for Central Texas WSC.

a. Pipeline to EWCRWTS
   - Cost Source: Volume II, Chapter 8.2
   - Date to be Implemented: 2020 although the project can be delayed until projected demands for customers approaches the current reliable BRA supply.
   - Total Project Cost: $42,127,000 (Total Cost for all Participating Entities)
   - Unit Cost: Max of $1,173 in 2020

b. Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2
   - Cost Source: Section 5.38.2
   - Date to be Implemented: 2020
   - Total Project Cost: borne by BRA
   - Unit Cost: already contracted supplies

Table 5.38-10. Recommended Plan Costs by Decade for Central Texas WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*1,825*	*1,376*	*787*	*317*	*199*	*13*
East Williamson County Water Project						
Supply From Plan Element (acft/yr)	2,240	2,240	2,240	2,240	2,240	2,240
Annual Cost ($/yr)	$2,627,520	$2,627,520	$1,688,960	$1,688,960	$1,688,960	$1,688,960
Unit Cost ($/yr)	$1,173	$1,173	$754	$754	$754	$754
Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2						
Supply From Plan Element (acft/yr)	2,401	2,850	2,939	3,409	3,527	3,713
Annual Cost ($/yr)	$0	$0	$0	$0	$0	$0
Unit Cost ($/yr)	$0	$0	$0	$0	$0	$0

5.38.9 Eastland County WSC

Eastland County WSD obtains its water supply from Lake Leon and a run-of-the-river right. No shortages are projected for Eastland County WSD and no changes in water supply are recommended. Table 4.3-7 in Chapter 4 includes additional information on contracts and water supplies for Eastland County WSD.

5.38.10 Heart of Texas Water Suppliers, LLC

Description of Supply

Heart of Texas has a contract to provide 5,600 acft/yr to the City of Hutto. Heart of Texas has a well field in the Carrizo-Wilcox Aquifer (Hooper formation) in Williamson County; however, the current MAG for the Carrizo-Wilcox in Williamson County is only 7 acft/yr. Heart of Texas also holds permits with the Lost Pines Groundwater Conservation District in Lee County for 3,300 acft/yr. A well has been constructed in Lee County, but it has not yet been brought online and is not counted as a current source of supply.

Table 4.3-8 in Chapter 4 includes additional information on contracts and water supplies for Heart of Texas.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortages for Heart of Texas.

a. Lee County Well Field

Utilize existing permits in Lee County, and assume additional permits can be obtained to meet needs for City of Hutto.

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020

- Total Project Cost: $127,086,000
- Unit Cost: $1,619/acft

Table 5.38-11. Recommended Plan Costs by Decade for Heart of Texas Suppliers, LLC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(5,593)*	*(5,593)*	*(5,593)*	*(5,593)*	*(5,593)*	*(5,593)*
Carrizo-Wilcox (Lee County)						
Supply From Plan Element (acft/yr)	5,593	5,593	5,593	7,503	9,710	11,994
Annual Cost ($/yr)	$9,055,000	$9,055,000	$4,094,000	$5,492,000	$7,108,000	$8,780,000
Unit Cost ($/yr)	$1,619	$1,619	$732	$732	$732	$732

5.38.11 North Central Texas Municipal Water Authority

Description of Supply

North Central Texas MWA owns and obtains its water supply from Millers Creek Reservoir. Based on the available surface water supply, shortages are expected through 2070. Table 4.3-9 in Chapter 4 includes additional information on contracts and water supplies for North Central Texas Municipal Water Authority.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for the North Central Texas MWA.

a. Millers Creek Augmentation (Option 4)
   - Cost Source: Volume II, Chapter 7.5
     - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
   - Date to be Implemented: 2020
   - Total Project Cost: $99,896,000
   - Unit Cost: Max of $2,958/ acft in 2020

b. Alternative: Lake Creek Reservoir
   - Cost Source: Volume II, Chapter 4.10
     - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
   - Date to be Implemented: 2020
   - Total Project Cost: $193,524,000
   - Unit Cost: $1,308 / acft

Table 5.38-12. Recommended Plan Costs by Decade for North Central Texas MWA

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(497)*	*(717)*	*(937)*	*(1,157)*	*(1,377)*	*(1,597)*
Millers Creek Augmentation (Volume II, Chapter 7.5)						
Supply From Plan Element (acft/yr)	2,425	2,425	2,425	2,425	2,425	2,425
Annual Cost ($/yr)	$1,135,872	$1,135,872	$1,135,872	$1,135,872	$931,200	$931,200
Unit Cost ($/yr)	$2,958	$2,958	$2,958	$2,958	$384	$384
Alternative: Lake Creek Reservoir (Volume II, Chapter 4.10)						
Supply From Plan Element (acft/yr)	14,500	14,500	14,500	14,500	14,500	14,500
Annual Cost ($/yr)	$18,961,000	$18,961,000	$9,716,000	$9,716,000	$4,541,000	$4,541,000
Unit Cost ($/yr)	$1,308	$1,308	$670	$670	$313	$313

5.38.12 Palo Pinto County Municipal Water District No. 1

Description of Supply

Palo Pinto County Municipal Water District owns and operates Lake Palo Pinto, which is used to supply water to entities in Palo Pinto and Parker Counties. A portion of its supply is used in Region C. The district has rights to 18,500 acft/yr for municipal and steam electric power uses. Treated water is supplied to the City of Mineral Wells (and its customers) and Lake Palo Pinto Area Water Supply Corporation. Projected demands indicate shortages through 2070. Table 4.3-10 in Chapter 4 includes additional information on contracts and water supplies for Palo Pinto County MWD No.1.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for the Palo Pinto County Municipal Water District No.1.

a. Lake Palo Pinto Expansion (Turkey Peak Dam)
   - Cost Source: Volume II, Chapter 4.13
   - Date to be Implemented: 2020
   - Total Project Cost: $83,363,000
   - Unit Cost: Max of $749 / acft in 2020

b. Alternative: Lake Palo Pinto Off-Channel Reservoir
   - Cost Source: Volume II, Chapter 4.6
   - Date to be Implemented: 2020
   - Total Project Cost: $34,685,000
   - Unit Cost: $980/ acft

Table 5.38-13. Recommended Plan Costs by Decade for Palo Pinto County Municipal Water District No.1

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(4,253)*	*(4,426)*	*(4,562)*	*(4,768)*	*(4,975)*	*(5,174)*
Turkey Peak Reservoir (Volume II, Chapter 4.13)						
Supply From Plan Element (acft/yr)	8,100	8,100	8,100	8,100	8,100	8,100
Annual Cost ($/yr)	$6,065,000	$6,065,000	$4,989,000	$4,989,000	$595,000	$595,000
Unit Cost ($/yr)	$749	$749	$616	$616	$73	$73
Alternative: Lake Palo Pinto OCR (Volume II, Chapter 4.6)						
Supply From Plan Element (acft/yr)	3,110	3,110	3,110	3,110	3,110	3,110
Annual Cost ($/yr)	$3,048,000	$3,048,000	$1,641,000	$1,641,000	$527,000	$527,000
Unit Cost ($/yr)	$980	$980	$528	$528	$169	$169

5.38.13 Upper Leon Municipal Water District

Description of Supply

Upper Leon MWD obtains its water supply through a contract with the Brazos River Authority for 6,437 acft/yr of water from Lake Proctor; however the firm supply of those contracts is 4,980 in 2020 and decreases over the planning period. The WSC has projected shortages starting in 2030. BRA strategies for the Little River System will firm up contracts to provide the full amount of supply during drought of record conditions. Table 4.3-11 in Chapter 4 includes additional information on contracts and water supplies for Upper Leon MWD.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet the projected water shortage for Upper Leon MWD.

a. Firm up Supplies through BRA Little River System Strategies – see Section 5.38.2
    - Cost Source: Section 5.38.2
    - Date to be Implemented: 2020
    - Total Project Cost: borne by BRA
    - Unit Cost: already contracted supplies
b. Trinity Groundwater from Pecan Orchard
    - Cost Source: Intended Use Plan Budget submitted to TWDB in support of DWSRF Application
    - Date to be Implemented: 2020
    - Total Project Cost: $5,347,000

- Unit Cost: $319/acft

Table 5.38-14. Recommended Plan Costs by Decade for Upper Leon MWD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*408*	*(31)*	*(75)*	*(308)*	*(366)*	*(458)*
Firm up Supplies through BRA Little River System Strategies-see Section 5.38.2						
Supply From Plan Element (acft/yr)	1,457	1,896	1,940	2,173	2,231	2,323
Annual Cost ($/yr)	$0	$0	$0	$0	$0	$0
Unit Cost ($/yr)	$0	$0	$0	$0	$0	$0
Trinity Groundwater from Pecan Orchard						
Supply From Plan Element (acft/yr)	2,040	2,040	2,040	2,040	2,040	2,040
Annual Cost ($/yr)	$447,433	$447,433	$203,327	$203,327	$203,327	$203,327
Unit Cost ($/yr)	$319	$319	$100	$100	$100	$100

5.38.14 West Central Texas Municipal Water District

Description of Supply

West Central Texas MWD owns and obtains its water supply from Hubbard Creek Reservoir. Based on the available surface water supply constrained to a 2-year safe yield estimate, West Central Texas MWD is projected to have shortages throughout the planning period. Table 4.3-12 in Chapter 4 includes additional information on contracts and water supplies for West Central Texas MWD.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet the projected water shortages for West Central Texas MWD

a. Voluntary Redistribution

The District's shortages have been applied to reduce the City of Abilene supply from Hubbard Creek Reservoir to less than its currently contracted amount, while retaining the supplies available to the other member cities at full contracted volumes. The recommended water supply plan for the West Central Texas Municipal Water District is to restructure its existing contract with the City of Abilene to reduce its contractual obligations to eliminate the apparent supply shortage. The various strategies in the water supply plan for the City of Abilene will accommodate these small shortages.

- Cost Source: No Cost
- Date to be Implemented: before 2020
- Total Project Cost: N/A
- Unit Cost: N/A

Table 5.38-15. Recommended Plan Costs by Decade for West Central Texas MWD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(890)*	*(1,028)*	*(1,167)*	*(1,306)*	*(1,444)*	*(1,583)*
Voluntary Redistribution from Abilene's Contract						
Supply From Plan Element (acft/yr)	890	1,028	167	1,306	1,444	1,583
Annual Cost ($/yr)	$0	$0	$0	$0	$0	$0
Unit Cost ($/yr)	$0	$0	$0	$0	$0	$0

5.38.15 City of Abilene

Description of Supply

The City of Abilene obtains its water supply from several surface water sources. The City owns water rights in Fort Phantom Hill Reservoir. The City has contracted for water in Hubbard Creek and O.H. Ivie Reservoirs with the West Central Texas Municipal Water District. Abilene also has a wastewater reuse system for non-potable use. The City supplies several neighboring communities and projected demands indicate shortages through 2070. Abilene is located in multiple counties (Taylor and Jones). Table 4.3-13 in Chapter 4 includes additional information on contracts and water supplies for City of Abilene.

Cedar Ridge Reservoir is the primary WMS selected to meet the bulk of the City's needs into the future. The City is also anticipating a treatment plant to go offline around the 2020 decade, which will be replaced by a new treatment plant with additional capacity.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortages for the City of Abilene.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: 2020
   - Unit Cost: $474 / acft
b. Water Treatment Plant Expansion – this will affect the City's treated water projected shortage but does not provide new supply.
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Total Project Cost: $48,257,000
   - Unit Cost: $577 / acft
c. Cedar Ridge Reservoir

- Cost Source: Volume II, Chapter 4.2
- Date to be Implemented: 2020
- Total Project Cost: $290,868,000
- Unit Cost: $1,031 / acft

d. Brush Control (Fort Phantom Hill Reservoir watershed)

- Cost Source: Volume II, Chapter 13
- Date to be Implemented: 2020
- Total Project Cost: $7,532,000
- Unit Cost: Not applicable – firm supply zero during drought of record conditions

e. Alternative: Possum Kingdom Supply

- Cost Source: Volume II, Chapter 5.2
  - Supply dependent on BRA obtaining the System Operations permit from TCEQ
- Date to be Implemented: 2020
- Total Project Cost: $269,334,000
- Unit Cost: $2,586 / acft

Table 5.38-16. Recommended Plan Costs by Decade for the City of Abilene

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(7,081)*	*(28,345)*	*(28,821)*	*(28,620)*	*(28,615)*	*(28,642)*
Conservation(Volume II, Chapter 2)						
Supply From Plan Element (acft/yr)	710	2,331	2,246	2,045	2,040	2,067
Annual Cost ($/yr)	$336,540	$1,104,894	$1,064,604	$969,330	$966,960	$979,758
Projected Surplus/(Shortage) after Conservation	*(6,471)*	*(26,114)*	*(26,575)*	*(26,575*	*(26,575)*	*(26,575)*
Water Treatment Plant Expansion(Volume II, Chapter 12)						
Supply From Plan Element (acft/yr)	12,992	12,992	12,992	12,992	12,992	12,992
Annual Cost ($/yr)	$7,492,000	$7,492,000	$3,454,000	$3,454,000	$3,454,000	$3,454,000
Unit Cost ($/yr)	$577	$577	$266	$266	$266	$266
Cedar Ridge Reservoir(Volume II, Chapter 4.2)						
Supply From Plan Element (acft/yr)	26,575	26,575	26,575	26,575	26,575	26,575
Annual Cost ($/yr)	$27,383,000	$27,383,000	$15,818,000	$15,818,000	$6,314,000	$6,314,000
Unit Cost ($/yr)	$1,031	$1,031	$595	$595	$238	$238
Brush Control – Fort Phantom Hill Reservoir Watershed (Volume II, Chapter 13)						
Supply From Plan Element (acft/yr)	0	0	0	0	0	0
Annual Cost ($/yr)	$999,295	$999,295	$999,295	$999,295	$999,295	$999,295

Table 5.38-16. Recommended Plan Costs by Decade for the City of Abilene

Plan Element	2020	2030	2040	2050	2060	2070
Unit Cost ($/yr)	—	—	—	—	—	—
Alternative: Possum Kingdom Supply (Volume II, Chapter 5.2)						
Supply From Plan Element (acft/yr)	14,800	14,800	14,800	14,800	14,800	14,800
Annual Cost ($/yr)	$38,271,000	$38,271,000	$15,733,000	$15,733,000	$15,733,000	$15,733,000
Unit Cost ($/yr)	$2,586	$2,586	$1,063	$1,063	$1,063	$1,063

5.38.16 City of Anson

The City of Anson receives surface water supplies from West Central Texas MWD and Lake Anson North. The City has a 1.8 MGD WTP for its own demand. Anson sells supply to Hawley WSC and City of Hamlin and contracts with Abilene to provide treatment for these supplies. Table 4.3-14 in Chapter 4 includes additional information on contracts and water supplies for the City of Anson. A surplus of supply is projected for the planning period. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.38.17 City of Bryan

Description of Supply

City of Bryan has a total of twelve wells located in the Simsboro and Sparta formations of the Carrizo-Wilcox Aquifer with a production capacity of 43 MGD. The Brazos Valley Groundwater Conservation District has permitted the City to withdraw 33,540 acft/yr. The City supplies several neighboring communities as well as manufacturing and steam-electric entities. Table 4.3-15 in Chapter 4 includes additional information on contracts and water supplies for the City of Bryan. Due to the estimated reliable supply from groundwater of 16,792 acft/yr in 2020, shortages are expected through 2070.

The City of Bryan currently irrigates the Traditions Golf Course with Type 2 treated wastewater effluent from Thompson's Creek WWTP, a small package treatment plant located near the golf course with a capacity of 2.0 MGD. The City has two other WWTPs, Burton Creek and Still Creek, that produce effluent requiring additional treatment to meet Type 1 reuse water requirements. There are several parks, ball fields, and other green spaces dispersed throughout the City that could be irrigated with reuse water if the wastewater could be treated and distributed economically. The Still Creek WWTP Year 2070 Estimated WWTP Effluent is 3,557 acft/yr (3.17 MGD). The Burton Creek WWTP Year 2070 Estimated WWTP Effluent is 11,561 acft/yr (10.31 MGD). Bryan is considering utilizing these reuse supplies for non-potable demands within the City.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortages for the City of Bryan.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Unit Cost: $474 / acft

b. Aquifer Storage and Recovery

- Cost Source: Volume II, Chapter 10.1
- Date to be Implemented: 2020
- Total Project Cost: $57,328,000
- Unit Cost: $385/acft (constant unit cost assumed, since infrastructure will be added each decade)

c. Groundwater Development - Carrizo-Wilcox Aquifer (Brazos County)

- Cost Source: Volume II, Chapter 9.1
- Date to be Implemented: by 2050
- Total Project Cost: $24,570,000
- Unit Cost: Max of $486 / acft in 2020

d. Alternative: Groundwater Development – Carrizo-Wilcox Aquifer (Robertson County)

- Cost Source: Volume II, Chapter 9.1
- Date to be Implemented: 2020
- Total Project Cost: $81,596,000
- Unit Cost: Max of $1,006 / acft in 2020

Table 5.38-17. Recommended Plan Costs by Decade for the City of Bryan

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(3,334)*	*(1,269)*	*(5,533)*	*(11,875)*	*(18,790)*	*(26,579)*
Conservation(Volume II, Chapter 2)						
Supply From Plan Element (acft/yr)	493	1,573	1,616	1,697	1,899	2,143
Annual Cost ($/yr)	$233,851	$745,799	$766,035	$804,443	$900,310	$1,015,578
Projected Surplus/(Shortage) after Conservation	*(2,841)*	*304*	*(3,917)*	*(10,178)*	*(16,891)*	*(24,436)*
Aquifer Storage and Recovery (Volume II, Chapter 10.1)						
Supply From Plan Element (acft/yr)	2,841	2,841	3,917	5,581	12,294	19,839
Annual Cost ($/yr)	$1,094,000	$1,094,000	$1,508,000	$2,149,000	$4,733,000	$7,638,000
Unit Cost ($/yr)	$385	$385	$385	$385	$385	$385
Groundwater Development - Carrizo Wilcox Aquifer in Brazos County (Volume II, Chapter 9.1)						
Supply From Plan Element (acft/yr)	—	—	—	5,100	5,100	5,100

Table 5.38-17. Recommended Plan Costs by Decade for the City of Bryan

Plan Element	2020	2030	2040	2050	2060	2070
Annual Cost ($/yr)	—	—	—	$2,479,000	$2,479,000	$1,020,000
Unit Cost ($/yr)	—	—	—	$486	$486	$200
Alternative: Groundwater Development - Carrizo-Wilcox Aquifer in Robertson Co. (Volume II, Chapter 9.1)						
Supply From Plan Element (acft/yr)	3,826	3,826	4,171	5,565	11,826	19,478
Annual Cost ($/yr)	$3,850,000	$3,850,000	$1,131,000	$1,603,000	$3,744,000	$6,294,000
Unit Cost ($/yr)	$1,006	$1,006	$271	$288	$317	$323

Reuse Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected reuse water shortages for the City of Bryan.

a. Option 1 Reuse for Bryan Utilities Lake Supply
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: 2020
   - Total Project Cost: $8,989,000
   - Unit Cost: Max of $1,547 / acft in 2020

b. Miramont Reuse
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: 2020
   - Total Project Cost: $2,544,000
   - Unit Cost: Max of $408/ acft in 2020

c. Alternative: Option 2 Indirect Potable Reuse
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: 2020
   - Total Project Cost: $24,206,000
   - Unit Cost: Max of $1,577/ acft in 2020

Table 5.38-18.Recommended Plan Costs by Decade for the City of Bryan for Reuse Supplies

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,205)*	*(1,205)*	*(1,205)*	*(1,205)*	*(1,205)*	*(1,205)*
Option 1 Reuse for Bryan Utilities Lake Supply (Volume II, Chapter 3)						
Supply From Plan Element (acft/yr)	605	605	605	605	605	605
Annual Cost ($/yr)	$936,000	$936,000	$184,000	$184,000	$184,000	$184,000

Table 5.38-18.Recommended Plan Costs by Decade for the City of Bryan for Reuse Supplies

Plan Element	2020	2030	2040	2050	2060	2070
Unit Cost ($/yr)	$1,547	$1,547	$304	$304	$304	$304
Miramont Reuse (Volume II, Chapter 3)						
Supply From Plan Element (acft/yr)	600	600	600	600	600	600
Annual Cost ($/yr)	$245,000	$245,000	$32,000	$32,000	$32,000	$32,000
Unit Cost ($/yr)	$408	$408	$53	$53	$53	$53
Alternative: Option 2 Indirect Potable Reuse for Bryan (Volume II, Chapter 3)						
Supply From Plan Element (acft/yr)	2,419	2,419	2,419	2,419	2,419	2,419
Annual Cost ($/yr)	$3,815,000	$3,815,000	$1,789,000	$1,789,000	$1,789,000	$1,789,000
Unit Cost ($/yr)	$1,577	$1,577	$740	$740	$740	$740

5.38.18 City of Cedar Park

Description of Supply

The City of Cedar Park is located in Williamson County and part of Travis County (Region K) and provides wholesale water to entities in Williamson and Travis Counties. The City has an 18,000 acft/yr contract from LCRA for Highland Lakes supply. Cedar Park is a participant in the Brushy Creek Regional Utility Authority to develop additional supplies from the Highland Lakes in Region K. The project is under construction and remaining phases are anticipated to be completed by 2018. Based on the available surface water supply and contractual commitments to supply water to wholesale customers, the City of Cedar Park is projected to have a shortage through the year 2070. Table 4.3-16 in Chapter 4 includes additional information on contracts and water supplies for the City of Cedar Park.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for the City of Cedar Park.

a. Conservation: Additional advanced conservation was considered and not applied since no shortage remains in later decades after applying conservation.
    - Cost Source: Volume II, Chapter 2
    - Date to be Implemented: Before 2020
    - Unit Cost: $470 / acft
b. Brushy Creek RUA Water Supply Project
    - Cost Source: (Volume II, Chapter 7.2)
    - Date to be Implemented: before 2020
    - Total Project Cost: $69,666,000 (city's portion of cost)

- Unit Cost: $836/acft

c. Voluntary Redistribution through Brushy Creek RUA Water Supply Project

- Cost Source: (Volume II, Chapter 7.2)
- Date to be Implemented: before 2020
- Total Project Cost: $69,666,000 (city's portion of cost)
- Unit Cost: $836/acft

Table 5.38-19. Recommended Plan Costs by Decade for the City of Cedar Park

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,075)*	*(3,854)*	*(4,082)*	*(4,159)*	*(4,244)*	*(4,348)*
Conservation(Volume II, Chapter 2)						
Supply From Plan Element (acft/yr)	875	2,573	3,982	4,438	4,522	4,614
Annual Cost ($/yr)	$411,250	$1,209,310	$1,871,540	$2,085,860	$2,125,340	$2,309,580
Projected Surplus/(Shortage) after Conservation	*(1,200)*	*(1,281)*	*(100)*	*279*	*278*	*266*
Brushy Creek RUA Water Supply Project (Volume II, Chapter 7.2)[1]						
Supply From Plan Element (acft/yr)	0	0	0	0	0	0
Annual Cost ($/yr)	$15,048,000	$15,048,000	$9,218,000	$9,218,000	$9,218,000	$9,218,000
Unit Cost ($/acft)	$836	$836	$512	$512	$512	$512
Voluntary Redistribution through Brushy Creek RUA Water Supply Project						
Supply From Plan Element (acft/yr)	1,200	1,281	100	—	—	—
Annual Cost ($/yr)	$1,003,200	$1,070,916	$51,200	—	—	—
Unit Cost ($/acft)	$836	$836	$512	—	—	—

1 – The LCRA contract is shown as a current supply to Cedar Park. This strategy provides additional flexibility to take supplies during drought by deep water intake in Lake Travis.

5.38.19 City of Cleburne

Description of Supply

City of Cleburne obtains groundwater from the Trinity Aquifer in Johnson County. Surface water supplies include Lake Pat Cleburne, Lake Aquilla, and Lake Whitney, although the city currently does not have the infrastructure to access Lake Whitney supplies. The City supplies fresh water to Johnson County Manufacturing and reuse supplies to Steam-Electric entities. Table 4.3-17 in Chapter 4 includes additional information on contracts and water supplies for the City of Cleburne. Due to the estimated increasing demands throughout the planning period, fresh water shortages are expected before 2050.

The City of Cleburne has embraced the beneficial use of reuse water as a viable water management strategy to meet anticipated future shortages. The City currently supplies 1.2 MGD (1,344 acft/yr) of reuse water directly to a Brazos Electric Power Cooperative

Plant located north of the city for use as cooling water. The City of Cleburne owns and operates the existing reuse water treatment facility located on the City's wastewater treatment plant site. The city plans to reuse available wastewater supplies to help meet its projected deficit in the year 2070, and has filed a water rights application for 8,440 acre feet (7.5 MGD) with TCEQ to allow reuse of all authorized discharges, which would provide for the city's needs well beyond the current planning horizon.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortages for the City of Cleburne.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Unit Cost: $470/acft
   - Annual Cost: maximum of $415,010 in 2070

b. Lake Aquilla Augmentation-Option A
   - Cost Source: Volume II, Chapter 5.1
   - Date to be Implemented:
   - Project Cost: $73912 ,144
   - Unit Cost: $926/acft

c. Alternative: Lake Whitney Diversion to Cleburne
   - Cost Source: Volume II, Chapter 5.1
   - Date to be Implemented: before 2020
   - Unit Cost: $3,151/acft in 2020

Table 5.38-20. Recommended Plan Costs by Decade for the City of Cleburne

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(264)*	*(550)*	*(1,314)*	*(2,319)*	*(3,418)*	*(4,625)*
Conservation(Volume II, Chapter 2)						
Supply From Plan Element (acft/yr)	207	685	736	749	809	883
Annual Cost ($/yr)	$97,290	$321,950	$345,920	$352,030	$380,230	$415,010
Projected Surplus/(Shortage) after Conservation	*(57)*	135	*(578)*	*(1,570)*	*(2,609)*	*(3,742)*
Lake Aquilla Augmentation (Volume II, Chapter 5.1)						
Supply From Plan Element (acft/yr)	9,700	9,700	9,700	9,700	9,700	9,700
Annual Cost ($/yr)	$8,982,000	$8,982,000	$4,588,000	$4,588,000	$4,588,000	$4,588,000

Table 5.38-20. Recommended Plan Costs by Decade for the City of Cleburne

Plan Element	2020	2030	2040	2050	2060	2070
Unit Cost ($/yr)	$926	$926	$473	$473	$473	$473
Alternative: Lake Whitney Diversion to Cleburne (Volume II, Chapter 5.1)						
Supply From Plan Element (acft/yr)	2,130	2,130	2,130	2,130	2,130	2,130
Annual Cost ($/yr)	$6,711,630	$6,711,630	$2,803,080	$2,803,080	$2,803,080	$2,803,080
Unit Cost ($/yr)	$3,151	$3,151	$1,316	$1,316	$1,316	$1,316

Water Reuse Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet the projected reuse water shortages for the City of Cleburne:

a. Reuse

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: before 2020
- Project Cost: $14,059,000
- Unit Cost: $736/acft

Table 5.38-21. Recommended Plan Costs by Decade for the City of Cleburne for Reuse Supplies

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,031)*	*(2,031)*	*(2,031)*	*(2,031)*	*(2,031)*	*(2,031)*
City of Cleburne Reuse						
Supply From Plan Element (acft/yr)	2,031	2,031	2,031	2,031	2,031	2,031
Annual Cost ($/yr)	$1,495,000	$1,495,000	$319,000	$319,000	$319,000	$319,000
Unit Cost ($/yr)	$736	$736	$157	$157	$157	$157

5.38.20 City of Gatesville

Description of Supply

The City of Gatesville obtains its supply from Lake Belton via a contract with BRA for 5,898 acft/yr. Not all of the supply contracted from the BRA is currently firm, but strategies being pursued by the BRA are intended to firm up the BRA's contractual commitments. This reduced supply from the BRA does not account for all of the City's projected shortages. The City of Gatesville owns and operates a 11 MGD regional treatment plant. Raw water is transferred from a raw water intake at Lake Belton through approximately 8 miles of transmission line to the regional treatment plant from which the water enters the distribution system. Gatesville has contracts to meet Coryell City Water Supply District's demands estimated at 1,543 acft/yr in 2070 in addition to contracts with entities included in the Coryell County-Other (500 acft/yr) and Coryell County Manufacturing Water User Groups. Table 4.3-18 in Chapter 4 includes additional information on contracts and water supplies for the City of Gatesville.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortages for the City of Gatesville.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: maximum of $1,156,913 in 2070
   - Unit Cost: $470/acft

b. Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2
   - Cost Source: Section 5.38.2
   - Date to be Implemented: 2020
   - Total Project Cost: borne by BRA
   - Unit Cost: already contracted supplies

c. Purchase from Multi-County WSC (Coryell County Off-Channel Reservoir)
   - Cost Source: Volume II, Section 4.3
     - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
   - Date to be Implemented: 2030
   - Unit Cost: $1,309/acft

Table 5.38-22. Recommended Plan Costs by Decade for City of Gatesville

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*28*	*(629)*	*(1,405)*	*(2,449)*	*(3,323)*	*(4,510)*
Conservation						
Supply From Plan Element (acft/yr)	208	610	1,097	1,644	2,261	2,462
Annual Cost ($/yr)	$97,958	$286,723	$515,682	$772,806	$1,062,706	$1,156,913
Projected Surplus/(Shortage) after Conservation	*236*	*(19)*	*(308)*	*(805)*	*(1,062)*	*(2,048)*
Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2						
Supply From Plan Element (acft/yr)	—	29	86	386	461	580
Annual Cost ($/yr)	—	$0	$0	$0	$0	$0
Unit Cost ($/yr)	—	$0	$0	$0	$0	$0

Table 5.38-22. Recommended Plan Costs by Decade for City of Gatesville

Plan Element	2020	2030	2040	2050	2060	2070
Purchase from Multi-County WSC (Coryell County Off-Channel Reservoir)						
Supply From Plan Element (acft/yr)	—	2,835	2,835	2,835	2,835	2,835
Annual Cost ($/yr)	—	$3,711,000	$3,711,000	$2,889,000	$2,889,000	$1,233,000
Unit Cost ($/yr)	—	$1,309	$1,309	$1,019	$1,019	$435

5.38.21 Johnson County SUD

Description of Supply

Johnson County Special Utility District (SUD) is located in Johnson, Hill, Ellis (Region C) and Tarrant (Region C) counties. The SUD obtains its water supply from groundwater from the Trinity Aquifer, and a contract with the Brazos River Authority for water from Lake Granbury and a contract with the City of Mansfield (10,089 acft/yr) for water from the Tarrant Regional Water District. Supplies from Tarrant have been constrained based on availability from the District. Johnson County SUD also has a contract with Grand Prairie for 6,720 acft/yr, which will be implemented by 2020. The SUD has contracts to supply treated water to eight water user groups.

Table 4.3-19 in Chapter 4 includes additional information on contracts and water supplies for Johnson County SUD.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, and through coordination with Region C, the following water management strategies are recommended for Johnson County SUD.

a. Conservation
   - Cost Source: 2016 Region C Water Plan (Appendix K)
   - Date to be Implemented: 2020
   - Project Cost: $4,470
   - Unit Cost: $186/acft

b. Purchase Supplies from Grand Prairie
   - Cost Source: 2016 Region C Water Plan (Appendix K)
   - Date to be Implemented: 2020
   - Project Cost: $86,140,000
   - Unit Cost: $2,063/acft

c. Purchase additional Supplies from Mansfield
   - Cost Source: 2016 Region C Water Plan

- Date to be Implemented: 2020
- Project Cost: contract in place for 10,089 acft/yr, reduced due to available supplies
- Unit Cost: wholesale water cost from Mansfield

d. Alternative: Johnson County ASR

- Cost Source: Volume II, Chapter 10.3
- Date to be Implemented: 2020
- Project Cost: $11,725,000
- Unit Cost: $1,131/acft

Table 5.38-23. Recommended Plan Costs by Decade for Johnson County SUD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*5,604*	*4,259*	*2,757*	*876*	*(679)*	*(2,267)*
Conservation (Region C)						
Supply From Plan Element (acft/yr)	2	4	4	5	7	10
Annual Cost ($/yr)	$371	$744	$744	$930	$1,302	$1,860
Projected Surplus/(Shortage) after Conservation (acft/yr)	*9,919*	*8,544*	*7,023*	*5,132*	*3,570*	*1,976*
Purchase Supplies from Grand Prairie (Region C)						
Supply From Plan Element (acft/yr)	—	6,726	6,726	6,726	6,726	6,726
Annual Cost ($/yr)	—	$13,873,000	$13,873,000	$6,794,000	$6,794,000	$6,794,000
Unit Cost ($/acft)	—	$2,063	$2,063	$1,010	$1,010	$1,010
Full Contract Supplies from Mansfield (Region C)						
Supply From Plan Element (acft/yr)	3,196	3,778	4,449	5,363	5,820	6,222
Annual Cost ($/yr)	$0	$0	$0	$0	$0	$0
Unit Cost ($/acft)	$0	$0	$0	$0	$0	$0
Alternative: Johnson County ASR						
Supply From Plan Element (acft/yr)	2,000	2,000	2,000	2,000	2,000	2,000
Annual Cost ($/yr)	$2,262,000	$2,262,000	$1,280,000	$1,280,000	$1,280,000	$1,280,000
Unit Cost ($/acft)	$1,131	$1,131	$640	$640	$640	$640

5.38.22 Kempner WSC

Description of Supply

Kempner WSC has service area in portions of Coryell, Bell, Burnet (Region C) and Lampasas Counties. The WSC receives surface water supplies from the Brazos River Authority out of Lake Stillhouse Hollow, totaling 8,900 acft/yr; however the firm supply of those contracts is 4,822 acft/yr in 2020 and decreases over the planning period. Kempner WSC sells supplies to the cities of Kempner, Copperas Cove, Lampasas, as well as to Salado WSC and Lampasas County-Mining. Shortages are projected for Kempner WSC in 2020. Table 4.3-20 in Chapter 4 includes additional information on contracts and water supplies.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Kempner WSC. Once BRA firms up supplies as shown in Chapter 5.38.2, Kempner WSC will be able to utilize its full contract amount up to 8,900 acft/yr.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: 2020
   - Annual Cost: maximum of $116,560 in 2070
   - Unit Cost: $470/acft

b. Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2
   - Cost Source: Section 5.38.2
   - Date to be Implemented: 2020
   - Total Project Cost: borne by BRA
   - Unit Cost: already contracted supplies

Table 5.38-24. Recommended Plan Costs by Decade for Kempner WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(536)*	*(814)*	*(1,076)*	*(1,344)*	*(1,612)*	*(1,868)*
Conservation						
Supply From Plan Element (acft/yr)	100	239	225	222	234	248
Annual Cost ($/yr)	$47,000	$112,330	$105,750	$104,340	$109,980	$116,560
Projected Surplus/(Shortage) after Conservation	*(458)*	*(723)*	*(1,078)*	*(1,440)*	*(1,792)*	*(2,125)*
Firm up Supplies through BRA Little River System Strategies-see Section 5.38.2						
Supply From Plan Element (acft/yr)	4,078	4,206	4,251	4,492	4,552	4,647
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/yr)	—	—	—	—	—	—

5.38.23 City of Mineral Wells

Description of Supply

City of Mineral Wells obtains raw water from Lake Mineral Wells and additional surface water supplies from Palo Pinto County MWD No. 1 (Lake Palo Pinto). The city supplies treated water to ten water user groups in Palo Pinto County and Parker County (Region

C). The city supplies treated water from Lake Palo Pinto to it's customers but does not have a water treatment plant to utilize supplies from Lake Mineral Wells. The City is projected to have enough supply through the planning period. Table 4.3-21 in Chapter 4 includes additional information on contracts and water supplies for Mineral Wells.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Mineral Wells.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Unit Cost: $496/acft
- Annual Cost: maximum of $34,720 in 2020

Table 5.38-25. Recommended Plan Costs by Decade for Mineral Wells

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*10*	*4*	*0*	*0*	*0*	*0*
Conservation(Volume II, Chapter 2)						
Supply From Plan Element (acft/yr)	70	31	0	0	0	0
Annual Cost ($/yr)	$34,720	$17,360	0	0	0	0
Projected Surplus/(Shortage) after Conservation	*80*	*35*	*0*	*0*	*0*	*0*

5.38.24 City of Round Rock

Description of Supply

The City of Round Rock obtains its water supply from groundwater from the Edwards-BFZ (Northern Segment) Aquifer and contracts with the Brazos River Authority for water from Lake Georgetown and Stillhouse Hollow Reservoir. In addition the city utilizes reuse supplies and receives out of region supply from LCRA. Based on the available groundwater and surface water supply and existing contractual demand, the City of Round Rock is projected to have a shortage from 2030 through 2070. The shortages shown include projected needs for Williamson County Manufacturing. Table 4.3-22 in Chapter 4 includes additional information on contracts and water supplies for the City of Round Rock.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the City of Round Rock.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Unit Cost: $474 / acft

b. Additional Advanced Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Unit Cost: $474 / acft

c. Firm up Supplies through BRA Little River System Strategies-see Section 5.38.2
   - Cost Source: Section 5.38.2
   - Date to be Implemented: 2020
   - Total Project Cost: borne by BRA
   - Unit Cost: already contracted supplies

d. Brushy Creek RUA Water Supply Project
   - Cost Source: Volume II, Chapter 4.1
   - Date to be Implemented: Before 2020
   - Total Project Cost: $102,995,000 (city's portion)
   - Unit Cost: $976 / acft

e. Little River OCR
   - Cost Source: Volume II, Chapter 4.7
     - Strategy could be supplied by the BRA System Operation, dependent on permit approval by TCEQ
   - Date to be Implemented: by 2050
   - Total Project Cost: $487,611,000
   - Unit Cost: $1,038/acft

f. Alternative: Lake Granger ASR
   - Cost Source: Volume II, Chapter 10.4
   - Date to be Implemented: by 2070
   - Total Project Cost: $99,820,000 (sum of 3 phases)
   - Unit Cost: $368 acft in 2060

Table 5.38-26. Recommended Plan Costs by Decade for the City of Round Rock

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*348*	*(5,702)*	*(14,028)*	*(24,227)*	*(34,874)*	*(46,089)*
Conservation(Volume II, Chapter 2)						
Supply From Plan Element (acft/yr)	520	119	0	0	0	0
Annual Cost ($/yr)	$244,400	$55,930	$0	$0	$0	$0
Projected Surplus/(Shortage) after Conservation	*868*	*(5,821)*	*(14,028)*	*(24,227)*	*(34,874)*	*(46,089)*
Advanced Conservation (Volume II, Chapter 2)						
Supply From Plan Element (acft/yr)	0	0	1,060	2,825	5,310	8,446
Annual Cost ($/yr)	$0	$0	$497,240	$1,324,850	$2,490,465	$3,961,318
Projected Surplus/(Shortage) after Additional Advanced Conservation	(1,307)	(7,783)	(12,968)	(21,402)	(29,564)	(37,643)
Firm up Supplies through BRA Little River System Strategies-see Section 5.38.2						
Supply From Plan Element (acft/yr)	—	122	361	1,626	1,943	2,443
Annual Cost ($/yr)	—	$0	$0	$0	$0	$0
Unit Cost ($/yr)	—	$0	$0	$0	$0	$0
Brushy Creek RUA Water Supply Project (Volume II, Chapter 4.1)						
Supply From Plan Element (acft/yr)	24,400	24,400	24,400	24,400	24,400	24,400
Annual Cost ($/yr)	$23,819,000	$23,819,000	$15,201,000	$15,201,000	$15,201,000	$15,201,000
Unit Cost ($/yr)	$976	$976	$623	$623	$623	$623
Little River OCR (Volume II, Chapter 4.7)						
Supply From Plan Element (acft/yr)	—	—	—	—	3,300	10,800
Annual Cost ($/yr)	—	—	—	—	$3,425,400	$11,210,400
Unit Cost ($/yr)	—	—	—	—	$1,038	$1,038
Alternative: Lake Granger ASR (Volume II, Chapter 10.4)						
Supply From Plan Element (acft/yr)	—	—	—	—	9,050	9,050
Annual Cost ($/yr)	—	—	—	—	$3,334,000	$3,334,000
Unit Cost ($/yr)	—	—	—	—	$368	$368

5.38.25 City of Stamford

Description of Supply

The City of Stamford located in Jones and Haskell counties has contracts to provide supply to nearby water user groups including a raw water contact with Haskell County Steam-Electric. The existing supply is constrained by treatment capacity to 1,458 acft/yr, however, the City is projected to have surpluses through 2070. Table 4.3-23 in Chapter 4 includes additional information on contracts and water supplies for the City of Stamford.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Stamford.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Unit Cost: $470 / acft

Table 5.38-27. Recommended Plan Costs by Decade for Stamford

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*2,218*	*2,067*	*1,927*	*1,782*	*1,640*	*1,501*
Conservation(Volume II, Chapter 5.2)						
Supply From Plan Element (acft/yr)	40	105	172	246	316	344
Annual Cost ($/yr)	$18,701	$49,576	$80,928	$115,420	$148,628	$161,538
Projected Surplus/(Shortage) after Conservation	*2,258*	*2,172*	*2,099*	*2,028*	*1,956*	*1,845*

5.38.26 City of Sweetwater

Description of Supply

Groundwater supplies for the City of Sweetwater are obtained from the Dockum Aquifer. Surface water supplies which are considered by the city to be unreliable include Oak Creek Reservoir (Region F, Colorado River Basin), Lake Trammel, and Lake Sweetwater. Firm yield supplies from Oak Creek Reservoir are zero. The long-term, firm annual supply from the City's Champion Well Field is about 2,540 acft/yr. The City of Sweetwater is projected to have supply shortages through 2070. Table 4.3-24 in Chapter 4 includes additional information on contracts and water supplies for the City of Sweetwater.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the City of Sweetwater.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: Before 2020
- Unit Cost: $496 / acft

b. Oak Creek Reservoir Conjunctive Use (Volume 2, Chapter 6.2)

- Cost Source: 2016 Region F Water Plan

- Date to be Implemented: before 2020
- Total Project Cost: No cost
- Unit Cost: none

c. Purchase from Abilene

- Cost Source: (Volume II, Chapter 12)
- Date to be Implemented: before 2020
- Total Project Cost: $13,036,000 for transmission facilities
- Unit Cost: $815/acft assuming wholesale rate plus transmission

Table 5.38-28. Recommended Plan Costs by Decade for the City of Sweetwater

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,188)*	*(2,381)*	*(2,544)*	*(2,762)*	*(2,969)*	*(3,184)*
Conservation(Volume II, Chapter 2)						
Supply From Plan Element (acft/yr)	39	0	0	0	0	0
Annual Cost ($/yr)	$18,330	$0	$0	$0	$0	$0
Projected Surplus/(Shortage) after Conservation	*(2,149)*	*(2,381)*	*(2,544)*	*(2,762)*	*(2,969)*	*(3,184)*
Oak Creek Reservoir Conjunctive Use (Volume II, Chapter 6.2)						
Supply From Plan Element (acft/yr)	1,575	1,575	1,575	1,575	1,575	1,575
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/yr)	—	—	—	—	—	—
Purchase from Abilene (Volume II, Chapter 12)						
Supply From Plan Element (acft/yr)	742	974	1,137	1,355	1,562	1,777
Annual Cost ($/yr)	$604,730	$793,810	$228,537	$272,355	$313,962	$357,177
Unit Cost ($/yr)	$815	$815	$201	$201	$201	$201

5.38.27 City of Temple

Description of Supply

The City of Temple has contracts with the Brazos River Authority for 30,453 acft/yr of raw water and an additional 10,100 acft/yr from a run-of-the-river water right (Certificate of Adjudication 12-2938). The BRA contract can yield a reliable supply of 23,542 acft/yr and the City's water right can provide a reliable supply up to 1,869 acft/yr (supplies from the right increase over time due to sedimentation in the upstream Lake Belton and increased wastewater treatment plant discharges). A few water supply corporations provide water to customers inside the city limits, and these supplies have been accounted for in the supply to the city as a WUG. The City provides supply to the Cities of Little River-Academy, Morgans Point Resort, and Troy. The City's water treatment plants have an annual average capacity of 27,955 acft. The water supply plan for Little River-Academy includes Temple supplying an additional 180 acft/yr of treated water by

2030. The City has a contract to supply effluent from its wastewater treatment plan to a new generating station owned by Panda Power.

The City of Temple is projected to have supply shortages through 2070. Table 4.3-25 in Chapter 4 includes additional information on contracts and water supplies for the City of Temple.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the City of Temple.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: Before 2020
- Unit Cost: $474 / acft

b. Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2

- Cost Source: Section 5.38.2
- Date to be Implemented: 2020
- Total Project Cost: borne by BRA
- Unit Cost: already contracted supplies

Table 5.38-29. Recommended Plan Costs by Decade for the City of Temple

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*2,223*	*(2,084)*	*(4,554)*	*(8,448)*	*(11,780)*	*(13,518)*
Conservation(Volume II, Chapter 2)						
Supply From Plan Element (acft/yr)	914	2,740	5,015	7,724	10,771	11,850
Annual Cost ($/yr)	$433,105	$1,298,837	$2,376,991	$3,660,947	$5,105,344	$5,616,738
Projected Surplus/(Shortage) after Conservation	*3,137*	*656*	*461*	*(724)*	*(1,009)*	*(1,668)*
Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2						
Supply From Plan Element (acft/yr)	6,563	8,021	7,497	8,221	8,357	6,929
Annual Cost ($/yr)	$0	$0	$0	$0	$0	$0
Unit Cost ($/acft)	$0	$0	$0	$0	$0	$0

5.38.28 City of Waco

Description of Supply

The City of Waco obtains its surface water supply from Lake Waco, in which it owns water rights, and from Lake Brazos on the Brazos River. The City supplies several neighboring communities and has sufficient water supply to meet its municipal and regional needs without conservation through 2060. Waco has a projected shortage of

2,730 acft in 2070. Table 4.3-26 in Chapter 4 includes additional information on contracts and water supplies for the City of Waco.

The City has demonstrated a commitment to provide regional water supply in McLennan County, and has plans to extend regional water supplies beyond the 2070 planning horizon by actively pursuing a reuse program. Since the 2011 Brazos G Regional Plan, Waco Metropolitan Area Regional Sewerage System (WMARSS) has constructed the Sandy Creek Energy Associates (SCEA) Project which provides 15,000 acft/yr of treated effluent from the WMARSS Central Wastewater Treatment Plant to the SCEA power plant. WMARSS continues to pursue the development of four wastewater reuse systems to supply reuse water to customers. The Year 2011 effluent from WMARSS was 25,355 acft/yr (22.6 MGD). The Year 2070 estimated effluent available from WMARSS is projected to be 36,370 acft/yr (32.5 MGD), which includes the 15,000 acft/yr of sales to the Sandy Creek Project.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the City of Waco.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: Before 2020
   - Unit Cost: $474 / acft

b. McLennan County ASR
   - Cost Source: Volume II, Chapter 10.5
   - Date to be Implemented: 2020
   - Total Project Cost: $43,940,000
   - Unit Cost: $677/ acft

Table 5.38-30.Recommended Plan Costs by Decade for the City of Waco

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*11,457*	*8,661*	*6,144*	*3,233*	*312*	*(2,730)*
Conservation(Volume II, Chapter 2)						
Supply From Plan Element (acft/yr)	1,462	4,033	6,781	9,781	11,940	12,554
Annual Cost ($/yr)	$692,979	$1,911,441	$3,214,161	$4,636,431	$5,659,560	$5,950,518
Projected Surplus/(Shortage) after Conservation	*12,919*	*12,694*	*12,925*	*13,014*	*12,252*	*9,824*
McLennan County ASR (Volume II, Chapter 10.5)						
Supply From Plan Element (acft/yr)	8,000	8,000	8,000	8,000	8,000	8,000
Annual Cost ($/yr)	$5,416,000	$5,416,000	$1,744,000	$1,744,000	$1,744,000	$1,744,000
Unit Cost ($/yr)	$677	$677	$218	$218	$218	$218

Reuse Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the City of Waco:

a. WMARSS- Bullhide Creek Reuse
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: 2020
   - Total Project Cost: $4,657,000
   - Unit Cost: $381/acft

b. WMARSS- Bellmead/Lacy-Lakeview Reuse
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: 2020
   - Total Project Cost: $ $5,768,000
   - Unit Cost: $324/acft

c. WMARSS- Flat Creek Reuse
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: 2020
   - Total Project Cost: $9,371,000
   - Unit Cost: $205/acft

d. Alternative: WMARSS- North Reuse
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: 2020
   - Total Project Cost: $21,945,000
   - Unit Cost: $1,009/acft

e. Alternative. WMARSS- East Reuse
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: 2020
   - Total Project Cost: $8,970,000
   - Unit Cost: $869 / acft

Table 5.38-31. Recommended Plan Costs by Decade for the City of Waco for Reuse Supplies

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(6,530)*	*(6,630)*	*(6,730)*	*(6,930)*	*(7,130)*	*(7,430)*
WMARSS-Bullhide Reuse (Volume II, Chapter 3)						
Supply From Plan Element (acft/yr)	1,681	1,671	1,671	1,671	1,671	1,671
Annual Cost ($/yr)	$641,000	$641,000	$251,000	$251,000	$251,000	$251,000
Unit Cost ($/yr)	$381	$381	$150	$150	$150	$150
WMARSS-Bellmead/Lacy Lakeview Reuse (Volume II, Chapter 3)						
Supply From Plan Element (acft/yr)	2,240	2,240	2,240	2,240	2,240	2,240
Annual Cost ($/yr)	$725,000	$725,000	$242,000	$242,000	$242,000	$242,000
Unit Cost ($/yr)	$324	$324	$108	$108	$108	$108
WMARSS-Flat Creek Reuse (Volume II, Chapter 3)						
Supply From Plan Element (acft/yr)	7,847	7,847	7,847	7,847	7,847	7,847
Annual Cost ($/yr)	$1,609,000	$1,609,000	$825,000	$825,000	$825,000	$825,000
Unit Cost ($/yr)	$205	$205	$105	$105	$105	$105
Alternative: WMARSS-North Reuse (Volume II, Chapter 3)						
Supply From Plan Element (acft/yr)	3,360	3,360	3,360	3,360	3,360	3,360
Annual Cost ($/yr)	$3,390,000	$3,390,000	$1,554,000	$1,554,000	$1,554,000	$1,554,000
Unit Cost ($/yr)	$1,009	$1,009	$463	$463	$463	$463
Alternative: WMARSS-East Reuse (Volume II, Chapter 3)						
Supply From Plan Element (acft/yr)	208	208	208	208	208	208
Annual Cost ($/yr)	$180,752	$180,752	$39,728	$39,728	$39,728	$39,728
Unit Cost ($/yr)	$869	$869	$191	$191	$191	$191

5.39 Summary of Recommended and Alternative Water Management Strategies

5.39.1 Recommended and Alternative Water Management Strategies and Unmet Needs

Recommended Water Management Strategies as applied to the Water User Groups (Section 5.1 – 5.37) and the Wholesale Water Provider (Section 5.38) are summarized in Table 5.39-1 and listed in Table 5.39-2. A summary of the Alternative Water Management Strategies as applied to the Water User Groups (Section 5.1 – 5.37) and the Wholesale Water Provider (Section 5.38) is listed in Table 5.39-3. A full description of each of these strategies is included in Volume II.

A total of 15 Water User Groups are recommended to not have needs met. Table 5.39-4 from the DB17 application includes a summary of unmet needs by Water User Group.

Table 5.39-1. Summary of Recommended Strategies Applied to WUG and/or WWPs

Recommended Strategies	WUG/ WWP using Strategy [1]	1st Decade Average Annual Unit Cost ($/acft)	Supply Developed						Total Project Cost
			2020	2030	2040	2050	2060	2070	
Municipal Conservation	93	$478	10,845	30,658	46,765	61,587	73,849	81,664	NA
Irrigation Conservation	10	$230	4,431	7,168	9,739	9,453	9,175	8,940	NA
Industrial Conservation	19	ND	2,399	6,684	12,564	14,853	16,081	17,526	ND
Advanced Conservation	6	$470	39	81	1,233	4,036	9,700	17,909	NA
Advanced Industrial Conservation	2	ND	5,279	5,279	5,279	5,279	6,690	16,817	NA
Voluntary Redistribution	5	ND	1,205	1,676	1,262	1,547	2,043	2,574	NA
Leave Needs Unmet	15	ND	56,916	59,998	58,116	61,814	72,014	85,347	NA
Purchase Additional Water	27	$903	12,180	21,818	21,327	21,247	20,971	21,065	NA
Increase WTP Capacity	7	$1,000	18,983	30,436	32,981	33,946	35,273	36,554	$122,634,000
Reuse	21	$635	35,077	35,833	36,785	38,794	41,957	46,662	$76,898,000
Millers Creek Reservoir Augmentation	7	$740	2,833	3,013	3,194	3,374	3,554	3,735	$99,896,000
Throckmorton Reservoir	1	$601	3,540	3,540	3,540	3,540	3,540	3,540	$28,041,000
Turkey Peak Reservoir	1	$643	8,100	8,100	8,100	8,100	8,100	8,100	$83,363,000
Little River OCR	4	$800	0	56,150	56,150	56,150	56,150	56,150	$487,611,000
Blaine Groundwater	3	$887	876	876	876	876	876	876	$6,093,000
Brazos River Alluvium Groundwater	2	$530	4,000	4,000	4,000	4,700	4,700	5,100	$23,948,000

Table 5.39-1. Summary of Recommended Strategies Applied to WUG and/or WWPs

Recommended Strategies	WUG/ WWP using Strategy [1]	1st Decade Average Annual Unit Cost ($/acft)	Supply Developed						Total Project Cost
			2020	2030	2040	2050	2060	2070	
Carrizo Groundwater	11	$974	30,384	31,143	31,402	35,504	29,244	21,406	$231,702,609
Dockum Groundwater	2	$7,368	450	450	540	540	540	540	$13,116,000
Edwards Groundwater	8	$1,061	4,481	4,478	4,475	4,487	4,501	4,513	$45,324,000
Gulf Coast Groundwater	4	$1,036	7,359	7,678	7,554	7,453	7,367	7,338	$41,016,000
Other Groundwater	5	$1,513	1,256	1,256	1,246	1,246	1,246	1,246	$15,340,000
Seymour Groundwater	1	$571	1,571	1,345	1,193	1,116	1,041	1,041	$9,817,000
Sparta Groundwater	2	$972	740	790	790	790	825	825	$6,398,000
Trinity Groundwater	23	$1,358	12,546	13,023	10,979	10,521	10,445	10,963	$152,155,000
Woodbine Groundwater	5	$908	1,700	560	0	0	285	285	$11,624,000
Yegua-Jackson Groundwater	1	$656	4,452	5,565	5,565	5,565	5,565	5,565	$32,957,000
Rehab Existing Wells	2	$49	0	0	0	173	173	185	$35,000
Lake Granger ASR	1	$870	9,050	9,050	9,050	9,050	9,050	9,050	$99,820,000
McLennan County ASR	1	$677	8,000	8,000	8,000	8,000	8,000	8,000	$43,940,000
College Station ASR	1	$3,069	2,800	2,800	2,800	2,800	2,800	2,800	$63,850,000
Belton to Stillhouse Pipeline	1	$154	30,000	30,000	30,000	30,000	30,000	30,000	$38,069,000
Purchase from Walnut Creek Mine	1	$500	0	0	0	9,000	9,000	9,000	NA
Lake Aquilla Augmentation	3	$926	14,700	14,700	14,700	14,700	14,700	14,700	$79,627,000
Lake Aquilla Reallocation	1	$865	2,400	2,400	2,400	2,400	2,400	2,400	$21,887,000
Bosque County Interconnection	6	$2,277	1,070	1,070	1,070	1,070	1,070	1,070	$22,372,000
Brushy Creek Reservoir	1	$481	1,450	1,450	1,450	1,450	1,450	1,450	$20,836,000
Cedar Ridge Reservoir	1	$1,031	26,575	26,575	26,575	26,575	26,575	26,575	$290,868,000
Coryell County OCR	3	$1,405	0	3,135	3,135	3,135	3,135	3,135	$42,246,000
Gibbons Creek Reservoir Expansion	1	$359	2,605	2,605	2,605	2,605	2,605	2,605	$12,979,000
Groesbeck OCR	1	$617	1,755	1,755	1,755	1,755	1,755	1,755	$11,909,000
Reallocation of Supplies	9	$330	40,574	47,927	54,849	61,366	63,360	61,786	NA
Oak Creek Reservoir Conjunctive Management	1	ND	1,575	1,575	1,575	1,575	1,575	1,575	NA
WCBWDS	5	$2,492	1,400	1,400	1,400	1,400	1,400	1,400	$21,148,000

Table 5.39-1. Summary of Recommended Strategies Applied to WUG and/or WWPs

Recommended Strategies	WUG/ WWP using Strategy [1]	1st Decade Average Annual Unit Cost ($/acft)	Supply Developed						Total Project Cost
			2020	2030	2040	2050	2060	2070	
Somervell County Water Supply Project	2	$4,305	900	900	1,084	1,084	1,084	1,084	$35,249,000
East Williamson County Water Project	5	$1,173	8,400	8,400	8,400	8,400	8,400	8,400	$42,127,000
BCRUA Water Supply Project	4	$994	67,000	67,000	67,000	67,000	67,000	67,000	$314,847,000
BRA System Operation	6	$20	95,223	101,871	109,174	125,682	155,969	166,952	$23,582,000
Restructure Contracts	1	ND	890	1,028	167	1,306	1,444	1,583	NA

ND - costs and/or supply from strategy not determined
1 – Number of WUG/WWPs that are using the strategy in the final adopted regional water plan

Table 5.39-2. Recommended Projects Associated with Water Management Strategies (DB17 Report)

Sponsor Name	Is Sponsor a WWP?	Project Name	Project Description	Capital Cost	Online Decade
ABILENE	Y	BRUSH CONTROL	BRUSH CONTROL CAPITAL COST	$7,532,000	2020
ABILENE	Y	CEDAR RIDGE RESERVOIR	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$290,868,000	2020
ABILENE	Y	WTP EXPANSION (23.2 MGD)-ABILENE	WATER TREATMENT PLANT EXPANSION	$48,257,000	2020
AQUILLA WSD	Y	LAKE AQUILLA AUGMENTATION-A	CONVEYANCE/TRANSMISSION PIPELINE; INJECTION WELL; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT; PUMP STATION; STORAGE TANK	$5,714,856	2020
BARTLETT	N	TRINITY AQUIFER DEVELOPMENT- BARTLETT	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$10,428,000	2020
BELL COUNTY WCID #1	Y	BELL COUNTY WCID #1- NORTH REUSE	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK	$12,146,000	2020
BELL COUNTY WCID #1	Y	BELL COUNTY WCID #1- SOUTH REUSE	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; NEW WATER TREATMENT PLANT	$6,529,000	2020
BELLMEAD	N	REUSE- BELLMEAD/ LACY-LAKE	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$2,884,000	2020
BELL-MILAM FALLS WSC	N	EAST WILLIAMSON COUNTY WATER PROJECT	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; STORAGE TANK	$2,808,467	2020
BISTONE MWSD	Y	CARRIZO (BRAZOS) DEVELOPMENT-BISTONE MWSD	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$22,689,000	2020
BRAZOS RIVER AUTHORITY	Y	BELTON TO STILLHOUSE PIPELINE-BRA	CONVEYANCE/TRANSMISSION PIPELINE; DIVERSION AND CONTROL STRUCTURE; NEW SURFACE WATER INTAKE	$38,069,000	2020
BRAZOS RIVER AUTHORITY	Y	BRA SYSTEM OPERATION-MAIN STEM	NEW AGREEMENT	$23,581,674	2020
BRAZOS RIVER AUTHORITY	Y	BRA SYSTEM OPERATIONS-LITTLE RIVER	NEW WATER RIGHT/PERMIT	$23,581,674	2050
BRAZOS RIVER AUTHORITY	Y	CHLORIDE CONTROL PROJECT-BRA	INJECTION WELL; NEW WATER TREATMENT PLANT	$172,652,000	2020
BRAZOS RIVER AUTHORITY	Y	LAKE AQUILLA REALLOCATION- BRA	RAISE CONSERVATION POOL	$21,887,000	2020
BRAZOS RIVER AUTHORITY	Y	LAKE GRANGER ASR	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$99,820,000	2020
BRAZOS RIVER AUTHORITY	Y	LAKE GRANGER AUGMENTATION-PHASE 1-BRA	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; PUMP STATION; WATER TREATMENT PLANT EXPANSION	$85,170,000	2020
BRAZOS RIVER AUTHORITY	Y	LAKE GRANGER AUGMENTATION-PHASE 2-BRA	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$637,057,000	2020
BRAZOS RIVER AUTHORITY	Y	LITTLE RIVER OCR-BRA	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION	$487,611,000	2030
BRECKENRIDGE	N	WEST CENTRAL BRAZOS WATER DISTRIBUTION SYSTEM	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT	$8,308,142	2020
BRUSHY CREEK MUD	N	EDWARDS AQUIFER DEVELOPMENT-BRUSHY CREEK MUD	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$182,000	2050
BRYAN	Y	BRYAN ASR (CARRIZO-WILCOX)	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT; PUMP STATION	$57,328,000	2020
BRYAN	Y	CARRIZO-WILCOX DEVELOPMENT-BRYAN	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; PUMP STATION; WATER TREATMENT PLANT EXPANSION	$24,569,609	2020
BRYAN	Y	REUSE- BRYAN (OPTION 1)	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$8,989,000	2020
BRYAN	Y	REUSE- MIRAMONT	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$2,544,000	2020
CEDAR PARK	Y	BRUSHY CREEK RUA WATER SUPPLY	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; NEW WATER TREATMENT PLANT	$69,665,771	2020

Table 5.39-2. Recommended Projects Associated with Water Management Strategies (DB17 Report)

Sponsor Name	Is Sponsor a WWP?	Project Name	Project Description	Capital Cost	Online Decade
CENTRAL TEXAS WSC	Y	EAST WILLIAMSON COUNTY WATER PROJECT	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; STORAGE TANK	$11,233,867	2020
CHILDRESS CREEK WSC	N	BOSQUE COUNTY-RWSP	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$5,074,000	2020
CHILDRESS CREEK WSC	N	TRINITY WELL REHAB-CHILDRESS CREEK WSC	DEEPEN WELL	$15,000	2050
CHISHOLM TRAIL SUD	N	CHISHOLM TRAIL SUD WTP EXPANSION	NEW WATER TREATMENT PLANT	$31,675,000	2020
CLEBURNE	Y	LAKE AQUILLA AUGMENTATION-A	CONVEYANCE/TRANSMISSION PIPELINE; INJECTION WELL; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT; PUMP STATION; STORAGE TANK	$73,912,144	2020
CLEBURNE	Y	REUSE- CLEBURNE	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$14,059,000	2020
CLIFTON	N	BOSQUE COUNTY-RWSP	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$5,135,000	2020
COLLEGE STATION	N	COLLEGE STATION ASR (REUSE)	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT; PUMP STATION	$63,850,000	2020
COLLEGE STATION	N	REUSE-COLLEGE STATION	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$1,705,000	2020
COLLEGE STATION	N	YEGUA-JACKSON DEVELOPMENT-COLLEGE STATION	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$32,957,000	2020
COUNTY-OTHER, BELL	N	EDWARDS AQUIFER DEVELOPMENT-BELL COUNTY OTHER	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$3,736,000	2040
COUNTY-OTHER, COMANCHE	N	TRINITY AQUIFER DEVELOPMENT- COMANCHE COUNTY-OTHER	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$2,033,000	2020
COUNTY-OTHER, CORYELL	N	TRINITY AQUIFER DEVELOPMENT- CORYELL COUNTY-OTHER	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$4,428,000	2050
COUNTY-OTHER, ERATH	N	TRINITY AQUIFER DEVELOPMENT- ERATH COUNTY-OTHER	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$2,195,000	2060
COUNTY-OTHER, FALLS	N	UPGRADE WTP FOR ARSENIC-FALLS COUNTY-OTHER	WATER TREATMENT PLANT EXPANSION	$220,000	2020
COUNTY-OTHER, HILL	N	UPGRADE WTP FOR ARSENIC-HILL COUNTY-OTHER	WATER TREATMENT PLANT EXPANSION	$1,042,000	2020
COUNTY-OTHER, HOOD	N	TRINITY AQUIFER DEVELOPMENT- HOOD COUNTY-OTHER	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$6,164,000	2020
COUNTY-OTHER, LIMESTONE	N	UPGRADE WTP FOR ARSENIC-LIMESTONE COUNTY-OTHER	WATER TREATMENT PLANT EXPANSION	$1,115,000	2020
COUNTY-OTHER, MCLENNAN	N	UPGRADE WTP FOR ARSENIC-MCLENNAN COUNTY OTHER	WATER TREATMENT PLANT EXPANSION	$3,811,000	2020
COUNTY-OTHER, ROBERTSON	N	CARRIZO AQUIFER DEVELOPMENT-ROBERTSON COUNTY-OTHER	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$825,000	2070
COUNTY-OTHER, SHACKELFORD	N	WEST CENTRAL BRAZOS WATER DISTRIBUTION SYSTEM	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT	$3,776,429	2020
COUNTY-OTHER, SOMERVELL	N	SOMERVELLE COUNTY WATER SUPPLY PROJECTS PHASES 1-4, 7A, 9-17	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$35,249,000	2020
COUNTY-OTHER, WILLIAMSON	N	EAST WILLIAMSON COUNTY WATER PROJECT	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; STORAGE TANK	$11,534,774	2020
CRESSON	N	TRINITY AQUIFER DEVELOPMENT- CRESSON	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$771,000	2040
CROSS COUNTRY WSC	N	INTERCONNECT FROM WACO TO CROSS COUNTRY WSC	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; NEW SURFACE WATER INTAKE	$2,579,000	2050
FLORENCE	N	EDWARDS AQUIFER DEVELOPMENT-FLORENCE	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$218,000	2060
FLORENCE	N	TRINITY AQUIFER DEVELOPMENT (BELL CO.)-FLORENCE	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$3,778,000	2020
GEORGETOWN	N	EXPAND WTP (21 MGD)- GEORGETOWN	WATER TREATMENT PLANT EXPANSION	$44,534,000	2030
GODLEY	N	WOODBINE AQUIFER DEVELOPMENT-GODLEY	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$375,000	2060

Table 5.39-2. Recommended Projects Associated with Water Management Strategies (DB17 Report)

Sponsor Name	Is Sponsor a WWP?	Project Name	Project Description	Capital Cost	Online Decade
GRANGER	N	EAST WILLIAMSON COUNTY WATER PROJECT	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; STORAGE TANK	$1,003,024	2020
GROESBECK	N	GROESBECK OCR- GROESBECK	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION	$11,909,000	2020
HARKER HEIGHTS	N	INTERCONNECT FROM KILLEEN TO HARKER HEIGHTS	CONVEYANCE/TRANSMISSION PIPELINE; STORAGE TANK; PUMP STATION	$2,580,000	2070
HEART OF TEXAS WATER SUPPLIERS LLC	Y	CARRIZO AQUIFER DEVELOPMENT-HUTTO (HEART OF TEXAS-LEE CO.)	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT; PUMP STATION	$127,086,000	2020
HEWITT	N	REUSE- BULLHIDE CREEK	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$4,657,000	2020
IRRIGATION, BELL	N	EDWARDS AQUIFER DEVELOPMENT-BELL COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$13,384,000	2020
IRRIGATION, BELL	N	TRINITY AQUIFER DEVELOPMENT-BELL COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$2,541,000	2070
IRRIGATION, BOSQUE	N	TRINITY AQUIFER DEVELOPMENT-BOSQUE COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$11,048,000	2020
IRRIGATION, COMANCHE	N	TRINITY AQUIFER DEVELOPMENT- COMANCHE COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$11,015,000	2050
IRRIGATION, EASTLAND	N	TRINITY AQUIFER DEVELOPMENT- EASTLAND COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$24,210,000	2020
IRRIGATION, HAMILTON	N	TRINITY AQUIFER DEVELOPMENT- HAMILTON COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$1,173,000	2020
IRRIGATION, KNOX	N	BLAINE AQUIFER DEVELOPMENT- KNOX COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$2,436,000	2020
IRRIGATION, KNOX	N	SEYMOUR AQUIFER DEVELOPMENT- KNOX COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$9,817,000	2020
IRRIGATION, LAMPASAS	N	TRINITY AQUIFER DEVELOPMENT- LAMPASAS COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$3,049,000	2020
IRRIGATION, MCLENNAN	N	BRAZOS RIVER ALLUVIUM DEVELOPMENT-MCLENNAN COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$16,763,000	2020
IRRIGATION, ROBERTSON	N	CARRIZO AQUIFER DEVELOPMENT-ROBERTSON COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$128,018,000	2020
IRRIGATION, STEPHENS	N	OTHER AQUIFER DEVELOPMENT-STEPHENS IRRIGATION	MULTIPLE WELLS/WELL FIELD	$640,000	2020
IRRIGATION, WILLIAMSON	N	EDWARDS AQUIFER DEVELOPMENT-WILLIAMSON IRRIGATION	MULTIPLE WELLS/WELL FIELD	$1,220,000	2020
IRRIGATION, YOUNG	N	OTHER AQUIFER DEVELOPMENT-YOUNG IRRIGATION	MULTIPLE WELLS/WELL FIELD	$1,172,000	2020
JARRELL	N	EAST WILLIAMSON COUNTY WATER PROJECT	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; STORAGE TANK	$501,512	2020
JAYTON	N	NEW WTP(0.4 MGD)-JAYTON	WATER TREATMENT PLANT EXPANSION	$3,537,000	2020
JONAH WATER SUD	N	EAST WILLIAMSON COUNTY WATER PROJECT	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; STORAGE TANK	$15,045,357	2020
LACY-LAKEVIEW	N	REUSE- BELLMEAD/ LACY-LAKE	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$2,884,000	2020
LEANDER	N	BRUSHY CREEK RUA WATER SUPPLY	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; NEW WATER TREATMENT PLANT	$142,186,421	2020
LIBERTY HILL	N	BRUSHY CREEK RUA WATER SUPPLY	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; NEW WATER TREATMENT PLANT	$3,554,660	2020
LORENA	N	REUSE- BULLHIDE CREEK	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$2,884,000	2020
MANUFACTURING, BRAZOS	N	GULF COAST DEVELOPMENT-BRAZOS COUNTY MANUFACTURING	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$8,932,000	2020
MANUFACTURING, BURLESON	N	SPARTA AQUIFER DEVELOPMENT-BURLESON COUNTY MANUFACTURING	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$932,000	2020
MANUFACTURING, FISHER	N	DOCKUM AQUIFER DEVELOPMENT- FISHER COUNTY MANUFACTURING	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$10,081,000	2020
MANUFACTURING, WASHINGTON	N	GULF COAST DEVELOPMENT-WASHINGTON MININGMANUFACTURING	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$3,380,000	2020

Table 5.39-2. Recommended Projects Associated with Water Management Strategies (DB17 Report)

Sponsor Name	Is Sponsor a WWP?	Project Name	Project Description	Capital Cost	Online Decade
MARLIN	N	BRUSHY CREEK RESERVOIR- MARLIN	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK	$20,836,000	2020
MART	N	INTERCONNECT FROM WACO TO MART	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; NEW SURFACE WATER INTAKE	$5,617,000	2020
MART	N	INTERCONNECT FROM WACO TO NORTH BOSQUE	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; NEW SURFACE WATER INTAKE	$2,203,000	2030
MERIDIAN	N	BOSQUE COUNTY-RWSP	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$3,220,000	2020
MINING, BELL	N	EDWARDS AQUIFER DEVELOPMENT-BELL COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$13,846,000	2020
MINING, BELL	N	TRINITY AQUIFER DEVELOPMENT-BELL COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$14,731,000	2020
MINING, BURLESON	N	SPARTA AQUIFER DEVELOPMENT-BURLESON COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$5,466,000	2020
MINING, CALLAHAN	N	TRINITY AQUIFER DEVELOPMENT CALLAHAN MINING	MULTIPLE WELLS/WELL FIELD	$1,695,000	2020
MINING, COMANCHE	N	TRINITY AQUIFER DEVELOPMENT- COMANCHE COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$4,475,000	2020
MINING, CORYELL	N	TRINITY AQUIFER DEVELOPMENT- CORYELL COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$20,220,000	2020
MINING, EASTLAND	N	TRINITY AQUIFER DEVELOPMENT- EASTLAND COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$8,202,000	2020
MINING, FISHER	N	DOCKUM AQUIFER DEVELOPMENT- FISHER COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$3,035,000	2020
MINING, GRIMES	N	CARRIZO AQUIFER DEVELOPMENT-GRIMES COUNTY MINING	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$5,805,000	2020
MINING, HAMILTON	N	TRINITY AQUIFER DEVELOPMENT HAMILTON MINING	MULTIPLE WELLS/WELL FIELD	$2,734,000	2020
MINING, HILL	N	WOODBINE AQUIFER DEVELOPMENT- HILL COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$4,684,000	2020
MINING, HOOD	N	TRINITY AQUIFER DEVELOPMENT- HOOD COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$6,197,000	2020
MINING, JOHNSON	N	WOODBINE AQUIFER DEVELOPMENT- JOHNSON COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$4,684,000	2020
MINING, KNOX	N	BLAINE AQUIFER DEVELOPMENT- KNOX COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$223,000	2020
MINING, LAMPASAS	N	TRINITY AQUIFER DEVELOPMENT- LAMPASAS COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$2,219,000	2020
MINING, LIMESTONE	N	CARRIZO (BRAZOS) DEVELOPMENT-LIMESTONE COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$31,546,000	2020
MINING, LIMESTONE	N	CARRIZO (TRINITY) DEVELOPMENT-LIMESTONE COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$5,871,000	2020
MINING, MCLENNAN	N	BRAZOS RIVER ALLUVIUM DEVELOPMENT-MCLENNAN COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$7,185,000	2020
MINING, NOLAN	N	EDWARDS AQUIFER DEVELOPMENT-NOLAN COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$2,448,000	2020
MINING, SHACKELFORD	N	OTHER AQUIFER DEVELOPMENT-SHACKELFORD MINING	MULTIPLE WELLS/WELL FIELD	$8,095,000	2020
MINING, SOMERVELL	N	TRINITY AQUIFER DEVELOPMENT- SOMERVELL COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$3,502,000	2020
MINING, STONEWALL	N	BLAINE AQUIFER DEVELOPMENT- STONEWALL MINING	MULTIPLE WELLS/WELL FIELD	$3,434,000	2020
MINING, THROCKMORTON	N	OTHER AQUIFER DEVELOPMENT- THROCKMORTON MINING	MULTIPLE WELLS/WELL FIELD	$2,344,000	2020
MINING, WASHINGTON	N	GULF COAST DEVELOPMENT-WASHINGTON MINING	MULTIPLE WELLS/WELL FIELD	$6,245,000	2020
MINING, YOUNG	N	OTHER AQUIFER DEVELOPMENT-YOUNG MINING	MULTIPLE WELLS/WELL FIELD	$3,089,000	2020
MULTI-COUNTY WSC	N	CORYELL COUNTY OCR-BRA	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION	$42,246,000	2030
NORTH BOSQUE WSC	N	INTERCONNECT FROM WACO TO NORTH BOSQUE	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; NEW SURFACE WATER INTAKE	$2,203,000	2030

Table 5.39-2. Recommended Projects Associated with Water Management Strategies (DB17 Report)

Sponsor Name	Is Sponsor a WWP?	Project Name	Project Description	Capital Cost	Online Decade
NORTH CENTRAL TEXAS MUNICIPAL WATER AUTHORITY	Y	MILLERS CREEK AUGMENTATION-NCTWA	RESERVOIR CONSTRUCTION	$74,399,000	2020
PALO PINTO COUNTY MWD #1	Y	TURKEY PEAK RESERVOIR	RESERVOIR CONSTRUCTION	$71,988,000	2020
PARKER WSC	N	WOODBINE AQUIFER DEVELOPMENT- PARKER WSC	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$1,128,000	2060
RIO VISTA	N	WOODBINE AQUIFER DEVELOPMENT-RIO VISTA	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$753,000	2020
ROBINSON	N	EXPAND WTP(4MGD)-ROBINSON	WATER TREATMENT PLANT EXPANSION	$13,153,000	2020
ROUND ROCK	Y	BRUSHY CREEK RUA WATER SUPPLY	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; NEW WATER TREATMENT PLANT	$102,994,808	2020
STEAM ELECTRIC POWER, GRIMES	N	CARRIZO AQUIFER DEVELOPMENT-GRIMES COUNTY STEAM-ELECTRIC	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$8,182,000	2020
STEAM ELECTRIC POWER, GRIMES	N	GIBBONS CREEK RESERVOIR-GRIMES SE	RAISE CONSERVATION POOL	$12,979,000	2020
STEAM ELECTRIC POWER, GRIMES	N	GULF COAST DEVELOPMENT-GRIMES COUNTY STEAM-ELECTRIC	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$22,459,000	2020
STEAM ELECTRIC POWER, SOMERVELL	N	BRA SYSTEM OPS INFRASTRUCTURE-SOMERVELL SE	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION	$128,162,000	2020
STEPHENS REGIONAL SUD	N	WEST CENTRAL BRAZOS WATER DISTRIBUTION SYSTEM	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT	$6,042,286	2020
SWEETWATER	Y	INTERCONNECT FROM ABILENE TO SWEETWATER	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK	$13,036,000	2020
THROCKMORTON	N	THROCKMORTON RESERVOIR-THROCKMORTON	RESERVOIR CONSTRUCTION	$28,041,000	2020
THROCKMORTON	N	WEST CENTRAL BRAZOS WATER DISTRIBUTION SYSTEM	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT	$2,915,403	2020
TOLAR	N	TRINITY WELL REHAB- TOLAR	DEEPEN WELL	$20,000	2050
TRI-COUNTY SUD	N	CARRIZO-WILCOX DEVELOPMENT-TRI-COUNTY SUD	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$1,445,000	2020
UPPER LEON MWD	Y	TRINITY AQUIFER DEVELOPMENT- UPPER LEON (FROM PECAN ORCHARD)	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$5,347,000	2020
VALLEY MILLS	N	BOSQUE COUNTY-RWSP	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$4,730,000	2020
WACO	Y	MCLENNAN COUNTY ASR (WACO)	MULTIPLE WELLS/WELL FIELD	$43,940,000	2020
WACO	Y	REUSE- FLAT CREEK	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION; STORAGE TANK	$9,371,000	2020
WALNUT SPRINGS	N	BOSQUE COUNTY-RWSP	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$4,213,000	2020
WELLBORN SUD	N	EXPAND WTP (4MGD)- WELLBORN SUD	WATER TREATMENT PLANT EXPANSION	$13,153,000	2040
WEST BRAZOS WSC	N	CARRIZO AQUIFER DEVELOPMENT-WEST BRAZOS WSC	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$2,752,000	2020

Region G Total Recommended Capital Cost	$3,926,014,878

*Projects with a capital cost of zero are excluded from the report list.

Table 5.39-3. Alternative Water Management Strategies Summary (DB17 Report)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
ABILENE	G	POSSUM KINGDOM TO ABILENE	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	14,800	14,800	14,800	14,800	14,800	14,800	$2586	$1063
ASPERMONT	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	33	47	62	76	90	105	$0	$0
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION-PH 1	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	17,017	17,017	17,017	17,017	17,017	17,017	$0	$0
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION-PH 1	G | TRINITY AQUIFER | WILLIAMSON COUNTY	8,509	8,509	8,509	8,509	8,509	8,509	$584	$305
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION-PH 2	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	18,107	18,107	18,107	18,107	18,107	18,107	$0	$0
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION-PH 2	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	28,118	28,118	28,118	28,118	28,118	28,118	$1611	$458
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	SEDIMENT REDUCTION PROGRAM (LAKE LIMESTONE WATERSHED)	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	177	355	532	710	888	N/A	$167
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	STORAGE REALLOCATION OF LAKE GRANGER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,940	1,940	1,940	1,940	1,940	1,940	$1552	$314
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	STORAGE REALLOCATION OF LAKE WHITNEY	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	20,842	20,842	20,842	20,842	20,842	20,842	$361	$4
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	STORAGE REALLOCATION OF STILLHOUSE HOLLOW RESERVOIR	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	2,643	2,643	2,643	2,643	2,643	2,643	$1177	$19
BRYAN	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	3,826	3,826	4,171	5,565	11,826	19,478	$1006	$323
COLLEGE STATION	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	6,000	6,000	6,000	6,000	6,000	6,000	$1065	$547
COLLEGE STATION - UNASSIGNED WATER VOLUMES	G	DPR- COLLEGE STATION	G | DIRECT REUSE	2,800	2,800	2,800	2,800	2,800	2,800	$3484	$1805
COUNTY-OTHER, CORYELL	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	0	100	200	525	N/A	$1309
COUNTY-OTHER, HASKELL	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	53	76	100	123	146	170	$0	$0
COUNTY-OTHER, HOOD	G	ACTON MUD REDUCTION TO HOOD COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	968	344	77	121	22	0	$977	N/A
GLEN ROSE	G	SOMERVELL COUNTY WSP	G | BRAZOS RUN-OF-RIVER	0	0	0	0	50	50	N/A	$1059

Table 5.39-3. Alternative Water Management Strategies Summary (DB17 Report)

				Water Management Strategy Supplies							
WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
HALLSBURG	G	REUSE- WMARSS WACO EAST	G | DIRECT REUSE	31	31	31	31	31	31	$869	$191
HASKELL	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	176	254	332	410	488	566	$0	$0
HUTTO	G	LITTLE RIVER OCR	G | LITTLE RIVER OFF-CHANNEL LAKE/RESERVOIR	0	378	2,181	4,001	6,215	8,499	N/A	$350
IRRIGATION, BELL	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,200	1,200	1,200	1,200	1,200	1,250	$66	$66
IRRIGATION, MCLENNAN	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,200	1,200	1,200	1,200	1,200	1,200	$66	$66
IRRIGATION, MCLENNAN	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | MCLENNAN COUNTY	1,000	1,000	1,000	1,000	1,000	1,000	$1047	$86
IRRIGATION, PALO PINTO	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	2,494	2,392	2,299	2,260	2,222	2,188	$66	$66
JOHNSON COUNTY SUD	G	TRINITY - JOHNSON COUNTY ASR	G | TRINITY AQUIFER ASR | JOHNSON COUNTY	2,000	2,000	2,000	2,000	2,000	2,000	$1131	$640
KNOX CITY	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	72	104	136	167	199	231	$0	$0
MANUFACTURING, BELL	G	REUSE-BCWCID #1 NORTH	G | DIRECT REUSE	1,000	1,000	1,000	1,360	1,360	1,360	$765	$765
MANUFACTURING, BURLESON	G	CALDWELL REDUCTION TO BURLESON MANUFACTURING	G | CARRIZO-WILCOX AQUIFER | BURLESON COUNTY	0	50	50	50	85	85	N/A	$500
MART	G	REUSE- WMARSS WACO EAST	G | DIRECT REUSE	134	134	134	134	134	134	$869	$191
MERIDIAN	G	MERIDIAN OCR	G | MERIDIAN OFF-CHANNEL LAKE/RESERVOIR	615	615	615	615	615	615	$3961	$1220
MINING, MCLENNAN	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	0	1,050	1,050	1,050	N/A	$66
MUNDAY	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	74	107	140	173	205	238	$0	$0
NORTH CENTRAL TEXAS MUNICIPAL WATER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	13,815	13,511	13,208	12,905	12,601	12,298	$1308	$313
PALO PINTO COUNTY MWD #1 - UNASSIGNED WATER VOLUMES	G	PALO PINTO OCR	G | LAKE PALO PINTO OFF-CHANNEL LAKE/RESERVOIR	3,110	3,110	3,110	3,110	3,110	3,110	$980	$169
RIESEL	G	REUSE- WMARSS WACO EAST	G | DIRECT REUSE	43	43	43	43	43	43	$869	$191
ROUND ROCK	G	TRINITY - WILLIAMSON COUNTY ASR	G | TRINITY AQUIFER ASR | WILLIAMSON COUNTY	0	0	0	0	9,050	9,050	N/A	$368
RULE	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	12	18	23	29	34	40	$0	$0
VENUS	G	WOODBINE AQUIFER DEVELOPMENT	G | WOODBINE AQUIFER | JOHNSON COUNTY	0	150	150	450	450	450	N/A	$203
WACO - UNASSIGNED WATER VOLUMES	G	REUSE- WMARSS WACO EAST	G | DIRECT REUSE	0	0	0	0	0	0	N/A	N/A
Region G Total Alternative WMS Supplies				152,632	152,543	154,393	159,481	177,112	187,430		

Table 5.39-4. Unmet Needs for Water User Groups (DB17 Report)

REGION G	WUG UNMET NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
BELL COUNTY						
BRAZOS BASIN						
MINING	459	1,023	1,614	3,216	4,915	6,360
BOSQUE COUNTY						
BRAZOS BASIN						
MINING	1,784	1,838	1,631	1,612	1,576	1,565
BRAZOS COUNTY						
BRAZOS BASIN						
MINING	1,055	1,529	1,333	1,064	858	757
BURLESON COUNTY						
BRAZOS BASIN						
MINING	225	1,087	666	283	0	0
JONES COUNTY						
BRAZOS BASIN						
MINING	232	222	203	185	170	157
IRRIGATION	174	35	0	0	0	0
LEE COUNTY						
BRAZOS BASIN						
MINING	2,406	5,401	5,634	6,024	6,459	6,986
COLORADO BASIN						
MINING	679	1,524	1,589	1,699	1,822	1,971
LIMESTONE COUNTY						
BRAZOS BASIN						
MINING	3,431	2,876	2,572	2,797	3,295	3,923
TRINITY BASIN						
MINING	368	320	294	314	357	412
NOLAN COUNTY						
BRAZOS BASIN						
IRRIGATION	1,357	1,155	962	860	760	667
COLORADO BASIN						
IRRIGATION	904	771	640	573	507	445
PALO PINTO COUNTY						
BRAZOS BASIN						
POSSUM KINGDOM WSC	7	0	0	0	0	0
ROBERTSON COUNTY						
BRAZOS BASIN						
MINING	0	960	2,599	4,881	7,667	11,129
IRRIGATION	35,322	31,853	28,799	28,207	32,917	39,407
STEPHENS COUNTY						
BRAZOS BASIN						
MINING	3,912	3,884	3,146	2,557	2,029	1,579
WILLIAMSON COUNTY						
BRAZOS BASIN						
MINING	4,593	5,520	6,434	7,541	8,682	9,988

5.39.2 Potentially Feasible Water Management Strategies

Table 5.39-5 includes a list of water management strategies that have been evaluated in the Brazos G Regional Water Plan since 2001. This table indicates for which plan(s) the strategies were evaluated. Some of these strategies such as the Wheeler Off-Channel Reservoir may have been implemented or others may have changed names since the 2001 plan. This list represents potentially feasible water management strategies for the Brazos G Area.

Table 5.39-5. Potentially Feasible Water Management Strategies Evaluated in Brazos G Regional Water Plans

Strategy	2001	2006	2011	2016
Advanced Conservation				X
Advanced Industrial Conservation				X
Bosque County Regional Project	X	X	X	X
BRA Reservoir Connection			X	X
BRA SWATS	X		X	
BRA System Operation		X	X	X
Brackish Desal	X		X	X
Brazos River Alluvium	X			X
Breckenridge Reservoir				
Brush Control			X	X
Brushy Creek Reservoir			X	X
Brushy Creek RUA Water Supply Project	X	X	X	X
Bryan ASR				X
Carrizo-Aquifer Development	X	X		X
Carrizo-Wilcox Groundwater	X	X	X	
Cedar Ridge Reservoir		X	X	X
Chloride Control Project	X		X	X
College Station ASR				X
College Station DPR				X
Coordinated use of Fort Phantom Hill and Hubbard Creek Reservoirs	X			
Coordinated Use of Lake Leon Water Supply with Local Groundwater	X			
Coryell County Off-Channel Reservoir			X	X
Double Mtn. Fork (East) Reservoir		X	X	
Double Mtn. Fork (West) Reservoir		X	X	
East Williamson County Water Supply Project				X
Future Phases of Lake Whitney Water Supply Project			X	X
Gibbons Creek Reservoir Expansion			X	X

Table 5.39-5. Potentially Feasible Water Management Strategies Evaluated in Brazos G Regional Water Plans

Strategy	2001	2006	2011	2016
Groesbeck Off-Channel Reservoir	X	X	X	X
Groundwater Development			X	X
Gulf Coast Groundwater			X	X
Hamilton County Reservoir				X
Increase WTP Capacity	X	X	X	X
Industrial Conservation		X	X	X
Irrigation Conservation		X	X	X
Johnson County ASR				X
Kerr-McGee transmission	X			
Lake Aquilla Augmentation			X	X
Lake Bosque	X			
Lake Cisco Augmentation				
Lake Creek Reservoir				X
Lake Granger ASR				X
Lake Granger Augmentation		X	X	X
Lake Leon Augmentation	X			
Lake Palo Pinto Off-Channel Reservoir		X	X	X
Lake Stamford Augmentation				
Lake Sweetwater Augmentation				
Lake Whitney Desal	X			
Leave Needs Unmet				X
Little River Off-Channel Reservoir	X	X	X	X
Little River Reservoir			X	
McLennan County ASR				X
Meridian Off-Channel Reservoir	X		X	X
Millers Creek Reservoir Augmentation			X	X
Millican-Bundic Reservoir	X	X		
Millican-Panther Reservoir			X	
Municipal Conservation		X	X	X
Oak Creek Reservoir Conjunctive Management			X	X
Paluxy Reservoir	X			
Peach Creek Off-Channel Reservoir	X	X	X	X
Phase I Lake Whitney Water Supply Project			X	X
Possum Kingdom		X	X	X

Table 5.39-5. Potentially Feasible Water Management Strategies Evaluated in Brazos G Regional Water Plans

Strategy	2001	2006	2011	2016
Purchase Additional Water		X	X	X
Purchase Additional Water + Infrastructure	X	X	X	X
Purchase from Walnut Creek Mine				X
Reallocation of Supplies			X	X
Rehabilitate Existing Wells			X	X
Restructure Contracts			X	X
Reuse Supply	X	X	X	X
Run-of-river water right of unappropriated flows			X	
Sediment Reduction Program			X	X
Seymour ASR Project	X	X	X	
Somervell County Off-Channel Reservoir	X			
Somervell County WSP			X	X
South Bend Reservoir	X	X	X	X
Storage Reallocation	X		X	X
Subordination Agreement			X	X
Throckmorton Reservoir			X	X
TRA Reuse - Joe Pool		X	X	
Trinity ASR Project		X	X	X
Trinity Groundwater			X	X
Turkey Peak Reservoir		X	X	X
Voluntary Redistribution			X	X
West Central Brazos Water Distribution System				X
Weather Modification			X	
Wheeler Branch Off-Channel Reservoir[1]		X	X	

1 – Strategy has been implemented.

5.40 Water Conservation Recommendations

Regional water planning guidelines require each regional water planning group to consider water conservation to meet projected shortages, although funding to implement such water conservation programs is limited. Conservation is shown as a recommended strategy for all water user groups with needs identified during the planning period. The Brazos G RWPG adopted the following water conservation recommendations for the 2016 Plan which are further described in Volume II, Section 2.

- Municipal water user groups with per capita rates exceeding 140 gallons per person per day (gpcd) were recommended to reduce per capita consumption by 1% annually through 2070 until a 140 gpcd rate is attained. This recommendation applies to all municipal water user groups with and without projected water supply needs (shortages). For Water User Groups (WUGs) in Williamson County, an additional advanced conservation goal of 120 gpcd by 2070 was recommended. Annual reduction rates ranging from 0.35% to 1.1% for Williamson County WUGs were applied to bring the gpcd of each WUG to 120 gpcd. Conservation can be achieved through a variety of best management practices, some of which are listed in Section 2.1.2. For municipal entities reporting real losses greater than 15% of water system input volume, an infrastructure replacement program to reduce water loss is summarized in Section 2.1.8.
- Irrigation water user groups with identified needs were recommended to reduce water use by 3% by 2020, 5% by 2030, and 7% from 2040-2070. A list of best management practices prepared by the Water Conservation Implementation Task Force that can be implemented to achieve these goals is included in Section 2.2.2.
- Manufacturing, steam-electric, and mining water user groups with identified needs were recommended to reduce water use by 3% by 2020, 5% by 2030, and 7% from 2040-2070. A list of best management practices prepared by the Water Conservation Implementation Task Force that can be implemented to achieve these goals is included in Section 2.3.2.
- Conservation recommendations were not made for livestock water user groups.

A summary was prepared of common water conservation best management practices (Table 5.40-1) and recommended 5- and 10-year water conservation targets (Table 5.40-2) obtained from local water conservation plans for entities located in Brazos G. The Brazos G RWPG suggests that water user groups in the region review the list and look to identify water user groups at a relevant size with similar water supply type and consider voluntary implementation of those best management practices, if applicable.

TCEQ has prepared model water conservation plans (WCPs) for municipal public water suppliers, wholesale providers, industrial and mining entities, and agricultural users to provide guidance and suggestions to entities with regard to the preparation of water conservation plans. Not all items in the model plan will apply to every system's situation, but the overall model plan can be used as a starting point for most entities. For water user groups wishing to develop a new WCP, Brazos G suggests considering best management practices from local water conservation plans for entities similar in size, as discussed previously, in addition to the TCEQ Model WCPs. The TCEQ model water conservation plans can be found in on TCEQ's website at the following link:

https://www.tceq.texas.gov/permitting/water_rights/wr_technical-resources/conserve.html

Table 5.40-1. Summary of Water Conservation BMPs in the Brazos G Area

Wholesale Water Provider	WCP Available	Date	Best Management Practices							
			Reduce Water Losses/ Unaccounted for Water/Leak Detection	Water Conservation Pricing/Seasonal or Inverted Block Rates	Reuse	Improve Meter Accuracy	Toilet Replacement/ Retrofit Programs	Public/School Education	Landscape Conservation/Xeriscape	Others
Aquilla WSD	Y	2014	√	√		√				√
Bellmead	Y	2010	√	√		√	√	√	√	
Belton	Y	2000	√	√		√		√		√
Bethesda WSC	Y	2009	√	√		√		√	√	√
Block House MUD	Y	2013	√		√	√	√	√	√	√
Blum	Y	2002	√	√		√		√	√	√
Brazos Valley GCD	Y	2012	√			√	√	√	√	√
Bryan	Y	2011	√	√	√	√	√	√	√	√
Buffalo Gap	Y	2010	√			√		√		
Clyde	Y	2010	√	√		√		√		√
Fort Hood	Y	2002	√		√	√	√	√	√	
Gatesville	Y	2000	√	√	√	√	√	√		
Georgetown	Y	2009	√	√	√	√		√	√	√
Harker Heights	Y	2011	√	√	√	√	√	√	√	√
Hico	Y	2013	√	√		√		√		√
Lampasas	Y	2001	√	√	√	√	√	√	√	√
LCRA	Y	2012	√	√		√	√	√	√	√
Manville WSC	Y	2011	√			√		√		
Mexia	Y	2002	√	√		√		√	√	√
Navasota	Y	1999	√			√		√		√
Ranger	Y	2012	√	√		√		√		√
Robinson	Y	2002		√		√	√	√	√	
Stamford	Y	2011	√	√		√	√	√		√

Table 5.40-1. Summary of Water Conservation BMPs in the Brazos G Area

Wholesale Water Provider	WCP Available	Date	Best Management Practices							
			Reduce Water Losses/ Unaccounted for Water/Leak Detection	Water Conservation Pricing/Seasonal or Inverted Block Rates	Reuse	Improve Meter Accuracy	Toilet Replacement/ Retrofit Programs	Public/School Education	Landscape Conservation/Xeriscape	Others
Stephens Regional SUD	Y	2014	√	√		√		√		√
Vista Oaks MUD	Y	2012	√			√		√	√	√
West Central Texas MUD	Y	1999	√			√				√
Woodway	Y	2009	√			√	√	√	√	√

Table 5.40-2. Summary of 5- and 10-Year Water Conservation Goals in the Brazos G Area

Wholesale Water Provider	5-Year Goal		10-Year Goal	
	GPCD Target	General	GPCD Target	General
Aquilla WSD	151	Not available	150	Not available
Bellmead	118	Not available	113	Not available
Belton	–	Not available	–	5 to 10% reduction
Bethesda WSC	121	Not available	117	Not available
Block House MUD	–	2.5% per capita decrease	–	5% per capita decrease
Blum	NA	1%/year reduction in unaccounted water	–	1%/year reduction in unaccounted water
Brazos Valley GCD	–	Not available	–	Not available
Bryan	167	Not available	137	Not available
Buffalo Gap	51.8	Not available	46.8	Not available
Clyde	82	Not available	77	Not available
Fort Hood	–	Not available	–	Not available
Gatesville	–	Not available	–	Not available
Georgetown	190	12% water loss	180	10% water loss
Harker Heights	143	Reduce water loss to 12%	143	Reduce water loss to 10%
Hico	188	Residential GPCD of 140.20; GPCD reduction of 30; 16.2 % water loss	186	Residential GPCD of 138.94; Water loss GPCD reduction of 29; 15.5 % water loss

Table 5.40-2. Summary of 5- and 10-Year Water Conservation Goals in the Brazos G Area

Wholesale Water Provider	5-Year Goal		10-Year Goal	
	GPCD Target	General	GPCD Target	General
Lampasas	—	Not available	—	Not available
LCRA	104	2% decrease in water use	100	6% decrease in water use
Manville WSC	122	2 gpcd reduction in water loss	120	4 gpcd reduction in water loss
Mexia	—	Not available	—	Not available
Navasota	143	Not available	—	Not available
Ranger	137	33% water loss	110	20% water loss
Robinson	128.8	Not available	126.6	Not available
Stamford	154	Not available	152	Not available
Stephens Regional SUD	79.9	GPCD reduction of 13.2, or 21%	77.4	GPCD reduction of 11.7, or 19%
Vista Oaks MUD	—	Reduce GPCD by 3%	—	Reduce GPCD by 6%
West Central Texas MUD	—	Not available	—	Not available
Woodway	175.6	5% or 10.36 GPCD reduction	165.3	10% or 20.72 GPCD reduction

Chapter 6

6

Consistency with Long Term Protection of the State's Water, Agricultural, and Natural Resources

This page intentionally left blank.

6 Consistency with Long-Term Protection of the State's Water, Agricultural, and Natural Resources

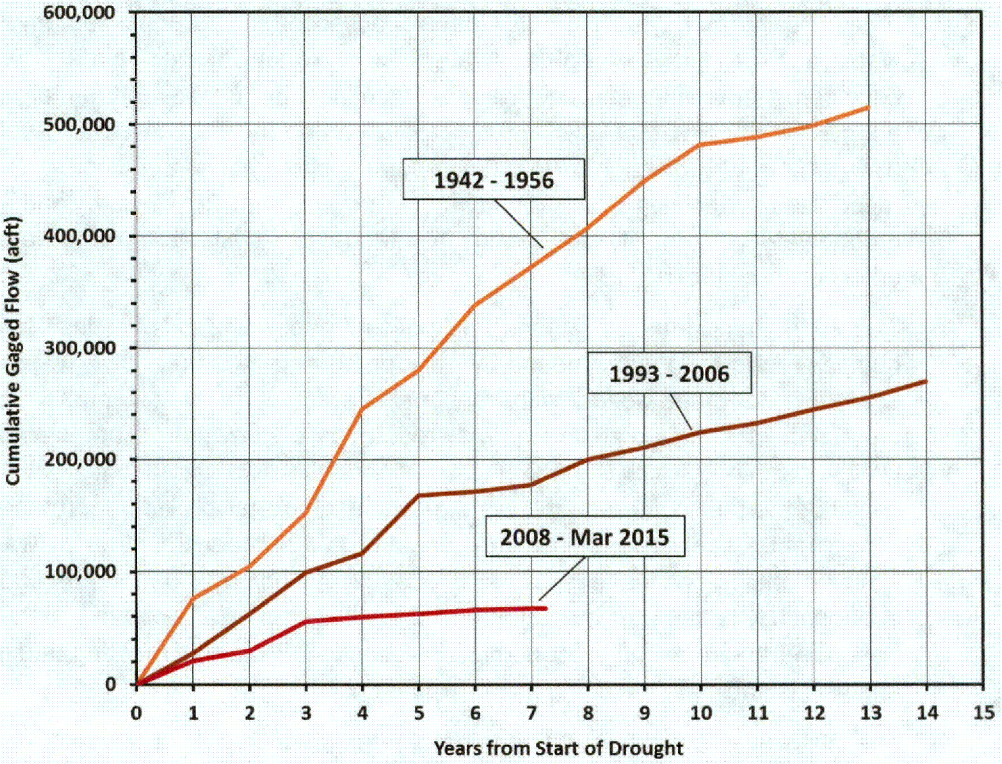
The 2016 Plan is consistent with long-term protection of the state's water resources, agricultural resources, and natural resources and is developed based on guidance principles outlined in the Texas Administrative Code Chapter 358 – State Water Planning Guidelines. The 2016 Plan was produced with an understanding of the importance of orderly development, management, and conservation of water resources and is consistent with all laws applicable to water use for the state and regional water planning areas. Furthermore, the plan was developed according to principles governing surface water and groundwater rights. Availability of water for new surface water supplies considered environmental flow needs as defined by the environmental flow standards adopted in the Brazos Basin and incorporated into the Brazos Water Availability Model (BWAM), and protection of existing water rights. For groundwater, the 2016 Plan recognizes principles for groundwater management in Texas, and estimates of groundwater availability take into the Modeled Available Groundwater (MAG) as determined by the TWDB.

The 2016 Plan identifies actions and policies necessary to meet the Brazos G Area's near and long-term water needs by developing and recommending water management strategies to meet needs with reasonable cost, good water quality, and sufficient protection of agricultural and natural resources of the state. The Brazos G Regional Water Planning Group (RWPG) has recommended water management strategies that consider the public interest of the state, wholesale water providers, protection of existing water rights, and opportunities that encourage voluntary transfers of water resources while balancing economic, social, and ecological viability. When needs could not be met economically with water management strategies, a socioeconomic impact analysis was performed to estimate the economic loss associated with not meeting these needs. This analysis is shown in the final plan in (Appendix H).

The 2016 Plan considers environmental information resulting from site-specific studies and ongoing development of water projects when evaluating water management strategies. Cumulative effects of water management strategies on Brazos River instream flows and inflows to the Gulf of Mexico were considered, as documented later in this chapter. A list of endangered and threatened species in the Brazos G Area for each county was obtained from the U.S. Fish and Wildlife Service and possible impacts to these species and/or their habitats were considered for each water management strategy evaluated.

The 2016 Plan consists of initiatives to respond to continuing drought conditions in the western part of the region, and makes use of relatively low-impact strategies such as reuse of wastewater return flows and the Brazos River Authority's proposed System Operations Permit to increase supplies. As a further drought protection provision, the Brazos G RWPG adopted use of safe yield analyses for purposes of determining water supply for municipal supply reservoirs upstream of Possum Kingdom Reservoir. The use of safe yield analyses anticipates that a future drought may occur that is greater in severity than the worst drought of record and reserves a certain amount of water in storage (i.e., a 6-month, or 1- or 2-year supply) for such an event. Use of safe yield in the upper Brazos Basin is justified based on the severity of the recent and ongoing drought. Figure 6-1 presents the cumulative gaged streamflow for the USGS gage located on the Clear Fork of the Brazos River near Nugent, TX. The figure shows how flows during the current drought beginning in 2008 are significantly less than those of the drought of record (1950's drought) and the drought beginning in 1993. After seven years from the beginning of the droughts, the cumulative gaged flow of the current drought is 82 and 62 percent less than the cumulative gaged flows of the 1950's and 1993 drought, respectively.

Figure 6-1. Cumulative Gaged Flows at Clear Fork of the Brazos near Nugent



The Brazos G RWPG conducted numerous meetings during the 2016 planning cycle, which were open to the public, and decisions were based on accurate, objective, and reliable information. The Brazos G RWPG coordinated water planning activities with local, regional and state agencies, and was committed to facilitating the initiatives and addressing the concerns of local and regional entities.

The Brazos G RWPG developed policy recommendations regarding State water policy after extensive consideration and deliberation, and these are presented in Chapter 8 of this report. The Brazos G RWPG considered recommendations of stream segments with unique ecolcgical value by Texas Parks and Wildlife and sites of unique value for construction of reservoirs. At this time, the Brazos G RWPG recommends that no stream segments be designated as unique; however, there are recommendations to identify certain reservoir sites as unique (Chapter 8).

6.1 Cumulative Hydrologic Effects of Implementing the Brazos G Regional Water Plan

The following sections describe in more detail the hydrologic effects of the recommended water management strategies on surface water and groundwater resources.

6.1.1 Surface Water

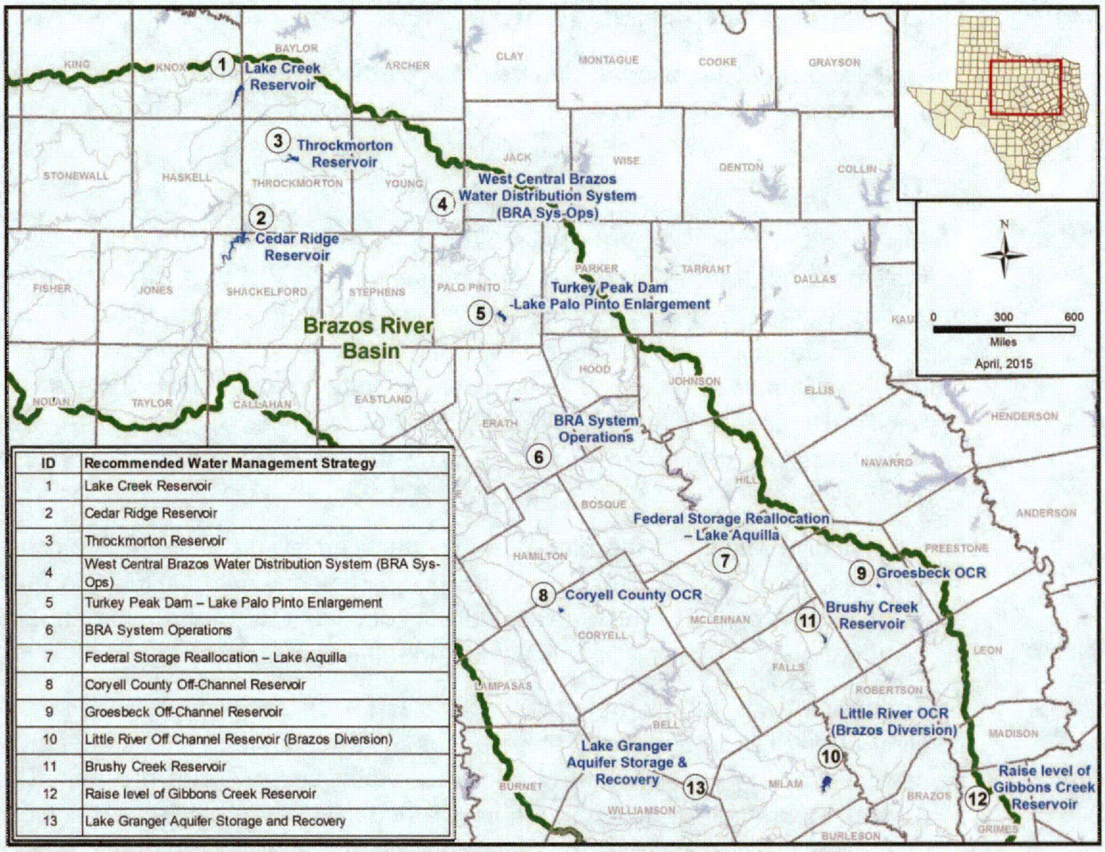
Sophisticated hydrologic models have been employed to quantify the cumulative effects of implementation of the 2016 Plan through the year 2070. Surface water effects were quantified using the TECQ Brazos WAM Run 3 which, as per the TWDB planning guidelines, was the standard tool utilized to evaluate surface water strategies in the region. The Brazos WAM Run 3 assumptions include no return flows (unless included as a specific component to a strategy), as-permitted reservoir contents, BRA water rights diverted lakeside, and the environmental flow standards adopted by the TCEQ for the Brazos Basin.

The cumulative effects of the plan can be quantified by comparing conditions prior to implementation of the plan (base condition) to conditions with the plan in place. The base condition against which to compare conditions with the plan in place was streamflow computed by the Brazos WAM under the Run 3 assumptions.

The conditions with the plan in place include the base condition assumptions, with the addition of any recommended strategies that could measurably affect streamflows, i.e., those that result in development of additional water supply. The recommended water management strategies, shown in Figure 6-2 and listed in Table 6-1, were incorporated into the model. Specific strategies not included in the analysis are direct reuse projects, conservation, strategies transferring water from one entity to another through new or increased purchases, and development of additional groundwater. The base condition assumes full utilization of water rights, and conservation or transfers of water will not impact the assumption of full utilization of water rights. Surface water/groundwater interactions are difficult to quantify, but reductions in streamflow due to increased utilization of groundwater resources are expected to be small.

The cumulative effects of the 2016 Plan on streamflows were evaluated at the eight locations presented in Table 6-2. Each selected location is located in the Brazos G portion of the Brazos River Basin, except the Brazos River at Richmond site. This location was included in the analysis to illustrate the impacts of not only Brazos G strategies on the lower part of the basin, but also to include the effects of the Region H strategies (Allens Creek Reservoir and lower basin diversions from BRA System Operations) that were included in the analysis.

Figure 6-2. Location of Recommended Water Management Strategies Included in the Cumulative Impacts Analysis



L:\Project_Data\00044_BrazosG\GIS\Map_Docs\Task_04_WMS\WMS_Task_06_Plan_Impacts\BrazosG_Recommended_Strategies.mxd

Table 6-1. Recommended Water Management Strategies Included in the Cumulative Impacts Analysis

Recommended Water Management Strategy	WUG or WWP	Plan Section
Lake Creek Reservoir	North Central Texas Municipal Water Authority	4.10
Cedar Ridge Reservoir	City of Abilene	4.2
Throckmorton Reservoir	City of Throckmorton	4.12
West Central Brazos Water Distribution System (BRA Sys-Ops)	Multiple	8.4
Turkey Peak Dam – Lake Palo Pinto Enlargement	Palo Pinto County MWD No.1	4.13
BRA System Operations	BRA - Multiple	7.12
Federal Storage Reallocation – Lake Aquilla	BRA	7.6

Table 6-1. Recommended Water Management Strategies Included in the Cumulative Impacts Analysis

Recommended Water Management Strategy	WUG or WWP	Plan Section
Coryell County Off-Channel Reservoir	BRA - Multiple	4.3
Groesbeck Off-Channel Reservoir	City of Groesbeck	4.4
Little River Off Channel Reservoir (Brazos Diversion)	BRA - Multiple	4.7
Brushy Creek Reservoir	City of Marlin	4.1
Gibbons Creek Reservoir Expansion	Grimes County Steam Electric	7.4
Lake Granger Aquifer Storage and Recovery	BRA - Multiple	10.4
Allens Creek Reservoir [a]	BRA	N/A

[a] Allens Creek Reservoir is a recommended strategy in the Region H Plan. Allens Creek is neither recommended nor discouraged in the Brazos G Plan.

Table 6-2. Locations for Evaluating the Effects of Recommended Strategies on Streamflow

Location	WAM Control Point Identifier	Region Location (G/H)
Brazos River at South Bend	BRSB23	G
Brazos River near Glen Rose	BRGR30	G
Brazos River near Aquilla	BRAQ33	G
Bosque River near Waco	BOWA40	G
Little River near Cameron	LRCA58	G
Brazos River near Bryan	BRBR59	G
Brazos River near Hempstead	BRHE68	H
Brazos River at Richmond	BRRI70	H

The new strategies were operated junior to the proposed appropriation under the BRA System Operations Permit, since this strategy will receive a priority date from the TCEQ that is senior to all strategies listed, except for Brushy Creek Reservoir and Allens Creek Reservoir, which are already permitted. It was assumed during evaluation of most of the strategies that some form of priority calls agreement would be required between the BRA and the entity developing a new water supply project to more fully realize the yield potential of a project. These agreements were not included for new strategies in the cumulative impacts analysis, unless the entity sponsoring a strategy already has an agreement with the BRA. In all cases, the priorities of BRA's existing rights were honored, as simulated under system operations.

The Region H portion of the supply made available under BRA System Operations was diverted at the Rosharon control point (BRRO72) in the model. The existing priority calls agreements with the BRA and other water right holders were considered in this model run. The inclusion or exclusion of the subordination agreements does not affect the resulting streamflows at the selected locations in a substantive manner.

The cumulative effects of the recommended water management strategies on regulated streamflow were evaluated by comparing descriptive streamflow statistics for the base condition with those from the plan condition at the selected evaluation locations.

Also included in the comparisons are flows as obtained from the version of the Brazos WAM maintained by the TCEQ known as Run 8. Run 8 attempts to duplicate flows under "current" conditions of use for individual water rights, return flows, and year 2010 reservoir sedimentation conditions. The TCEQ has not updated Run 8 for the Brazos basin since the 2011 Plan, therefore the Run 8 flows included in the last plan were utilized for comparisons and assumed to accurately reflect current conditions to the degree necessary for this analysis. Differences between Run 8 and the plan condition flows are not due solely to the water management strategies recommended in the plan, but also due to full utilization of existing water rights, differences in assumed return flows, reservoir sedimentation conditions, and locations of BRA diversions. The Run 8 information is provided as a snapshot of the current utilization of supplies in the Brazos basin and allows for comparison with the base condition and plan condition scenarios.

through Figure 6-10 present these comparisons for regulated streamflow at each of the evaluation locations. Regulated flow is the total streamflow remaining in the stream after all existing water rights have been exercised and other water management activities have taken place. It represents the total flow passing a location (control point) after all water rights have appropriated the flows to which they are entitled.

One noticeable trend in the monthly median graphs for most locations is that monthly median streamflows are significantly greater January through June than July through December. In order to investigate this apparent trend, a comparison of naturalized flows with the regulated flows was completed to verify if this trend was a by-product of the modeling, or if it occurs naturally in the streamflow records. Figure 6-11 illustrates the median naturalized flows at the Brazos River at Richmond location compared to the regulated flows of both the base and the implemented plan scenarios. This graph demonstrates that the trend in flows computed by the modeling follows the same pattern in the underlying natural flows upon which the simulations are based.

Many locations exhibit larger flows with the implementation of the 2016 Plan than with the base condition. This is due primarily to releases being made from upstream BRA reservoirs as part of the BRA System Operations to the diversions modeled at various locations along the main stem of the Brazos River.

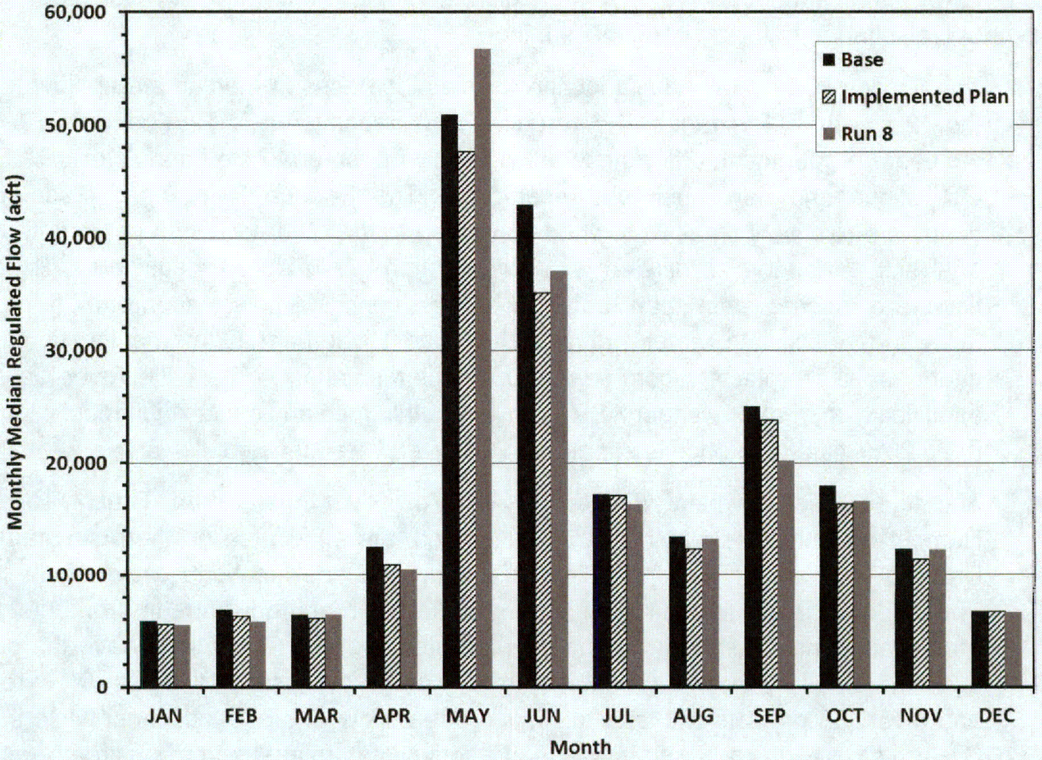
The Brazos River near South Bend is the only location that shows there are more months where the median streamflow would decrease between the base and the plan conditions than where it would stay the same or increase. These reductions are the result of the implementation of the Cedar Ridge and Lake Creek Reservoirs. The increases in median flow, especially at the Brazos River near Glen Rose, are the results of BRA System Operations releases from Possum Kingdom Reservoir and Lake Granbury. For the South Bend location, the largest decrease occurs in June at 22%. Even with this modest difference in median streamflow, the frequency plots show that the overall change to the flow regime is minor.

The Brazos River near Aquilla location shows increases in median streamflow for 11 of the 12 months. The range of differences at this location is a 19% decrease to a 78% increase. Again these differences are primarily attributed to the impacts of BRA System Operations and new upstream reservoirs. The Bosque River near Waco location controls a relatively small watershed compared to the other locations investigated in this analysis. Changes associated with this location are relatively negligible. The Run 8 flows are much greater than the base or plan condition flows, apparently from under-utilization of existing water rights. The Little River near Cameron location reflects changes from projects recommended for implementation in the Little River watershed, specifically the Lake Granger ASR. While monthly median flows exhibit mostly increases up to 29%, little difference is apparent in the overall frequency of flows.

The three most downstream locations, Brazos River near Bryan, Brazos River near Hempstead and the Brazos River at Richmond, are all located on the main stem of the Brazos River and the changes in streamflow at these locations show similar trends. These locations are located downstream in the basin and downstream from the majority of the recommended water management strategies. These locations have the potential to be impacted by the implementation of any of the proposed strategies. New reservoir and diversion projects will tend to reduce streamflow at these locations, while the BRA System Operations tends to increase streamflows as releases from upstream reservoirs pass these locations to satisfy demands at downstream locations. The Bryan location shows increases in median streamflow for 11 of the 12 months by as much as 56%, with the largest reduction of 21%. Hempstead sees 11 months with increase in median streamflow ranging from 3% to 46% and 1 month with a reduction of 16%. At the Richmond location, 8 of the 12 months have an increase in median flow.

Overall the cumulative effects of the implemented plan will have a slight to modest effect on streamflows in the Brazos Basin with both increases and decreases. Locations below new reservoirs or reservoirs with augmented supplies will generally experience reduced streamflows; although generally not to a significant level, and the detrimental effects of these reductions can be minimized with proper consideration of reservoir pass-through requirements to maintain flows necessary to meet the needs of the environment. Locations lower in the basin will often experience greater streamflows in the lower portion of the streamflow regime, as the BRA System Operations releases water during dry times to downstream diversion points. None of the locations will experience significantly different streamflows with implementation of the recommended water management strategies in the 2016 Plan.

Figure 6-3. Effects of Plan Implementation on Streamflows – Brazos River at South Bend



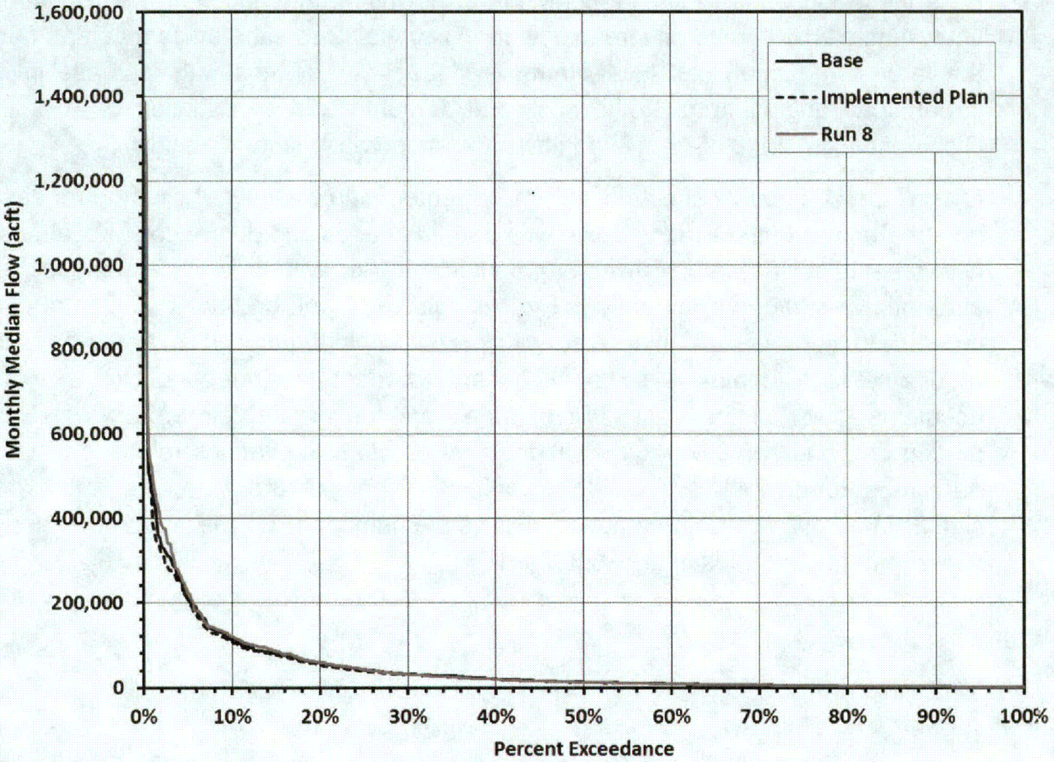


Figure 6-4. Effects of Plan Implementation on Streamflows – Brazos River near Glen Rose

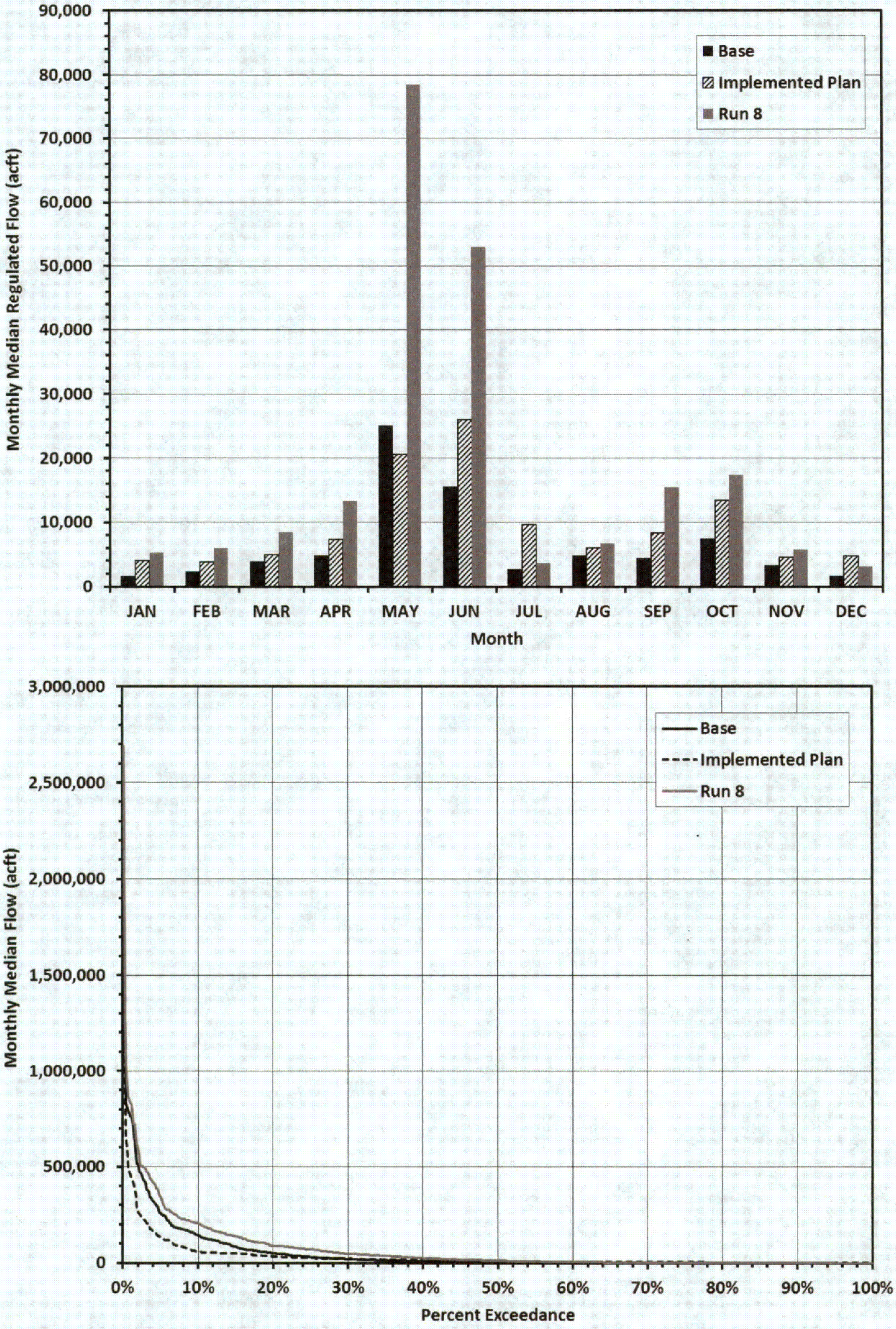
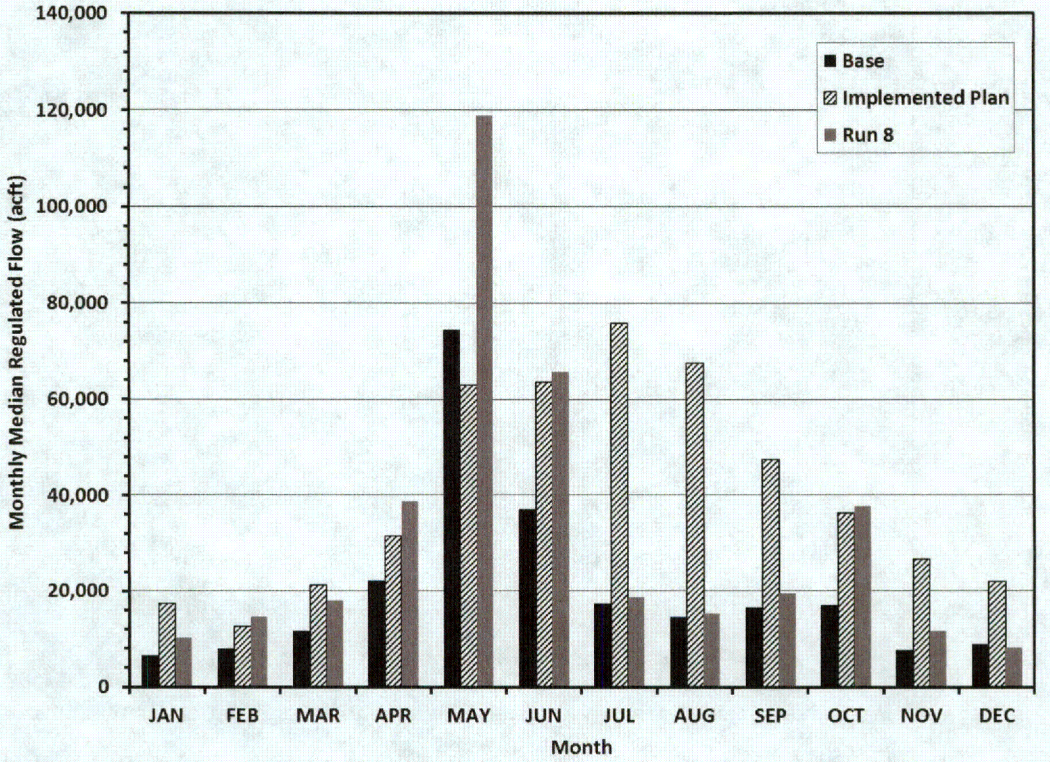


Figure 6-5. Effects of Plan Implementation on Streamflows – Brazos River near Aquilla



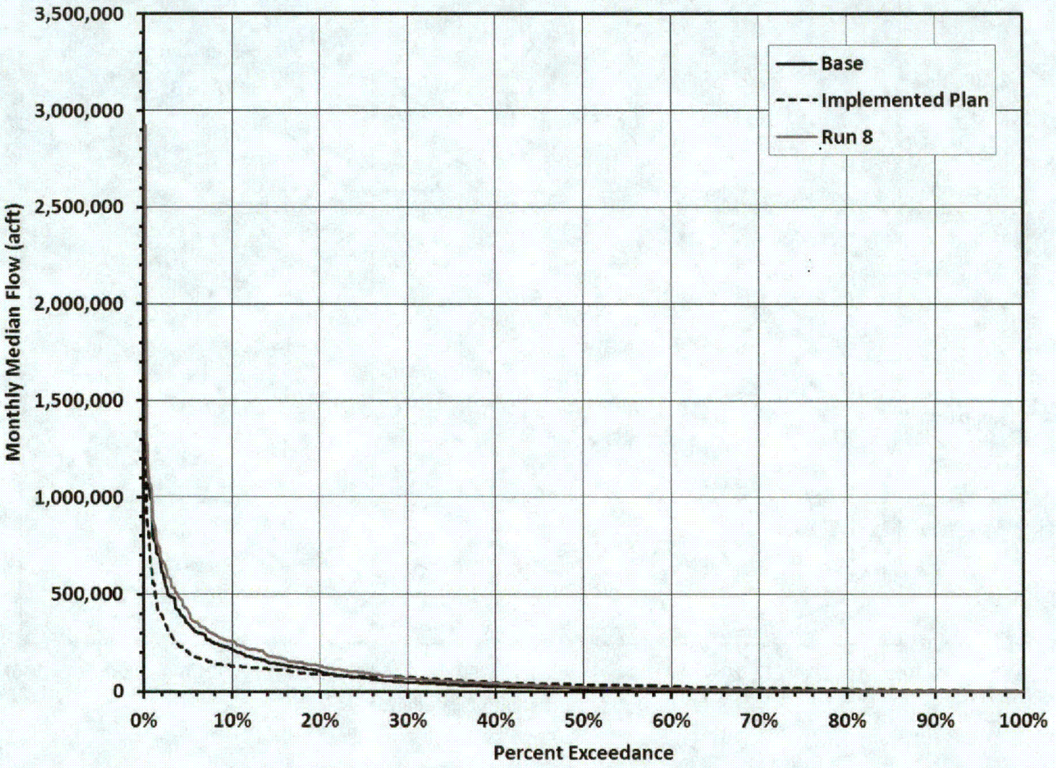
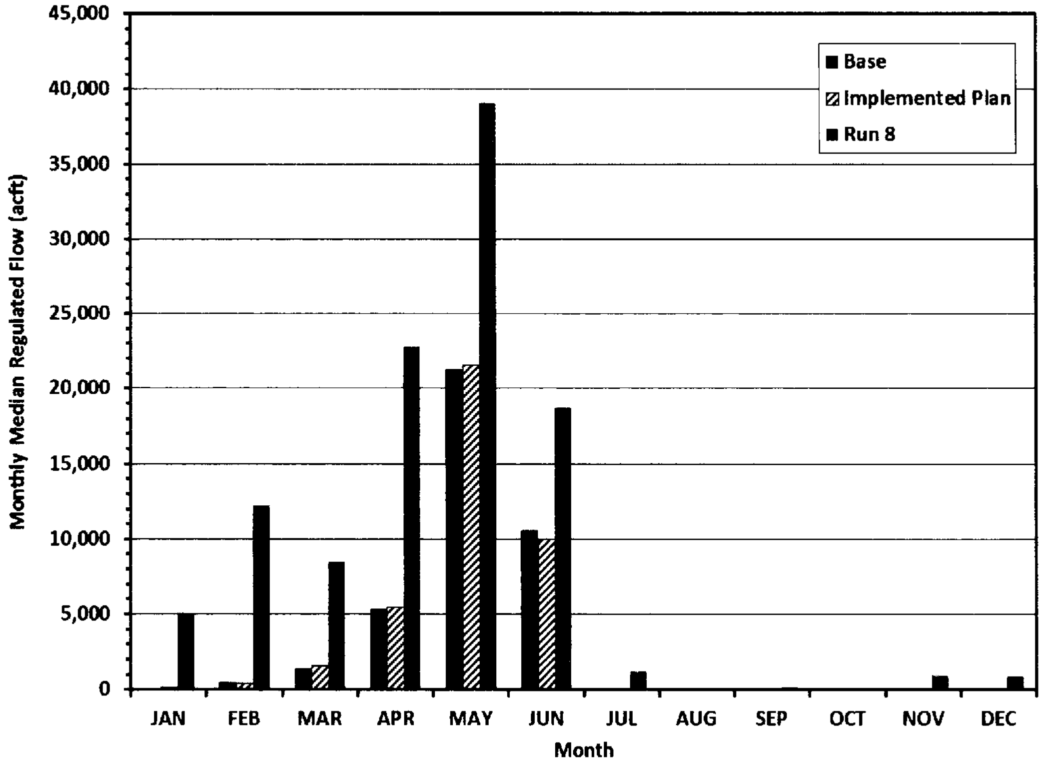


Figure 6-6. Effects of Plan Implementation on Streamflows – Bosque River near Waco



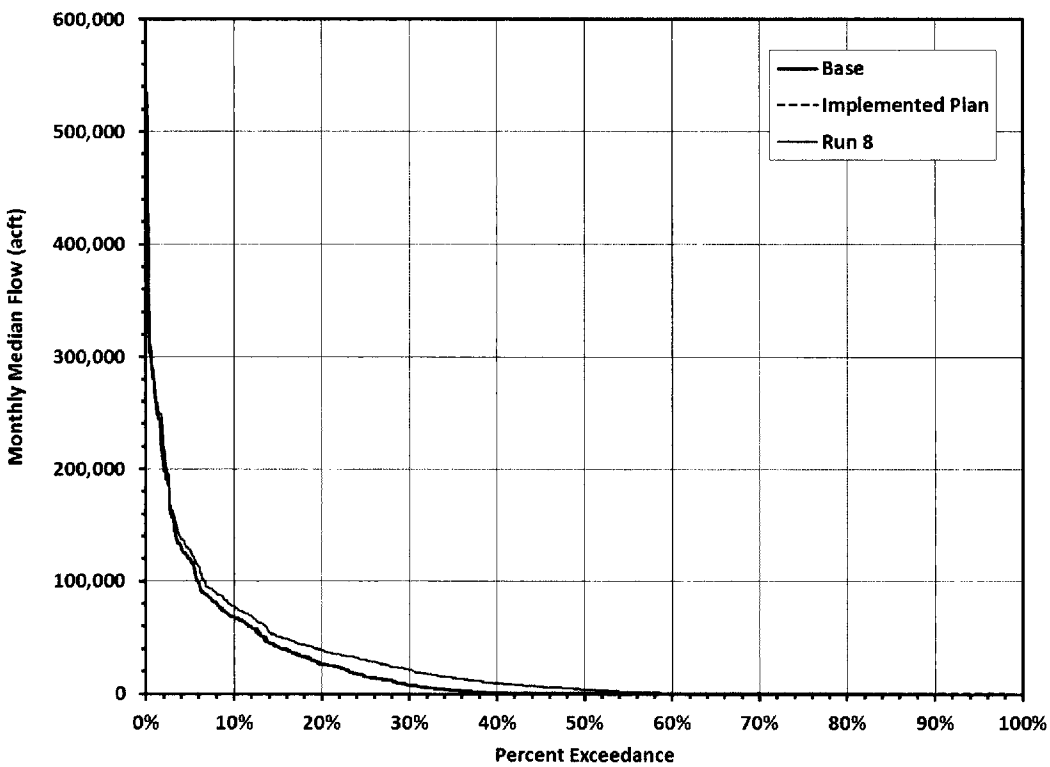
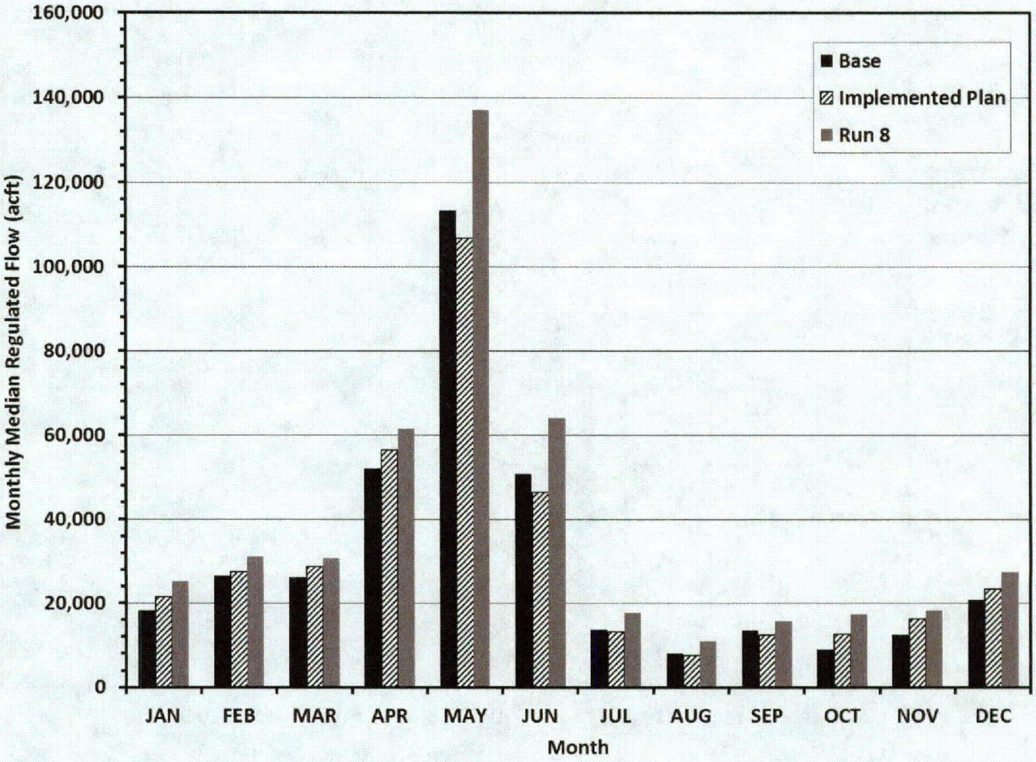


Figure 6-7. Effects of Plan Implementation on Streamflows – Little River near Cameron



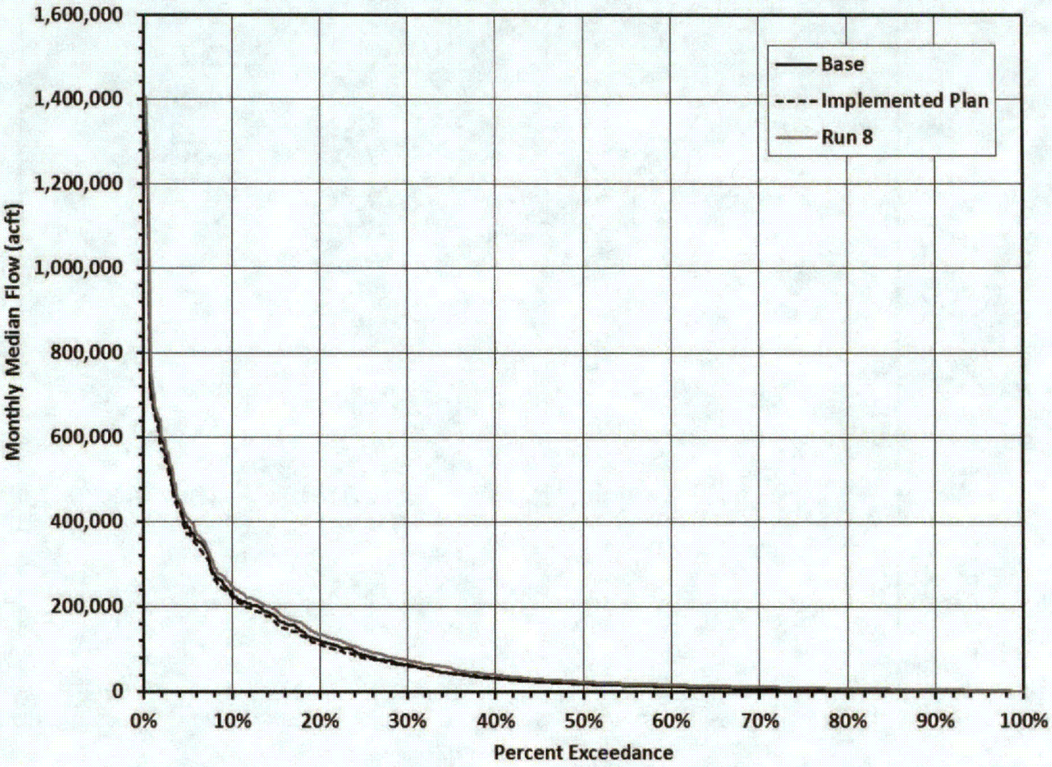
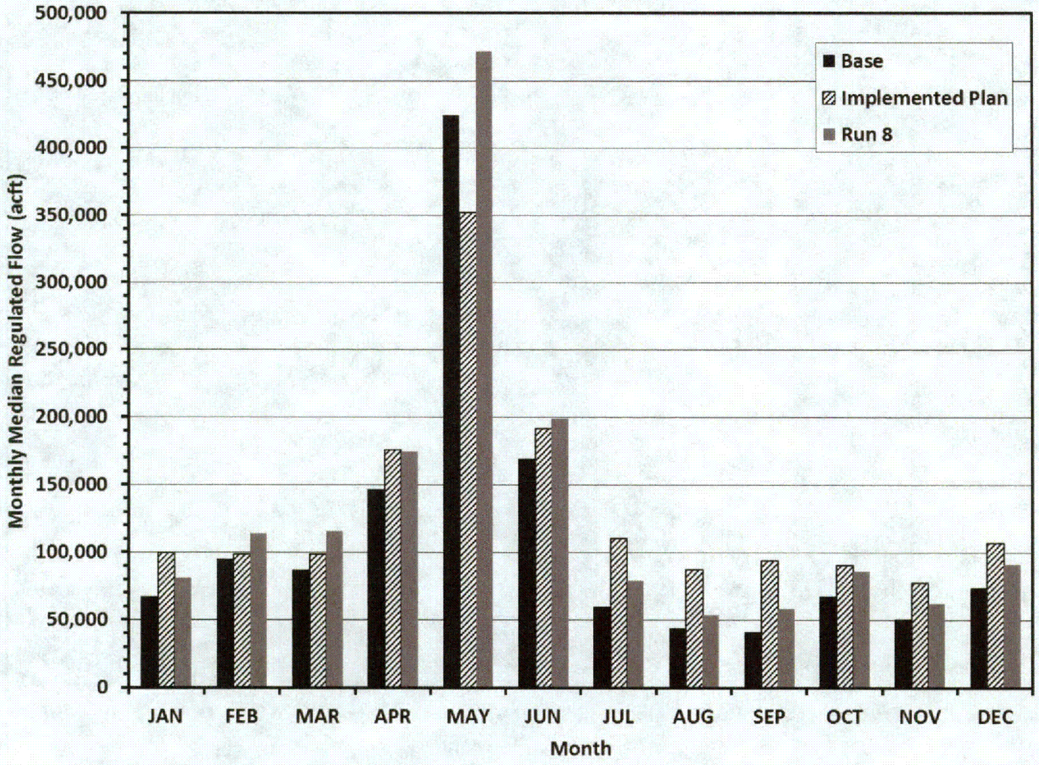


Figure 6-8. Effects of Plan Implementation on Streamflows – Brazos River near Bryan



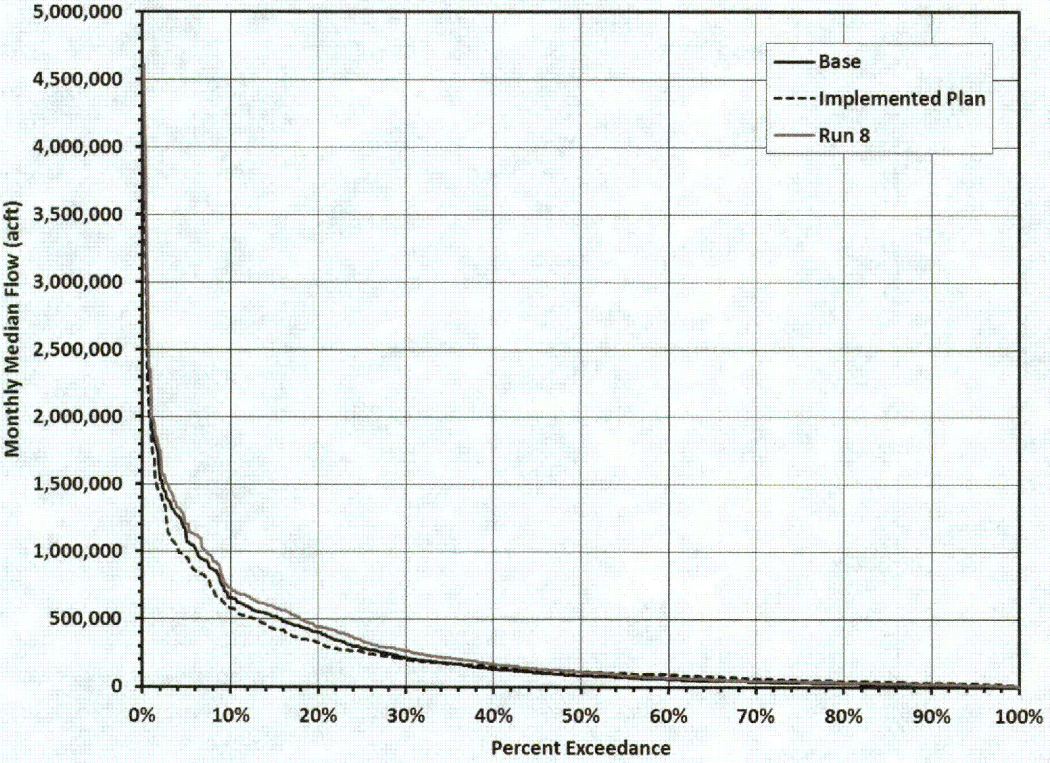
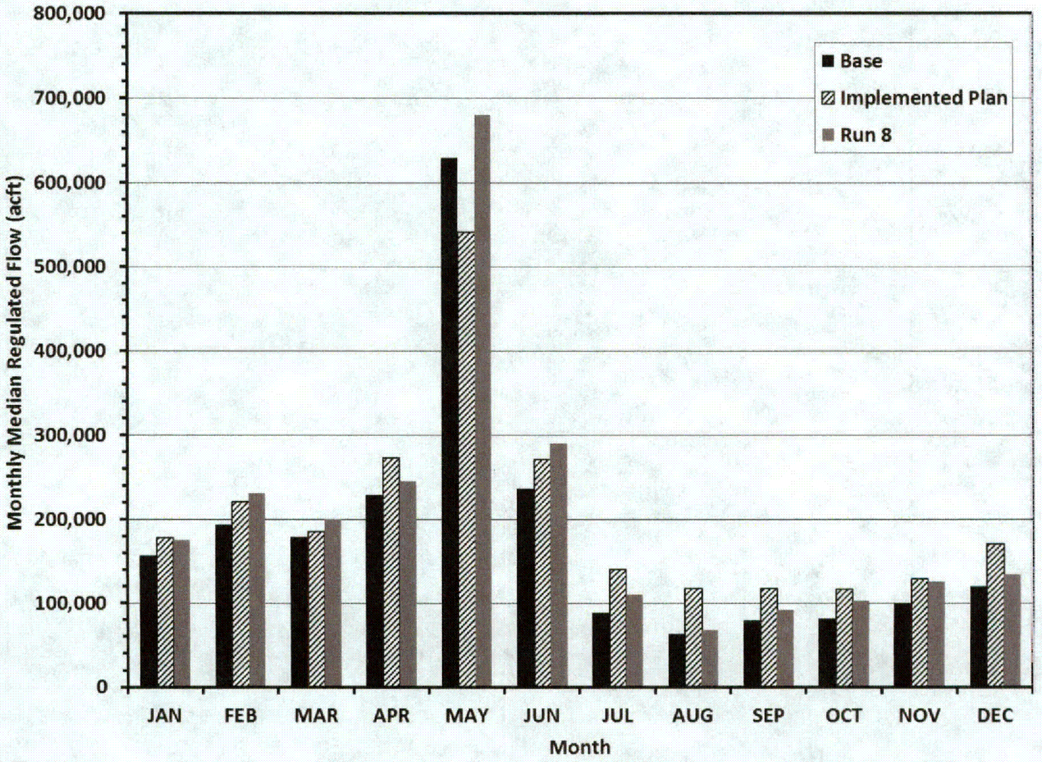


Figure 6-9. Effects of Plan Implementation on Streamflows – Brazos River near Hempstead



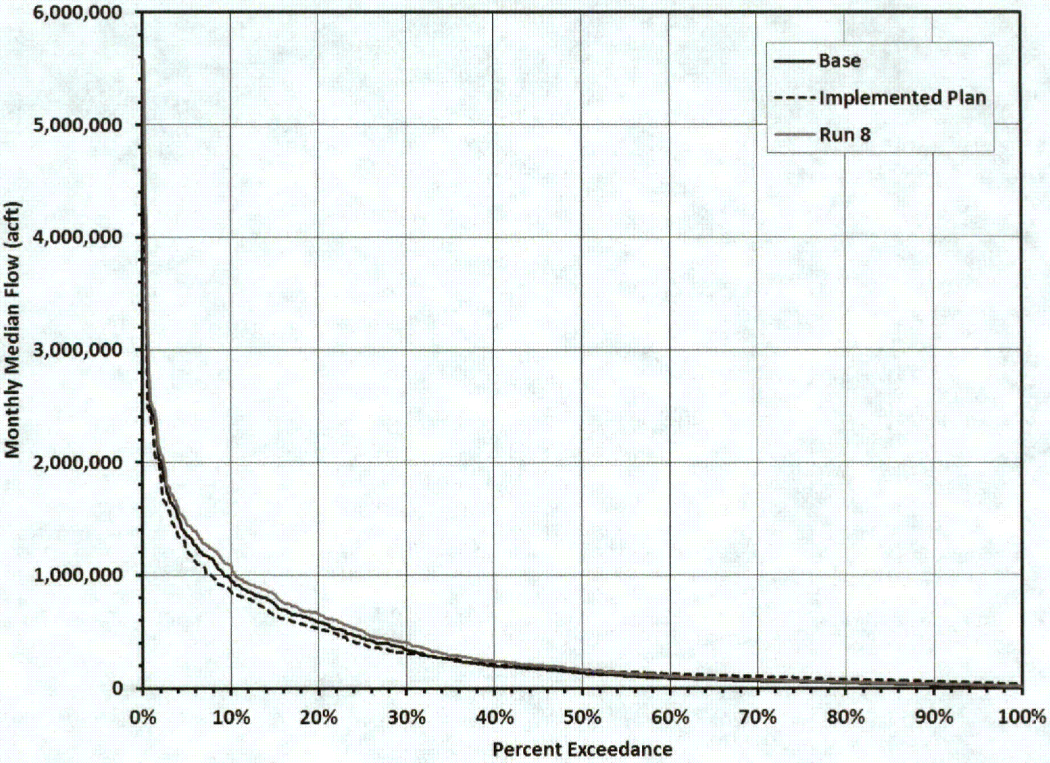
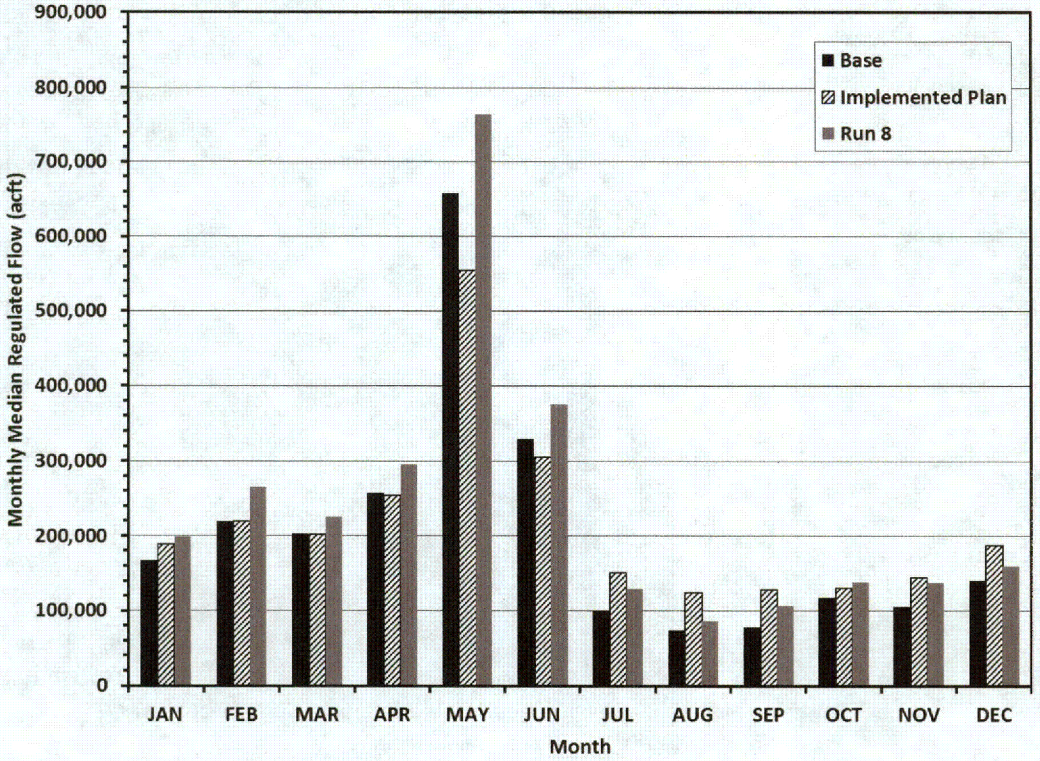


Figure 6-10. Effects of Plan Implementation on Streamflows – Brazos River at Richmond



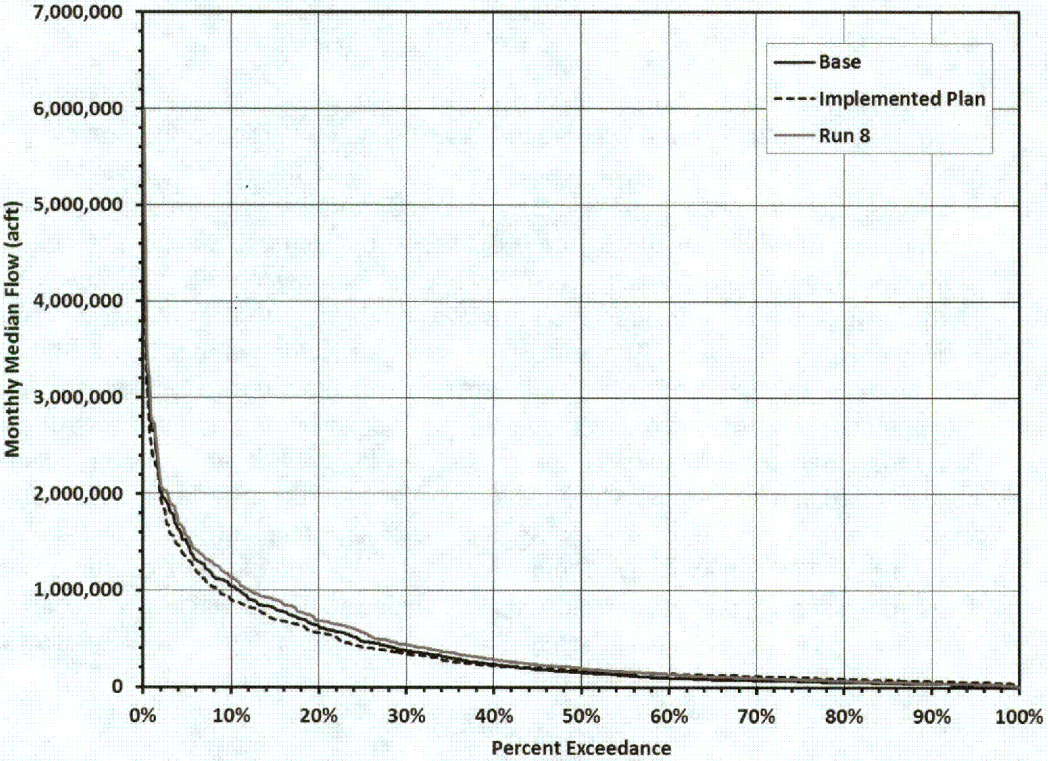
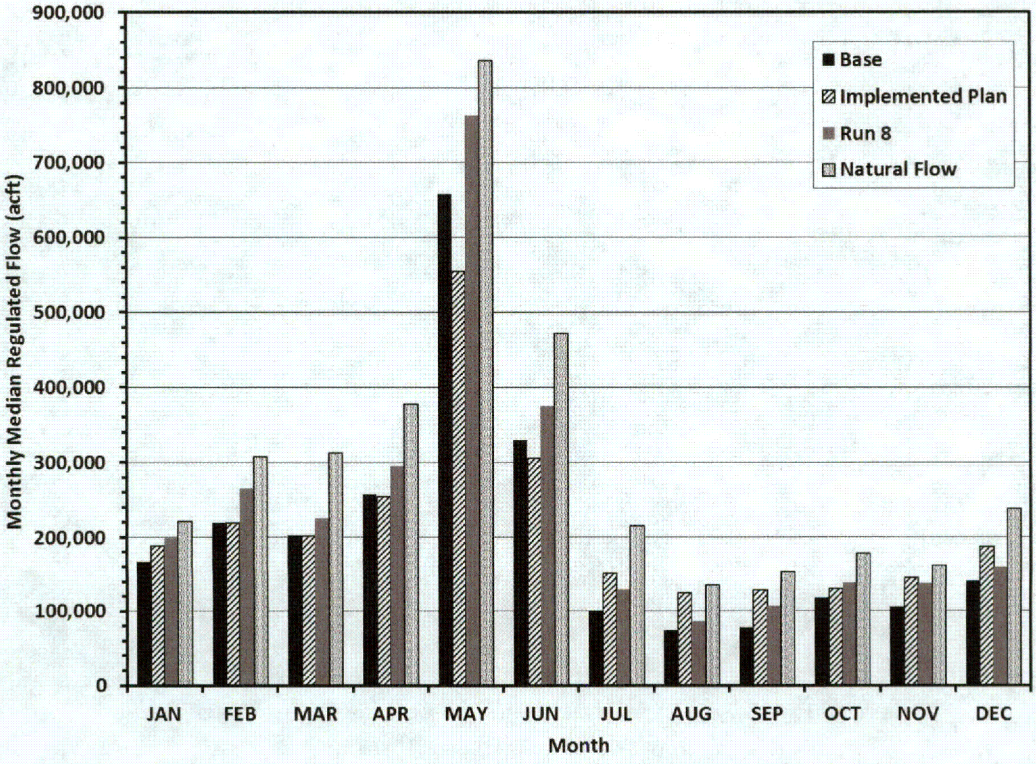


Figure 6-11. Comparison of Regulated and Natural Flows – Brazos River at Richmond



6.1.2 Groundwater

Recommended water management strategies involving additional development of groundwater would increase total groundwater usage by entities in the Brazos G Area by slightly more than 76,000 acft/yr in 2020 to slightly more than 84,000 acft/yr in 2070. The greatest increase occurs in the Carrizo-Wilcox Aquifer where strategies involving groundwater development for Brazos G entities would increase pumping by about 31,000 acft/yr in 2020 and 39,000 acft/yr 2070 over what is considered to be existing supplies. Note that this does not include the expected pumping related to the SAW/Vista Ridge Project in Region L. In the Trinity Aquifer, strategies include an additional 16,000 acft/yr of pumping by 2070. Overall, the amount of groundwater identified for water management strategies is rather modest in comparison to the amount from all the other water management strategies. However, the development of groundwater is likely to be concentrated in a few areas, which could experience noticeable declines in groundwater levels. However, none of the strategies increase projected groundwater pumpage beyond the Modeled Available Groundwater (MAG) established by county and aquifer. Thus, projected groundwater conditions are expected to be within the Desired Future Conditions (DFC) and within a range that the local groundwater conservation districts consider manageable.

6.2 Summary of the Environmental Effects of the 2016 Brazos G Regional Water Plan

Overall, the strategies recommended in the 2016 Plan will have limited negative effects on the environment. The largest localized impacts will be from new reservoirs. New reservoirs recommended as strategies in the 2016 Plan (Lake Creek Reservoir, Cedar Ridge Reservoir, Throckmorton Reservoir, Turkey Peak Reservoir, Coryell County Off-Channel Reservoir, City of Groesbeck Off-Channel, Little River Off-Channel Reservoir, and Brushy Creek Reservoir) will inundate more than 17,400 acres, reducing wildlife habitat, bottomland hardwood forestland and cultivated farmland as documented in the individual strategy evaluations (Volume II). Permitting for these projects will require mitigation land of at least equal ecological value, reducing the negative environmental consequences of the projects. Streamflows immediately downstream from these projects will decrease, but permit requirements will also specify reservoir pass-through flows necessary to maintain ecological health in the downstream receiving stream.

Many elements of the 2016 Plan augment existing resources and delay or eliminate the need for new constructed projects. For example, the BRA's proposed System Operations Permit will make better use of existing reservoir facilities and make available additional supply that previously would have only been made available through construction of a major water supply project. Utilization of water from the Colorado River Basin's Highland Lakes System in Williamson County reduces the need for new major water supply projects to serve Williamson County needs. The utilization of reuse water by several WUGs and WWPs will extend supplies and could delay the need for new raw water projects. Augmentation of Lake Granger through conjunctive use with an Aquifer Storage and Recovery (ASR) project maximizes the use of the existing reservoir facility.

Overall the strategies recommended in the 2016 Plan maximize use of existing resources and reduce the need for several large, costly reservoir projects, minimizing impacts to the environment.

6.3 Impacts of Recommended Water Management Strategies on Key Parameters of Water Quality and Moving Water from Rural and Agricultural Areas

The guidelines for 2016 Regional Water Plans include describing major impacts of recommended water management strategies on key parameters of water quality identified by the regional water planning group and consideration of third party social and economic impacts associated with voluntary redistribution of water from rural and agricultural areas.

6.3.1 Impacts of Water Management Strategies on Key Parameters of Water Quality

The Brazos G RWPG has identified the following eleven key parameters of water quality to consider for recommended water management strategies:

- Chlorides,

- Sulfates,
- Total Dissolved Solids (TDS),
- Total Suspended Solids (TSS),
- Dissolved Oxygen,
- pH Range,
- Indicator Bacteria (Escherichia coli or fecal coliform),
- Temperature,
- Nitrates,
- Total Phosphorous, and
- Total Nitrogen- ammonia.

The selection of key water quality parameters is based on Texas Surface Water Quality Standards Chapter 307, current water quality concerns identified in the Brazos River Authority's Basin Highlights Report, water user concerns expressed during Brazos G RWPG meetings, and regional water quality studies. Total Phosphorous and Total Nitrogen were selected based on nutrient concerns in the North Bosque Watershed and will be considered throughout the Brazos G Area.

The major impacts of recommended water management strategies on key parameters of water quality were identified by the Brazos G RWPG pursuant to Texas Administrative Code Chapter 357-Regional Water Planning Guidelines. The recommended water management strategies for the Brazos G Area and effects of the key water quality parameters are presented in Table 6-3.

Water quality concerns affecting existing supplies are described in greater detail in Chapter 3.3, which also includes a summary of special water quality studies and activities in the Brazos River Basin. These identified water quality concerns present challenges that may need to be overcome before a water management strategy can be used as a water supply. For water quality parameters that cannot be fully addressed due to lack of available information or inconclusive water quality studies, the Brazos G RWPG recommends further studies prior to implementing a water management strategy.

6.3.2 Impacts of Voluntary Redistribution of Water from Rural and Agricultural Areas

Several opportunities for voluntary redistribution exist for the Brazos G Area, such as supplying groundwater from the Carrizo-Wilcox Aquifer in Lee and Milam Counties to Williamson County. While this groundwater water management strategy provides regional water supply and economic benefits, it will result in lowering of artesian levels in the Carrizo-Wilcox Aquifer and, consequently, may increase costs to pump water for water supply for rural and agricultural users.

The remaining water management strategies recommended to meet water needs (Chapter 5) do not include transferring significant quantities of water needed by rural and agricultural users and, therefore, are not considered to impact them.

Table 6-3. Summary of Water Management Strategies, Potential Water Quality Concerns and WUGs Potentially Affected

Recommended WMS	Project Origination	Beneficiaries of Project	Potential Water Quality Concerns Affecting Use of Supply
Treated Effluent Reuse	Bell, Brazos, Grimes, Johnson, McLennan	Manufacturing (McLennan County) Steam-Electric (Brazos, Bell, Johnson and Grimes Counties) Municipal (Cities of Round Rock, Bryan, College Station, Cleburne, Waco, Bellmead, Lacy-Lakeview, Hewitt, Lorena, , Harker Heights, and Killeen and 439 WSC)	Indicator bacteria
Water Conservation	Varies	All municipal, industrial, and agricultural users with projected needs (shortages)*	Total dissolved solids, sulfates, and chlorides
Interbasin Transfer of Surface Water from Lower Colorado River Basin (Region K)			
BCRUA	Varies	Municipal (Leander, Liberty Hill, Round Rock and Cedar Park)	None identified
New Reservoirs			
Brushy Creek Reservoir	Falls	Municipal (City of Marlin)	None identified
Cedar Ridge Reservoir	Clear Fork	Municipal (City of Abilene)	None identified
Coryell County OCR	Coryell	Municipal (Gatesville and Multi-County WSC)	None identified
Groesbeck OCR	Limestone	Municipal (City of Groesbeck)	None identified
Lake Creek Reservoir	Throckmorton and Baylor	Municipal (North Central Texas Municipal Water Authority)	Total dissolved solids, sulfates, and chlorides from Brazos River diversion
Little River OCR (Brazos River Diversion)	Milam and Williamson	Municipal (Chisholm Trail SUD, Hutto, Williamson County-Other, Round Rock); Steam-Electric (Milam County)	Total dissolved solids, sulfates, and chlorides from Brazos River diversion
Throckmorton Reservoir	Throckmorton	Municipal (City of Throckmorton)	None identified
Augmentation of Existing Surface Water Supplies			

[redacted]

Table 6-3. Summary of Water Management Strategies, Potential Water Quality Concerns, and WUGs Potentially Affected

Recommended WMS	Project Origination	Beneficiaries of Project	Potential Water Quality Concerns Affecting Use of Supply
Gibbons Creek Reservoir Expansion	Grimes	Steam/Electric (Grimes County)	Indicator bacteria, temperature, pH
Lake Aquilla Reallocation	Hill	BRA	None identified
Lake Granger ASR	Williamson	BRA	Increasing trends in sulfates, chlorides, elevated nutrients, and sedimentation from total suspended solids
Turkey Peak Dam – Lake Palo Pinto Enlargement	Palo Pinto	Municipal (Palo Pinto County MWD No. 1)	None identified
System Approaches			
BRA System Operations	Varies	Manufacturing (Bosque and Hill Counties); Steam/Electric (Bosque and Somervell Counties); Municipal (Bell County WCID #1, Bosque County-Other, Brandon-Irene WSC, City of Hillsboro, White Bluff community WS and Woodrow-Osceola WSC)	Chlorides, total dissolved solids, total suspended solids, and nutrients
Groundwater Development			
Blaine Aquifer	Stonewall, Knox	Mining (Stonewall, Knox counties); Irrigation (Knox County)	Chlorides and total dissolved solids
Brazos River Alluvium	McLennan	Mining, Irrigation	Chlorides and total dissolved solids
Carrizo-Wilcox Aquifer	Brazos, Lee, Robertson, Coryell, Erath, Falls, Limestone, Grimes	Mining (Limestone, Grimes counties); Irrigation (Robertson County); Municipal (West Brazos WSC, Tri-County SUD, Robertson County-Other, Bryan, Bistone MWSD, Heart of Texas)	Iron and manganese and temperature (deep wells only)
Dockum Aquifer	Fisher	Manufacturing; Mining	None identified

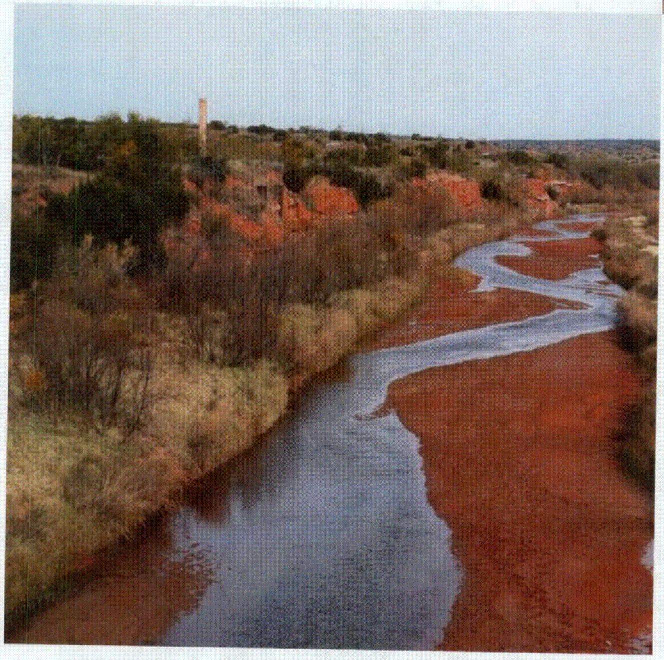
Table 6-3. Summary of Water Management Strategies, Potential Water Quality Concerns, and WUGs Potentially Affected

Recommended WMS	Project Origination	Beneficiaries of Project	Potential Water Quality Concerns Affecting Use of Supply
Edwards Aquifer	Bell, Nolan, Williamson	Irrigation (Williamson County); Manufacturing (Bell County); Mining (Bell and Nolan counties); Municipal (Bell County-Other, Brushy Creek MUD, Florence)	None
Trinity Aquifer	Bell, Bosque, Callahan, Comanche, Coryell, Erath, Hamilton, Hood, Somervell, McLennan, Lampasas, Eastland, Williamson	Mining (Callahan, Hamilton, Hood, Somervell, Comanche, Eastland, Coryell, Lampasas, Bell counties); Irrigation (Hamilton, Bosque, McLennan, Lampasas, Comanche, Eastland, Bell counties); Municipal (Bartlett, Florence, Comanche County-Other, Coryell County-Other, Erath County-Other, Hood County-Other	Chlorides and total dissolved solids
Gulf Coast Aquifer	Grimes, Brazos, Washington	Manufacturing (Brazos and Washington County); Steam-Electric (Grimes County);	None identified
Seymour Aquifer	Knox	Irrigation	Chlorides and total dissolved solids
Sparta Aquifer	Burleson	Manufacturing; Mining	Iron and manganese
Woodbine Aquifer	Hill, Johnson	Mining (Hill and Johnson counties); Municipal (Godley, Rio Vista, Hill County-Other)	Chlorides, total dissolved solids, iron and manganese
Yegua-Jackson Aquifer	Brazos	College Station	Chlorides and total dissolved solids

*For municipal users with shortages, additional conservation was recommended only for WUGs exceeding 140 gallons per capita per day

This page intentionally left blank.

Chapter 7



7

Drought Response Information, Activities and Recommendations

This page intentionally left blank.

7 Drought Response Information, Activities and Recommendations

Droughts are of great importance to the planning and management of water resources in Texas. Although droughts can occur in all climatic zones, they have the greatest potential to become catastrophic in dry or arid regions such as West and Central Texas. It is not uncommon for mild droughts to occur over short periods of time in Texas; however, there is no certain way to predict how long or severe a drought will be while it is occurring. The only defense available in drought prone areas such as Brazos G is proper planning and preparation for worst case scenarios. This requires understanding of drought patterns and the historical droughts in the region.

Due to significant population growth throughout Texas, which is expected to continue in the Brazos G Area based on TWDB projections, the demand for water has increased. With growing demand and the threat of climate change contributing to water scarcity, planning is even more important to prevent shortages, deterioration of water quality and lifestyle/financial impacts on water suppliers and users. This chapter presents information on drought preparedness in the Brazos G Area, including regional droughts of record, current example drought contingency plans, emergency interconnects, and responses to local drought conditions, and methods to estimate available water supplies in the region.

7.1 Droughts of Record in the Brazos G Area

7.1.1 Background

One of the best tools in drought preparedness is a thorough understanding of the drought of record (DOR), or the worst drought to occur for a particular area during the available period of hydrologic data. However, there are many ways that the "worst drought" can be defined (degree of dryness, agricultural impacts, socioeconomic impacts, effects of precipitation etc.). Regional water planning focuses on hydrological drought, which is typically the type of drought associated with the largest shortfalls in surface and/or subsurface water supply. The frequency and severity of hydrological drought is often defined on a watershed or river basin scale, although it could be different from one area to the next, even within a planning region.

7.1.2 Current Drought of Record

In terms of severity and duration, the devastating drought of the 1950s is considered the drought of record for most of Texas, including most of the Brazos G Area. By 1956, 244 of the 254 counties were considered disaster areas. This drought lasted almost a decade in many places and not only affected Texas, but other states throughout the nation. The 1950's drought has been used by water resource engineers and managers as a benchmark drought for water supply planning. Texas has experienced two recent droughts centered around 2008 and 2011. Incorporating these recent droughts into future water planning efforts would be prudent. These droughts have not yet been widely considered to be new droughts of record for most of Texas, but have shown to be more severe in some parts of the Brazos G Area.

7.1.3 Drought Indicators

Water Availability Modeling

Engineers and planners often use surface water models to demonstrate the effects of historical droughts on water supply. Surface water effects are more readily observed than groundwater, and reservoir supplies that were not in place during historic droughts can be assessed using historic hydrology and these modeling tools. The primary tool used in regional planning in Texas to observe the performance of reservoirs under historic drought conditions is the TCEQ Water Availability Model (WAM). The WAM is the same tool used to determine the available flow and firm yields of surface water projects in the regional water plan.

The Brazos River Basin WAM (Brazos WAM) includes hydrologic information from 1940 through 1997 and supports the use of the 1950's drought as the drought of record for nearly all reservoirs in the Brazos G Area. However, it has not been updated to include information from more recent periods of drought after the turn of the century. A related tool called the Brazos Mini Water Availability Model (Mini-WAM), developed by HDR Inc , has been utilized by Brazos G to model reservoirs upstream of Possum Kingdom Reservoir and has been updated to include hydrology through June 2008. Applications of this tool support the more recent drought cycle that began in the late 1990's as potentially being more severe than the drought of the 1950's; however it also does not capture the entirety of the 2007-2009 drought or the drought that plagued parts of the region between 2011 and the Spring of 2015.

Drought Indices

Several Drought Indices have been developed to assess the effect of a drought through parameters such as severity, duration and spatial extent. The Palmer Drought Severity Index (PDSI) was one of the first comprehensive efforts using precipitation and temperature for estimating the moisture of a region. PDSI values greater than 0.49 correspond to wetter than normal conditions and values from -0.5 to 6 represent varying degrees of drought. Information is available for climate regions across the country through 2014, which makes the PDSI a helpful tool for understanding recent drought periods not included in the WAM.

Most of Brazos G lies in Texas Climate Division 3. A graph of yearly PDSI values for Texas Climate Division 3 shows that while the 1908 and the more recent drought in the early 21st century were severe, the drought of the 1950's was the most intense over a longer period of time, supporting the continued use of this drought as the drought of record for Brazos G (Figure 7-1). However, the eight most upstream counties in Brazos G, containing Lake Davis, Lake Stamford, Lake Fort Phantom Hill, Lake Kirby, Lake Abilene, and Lake Sweetwater, are located in Texas Climate Division 2. Figure 7-2 shows that while the drought of the 1950's has, to this point, lasted longer than the most recent drought, the PDSI in 2011 is more severe than the PDSI in 1956. The available information is not strong enough to change the drought of record, but it is worth noting the intensity of 2011.

Figure 7-1. Parmer Drought Severity Index: Division 3

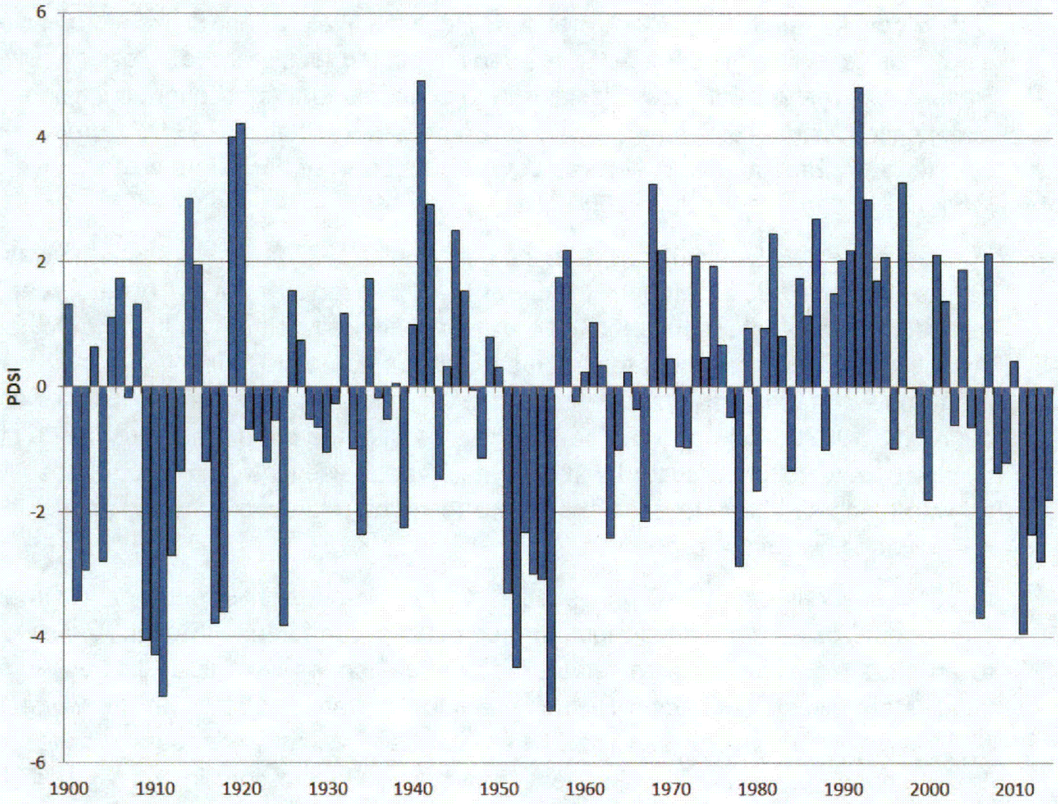
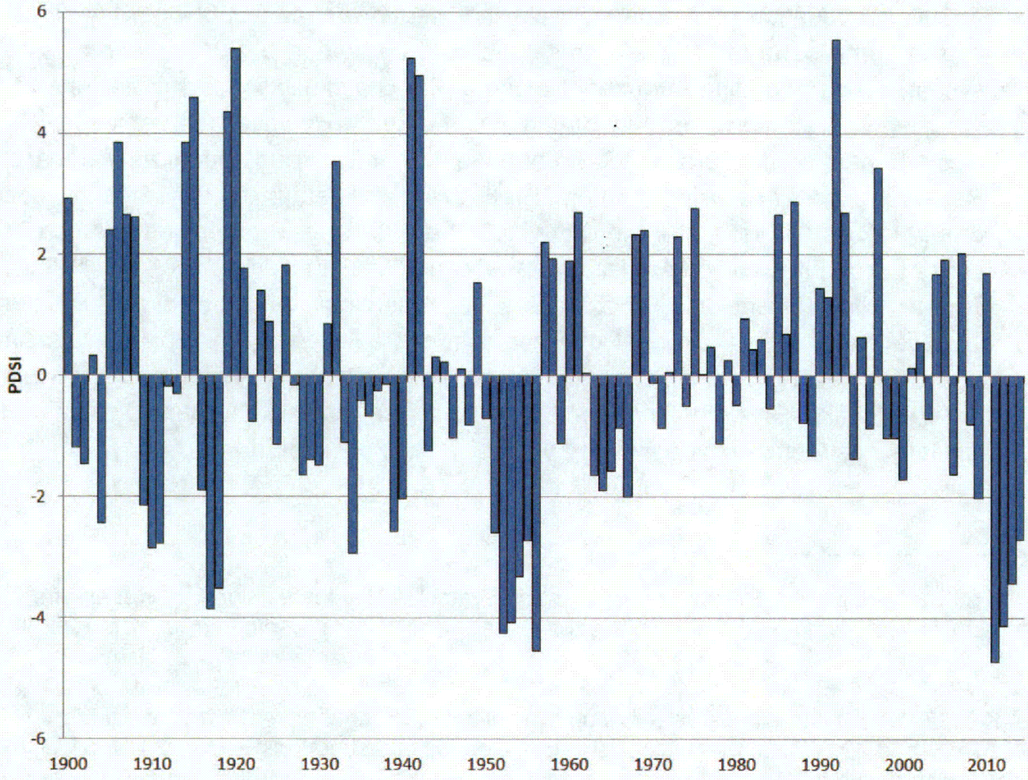


Figure 7-2. Parmer Drought Severity Index: Division 2



7.1.4 Recent Droughts

During development of the 2011 Brazos G Regional Water Plan, Brazos G completed a study[1] of reservoir yields for 19 reservoirs located upstream of Possum Kingdom Reservoir in the upper Brazos Basin, due to concerns that the drought conditions being experienced since 1997 may have been more severe than the 1950's drought. The update to the Brazos Mini-WAM was competed as part of this effort, with the hydrologic record extended through June 2008.

The results of the study indicated that the period after 1997 through June 2008 was more severe than the 1950's drought for 11 of the 19 reservoirs, based on the year when minimum storage was computed by the model, typically either 2000 or 2004. As an indication of a new drought of record, the results demonstrate that some of the reservoirs in the upper Brazos Basin have experienced a drought worse than the 1950's drought during the 1997 – 2008 period. The fact that not all of the upper basin reservoirs studied indicated new drought of record demonstrates that "the severity of a drought has much to do with reservoir characteristics and how a reservoir relates to surrounding water rights in addition to hydrologic processes."[2]

In 2011, severely decreased precipitation resulted in substantial declines in streamflow throughout Texas. Record high temperatures also occurred June through August leading to an increase in evaporation rates. The evaporation was so great that by August 4, 2011, state climatologist John Nielson-Gammon declared 2011 to be the worst 1-year drought on record in Texas[3]. The 2011 water year statewide annual precipitation was 11.27 inches, more than 2 inches less than the previous record low of 13.91 inches in 1956.

The severe one-year drought experienced in 2011 can be considered to be part of an overall continuation of a drought cycle that began around 2008 (possibly since 1998), and in some parts of the state continued until the spring of 2015, when a large storm system caused flooding throughout much of the Brazos Basin and replenished much of the reservoir storage depleted during the drought. However, some reservoirs in the western part of the Brazos G Area have still not refilled, such as Hubbard Creek Reservoir and Lake Fort Phantom Hill. While the length of this recently concluded drought does not yet equal the drought of the 1950's, if weather patterns continue, the current drought cycle could very well be considered the drought of record throughout Texas. The current drought extending to present day and including 2011 has been identified as the new Drought of Record in the adjacent Colorado River Basin. The Lower Colorado River Authority (LCRA) recently reduced the estimated firm yield of the Highland Lakes system, and the Colorado River Municipal Water District (CRMWD) similarly has reduced the estimated yield of O.H. Ivie Reservoir.

---

1 HDR, Inc., Study 1 – Updated Drought of Record and Water Quality Implications for Reservoirs Upstream of Possum Kingdom Reservoir, Brazos G Regional Water Planning Group, April 2009.

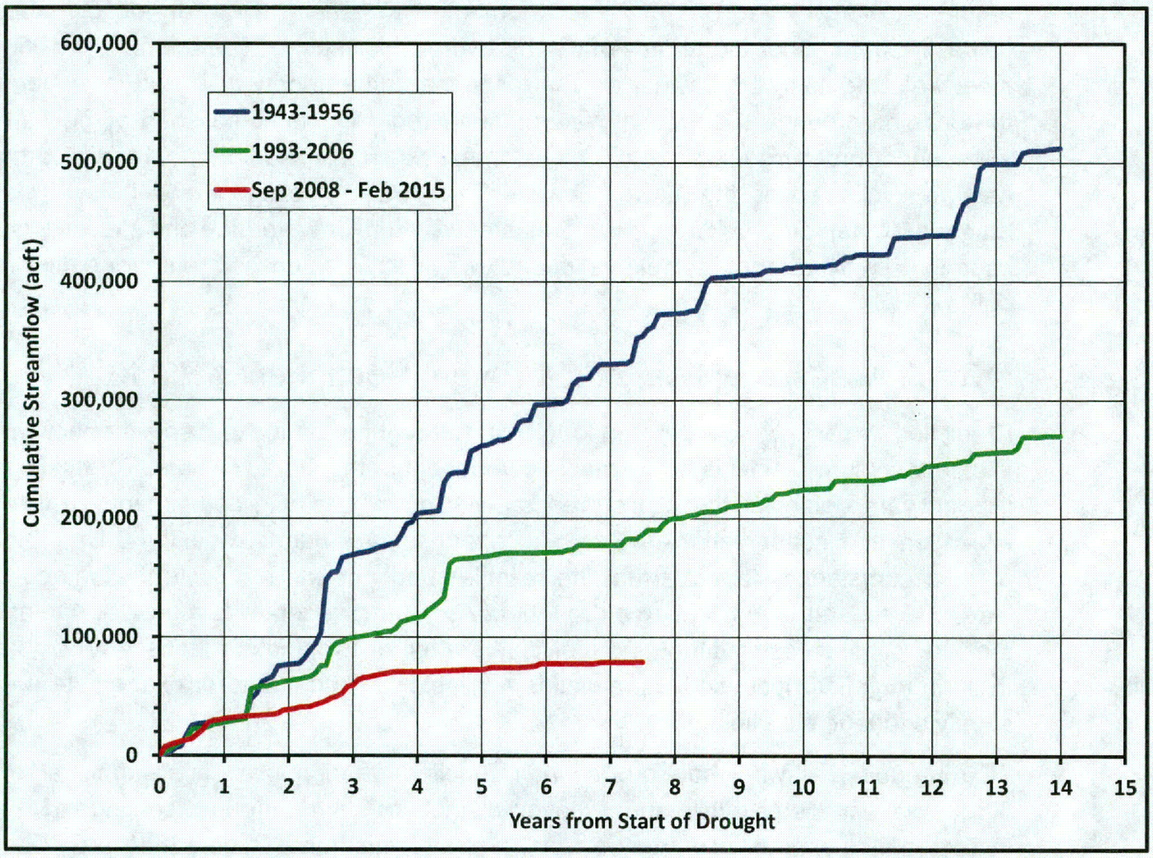
2 Ibid.

3 Winters, K.E., 2013, A historical perspective on precipitation, drought severity, and streamflow in Texas during 1951–56 and 2011: U.S. Geological Survey Scientific Investigations Report 2013–5113, p.1 http://pubs.usgs.gov/sir/2013/5113

The severity of the current drought is illustrated in Figure 7-3, which presents cumulative streamflows measured at USGS Streamgage 08084000 Clear Fork of the Brazos River near Nugent, TX. In the figure, cumulative streamflows since drought initiation are compared for three drought periods: 1950's, 1993 – 2006, and 2008 – February 15, 2015. When cumulative streamflows for the three drought periods are compared at a point in time seven years from initiation (essentially mid way through the 1950's drought), total streamflow for the current drought cycle is 22 percent and 42 percent of the total streamflow for the 1950's and 2006 droughts, respectively.

While the 2011 drought year and recent years appear to be very severe and can provide helpful information to water planners and managers throughout the state, the duration of the 1950's drought combined with the overall severity for more than a decade in the Brazos G Area suggests that it is still a valid choice as the DOR for regional planning purposes over the majority of the Brazos G Area. However, it appears from data such as presented in Figure 7-3 and the analyses performed previously that the upper Brazos Basin may be experiencing a new drought of record. This would have to be confirmed by more detailed analyses beyond the scope of this regional water plan. However, conditions in the middle and lower portions of the basin for these more recent droughts do not appear to be as severe as those experienced during the 1950's drought.

Figure 7-3. Comparison of Cumulative Streamflows for Three Drought Periods for the Clear Fork at Nugent, TX Streamgage (08084000)



7.2 Current Drought Preparations and Response

7.2.1 Current Drought Preparations and Responses

WUG Level Planning

WUGs in Brazos G can prepare for drought by participating in the regional planning process. The regional planning process attempts to meet projected water demands during a drought of severity equivalent to the drought of record. WUGs that provide accurate information to the planning group and Texas Water Development Board and consider recommendations accepted by the regional planning group should be able to supply water through drought periods. In addition, all wholesale water providers and most municipalities develop individual drought contingency plans or emergency action plans to be implemented at various stages of a drought.

Basin Responses

Throughout Texas, including the Brazos River Basin, water rights are issued under the prior appropriation system. During times of shortage, curtailment of water rights has become necessary in recent droughts. Dow Chemical made priority water rights calls in the Brazos River Basin in 2009, 2011, 2012, and 2013. When a priority call is made, upstream water rights that are junior in priority to the water right making the call are required to forgo diversions and impoundment of water and allow streamflows to pass downstream to honor the priority of downstream senior rights. The priority calls affected most water rights in the basin. Partly in response to the priority calls and in response to the ongoing drought, the Brazos Watermaster Program was established by petition and subsequent order issued by the TCEQ Commissioners on April 21, 2014. The program has jurisdiction over the Lower Brazos River Basin including and below Possum Kingdom Reservoir. The Brazos Watermaster will monitor water use and streamflow, and coordinate with water rights holders when flows need to be passed to honor senior water rights.

7.2.2 Overall Assessment of Local Drought Contingency Plans

Predicting the timing, severity and length of a drought is an inexact science; however, it is safe to assume that it is an inevitable component of the Texas climate. For this reason, it is critical to plan for these occurrences with policy outlining adjustments to the use, allocation and conservation of water in response to drought conditions. Drought and other circumstances that interrupt the reliable supply or water quality of a source often lead to water shortages. During a drought period, there generally is a greater demand on the already decreased supply as individuals attempt to maintain landscape vegetation through irrigation because less rainfall is available. This can further exacerbate a water supply shortage situation.

TCEQ requires all wholesale public water suppliers, retail public water suppliers serving 3,300 connections or more, and irrigation districts to submit drought contingency plans. In accordance with the requirements of Texas Administrative Code §288(b), DCPs must be updated every 5 years and adopted by retail public water providers. The TCEQ defines a DCP as "A strategy or combination of strategies for temporary supply and demand management responses to temporary and potentially recurring water supply shortages and other water supply emergencies."[4] According to a TCEQ handbook[5] the underlying philosophy of drought contingency planning is that:

- While often unpreventable, short-term water shortages and other water supply emergencies can be anticipated,
- The potential risks and impacts of drought or other emergency conditions can be considered and evaluated in advance of an actual event; and, most importantly,
- Response measures and best management practices can be determined with implementation procedures defined, again in advance, to avoid, minimize, or mitigate the risks and impacts of drought-related shortages and other emergencies.

Model Drought Contingency plans are available on TCEQ's website, however, it is not possible to create a single DCP that will adequately address local concerns for all entities throughout the State of Texas. The conditions that define a water shortage can be very location specific because most communities in Brazos G rely primarily on local water supplies. For example, some communities rely on reservoirs that are regularly operated at full conditions; in this case a shortage could exist when the supplies are at 75 percent. Other reservoirs may rarely refill and be considered a concern at 25 percent capacity. Similarly, unique aquifer systems are considered at risk under location specific conditions. While the approach to planning may be different between entities all DCP's should include:

- Specific, quantified targets for water use reductions,
- Drought response stages,
- Triggers to begin and end each stage,
- Supply management measures,
- Demand management measures,
- Descriptions of drought indicators,
- Notification procedures,
- Enforcement procedures,
- Procedures for granting exceptions,
- Public input to the plan,
- Ongoing public education,
- Adoption of plan, and
- Coordination with regional water planning groups.

For water suppliers such as those in Brazos G, the primary goal of DCP development is to have a plan that can ensure an uninterrupted supply of water in an amount that can satisfy essential human needs. A secondary but also important goal is to minimize

---

[4] http://www.twdb.texas.gov/conservation/training/archives/more-than-a-drop-workshop/doc/5_%20TCEQ%20Rules.pdf

[5] https://www.tceq.texas.gov/assets/public/comm_exec/pubs/archive/rg424.pdf

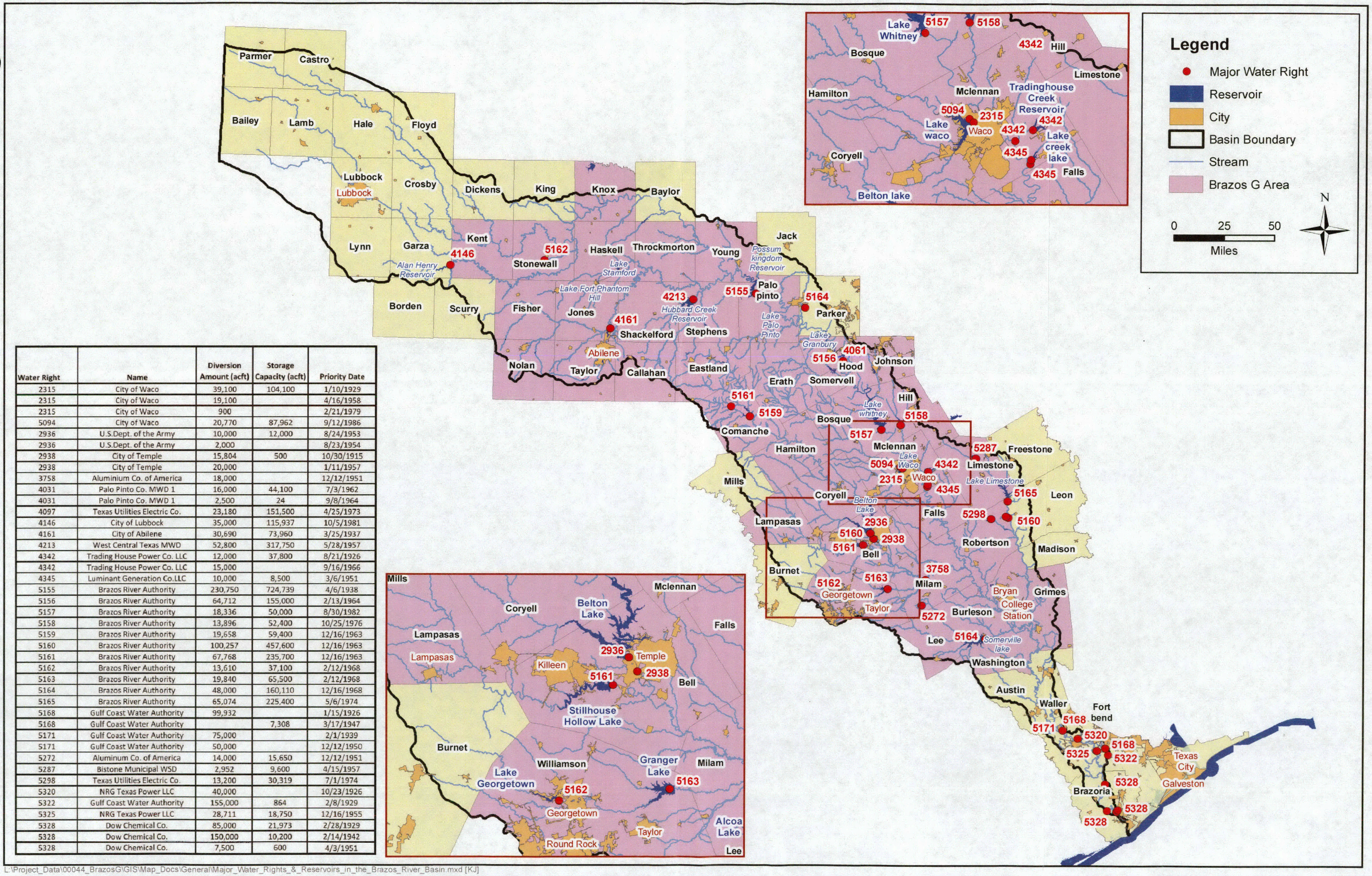
negative impacts on quality of life, the economy and the local environment. In order to meet these goals, action needs to be taken in an expedient, pre-determined procedure, requiring that an approved DCP be in place before drought conditions occur.

In accordance with Texas Administrative code, most Region G entities have submitted DCPs to be implemented when local shortages occur. Brazos G was able to obtain DCPs for multiple WUGs and WWPs. These plans identify multiple triggers for initiation and termination of drought stages, responses to be implemented and reduction targets based on each stage. The plans also include information regarding public notification procedures and enforcement measures. Some WUGs or WWPs have included a method of granting a variance should the need arise.

7.2.3 Summary of Existing Triggers and Responses

Through timely implementation of drought response measures it is possible to meet the goals of the DCP by avoiding, minimizing or mitigating risks and impacts of water shortages and drought. In order to accomplish this, DCP's are built around a collection of drought responses and triggers based on various drought stages. Stages are generally similar for all DCP's but can vary from entity to entity. Stage one will normally represent mild water shortage conditions and the severity of the situation will increase through the stages until emergency water conditions are reached and, in some cases, a water allocation stage is determined.

Brazos G compiled stage, trigger and response information for 25 DCP's in the region including those from WWPs, WUGs and County-Other suppliers. Compliance in the majority of the DCPs in the region is voluntary under Stage I and mandatory under Stage II and III. Most Entities included a Stage IV and a few plans specify a Stage V and/or Stage VI scenario. Target reductions, triggers and responses are included for most stages. Triggers, stages and responses for entities in Brazos G can be found in Table 7-1.



Water Right	Name	Diversion Amount (acft)	Storage Capacity (acft)	Priority Date
2315	City of Waco	39,100	104,100	1/10/1929
2315	City of Waco	19,100		4/16/1958
2315	City of Waco	900		2/21/1979
5094	City of Waco	20,770	87,962	9/12/1986
2936	U.S.Dept. of the Army	10,000	12,000	8/24/1953
2936	U.S.Dept. of the Army	2,000		8/23/1954
2938	City of Temple	15,804	500	10/30/1915
2938	City of Temple	20,000		1/11/1957
3758	Aluminium Co. of America	18,000		12/12/1951
4031	Palo Pinto Co. MWD 1	16,000	44,100	7/3/1962
4031	Palo Pinto Co. MWD 1	2,500	24	9/8/1964
4097	Texas Utilities Electric Co.	23,180	151,500	4/25/1973
4146	City of Lubbock	35,000	115,937	10/5/1981
4161	City of Abilene	30,690	73,960	3/25/1937
4213	West Central Texas MWD	52,800	317,750	5/28/1957
4342	Trading House Power Co. LLC	12,000	37,800	8/21/1926
4342	Trading House Power Co. LLC	15,000		9/16/1966
4345	Luminant Generation Co.LLC	10,000	8,500	3/6/1951
5155	Brazos River Authority	230,750	724,739	4/6/1938
5156	Brazos River Authority	64,712	155,000	2/13/1964
5157	Brazos River Authority	18,336	50,000	8/30/1982
5158	Brazos River Authority	13,896	52,400	10/25/1976
5159	Brazos River Authority	19,658	59,400	12/16/1963
5160	Brazos River Authority	100,257	457,600	12/16/1963
5161	Brazos River Authority	67,768	235,700	12/16/1963
5162	Brazos River Authority	13,610	37,100	2/12/1968
5163	Brazos River Authority	19,840	65,500	2/12/1968
5164	Brazos River Authority	48,000	160,110	12/16/1968
5165	Brazos River Authority	65,074	225,400	5/6/1974
5168	Gulf Coast Water Authority	99,932		1/15/1926
5168	Gulf Coast Water Authority		7,308	3/17/1947
5171	Gulf Coast Water Authority	75,000		2/1/1939
5171	Gulf Coast Water Authority	50,000		12/12/1950
5272	Aluminum Co. of America	14,000	15,650	12/12/1951
5287	Bistone Municipal WSD	2,952	9,600	4/15/1957
5298	Texas Utilities Electric Co.	13,200	30,319	7/1/1974
5320	NRG Texas Power LLC	40,000		10/23/1926
5322	Gulf Coast Water Authority	155,000	864	2/8/1929
5325	NRG Texas Power LLC	28,711	18,750	12/16/1955
5328	Dow Chemical Co.	85,000	21,973	2/28/1929
5328	Dow Chemical Co.	150,000	10,200	2/14/1942
5328	Dow Chemical Co.	7,500	600	4/3/1951

L:\Project_Data\00044_BrazosG\GIS\Map_Docs\General\Major_Water_Rights_&_Reservoirs_in_the_Brazos_River_Basin.mxd [KJ]

This page intentionally left blank.

Table 7-1. Common Drought Response Measures

			Triggers										Responses											Water Supplies	
Entity Name	DCP Date	Stage Number	Contamination	Demand/Capacity Based	Failure	Groundwater Level	Production Rate	Reservoir Level	Supply Based	Time	Wholesale Provider	Other	Assessment and Identification	Water Rate Change or Surcharge	Irrigation Schedule	Mandatory Reduction	Notification of Public Agencies or Specific Users	Prohibited Use	Public Notification	Discontinue Water Diversions	Suspend Service	Water Allocation	Others	SW	GW
City of Thrall	2003	1								√					√	√			√				√		√
		2		√		√									√			√	√				√		
		3		√		√									√			√	√				√		
		4		√		√									√			√	√				√		
		Emergency	√		√							√					√	√	√				√		
Central Texas WSC	2009	1						√									√		√					√	
		2						√								√	√								
		3						√						√		√	√								
		Emergency						√									√			√			√		
Upper Leon River MWD	2009	1		√				√			√	√					√							√	
		2		√				√			√	√					√								
		Emergency	√		√			√			√	√					√					√			
City of Harker Heights	2012	1		√											√			√	√					√	
		2		√											√			√	√				√		
		3	√	√	√				√			√			√			√	√		√	√	√		
City of Sweetwater	2011	1		√			√	√											√				√	√	√
		2		√			√	√							√			√	√						
		3		√			√	√							√		√	√	√						
		4		√			√	√						√	√		√	√	√			√			
		Emergency			√							√	√	√			√		√				√		
City of Comanche	2011	1		√				√				√			√	√	√		√				√	√	
		2		√				√				√			√	√	√		√				√		
		3		√				√				√			√	√	√	√	√				√		
		Emergency	√	√	√			√				√		√	√		√		√			√	√		
City of Robinson	2002	1		√			√			√						√	√	√	√				√	√	√
		2		√			√			√					√		√	√	√				√		
		3		√			√			√					√		√	√	√				√		
		4		√	√		√			√					√		√	√	√				√		
		Emergency	√		√												√	√	√				√		
City of Mexia	2002	1		√		√		√							√				√				√	√	√
		2		√		√		√							√			√	√				√		
		3		√		√		√						√				√	√			√	√		
City of Lampasas	2001	1		√	√						√	√			√	√	√		√				√	√	
		2		√	√						√	√			√	√		√	√				√		
		3	√	√	√						√	√			√	√	√	√	√			√	√		
		Emergency	√	√	√						√	√	√				√		√				√		
Bethesda WSC	2009	1		√							√	√			√		√	√					√	√	√
		2		√			√		√		√	√			√		√	√	√				√		
		3	√	√	√		√		√		√	√			√		√	√	√				√		
City of Hearne	2001	1					√									√	√		√				√		√
		2					√								√	√	√		√				√		
		3					√								√	√	√		√				√		
		4					√								√	√	√		√				√		
		Emergency	√		√												√		√						
City of Georgetown	2009	1								√													√	√	√
		2		√		√		√	√			√			√			√					√		
		3		√		√		√	√			√			√			√					√		
		Emergency		√					√			√						√					√		

This page intentionally left blank.

Table 7-1. Common Drought Response Measures (Continued)

			Triggers										Responses											Water Supplies	
Entity Name	DCP Date	Stage Number	Contamination	Demand/Capacity Based	Failure	Groundwater Level	Production Rate	Reservoir Level	Supply Based	Time	Wholesale Provider	Other	Assessment and Identification	Water Rate Change or Surcharge	Irrigation Schedule	Mandatory Reduction	Notification of Public Agencies or Specific Users	Prohibited Use	Public Notification	Discontinue Water Diversions	Suspend Service	Water Allocation	Others	SW	GW
Tri-County SUD	2002	1		√																			√		√
		2		√											√								√		
		3		√											√			√					√		
		4		√											√			√					√		
		Emergency	√		√													√							
City of Taylor	2002	1		√											√			√					√	√	
		2		√											√			√					√		
		3		√											√			√					√		
		4		√											√			√					√		
		Emergency	√	√	√							√		√				√				√	√		
City of Copperas Cove	2002	1		√											√		√	√	√				√	√	
		2		√					√						√		√	√	√				√		
		3		√											√		√	√	√				√		
		4		√	√										√		√	√	√				√		
		Emergency	√		√										√		√	√	√				√		
		Water Allocation	√		√							√		√	√		√	√	√			√	√		
City of Anson	2009	1		√				√								√			√				√	√	
		2		√				√								√		√	√				√		
		3		√				√								√		√	√			√	√		
		Emergency	√		√								√				√						√		
Manville WSC	2009	1		√			√																√		√
		2		√			√		√						√								√		
		3		√	√		√		√			√			√			√					√		
		Emergency	√		√								√				√					√	√		
Stephens Regional SUD	2014	1							√										√				√	√	
		2							√						√				√				√		
		3							√									√	√				√		
		Emergency	√		√				√				√	√			√		√			√	√		
City of Rule	2013	1									√				√								√	√	√
		2									√				√			√					√		
		3									√				√			√					√		
		Emergency	√		√									√				√				√	√		
Block House MUD	2013	1										√							√				√	√	
		2		√								√			√			√					√		
		3		√								√			√			√					√		
		Emergency		√								√			√			√				√	√		
City of Stamford	2012	1						√	√														√	√	
		2		√			√	√	√					√	√			√					√		
		3		√			√	√	√					√	√			√					√		
		4		√	√		√	√	√			√		√				√				√	√		
City of Killeen	2012	1								√													√	√	
		2								√					√			√					√		
		3										√			√			√					√		
		Emergency										√			√			√					√		
City of Gatesville	2000	1					√	√											√				√	√	
		2					√	√							√				√				√		
		3			√		√	√										√					√		
North Central Texas Municipal Water Authority	2000	1						√	√										√				√	√	
		2						√	√								√		√				√		
		3						√	√								√		√			√	√		
		Emergency	√		√								√				√						√		

This page intentionally left blank.

7.3 Existing and Potential Emergency Interconnects

A goal of the regional planning process is to ensure a connected supply that meets or exceeds drought of record demands for the next 50 years. However, it is also important for regions to plan for emergency supplies in the event of a prolonged drought or an interruption/impairment of supply from an existing source. An interconnection between two collaborating municipal water user groups (WUGs) can serve as an alternative means of providing emergency drinking water in lieu of trucking in supply or other expensive options. In Compliance with Texas Administrative Code (TAC), Chapter 357 Regional Water Planning Guidelines, available information on existing major water infrastructure facilities that may be used for interconnections in event of an emergency shortage of water was collected.

For the Brazos G Regional Water Planning Area, all municipal water user groups and wholesale water providers were sent a survey in 2013 regarding their water supply and use. As part of the survey, individual municipalities and wholesale water providers were asked to confirm or update information regarding the existence of emergency interconnects integrated with their system and the provider of the potential emergency supply. Of the 237 WUGs in Region G, 56 responded to the survey and only ten reported having emergency interconnects.

The TCEQ Texas Drinking Water Watch database (TCEQ database) was used as a secondary source of emergency interconnection information. While more WUGs had reported information to TCEQ than had completed the Brazos G survey, some interconnects reported on the survey were not found in the TCEQ database. However, 22 additional interconnects were noted from the TCEQ database bringing the total to 32 reported emergency interconnects. While this should not be considered a comprehensive list, it is the extent of information available at this time.

Some circumstances that would require the use of an emergency interconnect system to be operated could affect an entire body of water or aquifer, such as drought or contamination. It is important to know the source of the emergency interconnect provider's supply for this reason. The source to each provider was determined using the TCEQ Water Watch database and surface water (SW) or groundwater (GW) designation is noted. Information on existing and potential interconnect supply capacity or location was not available from either source. In accordance with Texas Water Code §16.053(r) the information gathered is considered confidential and was submitted to the executive administrator but not included in the regional plan.

7.4 Emergency Response to Local Drought Conditions or Loss of Municipal Supply

The regional and state water plans aim to prepare entities for severe drought scenarios based on the drought of record as described in section 7.1. However, entities may find themselves in a local drought or facing a loss of municipal supply. While rare, it is important to have a back up plan in case of infrastructure failure or water supply contamination. This is especially important for smaller entities that rely on a sole source of supply. While many entities and wholesale water providers have DCP's as described in section 7.2, it is less common for small municipalities or those included in County-Other to have these emergency plans. An analysis of a broad range of emergency response options was performed for small WUGs with 2010 Census populations less than 7,500 and a sole supply source as well as for all County-Other WUGs in the region.

A WUG relying on groundwater is considered sole source if its entire supply comes from the same aquifer regardless of varying groundwater districts or combination of contractual and local development supplies. A WUG relying on surface water is considered sole source if their yield comes from one river intake or one reservoir, regardless of the number of contracts in place. A WUG with a BRA contract was not considered sole-source due to system operations. WUGs with both groundwater and surface water supplies were not included, with the exception of county-other entities.

A broad range of emergency situations could result in a loss of reliable municipal supply and it is not possible to plan one solution to meet any possible emergency. Accordingly, a range of possible responses were selected for each entity based on source type and location. A WUG utilizing groundwater was analyzed for potential additional fresh water and brackish water wells, based on the existence of appropriate aquifers in the area. MAG availability was not considered since the wells are assumed temporary over the course of an emergency. Surface water WUGs were analyzed for curtailment of junior water rights and for releases from upstream reservoirs. Additional yield availability was not analyzed for reservoir releases; in the case of a temporary, localized emergency, special arrangements can be made.

A nearby entity that could provide supply in the case of an isolated incident was identified for each WUG and existing interconnects were noted if information was available. In addition, trucking in water was considered as a supply option under severe circumstances. Any infrastructure required for implementation of the options is also reported. A total of 84 entities were analyzed including 38 county-other WUGs. The results of this analysis are summarized in Table 7-2, with the detailed results presented in Table 7-3.

Table 7-2. Summary of Emergency Supply Options

Entity		Potential Emergency Water Supply Sources					
Primary Source	Total WUGs	Release From Upstream Reservoir	Curtailment of Junior Water Rights	Local Groundwater Well	Brackish Groundwater Well	Truck in Water	Supply from Nearby Entity
Groundwater	57	0	0	57	17	57	57
Surface Water	9	5	9	0	0	9	9
Blend	18	11	18	18	9	18	18
Total:	84	16	27	75	26	84	84

Table 7-3. Potential Emergency Supply Options for Small Water User Groups

Entity					Potential Emergency Water Supply Sources						Implementation Requirements		
Water User Group	County	2020 Population	2020 Demand (acft)	Source	Release From Upstream Reservoir	Curtailment of Junior Water Rights	Local Groundwater Well	Brackish Groundwater Well	Truck in Water	Supply from Nearby Entity	Known Existing Interconnect	Potential Entity Providing Supply	Type of Infrastructure Required
BELL COUNTY-OTHER	BELL	5,166	870	BLEND		X	X	X	X	X		KILLEEN	Well, Pipeline, Transportation
CHILDRESS CREEK WSC	BOSQUE	2,656	410	TRINITY			X		X	X		CLIFTON	Well, Pipeline, Transportation
VALLEY MILLS	BOSQUE	1,349	264	TRINITY			X		X	X		CLIFTON	Well, Pipeline, Transportation
WALNUT SPRINGS	BOSQUE	922	97	TRINITY			X		X	X		CLIFTON	Well, Pipeline, Transportation
BOSQUE COUNTY-OTHER	BOSQUE	9,167	1,271	GW			X		X	X		CLIFTON	Well, Pipeline, Transportation
BRAZOS COUNTY-OTHER	BRAZOS	6,168	904	GW			X	X	X	X		COLLEGE STATION	Well, Pipeline, Transportation
CALDWELL	BURLESON	4,896	1,027	CARRIZO			X		X	X		ROCKDALE	Well, Pipeline, Transportation
DEANVILLE WSC	BURLESON	3,598	465	CARRIZO			X		X	X		CALDWELL	Well, Pipeline, Transportation
SNOOK	BURLESON	552	184	SPARTA			X	X	X	X		CALDWELL	Well, Pipeline, Transportation
SOMERVILLE	BURLESON	1,485	266	SPARTA			X	X	X	X		CALDWELL	Well, Pipeline, Transportation
BURLESON COUNTY-OTHER	BURLESON	5,341	615	GW			X	X	X	X		CALDWELL	Well, Pipeline, Transportation

[redacted]

Table 7-3. Potential Emergency Supply Options for Small Water User Groups

Entity					Potential Emergency Water Supply Sources						Implementation Requirements		
Water User Group	County	2020 Population	2020 Demand (acft)	Source	Release From Upstream Reservoir	Curtailment of Junior Water Rights	Local Groundwater Well	Brackish Groundwater Well	Truck in Water	Supply from Nearby Entity	Known Existing Interconnect	Potential Entity Providing Supply	Type of Infrastructure Required
BELL COUNTY-OTHER	BELL	5,166	870	BLEND		X	X	X	X	X		KILLEEN	Well, Pipeline, Transportation
CHILDRESS CREEK WSC	BOSQUE	2,656	410	TRINITY			X		X	X		CLIFTON	Well, Pipeline, Transportation
VALLEY MILLS	BOSQUE	1,349	264	TRINITY			X		X	X		CLIFTON	Well, Pipeline, Transportation
WALNUT SPRINGS	BOSQUE	922	97	TRINITY			X		X	X		CLIFTON	Well, Pipeline, Transportation
BOSQUE COUNTY-OTHER	BOSQUE	9,167	1,271	GW			X		X	X		CLIFTON	Well, Pipeline, Transportation
BRAZOS COUNTY-OTHER	BRAZOS	6,168	904	GW			X	X	X	X		COLLEGE STATION	Well, Pipeline, Transportation
CALDWELL	BURLESON	4,896	1,027	CARRIZO			X		X	X		ROCKDALE	Well, Pipeline, Transportation
DEANVILLE WSC	BURLESON	3,598	465	CARRIZO			X		X	X		CALDWELL	Well, Pipeline, Transportation
SNOOK	BURLESON	552	184	SPARTA			X	X	X	X		CALDWELL	Well, Pipeline, Transportation
SOMERVILLE	BURLESON	1,485	266	SPARTA			X	X	X	X		CALDWELL	Well, Pipeline, Transportation
BURLESON COUNTY-OTHER	BURLESON	5,341	615	GW			X	X	X	X		CALDWELL	Well, Pipeline, Transportation

Table 7-3. Potential Emergency Supply Options for Small Water User Groups

Entity					Potential Emergency Water Supply Sources						Implementation Requirements		
Water User Group	County	2020 Population	2020 Demand (acft)	Source	Release From Upstream Reservoir	Curtailment of Junior Water Rights	Local Groundwater Well	Brackish Groundwater Well	Truck in Water	Supply from Nearby Entity	Known Existing Interconnect	Potential Entity Providing Supply	Type of Infrastructure Required
CROSS PLAINS	CALLAHAN	1,051	179	TRINITY			X		X	X		CLYDE	Well, Pipeline, Transportation
CALLAHAN COUNTY-OTHER	CALLAHAN	7,728	613	BLEND	X	X	X		X	X		CLYDE	Well, Pipeline, Transportation
COMANCHE COUNTY-OTHER	COMANCHE	7,672	805	BLEND	X	X	X		X	X		COMANCHE	Well, Pipeline, Transportation
CORYELL COUNTY-OTHER	CORYELL	4,807	564	BLEND	X	X	X	X	X	X		COPPERAS COVE	Well, Pipeline, Transportation
RISING STAR	EASTLAND	867	100	TRINITY			X		X	X		EASTLAND	Well, Pipeline, Transportation
EASTLAND COUNTY-OTHER	EASTLAND	6,450	583	BLEND	X	X	X		X	X		EASTLAND	Well, Pipeline, Transportation
MOUNTAIN PEAK SUD	JOHNSON	7,272	2,284	TRINITY			X		X	X		BURLESON	Well, Pipeline, Transportation
ERATH COUNTY-OTHER	ERATH	19,031	2,665	BLEND		X	X		X	X		STEPHENVILLE	Well, Pipeline, Transportation
WEST BRAZOS WSC	FALLS	2,781	399	TRINITY			X		X	X	WACO	MARLIN	Well, Pipeline, Transportation
FALLS COUNTY-OTHER	FALLS	4,153	526	BLEND		X	X	X	X	X		MARLIN	Well, Pipeline, Transportation
FISHER COUNTY-OTHER	FISHER	989	115	SEYMOUR			X	X	X	X		ROTAN	Well, Pipeline, Transportation

[redacted]

Table 7-3. Potential Emergency Supply Options for Small Water User Groups

Entity					Potential Emergency Water Supply Sources						Implementation Requirements		
Water User Group	County	2020 Population	2020 Demand (acft)	Source	Release From Upstream Reservoir	Curtailment of Junior Water Rights	Local Groundwater Well	Brackish Groundwater Well	Truck in Water	Supply from Nearby Entity	Known Existing Interconnect	Potential Entity Providing Supply	Type of Infrastructure Required
NAVASOTA	GRIMES	7,291	1,428	GULF COAST			X		X	X		COLLEGE STATION	Well, Pipeline, Transportation
GRIMES COUNTY-OTHER	GRIMES	12,659	1,789	GW			X	X	X	X		NAVASOTA	Well, Pipeline, Transportation
HICO	HAMILTON	1,385	180	TRINITY			X		X	X		HAMILTON	Well, Pipeline, Transportation
HAMILTON COUNTY-OTHER	HAMILTON	3,387	423	TRINITY			X		X	X		HAMILTON	Well, Pipeline, Transportation
HASKELL COUNTY-OTHER	HASKELL	1,911	255	BLEND		X	X	X	X	X		HASKELL	Well, Pipeline, Transportation
ITASCA	HILL	1,773	156	TRINITY			X	X	X	X		HILLSBORO	Well, Pipeline, Transportation
WHITE BLUFF COMMUNITY WS	HILL	2,022	434	TRINITY			X		X	X		HILLSBORO	Well, Pipeline, Transportation
WOODROW-OSCEOLA WSC	HILL	4,205	384	TRINITY			X		X	X		HILLSBORO	Well, Pipeline, Transportation
HILL COUNTY-OTHER	HILL	8,692	968	BLEND	X	X	X	X	X	X		HILLSBORO	Well, Pipeline, Transportation
TOLAR	HOOD	858	120	TRINITY			X		X	X		GRANBURY	Well, Pipeline, Transportation
HOOD COUNTY-OTHER	HOOD	26,999	2,823	BLEND	X	X	X		X	X		GRANBURY	Well, Pipeline, Transportation

Table 7-3. Potential Emergency Supply Options for Small Water User Groups

Entity					Potential Emergency Water Supply Sources						Implementation Requirements		
Water User Group	County	2020 Population	2020 Demand (acft)	Source	Release From Upstream Reservoir	Curtailment of Junior Water Rights	Local Groundwater Well	Brackish Groundwater Well	Truck in Water	Supply from Nearby Entity	Known Existing Interconnect	Potential Entity Providing Supply	Type of Infrastructure Required
GODLEY	JOHNSON	1,133	115	TRINITY			X		X	X		BURLESON	Well, Pipeline, Transportation
GRANDVIEW	JOHNSON	1,754	182	WOODBINE			X		X	X		BURLESON	Well, Pipeline, Transportation
RIO VISTA	JOHNSON	1,080	150	TRINITY			X		X	X		BURLESON	Well, Pipeline, Transportation
JOHNSON COUNTY-OTHER	JOHNSON	15,131	1,613	BLEND	X	X	X		X	X		BURLESON	Well, Pipeline, Transportation
JONES COUNTY-OTHER	JONES	2,220	279	BLEND	X	X	X	X	X	X		ABILENE	Well, Pipeline, Transportation
JAYTON	KENT	528	92	SEYMOUR			X	X	X	X		ASPERMONT	Well, Pipeline, Transportation
KENT COUNTY-OTHER	KENT	270	33	SEYMOUR			X	X	X	X		JAYTON	Well, Pipeline, Transportation
KNOX COUNTY-OTHER	KNOX	1,333	138	BLEND		X	X	X	X	X		MUNDAY	Well, Pipeline, Transportation
LAMPASAS COUNTY-OTHER	LAMPASAS	2,364	317	GW			X	X	X	X		LAMPASAS	Well, Pipeline, Transportation
GIDDINGS	LEE	5,621	1,120	CARRIZO			X	X	X	X		THRALL	Well, Pipeline, Transportation
LEXINGTON	LEE	1,355	242	CARRIZO			X		X	X		GIDDINGS	Well, Pipeline, Transportation

[redacted]

Table 7-3. Potential Emergency Supply Options for Small Water User Groups

Entity					Potential Emergency Water Supply Sources						Implementation Requirements		
Water User Group	County	2020 Population	2020 Demand (acft)	Source	Release From Upstream Reservoir	Curtailment of Junior Water Rights	Local Groundwater Well	Brackish Groundwater Well	Truck in Water	Supply from Nearby Entity	Known Existing Interconnect	Potential Entity Providing Supply	Type of Infrastructure Required
LEE COUNTY-OTHER	LEE	1,870	195	GW			X	X	X	X		GIDDINGS	Well, Pipeline, Transportation
GROESBECK	LIMESTONE	4,377	688	SW	X	X			X	X		MEXIA	Pipeline, Transportation
THORNTON	LIMESTONE	529	70	CARRIZO			X		X	X		MEXIA	Well, Pipeline, Transportation
LIMESTONE COUNTY-OTHER	LIMESTONE	9,384	892	BLEND	X	X	X	X	X	X		MEXIA	Well, Pipeline, Transportation
CHALK BLUFF WSC	MCLENNAN	2,646	269	TRINITY			X		X	X		WACO	Well, Pipeline, Transportation
CROSS COUNTRY WSC	MCLENNAN	3,175	533	TRINITY			X		X	X		WACO	Well, Pipeline, Transportation
GHOLSON	MCLENNAN	1,174	155	TRINITY			X		X	X		WACO	Well, Pipeline, Transportation
MART	MCLENNAN	2,375	353	TRINITY			X		X	X		WACO	Well, Pipeline, Transportation
NORTH BOSQUE WSC	MCLENNAN	2,436	619	TRINITY			X		X	X		WACO	Well, Pipeline, Transportation
WESTERN HILLS WS	MCLENNAN	3,142	212	TRINITY			X		X	X		WACO	Well, Pipeline, Transportation
MCLENNAN COUNTY-OTHER	MCLENNAN	27,613	3,533	BLEND	X	X	X		X	X		WACO	Well, Pipeline, Transportation

Table 7-3. Potential Emergency Supply Options for Small Water User Groups

Entity					Potential Emergency Water Supply Sources						Implementation Requirements		
Water User Group	County	2020 Population	2020 Demand (acft)	Source	Release From Upstream Reservoir	Curtailment of Junior Water Rights	Local Groundwater Well	Brackish Groundwater Well	Truck in Water	Supply from Nearby Entity	Known Existing Interconnect	Potential Entity Providing Supply	Type of Infrastructure Required
MILANO WSC	MILAM	3,805	432	CARRIZO			X		X	X		CAMERON	Well, Pipeline, Transportation
ROCKDALE	MILAM	5,929	1,159	CARRIZO			X		X	X		CAMERON	Well, Pipeline, Transportation
MILAM COUNTY-OTHER	MILAM	2,438	300	SW		X		X	X	X		CAMERON	Pipeline, Transportation
ROSCOE	NOLAN	1,402	200	DOCKUM			X		X	X		SWEETWATER	Well, Pipeline, Transportation
NOLAN COUNTY-OTHER	NOLAN	1,948	228	BLEND		X	X		X	X		SWEETWATER	Well, Pipeline, Transportation
STRAWN	PALO PINTO	710	137	SW	X	X			X	X		MINERAL WELLS	Pipeline, Transportation
PALO PINTO COUNTY-OTHER	PALO PINTO	11,432	1,063	SW	X	X			X	X		MINERAL WELLS	Pipeline, Transportation
BREMOND	ROBERTSON	1,027	189	CARRIZO			X		X	X		HEARNE	Well, Pipeline, Transportation
CALVERT	ROBERTSON	1,192	190	CARRIZO			X		X	X		HEARNE	Well, Pipeline, Transportation
FRANKLIN	ROBERTSON	1,728	256	CARRIZO			X		X	X		HEARNE	Well, Pipeline, Transportation
HEARNE	ROBERTSON	4,459	757	CARRIZO			X		X	X		HEARNE	Well, Pipeline, Transportation
ROBERTSON COUNTY WSC	ROBERTSON	3,049	246	CARRIZO			X		X	X		HEARNE	Well, Pipeline, Transportation

[redacted]

Table 7-3. Potential Emergency Supply Options for Small Water User Groups

Entity					Potential Emergency Water Supply Sources						Implementation Requirements		
Water User Group	County	2020 Population	2020 Demand (acft)	Source	Release From Upstream Reservoir	Curtailment of Junior Water Rights	Local Groundwater Well	Brackish Groundwater Well	Truck in Water	Supply from Nearby Entity	Known Existing Interconnect	Potential Entity Providing Supply	Type of Infrastructure Required
ROBERTSON COUNTY-OTHER	ROBERTSON	3,890	439	CARRIZO			X	X	X	X		HEARNE	Well, Pipeline, Transportation
SHACKELFORD COUNTY-OTHER	SHACKELFORD	1,242	125	SW	X	X			X	X		ALBANY	Pipeline, Transportation
GLEN ROSE	SOMERVELL	2,730	583	TRINITY			X		X	X		TOLAR	Well, Pipeline, Transportation
SOMERVELL COUNTY-OTHER	SOMERVELL	6,752	822	SW	X	X			X	X		GLEN ROSE	Pipeline, Transportation
STEPHENS COUNTY-OTHER	STEPHENS	1,447	156	GW			X		X	X		BRECKENRIDGE	Well, Pipeline, Transportation
STONEWALL COUNTY-OTHER	STONEWALL	575	68	SEYMOUR			X	X	X	X		ASPERMONT	Well, Pipeline, Transportation
TAYLOR COUNTY-OTHER	TAYLOR	5,714	660	SW		X			X	X		ABILENE	Pipeline, Transportation
THROCKMORTON	THROCKMORTON	831	182	SW		X			X	X	FORT BELKNAP WSC	GRAHAM	Pipeline, Transportation
THROCKMORTON COUNTY-OTHER	THROCKMORTON	496	48	SW		X			X	X		THROCKMORTON	Pipeline, Transportation
G & W WSC	GRIMES	7,638	851	GULF COAST			X		X	X		NAVASOTA	Well, Pipeline, Transportation
WASHINGTON COUNTY-OTHER	WASHINGTON	18,844	2,424	GULF COAST			X	X	X	X		BRENHAM	Well, Pipeline, Transportation

Table 7-3. Potential Emergency Supply Options for Small Water User Groups

Entity					Potential Emergency Water Supply Sources						Implementation Requirements		
Water User Group	County	2020 Population	2020 Demand (acft)	Source	Release From Upstream Reservoir	Curtailment of Junior Water Rights	Local Groundwater Well	Brackish Groundwater Well	Truck in Water	Supply from Nearby Entity	Known Existing Interconnect	Potential Entity Providing Supply	Type of Infrastructure Required
BARTLETT	WILLIAMSON	1,855	356	TRINITY			X	X	X	X		ROUND ROCK	Well, Pipeline, Transportation
FLORENCE	WILLIAMSON	1,238	119	TRINITY			X		X	X		ROUND ROCK	Well, Pipeline, Transportation
GRANGER	WILLIAMSON	1,568	212	TRINITY			X	X	X	X		ROUND ROCK	Well, Pipeline, Transportation
THRALL	WILLIAMSON	1,000	89	GW			X		X	X		ROUND ROCK	Well, Pipeline, Transportation
WILLIAMSON COUNTY-OTHER	WILLIAMSON	71,170	11,047	BLEND	X	X	X	X	X	X		ROUND ROCK	Well, Pipeline, Transportation
YOUNG COUNTY-OTHER	YOUNG	1,757	214	BLEND		X	X		X	X		GRAHAM	Well, Pipeline, Transportation

7.5 Region Specific Drought Response Recommendations and Model Drought Contingency Plans

Brazos G acknowledges that DCPs are a useful drought management tool for entities with both surface and groundwater sources and recommends that all entitles consider adopting a DCP in preparation for drought conditions. The region also recommends that in accordance with TCEQ guidelines, entities update their DCPs every five years as triggers can change as wholesale and retail water providers reassess their contracts and supplies. Brazos G obtained 24 drought contingency plans from across the region. Fourteen of these participating water providers and WUGs rely solely on surface water, four entities rely solely on groundwater and six of them utilize both sources to meet needs.

7.5.1 Drought Response Recommendations for Surface Water

Surface water accounts for approximately 75% of projected 2070 municipal supplies in Brazos G. Surface water supply is sold by more than 25 wholesale water providers and comes from over 50 lakes and numerous river intakes. With such a variety of supply sources it is difficult to create a set of triggers and responses that fit the needs of each WUG in the regional planning area. Brazos G recognizes that supplies are understood best by the operators and suggests that WUGs without DCPs look to the DCPs of their water providers as examples, if available.

For entities without DCPs which supply themselves with local surface water, Brazos G suggests reviewing the drought responses and recommendations used by similar entities in the region. An example of triggers and responses from the DCP for the City of Abilene is presented below (Table 7-4). Abilene was selected as a representative example because they provide water to several entities throughout the Brazos G Area and rely on various types of surface water triggers that can be applied throughout the region. The DCP includes four water stages ranging from "Water Alert" to "Water Crisis". The triggers depend on parameters such as treatment plant use, storage levels, reservoir elevations, and system failures. The responses include categories ranging from home irrigation limits to commercial and industrial use reductions.

Table 7-4. Abilene Surface Water Drought Contingency Response

Drought Stage	Trigger	Actions
Stage I – Water Alert	• Combined treatment plant use > 49.5 MGD for 2 Days, or • Storage levels do not refill above 50% overnight, or • Ft. Phantom Reservoir at or below EL. 1625.9 if Hubbard Creek Reservoir is at 60% capacity or less, or • Ft. Phantom Reservoir at or below EL. 1624.9 if Hubbard Creek Reservoir is at greater than 60% capacity.	• Announcement and Implementation by the City • Irrigation limited to designated day of the week during restricted hours unless hand held hose or less than 5 gallons of faucet water is used • Vehicle washing is only permissible by using a five gallon container and/or a hand held hose equipped with a quick shutoff nozzle. • Water may be added to swimming pools or fountains to sustain appropriate maintenance levels only on designated irrigation day • Use of water from fire hydrants shall be limited to firefighting activities or other activities necessary to maintain public health, safety and welfare • Water wasting is prohibited • Commercial and industrial users shall reduce water use by 15%
Stage II – Water Warning	• Combined treatment plant use > 49.5 MGD for 2 Days, or • Storage levels do not refill above 50% overnight, or • Ft. Phantom Reservoir at or below EL. 1618.9, or • Major line breaks or pump system failure causes loss of capacity to provide service.	• Announcement and Implementation by the City • Irrigation limited to designated day once every two weeks during restricted hours unless hand held hose or less than 5 gallons of faucet water is used • Vehicle washing is only permissible by using a five gallon container and/or a hand held hose equipped with a quick shutoff nozzle. • Water may be added to swimming pools or fountains to sustain appropriate maintenance levels only on designated irrigation day • Use of water from fire hydrants shall be limited to firefighting activities or other activities necessary to maintain public health, safety and welfare • Water Wasting is prohibited • Commercial and industrial users shall reduce water use by 15%, golf courses by 30%
Stage III – Water Emergency	• Combined treatment plant use > 30 MGD for 3 days, and Ft. Phantom Reservoir at or below EL. 1614.9, or • Major line breaks or pump system failure causes loss of capacity to provide service.	• Announcement and Implementation by the City • Irrigation limited to hand held hose or less than 5 gallons of faucet water is used, no lawn use • Only permissible to wash vehicles on the premises of a commercial car wash station • Water may be added to swimming pools or fountains to sustain appropriate maintenance levels only on designated irrigation day • Use of water from fire hydrants shall be limited to firefighting activities or other activities necessary to maintain public health, safety and welfare • Water Wasting is prohibited • Commercial and industrial users shall reduce water use by 15%, golf courses by 50%

Table 7-4. Abilene Surface Water Drought Contingency Response

Drought Stage	Trigger	Actions
Stage IV – Water Crisis	• Loss of capability to provide water service, or • Contamination of supply source, or • Other unforeseen conditions.	• All outdoor irrigation of vegetation including lawns, using potable water is prohibited • Only washing of mobile equipment in the critical interest of the public health or safety is allowed • Filling of swimming pools or fountains is prohibited • Use of water from fire hydrants shall be limited to fire fighting and related activities • Water for domestic use only may be purchased from the bulk loading station • Commercial and industrial users of water shall continue to maintain at least a 15% use reduction

7.5.2 Drought Response Recommendations for Groundwater

Groundwater accounts for approximately 25% of projected 2070 municipal supplies. Entities in Brazos G utilize both brackish and non-brackish wells from over 15 aquifers or formations. With such a variety of supply sources it is difficult to create a set of triggers and responses that fit the needs of each WUG in the regional planning area. Brazos G recognizes that supplies are understood best by the operators and suggests that WUGs without DCPs look to the DCP's of their water providers and groundwater conservation districts as examples, if available.

For entities without DCPs supplying themselves with local groundwater, Brazos G suggests reviewing the drought responses and recommendations used by similar entities in the region. An example of triggers and responses from the DCP for the City of Thrall is presented below (Table 7-5). Thrall was selected as a representative example because they are a small WUG utilizing local groundwater like many of the groundwater reliant WUGS who have not yet developed a DCP. The DCP includes four water stages ranging from "Mild" to "Water Emergency". The triggers depend on parameters such as season, ground storage levels, contamination, and system failures. The responses include categories ranging from residential irrigation limits to commercial and industrial use reductions.

Table 7-5. Thrall Groundwater Drought Contingency Response

Drought Stage	Trigger	Actions
Stage I – MILD	Yearly: May 1st – September 30th.	• City reduces water main flushing • Voluntary limit on irrigation to 2 days a week at designated times • City of Thrall should adhere to Stage 2 restrictions below • Customers are requested to minimize or discontinue non-essential water use

Table 7-5. Thrall Groundwater Drought Contingency Response

Drought Stage	Trigger	Actions
Stage II – MODERATE	Ground Storage does not gain over 20ft.	• Mandatory limit on irrigation to 2 days a week at designated times or by hand held hose or 5 gallon bucket • Vehicle washing allowed only with hand held bucket or hose • Filling of pools or Jacuzzis limited to watering days/times • Non-circulating ponds or fountains are prohibited unless supporting aquatic life. • Use of water from fire hydrants shall be limited to firefighting activities or other activities necessary to maintain public health, safety and welfare. • All restaurants are prohibited from serving water unless requested • Non essential uses are prohibited
Stage III – SEVERE	Ground Storage does not gain over 15 ft.	• All actions listed in Stage II • Irrigation limited to hand held hose or less than 5 gallons of faucet water is used during designated watering days and times. • The use of water for construction from designated hydrants under special permit is discontinued.
Stage IV – CRITICAL	Ground Storage does not gain over 10 ft	• All actions listed in Stages II and III • Only washing of mobile equipment in the critical interest of the public health or safety is allowed. Commercial car washes can be used during designated hours. • Filling of swimming pools or fountains is prohibited • No applications for new, additional or expanded water service infrastructure shall be approved
Stage V – EMERGENCY	• Infrastructure breaks • Contamination • System outage	• All actions described in previous stages • Irrigation of landscaped areas is absolutely prohibited • Use of water to wash any vehicle is absolutely prohibited

7.5.3 Model Drought Contingency Plans

TCEQ has prepared model drought contingency plans for wholesale and retail water suppliers to provide guidance and suggestions to entities with regard to the preparation of drought contingency plans. Not all items in the model will apply to every system's situation, but the overall model can be used as a starting point for most entities. Brazos G suggests that the TCEQ Model DCPs should be used in conjunction with drought contingency measures such as those listed above for Abilene and Thrall for entities wishing to develop a new DCP. The TCEQ model drought contingency plans can be found in on TCEQ's website at the following link:

https://www.tceq.texas.gov/permitting/water_rights/contingency.html

7.6 Drought Management WMS

The regional water plan is developed to meet projected water demands during a drought of severity equivalent to the drought of record. Brazos G sees the purpose of the planning as ensuring that sufficient supplies are available to meet future water demands. For this reason, drought management recommendations have not been made by Brazos G as a water management strategy for specific WUG needs. Reducing water demands during a drought as a defined water management strategy does not ensure that sufficient supplies will be available to meet the projected water demands; but simply eliminates the demands. While Brazos G encourages entities in the region to promote demand management during a drought, it should not be identified as a "new source" of supply. Recommending demand reductions as a water management strategy is antithetical to the concept of planning to meet projected water demands. It does not make more efficient use of existing supplies as does conservation, but instead effectively turns the tap off when the water is needed most. It is planning to not meet future water demands.

While Drought Management WMS are not supported by the RGWPG, DCPs are encouraged for all entities and the region supports the implementation of the drought responses outlined in these DCPs when corresponding triggers occur. While the relief provided from these DCP responses can prolong supply and reduce impacts to communities, they are not considered to be reliable for all entities under all potential droughts.

7.7 Other Drought Recommendations

7.7.1 Model Updates

It is of upmost importance that regional water planning groups have the most up to date information available to make decisions. The Brazos G WAM is used to determine both the drought of record and the firm yield of reservoirs, but has not been updated in almost 20 years. The Brazos G Regional Water Planning Group recommends that the Texas legislature approve a budget for TCEQ to pursue updated WAMs before the next regional planning cycle. This will be especially important if the duration of the recent drought continues or the severity increases.

7.7.2 Monitoring and Assessment

Brazos G recommends that all entities monitor the drought situation around the state and locally in order to prepare for and facilitate decisions. Several state and local agencies are monitoring and reporting on conditions with up to date information. A few informative sources are listed below.

- Brazos River Authority Drought Information: http://www.brazos.org/DroughtStatus.asp
- Parmer Drought Severity Index: http://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers/
- TWDB Drought Information: http://waterdatafortexas.org/drought/

- TCEQ Drought Information: https://www.tceq.texas.gov/response/drought

In addition, Brazos G supports the efforts of the Texas Drought Preparedness Council administered by the Texas Department of Public Safety, and recommends that entities review information developed by the council. The Drought Preparedness Council was established by the legislature in 1999 and is composed of 15 representatives from several state agencies. The council is responsible for assessment and public reporting of drought monitoring and water supply conditions, advising the governor on drought conditions, and ensuring effective coordination among agencies. The council currently is promoting outreach to inform entities of the assistance they can provide and looking for input as to how they can be more useful. Brazos G suggests that entities take advantage of the resources available to them through the Drought Preparedness Council such as the Drought Annex (2014), which describes the activities that help minimize potential impacts of drought and outlines an effective mechanism for proactive monitoring and assessment. More information on the Drought Preparedness Council can be found here:

http://www.txdps.state.tx.us/dem/CouncilsCommittees/droughtCouncil/stateDroughtPrepCouncil.htm

This page intentionally left blank.

Chapter 8

8

Recommendations for Unique Stream Segments, Unique Reservoir Sites, and Other Legislative Policy Recommendations

This page intentionally left blank.

8 Recommendations for Unique Stream Segments, Unique Reservoir Sites, and Other Legislative Policy Recommendations

8.1 Recommendations Concerning River and Stream Segments Having Unique Ecological Value

Regional water planning groups are given the option of designating stream segments having "unique ecological value" within their planning areas. Five criteria are utilized to identify such segments:

1. Biological Function:
   - Quantity (acreage or areal extent of habitat), and
   - Quality (biodiversity, age, uniqueness).
2. Hydrologic Function:
   - Water Quality,
   - Flood Attenuation and Flow Stabilization, and
   - Groundwater Recharge and Discharge.
3. Occurrence of Riparian Conservation Areas.
4. Occurrence of High Water Quality, Exceptional Aquatic Life or High Aesthetic Value.
5. Occurrence of Threatened or Endangered Species and/or Unique Communities.

The Brazos G RWPG has chosen not to designate any stream segments as having unique ecological value.

8.2 Recommendations Concerning Sites Uniquely Suited for Reservoir Construction

The Brazos G RWPG has chosen to identify the following five sites as uniquely suited for reservoir construction. Each of these sites is associated with a request by a potential local project sponsor to include the project as a recommended or alternative water management strategy in the 2016 Plan.

- Cedar Ridge Reservoir (City of Abilene),
- Turkey Peak Reservoir (Palo Pinto County Municipal Water District No. 1),
- Millers Creek Off-Channel Reservoir (North Central Texas Municipal Water District),
- Brushy Creek Reservoir (City of Marlin), and
- Coryell County Off-Channel Reservoir (Coryell County).

8.3 Legislative and Policy Recommendations

The Brazos G Regional Water Planning Group (Brazos G) established a Water Policy Workgroup to discuss various issues concerning State water policy and to formulate proposed positions for the planning group to consider for recommendation to the TWDB and the Texas Legislature. As the population and economic demands grow, water supplies become more stressed. These developments coupled with recent drought conditions make it increasingly important for water planning groups to consider diverse water management strategies.

Regional water planning rules require use of the Texas Commission on Environmental Quality (TCEQ) Water Availability Models in determining surface water supply availability. The period of record for most existing TCEQ Water Availability Models ends with the year 1997. In some parts of the State, and possibly in some portions of the Brazos River Basin, hydrologic conditions since 1997 may be worse than conditions experienced prior to 1997. Therefore, firm water availability from existing surface water supply sources and from new surface water supply strategies may be overstated. As a result, water shortages may exist that are not apparent in the regional and State water plans. Brazos G considers it prudent to explore alternatives to the historic drought of record for water planning purposes. As more diverse water management planning strategies are developed alternative water planning measurements may include firm yield, safe yield and/or operational yield as appropriate. In addition, the water planning process requires coordination with agencies such as the TCEQ and the TWDB. These agencies need sufficient funding and staffing in order to assist water planning groups in fulfilling their water planning mission. Also, funding should be provided for TCEQ to update the hydrology for all Water Availability Models (WAMs) to extend through 2016 to account for the ongoing drought with additional funding for regular maintenance updates.

Brazos G will promote water development policies that support efforts to protect both groundwater and surface water sources by encouraging sound practices that will not adversely affect water supply or quality. We support other agencies and organizations in their efforts to encourage responsible land management and will oppose any practice or action in our watersheds or recharge zones that could adversely affect our water resources. Maintaining our watershed health, economic sustainability, and community viability are all critical elements in our water planning efforts. Protecting source water and sensible stewardship of the areas adjacent to and around river basins, sensitive sub-basins, aquifers, and recharge zones is essential for maintaining these resources for present and future needs.

For the 2016 Plan, the Water Policy Workgroup revisited several legislative and water policy recommendations that had been incorporated into the 2006 Plan. The Water Policy Workgroup also reviewed the specific legislative and water policy recommendations that had been incorporated into the 2011 Plan. The Water Policy Workgroup offered specific revised recommendations to the full planning group for consideration.

Brazos G offers the following specific recommendations concerning State water policy to the TWDB and the Texas Legislature.

Issue #1: Streamlining the Permitting Processes for Project Implementation

"Brazos G recommends that the Legislature direct all State agencies involved in planning and/or permitting water projects to streamline the process of evaluating, approving, permitting, and funding in order to allow timely project implementation. The amount of time required to gain approval for surface water projects is just one example of the need for more streamlined processes."

Issue #2: Plan Implementation

"Brazos G recognizes the need for expeditious implementation of the State Water Plan facilitated by the use of the State Water Implementation Fund for Texas (SWIFT)."

Issue #3: Coordination between Regional Water Planning Groups and Groundwater Conservation Districts

"Brazos G is committed to working cooperatively with Groundwater Conservation Districts (GCDs) when developing the Regional Plan. The GCDs are requested to review water demand, population projections, and water availability numbers for their respective Districts and comment accordingly.

Brazos G recognizes, pursuant to SB 660, that GCDs are statutorily required to determine the amount of groundwater that is available for use in the Regional Water Plan. SB 660, passed by the 82nd Texas Legislature (2011), outlines a process by which Modeled Available Groundwater (MAG) figures are supplied to the GMA and its member GCDs. MAG is the amount of water that may be withdrawn while maintaining or achieving the Desired Future Conditions (DFCs) adopted by the GCDs within a GMA. "Desired future condition" means a quantitative description of the desired condition of the groundwater resources in a management area at one or more specified future times.

Regional water plans are required to use the MAGs in place at the time of adoption of TWDB's state water plan in the next regional water planning cycle or, at the option of the regional water planning group, established subsequent to the adoption of the most recent plan.

The use of DFCs to take a long term view of the health of aquifers and MAG to allow the use of groundwater for beneficial purposes without depleting aquifers is consistent with Brazos G's historical policy that does not allow the adoption of water management strategies that will substantially deplete the aquifers.

However, the strict use of MAGs can restrict the ability of planning groups to develop feasible regional water plans. Therefore, a planning group should be allowed to exceed a MAG within a tolerance agreed to by the applicable groundwater conservation district, recognizing that protection of local aquifer systems will be accomplished through oversight and management by groundwater conservation districts."

Issue #4: System Operation of Water Facilities

"Brazos G recognizes the inherent benefit of system operations of existing water supply sources and recommends that State water planning as well as permitting continue to promote such water management strategies.

System operation involves coordinated operation of two or more water supply sources (including surface water reservoirs and run-of-river diversions, as well as groundwater aquifers) such that the system yield is greater than the sum of the individual sources.

System operation provides several significant benefits to the State, including: better utilization of existing infrastructure; efficient use of water supplies to meet needs; delay or avoidance of expensive new water supply infrastructure; and reduced environmental impact potentially occurring due to major new projects."

Issue #5: Outdated Hydrology Used for Surface Water Supply Availability

"Regional water planning rules require use of the TCEQ Water Availability Models in determining surface water supply availability. The period of record for existing TCEQ Water Availability Models ends with the year 1997. In some parts of the State, and possibly in some portions of the Brazos River Basin, hydrologic conditions since 1997 may be worse than conditions experienced prior to 1997. Therefore, firm water availability from existing surface water supply sources and from new surface water supply strategies may be overstated. As a result, water shortages may exist that aren't apparent in the regional and State water plans. The TCEQ should be adequately funded to update the hydrology for all WAMS to extend through 2016 to account for the ongoing drought and additional annual funding should be provided for regular maintenance updates."

Issue #6: Interbasin Transfers of Surface Water

"Brazos G recognizes that Interbasin Transfers have been a critical component of water management in Region G and are a necessary component of overall State water management strategies. The automatic assignment of junior rights to an interbasin water transfer is a deterrent and suppresses the development of interbasin water supply projects. We recommend the re-evaluation of the junior water rights provision that is automatically assigned to interbasin transfers. We also recommend that statutory rules, policies and administrative code be reviewed and the permitting and review process be streamlined to eliminate any unnecessary obstacles to IBT's."

Issue #7: Rule of Capture

"While Brazos G recognizes that the Rule of Capture remains valid law in Texas, we also recognize that advances in science, changes in water marketing, recent Texas Supreme Court rulings, and increasing pressures on groundwater add complexity to this issue.

The State groundwater supply is being tapped to its limits, and in many instances, landowners risk loss due to depletion by over-pumping. Local control through checks and balances can most effectively and fairly regulate usage and protect individual property rights. Groundwater Conservation Districts are the appropriate mechanisms to provide local control of groundwater, to fairly preserve historic use, ensure future sustainability, and protect private property rights – both the rights of those pumping groundwater, and their neighbors.

As such, Brazos G supports the continued management of fresh, brackish, and saline groundwater by groundwater conservation districts."

Issue #8: Conjunctive Use of Groundwater and Surface Water

"Brazos G recognizes conjunctive use as an important management strategy. Conjunctive use is the systematic utilization of groundwater and surface water to optimize the combined yield from both sources. Conjunctive use seeks to maximize the advantages and minimize the disadvantages of each source when both are utilized together. As conjunctive use projects are recognized, they should be included as management strategies for the regional water plan. Brazos G encourages development of conjunctive use projects. Construction of surface water reservoirs, which provide new sources of water, along with judicial use of groundwater resources, which can be a finite quantity, will provide an integrated solution for the water needs of the future."

Issue #9: Aquifer storage and recovery (ASR)

"ASR projects have the potential to store large amounts of water, eliminate evaporative losses of stored water, and minimize the impact on surface owners when compared to large reservoir projects. While ASR projects could be beneficial, there are a number of questions regarding ownership of the injected water, percentage of injected water that is recoverable, impact to existing users, the appropriate degree of oversight for Groundwater Conservation Districts in the development and permitting of these projects, and the quality to which injected water must be treated. An improved legal/public policy framework is needed to address these issues and enhance adoption. We support groundwater conservation districts having the authority to monitor ASR projects and enact rules to regulate and protect ASR supplies and ensure there are no detrimental impacts to the existing groundwater supplies or private property rights or the entity injecting the water for the ASR. Further, we recommend that these water management strategies include sufficient hydrologic study to protect receiving aquifers."

Issue #10: Municipal Per Capita Water Use

"Brazos G recommends the regional water planning process be changed to separate commercial and residential water use and look at both individually. The current practice of using a city's overall gallons per capita/day unfairly characterizes some cities as water wasters. Cities with a vibrant commercial sector see an influx of workers and customers commuting in and raising water usage, which is then applied to the resident population. Also, there needs to be consistency in the calculations of GPCD, and better guidance as to whether regional planning groups are to use raw water delivered or treated water provided in calculating GPCD numbers."

Issue # 11: Reservoir Water Management

"Brazos G recognizes that the primary purpose of conservation storage capacity in Texas reservoirs authorized for water supply is, in fact, water supply. Although recreational and aesthetic benefits of these reservoirs may provide economic impacts locally, these are secondary incidental benefits. Therefore, we recommend that appropriate State agencies and State legislative bodies uphold the critically important primary purpose of Texas water supply reservoirs to ensure long-standing agreements and contracts are met and deliveries are not jeopardized by secondary interests. Further, consideration of providing

educational programs regarding reservoir purpose and management and other appropriate assistance for businesses and others impacted is recommended."

Issue #12: Support for Brush Control Projects as Viable Water Management Strategies

"Brazos G supports brush control projects as water management strategies and encourages the Texas legislature to instruct the Texas State Soil and Water Conservation Board to allow funding for these projects, via its Water Supply Enhancement Program, even if they are not included in a Regional Water Plan or the State Water Plan. Brush control projects are often not included in water plans due to the difficulty of assigning a specific amount of new water contributed; however, such projects may have a positive impact on aquifer recharge and stream flows."

Issue #13: Watershed Planning/Source Water Protection

"Brazos G will promote water development policies that support efforts to protect both groundwater and surface water sources by encouraging sound practices that will not adversely affect water supply or quality. We support other agencies and organizations in their efforts to encourage responsible land management and will oppose any practice or action in our watersheds or recharge zones that could adversely affect our water resources. Maintaining our watershed health, economic sustainability and community viability are all critical elements in our water planning efforts. Sensible stewardship of the areas adjacent to and around river basins, sensitive sub-basins, aquifers and re-charge zones is essential for maintaining these resources. Through source water protection, Texas can promote equitable costs for present and future water sources."

Issue #14: Water Pricing and Conservation

"Brazos G encourages retail water providers to seriously consider implementing appropriate rate structures that would be consistent with best management practices for conserving water. Properly designed rate structures allow a consistent price signal to the ratepayer, without resulting in over earnings to the utility. This increasingly favored approach heightens the interest in water conservation to the end users."

Issue #15: Integrating Water Quality and Water Supply Considerations

"Brazos G continues to support existing efforts of regulatory agencies to protect current and future sources of drinking water, including both groundwater and surface water supplies. Brazos G, as well as the regulatory agencies, is committed to ensuring both the quality and quantity of water for our constituents. Furthermore, Brazos G encourage all governmental agencies, when making regulatory or permitting decisions or influencing decisions regarding land and resource use, to give preference to alternatives to protect or enhance the quality of water so that such water resources may be utilized for beneficial use. As a planning group, protecting and enhancing these resources and sustaining our supply will always be among Brazos G's priority commitments."

Issue #16: Education

"Research indicates that there is a strong relationship between knowledge of water sources and a willingness to conserve. Conservation is the most cost-effective means of securing future water supply. Brazos G believes strongly that water education is important and supports water conservation and public awareness programs at the state and local level."

Issue #17: Effects of the Federal Safe Drinking Water Act (SDWA) on Water Supply Systems

"Brazos G recognizes the difficulty in meeting the standards of the Federal Safe Drinking Water Act for some water supply systems. Therefore, we encourage the regionalization of these systems, and/or education and proactive planning."

Brazos G is one the most diverse regional water planning areas in Texas, covering 37 counties along the Brazos River Basin. The geographic area extends from Kent, Stonewall and Knox Counties in the northwest to Washington and Lee Counties in the southeast.

For sixteen years, Brazos G has been an important platform in regional water planning. Its central mission is to develop a regional water plan. The planning process is the true added value. Bringing together perspectives from agriculture, industries, municipalities, counties, small business, water utilities, the public, electric utilities, groundwater management representatives, environmental and river authorities has helped to enhance the overall water planning process.

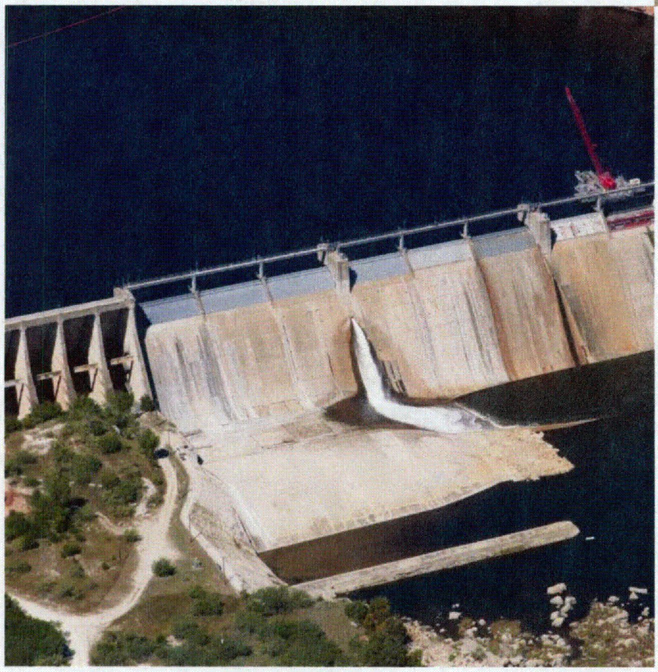
Brazos G does not operate in a vacuum. We use resources such as our consultant, HDR Engineering, Inc., to collect reliable data to include in our regional water plan. We reach out to constituents in the 37 counties as we develop the regional water plan. We engage with other stakeholders in addressing water planning issues. Our planning group meetings are forums for vetting ideas for or against water planning ideas. This process encourages transparency.

Brazos G serves an important role as an entry point for public engagement in the water planning process. This role also makes it a good resource for the State Legislature as it grapples with the realities of an ongoing drought, a burgeoning population, and strong economic development.

We welcome such a role and stand ready to be of assistance.

This page intentionally left blank.

Chapter 9



9

Infrastructure Financing

This page intentionally left blank.

9 Infrastructure Financing

9.1 Introduction

Senate Bill 2 (77th Texas Legislature) requires that an Infrastructure Financing Report (IFR) be incorporated into the regional water planning process. In order to meet this requirement, each regional water planning group (RWPG) is required to examine the funding needed to implement the water management strategies and projects identified and recommended in the planning area's 2016 regional water plan.

9.2 Objectives of the Infrastructure Financing Report

The primary objective of the Infrastructure Financing Report is to determine the financing options proposed by political subdivisions to meet future water infrastructure needs (including the identification of any State funding sources considered).

9.3 Methods and Procedures

For the Brazos G Regional Water Planning Area, all municipal water user groups and wholesale water providers having water needs and recommended water management strategies with an associated capital cost in the initially prepared regional plan were surveyed using the questionnaire provided by the TWDB (Exhibit 9-A). Individual municipalities and wholesale water providers were provided a link to complete the survey online through the Brazos G website.

For each project with an identified capital cost, the survey respondents were asked to enter only the amounts that they wish to receive from the TWDB program listed below:

- Planning, Design, and Permitting: Costs were entered into this category if the entity wanted to participate in the TWDB programs offering subsidized interest and deferral of principal and interest for planning, design, and permitting costs.
- Construction Funding: Costs were entered into this category if the entity wants to obtain subsidized interest for all construction costs, including planning, design, and construction.
- State Participation: Percentages of costs were entered into this category if the entity wanted to participate in the State Participation Program. State Participation funding offers partial interest and principal deferral for the incremental cost of project elements which are designed and built to serve needs beyond 10 years.

9.4 Survey Responses

The Brazos G RWPG sent letters to 64 municipal water user groups and wholesale water providers and as of November 15, 2015, had received 11 responses, a 17 percent response rate. In addition to the surveys that were returned, a number of other WUGs and WWPs provided feedback and questions about the survey but have not returned their survey. Limited feedback indicated that there was concern that the survey information could commit the entity into a certain financing strategy for water management strategies projected to come online more than 20 years from today.

As shown in Table 9-1, the 11 responses represent about 20 percent of the estimated capital costs of water management strategies included in the 2016 Brazos G Plan. Of those responding, for which total capital costs are $3,330,118,675, the survey shows that approximately $646 million would be sought through the state participation programs. It is also important to note that it is unclear how the remaining 80 percent of the capital costs for those entities not responding would be financed. Note that these survey results represent responses to recommended water management strategies with capital costs as included in the initially prepared plan.

Table 9-1. Summary of Responses to the Infrastructure Financing Survey*

Sponsor	Project Name	Capital Cost	Planning, Design, Permitting and Acquisition		Construction	
			Funding Amount	Year	Funding Amount	Year
ABILENE	BRUSH CONTROL	$7,532,000	not to be funded by State Programs			
ABILENE	CEDAR RIDGE RESERVOIR	$290,868,000	$99,700,000	2023	$191,168,000	2025
ABILENE	WTP EXPANSION (23.2 MGD)-ABILENE	$48,257,000	$13,720,000	2018	$34,537,000	2020
AQUILLA WSD	LAKE AQUILLA AUGMENTATION-A	$5,714,856	NA	NA	NA	NA
BARTLETT	TRINITY AQUIFER DEVELOPMENT-BARTLETT	$10,428,000	No Response			
BELL COUNTY WCID #1	BELL COUNTY WCID #1- NORTH REUSE	$12,146,000	No Response			
BELL COUNTY WCID #1	BELL COUNTY WCID #1- SOUTH REUSE	$6,529,000	No Response			
BELL-MILAM FALLS WSC	EAST WILLIAMSON COUNTY WATER PROJECT	$2,808,467	Removing strategy from WUG			
BELLMEAD	REUSE- BELLMEAD/ LACY-LAKE	$5,768,000	No Response			
BETHESDA WSC	BETHESDA WSC - CONNECT TO AND PURCHASE WATER FROM ARLINGTON Q-184	$18,698,000	No Response			
BETHESDA WSC	CONSERVATION, WATER LOSS CONTROL - BETHESDA WSC	$139,100	No Response			
BISTONE MWSD	CARRIZO (BRAZOS) DEVELOPMENT-BISTONE MWSD	$22,689,000	No Response			
BRANDON-IRENE WSC	CONSERVATION, WATER LOSS CONTROL - BRANDON-IRENE WSC	$98	$0	NA	$0	NA
BRAZOS RIVER AUTHORITY	BELTON TO STILLHOUSE PIPELINE-BRA	$38,069,000	No Response			
BRAZOS RIVER AUTHORITY	BRA SYSTEM OPERATION-MAIN STEM	$23,581,674	No Response			
BRAZOS RIVER AUTHORITY	BRA SYSTEM OPERATIONS-LITTLE RIVER	$23,581,674	No Response			
BRAZOS RIVER AUTHORITY	CHLORIDE CONTROL PROJECT-BRA	$172,652,000	No Response			

Table 9-1. Summary of Responses to the Infrastructure Financing Survey*

Sponsor	Project Name	Capital Cost	Planning, Design, Permitting and Acquisition		Construction	
			Funding Amount	Year	Funding Amount	Year
BRAZOS RIVER AUTHORITY	LAKE AQUILLA REALLOCATION- BRA	$21,887,000	No Response			
BRAZOS RIVER AUTHORITY	LAKE GRANGER ASR	$99,820,000	No Response			
BRAZOS RIVER AUTHORITY	LITTLE RIVER OCR-BRA	$487,611,000	No Response			
BRECKENRIDGE	WEST CENTRAL BRAZOS WATER DISTRIBUTION SYSTEM	$8,308,142	No Response			
BRUSHY CREEK MUD	EDWARDS AQUIFER DEVELOPMENT-BRUSHY CREEK MUD	$182,000	$0	NA	$0	NA
BRYAN	CARRIZO-WILCOX DEVELOPMENT-BRYAN	$24,569,609	$4,000,000	2045	$20,000,000	2050
BRYAN	REUSE- BRYAN (OPTION 1)	$8,989,000	$1,200,000	2017	$7,700,000	2020
BRYAN	REUSE- MIRAMONT	$2,544,000	$350,000	2016	$2,194,000	2018
BRYAN	BRYAN ASR (CARRIZO/WILCOX)	$57,328,000	$8,000,000	2017	$49,000,000	2019
BURLESON	BURLESON - INCREASE DELIVERY INFRASTRUCTURE TO PURCHASE ADDITIONAL WATER FROM FORT WORTH Q-186	$21,780,000	No Response			
BURLESON	CONSERVATION, WATER LOSS CONTROL - BURLESON	$37,638	No Response			
CEDAR PARK	BRUSHY CREEK RUA WATER SUPPLY	$69,665,771	$20,899,731	2016	$48,766,040	2017
CEDAR PARK	MUNICIPAL CONSERVATION - CEDAR PARK	$238,695	$0	NA	$0	NA
CENTRAL TEXAS WSC	EAST WILLIAMSON COUNTY WATER PROJECT	$11,233,867	No Response			
CHILDRESS CREEK WSC	BOSQUE COUNTY-RWSP	$22,372,000	No Response			
CHILDRESS CREEK WSC	TRINITY WELL REHAB-CHILDRESS CREEK WSC	$15,000	No Response			
CLEBURNE	REUSE- CLEBURNE	$14,059,000	No Response			
CLEBURNE	LAKE AQUILLA AUGMENTATION-A	$73,912,144	No Response			
COLLEGE STATION	COLLEGE STATION ASR (REUSE)	$63,850,000	No Response			
COLLEGE STATION	REUSE-COLLEGE STATION	$1,705,000	No Response			
COLLEGE STATION	YEGUA-JACKSON DEVELOPMENT-COLLEGE STATION	$32,957,000	No Response			
CRESSON	CONSERVATION, WATER LOSS CONTROL - CRESSON	$5,210	No Response			
CRESSON	CRESSON - NEW WELL IN TRINITY AQUIFER Q-170	$917,300	No Response			

Table 9-1. Summary of Responses to the Infrastructure Financing Survey*

Sponsor	Project Name	Capital Cost	Planning, Design, Permitting and Acquisition		Construction	
			Funding Amount	Year	Funding Amount	Year
CRESSON	TRINITY AQUIFER DEVELOPMENT-CRESSON	$771,000	No Response			
CROSS COUNTRY WSC	INTERCONNECT FROM WACO TO CROSS COUNTRY WSC	$2,579,000	No Response			
FILES VALLEY WSC	CONSERVATION, WATER LOSS CONTROL - FILES VALLEY WSC	$2,010	No Response			
FLORENCE	EDWARDS AQUIFER DEVELOPMENT-FLORENCE	$218,000	No Response			
FLORENCE	TRINITY AQUIFER DEVELOPMENT (BELL CO.)- FLORENCE	$3,778,000	No Response			
GEORGETOWN	EXPAND WTP (21 MGD)-GEORGETOWN	$44,534,000	$8,906,800	2017	$35,627,200	2020
GODLEY	WOODBINE AQUIFER DEVELOPMENT-GODLEY	$375,000	No Response			
GRANGER	EAST WILLIAMSON COUNTY WATER PROJECT	$1,003,024	No Response			
GROESBECK	GROESBECK OCR- GROESBECK	$11,909,000	No Response			
HARKER HEIGHTS	INTERCONNECT FROM KILLEEN TO HARKER HEIGHTS	$2,580,000	No Response			
HEWITT	REUSE- BULLHIDE CREEK	$7,541,000	No Response			
JARRELL	EAST WILLIAMSON COUNTY WATER PROJECT	$501,512	No Response			
JAYTON	NEW WTP(0.4 MGD)-JAYTON	$3,537,000	No Response			
JOHNSON COUNTY SUD	CONSERVATION, WATER LOSS CONTROL - JOHNSON COUNTY SUD	$4,470	No Response			
JOHNSON COUNTY SUD	JOHNSON COUNTY SUD - CONNECT TO PURCHASE WATER FROM GRAND PRAIRIE Q-188	$86,140,000	No Response			
JONAH WATER SUD	EAST WILLIAMSON COUNTY WATER PROJECT	$15,045,357	No Response			
LEANDER	BRUSHY CREEK RUA WATER SUPPLY	$142,186,421	No Response			
LIBERTY HILL	BRUSHY CREEK RUA WATER SUPPLY	$3,554,660	No Response			
MARLIN	BRUSHY CREEK RESERVOIR- MARLIN	$20,836,000	No Response			
MART	INTERCONNECT FROM WACO TO MART	$5,617,000	No Response			
MART	INTERCONNECT FROM WACO TO NORTH BOSQUE	$4,406,000	No Response			
MINERAL WELLS	CONSERVATION, WATER LOSS CONTROL - MINERAL WELLS	$6,389	$6,389	2018	$0	NA
MULTI-COUNTY WSC	CORYELL COUNTY OCR-BRA	$42,246,000	No Response			

Table 9-1. Summary of Responses to the Infrastructure Financing Survey*

Sponsor	Project Name	Capital Cost	Planning, Design, Permitting and Acquisition		Construction	
			Funding Amount	Year	Funding Amount	Year
NORTH CENTRAL TEXAS MUNICIPAL WATER AUTHORITY	MILLERS CREEK AUGMENTATION-NCTWA	$74,399,000	No Response			
PALO PINTO MWD #1	TURKEY PEAK RESERVOIR	$71,988,000	$17,100,000	2015	$70,100,000	2018
PARKER WSC	WOODBINE AQUIFER DEVELOPMENT-PARKER WSC	$1,128,000	No Response			
RIO VISTA	WOODBINE AQUIFER DEVELOPMENT-RIO VISTA	$753,000	No Response			
ROBINSON	EXPAND WTP(4MGD)-ROBINSON	$13,153,000	No Response			
ROUND ROCK	MUNICIPAL CONSERVATION - ROUND ROCK	$36,147	No Response			
ROUND ROCK	BRUSHY CREEK RUA WATER SUPPLY	$102,994,808	No Response			
STEPHENS REGIONAL SUD	WEST CENTRAL BRAZOS WATER DISTRIBUTION SYSTEM	$6,042,286	No Response			
SWEETWATER	INTERCONNECT FROM ABILENE TO SWEETWATER	$13,036,000	$1,500,000	2018	$11,536,000	2020
THROCKMORTON	THROCKMORTON RESERVOIR-THROCKMORTON	$28,041,000	No Response			
THROCKMORTON	WEST CENTRAL BRAZOS WATER DISTRIBUTION SYSTEM	$2,915,403	No Response			
TOLAR	TRINITY WELL REHAB- TOLAR	$20,000	No Response			
TRI-COUNTY SUD	CARRIZO-WILCOX DEVELOPMENT-TRI-COUNTY SUD	$1,445,000	No Response			
UPPER LEON MWD	TRINITY AQUIFER DEVELOPMENT-UPPER LEON (FROM PECAN ORCHARD)	$5,347,000	No Response			
VENUS	CONSERVATION, WATER LOSS CONTROL - VENUS	$740	No Response			
WACO	MCLENNAN COUNTY ASR (WACO)	$43,940,000	No Response			
WACO	REUSE- FLAT CREEK	$9,371,000	No Response			
WELLBORN SUD	EXPAND WTP (4MGD)- WELLBORN SUD	$13,153,000	No Response			
WEST BRAZOS WSC	CARRIZO AQUIFER DEVELOPMENT-WEST BRAZOS WSC	$2,752,000	No Response			
Total		$3,300,118,675	$175,382,920		$470,628,240	

*Note: The survey responses presented are related to water management strategies and capital costs included in the Initially Prepared 2016 Plan. As a result of public and agency comments on the Initially Prepared 2016 Plan, some strategies and capital costs have been modified in the final 2016 Plan, and those changes are not necessarily reflected here. Responses are as of November 15, 2015.

This page intentionally left blank.

Chapter 10

10

Public Participation and Adoption of Plan

This page intentionally left blank.

10 Public Participation and Adoption of Plan

10.1 Public Participation

The Brazos G Regional Water Planning Group (BGRWPG) provided considerable opportunity for the public to participate in the planning process. Notices and meeting agendas were posted prior to each meeting in accordance with State law, and these and other meeting materials were posted on the BGRWPG website (www.brazosgwater.org) as they became available prior to each meeting. The public was invited to speak during public comment periods during each planning group and committee meeting. In addition, stakeholders were often invited to participate in planning group and committee meetings (as formal items of the meeting agenda) to present information to the planning group that was pertinent to issues the planning group was considering.

The BGRWPG formally adopted its process for identifying, evaluating and selecting water management strategies on January 26, 2012 and included opportunities for public input during the development of the scope of work to develop the 2016 Plan.

The BGRWPG held three sub-regional meetings in March 2015 to solicit comments on the draft WUG and WWP plans prior to development of the Initially Prepared Plan. These meetings were held in Abilene on March 24, 2015 (Upper Subregion), in Waco on March 25, 2015 (Middle Subregion), and in College Station on March 26, 2015 (Lower Subregion).

As described below, the BGRWPG held a public hearing on June 23, 2015 to receive comments from the public on the Initially Prepared Plan.

10.2 Brazos G Regional Water Planning Group Website (www.brazosgwater.org)

The BGRWPG has directed the Brazos River Authority (BRA) to maintain a website where meeting notices, agendas, and presentation materials may be viewed by the public. In addition to meeting materials, the 2001, 2006 and 2011 Brazos G Regional Water Plans are posted for public viewing and download, as well as documents from the planning process for the 2016 Plan. The website offers other features including member contact information, planning area maps, planning data, and audio transcripts of meetings.

10.3 Coordination with Water User Groups and Wholesale Water Providers

The BGRWPG coordinated with multiple water user groups, wholesale water providers, county judges, and councils of governments in the region regarding population and water demand projections developed by the Texas Water Development Board (TWDB), groundwater and surface water availability estimates, proposed water management strategies, and recommendations for sites uniquely suited for reservoir construction.

Representatives from the BGRWPG met with representatives from multiple entities in Williamson County on January 21, 2015 and March 16, 2015 to discuss options available to address large water needs in that county. At those meetings, various options were presented and the representatives prioritized those water management strategies they considered most desirable. The resulting plans for entities in Williamson County reflect the outcome from those meetings.

Surveys were disseminated to water user group and wholesale water providers to obtain input regarding draft population and water demand projections and current sources of supply (March/April 2013), draft water needs and strategies to supply those needs (October 2013), implementation of water management strategies recommended in the 2011 Brazos G Regional Water Plan (June 2015), and infrastructure financing recommendations for water management strategies recommended in the 2016 Plan (September 2015).

The Brazos G technical consultant worked closely with 30 water user groups during May – July, 2013 to refine or correct information used by the TWDB to determine per capita water use (gpcd) values used to project municipal water demands.

Draft plans for each water user group and wholesale water provider were presented to water user groups and wholesale water providers at the three subregional meetings held in January. In addition, the Initially Prepared 2016 Plan was provided to county libraries and county clerks in all Brazos G counties, and posted on the Brazos G website for public review and comment.

10.4 Coordination with Other Planning Regions

Coordination with other planning regions was accomplished primarily through the technical consultants, who coordinated data and shared information that was later reported to the planning groups. Coordination was accomplished with the technical consultants from Regions B, C, F, H, K, L and O.

10.5 Brazos G Regional Water Planning Group Meetings

The BGRWPG held 51 public meetings during the 2016 planning cycle, between March 1, 2011 and December 31, 2015, including regular meetings of the full planning group; periodic meetings of the Executive, Scope of Work, and Finance Committees; and periodic meetings of the Water Policy Workgroup.

10.6 Public Hearing and BGRWPG Responses to Public Comments on Initially Prepared Plan

The BGRWPG held a public hearing on June 23, 2015 to receive comments concerning the Initially Prepared 2016 Brazos G Regional Water Plan. The oral comments received can be heard from the audio transcripts on the BGRWPG website (www.brazosgwater.org), and a transcript of the public hearing can be viewed at the same location. At the public hearing, 20 members of the public provided oral comments and/or submitted written comments to the planning group concerning various aspects of the plan, predominantly focused on the proposed Little River Off-Channel Reservoir.

Written comments were received from several individuals that mirror or expand upon their oral comments.

Following the June 23, 2015 public hearing, written public comments were received by the planning group through August 24, 2015. Additional comments were received from the Texas Water Development Board and the Texas Parks and Wildlife Department. No comments were received from federal agencies.

The following section summarizes the public comments received and the responses of the BGRWPG. Comments are summarized in *italics*, with the response from the BGRWPG following in regular type. Copies of written comments received and a transcript of oral comments received at the public hearing are included in Appendix I. When duplicate written information was provided by different parties in support of written comments, only one copy of the duplicate document is included in the appendix.

Comments Received Opposing Inclusion of the Little River Off-Channel Reservoir in the 2016 Brazos G Regional Water Plan (oral and written comments)

Numerous comments were received in opposition to the Little River Off-Channel Reservoir. Those providing comments in opposition to the proposed reservoir are listed below. This list was compiled from signatories of hard copy and email comments received by the Brazos River Authority, and from the record of those making oral comments at the June 23, 2015 public hearing in the Initially Prepared Plan. In addition, opponents presented the results of a hard copy petition and a petition on the Change.org website, with a combined total of 2,442 signatures reported by the organizers.

Milam County Commissioners Court
Gause Independent School District Board
Milano City Council
22 Hills Homeowners' Association Architectural Control Committee, Gause, TX
Patsy Alford, Gause, TX
Judge Dave Barkemeyer, Milam County Judge – oral comments
Elaine Shafer Baumann, Gause, TX
Eugene and Elaine Baumann, Gause, TX
Curtis Chubb, Ph.D., Milam County, TX
Joyce and Mike Conner, Gause, TX – oral and written comments
Dave Cunningham, Gause, TX – oral comments
Cindy and James Delulio, Calvert, TX
Dan Fischer, Gause, TX
Wayne Fisher, Milan County and Harris County – oral comments
Sherry Hughes Garner
Don & Lynn Hagan, Gause, TX
Kimberly Hahn, Dewitt County – oral comments
Sheryl Hall, Gause, TX – oral comments
Linda Hoppe, Gause Independent School District – oral comments
Tommi Ivey

Steven Gonzales, Executive Director, El Camino Real de los Tejas National Historic Trail Association – oral and written comments

Robert W. Knight, Ph.D., Texas A&M University

Gary, Lisa, Sara and Scott Kornegay – oral and written comments

Julie Kornegy

Mary Lou Kornegay

Michael Wayne Kornegay, Gause, TX – oral and written comments

Steve and Cathy Lazarus, Calvert, TX – oral and written comments

Judy Marks, Gause, TX

Allison Shafer Riherd

Reece Riherd

Parker Riherd

Deborah, Jerrod, Graham and Sean Russell, Tomball, TX

Norma Schroeder Schendel, Yorktown, TX

Arlene Schroeder, Yorktown, TX

Marlan Scully – oral comments

Clay Shafer

Frank A. Shafer, Franklin, TX

Harold C. and Susan Shafer

Kyle Shafer

Philip Shafer

Watson Hubert & Opal Shafer, Gause, TX

William Shafer

Melissa Shehane, College Station, TX – oral and written comments

Amanda and John Sulzbach, The Woodlands, TX

Colby Theis, Robertson County, TX

Cathy Tooley

Marion Brewer Travis, Cameron, TX

Kathy and V.V. Turner, Gause, TX

James and Mary Waldson

Carl and Stephanie Wall

Frank Louis Wall II

Irma Andrea Wall

Maria Elizabeth Wall

Michelle Wall – oral comments

Stephanie Wall

Melvin F. Wall, Gause, TX – oral and written comments

Gary Westbrook, General Manager, Post Oak Savannah GCD, Milano, TX – oral and written comments

Benjamin Whittington

Jacob Whittington

Jerald Wise P.E. (Ret), Cameron, TX

Many of the comments opposing the reservoir focus on one or more common themes or technical arguments. Each of these is summarized below, followed by the BGRWPG's response. Note that numbers assigned to the comments are solely for organizational purposes.

1. *Each commenter identified above requested removal of the Little River Off-Channel Reservoir from the 2016 Brazos G Regional Water Plan as a recommended water management strategy.*

The BGRWPG understands the concerns voiced regarding the Little River Off-Channel Reservoir. During the Brazos G regional water planning process, water management strategies such as additional development of Carrizo-Wilcox Aquifer groundwater and the Lake Granger Augmentation Project were preferred options to include in the 2016 Brazos G Regional Water Plan. When confronted by the Modeled Available Groundwater (MAG) limitations of these two options, the BGRWPG has little alternative but to make the Little River Off-Channel Reservoir a recommended strategy.

At this time, the planning group believes it is prudent to continue the project as a recommended water management strategy in the 2016 Brazos G Regional Water Plan. Many of the issues put forth by opponents of the project are more appropriately dealt with during state and federal permitting processes and not during the regional water planning process. At this time, no entity has been identified as wishing to pursue the project, but if that should happen, environmental, cultural resource and technical issues will need to be addressed in much greater depth than is done during the regional water planning process. Retaining the project in the plan facilitates the opportunity to receive state funding to study the project further and provide greater definition of the impact of the issues identified by the project's opponents. If the project is not a recommended water management strategy in the plan, then state funding for those studies will not be available. These further studies will determine with greater certainty whether the project is, in actuality, feasible to develop or not. If the project is removed from the regional water plan, there is no certainty that it won't be recommended in some future regional water planning cycle. By allowing the project to remain as a recommended water management strategy in the 2016 Plan, the opportunity will remain for any entity wising to pursue the project to obtain state funding for the in-depth technical studies necessary to determine the actual viability of the project. These studies would include a more detailed alternative siting analysis, where sites other than the one identified in the plan would be investigated more fully.

2. *Remove designation of the Little River Off-Channel Reservoir as a Unique Reservoir Site.*

The Texas Legislature is responsible for designating Unique Reservoir Sites, and usually does so upon the recommendation of one or more regional water planning group and/or the Texas Water Development Board. The Brazos G Regional Water Planning Group has not recommended that the Little River Off-Channel Reservoir be designated as a Unique Reservoir Site. The Brazos G Regional Water Planning Group only recommends such designation when requested by a project sponsor. The Region H Water Planning Group has recommended that the project be designated as a Unique Reservoir Site in the 2011 Region H Plan and in the 2016 Initially Prepared Region H Plan. Requests to remove that designation should be made to the Region H Water Planning Group, the Texas Water Development Board, and the Texas Legislature.

3. *Remove the Little River Off-Channel Reservoir from evaluation in future water plans.*

The Brazos G Regional Water Planning group cannot guarantee that the project won't be evaluated in future regional water planning cycles. The Brazos G Regional Water Planning Group has no authority to prevent future members of the Brazos G Regional Water Planning Group from evaluating the project during future planning cycles or to prevent other regional water planning groups from evaluating the project.

4. *The proposed Little River Off-Channel Reservoir will inundate multiple cultural resources, including the Pin Oak Cemetery, designated an Historic Cemetery by the Texas Historical Commission, numerous family homesteads including Texas Department of Agriculture Family Land Heritage Program designations, Native American artifacts and a portion of the El Camino Real de los Tejas, a National Historic Trail.*

The BGRWPG appreciates the various commenters' concerns that the proposed reservoir will inundate numerous areas that have cultural and archeological significance. . Many of the impacts identified by the commenters, i.e., the Pin Oak Cemetery, are identified in the technical evaluation of the project (Volume II) and will be more fully assessed during the federal permitting process.

The portion of the El Camino Real de los Tejas within the area that would be inundated by the reservoir is largely on private property, and there is no public park system or other public access to view or otherwise visit this portion of the historic route.

5. *The proposed Little River Off-Channel Reservoir will inundate areas having substantial natural resource value, and this loss of habitat will negatively impact area wildlife as well as permanently destroy areas of natural beauty, such as dogwood forests and pristine streams. Maps do not show what land will be used for environmental mitigation.*

The BGRWPG understands the concerns that the proposed reservoir will inundate these areas and have these impacts to area wildlife. These issues are addressed during the federal permitting process and will require appropriate mitigation for those impacts. This mitigation process may include established mitigation banks. Identification of those mitigation areas is outside the scope of the regional water planning process.

6. *The proposed Little River Off-Channel Reservoir is not needed to meet the needs of Williamson County – other water management strategies can be recommended to meet those demands, such as additional conservation, aquifer storage and recovery projects, groundwater development, more aggressive levels of wastewater reuse and ocean water desalination.*

The BGRWPG is responsible for water planning in all areas of Brazos G, including Williamson County. The BGRWPG coordinated with entities in Williamson County, who requested that the Little River Off-Channel Reservoir be recommended to meet future water needs for entities in Williamson County. This is not the only strategy recommended to meet water needs in Williamson County. Other strategies recommended include developing water from the Highland Lakes, reuse, and aquifer storage and recovery associated with overdrafting of Lake Granger. Additional advanced conservation was also recommended for those entities having per capita water use rates greater than 120 gpcd to achieve that level within the planning horizon, while the target for the rest of the Brazos G Area is 140 gpcd. Only limited additional groundwater development can be recommended in the plan for any of the aquifer systems near Williamson County (including Milam County) because of limitations imposed by the estimates of the Managed Available Groundwater (MAG) for those aquifer systems.

7. *The proposed Little River Off-Channel Reservoir would impart a large increase on the BRA's system rate, and would produce a large cost on users of the supply. The costs for the project are much more expensive than other alternatives, such as the Allens Creek Reservoir.*

The BRA is identified as the project sponsor in the 2016 Plan by default because no entity has requested to be identified as the project sponsor. The impact of the project on BRA's system rate would be determined when and if the BRA decided to pursue the project. The BRA has no current plans to develop the project. A reservoir project is expensive, and will have a large impact on the end users' water rates.

8. *Specific errors or anomalies have been identified with regard to how supplies are assigned from the Little River OCR to various water user groups and the Brazos River Authority. Additionally, a completion date of 2020 appears unrealistic and should be changed to 2050 or later.*

These technical items have been reviewed and the values corrected, as necessary.

9. *Supplies from the proposed Little River Off-Channel Reservoir will be used to meet demands for Williamson County entities only, and therefore, any recommended strategy should be located in Williamson County. The citizens of Milam County would not benefit from supplies from the proposed reservoir.*

Supplies from the proposed Little River Off-Channel Reservoir are identified in the plan to supplement supplies available from the Brazos River Authority (Lakes Belton, Stillhouse Hollow, Georgetown and Granger), and from groundwater sources. The plan addresses specific water user groups in Williamson County. However, entities in Milam County also receive supplies from the BRA system through the Central Texas WSC, including the Town of Buckholts, Bell-Milam-Falls WSC, Little Elm Valley WSC, and Salem-Elm Ridge WSC. Although this is not specifically identified in the plan, these utilities would benefit from the proposed reservoir by reducing dependence on the limited supplies from the existing BRA reservoirs. Additionally, future steam-electric demands in Milam County are identified in the plan to be supplied from the reservoir.

10. *The water demands for Williamson County are overstated and the reservoir is not needed.*

The population of Williamson County is expected to increase from the 2010 census of 211,306 persons to 705,691 persons in 2030 and 1,523,206 persons in 2070. These projections were developed by the Texas State Demographer and accepted by entities in Williamson County. Water demand projections for water user groups in Williamson County reflect this dramatic population increase, but also reflect conservation through the increased use of water efficient plumbing fixtures. Williamson County entities requested that the plan include additional advanced conservation as a strategy to achieve a water conservation goal of 120 gpcd rather than the standard goal of 140 gpcd used for the rest of the Brazos G Area. Further, population projections are frequently evaluated during the water planning process.

11. *The proposed Little River Off-Channel Reservoir is located above the recharge zone of the Carrizo-Wilcox Aquifer and the reservoir will be unable to hold water, if constructed. This will cause degradation of the water quality in the aquifer because Brazos River has lower water quality than the native water in the aquifer.*

Any impacts of locating the reservoir above the recharge zone of the Carrizo-Wilcox Aquifer would be determined through a detailed technical study. Such a study will help address issues such as determining if the reservoir is a viable option. Assessment of long-term leakage would be affected by such factors as reservoir depth, aquifer properties, and other characteristics that might influence the rate of migration of water into the underlying aquifer.

12. *Other sites for the proposed Little River Off-Channel Reservoir should have been investigated.*

This specific site for the Little River Off-Channel Reservoir has been identified in the regional water planning process since the first planning cycle that developed the 2001 Plan. No other sites have ever been suggested for the project, and no detailed alternative siting analysis has been performed. A detailed review of other potential sites would most likely be one of the first priorities should a project sponsor be identified that is interested in pursuing the Little River Off-Channel Reservoir.

13. *The proposed Little River Off-Channel Reservoir will destroy the investments made by previous and current landowners to improve their property.*

The BGRWPG understands the concerns about the loss of investments in sometimes multi-generation held property. These are economic compensation issues that are addressed if the Little River Off-Channel Reservoir is pursued by a project sponsor.

14. *The proposed Little River Off-Channel Reservoir will destroy parts of FM 2095 and impair access to the City of Cameron by citizens of the communities of Gause and Hanover.*

These are issues that are addressed if the Little River Off-Channel Reservoir is pursued by a project sponsor.

15. *The proposed Little River Off-Channel Reservoir will have an adverse affect on the tax bases of the Gause Independent School District, the Milano Independent School District, and Milam County.*

The BGRWPG understands the concern about the impact of the Little River Off-Channel Reservoir affecting the tax base. Development of the reservoir will remove roughly 4,400 acres (6.875 square miles) from the tax rolls. The impact of this on the tax base of the two school districts and the county are not determined as part of the regional water planning study. The total area of Milam County is 1,022 square miles, so the area of the reservoir represents roughly 0.67 percent (a little more than half a percent) of the total land area in the county. The impact to the tax base of the two school districts would be proportionally greater because the reservoir footprint includes a greater portion of the school districts' areas. This is the kind of issue assessed if there is a project sponsor willing to pursue the project.

16. *The proposed Little River Off-Channel Reservoir will cover agricultural lands protected by the federal Farmland Protection Policy Act.*

The Farmland Protection Policy Act is intended to minimize the extent to which Federal programs "contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses." The act directs the Department of Agriculture and other Federal agencies to take steps to assure that the actions of the Federal Government do not cause farmland to be irreversibly converted in cases in which other national interests do not outweigh the benefits of maintaining farmland resources. It appears that this specific legislation would only apply if the project sponsor for the Little River Off-Channel Reservoir were a federal entity.

17. *The proposed Little River Off-Channel Reservoir would provide no significant recreational or economic value to the citizens of Milam County.*

This concern appears to be premature, as the use of a reservoir is determined by the project sponsor that owns and controls the rights to the reservoir's use, including recreational use.

18. *The TWDB has new requirements for water conservation content to be included in the Plans including directives...to assess the highest level of water conservation and efficiencies achievable, report the resulting projected water use savings in gallons per capita per day, and develop conservation strategies based on this information. The IPP...fails to report any savings from water conservation for the entities in Williamson County that are to receive water from the Little River Off-Channel Reservoir. Please break this information out as required.*

Conservation savings are documented for each of the Williamson County municipal WUGs identified to receive water from the Little River Off-Channel Reservoir. These include Brushy Creek MUD, Chisholm Trail SUD, City of Georgetown, City of Round Rock and Williamson County-Other. Conservation (140 gpcd) savings are documented in Volume II, Section 2.1.3 and additional advanced conservation (120 gpcd) savings are documented in Volume II, Section 2.1.4.

19. *There would be little water available to fill the reservoir. It will seldom be full and most of the time would be quite low.*

Water available to the project was determined using the Brazos River Basin Water Availability Model (Brazos WAM), as stipulated by Texas Water Development Board planning rules. A storage trace showing how the reservoir would perform over a historical period of record analysis is included in the technical evaluation of the project in Volume II, Figure 4.7-2, page 4.7-3. More detailed technical studies will assess points concerning water availability and retention.

20. *Please remove from the plan all identified off-channel reservoir sites.*

State law requires that the BGRWPG prepare a plan consisting of water planning strategies. Most of the off-channel reservoir sites identified in the technical evaluations in Volume II are not recommended strategies, but were potentially feasible alternatives that were considered and evaluated, but not recommended. These are potentially feasible water management strategies that were evaluated during the process of developing the 2016 Plan and should remain documented as such in the report.

21. *Milam County OCR should be preferred over the Little River OCR because it is a smaller, less expensive project and would have fewer negative environmental impacts. The Milam County OCR could also replace the Peach Creek OCR (specific comment from Mr. Theis)*

The Milam County OCR is not the recommended option because it does not generate sufficient supply. Future evaluations of alternative sizes for the project may prove that the Milam County OCR is the more preferred option. However, evaluation of multiple iterations of the project was outside the scope of this planning study. The Peach Creek OCR was evaluated, but is not a recommended water management strategy in the 2016 Plan.

22. *Impacted areas where projects are located should be notified when projects are included that affect them.*

The Brazos G Regional Water Planning Group posts public notices of all of its meetings. In addition, the planning group disseminates the Initially Prepared Plan to each county clerk and a public library in each county in the planning area. The planning group holds a public hearing on the Initially Prepared Plan to obtain public input, with the intention that comments on the Initially Prepared Plan will be considered and incorporated as appropriate into the final plan. Information is also available to the public on the brazosgwater.org website. At the time a project is actually pursued by a water supply entity and detailed plans are developed so that a more accurate determination can be made of property owners that might be affected by a particular project, notices will be sent by the appropriate entity.

23. *Use of "place holder" strategies that will never be built wastes the state's resources and misrepresents the state's water balance.*

Several alternatives exist by which regional water planning groups can account for how projected water needs will be met. One alternative is to assume in the plan that certain water needs will go unmet. Another alternative is to include a potentially feasible water management strategy in the plan to meet the projected needs. Another alternative is to include more than one strategy to meet a projected need with the expectation that future detailed evaluations will identify the preferred alternative. Readers should recognize that the strategies recommended are a plan, nothing more and nothing less, and nothing is binding regarding the strategies or the water user groups and wholesale water providers for which they are recommended.

24. *Environmental impacts of the proposed reservoir have not been fully determined, including downstream riparian impacts due to modified river flow regimes.*

Detailed environmental evaluations are part of the state and federal permitting process. Such studies are done when a project sponsor elects to pursue permitting of the Little River Off-Channel Reservoir.

25. *Use of GAM and WAM values appear to not be widely accepted amongst all users. Models and water availability estimates used in the planning process should be accepted by all stakeholders.*

The GAM and WAM models used in the planning process are stipulated by Texas Water Development Board rules, and are considered to be the standards by which water supplies are to be evaluated.

26. *Utilizing the lowest annual rainfall year to determine the amount of water needed is a flawed approach because it proposes a solution to a problem that has an extremely low probability of existing. Planning should be based on what is probable, not a worst case scenario.*

Hydrology in Texas is highly variable and is characterized by extremes. The Texas Legislature established that all water demands in regional water planning be based upon what is needed in a "dry" year, but not necessarily the driest year on record. Water demands in the Brazos G Area are based on that dry year methodology.

Similarly, supplies are to be developed based on drought of record analysis, i.e., how much water would be available throughout a repeat of the drought of record. The drought of record is based upon recorded historical observations, which represent a relatively short period of time, often less than 100 years. We know that there have been pre-historic periods that appear to have been much drier than what is generally accepted as the drought of record. Because drought periods in Texas span multiple years, water supplies need to be developed that allow for supply to be maintained through sequences of dry years. The need for water is so critical, that prudence calls for planning to meet water demands through a drought of record period.

27. *Inclusion of the reservoir location in the water plan unnecessarily encumbers the affected landowners because the land is at risk for condemnation in the future. This has a negative effect on any landowner attempting to sell property.*

The Brazos G Regional Water Planning Group understands the concerns of those land owners whose property is identified as being within areas shown to be impacted by the project. If the project were being pursued definitely by a project sponsor, it would be appropriate to show the project area to a level of detail that individual properties might be identified because the project sponsor would already have completed a more detailed site alternatives analysis and been in communication with those property owners affected. Conversely, in the absence of a project sponsor, the Brazos G Regional Water Planning Group believes it would be better to simply describe a project as being "in the vicinity" of Milam County without identifying a specific project footprint on a map because there is less definition of the project and the actual project might eventually be located miles or more from the location shown in the plan. However, Texas Water Development Board planning rules require that a footprint of the proposed project be shown in the plan.

Comments Received Supporting Inclusion of the Little River Off-Channel Reservoir in the 2016 Brazos G Regional Water Plan

Numerous comments were received in support of the Little River Off-Channel Reservoir. Those commenting in support of the proposed reservoir are listed below.

Dale Ross, Mayor, City of Georgetown, TX

Several officers of the Chisholm Trail SUD

Board of Directors, Lone Star Regional Water Authority, Jarrell, TX

David L. Mann, Sr., Chairman, The Woods Ad Hoc Water Committee, Georgetown, TX

William L. McGavran III, Chairperson, Williamson County Greater Water Committee, Georgetown, TX

Don Scott, Chairman, Woodland Park and Woodland Park West Water Committee, Georgetown, TX

Judith Prehar, Water Committee Member of Fountainwood, Georgetown, TX

Carlene Boyd, Shady Oaks Ad Hoc Water Committee, Georgetown, TX

Diana Rogoff, Georgetown, TX

These themes and arguments in support of the reservoir are summarized below.

1. *Williamson County and the entire Brazos Basin will be enhanced by inclusion of the project in the plan.*
2. *Every water resource that can be developed, in the Brazos Basin, is a resource that will provide for the continued prosperity of Texas.*
3. *...maintaining a diverse set of identified resource options is proper long-term regional planning.*
4. *Maintaining the reservoir in the plan will continue to make it eligible for state and federal funding.*

The BGRWPG understands your support of the Little River Off-Channel Reservoir and has opted to retain it as a recommended water management strategy in the 2016 Brazos G Regional Water Plan.

Commenter — T. Barret Lyne, Ph.D., Bryan, TX (oral and written comments)

The groundwater model, MODFLOW, is based upon equations that have limited ability to describe groundwater flow and decisions based upon modeling in MODFLOW are suspect and should not be relied upon by water planners and water managers.

The MODFLOW model has been proven to be a reliable system for evaluating groundwater systems and is used widely in the industry and in academia. It has general acceptance in the water supply community and is the basis for many decisions made by groundwater districts and for establishing Modeled Available Groundwater estimates by the Texas Water Development Board.

Comments Received from the Texas Parks and Wildlife Department

The Texas Parks and Wildlife Department provided a comment letter noting several aspects of the initially prepared plan. Those comments requiring a response involving a potential modification to the plan are summarized and responded to below.

1. *There appears to be an error on page ES-16 stating municipal conservation savings in the 2016 Plan are 21,366 acft/yr.*

The typographic error has been corrected to 73,835 acft/yr.

2. *Please include updated information to help clarify the present status of zebra mussels in Texas. The present known distribution (as of July 27, 2015) of zebra mussels in Texas reservoirs includes two reservoirs in Brazos G: Lake Waco and Belton Reservoir.*

The information has been added to the plan in Chapter 1, Section 1.9 as a threat to water supply in the Brazos G Area.

3. *The proposed Cedar Ridge Reservoir will alter streamflow variability, could potentially affect up to 27 threatened, endangered, and rare species, would increase concentrations of dissolved salts and minerals in Possum Kingdom Reservoir, and would increase fluctuations in lake levels at Possum Kingdom Reservoir.*

The Cedar Ridge Reservoir was evaluated using environmental flow standards adopted by the TCEQ, which were developed through a stakeholder-driven public process by the

Brazos River and Associated Bay and Estuary System Stakeholder Committee (BBASC) and Expert Science Team (BBEST), as per TWDB planning requirements. The expected environmental impacts of the proposed reservoir are discussed in detail in the technical evaluation of the project in Volume II. Any additional environmental evaluations of the project will be during the state and federal permitting processes for the project.

4. *The upper Brazos drainages support a unique prairie stream ecosystem. Alterations in hydrologic and water quality conditions due to reservoir construction and operation, water diversions, control of brine sources, and consequent effects may disrupt the dynamics of the unique ecosystem and render habitat unsuitable for species adapted to prairie streams, including pupfish, killifish and minnows (Smalley Shiner and Sharpnose Shiner).*

Anticipated environmental impacts of the each strategy are documented in the technical evaluations found in Volume II, which were completed as per regional planning rules and guidelines. Any of the recommended water management strategies located in the upper Brazos River Basin will undergo additional environmental assessment during the state and federal permitting processes for the projects. Such additional assessments are beyond the scope of the regional water planning process.

5. *The IPP does not recommend any stream segments be nominated as ecologically unique. No explanation is provided for the lack of recommendations.*

The BGRWPG is concerned regarding the impact such designation may have on limiting future activities in the vicinity of any streams designated as ecologically unique and has chosen to not nominate any streams.

Comments Received from the Brazos River Authority

1. *...all of BRA's existing supplies are fully contracted, so subordination agreements...may not be possible...the BRA requests that Brazos G and HDR, Inc. include a caveat in every water management strategy that assumes a subordination agreement with BRA that clearly states subordination may not be possible.*

The appropriate text has been added to each water management strategy that assumes a subordination agreement with BRA.

2. *There are frequent references that subordination for some recommended water management strategies will be possible upon issuance of BRA's System Operation Permit. BRA does not want sponsors of other recommended water management strategies to assume that a subordination agreement with BRA is "automatic."*

The appropriate text has been added to each water management strategy that assumes a subordination agreement with BRA related to the pending BRA System Operation Permit.

3. *BRA recommends that the Brazos G consultant revisit the use of BRA's System Operation Permit as a recommended water management strategy and limit the new supply to a volume closer to the 84,899 acft/yr that is contained in the 2011 Brazos G Plan.*

The total supply from BRA's System Operation Permit in the 2011 Brazos G Plan is actually 102,581 acft/yr, when accounting for the supply necessary to develop the Lake Granger Augmentation project, which would utilize an additional 17,682 acft/yr from the System Operation Permit. The total supply from the permit in the Initially Prepared 2016 Brazos G Plan is 141,952 acft/yr, or about 39,371 acft/yr more than the 2011 Plan.

4. *For planning purposes, it is assumed that all existing water supply contracts will be renewed. BRA notes that not all contracts will necessarily be renewed and requested the following text be added to the plan to the second sentence of the second paragraph of section 4.3.1: "...all of these contracts are long term and considered perpetual through 2070 for regional water planning purposes. However, in reality, the BRA will consider contract renewals on a case by case basis as contracts expire."*

The suggested text has been added, as requested.

5. *The BRA has requested that the current system rate charged to system contractual customers be used when presenting costs of strategies involving BRA supplies.*

Per regional water planning guidelines, costs are presented in September 2013 dollars. The costs in the plan utilize the 2014 BRA system rate of $65.65/acft, which was adopted for the BRA fiscal year beginning September 1, 2013.

6. *BRA has recommends revising the list of entities potentially involved with the West Central Brazos Water Distribution System (WCBWDS) because some have already contracted for water from BRA.*

The strategy evaluation was specific to those entities included in the evaluation and only those entities should continue to be identified with the project.

7. *BRA recommends removing the regional WTP expansion in Breckenridge from the WCBWDS strategy evaluation in Chapter 8.4 of Volume II because project participants have elected to build individual water treatment plants,, and notes that the City of Abilene is constructing new treatment capacity near Breckenridge that would benefit Abilene and possibly Breckenridge.*

The regional WTP identified in the strategy evaluation is part of the original formulation of the water management strategy, which has not been updated in this round of planning. Brazos G notes that the WCBWDS strategy should be updated in future plans to reflect current plans of selected entities, none of which have informed Brazos G of their intentions to build separate WTPs and forgo the regional WTP identified in the original plan formulation. The West Central Brazos Water Distribution System water management strategy was evaluated for a specific set of water user groups in the vicinity of Shackelford, Stephens, and Throckmorton Counties. The City of Abilene was not a participant in this water management strategy. The regional WTP identified in the strategy evaluation is for those entities, and does not involve Abilene. The WTP being constructed by Abilene is for Abilene's sole use and is not associated with this water management strategy.

8. *Regarding Table 8.4-2, BRA states "For Fish and Wildlife Habitat section, it will be more than a low to moderate impacts if brine effluent is discharged to surface water streams. The Sharp Nose Shiner has already precluded Abilene from discharging in the river above PK. Same comment for Threatened and Endangered Species below."*

The impacts to fish and wildlife habitat and threatened and endangered species if brine effluent were to be discharged to surface water streams should remain shown as "low to moderate" in Table 8.4-2. The actual method of brine disposal has not been determined, nor have specific streams been identified as candidates for brine disposal. Furthermore, the City of Abilene has requested that Brazos G note that the discharge permit in question for Abilene (which is not related to this water management strategy) is still under review and no determination has been made regarding Abilene's ability to discharge brine upstream of Possum Kingdom Reservoir. Endangered species have not been demonstrated to preclude Abilene from discharging in the river above Possum Kingdom Reservoir.

9. *The BRA suggests miscellaneous formatting, typographical corrections, and wording suggestions to refine information presented and improve the clarity of the text.*

Brazos G thanks the BRA for their thorough and careful review of the text of the initially prepared plan and will adopt those suggested revisions as appropriate in the text of the final plan.

Jayson Barfknecht, Ph.D., P.E., Public Works Director, City of Bryan

Dr. Barfknecht requested that the City of Bryan ASR project be made a recommended water management strategy with changes to the technical evaluation to demonstrate water available for ASR storage. The City offered to provide technical analysis in coordination with the TWDB to demonstrate water that would be made available by the project.

The BGRWPG will replace the current technical evaluation of the project with the evaluation demonstrating the water available for ASR that will not exceed the MAG for the Carrizo-Wilcox Aquifer in Brazos and Robertson Counties.

John Firth, Coryell County Judge

Judge Firth expressed support for inclusion of the Coryell County Off-Channel Reservoir as a recommended water management strategy in the 2016 Brazos G Regional Water Plan.

The Coryell County Off-Channel Reservoir is a recommended water management strategy in the plan.

Coryell County Commissioners Court

The Coryell County Commissioners Court provided a resolution passed by the court on June 22, 2015 that reads as follows:

> "The County of Coryell request that the State Water Development Board and Region G support increasing the priority for the construction of the Coryell Off-Channel Reservoir given the limited known water resources that will be available to Western Coryell County and neighboring counties."

The BGRWPG supports the development of the Coryell County Off-Channel Reservoir. The BGRWPG have recommended it as a water management strategy to meet projected water needs in the area and have recommended that the Texas Legislature designate the site of the proposed reservoir as a "Unique Reservoir Site."

Jimmy Wood, President, Multi-County Water Supply Corporation

Mr. Wood, on behalf of the Multi-County Water Supply Corporation, expressed support for the Coryell County Off-Channel Reservoir and requested that the Multi-County Water Supply Corporation be identified as the project sponsor in the 2016 Brazos G Regional Water Plan.

The BGRWPG supports the development of the Coryell County Off-Channel Reservoir. The BGRWPG have recommended it as a water management strategy to meet projected water needs in the area and have recommended that the Texas Legislature designate the site of the proposed reservoir as a "Unique Reservoir Site." Furthermore, the BGRWPG has modified the 2016 Brazos G Regional Water Plan to identify the Multi-County WSC as the sponsor of the project.

Kleber Denny, P.E., on behalf of the Salt Fork Water Quality Corporation

Mr. Denny expresses concerns that the evaluation of the Upper Brazos Basin Salinity Control project is not shown as developing a quantified water supply. Mr. Denny presented some research and computations to demonstrate that the reduced salinity results in less reject water (brine) coming from desalination treatment processes along the main stem of the Brazos River, which increases usable supply to entities desalinating the water prior to use.

The BGRWPG has considered the information provided by Mr. Denny and has incorporated it into the technical evaluation of the project. The project is now shown as making water supply available to municipal users due to reduced volumes of reject brine being produced by desalination facilities.

Rodney Kroll, President (written comments) and Scooter Radcliffe, General Manager (oral and written comments), Southern Trinity Groundwater Conservation District

Mr. Kroll and Mr. Radcliffe express support of the plan and inform the BGRWPG that the groundwater district is "developing policies and programs that promote the conjunctive use of groundwater and surface water to optimize the amount of water available to McLennan County during surface water shortages and extending the viability of the Trinity aquifer for many decades." Mr. Kroll also notes that the district's "approach and use of the existing Trinity Aquifer MAG...allows our permitted volumes to be equal to or less than the MAG while promoting long term conservation of the aquifer through reduced pumping during times of adequate surface water supplies."

The BGRWPG appreciates that the district's management of the Trinity Aquifer in McLennan County is consistent with the MAG, and looks forward to working with the district as the plans are formulated for conjunctive use of surface and groundwater supplies.

Janice Bezanson, Executive Director, Texas Conservation Alliance in coordination with Friends of the Brazos River (oral and written comments)

Ms. Bezanson expresses concerns over water demands shown for the City of Abilene, the supplies available to Abilene, and the resulting need for Cedar Ridge Reservoir as a recommended water management strategy for Abilene. Ms. Bezanson recommends that the Cedar Ridge Reservoir be replaced as a recommended water management strategy with a diversion from the Clear Fork of the Brazos River to Hubbard Creek Reservoir.

The projected water demands and supplies were developed using technical methods approved by the TWDB and reflect the best known information regarding the City's current and future water supply commitments and water supplies currently available to the City.

The BGRWPG strives for the Brazos G Plan to reflect the plans of local water user groups and wholesale water providers and will continue to recommend the Cedar Ridge Reservoir at the request of the City of Abilene.

William Oliver

Mr. Oliver expresses support for the proposed South Bend Reservoir project.

The BGRWPG has opted not to recommend the South Bend Reservoir project in the 2016 Brazos G Regional Water Plan, but recognizes that future circumstances could cause the project to become a more viable water management strategy.

10.7 TWDB Comments on Initially Prepared Plan and BGRWPG Responses

The following section summarizes the comments received from the TWDB and the responses of the BGRWPG. Level 1 comments are required to be addressed in order to meet statutory, agency rule, and/or contract requirements. Level 2 comments and suggestions are suggested for consideration to clarify or enhance the plan.

10.7.1 Level 1 TWDB Comments

1. *Tables 2-5 through 2-10 present water user group (WUG) demands by category of use, but do not include demand projections over the planning horizon for wholesale water providers (WWP) by water use category and by county. Please include WWP demands by category of use and county in the final, adopted regional water plan. [31 Texas Administrative Code (TAC) §357.31(b)]*

The information regarding demands by category of use for each WWP has been added in a new table.

2. *Page 3-51, Table 3.4-1 and Appendix B, page B-13: The Dockum Aquifer table of availability in Appendix B presents water volumes that differ from Table 3.4-1. Please reconcile Table 3.4-1 for the Dockum Aquifer in Nolan County with Appendix B information in the final, adopted regional water plan. [31 TAC §357.32(d)]*

The information between Chapter 3 and Appendix B has been reconciled.

3. *Volume I, Section 3.2.4 and Volume II, Section 1.2: Section 3.2.4 states that water availability was determined as the minimum annual supply for run-of-river rights; however, in Vol. II, Section 1.2, the methodology states the use of a 75/75 criteria for water right availability. Water availability for water management strategies must represent the anticipated diversion volume under drought of record conditions. Please confirm annual run-of-river availability and whether it is anticipated to be available under drought of record conditions. If necessary, please adjust strategy yields to reflect the volume of the run-of-river supplies that would be available under drought of record conditions in the final, adopted regional water plan. [31 TAC §357.34(d)(3)(A); Contract Exhibit 'C', Section 3.4]*

The text in Section 1.2 is a typographical error and has been corrected.

4. *Volume I, Table 5.39-2: The Summary of Recommended Strategies includes "Out of Region." It is not clear what this strategy rollup represents and an associated technical memorandum in Volume II could not be identified. Please clarify the "Out of*

Region" water management strategy(s) in the final, adopted regional water plan. [Contract Exhibit 'C', Section 12.1.2]

That table has been replaced with a report from DB17.

5. *Please describe how publicly available plans of major agricultural, municipal, manufacturing and commercial water users were considered in the final, adopted regional water plan. [31 TAC §357.22(a)(4)]*

A paragraph has been added to the beginning of Chapter 5 explaining how local, publically available plans were incorporated into the 2016 Brazos G Regional Water Plan.

6. *Please provide a statement regarding any water availability requirements promulgated by a county commissioners court pursuant to Texas Water Code §35.019, which in Region G applies to the North - Central Texas Trinity and Woodbine Aquifers and Central Texas - Trinity Priority Groundwater Management Areas. [31 TAC §357.22(a)(6)]*

Explanatory text has been added to the descriptions of aquifer availability for the Trinity and Woodbine Aquifers in Appendix B, and a brief explanation has been added to section 3.4.1.

7. *The plan does not include a subchapter in Chapter 5 consolidating the planning group's recommendations regarding water conservation and model water conservation plans. Please consolidate this information in the final, adopted regional water plan. [31 TAC §357.34(g)]*

The information has been added to Chapter 5 of the plan.

8. *The plan does not appear to document the planning group's process for identifying potentially feasible water management strategies. Please include this documentation in the final, adopted regional water plan. [31 TAC §357.12(b) and §357.34(b)]*

The process for identifying potentially feasible water management strategies has been documented in Chapter 5, section 5.39.3.

9. *The plan, in some instances, does not appear to include a quantitative reporting of impacts to agricultural resources. For example, Volume II strategy evaluation 4.7 identifies crops present in the reservoir and pipeline footprint, but does not appear to include quantified impacts to agricultural resources. Other strategy evaluations (e.g., 4.1, 4.2) do not appear to quantify impacts, including no impacts. Please include quantitative reporting of impacts, including if negligible, to agricultural resources in the final, adopted regional water plan. [31 TAC §357.34 (d)(3)(C)]*

Quantitative reporting of impacts, including negligible impacts, has been added to each water management strategy evaluation.

10. *Pages 5.10-4, 5.33-3: The plan does not appear to consider conservation as a potentially feasible strategy for all identified water supply needs. For example, West Brazos WSC and Steamboat Mountain WSC have identified water needs but no conservation strategy is summarized as potentially feasible. Please include documentation that conservation water management strategies were considered to meet identified needs and, if not recommended, please document the reason in the final, adopted regional water plan. [31 TAC §357.34(f)(2)(B)]*

For municipal conservation, an annual 1% reduction in gpcd is applied until a target of gpcd of 140 is met. If a municipal entity had a gpcd less than 140 (120 for Williamson County entities), no additional conservation is recommended as a water management strategy. Brazos G's approach for considering conservation is documented in Chapter 2 of Volume II. For most WUGs, this is also reiterated in Chapter 5 in the plan for each WUG. We have added that standard phrase for every WUG for which conservation is not a recommended water management strategy because the gpcd is below the 140 target (or 120 target in Williamson County).

11. *Tables 5.39-2 and 5.39-6: The plan appears to include the Lake Granger ASR recommended strategy also in the summary of alternative strategies. Both tables include identical costs and strategy volumes and the technical evaluations in Volume II do not describe an alternative configuration. Please reconcile in the final, adopted regional water plan. [31 TAC §357.34(e)]*

The Lake Granger ASR project in included in both tables because the project is identified as both a recommended strategy (BRA Little River System) and an alternative strategy (for City of Round Rock). We will remove it as an alternative strategy for the City of Round Rock to avoid any confusion. That table has been replaced by a DB17 report.

12. *The plan does not appear to include model water conservation plans. Please include in the final, adopted regional water plan for example, as an online link. [31 TAC §357.34(g)]*

These will be included in the final plan as an appendix.

13. *The technical evaluations of the water management strategies do not appear to estimate water losses from the associated strategies. Please include an estimate of water losses in the final, adopted regional water plan, for example as an estimated percent loss. [31 TAC §357.34(d)(3)(A); Contract Exhibit 'C', Section 5.1.1]*

Water loss from newly constructed water management strategies is assumed to be negligible (less than 1 percent). Supplies from water management strategies are sufficient to overcome minor losses and still meet the supplies assigned to individual water user groups and wholesale water providers. An explanatory statement has been included in the introduction of Volume II of the Plan.

14. *Volume II, Page 3.5-41: The City of Cleburne reuse strategy appears to include retail distribution-level infrastructure in the strategy evaluation (i.e., 6-inch spur line to the sports complex). Please remove all distribution-level infrastructures and associated costs from the plan and confirm water management evaluations throughout the plan. [31 TAC §357.34(d)(3)(A), Conforms with Contract Exhibit 'C', Section 5.1.2.3]*

None of the reuse strategy infrastructure should be considered "retail distribution-level" infrastructure. The entire infrastructure included in the strategy evaluations is used to transport the raw reuse supply to the place of its intended use. Retail distribution from the raw water source occurs downstream from these appurtenances.

15. *Volume II, Strategy Evaluation 7.2: The plan does not appear to include consideration given to the highest practicable level of water conservation achievable by water users as relates to the interbasin transfer water management strategy Brushy Creek Regional Utility Authority System. Please include this documentation in the final, adopted regional water plan. [31 TAC §357.34(f)(2)(C), Contract Exhibit 'C', Section 5.1]*

As per 31 TAC §357.34(f)(2)(c), the Brazos G Regional Water Planning Group consulted with Williamson County entities regarding strategies to meet needs in Williamson County. Additional advanced water conservation was identified to reduce per capita municipal consumption to 120 gpcd, which is less than the target of 140 gpcd established by

Brazos G as the goal for municipal water conservation. This was considered by the Williamson County entities as the highest practicable level of conservation to consider. This is documented in Chapter 2 of Volume II of the plan. In addition, the supply developed by the Brushy Creek Regional Utility Authority is not a proposed interbasin transfer, but is, in fact, an existing interbasin transfer authorization. As such, this strategy is exempt from this requirement.

16. *Volume II, Strategy Evaluation 7.11: The plan does not appear to report system gain as a separate permitted amount from the system in the analysis of the "BRA System Operation of Reservoirs". Please present the methodology used and the system gain volume separate from the system volume in the final, adopted regional water plan. [Contract Exhibit 'C', Section 3.5]*

It is shown in Table 7.11-1 as "Total Sys Ops Yield Supply". This quantity is the system gain volume.

10.7.2 Level 2 TWDB Comments

1. *In the Volume II, Table of Contents, the table heading number 3 for "Reuse" appears to have been omitted. Please consider revising in the final, adopted regional water plan.*

The typo has been corrected.

2. *Tables 5.39-2 and 5.39-6: Recommend clarifying that the numbers listed in the column "WUG/WWP using Strategy" are the number of entities using the strategy in the final, adopted regional water plan.*

We have added a footnote explaining the column.

3. *Tables 5.39-2 and 5.39-6: The "Supply Developed" for the "Reuse" alternative strategy appears to only account for the City of Bryan and does not account for WMARSS reuse (WMARSS is indicated as an alternative strategy for Cities of Mart, Riesel, and Waco). Suggest confirming supply volumes in the final, adopted regional water plan.*

We have corrected the tables for consistency.

4. *Table 5.39-6: It appears that the following Alternative Strategies are missing from Table 5.39-6: Voluntary Transfers such as Lake Whitney diversion to Cleburne (City of Cleburne), supply from City of Caldwell (Burleson Co. Manufacturing), supply for City of Gatesville (Coryell Co. – Other), supply from City of Granbury (City of Tolar), supply from Acton MUD (Hood Co. – Other), and supply from Somervell Co. water supply project (City of Glen Rose); Groundwater development of Edwards BFZ (Bell Co. Manufacturing); and WMARSS – Reuse (Cities of Mart, Riesel, and Waco). Please consider adding these alternative strategies to the table in the final, adopted regional water plan.*

The table has been replaced by a DB17 report in the final plan.

10.8 Final Plan Adoption

On September 15, October 7 and November 4, 2015, the BGRWPG reviewed and adopted responses to the oral and written comments received. On November 4, 2015, the final plan was adopted by unanimous vote of the members present pending completion of the changes noted in response to comments received and final formatting and editorial revisions.

Chapter 11

11

Implementation and Comparison to the 2011 Brazos G Regional Water Plan

This page intentionally left blank.

11 Implementation and Comparison to the 2011 Brazos G Regional Water Plan

11.1 Implementation of the 2011 Brazos G Regional Water Plan

A survey was sent to Brazos G WUGs and WWPs regarding the status of recommended strategies presented in the 2011 Brazos G Regional Water Plan and the survey results compiled. The survey includes information regarding the project description and infrastructure type. Survey participants were asked to update the regional water planning group on the level of implementation currently achieved, the initial volume of water provided, the funds expended to date, project cost, funding source and year the project went online. If the project is a phased project, the survey participants were asked about the ultimate volume of water to be supplied, project cost, and year that the project will reach maximum capacity. If the project has not been implemented, the WUGs and WWPs were asked to comment on why that was the case.

The survey was sent to 89 WUGs and WWPs regarding 202 projects. Of those 89 entities, 18 responded to the survey, providing information regarding a total of 36 projects. A summary of the survey results received is shown in Table 11-1 and full Survey results will be presented in Appendix N. Table 11-1 shows that approximately 31 percent of the projects for which we collected responses are completed, 36 percent are ongoing and 28 percent have not been implemented. For those projects which were classified as "not implemented", 43% of respondents listed that it was too soon for the project to begin, 13 percent stated that financing is still in progress and 13 percent of the projects are experiencing permit constraints.

11.2 Comparison to the 2011 Brazos G Regional Water Plan

There are several notable differences between the 2011 and 2016 Plans. For example, the planning horizons for the two plans are different; the 2011 Plan covered the period from 2010 to 2060, while the 2016 Plan covers the period from 2020 to 2070. Other differences between the two plans are due to differences in water demands, supplies, needs, and water management strategies recommended to meet needs. New municipal WUGs have been added and some have been combined with County-Other WUGs due to population growth and decline. Additionally, several new WWPs have been added since the 2011 Plan.

Table 11-1. Summary of Implementation Survey

Sponsor	Recommended Water Management Strategy	At what level of Implementation is the project?	If not implemented, why?	Year the Project is Online?	Is this a phased project?	Year project reaches maximum capacity?	What is the project funding source(s)?	Included in the 2016 Plan?
ABILENE	Cedar Ridge Reservoir	Permit Application Submitted/Pending			No	2060	Other	Yes
ABILENE	Increase treatment capacity	Not Implemented	Too soon		No	2060	Other	Yes
ABILENE	Municipal water conservation	Currently Operating			Yes	2020	Self (cash)	Yes
ABILENE	Wastewater reuse	Currently Operating		2012	No	2012	Self (cash)	No
AQUA WSC	Additional Carrizo Aquifer development (includes overdrafting)							No
BAIRD	Municipal water conservation	Not Implemented	Too soon					
BRA	Belton to Stillhouse pipeline	Feasibility Study Ongoing	Other		No	2020	Other	Yes
BRA	Coryell County Reservoir (BRA System)							
BRA	Groundwater/ surface water conjunctive use (Lake Granger Augmentation)	Under Construction			Yes	2050	Other	Yes
BRA	Stonewall, Kent, and Garza chloride control project	Feasibility Study Ongoing	Too soon	2016	Yes	2030	Other	Yes
BRA	Storage reallocation of federal reservoirs - Lake Aquilla	Feasibility Study Ongoing	Too soon		No	2035	Other	Yes
BRUSHY CREEK MUD	Municipal water conservation	Implemented and Ongoing		2012	Yes	2019	NA	Yes
BRUSHY CREEK MUD	Rehabilitate existing wells	Complete		2012, 2015	Yes	2015	Operating Revenues	No
CEDAR PARK	Municipal water conservation	Currently Operating						
CEDAR PARK	Regional surface waters supply to Williamson County from Lake Travis	Currently Operating		2012	Yes	2040	TWDB	Yes
GATESVILLE	Coryell County Reservoir (BRA System)	Not Implemented	Too soon		No	2030	Other	Yes
GEORGETOWN	Increase treatment capacity	Feasibility Study Ongoing	Too soon		Yes	2060	Local (market issue)	No
GEORGETOWN	Municipal water conservation	Currently Operating		2014	No	2060	Self (cash)	No
GROESBECK	City of Groesbeck off-channel reservoir	Not Implemented	Financing	2016	No	2018	Self (cash)	No
JARRELL-SCHWERTNER WSC	BRA supply through the East Williamson County Regional Water Treatment System	Sponsor Has Taken Action to Initiate			No		TWDB	Yes
JARRELL-SCHWERTNER WSC	Municipal water conservation	Currently Operating		2013	No		Self (cash)	Yes
MERKEL	Voluntary redistribution	Not Implemented	Too soon					
MINERAL WELLS	Municipal water conservation	Not Implemented	Financing					
MINERAL WELLS	Turkey Peak Reservoir	Permit Application Submitted/Pending	Permit contraints		No	2020	TWDB	Yes
NCTMWA	Millers Creek augmentation	Feasibility Study Ongoing	Permit contraints	2016	Yes	2035	TWDB	Yes
PPMWD #1	New water treatment plant	Not Implemented	Too soon					
PPMWD #2	Turkey Peak Reservoir	Permit Application Submitted/Pending	Permit contraints	2016	No	2020	TWDB	Yes
STRAWN	Municipal water conservation	Acquisition and Design Phase	Financing	2016	No		TWDB	
STRAWN	Voluntary redistribution	Not Implemented	Too soon					
SWEETWATER	Conjunctive management of Champion well field and Oak Creek Reservoir with subordination agreement	Currently Operating			Yes	2030	Self (cash)	Yes
SWEETWATER	Expansion of Champion well field	Currently Operating		2015	No	2015	Self (cash)	No
SWEETWATER	Municipal water conservation	Currently Operating			Yes	2020	Self (cash)	Yes
SWEETWATER	Oak Creek Reservoir with subordination agreement	Not Implemented	Other		No	2030	Self (cash)	No
TEMPLE	Increase treatment capacity	Sponsor Has Taken Action to Initiate		2016	Yes	2060	Local (market issue)	Yes
THROCKMORTON	Midway pipeline project (West Central Brazos distribution system)	Not Implemented	Too soon					
THROCKMORTON	Municipal water conservation	Currently Operating						

This chapter compares projected water demands, water supplies, needs, and water management strategies between this plan and the 2011 Plan. Population and water demands typically are updated each regional water planning cycle to reflect updated information on population from the latest census or better updated estimates from the Texas State Demographer. Per capita water use changes due to shifting water use patterns with municipal water systems resulting from water conservation efforts, drought measures, and patterns of development. County-aggregated water demands such as irrigation and steam-electric change between planning cycles for similar reasons as the TWDB updates demand estimates for these WUGs.

Groundwater supplies available for current uses and for water management strategies can change due to revisions in estimated available groundwater resulting from newly adopted Modeled Available Groundwater determinations arising out of the Groundwater Management Area process. Surface water supplies available for current uses and water management strategies will change as the Brazos Basin WAM is updated by the TCEQ, new projections of future return flows are developed, projections of reservoir sedimentation are revised, and as the TWDB changes requirements for water availability determination (such as no longer allowing the 75/75 convention for irrigation supply).

11.2.1 Changes to WUGs and WWPs

Changes to WUGs and WWPs included in the plan are shown in Table 11-2.

Table 11-2. Changes to WUGs and WWPs in the 2016 Plan

Entity	County	Comments
	New WUGs	
Armstrong WSC	Bell	Population increase
Buckholts	Milam	Population increase
Coryell City WSD	Coryell, McLennan	Population increase
Crowley	Johnson	Population increase
Deanville WSC	Burleson	Population increase
Dobbin-Plantersville WSC	Grimes	Population increase
Fort Worth	Johnson	Population increase
G & W WSC	Grimes	Population increase
Golinda	Falls, McLennan	Population increase
Hill County WSC	Hill	Population increase
Multi-County WSC	Coryell, Hamilton	Population increase
Pflugerville	Williamson	Population increase
Possum Kingdom WSC	Palo Pinto, Stephens	Population increase
Texas A & M University	Brazos	Split from College Station
Williamson County MUD #9	Williamson	Population increase
Williamson County MUD #10	Williamson	Population increase

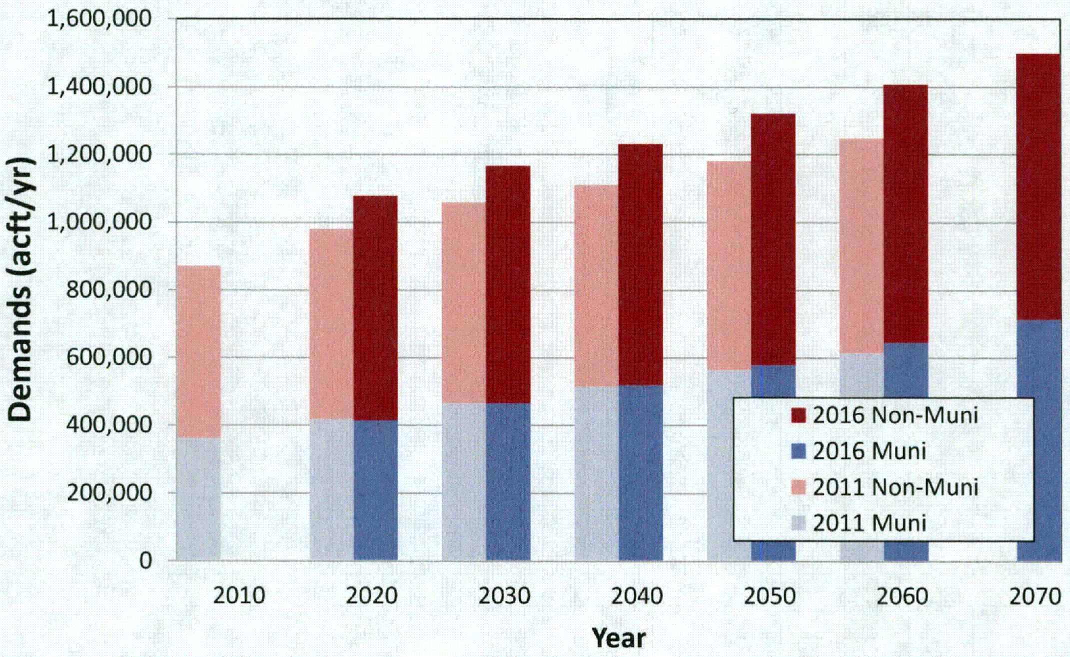
Table 11-2. Changes to WUGs and WWPs in the 2016 Plan

Entity	County	Comments
Williamson County MUD #11	Williamson	Population increase
	New WWPs	
City of Anson	Jones	Projected sales > 1,000 acft/yr
City of Cleburne	Johnson	Projected sales > 1,000 acft/yr
City of Gatesville	Coryell	Projected sales > 1,000 acft/yr
City of Graham	Young	Projected sales > 1,000 acft/yr
City of Mineral Wells	Palo Pinto	Projected sales > 1,000 acft/yr
Heart of Texas	Williamson	Projected sales > 1,000 acft/yr
Johnson County SUD	Johnson	Projected sales > 1,000 acft/yr
Kempner WSC	Bell, Coryell, Lampasas	Projected sales > 1,000 acft/yr
	WUGs Now Included with County-Other	
Bistone MWSD	Limestone	Below WUG size
Decordova	Hood	Below WUG size
Fort Gates WSC	Coryell	Below WUG size
Kosse	Limestone	Below WUG size
Lake Whitney Water Company	Bosque, Hill	Below WUG size
Lipan	Hood	Below WUG size
Morgan	Bosque	Below WUG size
Weir	Williamson	Below WUG size
Wells Branch MUD	Williamson	Below WUG size

11.2.2 Water Demand Projections

Overall, water demand projections for the region are greater in the 2016 Plan than in the 2011 Plan, as illustrated in Figure 11-1. Municipal water demand projections are slightly higher in the 2016 Plan for each decade, increasing to 714,086 acft/yr by the 2070 decade. Non-Municipal demands are substantially greater in the 2016 Plan than in the 2011 Plan in all decades.

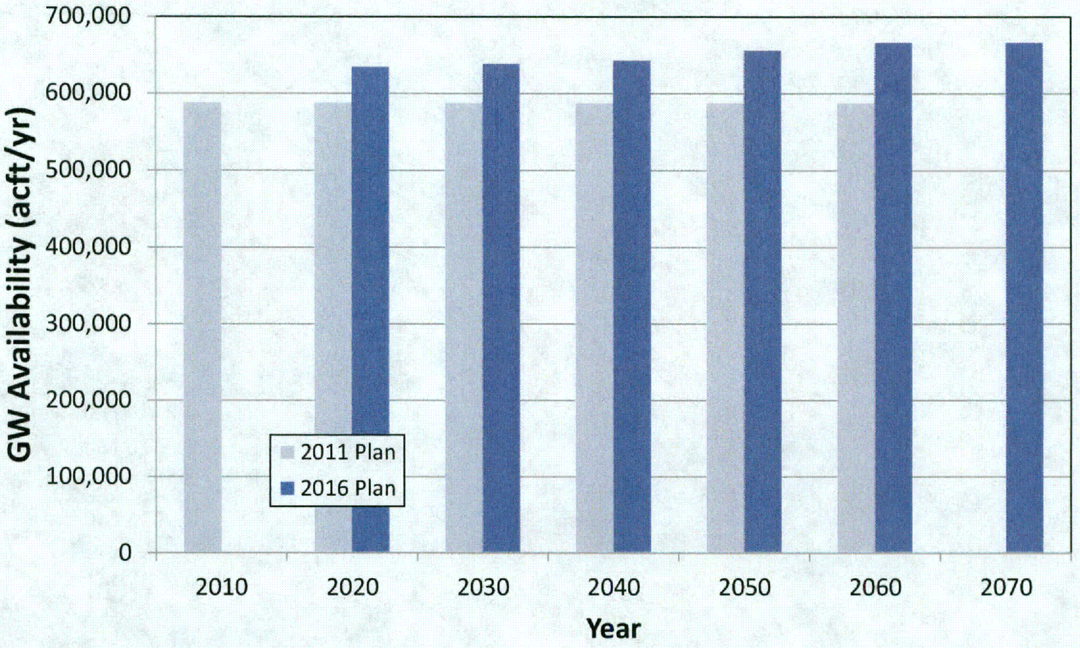
Figure 11-1. Water Demand Projections in the 2011 and 2016 Brazos G Plans



11.2.3 Water Supply Assumptions

For the 2011 Plan, the Groundwater Management Area process was not yet complete for most aquifers in the Brazos G Area. However, the process was sufficiently complete in some areas for an estimate of the expected Managed Available Groundwater (MAG, now "Modeled Available Groundwater") to be used in the 2011 Brazos G Plan. For other areas, groundwater availability was estimated using the detailed analyses completed for the 2006 Plan. For the 2016 Plan, the MAGs determined for aquifer systems in the Brazos G Area were used. For those aquifers without MAGs, the Brazos G RWPG adopted availability estimates based on those used in the 2011 Plan. Chapter 3 and Appendix B provide greater discussion on estimates for specific aquifers. Total groundwater availability in the Brazos G Area is compared for the 2011 and 2016 Plans in Figure 11-2. Groundwater supplies in both plans were then allocated to individual WUGs and WWPs based upon installed well capacities and records of recent groundwater withdrawals, prorated downward so that the total supply from an aquifer in a county did not exceed the estimated available groundwater.

Figure 11-2. Groundwater Availability in the Brazos G Area



For surface water availability, both plans utilized the TCEQ Brazos WAM as the base model, supplemented with the Brazos G Mini-WAM for reservoirs in the upper Brazos Basin. Similar modifications were made to the model in both plans for determining water available to existing water rights. The single most significant difference between the surface water availability analyses in the two plans concerned the methodology for determining reliable supplies to run-of-river irrigation rights. In the 2011 Plan, the 75/75 convention was used, as explained in Chapter 3. In the 2016 Plan, minimum annual supply based on minimum monthly diversions was used. This substantially decreased the estimated irrigation supplies from surface water rights.

Assumptions for determining groundwater and surface water availability in both plans are compared in Table 11-3.

Table 11-3. Assumptions for Determining Water Available to Current Supplies and Water Management Strategies

2011 Brazos G Plan	2016 Brazos G Plan
Groundwater availability based on **expected MAG results**, and **2006 estimates elsewhere**	Groundwater availability based on **Modeled Available Groundwater** where determined, and **2011 estimates elsewhere**
Existing surface water supply based on estimated 2010 and 2060 Effluent Discharges adjusted for reuse assumptions	Existing surface water supply based on estimated 2020 and 2070 Effluent Discharges adjusted for reuse assumptions
Existing surface water supply to **irrigation** rights based on **75/75 convention**[1]	Existing surface water supply to **irrigation** rights based on **minimum annual supply** from minimum monthly diversions

Table 11-3. Assumptions for Determining Water Available to Current Supplies and Water Management Strategies

2011 Brazos G Plan	2016 Brazos G Plan
Surface water management strategies **include** Effluent Discharges adjusted for reuse assumptions	Surface water management strategies **exclude** Effluent Discharges (TCEQ Run 3 assumptions), except where effluent is part of the supply from the strategy
Surface water management strategies subject to **Consensus Criteria for Environmental Flow Needs**	Surface water management strategies subject to **TCEQ Environmental Flow Standards**

1. See Chapter 3 Supplies, Section 3.2.4 for a detailed description of the 75/75 convention.

11.2.4 Existing Water Supplies

Water supplies available to WUGs and WWPs in the Brazos G Area have changed significantly since the last planning cycle. Municipal supplies have increased slightly, but supplies to non-municipal WUGs have decreased substantially. Groundwater supplies, surface water supplies, and total supplies are compared in Figure 11-3, Figure 11-4 and Figure 11-5, respectively, for municipal and non-municipal WUGs.

Figure 11-3. Groundwater Supplies Available to WUGs in the 2011 and 2016 Brazos G Plans

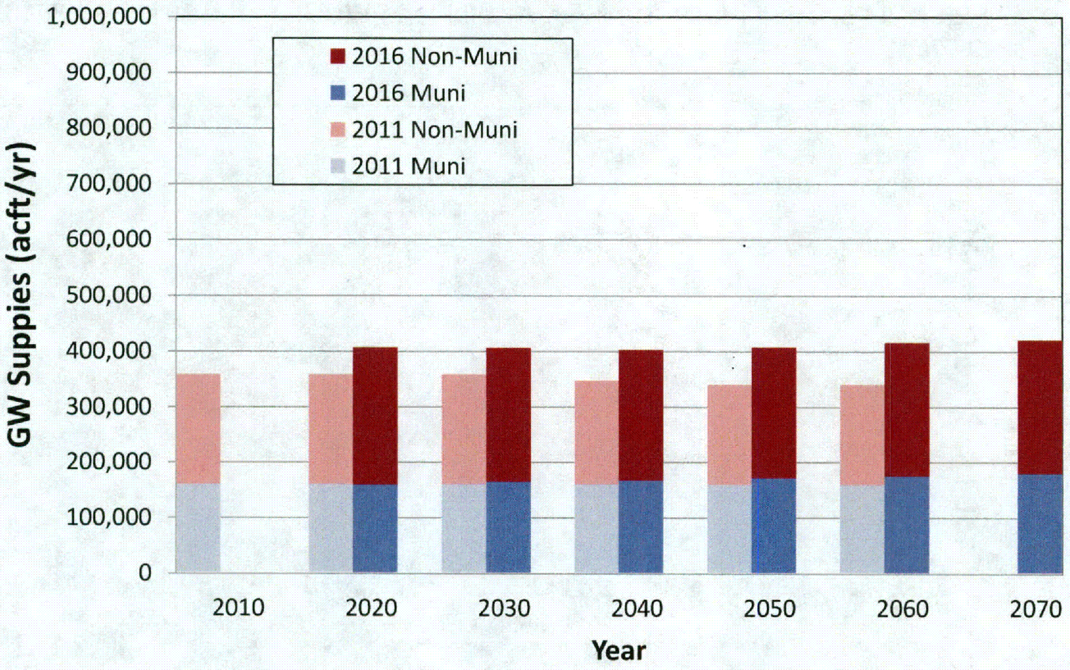


Figure 11-4. Surface Water Supplies Available to WUGs in the 2011 and 2016 Brazos G Plans

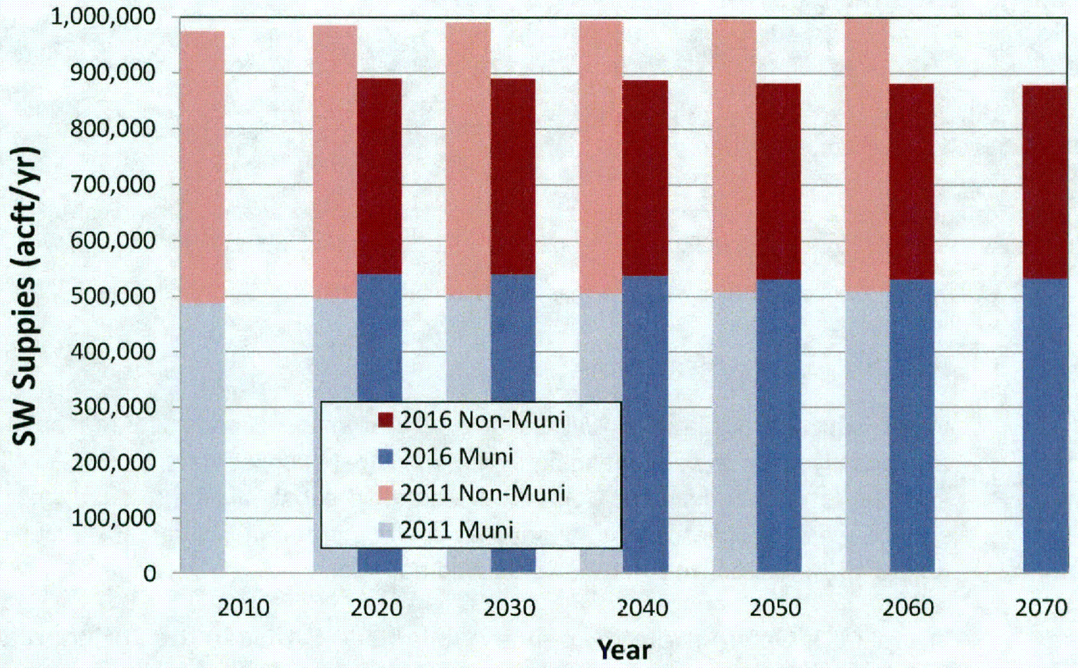
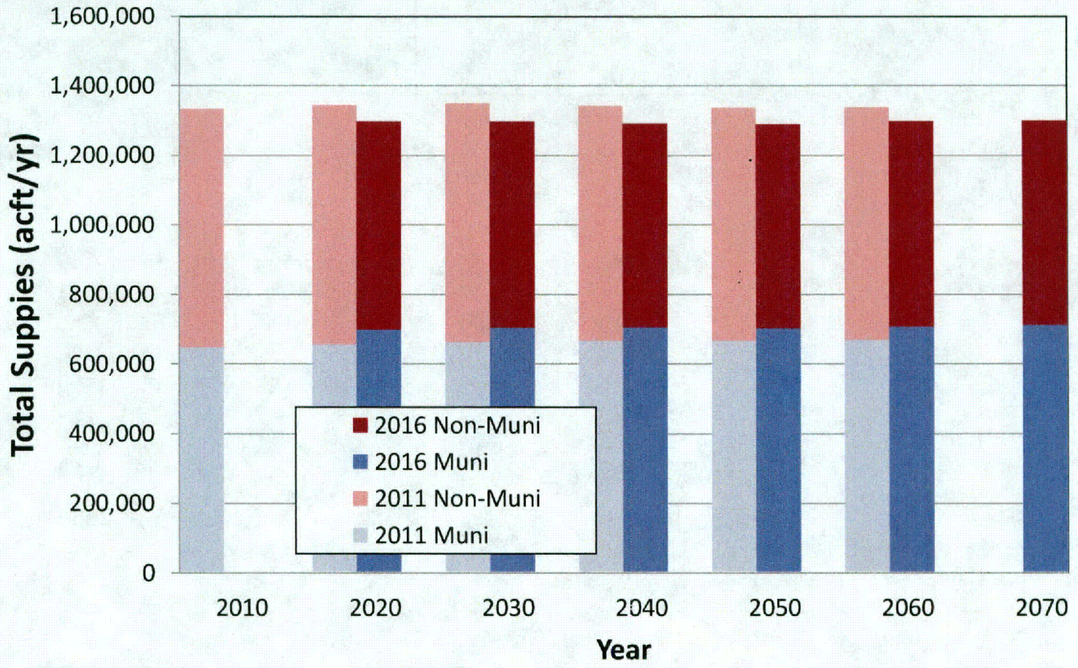


Figure 11-5. Total Water Supplies Available to WUGs in the 2011 and 2016 Brazos G Plans



11.2.5 Needs

Municipal need projections increase for each decade in both the 2011 and 2016 Plans, however, the municipal needs are less in the 2011 Plan than in the 2016 Plan during the 2020 and 2030 decades, but by the 2050 decade municipal needs are greater in the 2016 Plan. For municipal WUGs with surpluses, however, the total surpluses are always greater in the 2016 Plan. Total municipal needs (shortages) and total municipal surpluses for both plans are shown in Figure 11-6. When total needs and total surpluses are compared for both plans in Figure 11-7, total surpluses are less and total needs are greater in the 2016 Plan, caused by reduced supplies available to non-municipal WUGs.

Figure 11-6. Municipal Surpluses and Needs (Shortages) in the 2011 and 2016 Brazos G Plans

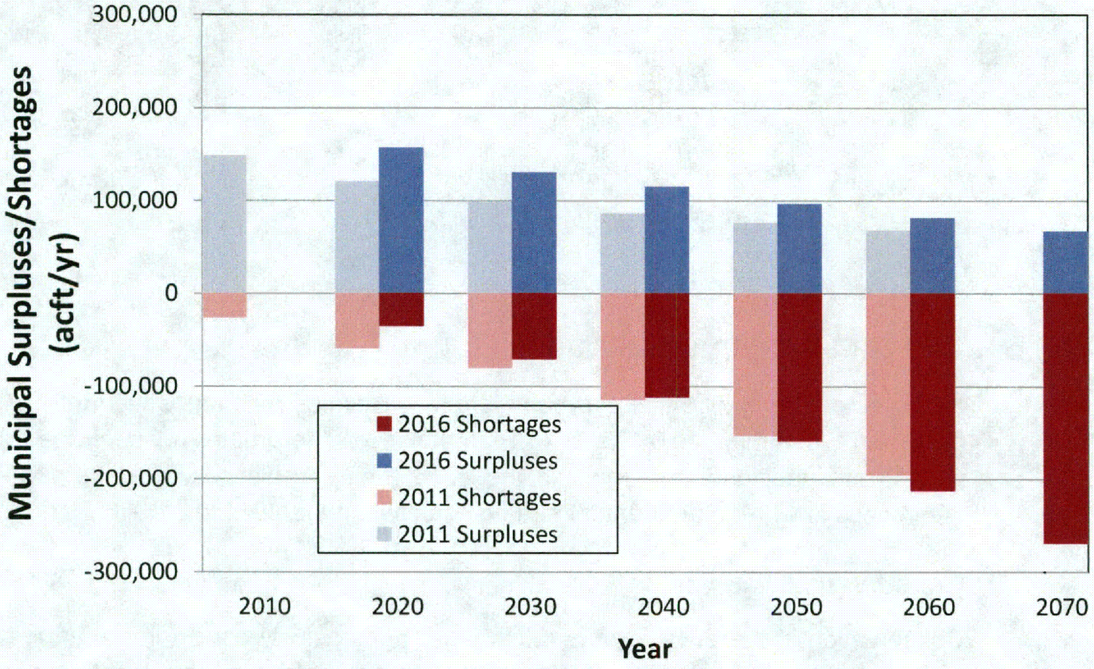
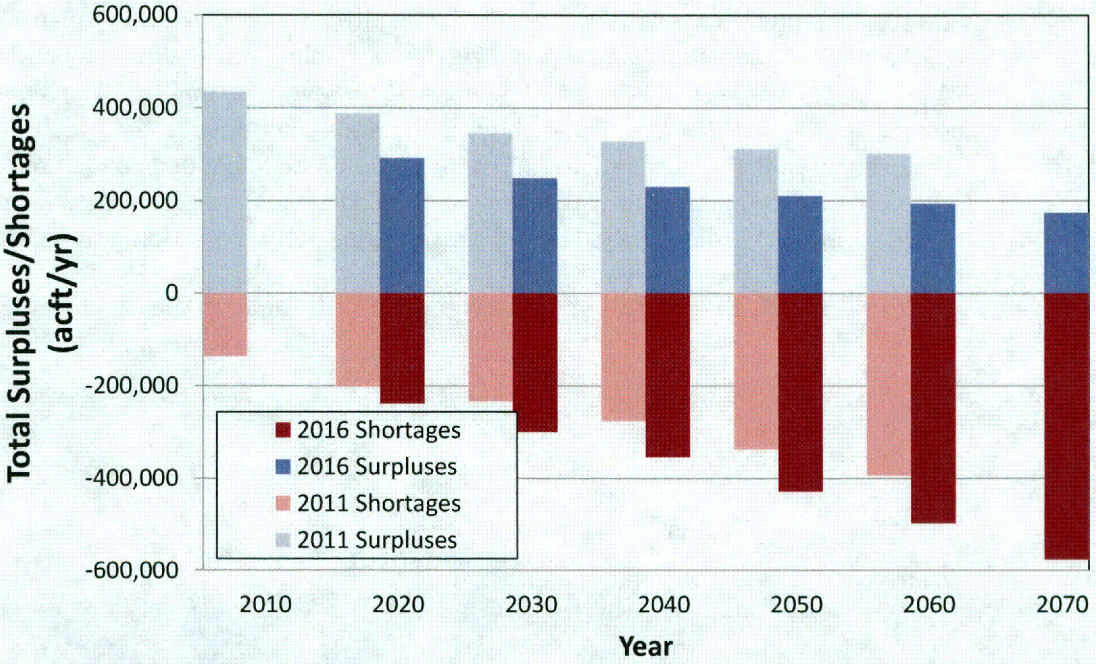


Figure 11-7. Total Surpluses and Needs (Shortages) in the 2011 and 2016 Brazos G Plans



11.2.6 Water Management Strategies

As expected, many of the water management strategies recommended in the 2011 Plan are again recommended in the 2016 Plan; however, the greater needs in the 2016 Plan necessitate additional strategies in the 2016 Plan. This section generally identifies differences in water management strategies between the 2011 and 2016 Plans.

Conservation and Reuse

Conservation in the 2016 Plan is much more aggressively considered than in the 2011 Plan. In the 2011 Plan, conservation as a water management strategy was recommended for all municipal water user groups with needs and per capita water use greater than 140 GPCD, and all other non-municipal water user groups with needs. In the 2016 Plan, conservation is recommended for all municipal water user groups with per capita water use greater than 140 GPCD, regardless of projected needs or surplus. In addition, conservation targets for some municipal entities in Williamson County are more aggressively recommended to achieve per capita water use of 120 GPCD by 2070. Total municipal conservation savings in the 2060 decade in the 2011 Plan was 21,366 acft/yr versus 99,573 acft/yr in the 2016 Plan.

Reuse is a key water management strategy in both the 2011 and 2016 Plans. In the 2016 Plan, water management strategies involving reuse total 46,662 acft/yr, versus 71,767 acft/yr in the 2011 Plan. This decrease is due in large part to some reuse projects being implemented since the 2011 Plan, including Steam-Electric supplies in Bell County and reuse supplies for the City of Round Rock.

Supplies from Other Regions

The 2011 Plan in the 2060 decade includes roughly 64,000 acft/yr of water to be supplied from outside the Brazos G Area, while the 2016 Plan includes almost 108,000 acft/yr of out-of-region supplies. These supplies in both plans are concentrated in the Brushy Creek Regional Utility Authority project for supplies from Region K for the cities of Cedar Park, Leander, Round Rock (and Chisholm Trail SUD in 2011), and in supplies from Region C for entities in Johnson County. The greater supplies to Johnson County entities from out-of-region suppliers in the 2016 Plan reflects greater demands for those entities that receive supplies from Region C entities.

New Reservoirs

The 2011 Plan recommended construction of the Groesbeck Off-Channel, Coryell County, Cedar Ridge, Little River OCR, and Brushy Creek Reservoir. The 2016 Plan recommends those same reservoirs, plus Throckmorton Reservoir and Lake Creek Reservoir, which replaces the Millers Creek Augmentation Project as the recommended strategy to increase supplies for the North Central Texas Municipal Water Authority.

During the Brazos G regional water planning process, water management strategies such as additional development of Carrizo-Wilcox Aquifer groundwater and the Lake Granger Augmentation Project were preferred options to include in the 2016 Brazos G Regional Water Plan. When confronted by the Modeled Available Groundwater (MAG) limitations of these two options, the BGRWPG has little alternative but to make the Little River Off-Channel Reservoir a recommended strategy.

BRA System Operations

Supplies to meet new WUG demands from the pending BRA System Operations Permit are similar in the 2011 and 2016 Plans, and are dominated by about 76,000 acft/yr to be supplied to meet steam-electric needs in Somervell County. Much of the rest of the supply from the BRA System Operations Permit would be used to firm up existing contractual commitments of the BRA.

Additional Groundwater Development

The 2016 Plan recommends substantially greater levels of groundwater development (65,000 acft/yr) than does the 2011 Plan (20,902 acft/yr), largely due to the greater needs projected for many of the county-aggregated WUGs such as irrigation, mining and manufacturing.

Aquifer Storage and Recovery (ASR)

The 2016 Plan includes four recommended ASR projects for College Station, Bryan, Waco (McLennan County ASR) and the BRA (Lake Granger ASR) that are not included in the 2011 Plan. In addition, the 2016 Plan includes an ASR project as an alternative strategy for Johnson County SUD.

Unmet Needs

The 2011 Plan contained sufficient recommended water management strategies that there were no needs unmet in the plan. In the 2016 Plan, however, increased county-aggregated demands such as irrigation demands in Robertson County and decreased supplies due to abandonment of the 75/75 convention for surface water irrigation supply has substantially increased many county-aggregated needs with few economically reasonable strategies to supply those uses. The Brazos G Regional Water Planning Group opts to not recommend strategies to meet those needs when no economically or practically viable strategies are identified. Those needs, therefore, remain unmet in the 2016 Plan, totaling approximately 85,000 acft/yr of mostly irrigation and mining demands.

Alternative Water Management Strategies

Both the 2011 Plan and the 2016 Plan identify alternative water management strategies for certain WUGs and WWPs that can replace one or more recommended strategies should the recommended strategies prove to be unfeasible in the future. Examples of such alternative strategies include the Lake Palo Pinto Off-Channel Reservoir project as an alternative to the recommended Turkey Peak Dam – Lake Palo Pinto Enlargement Project for the Palo Pinto County MWD No. 1, and supplies from the BRA's System Operation Permit as an alternative supply for several entities.

Appendices

Appendix A
Historical Supplemental Data

[The information contained for this appendix has been submitted to TWDB in electronic format and can be found on the TWDB website and at www.brazosgwater.org.]

This page intentionally left blank

Appendix B

Appendix B
Aquifer Descriptions and Groundwater Availability Analysis

This page is intentionally left blank.

Blaine Aquifer

Location

The Blaine Aquifer, a minor aquifer, occurs in the extreme western part of Brazos G and east of the High Plains of Texas (Figure B-1).

Geohydrology

The Blaine Formation of the Pease River Group of Permian Age consists of beds of gypsum, anhydrite, halite, dolomite, sandstone, and shale. Not all beds are found throughout the formation, however the individual beds of gypsum and dolomite are laterally continuous. Recharge primarily occurs from precipitation on the outcrop, which is along the eastern edge of the formation. Discharge is to the wells, seepage to streams, or leakage to other formations. Saturated thickness reaches 300 feet in the aquifer, but freshwater saturated thickness averages about 135 feet. Groundwater occurs primarily in solution channels and caverns within the beds of anhydrite and gypsum that contribute to the overall poor quality of the water. Although some wells contain slightly saline water, with total dissolved solids between 1,000 and 3,000 milligrams per liter, most contain moderately saline water, with total dissolved solids between 3,000 and 10,000 milligrams per liter, exceeding secondary drinking water standards for Texas. The aquifer is under water table conditions in the eastern part of the aquifer and under confined conditions to the west.

Development and Use

While the upper part of the Blaine provides irrigation supplies from solutioning of gypsum and dolomite beds in adjacent planning areas, Ogilbee (1962) reports that similar conditions are not present in Knox County. They probably do not exist in Fisher, Nolan and Stonewall Counties either. The TWDB data base shows only a few livestock and household wells in the Blaine Aquifer in the four counties. These data show inventoried Blaine wells be less than 200 ft deep. Water quality is highly variable. The TWDB estimated 2012 pumpage from Blaine Aquifer to total 478 acft/yr, of which 11 acft/yr is for municipal use.

Availability

The Blaine Aquifer in Brazos G is in GMA-6. In a letter dated December 2011, the TWDB referenced a report titled GAM Run 10-056 MAG, which presents the MAG for the Blaine Aquifer in GMA-6. The MAG determination utilized the Desired Future Conditions (DFC's provided by the GMA-6 representative) and version 1.01 groundwater model of the Seymour and Blaine aquifers. Using the approach outlined by the TWDB, the MAG is calculated for each county. The results are presented in the following table.

Blaine Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	**2020**	**2030**	**2030**	**2050**	**2060**	**2070**
FISHER	5,062	5,062	5,062	5,062	5,062	5,062
KNOX	700	700	700	700	700	700
NOLAN	100	100	100	100	100	100
STONEWALL	8,700	8,700	8,700	8,700	8,700	8,700
TOTAL	14,562	14,562	14,562	14,562	14,562	14,562

Well Yields and Water Quality

Any extensive development of this aquifer is unlikely because of the frequent occurrence of poor quality water and low well yields.

Resource Considerations

Counties in groundwater districts include: Knox (Rolling Plains Groundwater Conservation District (GCD)), Fisher (Clear Fork GCD), and Nolan (Wes-Tex GCD).

References

Duffin, G.L., and Beynon, B.E., 1992, Evaluation of water resources in parts of the Rolling Prairies region of North-Central Texas: TWDB Report 337.

Muller, Daniel A., and Price, Robert D., 1979, Ground-water availability in Texas: TDWR Report 238.

Ogilbee, William and Osborne, F.L., 1962, Ground-water resources of Haskell and Knox Counties, Texas: TWC Bulletin 6209.

Ewing, J.D., Jones, T.L., Pickens, J.F. and others, 2004, Groundwater Availability for the Seymour Aquifer: Texas Water Development Board Contract Report. http://www.twdb.state.tx.us/gam/symr/symr.htm

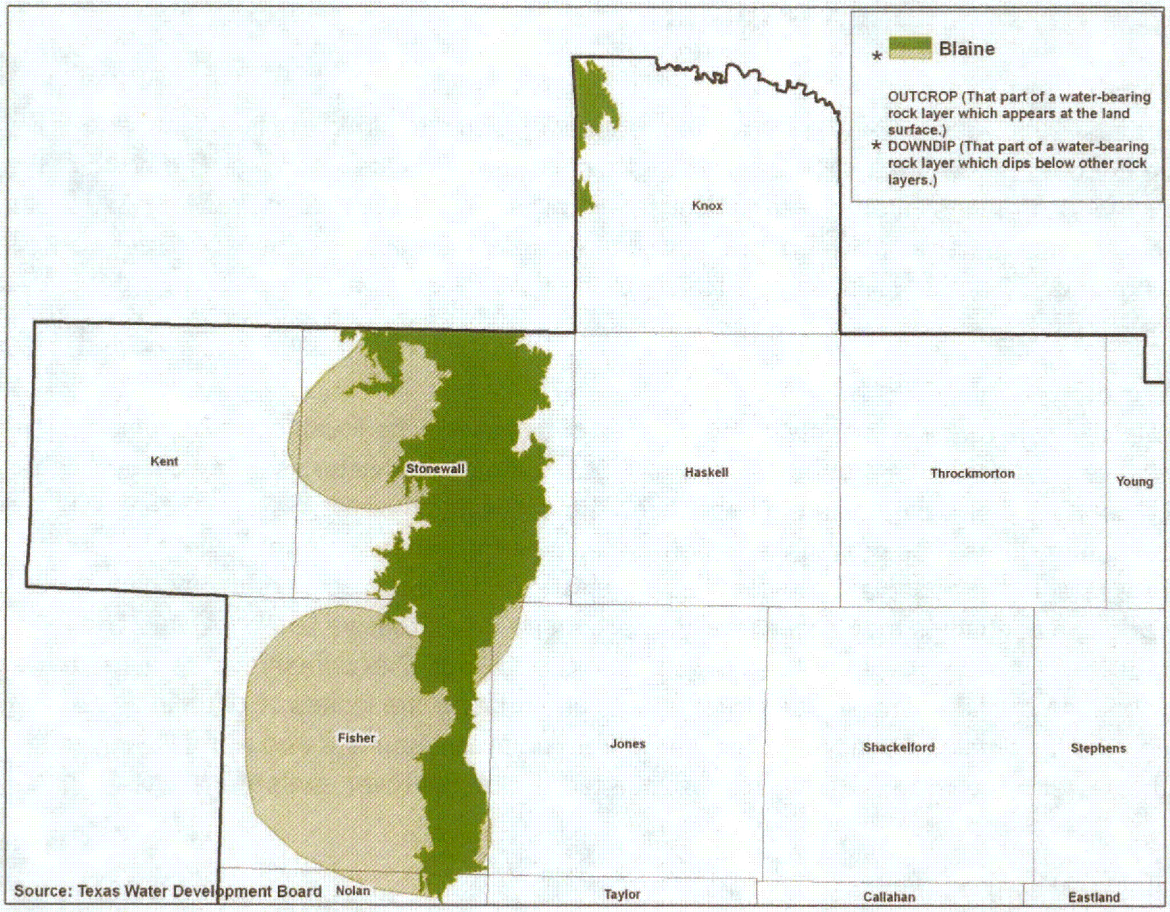


Figure B-1. Location of Blaine Aquifer in Brazos G

Brazos River Alluvium Aquifer

Location

The Brazos River Alluvium Aquifer is a minor aquifer and occurs along the floodplain and terrace deposits of the Brazos River downstream of Hill and Bosque Counties. The width of the aquifer ranges from less than one to almost seven miles. The Brazos River Alluvium Aquifer in Brazos G occurs in parts of Hill, Bosque, McLennan, Falls, Milam, Robertson, Burleson, Brazos, Washington and Grimes Counties. It is limited to the valley area along the Brazos River (Figure B-2).

Geohydrology

The river alluvium forms a floodplain and a series of terraces. The floodplain is of primary significance as a source of groundwater locally, however, groundwater also may occur in the terrace deposits that are outside the floodplain. The alluvium consists of layers of clay, silt, sand and various mixtures. The coarsest and best water-bearing zones are in the lower part of the aquifer. Water in the floodplain alluvium usually exists under water table conditions, although leaky artesian conditions may occur locally where there are extensive lenses of clay. The maximum saturated thickness of the alluvium is about 85 feet. The primary source of recharge is precipitation on the floodplain. Lesser amounts of recharge are losses of runoff in streams crossing the floodplain, groundwater discharge from adjacent aquifers and return flow from irrigation water. Discharge is mostly by seepage to the Brazos River, evapotranspiration, and wells.

Development and Use

The year 2012 Brazos G groundwater use for the Brazos River Alluvium Aquifer was estimated to be 128,528 acft with approximately 99 percent for irrigation.

Availability

The Brazos River Alluvium Aquifer in Brazos G is in GMA-12. In a letter dated July 2012, the TWDB referenced a report titled STA Aquifer Assessment 10-20 MAG, which presents the MAG. The MAG was determination by utilization of analytical groundwater budget equations with allowances for Desired Future Conditions provided by the GMA-12 representative Using the approach outlined by the TWDB, the MAG is calculated for each county. The results are presented in the following table

Brazos River Alluvium Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	**2020**	**2030**	**2030**	**2050**	**2060**	**2070**
BOSQUE	830	830	830	830	830	830
BRAZOS	12,500	12,500	12,500	12,500	12,500	12,500
BURLESON	22,056	22,056	22,056	22,056	22,056	22,056
FALLS	16,684	16,684	16,684	16,684	16,684	16,684
GRIMES	5,112	5,112	5,112	5,112	5,112	5,112
HILL	632	632	632	632	632	632
MCLENNAN	15,023	15,023	15,023	15,023	15,023	15,023
MILAM	3,082	3,082	3,082	3,082	3,082	3,082
ROBERTSON	6,300	6,300	6,300	6,300	6,300	6,300
WASHINGTON	5,770	5,770	5,770	5,770	5,770	5,770
TOTAL	87,989	87,989	87,989	87,989	87,989	87,989

Well Yields

Yields from large supply wells are typically between 250 and 500 gallons per minute (gpm). Well yields are considerably less at the edges of the alluvium, and where there is minimal sand thickness or a considerable amount of silt and/or clay is present.

Water Quality

Water quality from the Brazos River Alluvium Aquifer varies widely, even within short distances. Concentrations of dissolved solids exceed 1,000 milligrams per liter (mg/L) in many areas; but, water is sufficiently fresh to meet drinking water standards in some areas. Data show the aquifer generally having 500 to 3,000 mg/L dissolved solids content. Areas with dissolved solids concentrations less than 500 mg/L or greater than 3,000 mg/L are of limited extent. Local groundwater contamination from agriculture chemicals is likely in intensively irrigated areas.

Resource Considerations

Any extensive development of this aquifer is likely to cause some reductions of streamflow in the Brazos and Little Brazos Rivers.

Counties with groundwater conservation districts in the Brazos G include: Bosque (Middle Trinity GCD, Grimes (Bluebonnet GCD), Hill (Prairielands GCD), Robertson and Brazos (Brazos Valley GCD), McLennan (McLennan County GCD) and Milam and Burleson (Post Oak Savannah GCD).

References

Cronin, J.G., and Wilson, C.A., 1967, Groundwater in the flood-plain alluvium of the Brazos River, Whitney Dam to vicinity of Richmond, Texas: TWDB Report 41.

Ward, J.K., 2008, Managed available groundwater estimates for the Brazos River Alluvium Aquifer in Groundwater Management Area 8: TWDB letter dated Nov 7, 2008 with *GTA Aquifer Assessment 07-05mag* attachment.

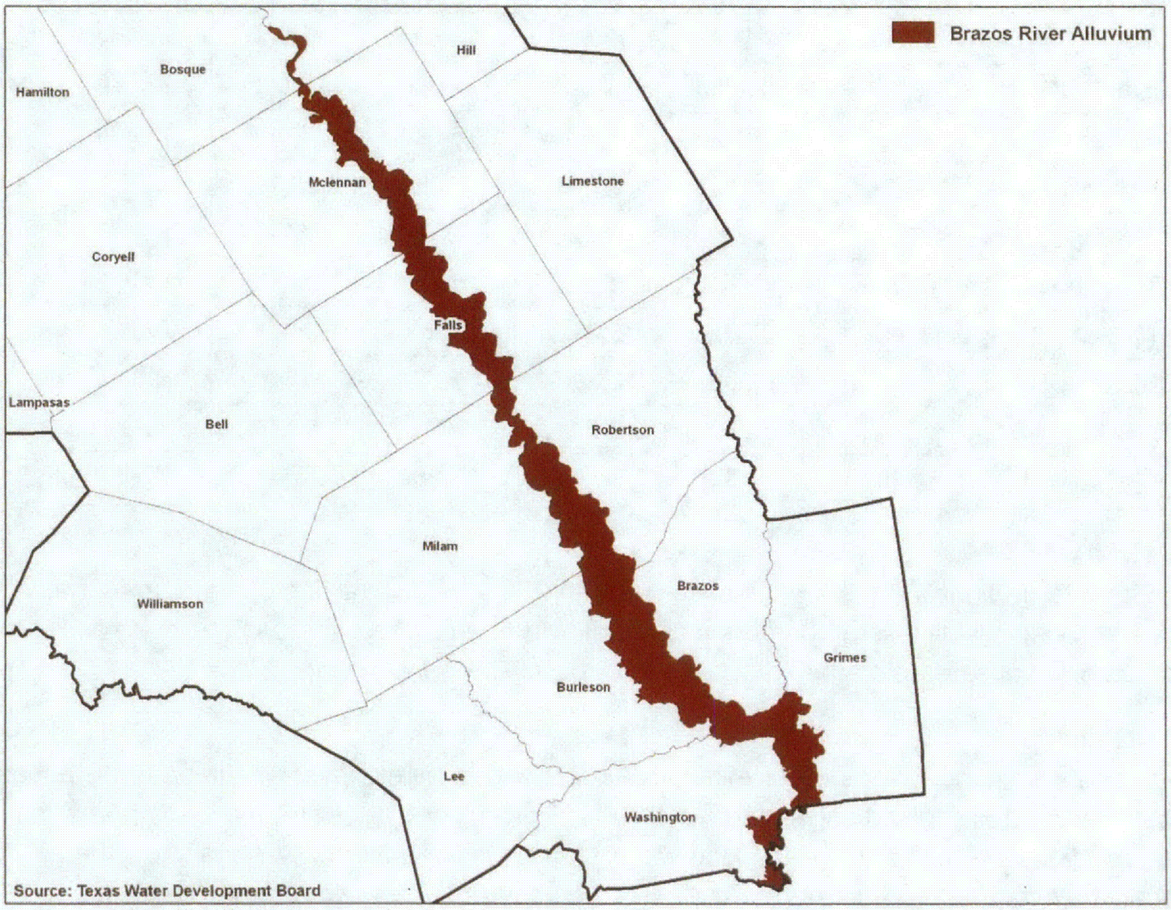


Figure B-2. Location of Brazos River Alluvium Aquifer in Brazos G

Carrizo-Wilcox Aquifer

Location

The Carrizo-Wilcox, a major aquifer within the Brazos G, is of major significance in water planning due to a relatively large supply of undeveloped water. It traverses a southeastern part of the Brazos G in a northeast-southwest-trending band and extends into adjoining planning areas (Figure B-3). It occurs within the Brazos G primarily in parts of Brazos, Burleson, Lee, Limestone, Milam, and Robertson Counties.

Geohydrology

The Carrizo Formation and the underlying Wilcox Group, which is divided into the Calvert Bluff, Simsboro, and Hooper units, form the Carrizo-Wilcox Aquifer. The Simsboro is a major water-bearing unit across the Brazos G and also in neighboring planning areas.. Between the Colorado and Trinity Rivers, the Simsboro sands are uniquely productive and are largely separated from overlying and underlying geologic units by clays of low permeability. The sands in the Simsboro and Carrizo are overwhelmingly the two most significant water-bearing zones in the Carrizo-Wilcox. The Calvert Bluff and Hooper are generally tapped only by shallow wells. The Carrizo-Wilcox consists of a thick sequence of ancient river and delta deposits, consisting mostly of sand, silt, and clay. Total thickness is typically between 2,000 and 3,000 feet, and net sand thickness can exceed 50 percent of the total thickness. Some important coal (lignite) deposits occur primarily within the Calvert Bluff. From surface outcrops (recharge areas) the Carrizo-Wilcox zones dip coastward beneath younger strata. Water table conditions occur in recharge areas, and artesian conditions occur in downdip areas. Precipitation is the main source of recharge. A substantial, but unknown, amount of recharge is rejected by evapotranspiration in the outcrop. Freshwater sands occur up to 30 miles south of recharge areas and to depths up to about 3,000 feet in the most permeable sands. Slightly saline water occurs just to the southeast (coastward) of the fresh water. Faulting within the Mexia-Talco Fault Zone occurs in about a 5-mile wide belt across parts of Lee, Burleson, Milam, and Robertson Counties. The faults affect position, continuity, and possibly water quality within the Carrizo-Wilcox zones in variable and mostly unknown ways.

Development and Use

The year 2012 Brazos G groundwater use for the Brazos River Alluvium Aquifer was estimated to be 49,299 acft with approximately 55 percent for municipal purposes.Relatively large amounts of municipal water use is by Bryan, College Station, Texas A&M, Hearne and Rockdale. Most of the irrigation is in Milam and Robertson Counties.

Availability

The Carrizo-Wilcox in Brazos G is in GMA-12 and 14. In letter dated November 2011 to GMA-14, TWDB referenced a report titled GAM Run 10-052 MAG Version 2, which presents the MAG. In letter dated July 2012 to GMA-12, TWDB referenced a report titled GAM Run 10-044 MAG, which presents the MAG. The MAGs was determination by utilization of Version 2.01 of the central Sparta, Queen City, and Carrizo-Wilcox GAM and the specified Desired Future

Conditions provided by the GMA-12 and GMA-14 representatives. The results are presented in the following table.

Carrizo-Wilcox Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	**2020**	**2030**	**2030**	**2050**	**2060**	**2070**
BRAZOS	38,835	44,847	49,421	53,970	57,169	57,169
BURLESON	23,249	28,047	32,518	36,492	38,701	38,701
FALLS	867	875	884	895	895	895
GRIMES	11,791	11,791	11,791	11,791	11,791	11,791
LEE	24,023	23,402	24,624	26,827	27,380	27,380
LIMESTONE	12,294	12,424	12,604	12,906	12,906	12,906
MILAM	23,923	20,206	19,112	21,359	22,319	22,319
ROBERTSON	45,435	45,814	46,238	46,582	46,583	46,583
WILLIAMSON	7	7	7	7	7	7
TOTAL	180,424	187,413	197,199	210,829	217,751	217,751

Well Yields

Wide variations occur in individual well yields for the four Carrizo-Wilcox hydrogeologic units, mostly depending on well depth and local sand thickness. Estimated ranges for maximum individual well yields are from 500 to 2,000 gpm for the Carrizo, from 100 to 300 gpm for the Calvert Bluff, from 500 to 3,000 gpm for the Simsboro, and from 100 to 300 gpm for the Hooper.

Water Quality

Water generally meets drinking water standards, but local exceptions occur. Excessive iron concentrations are the most common water quality problem, and some water supplies must be treated. Hydrogen sulfide and methane occurrences are occasionally reported. Water obtained near the outcrops of the water-bearing zones generally is higher in hardness and lower in total dissolved solids content. In downdip areas the water is commonly a sodium-bicarbonate-type water, with total dissolved solids content ranging from about 300 to 800 mg/L and averaging 400 to 500 mg/L. The dissolved solid concentrations tend to be greater at the downdip limit of the aquifer.

Resource Considerations

Few development problems have occurred to date, and water-level declines have been relatively small or restricted to pumping centers near larger developments. No important pollution problems are evident. One potential impact of a very significant drawdown is causing some wells to fail because they are either too shallow or the casing is too small to lower the pump as deep as needed.

There are four groundwater conservation districts that oversee the development and management of the Carrizo-Wilcox Aquifer within the Brazos G. The counties with a groundwater conservation district include: Lee (Lost Pines GCD), Robertson and Brazos (Brazos Valley GCD), Milam and Burleson (Post Oak Savannah GCD), and Grimes (Bluebonnet GCD).

References

Dutton, A.R., 1999, Assessment of groundwater availability in the Carrizo-Wilcox Aquifer in Central Texas--Results of numerical simulations of six groundwater-withdrawal projections (2000-2050), The University of Texas at Austin, Bureau of Economic Geology.

Dutton, A.R. and Others, 2002, Groundwater Availability Model for the Central Part of the Carrizo-Wilcox Aquifer in Texas: TWDB Contract Report.

Follett, C.R., 1970, Ground-water resources of Bastrop County, Texas: TWDB Report 109.

Follett, C.R., 1974, Ground-water resources of Brazos and Burleson Counties, Texas: TWDB Report 185.

Harden, R.W. & Associates, Inc., 1986, The most suitable areas for management of the Carrizo/Wilcox aquifer in Central Texas.

Kelley, V.A. and others, 2004, Groundwater availability models for the Queen City and Sparta Aquifers: TWDB Contract Report, http://www.twdb.state.tx.us/gam/czwx_c/czwx_c.htm

Rettman, P.L., 1987, Ground-water resources of Limestone County, Texas: TWDB Report 299.

Thompson, G.L., 1966, Ground-water resources of Lee County, Texas: TWDB Report 20.

Thorkildsen, D., and Price, R.D., 1991, Ground-water resources of the Carrizo-Wilcox aquifer in the Central Texas region: TWDB Report 332.

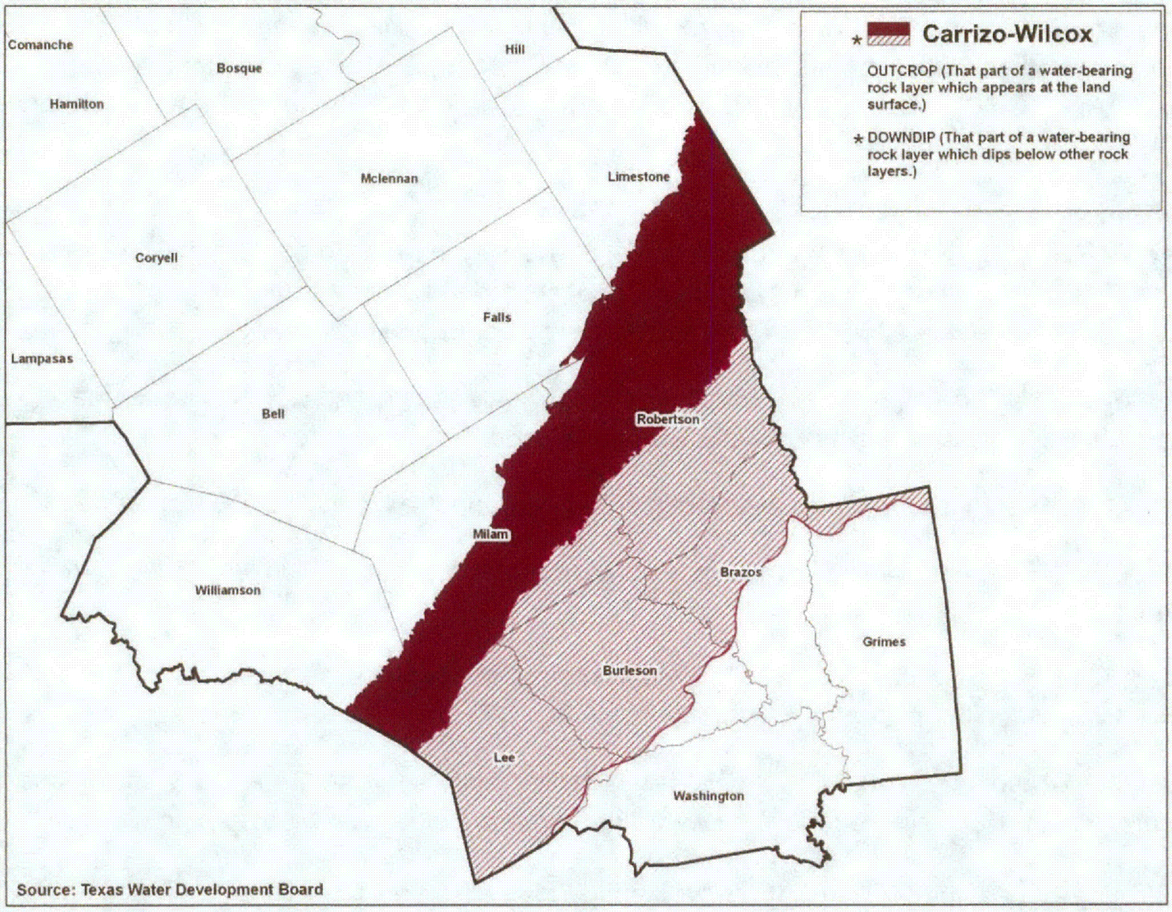


Figure B-3. Location of Carrizo-Wilcox Aquifer in Brazos G

Dockum Aquifer

Location

The Dockum, a minor aquifer, occurs only along in the western parts of Nolan, Fisher, and Kent Counties within the Brazos G (Figure B-4). It's important to note that there is a discrepancy in the occurrence of the Dockum as shown in Figure B-4 and in the Shamburger, 1967 report. The Shamburger report shows the Dockum extending into the mid-part of Nolan County, while the TWDB delineation is limited to the extreme western edge of the county.

Geohydrology

Water is derived largely from sands and gravels in the Santa Rosa Formation of Permian age or from the Santa Rosa and the overlying Trinity Sands in a western Nolan County. Water table conditions mostly prevail.

Development and Use

The year 2012 groundwater use within the Brazos G totaled 12,959 acft. Almost all the water is used for irrigation in Nolan County.

Availability

The Dockum in Brazos G is in GMA-6 and 7. In letter dated December 2011 to GMA-6, TWDB referenced a report titled GAM Run 10-057 MAG, which presents the MAG. In letter dated July 2012 to GMA-7, TWDB referenced a report titled GAM Run 10-057 MAG Version 2, which presents the MAG. The MAGs was determination by using a modified version of the Dockum GAM, and the specified Desired Future Conditions provided by the GMA-6 and GMA-7 representatives. The results are presented in the following table.

Dockum Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	**2020**	**2030**	**2030**	**2050**	**2060**	**2070**
FISHER	2,880	2,880	2,880	2,880	2,880	2,880
KENT	6,250	6,250	6,250	6,250	6,250	6,250
NOLAN	5,750	5,750	5,750	5,750	5,750	5,750
TOTAL	12,056	12,056	12,056	12,056	12,056	12,056

Well Yields and Water Quality

Well yields vary widely, ranging from less than 10 gpm to 400 gpm and averaging 200 gpm. Water from the aquifer typically meets drinking water standards and contains 500 to 600 mg/L dissolved solids content. However, in heavily irrigated areas, elevated concentrations of nitrates have been reported.

Resource Considerations

There are three groundwater conservation districts in Brazos G counties where the Dockum Aquifer is present. Groundwater management in Nolan County is by Wes-Tex GCD. There is little pumpage from the Dockum in the Kent County (Salt Fork UWCD) and Fisher County (Clear Fork GCD).

References

Duffin, G.L., and Beynon, B.E., 1992, Evaluation of water resources in parts of the Rolling Prairies region of North-Central Texas: TWDB Report 337.

Ewing, J.E. and others, 2008, Groundwater Availability for the Dockum Aquifer, TWDB Contract Report, http://www.twdb.state.tx.us/gam/dckm/dckm.htm

HDR Engineering, Inc., March 2009, Study 2: Groundwater availability model of the Edwards-Trinity (Plateau) and Dockum Aquifers in Western Nolan and Eastern Mitchell Counties, Texas: Prepared for Brazos G Regional Water Planning Group.

Muller, Daniel A., and Price, Robert D., 1979, Ground-water availability in Texas: TDWR Report 238.

Oliver, W. and Hutchinson, W.R., 2010 Modification and recalibration of the Groundwater

Availability Model of the Dockum Aquifer: Texas Water Development Board, 114 p.

Shamburger, Victor M., Jr., 1967, Ground-water resources of Mitchell and Western Nolan Counties, Texas: TWDB Report 50.

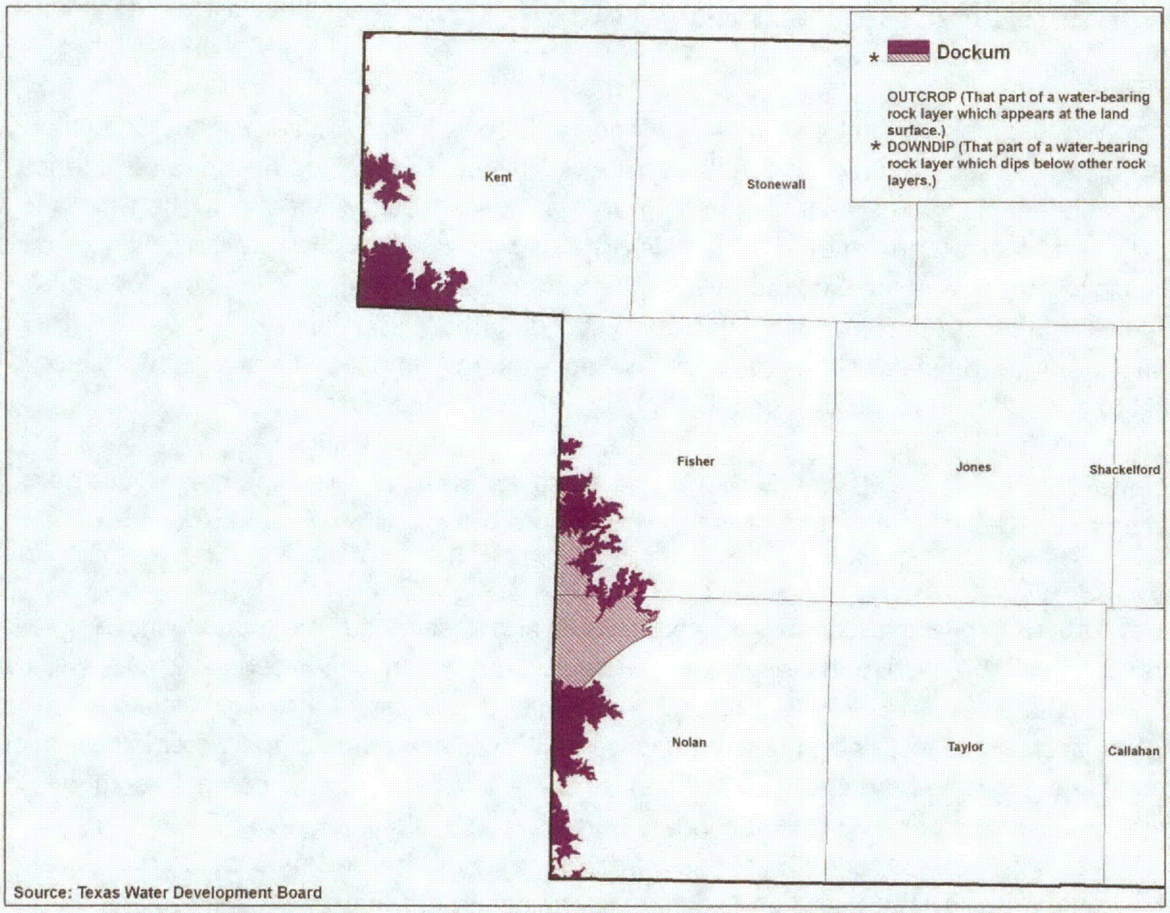


Figure B-4. Location of Dockum Aquifer in Brazos G

Edwards (Balcones Fault Zone) Aquifer

Location

The northern segment of the Edwards (Balcones Fault Zone (BFZ) Aquifer is a major aquifer and occurs in the southern part of central Brazos G. This segment of the aquifer also extends into the adjacent planning area to the south (northern Travis County, but only to the Colorado River). The northern segment of the Edwards (BFZ) is hydraulically separate from the Edwards (BFZ) occurring south of the Colorado River (the Barton Springs segment) and the Edwards (BFZ) even further south (San Antonio segment). The northern segment of the Edwards (BFZ) appears to be overdeveloped except during average and wet times, and some supplies are subject to shortages in larger droughts.

The Edwards (BFZ) in the Brazos G occurs in a narrow north-south-trending belt across parts of Williamson and Bell Counties (Figure B-5), essentially extending from Round Rock to Salado.

Geohydrology

The Edwards (BFZ) Aquifer consists of the Edwards and associated limestone, including the Comanche Peak, Kiamichi and Georgetown. However, significant water-bearing zones are normally restricted to the Edwards (BFZ), with associated limestone commonly yielding little to no water according to test drilling records (Harden, 1999). The source of the water is infiltration of rainfall and seepage from streams. The water moves primarily in honeycombed, solution-enlarged voids and other enlarged secondary porosity zones along joints and faults. The formation dips to the east beneath younger strata. Water table conditions occur in recharge areas (mostly west of IH-35), and artesian conditions occur further east. At the eastern boundary of the aquifer the water quality becomes more mineralized and eventually unusable for most purposes. The water moves from recharge areas to natural spring discharge points and to wells. The three largest springs (and their approximate high and low flows) include San Gabriel Springs at Georgetown (zero to 25 cubic feet per second (cfs)), Berry Springs north of Georgetown (zero to 48 cfs) and Salado Springs at Salado (5 to 59 cfs). The Edwards (BFZ) responds more quickly than most other aquifers to drought and wet cycles. With adequate rainfall, the aquifer is able to supply substantial water to current users and sustain substantial springflow at the three main locations. In times of below-average rainfall or drought, discharge exceeds recharge with the result being most springflow decreases greatly or dries up and some wells begin to fail. Over the years more and more wells have been drilled and increasingly diminished springflow has occurred. Introduction of surface water supplies has slowed the trend, but competition for Edwards (BFZ) water in the area is continuing.

Development and Use

The year 2012 groundwater use within the Brazos G totaled 19,358 acft. About 90 percent of the water is used for municipal supply, of which about 85 percent is in Williamson County.

Availability

The Northern Edwards (BFZ) Aquifer in Brazos G is in GMA-8. In letter dated September 2008 to GMA-8, TWDB referenced a report titled GAM Run 08-10 MAG, which presents the MAG. The MAGs was determination by using the Northern Edwards (BFZ) (Northern Segment) Aquifer GAM, and the specified Desired Future Conditions provided by the GMA-8 representative. The results are presented in the following table.

Edwards (BFZ) Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	2020	2030	2030	2050	2060	2070
BELL	6,469	6,469	6,469	6,469	6,469	6,469
WILLIAMSON	3,452	3,452	3,452	3,452	3,452	3,452
TOTAL	9,921	9,921	9,921	9,921	9,921	9,921

Well Yields

Wide variations occur in individual well yields obtainable from the Edwards (BFZ). Well yields depend upon boreholes encountering secondary, solution-enlarged openings in the limestone. Wells used for public supply range from 200 to about 2,000 gpm.

Water Quality

Water, although hard, meets drinking water standards with dissolved solids content mostly less than 500 mg/L in developed areas. Further east, the water becomes more mineralized. The fluoride content is high in some of the downdip eastern areas.

Resource Considerations

Groundwater resources appear to be overdeveloped during record drought conditions. Existing local plans of the larger users have long included conjunctive use plans with surface waters from Lakes Georgetown, Travis, and/or Stillhouse Hollow. Significant groundwater pumpage can reduce springflow, and the aquifer is locally subject to pollution from surface sources. The higher withdrawals by wells can directly affect springflow and downstream surface water supplies.

A groundwater district exists in Bell County (Clearwater UWCD).

References

Duffin, G.L., and Musick, S.P., 1991, Evaluation of water resources in Bell, Burnet, Travis, Williamson, and parts of adjacent counties, Texas: TWDB Report 326.

Harden, R. W., 1999, personal communication.

Jones, I.C., 2003, Groundwater Availability Model: Northern Segment of the Edwards Aquifer, Texas: TWDB Report 358.

Kreitler, C.W., Senger, R.K., and Collins, E.W., 1987, Geology and hydrology of the northern segment of the Edwards aquifer with an emphasis on the recharge zone in the Georgetown, Texas, area: Prepared for the Texas Water Development Board, IAC (86-67)-1046; Univ. of Texas, Bureau of Economic Geology.

William F. Guyton Associates, Inc., 1987, Ground-water availability update: consulting report to City of Georgetown.

Yelderman, Joe C., 1987, Hydrogeology of the Edwards Aquifer, Northern Balcones and Washita Prairie Segments: Austin Geological Society Guidebook 11.

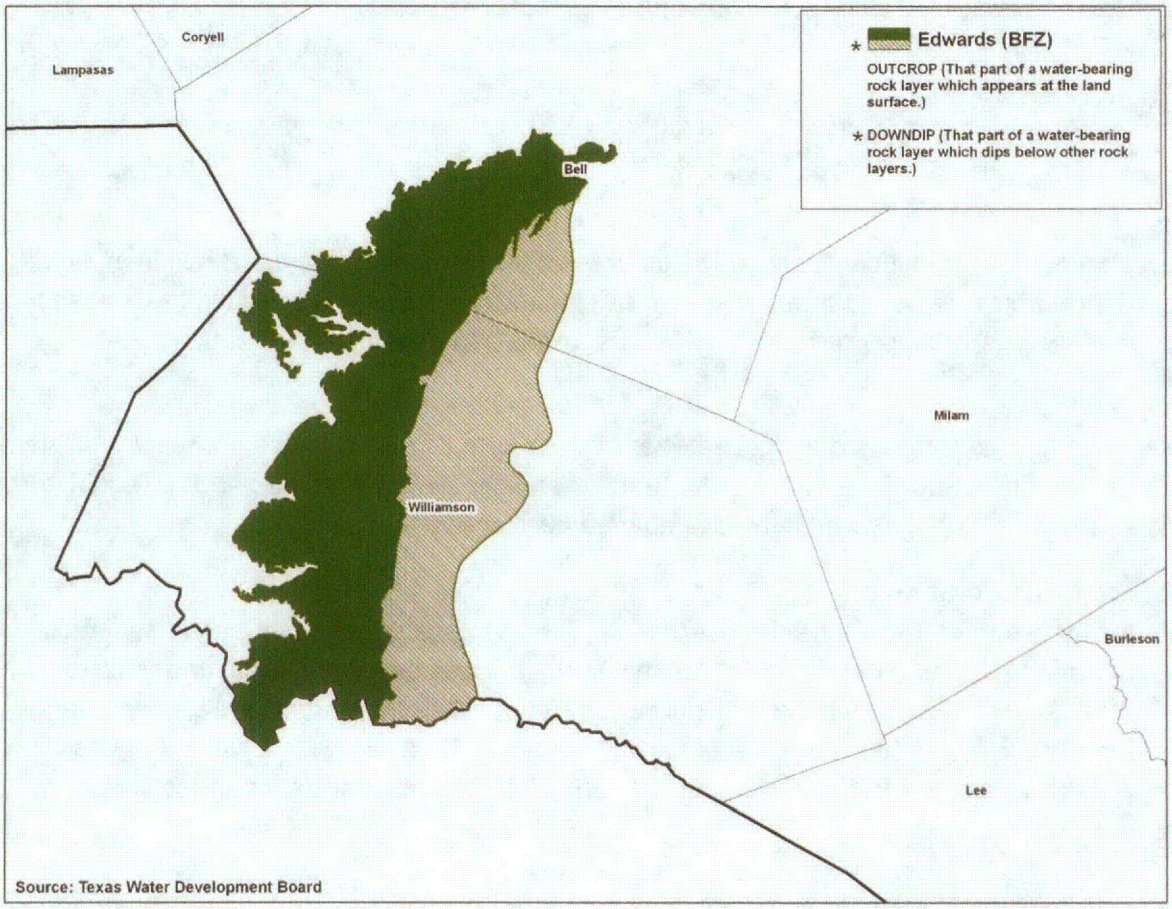


Figure B-5. Location of Edwards (BFZ) Aquifer (northern segment) in Brazos G

Edwards-Trinity (Plateau) Aquifer

Location

The Edwards-Trinity (Plateau) Aquifer is a major aquifer in Texas due to its expansive coverage and available water supplies. In the Brazos G, this aquifer is found only in parts of Nolan and Taylor Counties (Figure B-6). It provides only a very small water supply to the planning region.

Geohydrology

Water from the Edwards-Trinity (Plateau) is derived largely from Cretaceous sands (Trinity) in Nolan County in combination with the underlying Dockum, which exists in some areas. Water-table conditions are typical. Maximum well yields typically are less than 50 gallons per minute. In western Nolan County, much of the water production is associated with the Edwards-Trinity (Plateau) because of the surface geology, but the major water-bearing zone of higher capacity wells is the underlying Dockum.

Availability

The Edwards-Trinity (Plateau) Aquifer in Brazos G is in GMA-7 and 8. In letter dated November 2012 to GMA-8, TWDB referenced a report titled GAM Run 10-043 MAG Version 2, which presents the MAG. The MAGs was determination by using the Edwards-Trinity (Plateau) and Pecos Valley Aquifers GAM, and the specified Desired Future Conditions provided by the GMA-8 representative. The results are presented in the following table.

Edwards-Trinity (Plateau) Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	2020	2030	2030	2050	2060	2070
NOLAN	693	693	693	693	693	693
TAYLOR	489	489	489	489	489	489
TOTAL	1,182	1,182	1,182	1,182	1,182	1,182

Well Yields and Water Quality

Potential well yields are generally less than 100 gpm. Typical waters meet drinking water standards and contain 400 to 500 mg/L dissolved solids content.

Resource Consideration

In 2012, the TWDB estimated the total pumpage from the aquifer to be 2,631 acft. Most of the usage was for municipal purposes in Nolan County. Few undeveloped supplies appear available. Existing supplies appear to be susceptible to droughts.

Groundwater in Nolan County is regulated by Wes-Tex GCD.

References

Anaya, R. and Jones, I., 2004, Groundwater availability model of the Edwards-Trinity (Plateau) and Cenozoic Pecos Alluvium Aquifer systems, Texas: Texas Water Development Board.

HDR Engineering, Inc., March 2009, Study 2: Groundwater availability model of the Edwards-Trinity (Plateau) and Dockum Aquifers in Western Nolan and Eastern Mitchell Counties, Texas: Prepared for Brazos G Regional Water Planning Group.

Muller, Daniel A., and Price, Robert D., 1979, Ground-water availability in Texas: TDWR Report 238.

Taylor, Howard D., 1978, Occurrence, Quantity, and Quality of Ground Water in Taylor County, Texas: TWDB Report 224.

Shamburger, Victor M., Jr., 1967, Ground-Water Resources of Mitchell and Western Nolan Counties, Texas: TWDB Report 50.

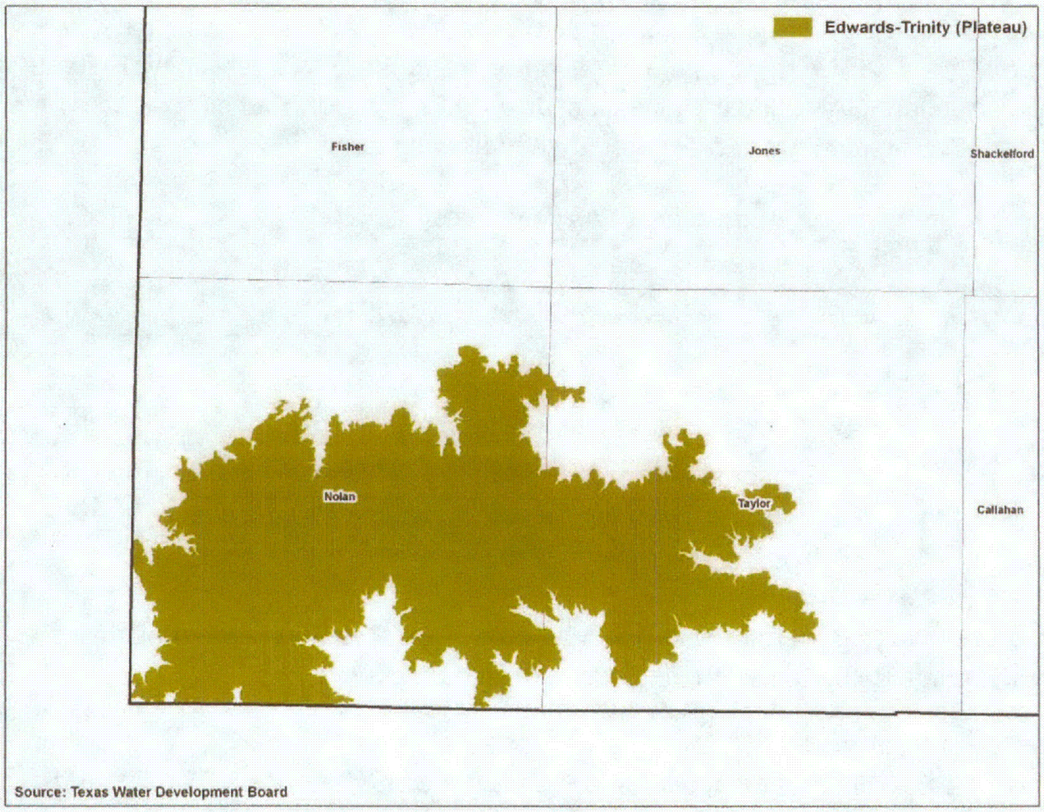


Figure B-6. Location of Edwards-Trinity (Plateau) Aquifer in Brazos G

Ellenburger-San Saba Aquifer

Location

The Ellenburger-San Saba Aquifer, a minor aquifer, occurs in the Brazos G, but only in the southwestern part of Lampasas County (Figure B-7). It primarily occurs in adjacent planning area to the south and west.

Geohydrology

The aquifer consists of limestone and dolomites with secondary solutioning along fractures and faults. The aquifer extends from outcrops and dips to depths of perhaps 2,000 feet. Little is known about conditions in the deeper parts of the aquifer. In some areas the aquifer is believed to be connected to the Marble Falls Aquifer. Faults are believed to function as an important part in controlling groundwater flow and water levels. The aquifer supports numerous springs, is lightly used, and usually has less than 1,000 mg/L dissolved solids.

Development and Use

In 2012, the TWDB estimated pumpage to be about 22 acft.

Availability

The Ellenburger-San Saba Aquifer in Brazos G is in GMA-8 and only occurs in Lampasas County. In letter dated March 2012 to GMA-8, TWDB referenced a report titled GTA Aquifer Assessment 10-15 MAG, which presents the MAG using a water budget approach. The results are 2,953 acft/yr from 2020-2070.

Resource Considerations

Groundwater resources are large in relation to current use and future local demand. The Saratoga Underground Water Conservation District has jurisdiction in Lampasas County.

References

Bluntzer, R.L., 1992, Evaluation of the ground-water resources of the Paleozoic and Cretaceous aquifers in the Hill Country of Central Texas: TWDB Report 339.

Preston, R.D., Pavlicek, D.J., Bluntzer, R.L., Derton, J., 1996, The Paleozoic and related aquifers of Central Texas: TWDB Report 346.

Williams, C.R., 2008. Adopted desired future conditions of the Ellenburger-San Saba, Hickory, and Marble Falls Aquifers: Memorandum dated June 9, 2008 and directed to Cheryl Maxwell, Administrative Agent for Groundwater Management Area 8.

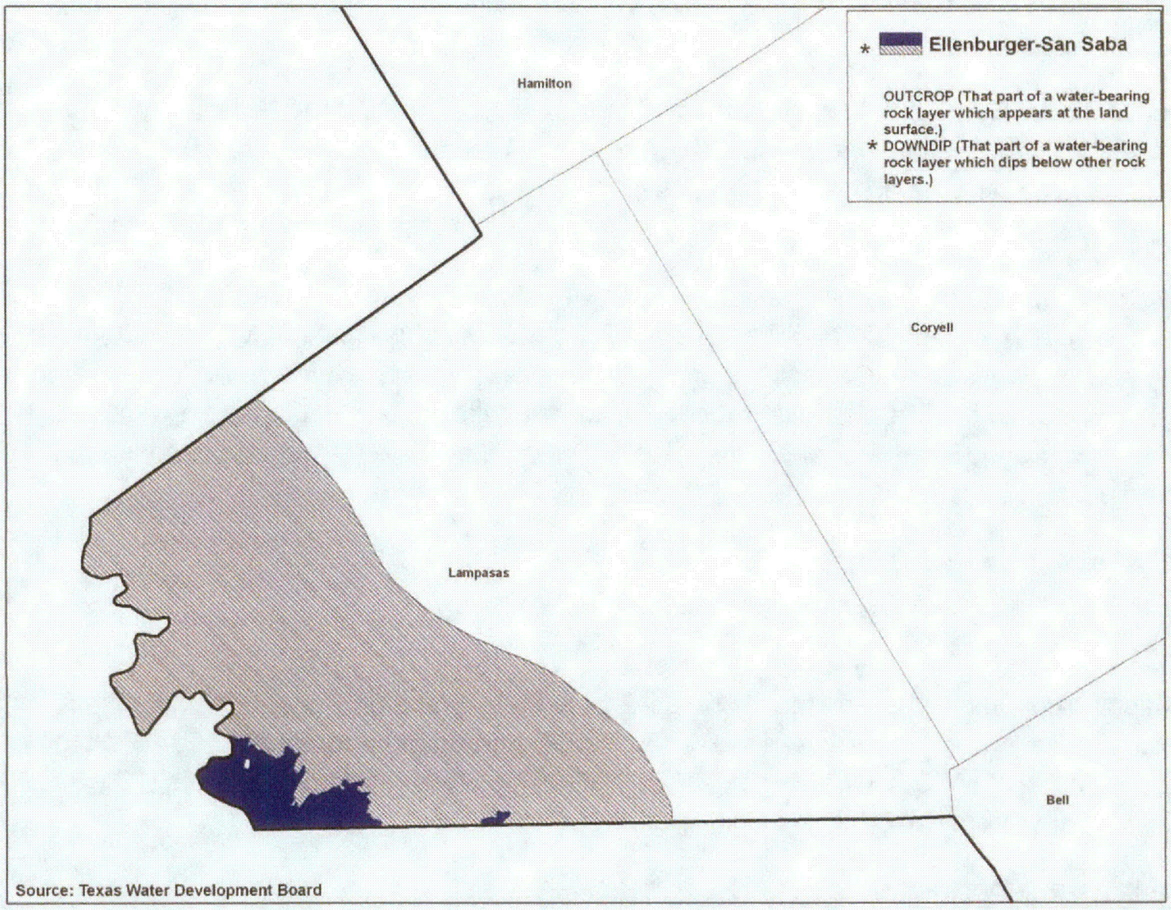


Figure B-7. Location of Ellenburger-San Saba Aquifer in Brazos G

Gulf Coast Aquifer

Location

The Gulf Coast Aquifer, a major aquifer, occurs in a limited area in the southeastern part of the Brazos G. It occurs in a northeast-southwest-trending band and extends into adjoining planning areas (Figure B-8). In the Brazos G the aquifer is present primarily in Washington and in the southern two-thirds of Grimes Counties. A small part of the aquifer exists in the extreme southernmost part of Brazos County, but is not considered to be sufficiently productive for regional planning purposes.

Geohydrology

The Gulf Coast Aquifer consists primarily of four water-bearing zones, the deepest being the Catahoula. The Catahoula is overlain by the Jasper Aquifer (mostly within the Oakville Sandstone). The Burkeville confining layer separates the Jasper from the overlying Evangeline Aquifer, which is contained within the Fleming and Goliad Sands. The Chicot Aquifer overlies the Evangeline and is the uppermost component of the Gulf Coast Aquifer. The Chicot consists of the Lissie, Willis and younger formations.

The water-bearing zones present consist of a complex sequence of ancient river and delta deposits, consisting mostly of interbedded and interfingering sands, silts and clays which thicken coastward. The strata form a leaky artesian aquifer system of large extent along the Texas Coastal Plain. Total thickness in the Brazos G is up to 1,200 feet, and net sand thickness is about 20 percent of the total thickness. From surface outcrops (recharge areas) the sand zones dip coastward beneath younger strata. Water table conditions occur in recharge areas, and artesian conditions occur in downdip areas. Precipitation is the main source of recharge, and large amounts of recharge are rejected by evapotranspiration in the outcrop. Mostly only freshwater sands occur in the Brazos G, and they extend to depths as great as 1,200 feet. However, some slightly saline water sands occur in the deeper extents of the Catahoula.

Development and Use

The year 2012 groundwater use within the Brazos G totaled 3,246 acft. About 80 percent of the water is used for municipal and industrial supply. About 60 percent of the pumpage is in Washington County.

Availability

The Gulf Coast Aquifer in Brazos G is in GMA-12 and 14. In letter dated November 2011 to GMA-14, TWDB referenced a report titled GAM Run 10-038 MAG, which presents the Modeled Available Groundwater MAG. The MAGs was determination by using the Gulf Coast Aquifer GAM, and the specified Desired Future Conditions provided by the GMA-14 representative. The results are presented in the following table.

Gulf Coast Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	2020	2030	2030	2050	2060	2070
BRAZOS	1,189	1,189	1,189	1,189	1,189	1,189
GRIMES	13,850	13,309	13,086	13,086	13,086	13,086
WASHINGTON	13,045	13,045	12,677	12,677	12,677	12,677
TOTAL	28,084	27,543	26,952	26,952	26,952	26,952

Well Yields

Wide variations occur in individual well yields obtainable from the primary water-bearing sands, depending on area, depth, and local sand thickness. Estimated ranges for maximum individual well yields are 300 to 800 gpm.

Water Quality

Water generally meets drinking water standards, but local exceptions occur. Iron content is occasionally a problem. Waters obtained near the outcrops of the water-bearing zones are generally higher in hardness and lower in total dissolved solids content. In downdip areas the water is commonly a calcium-bicarbonate-type water, with total dissolved solids content ranging up to 1,000 mg/L.

Resource Considerations

Groundwater resources are largely undeveloped, few development problems have occurred to date and water-level declines are minimal to none. Few and limited water pollution problems are apparent. Counties with groundwater conservation districts include: Grimes (Bluebonnet GCD) and Robertson and Brazos (Brazos Valley GCD).

References

Baker, E.T., Jr., Follett, C.D., McAdoo, G.D., and Bonnet, C.W., 1974, Ground-water resources of Grimes County, Texas: TWDB Report 186.

Baker, E.T., Jr., 1979, Stratigraphic and hydrogeologic framework of part of the Coastal Plain of Texas: TDWR Report 236.

Kasmarek, M.C. and Robinson, J.L., 2004, Hydrogeology and Simulation of Groundwater Flow and Land-Surface Subsidence in the Northern Part of the Gulf Coast Aquifer System, Texas: USGS Scientific Report 2004-5102.

Muller, Daniel A., and Price, Robert D., 1979, Ground-water availability in Texas: TDWR Report 238.

Sandeen, W.M., 1972, Ground-water resources of Washington County, Texas: TWDB Report 162.

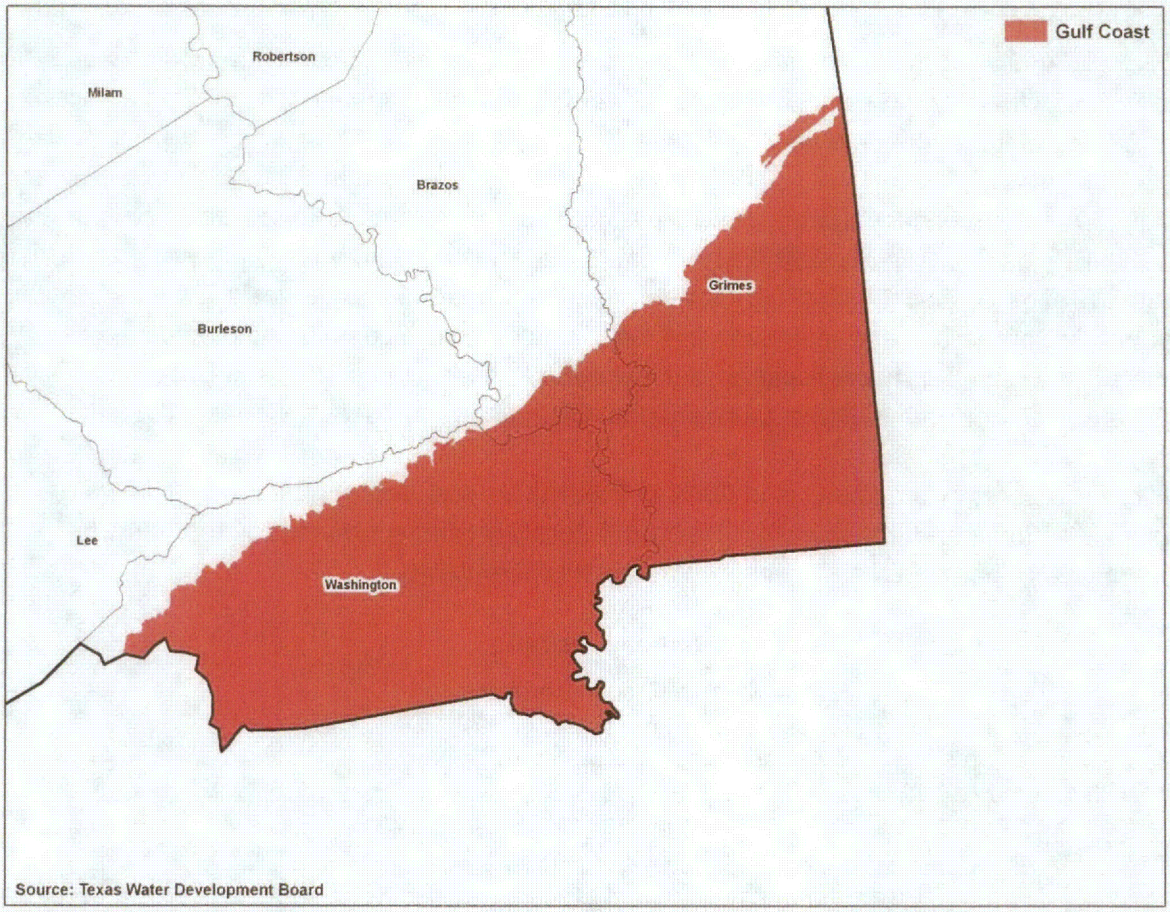


Figure B-8. Location of Gulf Coast Aquifer in Brazos G

Hickory Aquifer

The Hickory Aquifer, a minor aquifer, occurs in the southwest half of Lampasas County and the western tip of Williamson County in the Brazos G. The aquifer primarily occurs in an adjacent planning area to the south and west of Brazos G.

The aquifer consists of sandstones which dip northeast away from the Llano Uplift. No pumpage is listed in Brazos G in TWDB data files for year 2012, and no Hickory wells are known to exist within the Brazos G. Geophysical log data suggest that the aquifer is deeper than 3,500 feet. Water-bearing properties are unknown, and water quality with excessive radiological parameters is likely. For these reasons, it is not considered in planning for the Brazos G. The Saratoga Underground Water Conservation District encompasses Lampasas County.

The Hickory Aquifer in Brazos G is in GMA-8. The MAGs was determination by using water budget calculations, and the specified Desired Future Conditions provided by the GMA-8 representative. The results are presented in the following table.

Hickory Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	2020	2030	2030	2050	2060	2070
LAMPASAS	113	113	113	113	113	113
WILLIAMSON	15	15	15	15	15	15
TOTAL	128	128	128	128	128	128

References

Bluntzer, R.L., 1992, Evaluation of the ground-water resources of the Paleozoic and Cretaceous aquifers in the Hill Country of Central Texas: TWDB Report 339.

Preston, R.D., Pavlicek, D.J., Bluntzer, R.L., Derton, J., 1996, The Paleozoic and related aquifers of Central Texas: TWDB Report 346.

Williams, C.R., 2008. Adopted desired future conditions of the Ellenburger-San Saba, Hickory, and Marble Falls Aquifers: Memorandum dated June 9, 2008 and directed to Cheryl Maxwell, Administrative Agent for Groundwater Management Area 8.

Marble Falls Aquifer

Location

The Marble Falls Aquifer, a minor aquifer, occurs in the Brazos G only in Lampasas County (Figure B-9). It primarily occurs in an adjacent planning area to the south and west.

Geohydrology

The Marble Falls Aquifer occurs in discontinuous outcrops in the southwestern part of Lampasas County. Water occurs in secondary solution fractures, cavities and channels in the Marble Falls Limestone. The aquifer is connected to the Ellenburger-San Saba Aquifer where intervening beds are thin or absent and via faults. The aquifer supports numerous springs. The larger ones include the springs at Lampasas, which average about 9 cfs.

Development and Use

TWDB pumpage estimates for year 2012 total 23 acft, of which 13 acft are for municipal use.

Availability

The Marble Falls Aquifer in Brazos G is in GMA-8. The MAGs was determination by using water budget calculations, and the specified Desired Future Conditions provided by the GMA-8 representative. The results are 2,837 acft/yr for decades from 2020 to 2070.

Well Yields and Water Quality

Aquifer use is limited to shallow, small wells. Water quality is suitable for most purposes near the outcrop area.

Resource Considerations

Groundwater resources are large in relation to current use and future local demand. Regulation is provided by the Saratoga Underground Water Conservation District for Lampasas County.

References

Bluntzer, R.L., 1992, Evaluation of the ground-water resources of the Paleozoic and Cretaceous aquifers in the Hill Country of Central Texas: TWDB Report 339.

Muller, Daniel A., and Price, Robert D., 1979, Ground-water availability in Texas: TDWR Report 238.

Preston, R.D., Pavlicek, D.J., Bluntzer, R.L., Derton, J., 1996, The Paleozoic and related aquifers of Central Texas: TWDB Report 346.

Williams, C.R., 2008. Adopted desired future conditions of the Ellenburger-San Saba, Hickory, and Marble Falls Aquifers: Memorandum dated June 9, 2008 and directed to Cheryl Maxwell, Administrative Agent for Groundwater Management Area 8.

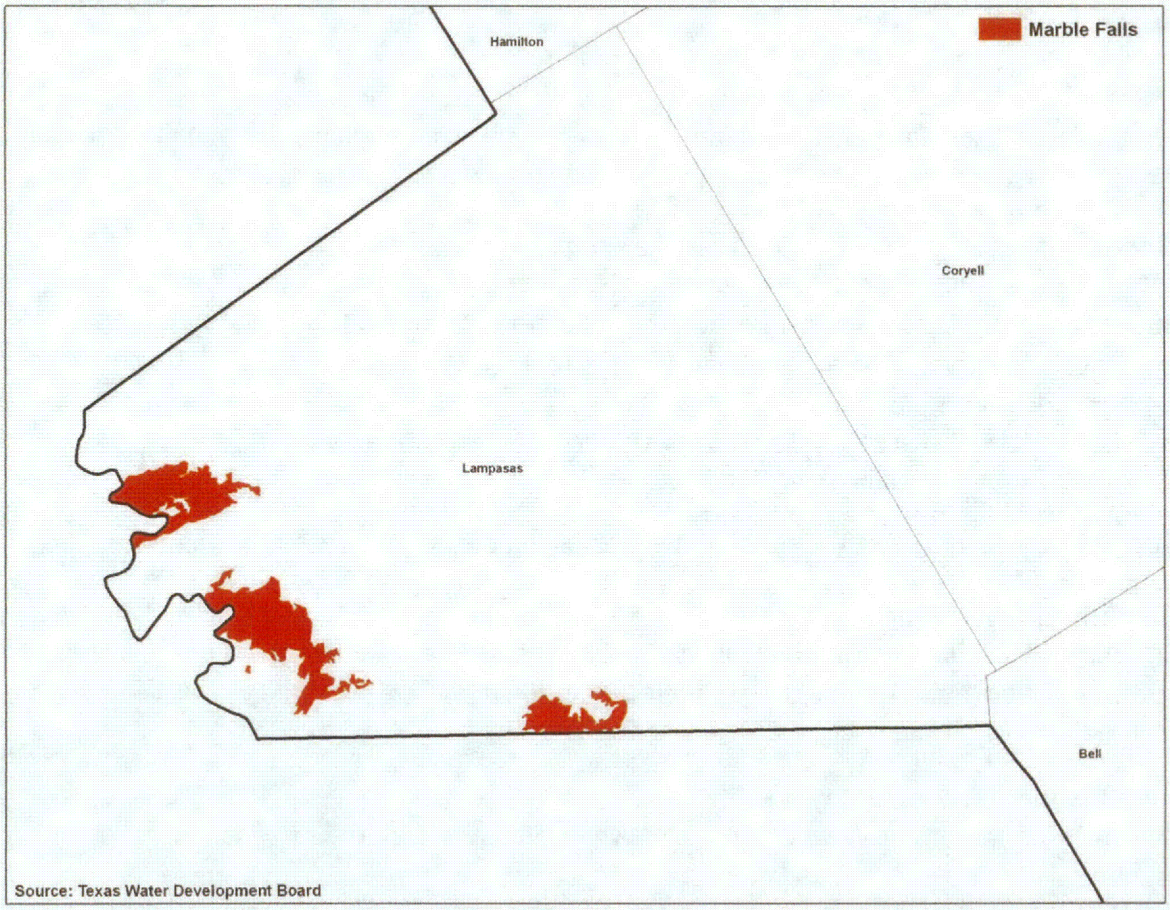


Figure B-9. Location of Marble Falls Aquifer in Brazos G

Queen City Aquifer

Location

The Queen City Aquifer, a minor aquifer, occurs in the southeastern part of the Brazos G and in adjoining planning areas. It forms a northeast-southwest-trending band primarily across parts of Robertson, Brazos, Grimes, Milam, Burleson and Lee Counties (Figure B-10).

Geohydrology

The water-bearing zones consist of sands interbedded with silts and clays. Total sand thickness ranges up to 300 feet. From their surface outcrop (recharge area) the sands dip coastward beneath younger strata. Freshwater occurs to depths up to 2,000 feet or more. Water table conditions occur in recharge areas, and artesian conditions exist in downdip areas. Precipitation and vertical leakage are the main sources of recharge. A large amount of recharge is rejected by evapotranspiration in the outcrop.

Development and Use

The year 2012 groundwater use within the Brazos G totaled 3,376 acft. About 40 percent that use was in Milam County. Total use was about 65 percent irrigation and 25 percent municipal. The relatively small use is partly due to the presence and development of the Sparta Aquifer at shallower depths over most of the area where the Queen City is present.

Availability

The Queen City Aquifer in Brazos G is in GMA-12. In letter dated July 2012 to GMA-12, TWDB referenced a report titled GAM Run 10-044 MAG, which presents the MAG. The MAGs was determination by utilization of Version 2.01 of the Central Sparta, Queen City, and Carrizo-Wilcox GAM and the specified Desired Future Conditions provided by the GMA-12 and GMA-14 representatives. The results are presented in the following table.

Well Yields

Estimated ranges for maximum individual well yields are 200 to 500 gpm. Wide variations can occur in individual well yields obtainable from the Queen City sands, depending on area, depth and local sand thickness.

Water Quality

Water typically meets drinking water standards, except for iron. High iron content is a common, but treatable, problem. Hydrogen sulfide or methane gas is reported occasionally. Waters obtained near the outcrops of the water-bearing zones generally are higher in hardness and lower in total dissolved solids content. In downdip areas the water is commonly a calcium/sodium- or sodium-bicarbonate-type water with total dissolved solids content ranging from 300 mg/L up to 1,000 mg/L or more.

Queen City Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	**2020**	**2030**	**2030**	**2050**	**2060**	**2070**
BRAZOS	604	634	587	533	529	529
BURLESON	415	446	446	446	446	446
GRIMES	637	637	637	637	637	637
LEE	120	115	113	111	111	111
MILAM	53	56	56	56	56	56
ROBERTSON	0	0	0	0	0	0
WASHINGTON	1	1	1	1	1	1
TOTAL	1,830	1,889	1,840	1,784	1,780	1,780

Resource Considerations

Groundwater resources are partly undeveloped, and few development problems have occurred to date. Water level declines are minimal to none. Few and limited water pollution problems are apparent.

Counties with groundwater districts include: Grimes (Bluebonnet GCD), Robertson and Brazos (Brazos Valley GCD), Lee (Lost Pines GCD), and Milam and Burleson (Post Oak Savannah GCD).

References

Baker, E.T., Jr., Follett, C.D., McAdoo, G.D., and Bonnet, C.W., 1974, Ground-water resources of Grimes County, Texas: TWDB Report 186.

Brown, Eric, 1997, Water quality in the Queen City aquifer, TWDB Hydrologic Atlas No. 6.

Follett, C.R., 1974, Ground-water resources of Brazos and Burleson Counties, Texas: TWDB Report 185.

Kelley, V.A. and others, 2004, Groundwater availability models for the Queen City and Sparta Aquifers: TWDB Contract Report, http://www.twdb.state.tx.us/gam/czwx_c/czwx_c.htm

Muller, Daniel A., and Price, Robert D., 1979, Ground-water availability in Texas: TDWR Report 238

Thompson, G.L., 1966, Ground-water resources of Lee County, Texas: TWDB Report 20.

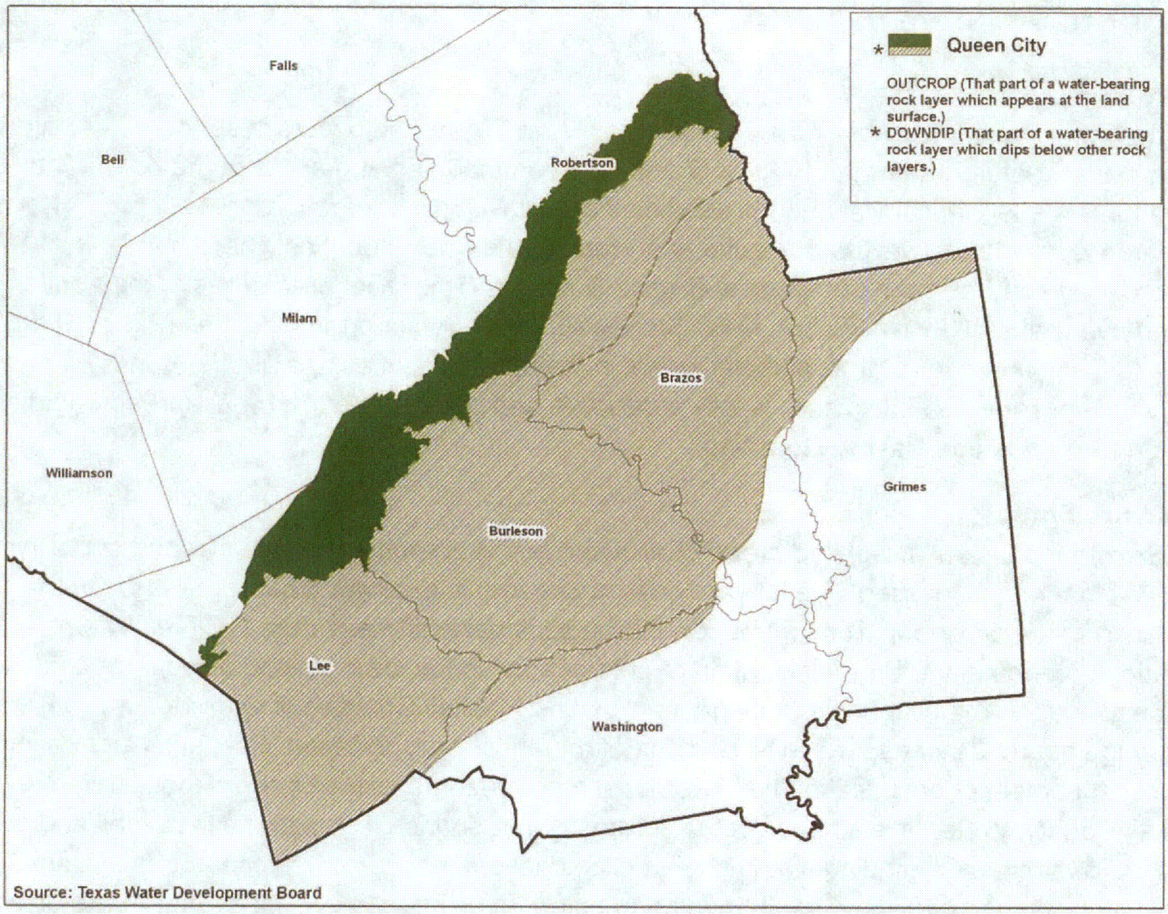


Figure B-10. Location of Queen City Aquifer in Brazos G

Seymour Aquifer

Location

The Seymour Aquifer is classified as a major aquifer in Texas and occurs in scattered, isolated areas in the western part of the Brazos G and in three other planning areas to the north. The Seymour is a shallow, alluvial aquifer used almost exclusively for irrigation.

The largest area of the Seymour Aquifer is in Haskell and Knox Counties where nearly 90 percent of the Seymour pumpage in Brazos G occurs. Other scattered areas of the aquifer extend over parts of Jones, Fisher, Kent, Stonewall, and Throckmorton Counties (Figure B-11). While the Seymour has a large surficial extent in these four counties, the aquifer generally has a relatively thin saturated thickness, is less productive and does not support widespread irrigation as it does in Knox and Haskell Counties.

Geohydrology

The Seymour consists of isolated areas of alluvium and is composed of gravel, sand and silty clay. The gravels, deposited by eastward flowing streams in geologic times, are mostly in the lower part of the Seymour. Total formation thickness is generally less than 100 feet. Water table conditions predominate. Direct infiltration of precipitation is the main source of recharge and is reasonably high. The historical pumpage in Knox and Haskell Counties is equivalent to capturing about 2.0 inches, or over 8 percent, of the annual precipitation. Recharge amounting of over 20 percent of precipitation has been observed for some seasons near Rochester in Haskell County. Water levels have fluctuated mostly in response to variations in rainfall and irrigation pumpage. Continuing water level declines have not occurred in most areas in Haskell and Knox Counties, and some rises have been noted. In all the other counties most water levels show a level or declining trend; and, few rises have been noted.

Development and Use

Within the Brazos G, the TWDB estimates total groundwater pumpage in 2012 to be 107,909 acft. About 98 percent is used for irrigation. However, this aquifer is an important resource for several municipal water users in the northern part of the region. In Kent County, groundwater from the Seymour accounts for nearly all of the municipal supplies. Haskell and Knox Counties accounted for about 96 percent of the total withdrawals in year 2012.

Availability

The Seymour Aquifer in Brazos G is in GMA-6. In a letter dated December 2011, the TWDB referenced a report titled GAM Run 10-058 MAG, which presents the MAG for the Seymour Aquifer in GMA-6. The MAG determination utilized the Desired Future Conditions (DFC's provided by the GMA-6 representative) and version 1.01 groundwater model of the Seymour and Blaine aquifers. Using the approach outlined by the TWDB, the MAG is calculated for each county. The results are presented in the following table.

Seymour Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	2020	2030	2030	2050	2060	2070
FISHER	2,935	2,931	2,920	2,915	2,733	2,733
HASKELL	46,180	44,575	42,358	42,524	43,617	43,617
JONES	2,918	2,918	2,918	2,918	2,918	2,918
KENT	1,181	1,180	1,180	1,179	1,179	1,179
KNOX	39,219	35,609	31,501	29,705	32,040	32,040
STONEWALL	233	230	224	215	214	214
THROCKMORTON	115	115	115	115	115	115
YOUNG	309	258	258	258	258	258
Total	93,090	87,816	81,474	79,829	83,074	83,074

Well Yields

Well yields average 270 gpm and are as high as 1,300 gpm. Wide variations occur in individual well yields obtainable from the Seymour, depending on area, depth and local character and thickness of gravels.

Water Quality

Water quality is variable for many reasons. The dissolved solids content of natural water ranges from 300 to 3,000 mg/L with most values between 400 and 1,000 mg/L. Most water meets drinking water standards, except for nitrate content which typically ranges from 30 to 90 mg/L and commonly exceeds the limit of 45 mg/L for public supplies. Past oil field practices have impacted water quality locally. Many detailed maps of individual water quality parameters for Haskell and Knox Counties are in included in the TDWR Report 226 (Harden, 1978).

Resource Considerations

Groundwater resources, while significant, are essentially fully developed, although some added supplies could be developed in some areas of water level rises or in other areas in average to wet times. Counties with groundwater conservation districts include: Kent (Salt Fork UWCD) and Haskell and Knox (Rolling Plains GCD). There may be additional opportunities for conjunctive use or for recharge and conservation projects in the region, depending on surface water availability and cost effectiveness.

References

Bradley, R. G. and Petrini, H., 1998, Priority groundwater management area update on Area 16, Rolling Prairies Region of North Central Texas, TWDB Open File Report 98-03.

Cronin, J. G., 1972, Ground water in Dickens and Kent Counties, Texas: TWDB Report 158.

Duffin, G.L., and Beynon, B.E., 1992, Evaluation of water resources in parts of the Rolling Prairies region of North-Central Texas: TWDB Report 337.

Ewing, J.D., Jones, T.L., Pickens, J.F. and others, 2004, Groundwater Availability for the Seymour Aquifer: Texas Water Development Board Contract Report. http://www.twdb.state.tx.us/gam/symr/symr.htm

Harden, R. W., and Associates, 1978, The Seymour aquifer, ground-water quality and availability in Haskell in Knox Counties, Texas: TDWR Report 226.

Muller, Daniel A., and Price, Robert D., 1979, Ground-water availability in Texas: TDWR Report 238.

Preston, R. D., 1978, Occurrence and availability of ground water in Baylor County, Texas: TDWR Report 218.

Price, R.D., 1978, Occurrence, quality, and availability of ground water in Jones County, Texas: TDWR Report 215.

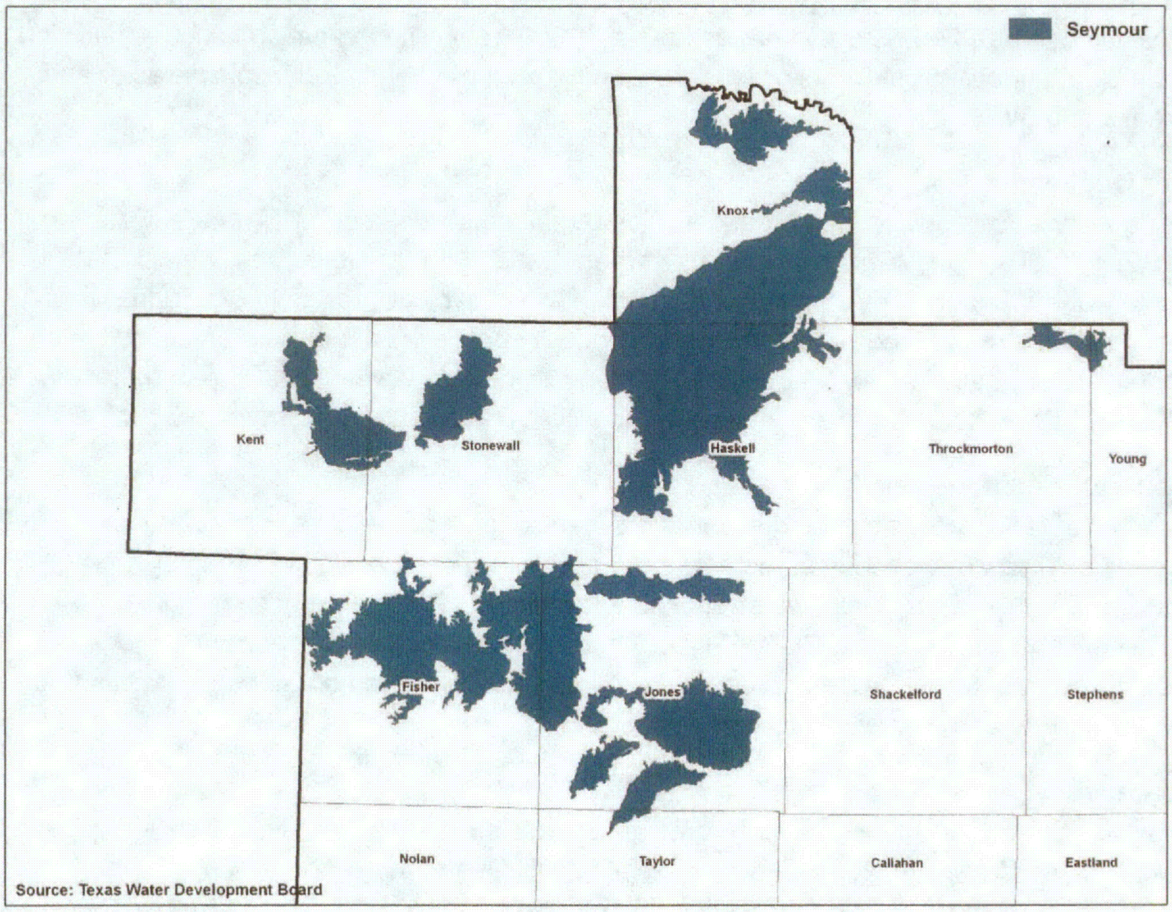


Figure B-11. Location of Seymour Aquifer in Brazos G

Sparta Aquifer

Location

The Sparta Aquifer, a minor aquifer, occurs in the southeastern part of the Brazos G and in adjoining planning areas. It occurs in a northeast-southwest-trending band primarily across parts of Brazos, Burleson, Grimes, Lee, Milam and Robertson Counties (Figure B-12). Its location is a short distance southeast of the Queen City Aquifer. Some users have wells screened across both zones.

Geohydrology

The water-bearing zones consist of sands interbedded with silts and clays. Total sand thickness ranges from about 100 to 200 feet. From their surface outcrop (recharge area) the sands dip coastward beneath younger strata. Freshwater occurs to depths up to 2,000 feet or more. Water table conditions occur in recharge areas, and artesian conditions occur in downdip areas. Precipitation and vertical leakage are the main sources of recharge. A large amount of recharge is rejected by evapotranspiration in the outcrop.

Development and Use

The year 2012 groundwater use within the Brazos G totaled 3,708 acft. About 35 percent that use was for municipal purposes and about 57 percent in Brazos County.

Availability

The Sparta Aquifer in Brazos G is in GMA-12. In letter dated July 2012 to GMA-12, TWDB referenced a report titled GAM Run 10-046 MAG, which presents the MAG. The MAGs was determination by utilization of Version 2.01 of the central Sparta, Queen City, and Carrizo-Wilcox GAM and the specified Desired Future Conditions provided by the GMA-12 and GMA-14 representatives. The results are presented in the following table.

Well Yields

Estimated ranges for maximum individual well yields are 200 to 600 gpm. Wide variations can occur in individual well yields obtainable from the Sparta, depending on area, depth and local sand thickness.

Water Quality

Water typically meets drinking water standards, except for iron. High iron content is a common problem, and hydrogen sulfide gas is reported occasionally. Waters obtained near the outcrops of the water-bearing zones generally are higher in hardness and lower in total dissolved solids content. In downdip areas the water is commonly a calcium/sodium- or sodium-bicarbonate-type water with total dissolved solids content ranging from about 300 up to 1,000 mg/L or more.

Sparta Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	**2020**	**2030**	**2030**	**2050**	**2060**	**2070**
BRAZOS	5,941	7,308	7,305	7,307	7,307	7,307
BURLESON	2,245	4,041	5,612	6,734	6,734	6,734
GRIMES	2,571	2,571	2,571	2,571	2,571	2,571
LEE	323	311	305	294	294	294
ROBERTSON	300	400	500	616	616	616
WASHINGTON	0	0	0	0	0	0
TOTAL	11,380	14,631	16,293	17,522	17,522	17,522

Well Yields

Estimated ranges for maximum individual well yields are 200 to 600 gpm. Wide variations can occur in individual well yields obtainable from the Sparta, depending on area, depth and local sand thickness.

Water Quality

Water typically meets drinking water standards, except for iron. High iron content is a common problem, and hydrogen sulfide gas is reported occasionally. Waters obtained near the outcrops of the water-bearing zones generally are higher in hardness and lower in total dissolved solids content. In downdip areas the water is commonly a calcium/sodium- or sodium-bicarbonate-type water with total dissolved solids content ranging from about 300 up to 1,000 mg/L or more.

Resource Considerations

Groundwater resources are largely undeveloped, except in the vicinity of College Station and Texas A&M well fields. Few development problems have occurred to date, and water level declines have been limited except near these well fields and the former Bryan well fields. Few and limited water pollution problems are apparent. Counties with groundwater conservation districts include: Lee (Lost Pines GCD), Robertson and Brazos (Brazos Valley GCD) and Milam and Burleson (Post Oak Savannah GCD)

References

Baker, E.T., Jr., Follett, C.D., McAdoo, G.D., and Bonnet, C.W., 1974, Ground-water resources of Grimes County, Texas: TWDB Report 186.

Follett, C.R., 1974, Ground-water resources of Brazos and Burleson Counties, Texas: TWDB Report 185.

Kelley, V.A. and others, 2004, Groundwater availability models for the Queen City and Sparta Aquifers: TWDB Contract Report, http://www.twdb.state.tx.us/gam/czwx_c/czwx_c.htm

Merrick, Biri, 1997, Water quality in the Sparta aquifer, TWDB Hydrologic Atlas No. 5.

Muller, Daniel A., and Price, Robert D., 1979, Ground-water availability in Texas: TDWR Report 238.

Thompson, G.L., 1966, Ground-water resources of Lee County, Texas: TWDB Report 20.

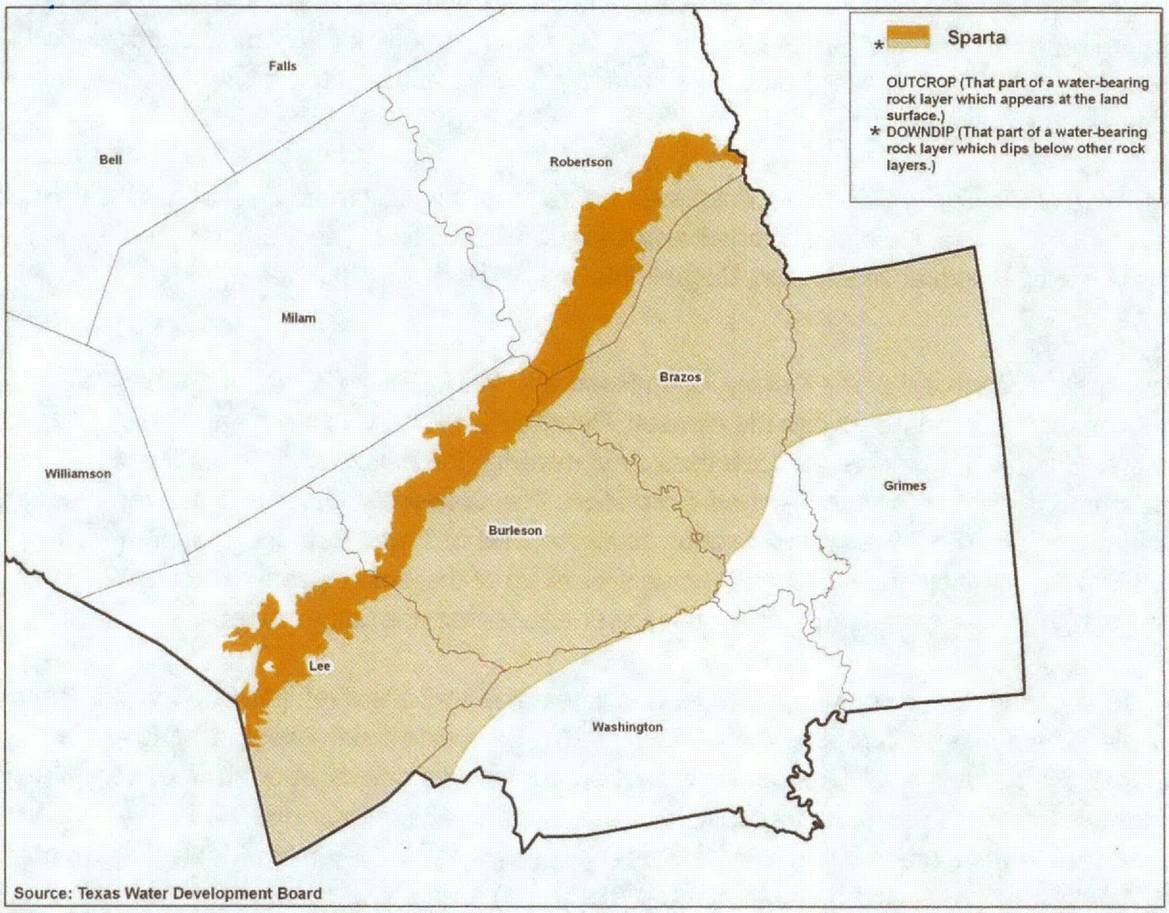


Figure B-12. Location of Sparta Aquifer in Brazos G

Trinity Aquifer

Location

The Trinity Aquifer, a major aquifer, occurs in a north-south-trending band that extends in Brazos G from Williamson County in the south to Hood and Johnson Counties in the north. The aquifer supplies drinking water to numerous communities, homes and farms in Central Texas and irrigation water to many farms, especially in Comanche and Erath Counties. Considering the trends in water level declines as a reference, the aquifer appears to be overdeveloped in a large part of the confined area.

The outcrop of the Trinity Aquifer in Brazos G occurs mostly in Callahan, Eastland, Erath, Hood, Somervell, Comanche, Hamilton, Coryell and Lampasas Counties. The confined area is mostly in Johnson, Hill, Bosque, McLennan, Coryell, Bell and Williamson Counties (Figure B-13).

Geohydrology

The aquifer is composed of the Paluxy, Glen Rose and Travis Peak Formations. The Travis Peak Formation is subdivided into the Hensell, Pearsall/CowCreek/Hamett, and Hosston/Sligo members. Updip where the Glen Rose thins or is missing, the Paluxy and Travis Peak Formations coalesce to form the Antlers Formation. The uppermost water-bearing zone is the Paluxy Formation. The lower water-bearing zone consists of Travis Peak Formation and is divided into the Hensell and Hosston Members in much of the eastern part of Brazos G. Groundwater is much more abundant in the lower zones than the upper zone.

The water-bearing zones consist of a sand and limestone and are often interbedded with clay and shale. The aquifer outcrops in the western part of the north-south-trending band and is confined in the eastern part. The rocks dip east-southeast at a rate of about 15 feet per mile in the northwest part of Brazos G, gradually increase in dip to 40 feet per mile in the central part, and then rapidly increase in dip to 80 to 100 feet per mile east of the Luling-Mexia-Talco Fault Zone. Water table conditions occur in outcrop (recharge) areas, and confined (artesian) conditions occur in downdip areas. The aquifer is naturally recharged by precipitation in the outcrop area where soils have layers of sand and sandy loam. In the downdip area, some recharge to the heavily pumped water-bearing zones probably includes a very modest amount of leakage from over- and underlying formations. Discharge is mostly to wells, springs, seeps and evapotranspiration in the outcrop area, and to wells in the confined zone.

Development and Use

The year 2012 Brazos G groundwater use totaled 85,833 acft, of which 42 percent was municipal use and 52 percent irrigation. Erath County accounts for 15 percent of the total pumping. Municipal pumping in McLennan County accounts for about 11 percent.

Availability

The Trinity Aquifer in Brazos G is in GMA-8. In letter dated March 2012 to GMA-8, TWDB referenced a report titled GAM Run 10-063 MAG, which presents the MAG. The MAGs was determination by using the Northern Trinity and Woodbine Aquifers GAM, and the specified Desired Future Conditions provided by the GMA-8 representative. The results are presented in the following table.

In addition, some municipal or county authorities in the North - Central Texas Trinity and Woodbine Aquifers and Central Texas -Trinity Aquifer in Priority Groundwater Management Areas (PGMAs) may require a groundwater availability certification at a subdivision level. If these authorities choose to require a certification, the developer of a new subdivision plat is to follow TCEQ Chapter 230 - Groundwater Availability Certification for Platting rules. It is unknown how many, if any, of the authorities in these PGMAs require certifications.

Well Yields

Well yields have a wide variation in the Trinity Aquifer. In general, yields for large supply wells in the western part of the aquifer where the outcrop occurs are between 50 and 250 gpm. In the confined part, large wells usually produce between 200 and 700 gpm. Well yields are mostly related to the cumulative thickness of sand layers and water level in the water-bearing zone at the well. Potential well yields have declined substantially in areas with large declines in water levels from a combination of increased lift and the inability to create a cone of depression around the well.

Water Quality

Water quality from the Trinity Aquifer is acceptable for most municipal and industrial purposes; however, excess concentrations of certain constituents in some areas exceed drinking water standards. One concern is relatively high concentrations of bacteria and nutrients that have been found in some wells in Callahan, Eastland, Erath and Comanche Counties. Another concern is contamination from brines associated with oil and gas operations. Finally, limited areas are impacted by leakage of poor quality water from overlying formations.

Resource Considerations

Groundwater resources are considered to be within or less than development limits in the outcrop area and generally overdeveloped in the confined areas. The Trinity Aquifer in Brazos G is overseen by seven groundwater conservation districts, but these districts do not cover the entire aquifer area within the Brazos G. Counties with groundwater conservation districts include: Lampasas (Saratoga UWCD), Bell (Clearwater UWCD), Bosque, Comanche and Erath (Middle Trinity GCD), McLennan (McLennan County GCD), and Coryell (Tablerock GCD), Somerville, Johnson and Hill (Prairielands GCD) and Hood (Upper Trinity GCD).

Trinity Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	**2020**	**2030**	**2030**	**2050**	**2060**	**2070**
BELL	7,068	7,068	7,068	7,068	7,068	7,068
BOSQUE	5,849	5,849	5,849	5,849	5,849	5,849
CALLAHAN	3,777	3,777	3,777	3,777	3,777	3,777
COMANCHE	32,235	32,235	32,235	32,235	32,235	32,235
CORYELL	3,716	3,716	3,716	3,716	3,716	3,716
EASTLAND	4,720	4,720	4,720	4,720	4,720	4,720
ERATH	32,926	32,926	32,926	32,926	32,926	32,926
FALLS	169	169	169	169	169	169
HAMILTON	2,144	2,144	2,144	2,144	2,144	2,144
HILL	3,147	3,147	3,147	3,147	3,147	3,147
HOOD	11,145	11,145	11,145	11,145	11,145	11,145
JOHNSON	12,871	12,871	12,871	12,871	12,871	12,871
LAMPASAS	3,117	3,117	3,117	3,117	3,117	3,117
LIMESTONE	69	69	69	69	69	69
MCLENNAN	20,690	20,690	20,690	20,690	20,690	20,690
MILAM	288	288	288	288	288	288
PALO PINTO	12	12	12	12	12	12
SOMERVELL	2,485	2,485	2,485	2,485	2,485	2,485
TAYLOR	431	431	431	431	431	431
WILLIAMSON	1,582	1,582	1,582	1,582	1,582	1,582
TOTAL	148,441	148,441	148,441	148,441	148,441	148,441

References

Baker, B., Duffin, G., Flores, R., and Lynch, T., 1990, Evaluation of water resources in part of Central Texas: TWDB Report 319.

Baker, B., Duffin, G., Flores, R., and Lynch, T., 1990, Evaluation of water resources in part of North-Central Texas: TWDB Report 318.

Bene', J. and Harden, B. and others, 2004, Northern Trinity/Woodbine Aquifer Groundwater Availability Model: TWDB Contract Report, http://www.twdb.state.tx.us/gam/trnt_n/trnt_n.htm

Duffin, G., and Musick, S.P., 1991, Evaluation of water resources in Bell, Burnet, Travis, Williamson, and parts of adjacent counties, Texas: TWDB Report 326.

Klemt, W.B., Perkins, R.D., and Alvarez, H.J., 17975, Ground-water resources in part of Central Texas, with emphasis on the Antlers and Travis Peak Formations: TWDB Report 195.

Nordstrom, P.L., 1982, Occurrence, availability, and chemical quality of ground-water in the Cretaceous aquifers of North-Central Texas: TDWR Report 269.

Nordstrom, P.L., 1987, Ground-water resources of the Antlers and Travis Peak Formations in the outcrop area of North-Central Texas: TWDB Report 298.

Sandeen, W.M., 1972, Ground-water resources of Washington County, Texas: TWDB Rept. 162.

Williams, C.R., 2008, Desired Future Conditions of N. Trinity Aquifer: Memorandum dated December 15, 2008 to Cheryl Maxwell, Administrative Agent for Groundwater Management Area 8.

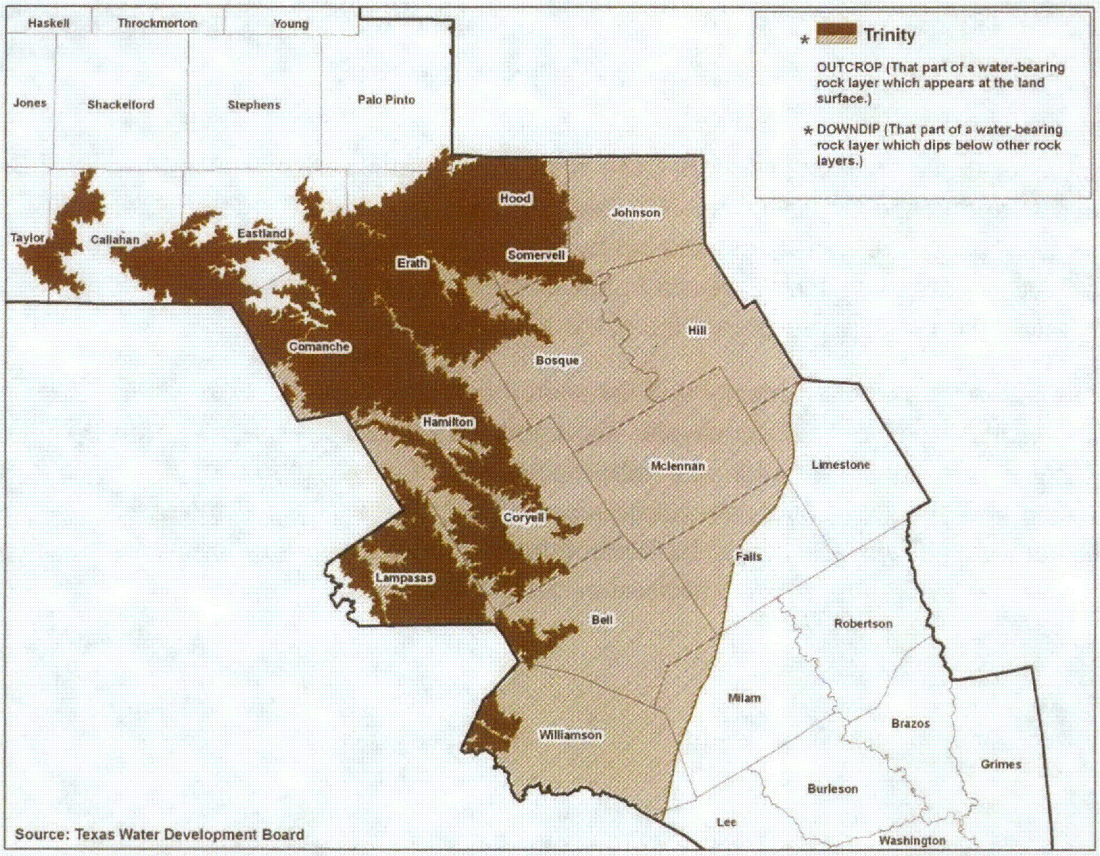


Figure B-13. Location of Trinity Aquifer in Brazos G

Woodbine Aquifer

Location

The Woodbine Aquifer, a minor aquifer, is in the north-central part of the Brazos G and in adjacent planning areas to the north. It occurs in a north-south-trending belt primarily across parts of Johnson and Hill Counties (Figure B-14).

Geohydrology

The Woodbine consists of water-bearing sandstone interbedded with shale. The sandstone tends to be thicker in the lower part of the formation. The upper part of the Woodbine has distinctly poorer water quality. Total formation thickness ranges up to slightly over 200 feet and sand thickness up to 100 feet. From their surface outcrop (recharge area) the water-bearing sands dip eastward beneath younger strata. Water table conditions occur in recharge areas, and artesian conditions occur in downdip areas. Precipitation is the main source of recharge. Maximum estimated transmissivities for the best yielding zones in the lower Woodbine are about 250 to 500 square ft per day.

Development and Use

Development is mostly limited to local use for household and livestock purposes. The TWDB estimates the total pumpage to be 1,001 acft in 2012. About 75 percent of the pumpage was for municipal purposes.

Availability

The Woodbine Aquifer in Brazos G is in GMA-8. In letter dated July 2012 to GMA-8, TWDB referenced a report titled GAM Run 10-064 MAG, which presents the Modeled Available Groundwater. The MAGs was determination by using the Northern Trinity and Woodbine Aquifers GAM, and the specified Desired Future Conditions provided by the GMA-8 representative. The results are presented in the following table.

In addition, some municipal or county authorities in the North - Central Texas Trinity and Woodbine Aquifers in Priority Groundwater Management Areas (PGMAs) may require a groundwater availability certification at a subdivision level. If these authorities choose to require a certification, the developer of a new subdivision plat is to follow TCEQ Chapter 230 - Groundwater Availability Certification for Platting rules. It is unknown how many, if any, of the authorities in these PGMAs require subdivision certifications.

Woodbine Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	**2020**	**2030**	**2030**	**2050**	**2060**	**2070**
HILL	2,261	2,261	2,261	2,261	2,261	2,261
JOHNSON	4,732	4,732	4,732	4,732	4,732	4,732
LIMESTONE	34	34	34	34	34	34
MCLENNAN	5	5	5	5	5	5
TOTAL	7,032	7,032	7,032	7,032	7,032	7,032

Well Yields

Estimated ranges for maximum individual well yields are 50 to 150 gpm. Wide variations occur in individual well yields obtainable from Woodbine sands, depending on area, depth, and local sand thickness.

Water Quality

Water typically meets drinking water standards. Waters obtained near the outcrop of the water-bearing zones generally are higher in hardness and lower in total dissolved solids content. In confined areas the water is commonly a sodium-bicarbonate-type water with total dissolved solids content ranging from 500 to over 1,000 mg/L. The higher mineralized waters contain appreciably higher sulfate content. High iron concentrations are common in the outcrop areas.

Resource Considerations

The Woodbine is a relatively weak aquifer, supports little development and has minimal potential within the Brazos G. Few development problems have occurred to date, but large water level declines can be expected from any significant added development. Care must be taken in well construction to seal off the higher mineralized water in the upper part of the formation and to screen the best water-bearing zones in the lower part. No existing local plans are known. The groundwater conservation districts regulating the Woodbine in the Brazos G are McLennan County GCD and Prairielands GCD (Hill, Johnson Counties).

References

Hopkins, Janie, 1996, Water quality in the Woodbine Aquifer, TWDB Hydrologic Atlas No. 4.

Bene', J. and Harden, B. and others, 2004, Northern Trinity/Woodbine Aquifer Groundwater Availability Model: TWDB Contract Report, http://www.twdb.state.tx.us/gam/trnt_n/trnt_n.htm

Klemt, W.B., Perkins, R.D., and Alvarez, H.J., 1975, Ground-water resources of part of Central Texas, with emphasis on the Antlers and Travis Peak Formations: TWDB Report 195.

Muller, Daniel A., and Price, Robert D., 1979, Ground-water availability in Texas: TDWR Report 238.

Nordstrom, P.L., 1982, Occurrence, availability, and chemical quality of ground water in the Cretaceous aquifers of North-Central Texas: TDWR Report 269.

Thompson, Gerald L., 1969, Ground water resources of Johnson County, Texas: TWDB Report 94.

Williams, C.R., 2008, Desired Future Conditions of N. Trinity Aquifer: Memorandum dated December 15, 2008 to Cheryl Maxwell, Administrative Agent for Groundwater Management Area 8.

Ward, J.K., Managed available groundwater estimates for the Woodbine Aquifer in Groundwater Management Area 8: TWDB letter dated Nov 10, 2008 with *GAM Run 08-14mag* attachment

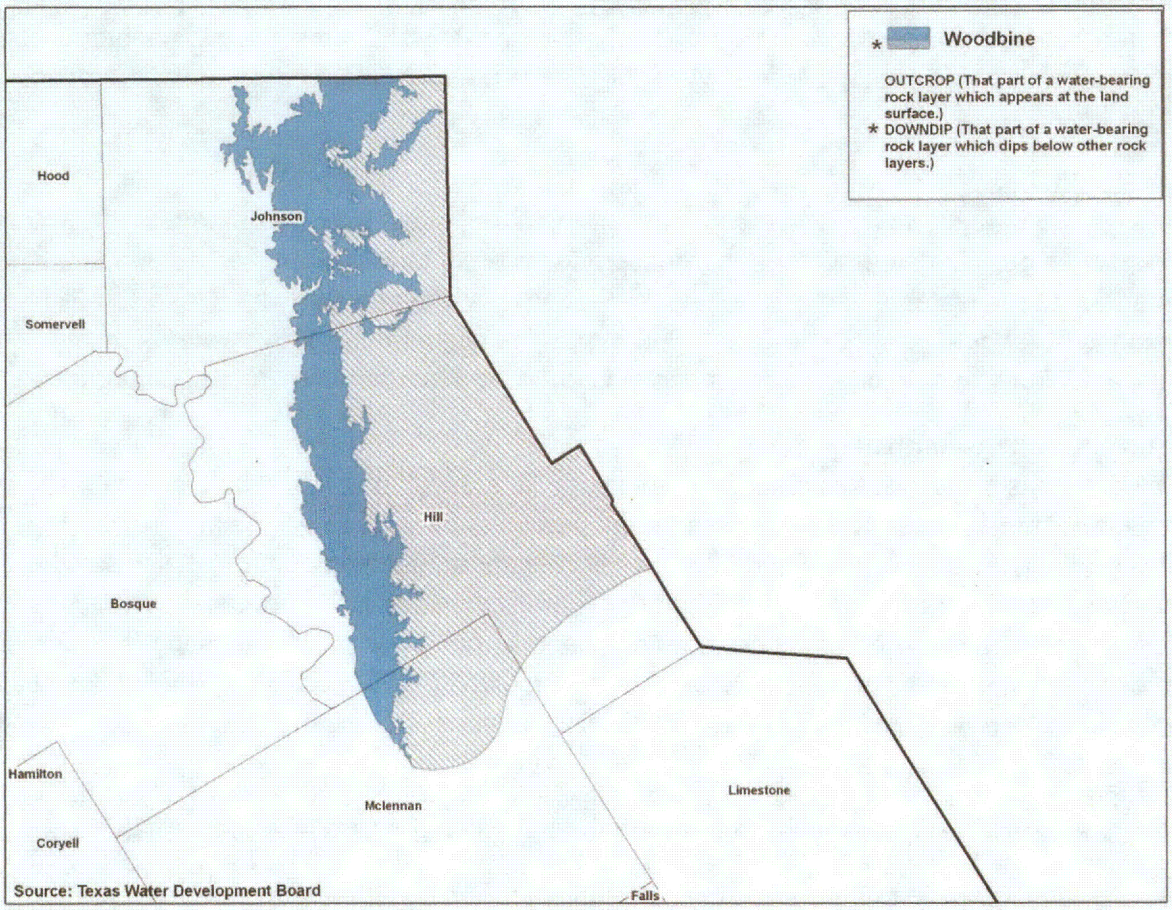


Figure B-14. Location of Woodbine Aquifer in Brazos G

Yegua-Jackson Aquifer

Location

The Yegua-Jackson Aquifer occurs in the southeastern part of the Brazos G and in adjoining planning areas. It occurs in a northeast-southwest-trending band that is 15-20 miles wide and primarily cuts across parts of Brazos, Burleson, Grimes, Lee, and Washington Counties (Figure B-15). Its location is a short distance downdip of the Sparta Aquifer and is covered by younger sediments in much of the area.

Geohydrology

The Yegua Formation consists of fine to medium sand that is interbedded with indurated fine-grained sandstone and clay. It has a maximum thickness in Grimes County of nearly 1,200 ft. The Jackson Group consists of fine to medium sand, clay, and siltstone. Its maximum thickness is about 1,600 ft. From their surface outcrop (recharge area) the sands dip coastward beneath younger strata. Water table conditions occur in recharge areas, and artesian conditions occur in downdip areas. Precipitation is the main source of recharge. A large amount of recharge is rejected by evapotranspiration in the outcrop.

Development and Use

Development is mostly limited to local use for household and livestock purposes. The TWDB estimates the total pumpage to be 3,481 acft in 2012. About two-thirds of the pumpage occurred in Brazos County. Most of this pumpage was for irrigation purposes.

Availability

The Trinity Aquifer in Brazos G is in GMA-12 and 14. The TWDB referenced a report titled GAM Run 10-060 MAG for GMA-12 and GAM Run 10-055 MAG, Version 2 report for GMA-14 to describe the calculation of the MAG. The MAGs was determination by using the Yegua-Jackson Aquifer GAM, and the specified Desired Future Conditions provided by the GMA-12 and 14 representatives. The results are presented in the following table.

Well Yields

Estimated maximum individual well yields are about 500 gpm. Wide variations can occur in individual well yields, depending on area, depth and local sand thickness.

Water Quality

Relatively shallow wells yield water that typically meets drinking water standards.. Waters obtained near the outcrops of the water-bearing zones generally are higher in hardness and lower in total dissolved solids content. In downdip areas, water with total dissolved solids content ranges from about 300 up to 1,000 mg/L or more.

Resource Considerations

Counties with groundwater conservation districts include: Lee (Lost Pines GCD), Robertson and Brazos (Brazos Valley GCD), and Grimes (Bluebonnet GCD).

Yegua-Jackson Aquifer

Modeled Available Groundwater (acft/yr)						
COUNTY	**2020**	**2030**	**2030**	**2050**	**2060**	**2070**
BRAZOS	7,071	7,071	7,071	7,071	7,071	7,071
BURLESON	12,923	12,923	12,923	12,923	12,923	12,923
GRIMES	3,278	3,278	3,278	3,278	3,278	3,278
LEE	635	635	635	635	635	635
WASHINGTON	3,716	3,716	3,716	3,716	3,716	3,716
TOTAL	24,056	24,056	24,056	24,056	24,056	24,056

References

Baker, E.T., Jr., Follett, C.D., McAdoo, G.D., and Bonnet, C.W., 1974, Ground-water resources of Grimes County, Texas: TWDB Report 186.

Follett, C.R., 1974, Ground-water resources of Brazos and Burleson Counties, Texas: TWDB Report 185.

Thompson, G.L., 1966, Ground-water resources of Lee County, Texas: TWDB Report 20.

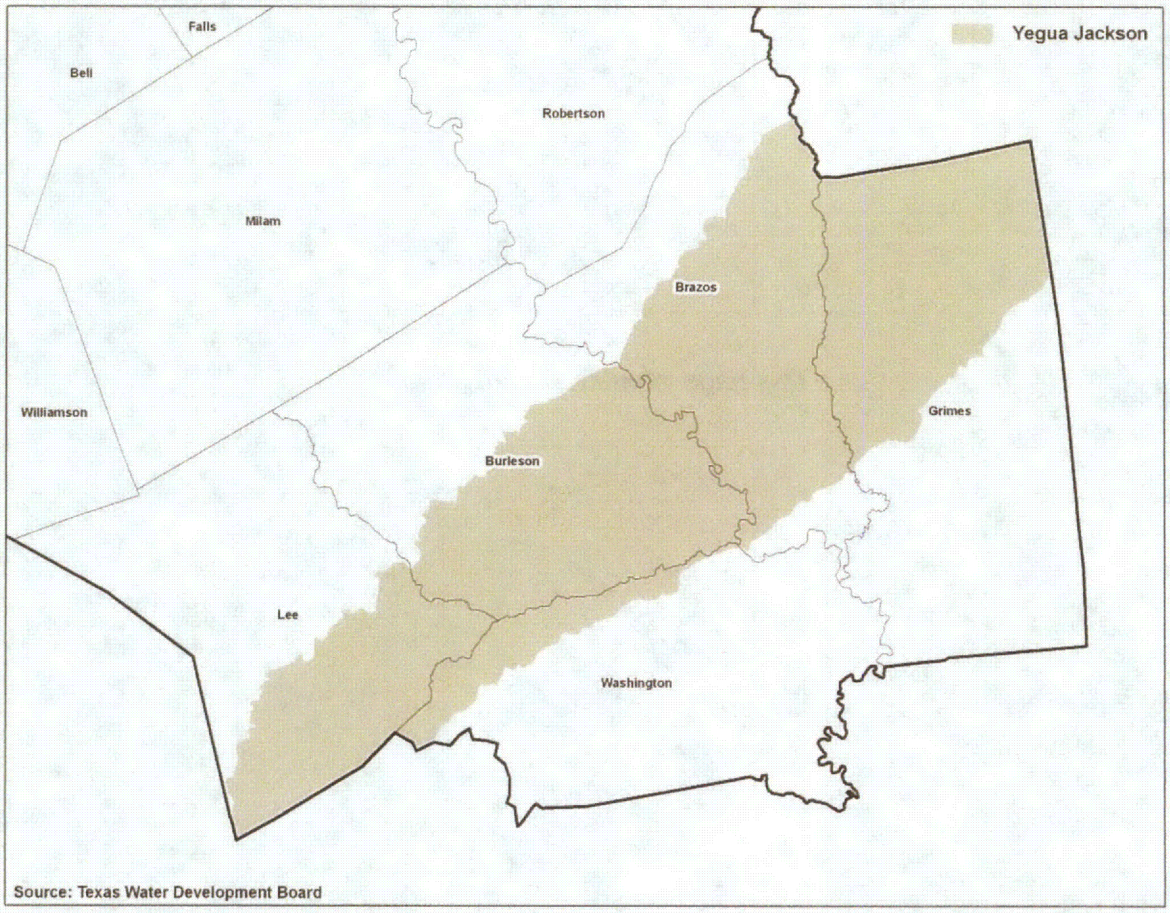


Figure B-15. Location of Yegua-Jackson Aquifer in Brazos G

This page intentionally left Blank.

Appendix C

Appendix C
Population, Water Supply, and Water Demand Projections

This page intentionally left blank

Table C-1
BELL County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	371,956	430,647	494,582	560,252	624,686	688,107

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	64,029	72,371	81,875	92,080	102,418	112,689
	Contractual Demand	4,188	4,188	4,188	4,188	4,188	4,188
	Municipal Existing Supply						
	Groundwater	5,399	5,399	5,399	5,399	5,399	5,399
	Surface water (Less Contractual Demand)[1]	104,135	102,181	102,107	99,036	98,799	99,095
	Total Existing Municipal Supply	109,534	107,579	107,505	104,434	104,197	104,494
	Municipal Balance	45,505	35,208	25,630	12,354	1,779	(8,195)
Industrial	Manufacturing Demand	1,370	1,490	1,607	1,711	1,847	1,994
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	497	497	497	497	497	497
	Total Manufacturing Supply	497	497	497	497	497	497
	Manufacturing Balance	(873)	(993)	(1,110)	(1,214)	(1,350)	(1,497)
	Steam-Electric Demand	4,220	4,934	5,804	6,865	8,157	9,693
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	(4,220)	(4,934)	(5,804)	(6,865)	(8,157)	(9,693)
	Mining Demand	3,242	3,980	4,599	5,349	6,105	6,968
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(3,242)	(3,980)	(4,599)	(5,349)	(6,105)	(6,968)
Agriculture	Irrigation Demand	2,205	2,174	2,147	2,117	2,086	2,058
	Irrigation Existing Supply						
	Groundwater	385	385	385	385	385	385
	Surface water	663	662	659	644	640	635
	Total Irrigation Supply	1,048	1,047	1,044	1,029	1,025	1,020
	Irrigation Balance	(1,157)	(1,127)	(1,103)	(1,088)	(1,061)	(1,038)
	Livestock Demand	1,009	1,009	1,009	1,009	1,009	1,009
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,009	1,009	1,009	1,009	1,009	1,009
	Total Livestock Supply	1,009	1,009	1,009	1,009	1,009	1,009
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	72,861	82,775	93,885	106,005	118,527	131,344
	Existing Municipal & Industrial Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	104,632	102,678	102,604	99,533	99,296	99,592
	Total Municipal & Industrial Supply	104,632	102,678	102,604	99,533	99,296	99,592
	Municipal & Industrial Balance	31,771	19,903	8,719	(6,472)	(19,231)	(31,752)
	Agriculture Demand	3,214	3,183	3,156	3,126	3,095	3,067
	Existing Agricultural Supply						
	Groundwater	385	385	385	385	385	385
	Surface water	1,672	1,671	1,668	1,653	1,649	1,644
	Total Agriculture Supply	2,057	2,056	2,053	2,038	2,034	2,029
	Agriculture Balance	(1,157)	(1,127)	(1,103)	(1,088)	(1,061)	(1,038)
	Total Demand	76,075	85,958	97,041	109,131	121,622	134,411
	Total Supply						
	Groundwater	385	385	385	385	385	385
	Surface water	106,303	104,348	104,272	101,185	100,945	101,236
	Total Supply	106,688	104,733	104,657	101,570	101,330	101,621
	Total Balance	30,613	18,775	7,616	(7,561)	(20,292)	(32,790)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-2. BELL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
439 WSC						
Demand	1,044	1,134	1,233	1,351	1,489	1,644
Supply	1,499	1,489	1,475	1,399	1,442	1,550
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,499	1,489	1,475	1,399	1,442	1,551
SW Constrained Supply	1,499	1,489	1,475	1,399	1,442	1,550
Balance	455	355	242	48	(47)	(94)
ARMSTRONG WSC						
Demand	406	418	434	454	478	502
Supply	1,271	1,271	1,271	1,271	1,271	1,271
Groundwater	488	488	488	488	488	488
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	783	783	783	783	783	783
SW Constrained Supply	783	783	783	783	783	783
Balance	865	853	837	817	793	769
BARTLETT (P)						
Demand	159	179	202	226	252	277
Supply	36	36	36	36	36	36
Groundwater	36	36	36	36	36	36
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(123)	(143)	(166)	(190)	(216)	(241)
BELL-MILAM FALLS WSC (P)						
Demand	344	356	371	390	411	432
Supply	1,056	1,056	1,056	1,056	1,056	1,056
Groundwater	107	107	107	107	107	107
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	949	949	949	949	949	949
SW Constrained Supply	949	949	949	949	949	949
Balance	712	700	685	666	645	624
BELTON						
Demand	3,807	4,306	4,872	5,480	6,099	6,715
Supply	7,399	7,355	7,285	6,914	6,821	6,674
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	7,399	7,355	7,285	6,914	6,821	6,674
SW Constrained Supply	7,399	7,355	7,285	6,914	6,821	6,674
Balance	3,592	3,049	2,413	1,434	722	(41)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-2 Continued. BELL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
CHISHOLM TRAIL SUD (P)						
Demand	553	632	721	814	906	998
Supply	308	308	308	308	308	308
Groundwater	31	31	31	31	31	31
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	665	644	677	784	930	1,101
SW Constrained Supply	277	277	277	277	277	277
Balance	(245)	(324)	(413)	(506)	(598)	(690)
DOG RIDGE WSC						
Demand	438	488	547	613	682	751
Supply	1,638	1,631	1,623	1,583	1,573	1,557
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,638	1,631	1,623	1,583	1,573	1,557
SW Constrained Supply	1,638	1,631	1,623	1,583	1,573	1,557
Balance	1,200	1,143	1,076	970	891	806
EAST BELL WSC (P)						
Demand	442	497	560	630	702	775
Supply	1,362	1,362	1,362	1,362	1,362	1,362
Groundwater	716	716	716	716	716	716
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	646	646	646	646	646	646
SW Constrained Supply	646	646	646	646	646	646
Balance	920	865	802	732	660	587
ELM CREEK WSC (P)						
Demand	254	288	327	370	413	457
Supply	347	345	342	332	328	321
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	347	345	342	332	328	321
SW Constrained Supply	347	345	342	332	328	321
Balance	93	57	15	(38)	(85)	(136)
FORT HOOD (P)						
Demand	3,954	3,870	3,815	3,810	3,804	3,804
Supply	5,683	5,494	5,305	5,115	4,926	4,737
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	5,683	5,494	5,305	5,115	4,926	4,737
SW Constrained Supply	5,683	5,494	5,305	5,115	4,926	4,737
Balance	1,729	1,624	1,490	1,305	1,122	933

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-2 Continued. BELL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
HARKER HEIGHTS						
Demand	6,224	7,079	8,042	9,061	10,087	11,106
Supply	7,156	7,105	7,104	7,565	8,113	7,936
Groundwater	1	1	1	1	1	1
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	7,155	7,104	7,103	7,564	8,112	7,935
SW Constrained Supply	7,155	--	--	--	--	--
Balance	932	26	(938)	(1,496)	(1,974)	(3,170)
HOLLAND						
Demand	112	108	106	105	106	107
Supply	489	489	489	489	489	489
Groundwater	158	158	158	158	158	158
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	331	331	331	331	331	331
SW Constrained Supply	331	--	--	--	--	--
Balance	377	381	383	384	383	382
JARRELL-SCHWERTNER WSC (P)						
Demand	186	209	235	264	294	324
Supply	439	473	524	511	508	503
Groundwater	28	28	28	28	28	28
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	411	445	496	484	480	475
SW Constrained Supply	411	445	496	484	480	475
Balance	253	264	289	247	214	179
KEMPNER WSC (P)						
Demand	350	398	451	507	565	622
Supply	539	539	539	539	539	539
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	656	638	632	600	591	578
SW Constrained Supply	539	539	539	539	539	539
Balance	189	141	88	32	(26)	(83)
KILLEEN						
Demand	19,467	21,902	24,713	27,748	30,864	33,969
Contractual Demand	7	7	7	7	7	7
Supply	39,964	39,768	39,384	37,350	36,840	36,035
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	39,964	39,768	39,384	37,350	36,840	36,035
SW Constrained Supply	39,964	39,768	39,384	37,350	36,840	36,035
Balance	20,490	17,859	14,664	9,595	5,969	2,059

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-2 Continued. BELL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
LITTLE RIVER-ACADEMY						
Demand	377	409	447	490	534	578
Supply	388	388	388	388	388	388
Groundwater	65	65	65	65	65	65
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	323	323	323	323	323	323
SW Constrained Supply	323	--	--	--	--	--
Balance	11	(21)	(59)	(102)	(146)	(190)
MOFFAT WSC						
Demand	479	481	487	500	517	536
Contractual Demand	11	11	11	11	11	11
Supply	1,340	1,334	1,323	1,286	1,271	1,248
Groundwater	206	206	206	206	206	206
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,134	1,128	1,118	1,081	1,066	1,043
SW Constrained Supply	1,134	--	NC	NC	NC	NC
Balance	850	842	825	775	743	701
MORGANS POINT RESORT						
Demand	595	684	787	897	1,009	1,121
Supply	1,935	1,935	1,935	1,935	1,935	1,935
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,935	1,935	1,935	1,935	1,935	1,935
SW Constrained Supply	1,935	1,935	1,935	1,935	1,935	1,935
Balance	1,340	1,251	1,148	1,038	926	814
NOLANVILLE						
Demand	1,382	1,749	2,154	2,575	2,991	3,401
Supply	1,310	1,305	1,296	1,245	1,233	1,213
Groundwater	320	320	320	320	320	320
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	990	985	976	925	913	893
SW Constrained Supply	990	985	976	925	913	893
Balance	(72)	(444)	(858)	(1,330)	(1,758)	(2,188)
PENDLETON WSC						
Demand	245	246	255	266	277	289
Contractual Demand	81	81	81	81	81	81
Supply	583	581	577	564	558	549
Groundwater	122	122	122	122	122	122
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	461	459	454	442	436	426
SW Constrained Supply	461	459	454	442	436	426
Balance	257	254	241	217	200	179

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-2 Continued. BELL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
ROGERS						
Demand	172	177	183	192	202	213
Supply	607	607	607	607	607	607
Groundwater	139	139	139	139	139	139
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	468	468	468	468	468	468
SW Constrained Supply	468	--	--	--	--	--
Balance	435	430	424	415	405	394
SALADO WSC						
Demand	1,726	1,863	2,017	2,182	2,348	2,514
Supply	2,236	2,236	2,236	2,236	2,236	2,236
Groundwater	2,053	2,053	2,053	2,053	2,053	2,053
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,034	1,026	1,018	975	964	947
SW Constrained Supply	183	183	183	183	183	183
Balance	510	373	219	54	(112)	(278)
TEMPLE						
Demand	19,485	22,186	25,212	28,415	31,644	34,842
Contractual Demand	4,030	4,030	4,030	4,030	4,030	4,030
Supply	25,738	24,312	24,869	24,177	24,074	25,535
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	25,738	24,312	24,869	24,177	24,074	25,535
SW Constrained Supply	25,738	24,312	24,869	24,177	24,074	25,535
Balance	2,223	(1,904)	(4,373)	(8,268)	(11,600)	(13,337)
TROY						
Demand	169	180	193	209	228	247
Contractual Demand	9	9	9	9	9	9
Supply	1,189	1,189	1,189	1,189	1,189	1,189
Groundwater	221	221	221	221	221	221
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	968	968	968	968	968	968
SW Constrained Supply	968	968	968	968	968	968
Balance	1,011	1,000	987	971	952	933
WEST BELL COUNTY WSC						
Demand	789	816	800	798	797	797
Supply	1,660	1,660	1,660	1,660	1,660	1,660
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,660	1,660	1,660	1,660	1,660	1,660
SW Constrained Supply	1,660	1,660	1,660	1,660	1,660	1,660
Balance	871	844	860	862	863	863

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-2 Continued. BELL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
BELL COUNTY-OTHER						
Demand	870	1,716	2,711	3,733	4,719	5,668
Contractual Demand	50	50	50	50	50	50
Supply	2,004	2,000	1,993	1,955	1,945	1,930
Groundwater	707	707	707	707	707	707
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,297	1,293	1,286	1,248	1,238	1,223
SW Constrained Supply	1,297	1,293	1,286	1,248	1,238	1,223
Balance	1,084	234	(768)	(1,828)	(2,824)	(3,788)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-3
BOSQUE County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	20,310	22,184	23,147	23,747	24,129	24,362

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	3,083	3,281	3,363	3,418	3,466	3,498
	Contractual Demand	113	113	113	113	113	113
	Municipal Existing Supply						
	Groundwater	3,575	3,575	3,575	3,575	3,575	3,575
	Surface water (Less Contractual Demand)[1]	842	842	842	842	842	842
	Total Existing Municipal Supply	4,417	4,417	4,417	4,417	4,417	4,417
	Municipal Balance	1,334	1,136	1,054	999	951	919
Industrial	Manufacturing Demand	2,739	3,058	3,372	3,643	3,959	4,302
	Manufacturing Existing Supply						
	Groundwater	871	871	871	871	871	871
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	871	871	871	871	871	871
	Manufacturing Balance	(1,868)	(2,187)	(2,501)	(2,772)	(3,088)	(3,431)
	Steam-Electric Demand	6,188	7,235	8,510	10,065	11,961	14,214
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	6,500	6,374	6,248	6,122	5,996	5,870
	Total Steam-Electric Supply	6,500	6,374	6,248	6,122	5,996	5,870
	Steam-Electric Balance	312	(861)	(2,262)	(3,943)	(5,965)	(8,345)
	Mining Demand	1,972	2,071	1,892	1,872	1,833	1,821
	Mining Existing Supply						
	Groundwater	129	129	129	129	129	129
	Surface water	0	0	0	0	0	0
	Total Mining Supply	129	129	129	129	129	129
	Mining Balance	(1,843)	(1,942)	(1,763)	(1,743)	(1,704)	(1,692)
Agriculture	Irrigation Demand	2,128	2,094	2,060	2,029	1,998	1,968
	Irrigation Existing Supply						
	Groundwater	1,460	1,460	1,460	1,460	1,460	1,460
	Surface water	132	132	132	131	131	131
	Total Irrigation Supply	1,592	1,592	1,592	1,591	1,591	1,591
	Irrigation Balance	(536)	(502)	(468)	(438)	(407)	(377)
	Livestock Demand	989	989	989	989	989	989
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	989	989	989	989	989	989
	Total Livestock Supply	989	989	989	989	989	989
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	13,982	15,645	17,137	18,998	21,219	23,835
	Existing Municipal & Industrial Supply						
	Groundwater	1,000	1,000	1,000	1,000	1,000	1,000
	Surface water	7,342	7,216	7,090	6,964	6,838	6,712
	Total Municipal & Industrial Supply	8,342	8,215	8,089	7,963	7,837	7,711
	Municipal & Industrial Balance	(5,641)	(7,430)	(9,048)	(11,035)	(13,382)	(16,124)
	Agriculture Demand	3,117	3,083	3,049	3,018	2,987	2,957
	Existing Agricultural Supply						
	Groundwater	1,460	1,460	1,460	1,460	1,460	1,460
	Surface water	1,121	1,121	1,121	1,120	1,120	1,120
	Total Agriculture Supply	2,581	2,581	2,581	2,580	2,580	2,580
	Agriculture Balance	(536)	(502)	(468)	(438)	(407)	(377)
	Total Demand	17,099	18,728	20,186	22,016	24,206	26,792
	Total Supply						
	Groundwater	2,460	2,460	2,460	2,460	2,460	2,460
	Surface water	8,463	8,337	8,210	8,084	7,958	7,832
	Total Supply	10,922	10,796	10,670	10,544	10,418	10,291
	Total Balance	(6,177)	(7,932)	(9,516)	(11,472)	(13,788)	(16,501)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-4. BOSQUE COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
CHILDRESS CREEK WSC						
Demand	410	436	446	453	459	464
Supply	449	449	449	449	449	449
Groundwater	449	449	449	449	449	449
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	39	13	3	(4)	(10)	(15)
CLIFTON						
Demand	700	745	763	775	786	793
Contractual Demand	113	113	113	113	113	113
Supply	1,146	1,146	1,146	1,146	1,146	1,112
Groundwater	581	581	581	581	581	581
GW Constrained Supply	NC	NC	NC	NC	NC	546
Surface water	730	730	730	730	730	730
SW Constrained Supply	566	566	566	566	566	566
Balance	333	288	270	258	247	206
BOSQUE COUNTY-OTHER						
Demand	1,271	1,357	1,395	1,420	1,440	1,453
Supply	1,519	1,519	1,519	1,519	1,519	1,519
Groundwater	1,519	1,519	1,519	1,519	1,519	1,519
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	248	162	124	99	79	66
CROSS COUNTRY WSC (P)						
Demand	124	132	135	138	139	141
Supply	161	161	161	-	-	-
Groundwater	161	161	161	161	161	161
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	37	29	26	(138)	(139)	(141)
MERIDIAN						
Demand	222	234	238	241	244	246
Supply	487	487	487	487	487	487
Groundwater	375	375	375	375	375	375
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	112	112	112	112	112	112
SW Constrained Supply	112	112	112	112	112	112
Balance	265	253	249	246	243	241

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-4 Continued. BOSQUE COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
VALLEY MILLS (P)						
Demand	259	276	284	288	293	295
Supply	294	294	294	294	294	294
Groundwater	294	294	294	294	294	294
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	35	18	10	6	1	(1)
WALNUT SPRINGS						
Demand	97	101	102	103	105	106
Supply	195	195	195	195	195	195
Groundwater	195	195	195	195	195	195
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	98	94	93	92	90	89

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-5
BRAZOS County
Population, Water Supply, and Water Demand Projections

Population Projection	2020	2030	2040	2050	2060	2070
	227,654	264,665	302,997	349,894	400,135	455,529

	Supply and Demand by Type of Use	2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	44,928	50,728	56,578	64,224	72,685	82,071
	Contractual Demand	6,042	6,134	7,387	10,854	14,639	19,037
	Municipal Existing Supply						
	Groundwater	48,837	55,039	58,422	61,917	65,726	70,143
	Surface water (Less Contractual Demand)[1]	3,352	3,219	3,086	2,952	2,819	2,686
	Total Existing Municipal Supply	52,189	58,258	61,508	64,870	68,546	72,829
	Municipal Balance	7,261	7,530	4,930	646	(4,139)	(9,242)
Industrial	Manufacturing Demand	2,456	2,779	3,109	3,405	3,694	4,008
	Manufacturing Existing Supply						
	Groundwater	656	1,893	1,890	1,892	1,892	1,892
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	656	1,893	1,890	1,892	1,892	1,892
	Manufacturing Balance	(1,800)	(886)	(1,219)	(1,513)	(1,802)	(2,116)
	Steam-Electric Demand	503	406	460	312	405	384
	Steam-Electric Existing Supply						
	Groundwater	147	170	178	178	178	178
	Surface water[2]	85	85	85	85	85	85
	Total Steam-Electric Supply	232	255	263	263	263	263
	Steam-Electric Balance	(271)	(151)	(197)	(49)	(142)	(121)
	Mining Demand	1,088	1,610	1,433	1,144	923	814
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(1,088)	(1,610)	(1,433)	(1,144)	(923)	(814)
Agriculture	Irrigation Demand	26,050	24,791	23,594	22,459	21,374	20,438
	Irrigation Existing Supply						
	Groundwater	14,766	14,773	14,773	14,773	14,773	14,773
	Surface water	350	349	348	347	345	344
	Total Irrigation Supply	15,116	15,122	15,121	15,119	15,118	15,117
	Irrigation Balance	(10,934)	(9,669)	(8,473)	(7,340)	(6,256)	(5,321)
	Livestock Demand	1,322	1,322	1,322	1,322	1,322	1,322
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,322	1,322	1,322	1,322	1,322	1,322
	Total Livestock Supply	1,322	1,322	1,322	1,322	1,322	1,322
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	48,975	55,523	61,580	69,085	77,707	87,277
	Existing Municipal & Industrial Supply						
	Groundwater	804	2,063	2,068	2,070	2,070	2,070
	Surface water	3,437	3,304	3,171	3,037	2,904	2,771
	Total Municipal & Industrial Supply	4,241	5,367	5,239	5,107	4,974	4,841
	Municipal & Industrial Balance	(44,734)	(50,156)	(56,341)	(63,978)	(72,733)	(82,436)
	Agriculture Demand	27,372	26,113	24,916	23,781	22,696	21,760
	Existing Agricultural Supply						
	Groundwater	14,766	14,773	14,773	14,773	14,773	14,773
	Surface water	1,672	1,671	1,670	1,669	1,667	1,666
	Total Agriculture Supply	16,438	16,444	16,443	16,441	16,440	16,439
	Agriculture Balance	(10,934)	(9,669)	(8,473)	(7,340)	(6,256)	(5,321)
	Total Demand	76,347	81,636	86,496	92,866	100,403	109,037
	Total Supply						
	Groundwater	15,569	16,836	16,841	16,843	16,843	16,843
	Surface water	5,109	4,975	4,840	4,706	4,572	4,437
	Total Supply	20,679	21,811	21,681	21,549	21,414	21,280
	Total Balance	(55,668)	(59,825)	(64,815)	(71,317)	(78,989)	(87,757)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-6. BRAZOS COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
BRYAN						
Demand	15,696	16,243	20,342	23,492	26,926	30,652
Contractual Demand	4,431	4,320	5,358	8,550	12,031	16,093
Supply	16,792	19,294	20,167	20,167	20,167	20,167
Groundwater	16,792	19,294	20,167	20,167	20,167	20,167
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(3,335)	(1,269)	(5,533)	(11,875)	(18,790)	(26,578)
COLLEGE STATION						
Demand	19,178	24,320	25,726	29,619	33,927	38,728
Contractual Demand	6	6	6	6	6	6
Supply	14,211	16,302	18,360	21,952	25,848	30,333
Groundwater	14,211	16,302	18,360	21,952	25,848	30,333
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(4,973)	(8,024)	(7,372)	(7,673)	(8,085)	(8,401)
BRAZOS COUNTY-OTHER						
Demand	904	590	551	629	752	947
Supply	943	970	975	975	975	975
Groundwater	943	970	975	975	975	975
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	39	380	424	346	223	28
TEXAS A & M UNIVERSITY						
Demand	6,322	6,350	6,309	6,292	6,289	6,288
Supply	11,575	13,110	13,632	13,632	13,632	13,632
Groundwater	11,575	13,110	13,632	13,632	13,632	13,632
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	5,253	6,760	7,323	7,340	7,343	7,344
WELLBORN SUD (P)						
Demand	1,837	2,070	2,318	2,634	2,982	3,368
Contractual Demand	1,597	1,800	2,015	2,290	2,593	2,928
Supply	3,554	3,668	3,708	3,708	3,708	3,708
Groundwater	2,615	2,729	2,770	2,770	2,770	2,770
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	3,352	3,219	3,086	2,952	2,819	2,686
SW Constrained Supply	939	939	939	939	939	939
Balance	120	(202)	(625)	(1,216)	(1,867)	(2,588)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-6 Continued. BRAZOS COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
WICKSON CREEK SUD (P)						
Demand	991	1,155	1,332	1,558	1,809	2,088
Contractual Demand	8	8	8	8	9	10
Supply	2,701	2,634	2,518	2,422	2,335	2,266
Groundwater	2,701	2,634	2,518	2,422	2,335	2,266
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	1,702	1,471	1,178	856	517	168

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

11/30/2015
1:56 PM

Table C-7
BURLESON County
Population, Water Supply, and Water Demand Projections

Population Projection	Year					
	2020	2030	2040	2050	2060	2070
	18,539	19,946	20,838	21,735	22,442	23,022

	Supply and Demand by Type of Use	Year					
		2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	2,898	3,014	3,114	3,210	3,298	3,376
	Contractual Demand	0	0	0	0	0	0
	Municipal Existing Supply						
	Groundwater	5,713	5,684	5,663	5,679	5,697	5,702
	Surface water (Less Contractual Demand)[1]	0	0	0	0	0	0
	Total Existing Municipal Supply	5,713	5,684	5,663	5,679	5,697	5,702
	Municipal Balance	2,815	2,670	2,549	2,469	2,399	2,326
Industrial	Manufacturing Demand	139	161	183	203	221	241
	Manufacturing Existing Supply						
	Groundwater	139	139	139	139	139	139
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	139	139	139	139	139	139
	Manufacturing Balance	(0)	(22)	(44)	(64)	(82)	(102)
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	995	1,923	1,512	1,100	686	428
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(995)	(1,923)	(1,512)	(1,100)	(686)	(428)
Agriculture	Irrigation Demand	22,855	21,904	21,057	20,115	19,216	18,469
	Irrigation Existing Supply						
	Groundwater	22,962	22,962	22,962	22,962	22,962	22,962
	Surface water	0	0	0	0	0	0
	Total Irrigation Supply	22,962	22,962	22,962	22,962	22,962	22,962
	Irrigation Balance	107	1,058	1,905	2,847	3,746	4,493
	Livestock Demand	1,508	1,508	1,508	1,508	1,508	1,508
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,508	1,508	1,508	1,508	1,508	1,508
	Total Livestock Supply	1,508	1,508	1,508	1,508	1,508	1,508
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	4,032	5,098	4,809	4,513	4,205	4,045
	Existing Municipal & Industrial Supply						
	Groundwater	139	139	139	139	139	139
	Surface water	0	0	0	0	0	0
	Total Municipal & Industrial Supply	139	139	139	139	139	139
	Municipal & Industrial Balance	(3,893)	(4,959)	(4,670)	(4,374)	(4,066)	(3,906)
	Agriculture Demand	24,363	23,412	22,565	21,623	20,724	19,977
	Existing Agricultural Supply						
	Groundwater	22,962	22,962	22,962	22,962	22,962	22,962
	Surface water	1,508	1,508	1,508	1,508	1,508	1,508
	Total Agriculture Supply	24,470	24,470	24,470	24,470	24,470	24,470
	Agriculture Balance	107	1,058	1,905	2,847	3,746	4,493
	Total Demand	28,395	28,510	27,374	26,136	24,929	24,022
	Total Supply						
	Groundwater	23,100	23,100	23,100	23,100	23,100	23,100
	Surface water	1,508	1,508	1,508	1,508	1,508	1,508
	Total Supply	24,608	24,608	24,608	24,608	24,608	24,608
	Total Balance	(3,787)	(3,902)	(2,766)	(1,528)	(321)	586

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-8. BURLESON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
CALDWELL						
Demand	1,027	1,043	1,073	1,073	1,091	1,108
Supply	2,352	2,352	2,352	2,352	2,352	2,352
Groundwater	2,352	2,352	2,352	2,352	2,352	2,352
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	1,325	1,309	1,279	1,279	1,261	1,244
BURLESON COUNTY-OTHER						
Demand	615	673	703	771	809	841
Supply	873	873	873	873	873	873
Groundwater	873	873	873	873	873	873
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	258	200	170	102	64	32
DEANVILLE WSC						
Demand	465	471	490	487	493	499
Supply	701	701	701	701	701	701
Groundwater	701	701	701	701	701	701
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	236	230	211	214	208	202
MILANO WSC (P)						
Demand	212	220	224	231	237	243
Supply	251	234	231	231	241	246
Groundwater	251	234	231	231	241	246
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	39	14	7	0	4	3
SNOOK						
Demand	184	195	201	209	216	221
Supply	475	475	475	475	475	475
Groundwater	475	475	475	475	475	475
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	291	280	274	266	259	254

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

11/30/2015
1:56 PM

C-8 Continued. BURLESON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
SOMERVILLE						
Demand	266	277	285	296	305	313
Supply	891	891	891	891	891	891
Groundwater	891	891	891	891	891	891
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	625	614	606	595	586	578
SOUTHWEST MILAM WSC (P)						
Demand	129	135	138	143	147	151
Supply	170	158	140	156	163	163
Groundwater	170	158	140	156	163	163
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	41	23	2	13	16	12

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-9
CALLAHAN County
Population, Water Supply, and Water Demand Projections

Population Projection	Year					
	2020	2030	2040	2050	2060	2070
	14,482	15,504	16,061	16,351	16,564	16,700

	Supply and Demand by Type of Use	Year					
		2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	1,389	1,407	1,402	1,401	1,413	1,423
	Contractual Demand	221	221	221	221	221	221
	Municipal Existing Supply						
	Groundwater	998	998	998	998	998	998
	Surface water (Less Contractual Demand)[1]	2,840	2,783	2,725	2,667	2,609	2,551
	Total Existing Municipal Supply	3,838	3,781	3,723	3,665	3,607	3,549
	Municipal Balance	2,449	2,374	2,321	2,264	2,194	2,126
Industrial	Manufacturing Demand	0	0	0	0	0	0
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	0	0	0	0	0	0
	Manufacturing Balance	0	0	0	0	0	0
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	228	227	214	201	190	180
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(228)	(227)	(214)	(201)	(190)	(180)
Agriculture	Irrigation Demand	573	564	555	546	537	529
	Irrigation Existing Supply						
	Groundwater	743	743	743	743	743	743
	Surface water	0	0	0	0	0	0
	Total Irrigation Supply	743	743	743	743	743	743
	Irrigation Balance	170	179	188	197	206	214
	Livestock Demand	920	920	920	920	920	920
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	920	920	920	920	920	920
	Total Livestock Supply	920	920	920	920	920	920
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	1,617	1,634	1,616	1,602	1,603	1,603
	Existing Municipal & Industrial Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	2,840	2,783	2,725	2,667	2,609	2,551
	Total Municipal & Industrial Supply	2,840	2,783	2,725	2,667	2,609	2,551
	Municipal & Industrial Balance	1,223	1,149	1,109	1,065	1,006	948
	Agriculture Demand	1,493	1,484	1,475	1,466	1,457	1,449
	Existing Agricultural Supply						
	Groundwater	743	743	743	743	743	743
	Surface water	920	920	920	920	920	920
	Total Agriculture Supply	1,663	1,663	1,663	1,663	1,663	1,663
	Agriculture Balance	170	179	188	197	206	214
	Total Demand	3,110	3,118	3,091	3,068	3,060	3,052
	Total Supply						
	Groundwater	743	743	743	743	743	743
	Surface water	3,760	3,703	3,645	3,587	3,529	3,471
	Total Supply	4,503	4,445	4,387	4,329	4,271	4,213
	Total Balance	1,393	1,327	1,296	1,261	1,211	1,161

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-10. CALLAHAN COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
BAIRD						
Demand	241	233	227	226	226	226
Supply	307	307	307	307	307	307
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	307	307	307	307	307	307
SW Constrained Supply	307	307	307	307	307	307
Balance	66	74	80	81	81	81
CLYDE						
Demand	324	327	325	323	326	329
Contractual Demand	221	221	221	221	221	221
Supply	807	807	807	807	807	807
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	2,457	2,399	2,341	2,283	2,225	2,167
SW Constrained Supply	807	807	807	807	807	807
Balance	262	259	261	263	260	257
COLEMAN COUNTY SUD (P)						
Demand	20	21	21	21	21	22
Supply	10	11	11	11	11	11
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	10	11	11	11	11	11
SW Constrained Supply	10	11	11	11	11	11
Balance	(10)	(10)	(10)	(10)	(10)	(11)
CALLAHAN COUNTY-OTHER						
Demand	613	627	628	627	634	639
Supply	648	648	648	648	648	648
Groundwater	587	587	587	587	587	587
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	61	61	61	61	61	61
SW Constrained Supply	61	61	61	61	61	61
Balance	35	21	20	21	14	9
CROSS PLAINS						
Demand	179	186	188	191	193	194
Supply	411	411	411	411	411	411
Groundwater	411	411	411	411	411	411
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	232	225	223	220	218	217

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-10 Continued. CALLAHAN COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
POTOSI WSC (P)						
Demand	12	13	13	13	13	13
Supply	5	5	5	5	5	5
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	5	5	5	5	5	5
SW Constrained Supply	5	--	--	--	--	--
Balance	(7)	(8)	(8)	(8)	(8)	(8)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-11
COMANCHE County
Population, Water Supply, and Water Demand Projections

Population Projection	2020	2030	2040	2050	2060	2070
	14,502	15,078	15,467	15,974	16,406	16,814

	Supply and Demand by Type of Use	2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	1,549	1,539	1,522	1,541	1,578	1,617
	Contractual Demand	26	29	31	33	36	39
	Municipal Existing Supply						
	Groundwater	647	647	647	647	647	647
	Surface water (Less Contractual Demand)[1]	1,022	1,014	1,003	943	929	905
	Total Existing Municipal Supply	1,669	1,661	1,650	1,590	1,576	1,552
	Municipal Balance	120	122	128	49	(2)	(65)
Industrial	Manufacturing Demand	36	39	41	43	46	49
	Manufacturing Existing Supply						
	Groundwater	10	10	10	10	10	10
	Surface water	26	29	31	33	36	39
	Total Manufacturing Supply	36	39	41	43	46	49
	Manufacturing Balance	0	0	0	0	0	0
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	444	525	363	276	188	128
	Mining Existing Supply						
	Groundwater	26	26	26	26	26	26
	Surface water	0	0	0	0	0	0
	Total Mining Supply	26	26	26	26	26	26
	Mining Balance	(418)	(499)	(337)	(250)	(162)	(102)
Agriculture	Irrigation Demand	27,458	27,175	26,894	26,617	26,342	26,076
	Irrigation Existing Supply						
	Groundwater	21,597	21,597	21,597	21,597	21,597	21,597
	Surface water	4,968	3,616	3,474	4,557	3,988	3,511
	Total Irrigation Supply	26,565	25,213	25,071	26,154	25,585	25,108
	Irrigation Balance	(893)	(1,962)	(1,823)	(463)	(757)	(968)
	Livestock Demand	3,895	3,895	3,895	3,895	3,895	3,895
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	3,895	3,895	3,895	3,895	3,895	3,895
	Total Livestock Supply	3,895	3,895	3,895	3,895	3,895	3,895
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	2,029	2,103	1,926	1,860	1,812	1,794
	Existing Municipal & Industrial Supply						
	Groundwater	36	36	36	36	36	36
	Surface water	1,048	1,043	1,034	976	965	944
	Total Municipal & Industrial Supply	1,084	1,079	1,070	1,013	1,001	980
	Municipal & Industrial Balance	(945)	(1,024)	(856)	(847)	(811)	(814)
	Agriculture Demand	31,353	31,070	30,789	30,512	30,237	29,971
	Existing Agricultural Supply						
	Groundwater	21,597	21,597	21,597	21,597	21,597	21,597
	Surface water	8,863	7,511	7,369	8,452	7,883	7,406
	Total Agriculture Supply	30,460	29,108	28,966	30,049	29,480	29,003
	Agriculture Balance	(893)	(1,962)	(1,823)	(463)	(757)	(968)
	Total Demand	33,382	33,173	32,715	32,372	32,049	31,765
	Total Supply						
	Groundwater	21,633	21,633	21,633	21,633	21,633	21,633
	Surface water	9,911	8,554	8,403	9,429	8,848	8,350
	Total Supply	31,544	30,187	30,036	31,062	30,481	29,983
	Total Balance	(1,838)	(2,986)	(2,679)	(1,310)	(1,568)	(1,782)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-12. COMANCHE COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
COMANCHE						
Demand	521	519	515	522	535	548
Contractual Demand	26	29	31	33	36	39
Supply	706	700	693	651	641	625
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	706	700	693	651	641	625
SW Constrained Supply	706	700	693	651	641	625
Balance	159	152	147	96	70	38
COMANCHE COUNTY-OTHER						
Demand	805	800	791	800	819	839
Supply	656	656	656	656	656	656
Groundwater	647	647	647	647	647	647
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	9	9	9	9	9	9
SW Constrained Supply	9	9	9	9	9	9
Balance	(149)	(144)	(135)	(144)	(163)	(183)
DE LEON						
Demand	223	220	216	219	224	230
Supply	307	305	301	283	279	272
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	307	305	301	283	279	272
SW Constrained Supply	307	305	301	283	279	272
Balance	84	85	85	64	55	42

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-13
CORYELL County
Population, Water Supply, and Water Demand Projections

Population Projection	2020	2030	2040	2050	2060	2070
	86,105	97,771	110,752	122,101	134,199	146,240

	Supply and Demand by Type of Use	2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	14,598	15,962	17,554	19,040	20,715	22,406
	Contractual Demand	1,446	1,559	1,686	1,802	1,931	2,060
	Municipal Existing Supply						
	Groundwater	614	614	614	614	614	614
	Surface water (Less Contractual Demand)[1]	23,068	22,889	22,674	21,788	21,773	21,375
	Total Existing Municipal Supply	23,682	23,503	23,288	22,402	22,387	21,989
	Municipal Balance	9,084	7,541	5,734	3,362	1,672	(417)
Industrial	Manufacturing Demand	10	11	12	13	14	15
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	10	11	12	13	14	15
	Total Manufacturing Supply	10	11	12	13	14	15
	Manufacturing Balance	0	0	0	0	0	0
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	1,510	1,072	491	363	398	437
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(1,510)	(1,072)	(491)	(363)	(398)	(437)
Agriculture	Irrigation Demand	214	214	214	214	214	214
	Irrigation Existing Supply						
	Groundwater	240	240	240	240	240	240
	Surface water	530	530	530	530	530	530
	Total Irrigation Supply	770	770	770	770	770	770
	Irrigation Balance	556	556	556	556	556	556
	Livestock Demand	1,471	1,471	1,471	1,471	1,471	1,471
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,471	1,471	1,471	1,471	1,471	1,471
	Total Livestock Supply	1,471	1,471	1,471	1,471	1,471	1,471
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	16,118	17,045	18,057	19,416	21,127	22,858
	Existing Municipal & Industrial Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	23,078	22,900	22,686	21,801	21,787	21,390
	Total Municipal & Industrial Supply	23,078	22,900	22,686	21,801	21,787	21,390
	Municipal & Industrial Balance	6,960	5,855	4,629	2,385	660	(1,468)
	Agriculture Demand	1,685	1,685	1,685	1,685	1,685	1,685
	Existing Agricultural Supply						
	Groundwater	240	240	240	240	240	240
	Surface water	2,001	2,001	2,001	2,001	2,001	2,001
	Total Agriculture Supply	2,241	2,241	2,241	2,241	2,241	2,241
	Agriculture Balance	556	556	556	556	556	556
	Total Demand	17,803	18,730	19,742	21,101	22,812	24,543
	Total Supply						
	Groundwater	240	240	240	240	240	240
	Surface water	25,079	24,901	24,687	23,802	23,788	23,391
	Total Supply	25,319	25,141	24,927	24,042	24,028	23,631
	Total Balance	7,516	6,411	5,185	2,941	1,216	(912)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-14. CORYELL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
COPPERAS COVE (P)						
Demand	4,266	4,655	5,133	5,586	6,122	6,666
Supply	8,686	8,644	8,563	8,133	8,026	7,856
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	8,686	8,644	8,563	8,133	8,026	7,856
SW Constrained Supply	8,686	8,644	8,563	8,133	8,026	7,856
Balance	4,420	3,989	3,430	2,547	1,904	1,190
CORYELL CITY WATER SUPPLY DISTRICT (P)						
Demand	809	899	1,006	1,101	1,208	1,316
Supply	1,010	1,110	1,224	1,315	1,420	1,523
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,010	1,110	1,224	1,315	1,420	1,523
SW Constrained Supply	1,010	1,110	1,224	1,315	1,420	1,523
Balance	201	211	218	214	212	207
CORYELL COUNTY-OTHER						
Demand	564	838	1,195	1,507	1,840	2,172
Supply	1,434	1,432	1,429	1,414	1,669	1,657
Groundwater	614	614	614	614	614	614
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	820	818	815	800	1,055	1,043
SW Constrained Supply	820	818	815	800	1,055	1,043
Balance	870	594	234	(93)	(171)	(515)
ELM CREEK WSC (P)						
Demand	44	48	54	58	64	70
Supply	56	56	55	54	53	52
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	56	56	55	54	53	52
SW Constrained Supply	56	56	55	54	53	52
Balance	12	8	1	(4)	(11)	(18)
FORT HOOD (P)						
Demand	3,672	3,679	3,627	3,622	3,617	3,616
Supply	5,373	5,194	5,016	4,837	4,658	4,479
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	5,373	5,194	5,016	4,837	4,658	4,479
SW Constrained Supply	5,373	5,194	5,016	4,837	4,658	4,479
Balance	1,701	1,515	1,389	1,215	1,041	863

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-14 Continued. CORYELL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
GATESVILLE						
Demand	4,424	4,939	5,532	6,066	6,658	7,253
Contractual Demand	1,446	1,559	1,686	1,802	1,931	2,060
Supply	5,898	5,869	5,812	5,512	5,437	5,318
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	5,898	5,869	5,812	5,512	5,437	5,318
SW Constrained Supply	5,898	5,869	5,812	5,512	5,437	5,318
Balance	28	(629)	(1,406)	(2,356)	(3,152)	(3,995)
KEMPNER WSC (P)						
Demand	541	602	674	738	810	882
Supply	837	837	837	837	837	837
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,018	990	981	930	917	897
SW Constrained Supply	837	837	837	837	837	837
Balance	296	235	163	99	27	(45)
MULTI-COUNTY WSC (P)						
Demand	278	302	333	362	396	431
Supply	207	207	207	207	207	207
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	207	207	207	207	207	207
SW Constrained Supply	207	207	207	207	207	207
Balance	(71)	(95)	(126)	(155)	(189)	(224)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-15
EASTLAND County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	19,289	19,712	19,730	19,732	19,732	19,732

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	2,626	2,591	2,522	2,487	2,480	2,480
	Contractual Demand	267	267	267	267	267	267
	Municipal Existing Supply						
	Groundwater	216	216	216	216	216	216
	Surface water (Less Contractual Demand)[1]	7,123	7,119	7,114	7,101	7,095	7,088
	Total Existing Municipal Supply	7,339	7,334	7,329	7,316	7,311	7,304
	Municipal Balance	4,713	4,743	4,807	4,829	4,831	4,824
Industrial	Manufacturing Demand	72	77	82	85	91	97
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	110	115	120	123	129	135
	Total Manufacturing Supply	110	115	120	123	129	135
	Manufacturing Balance	38	38	38	38	38	38
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	1,164	1,173	929	714	518	432
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(1,164)	(1,173)	(929)	(714)	(518)	(432)
Agriculture	Irrigation Demand	6,819	6,829	6,837	6,840	6,843	6,850
	Irrigation Existing Supply						
	Groundwater	4,504	4,504	4,504	4,504	4,504	4,504
	Surface water	77	76	76	76	75	75
	Total Irrigation Supply	4,581	4,581	4,580	4,580	4,580	4,579
	Irrigation Balance	(2,238)	(2,248)	(2,257)	(2,260)	(2,263)	(2,271)
	Livestock Demand	1,127	1,127	1,127	1,127	1,127	1,127
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,127	1,127	1,127	1,127	1,127	1,127
	Total Livestock Supply	1,127	1,127	1,127	1,127	1,127	1,127
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	3,862	3,841	3,533	3,286	3,089	3,009
	Existing Municipal & Industrial Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	7,233	7,234	7,234	7,224	7,224	7,223
	Total Municipal & Industrial Supply	7,233	7,234	7,234	7,224	7,224	7,223
	Municipal & Industrial Balance	3,371	3,393	3,701	3,938	4,135	4,214
	Agriculture Demand	7,946	7,956	7,964	7,967	7,970	7,977
	Existing Agricultural Supply						
	Groundwater	4,504	4,504	4,504	4,504	4,504	4,504
	Surface water	1,204	1,203	1,203	1,203	1,202	1,202
	Total Agriculture Supply	5,708	5,708	5,707	5,707	5,707	5,706
	Agriculture Balance	(2,238)	(2,248)	(2,257)	(2,260)	(2,263)	(2,271)
	Total Demand	11,808	11,797	11,497	11,253	11,059	10,986
	Total Supply						
	Groundwater	4,504	4,504	4,504	4,504	4,504	4,504
	Surface water	8,437	8,437	8,437	8,426	8,426	8,425
	Total Supply	12,941	12,941	12,941	12,931	12,931	12,929
	Total Balance	1,133	1,144	1,444	1,678	1,872	1,943

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-16. EASTLAND COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
CISCO						
Demand	719	716	701	693	691	691
Contractual Demand	147	147	147	147	147	147
Supply	1,089	1,087	1,084	1,081	1,078	1,075
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,090	1,087	1,084	1,081	1,078	1,075
SW Constrained Supply	1,089	1,087	1,084	1,081	1,078	1,075
Balance	223	224	236	241	240	237
EASTLAND COUNTY-OTHER						
Demand	583	565	542	529	527	527
Supply	603	603	603	603	603	603
Groundwater	115	115	115	115	115	115
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	488	488	488	488	488	488
SW Constrained Supply	488	488	488	488	488	488
Balance	20	38	61	74	76	76
EASTLAND						
Demand	648	643	629	621	619	619
Contractual Demand	120	120	120	120	120	120
Supply	3,314	3,314	3,314	3,314	3,314	3,314
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	3,314	3,314	3,314	3,314	3,314	3,314
SW Constrained Supply	3,314	3,314	3,314	3,314	3,314	3,314
Balance	2,546	2,551	2,565	2,573	2,575	2,575
GORMAN						
Demand	99	95	91	90	90	90
Supply	169	168	166	156	153	149
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	169	168	166	156	153	149
SW Constrained Supply	169	168	166	156	153	149
Balance	70	73	75	66	63	59
RANGER						
Demand	463	460	450	448	447	447
Supply	2,025	2,025	2,025	2,025	2,025	2,025
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	2,025	2,025	2,025	2,025	2,025	2,025
SW Constrained Supply	2,025	2,025	2,025	2,025	2,025	2,025
Balance	1,562	1,565	1,575	1,577	1,578	1,578

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-16 Continued. EASTLAND COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
RISING STAR						
Demand	100	98	95	93	93	93
Supply	100	100	100	100	100	100
Groundwater	100	100	100	100	100	100
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	0	2	5	7	7	7
STEPHENS REGIONAL SUD (P)						
Demand	14	14	14	13	13	13
Supply	26	26	26	26	26	26
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	37	37	37	37	37	37
SW Constrained Supply	26	26	26	26	26	26
Balance	12	12	12	13	13	13

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-17
ERATH County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	42,135	46,923	50,968	54,827	58,474	61,844

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	5,706	6,150	6,534	6,949	7,392	7,815
	Contractual Demand	107	115	123	130	139	150
	Municipal Existing Supply						
	Groundwater	7,559	7,559	7,559	7,559	7,559	7,559
	Surface water (Less Contractual Demand)[1]	2,607	2,592	2,572	2,463	2,435	2,392
	Total Existing Municipal Supply	10,166	10,151	10,131	10,022	9,994	9,951
	Municipal Balance	4,460	4,001	3,597	3,073	2,602	2,136
Industrial	Manufacturing Demand	80	88	96	103	112	122
	Manufacturing Existing Supply						
	Groundwater	74	80	87	93	100	109
	Surface water	6	8	9	10	12	14
	Total Manufacturing Supply	80	88	96	103	112	123
	Manufacturing Balance	0	0	0	0	0	1
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	505	536	376	304	232	177
	Mining Existing Supply						
	Groundwater	511	511	511	511	511	511
	Surface water	0	0	0	0	0	0
	Total Mining Supply	511	511	511	511	511	511
	Mining Balance	6	(25)	135	207	279	334
Agriculture	Irrigation Demand	6,383	6,290	6,198	6,107	6,018	5,933
	Irrigation Existing Supply						
	Groundwater	6,923	6,923	6,923	6,923	6,923	6,923
	Surface water	101	100	100	99	99	98
	Total Irrigation Supply	7,024	7,023	7,023	7,022	7,022	7,021
	Irrigation Balance	641	733	825	915	1,004	1,088
	Livestock Demand	6,702	6,702	6,702	6,702	6,702	6,702
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	6,702	6,702	6,702	6,702	6,702	6,702
	Total Livestock Supply	6,702	6,702	6,702	6,702	6,702	6,702
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	6,291	6,774	7,006	7,356	7,736	8,114
	Existing Municipal & Industrial Supply						
	Groundwater	585	591	598	604	611	620
	Surface water	2,613	2,600	2,581	2,473	2,447	2,406
	Total Municipal & Industrial Supply	3,198	3,191	3,178	3,076	3,058	3,026
	Municipal & Industrial Balance	(3,093)	(3,583)	(3,828)	(4,280)	(4,678)	(5,088)
	Agriculture Demand	13,085	12,992	12,900	12,809	12,720	12,635
	Existing Agricultural Supply						
	Groundwater	6,923	6,923	6,923	6,923	6,923	6,923
	Surface water	6,803	6,802	6,802	6,801	6,801	6,800
	Total Agriculture Supply	13,726	13,725	13,725	13,724	13,724	13,723
	Agriculture Balance	641	733	825	915	1,004	1,088
	Total Demand	19,376	19,766	19,906	20,165	20,456	20,749
	Total Supply						
	Groundwater	7,508	7,514	7,521	7,527	7,534	7,543
	Surface water	9,416	9,403	9,382	9,274	9,248	9,206
	Total Supply	16,924	16,916	16,903	16,800	16,781	16,749
	Total Balance	(2,452)	(2,850)	(3,003)	(3,365)	(3,675)	(4,000)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-18. ERATH COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
ERATH COUNTY-OTHER						
Demand	2,665	2,880	3,066	3,264	3,472	3,671
Contractual Demand	1	1	1	1	2	2
Supply	3,358	3,358	3,358	3,358	3,358	3,358
Groundwater	3,211	3,211	3,211	3,211	3,211	3,211
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	147	147	147	147	147	147
SW Constrained Supply	147	147	147	147	147	147
Balance	692	477	291	93	(116)	(315)
DUBLIN						
Demand	382	403	421	444	472	499
Contractual Demand	77	79	80	81	82	84
Supply	598	598	598	598	598	598
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	598	598	598	598	598	598
SW Constrained Supply	598	598	598	598	598	598
Balance	139	116	97	73	44	15
STEPHENVILLE						
Demand	2,659	2,867	3,047	3,241	3,448	3,645
Contractual Demand	29	35	42	48	55	64
Supply	6,210	6,195	6,175	6,066	6,038	5,995
Groundwater	4,348	4,348	4,348	4,348	4,348	4,348
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,862	1,847	1,827	1,718	1,690	1,647
SW Constrained Supply	1,862	1,847	1,827	1,718	1,690	1,647
Balance	3,522	3,293	3,086	2,777	2,535	2,286

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

11/30/2015
1:56 PM

Table C-19
FALLS County
Population, Water Supply, and Water Demand Projections

Population Projection	Year					
	2020	2030	2040	2050	2060	2070
	19,413	20,397	20,610	20,126	20,736	21,364

	Supply and Demand by Type of Use	Year					
		2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	3,388	3,463	3,426	3,325	3,419	3,521
	Contractual Demand	80	84	87	88	93	98
	Municipal Existing Supply						
	Groundwater	1,197	1,196	1,197	1,195	1,196	1,198
	Surface water (Less Contractual Demand)[1]	4,165	4,165	4,165	4,165	4,165	4,165
	Total Existing Municipal Supply	5,362	5,362	5,362	5,360	5,361	5,363
	Municipal Balance	1,974	1,899	1,936	2,035	1,942	1,842
Industrial	Manufacturing Demand	1	1	1	1	1	1
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	0	0	0	0	0	0
	Manufacturing Balance	(1)	(1)	(1)	(1)	(1)	(1)
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	225	246	259	286	307	331
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(225)	(246)	(259)	(286)	(307)	(331)
Agriculture	Irrigation Demand	4,301	4,163	4,027	3,898	3,772	3,658
	Irrigation Existing Supply						
	Groundwater	6,331	6,331	6,331	6,331	6,331	6,331
	Surface water	174	174	174	174	174	174
	Total Irrigation Supply	6,505	6,505	6,505	6,505	6,505	6,505
	Irrigation Balance	2,204	2,342	2,478	2,607	2,733	2,847
	Livestock Demand	1,878	1,878	1,878	1,878	1,878	1,878
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,878	1,878	1,878	1,878	1,878	1,878
	Total Livestock Supply	1,878	1,878	1,878	1,878	1,878	1,878
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	3,614	3,710	3,686	3,612	3,727	3,853
	Existing Municipal & Industrial Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	4,165	4,165	4,165	4,165	4,165	4,165
	Total Municipal & Industrial Supply	4,165	4,165	4,165	4,165	4,165	4,165
	Municipal & Industrial Balance	551	455	479	553	438	312
	Agriculture Demand	6,179	6,041	5,905	5,776	5,650	5,536
	Existing Agricultural Supply						
	Groundwater	6,331	6,331	6,331	6,331	6,331	6,331
	Surface water	2,052	2,052	2,052	2,052	2,052	2,052
	Total Agriculture Supply	8,383	8,383	8,383	8,383	8,383	8,383
	Agriculture Balance	2,204	2,342	2,478	2,607	2,733	2,847
	Total Demand	9,793	9,751	9,591	9,388	9,377	9,389
	Total Supply						
	Groundwater	6,331	6,331	6,331	6,331	6,331	6,331
	Surface water	6,217	6,217	6,217	6,217	6,217	6,217
	Total Supply	12,548	12,548	12,548	12,548	12,548	12,548
	Total Balance	2,755	2,797	2,957	3,160	3,171	3,159

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-20. FALLS COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
BELL-MILAM FALLS WSC (P)						
Demand	195	200	198	191	197	203
Supply	544	544	544	544	544	544
Groundwater	55	55	55	55	55	55
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	489	489	489	489	489	489
SW Constrained Supply	489	489	489	489	489	489
Balance	349	344	346	353	347	341
BRUCEVILLE-EDDY (P)						
Demand	1	1	1	1	1	1
Supply	4	4	4	4	4	4
Groundwater	1	1	1	1	1	1
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	3	3	3	3	3	3
SW Constrained Supply	3	3	3	3	3	3
Balance	3	3	3	3	3	3
FALLS COUNTY-OTHER						
Demand	526	531	520	504	518	533
Contractual Demand	42	45	47	48	52	56
Supply	657	657	657	657	657	657
Groundwater	612	612	612	612	612	612
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	45	45	45	45	45	45
SW Constrained Supply	45	45	45	45	45	45
Balance	89	81	90	105	87	68
EAST BELL WSC (P)						
Demand	40	41	40	39	40	41
Supply	95	95	95	95	95	95
Groundwater	50	50	50	50	50	50
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	45	45	45	45	45	45
SW Constrained Supply	45	45	45	45	45	45
Balance	55	54	55	56	55	54
GOLINDA (P)						
Demand	44	44	44	42	43	45
Supply	44	44	44	42	43	45
Groundwater	44	44	44	42	43	45
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	0	(0)	0	-	-	-

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-20 Continued. FALLS COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
LOTT						
Demand	75	75	73	70	71	73
Supply	234	234	234	234	234	234
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	234	234	234	234	234	234
SW Constrained Supply	234	--	--	--	--	--
Balance	159	159	161	164	163	161
MARLIN						
Demand	1,771	1,827	1,820	1,772	1,823	1,878
Supply	2,750	2,750	2,750	2,750	2,750	2,750
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	2,750	2,750	2,750	2,750	2,750	2,750
SW Constrained Supply	2,750	2,750	2,750	2,750	2,750	2,750
Balance	979	923	930	978	927	872
ROSEBUD						
Demand	173	174	170	165	170	175
Supply	600	600	600	600	600	600
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	600	600	600	600	600	600
SW Constrained Supply	600	600	600	600	600	600
Balance	427	426	430	435	430	425
TRI-COUNTY SUD (P)						
Demand	350	355	348	335	344	354
Supply	293	293	293	293	293	293
Groundwater	293	293	293	293	293	293
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(57)	(62)	(55)	(42)	(51)	(61)
WEST BRAZOS WSC (P)						
Demand	213	215	212	206	212	218
Contractual Demand	38	39	40	40	41	42
Supply	142	142	142	142	142	142
Groundwater	142	142	142	142	142	142
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(109)	(112)	(110)	(104)	(111)	(118)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-21
FISHER County
Population, Water Supply, and Water Demand Projections

Population Projection	2020	2030	2040	2050	2060	2070
	4,001	4,001	4,001	4,001	4,001	4,001

	Supply and Demand by Type of Use	2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	526	506	491	489	486	486
	Contractual Demand	4	4	4	4	4	4
	Municipal Existing Supply						
	Groundwater	273	273	273	273	273	273
	Surface water (Less Contractual Demand)[1]	620	651	636	628	618	610
	Total Existing Municipal Supply	893	924	909	901	891	883
	Municipal Balance	367	418	418	412	405	397
Industrial	Manufacturing Demand	225	255	284	310	336	364
	Manufacturing Existing Supply						
	Groundwater	203	203	203	203	203	203
	Surface water	2	2	2	2	2	2
	Total Manufacturing Supply	205	205	205	205	205	205
	Manufacturing Balance	(20)	(50)	(79)	(105)	(131)	(159)
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	407	402	359	313	273	238
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(407)	(402)	(359)	(313)	(273)	(238)
Agriculture	Irrigation Demand	4,488	4,354	4,224	4,098	3,974	3,862
	Irrigation Existing Supply						
	Groundwater	5,273	5,273	5,273	5,273	5,273	5,273
	Surface water	17	17	17	17	17	17
	Total Irrigation Supply	5,290	5,290	5,290	5,290	5,290	5,290
	Irrigation Balance	802	936	1,066	1,192	1,316	1,428
	Livestock Demand	634	634	634	634	634	634
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	634	634	634	634	634	634
	Total Livestock Supply	634	634	634	634	634	634
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	1,158	1,163	1,134	1,112	1,095	1,088
	Existing Municipal & Industrial Supply						
	Groundwater	203	203	203	203	203	203
	Surface water	622	653	638	630	620	612
	Total Municipal & Industrial Supply	825	856	841	833	823	815
	Municipal & Industrial Balance	(333)	(307)	(293)	(279)	(272)	(273)
	Agriculture Demand	5,122	4,988	4,858	4,732	4,608	4,496
	Existing Agricultural Supply						
	Groundwater	5,273	5,273	5,273	5,273	5,273	5,273
	Surface water	651	651	651	651	651	651
	Total Agriculture Supply	5,924	5,924	5,924	5,924	5,924	5,924
	Agriculture Balance	802	936	1,066	1,192	1,316	1,428
	Total Demand	6,280	6,151	5,992	5,844	5,703	5,584
	Total Supply						
	Groundwater	5,476	5,476	5,476	5,476	5,476	5,476
	Surface water	1,273	1,304	1,289	1,281	1,271	1,263
	Total Supply	6,749	6,780	6,765	6,757	6,747	6,739
	Total Balance	469	629	773	913	1,044	1,155

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-22. FISHER COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
BITTER CREEK WSC (P)						
Demand	112	108	104	104	104	104
Supply	260	260	260	260	260	260
Groundwater	83	83	83	83	83	83
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	177	177	177	177	177	177
SW Constrained Supply	177	177	177	177	177	177
Balance	148	152	156	156	156	156
FISHER COUNTY-OTHER						
Demand	115	110	106	106	105	105
Supply	156	156	156	156	156	156
Groundwater	156	156	156	156	156	156
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	41	46	50	50	51	51
ROBY						
Demand	121	118	116	115	114	114
Supply	384	384	384	384	384	384
Groundwater	34	34	34	34	34	34
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	350	350	350	350	350	350
SW Constrained Supply	350	350	350	350	350	350
Balance	263	266	268	269	270	270
ROTAN						
Demand	178	170	165	164	163	163
Contractual Demand	4	4	4	4	4	4
Supply	93	124	109	101	91	83
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	93	124	109	101	91	83
SW Constrained Supply	93	124	109	101	91	83
Balance	(89)	(50)	(60)	(67)	(76)	(84)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-23
GRIMES County
Population, Water Supply, and Water Demand Projections

Population Projection	Year					
	2020	2030	2040	2050	2060	2070
	29,441	32,179	34,258	36,454	38,277	39,867

	Supply and Demand by Type of Use	Year					
		2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	4,178	4,375	4,520	4,742	4,940	5,120
	Contractual Demand	114	114	114	114	138	183
	Municipal Existing Supply						
	Groundwater	5,757	5,871	5,941	6,025	6,094	6,157
	Surface water (Less Contractual Demand)[1]	0	0	0	0	0	0
	Total Existing Municipal Supply	5,757	5,871	5,941	6,025	6,094	6,157
	Municipal Balance	1,579	1,496	1,421	1,283	1,154	1,037
Industrial	Manufacturing Demand	361	408	455	497	539	585
	Manufacturing Existing Supply						
	Groundwater	415	415	414	414	439	485
	Surface water	100	100	100	100	100	100
	Total Manufacturing Supply	515	515	514	514	539	585
	Manufacturing Balance	154	107	59	17	(0)	(0)
	Steam-Electric Demand	31,760	33,160	34,660	36,660	39,660	42,905
	Steam-Electric Existing Supply						
	Groundwater	34	34	34	34	34	34
	Surface water[2]	20,060	19,974	19,887	19,801	19,714	19,628
	Total Steam-Electric Supply	20,094	20,008	19,922	19,835	19,749	19,662
	Steam-Electric Balance	(11,666)	(13,152)	(14,738)	(16,825)	(19,911)	(23,243)
	Mining Demand	323	602	471	340	209	128
	Mining Existing Supply						
	Groundwater	33	33	33	33	33	33
	Surface water	0	0	0	0	0	0
	Total Mining Supply	33	33	33	33	33	33
	Mining Balance	(290)	(569)	(438)	(307)	(176)	(95)
Agriculture	Irrigation Demand	0	0	0	0	0	0
	Irrigation Existing Supply						
	Groundwater	585	585	585	585	585	585
	Surface water	0	0	0	0	0	0
	Total Irrigation Supply	585	585	585	585	585	585
	Irrigation Balance	585	585	585	585	585	585
	Livestock Demand	1,503	1,503	1,503	1,503	1,503	1,503
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,503	1,503	1,503	1,503	1,503	1,503
	Total Livestock Supply	1,503	1,503	1,503	1,503	1,503	1,503
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	36,622	38,545	40,106	42,239	45,348	48,738
	Existing Municipal & Industrial Supply						
	Groundwater	482	482	481	481	506	552
	Surface water	20,160	20,074	19,987	19,901	19,814	19,728
	Total Municipal & Industrial Supply	20,642	20,555	20,468	20,382	20,320	20,280
	Municipal & Industrial Balance	(15,980)	(17,990)	(19,638)	(21,857)	(25,028)	(28,458)
	Agriculture Demand	1,503	1,503	1,503	1,503	1,503	1,503
	Existing Agricultural Supply						
	Groundwater	585	585	585	585	585	585
	Surface water	1,503	1,503	1,503	1,503	1,503	1,503
	Total Agriculture Supply	2,088	2,088	2,088	2,088	2,088	2,088
	Agriculture Balance	585	585	585	585	585	585
	Total Demand	38,125	40,048	41,609	43,742	46,851	50,241
	Total Supply						
	Groundwater	1,067	1,067	1,066	1,066	1,091	1,137
	Surface water	21,663	21,577	21,490	21,404	21,317	21,231
	Total Supply	22,730	22,644	22,556	22,470	22,408	22,368
	Total Balance	(15,395)	(17,404)	(19,053)	(21,272)	(24,443)	(27,873)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-24. GRIMES COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
DOBBIN-PLANTERSVILLE WSC						
Demand	182	205	223	243	260	276
Supply	377	377	377	377	377	377
Groundwater	377	377	377	377	377	377
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	195	172	154	134	117	101
G & W WSC						
Demand	436	568	669	779	871	952
Supply	436	568	669	779	871	952
Groundwater	436	568	669	779	871	952
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(0)	(0)	(0)	(0)	(0)	(0)
GRIMES COUNTY-OTHER						
Demand	1,789	1,804	1,810	1,865	1,911	1,955
Supply	2,021	2,021	2,021	2,021	2,021	2,021
Groundwater	2,021	2,021	2,021	2,021	2,021	2,021
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	232	217	211	156	110	66
NAVASOTA						
Demand	1,428	1,439	1,446	1,466	1,493	1,518
Contractual Demand	114	114	114	114	138	183
Supply	2,203	2,203	2,203	2,203	2,203	2,203
Groundwater	2,203	2,203	2,203	2,203	2,203	2,203
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	661	650	643	623	572	502
WICKSON CREEK SUD (P)						
Demand	343	359	372	389	405	419
Supply	720	703	672	646	623	605
Groundwater	720	703	672	646	623	605
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	377	344	300	257	218	186

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-25
HAMILTON County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	8,562	8,703	8,703	8,703	8,703	8,703

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	1,203	1,181	1,148	1,136	1,133	1,133
	Contractual Demand	248	249	250	251	252	253
	Municipal Existing Supply						
	Groundwater	955	955	955	955	955	955
	Surface water (Less Contractual Demand)[1]	959	952	942	888	874	853
	Total Existing Municipal Supply	1,914	1,907	1,897	1,843	1,829	1,808
	Municipal Balance	711	726	749	707	696	675
Industrial	Manufacturing Demand	5	6	7	8	9	10
	Manufacturing Existing Supply						
	Groundwater	5	6	7	8	9	10
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	5	6	7	8	9	10
	Manufacturing Balance	0	0	0	0	0	0
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	393	236	101	0	0	0
	Mining Existing Supply						
	Groundwater	13	13	13	13	13	13
	Surface water	0	0	0	0	0	0
	Total Mining Supply	13	13	13	13	13	13
	Mining Balance	(381)	(224)	(89)	13	13	13
Agriculture	Irrigation Demand	507	504	495	471	448	436
	Irrigation Existing Supply						
	Groundwater	383	383	383	383	383	383
	Surface water	54	53	51	50	49	47
	Total Irrigation Supply	437	435	434	432	431	430
	Irrigation Balance	(71)	(69)	(61)	(39)	(17)	(6)
	Livestock Demand	1,677	1,677	1,677	1,677	1,677	1,677
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,677	1,677	1,677	1,677	1,677	1,677
	Total Livestock Supply	1,677	1,677	1,677	1,677	1,677	1,677
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	1,601	1,423	1,256	1,144	1,142	1,143
	Existing Municipal & Industrial Supply						
	Groundwater	18	19	20	21	22	23
	Surface water	959	952	942	888	874	853
	Total Municipal & Industrial Supply	977	970	961	908	896	875
	Municipal & Industrial Balance	(624)	(453)	(295)	(236)	(246)	(268)
	Agriculture Demand	2,184	2,181	2,172	2,148	2,125	2,113
	Existing Agricultural Supply						
	Groundwater	383	383	383	383	383	383
	Surface water	1,731	1,730	1,728	1,727	1,726	1,724
	Total Agriculture Supply	2,114	2,112	2,111	2,109	2,108	2,107
	Agriculture Balance	(71)	(69)	(61)	(39)	(17)	(6)
	Total Demand	3,785	3,604	3,428	3,292	3,267	3,256
	Total Supply						
	Groundwater	400	401	402	403	404	405
	Surface water	2,690	2,682	2,670	2,615	2,600	2,577
	Total Supply	3,090	3,083	3,072	3,018	3,004	2,982
	Total Balance	(695)	(521)	(356)	(274)	(263)	(274)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-26. HAMILTON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
HAMILTON COUNTY-OTHER						
Demand	423	411	397	395	394	394
Supply	572	572	572	572	572	572
Groundwater	572	572	572	572	572	572
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	149	161	175	177	178	178
HAMILTON						
Demand	534	529	517	511	510	510
Contractual Demand	248	249	250	251	252	253
Supply	921	914	904	850	836	815
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	921	914	904	850	836	815
SW Constrained Supply	921	914	904	850	836	815
Balance	140	136	137	88	75	52
HICO						
Demand	180	176	171	168	167	167
Supply	383	383	383	383	383	383
Groundwater	383	383	383	383	383	383
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	203	207	212	215	216	216
MULTI-COUNTY WSC (P)						
Demand	66	65	63	62	62	62
Supply	38	38	38	38	38	38
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	38	38	38	38	38	38
SW Constrained Supply	38	38	38	38	38	38
Balance	(28)	(27)	(25)	(24)	(24)	(24)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-27
HASKELL County
Population, Water Supply, and Water Demand Projections

Population Projection	Year					
	2020	2030	2040	2050	2060	2070
	5,913	5,973	6,004	6,064	6,153	6,285

	Supply and Demand by Type of Use	Year					
		2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	872	851	834	835	845	863
	Contractual Demand	0	0	0	0	0	0
	Municipal Existing Supply						
	Groundwater	258	249	236	237	243	243
	Surface water (Less Contractual Demand)[1]	953	827	701	575	449	323
	Total Existing Municipal Supply	1,211	1,076	937	812	692	566
	Municipal Balance	339	225	103	(23)	(153)	(297)
Industrial	Manufacturing Demand	0	0	0	0	0	0
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	0	0	0	0	0	0
	Manufacturing Balance	0	0	0	0	0	0
	Steam-Electric Demand	336	393	462	547	650	720
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	2,200	2,200	2,200	2,200	2,200	2,200
	Total Steam-Electric Supply	2,200	2,200	2,200	2,200	2,200	2,200
	Steam-Electric Balance	1,864	1,807	1,738	1,653	1,550	1,480
	Mining Demand	93	92	83	74	66	59
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(93)	(92)	(83)	(74)	(66)	(59)
Agriculture	Irrigation Demand	47,844	46,422	45,040	43,072	42,405	41,207
	Irrigation Existing Supply						
	Groundwater	45,619	44,034	41,843	42,007	43,087	43,087
	Surface water	0	0	0	0	0	0
	Total Irrigation Supply	45,619	44,034	41,843	42,007	43,087	43,087
	Irrigation Balance	(2,225)	(2,388)	(3,197)	(1,065)	682	1,880
	Livestock Demand	676	676	676	676	676	676
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	676	676	676	676	676	676
	Total Livestock Supply	676	676	676	676	676	676
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	1,301	1,336	1,379	1,456	1,561	1,642
	Existing Municipal & Industrial Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	3,153	3,027	2,901	2,775	2,649	2,523
	Total Municipal & Industrial Supply	3,153	3,027	2,901	2,775	2,649	2,523
	Municipal & Industrial Balance	1,852	1,691	1,522	1,319	1,088	881
	Agriculture Demand	48,520	47,098	45,716	43,748	43,081	41,883
	Existing Agricultural Supply						
	Groundwater	45,619	44,034	41,843	42,007	43,087	43,087
	Surface water	676	676	676	676	676	676
	Total Agriculture Supply	46,295	44,710	42,519	42,683	43,763	43,763
	Agriculture Balance	(2,225)	(2,388)	(3,197)	(1,065)	682	1,880
	Total Demand	49,821	48,434	47,095	45,204	44,642	43,525
	Total Supply						
	Groundwater	45,619	44,034	41,843	42,007	43,087	43,087
	Surface water	3,829	3,703	3,577	3,451	3,325	3,199
	Total Supply	49,448	47,736	45,420	45,458	46,412	46,286
	Total Balance	(373)	(698)	(1,675)	254	1,770	2,761

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-28. HASKELL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
HASKELL COUNTY-OTHER						
Demand	255	247	243	245	248	253
Supply	535	489	441	400	362	320
Groundwater	130	125	119	120	123	123
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	405	363	322	280	239	198
SW Constrained Supply	405	363	322	280	239	198
Balance	280	242	198	155	114	67
HASKELL						
Demand	519	509	498	496	502	513
Supply	461	383	305	227	149	71
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	461	383	305	227	149	71
SW Constrained Supply	461	383	305	227	149	71
Balance	(58)	(126)	(193)	(269)	(353)	(442)
RULE						
Demand	89	86	84	85	86	88
Supply	160	150	139	134	131	126
Groundwater	128	123	117	118	121	121
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	33	27	22	16	11	5
SW Constrained Supply	33	27	22	16	11	5
Balance	71	64	55	49	45	38
STAMFORD (P)						
Demand	9	9	9	9	9	9
Supply	15	15	15	15	15	15
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	55	54	53	51	50	49
SW Constrained Supply	15	15	15	15	15	15
Balance	6	6	6	6	6	6

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-29
HILL County
Population, Water Supply, and Water Demand Projections

Population Projection	Year					
	2020	2030	2040	2050	2060	2070
	37,828	40,277	41,935	43,643	44,937	45,989

	Supply and Demand by Type of Use	Year					
		2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	5,616	5,828	5,965	6,160	6,328	6,474
	Contractual Demand	500	508	516	523	530	537
	Municipal Existing Supply						
	Groundwater	3,618	3,618	3,618	3,618	3,618	3,618
	Surface water (Less Contractual Demand)[1]	7,277	7,028	6,997	6,959	6,914	6,866
	Total Existing Municipal Supply	10,895	10,646	10,615	10,577	10,532	10,485
	Municipal Balance	5,279	4,818	4,650	4,417	4,204	4,011
Industrial	Manufacturing Demand	45	50	55	60	65	70
	Manufacturing Existing Supply						
	Groundwater	45	50	55	60	65	70
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	45	50	55	60	65	70
	Manufacturing Balance	0	0	0	0	0	0
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	1,634	1,190	775	403	436	472
	Mining Existing Supply						
	Groundwater	31	31	31	31	31	31
	Surface water	1,000	984	967	951	934	918
	Total Mining Supply	1,031	1,015	998	982	965	949
	Mining Balance	(603)	(175)	223	579	529	477
Agriculture	Irrigation Demand	582	582	582	582	568	563
	Irrigation Existing Supply						
	Groundwater	405	405	405	405	405	405
	Surface water	1,009	1,009	1,009	1,009	1,009	1,009
	Total Irrigation Supply	1,414	1,414	1,414	1,414	1,414	1,414
	Irrigation Balance	832	832	832	832	846	851
	Livestock Demand	1,184	1,184	1,184	1,184	1,184	1,184
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,184	1,184	1,184	1,184	1,184	1,184
	Total Livestock Supply	1,184	1,184	1,184	1,184	1,184	1,184
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	7,295	7,068	6,795	6,623	6,829	7,016
	Existing Municipal & Industrial Supply						
	Groundwater	76	81	86	91	96	101
	Surface water	8,277	8,011	7,964	7,910	7,848	7,784
	Total Municipal & Industrial Supply	8,354	8,093	8,051	8,001	7,944	7,885
	Municipal & Industrial Balance	1,059	1,025	1,256	1,378	1,115	869
	Agriculture Demand	1,766	1,766	1,766	1,766	1,752	1,747
	Existing Agricultural Supply						
	Groundwater	405	405	405	405	405	405
	Surface water	2,193	2,193	2,193	2,193	2,193	2,193
	Total Agriculture Supply	2,598	2,598	2,598	2,598	2,598	2,598
	Agriculture Balance	832	832	832	832	846	851
	Total Demand	9,061	8,834	8,561	8,389	8,581	8,763
	Total Supply						
	Groundwater	481	486	491	496	501	506
	Surface water	10,470	10,204	10,157	10,103	10,041	9,977
	Total Supply	10,952	10,691	10,649	10,599	10,542	10,483
	Total Balance	1,891	1,857	2,088	2,210	1,961	1,720

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-30. HILL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
BRANDON-IRENE WSC						
Demand	256	262	265	273	281	287
Contractual Demand	29	31	32	33	34	35
Supply	376	395	390	385	379	372
Groundwater	169	169	169	169	169	169
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	207	226	221	216	210	203
SW Constrained Supply	207	226	221	216	210	203
Balance	91	102	93	79	64	50
HILL COUNTY-OTHER						
Demand	968	1,011	1,042	1,077	1,105	1,131
Contractual Demand	45	50	55	60	65	70
Supply	1,505	1,358	1,344	1,322	1,294	1,264
Groundwater	703	703	703	703	703	703
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	802	655	641	619	591	561
SW Constrained Supply	802	655	641	619	591	561
Balance	492	297	247	185	124	63
HILL COUNTY WSC						
Demand	425	444	457	473	486	497
Supply	852	872	872	872	872	872
Groundwater	642	642	642	642	642	642
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	210	230	230	230	230	230
SW Constrained Supply	210	230	230	230	230	230
Balance	427	428	415	399	386	375
FILES VALLEY WSC (P)						
Demand	405	419	428	441	453	463
Contractual Demand	420	420	420	420	420	420
Supply	1,208	1,321	1,321	1,321	1,321	1,321
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,208	1,321	1,321	1,321	1,321	1,321
SW Constrained Supply	1,208	1,321	1,321	1,321	1,321	1,321
Balance	383	482	473	460	448	438
HILLSBORO						
Demand	1,945	2,027	2,077	2,144	2,204	2,255
Contractual Demand	6	7	9	10	11	12
Supply	3,839	3,640	3,640	3,640	3,640	3,640
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	3,839	3,640	3,640	3,640	3,640	3,640
SW Constrained Supply	3,839	3,640	3,640	3,640	3,640	3,640
Balance	1,888	1,606	1,554	1,486	1,425	1,373

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-30 Continued. HILL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
HUBBARD						
Demand	151	153	152	158	162	166
Supply	180	128	120	114	105	97
Groundwater	29	29	29	29	29	29
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	151	99	91	85	76	68
SW Constrained Supply	151	--	--	--	--	--
Balance	29	(25)	(32)	(44)	(57)	(69)
ITASCA						
Demand	156	158	158	161	165	168
Supply	241	241	241	241	241	241
Groundwater	241	241	241	241	241	241
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	85	83	83	80	76	73
JOHNSON COUNTY SUD (P)						
Demand	29	29	30	31	32	33
Supply	91	88	85	80	77	75
Groundwater	11	11	11	11	11	11
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	89	85	82	77	74	72
SW Constrained Supply	80	77	73	68	66	63
Balance	62	59	55	49	45	42
PARKER WSC (P)						
Demand	32	33	33	34	35	36
Supply	39	39	39	39	39	39
Groundwater	18	18	18	18	18	18
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	22	22	22	22	22	22
SW Constrained Supply	22	22	22	22	22	22
Balance	7	6	6	5	4	3
WHITE BLUFF COMMUNITY WS						
Demand	434	458	474	491	505	517
Supply	600	600	600	600	600	600
Groundwater	600	600	600	600	600	600
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	166	142	126	109	95	83

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-30 Continued. HILL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
WHITNEY						
Demand	431	449	461	475	488	500
Supply	600	600	600	600	600	600
Groundwater	600	600	600	600	600	600
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	750	750	750	750	750	750
SW Constrained Supply	-	-	-	-	-	-
Balance	169	151	139	125	112	100
WOODROW-OSCEOLA WSC						
Demand	384	385	388	402	412	421
Supply	605	605	605	605	605	605
Groundwater	605	605	605	605	605	605
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	221	220	217	203	193	184

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-31
HOOD County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	61,316	71,099	78,111	84,147	88,785	92,339

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	7,434	8,642	9,573	10,293	10,919	11,471
	Contractual Demand	406	421	435	449	464	480
	Municipal Existing Supply						
	Groundwater	3,986	3,992	3,997	4,003	4,008	4,008
	Surface water (Less Contractual Demand)[1]	19,328	19,328	19,328	19,328	19,328	19,328
	Total Existing Municipal Supply	23,314	23,320	23,325	23,331	23,336	23,336
	Municipal Balance	15,880	14,678	13,752	13,038	12,417	11,865
Industrial	Manufacturing Demand	25	27	29	31	34	37
	Manufacturing Existing Supply						
	Groundwater	25	25	25	25	25	25
	Surface water	10,000	10,000	10,000	10,000	10,000	10,000
	Total Manufacturing Supply	10,025	10,025	10,025	10,025	10,025	10,025
	Manufacturing Balance	10,000	9,998	9,996	9,994	9,991	9,988
	Steam-Electric Demand	5,814	6,796	7,995	9,456	11,238	13,354
	Steam-Electric Existing Supply						
	Groundwater	150	150	150	150	150	150
	Surface water[2]	43,447	43,447	43,447	43,447	43,271	40,337
	Total Steam-Electric Supply	43,597	43,597	43,597	43,597	43,421	40,487
	Steam-Electric Balance	37,783	36,801	35,602	34,141	32,183	27,133
	Mining Demand	2,078	2,436	2,222	2,133	2,043	2,057
	Mining Existing Supply						
	Groundwater	1,224	1,224	1,224	1,224	1,224	1,224
	Surface water	0	0	0	0	0	0
	Total Mining Supply	1,224	1,224	1,224	1,224	1,224	1,224
	Mining Balance	(854)	(1,212)	(998)	(909)	(819)	(833)
Agriculture	Irrigation Demand	7,205	7,071	6,939	6,807	6,680	6,560
	Irrigation Existing Supply						
	Groundwater	3,470	3,470	3,470	3,470	3,470	3,470
	Surface water	4,460	4,460	4,460	4,461	4,461	4,461
	Total Irrigation Supply	7,930	7,930	7,930	7,931	7,931	7,931
	Irrigation Balance	725	859	991	1,124	1,251	1,371
	Livestock Demand	522	522	522	522	522	522
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	522	522	522	522	522	522
	Total Livestock Supply	522	522	522	522	522	522
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	15,351	17,901	19,819	21,913	24,234	26,919
	Existing Municipal & Industrial Supply						
	Groundwater	1,399	1,399	1,399	1,399	1,399	1,399
	Surface water	72,775	72,775	72,775	72,775	72,599	69,665
	Total Municipal & Industrial Supply	74,174	74,174	74,174	74,174	73,998	71,064
	Municipal & Industrial Balance	58,823	56,273	54,355	52,261	49,764	44,145
	Agriculture Demand	7,727	7,593	7,461	7,329	7,202	7,082
	Existing Agricultural Supply						
	Groundwater	3,470	3,470	3,470	3,470	3,470	3,470
	Surface water	4,982	4,982	4,982	4,983	4,983	4,983
	Total Agriculture Supply	8,452	8,452	8,452	8,453	8,453	8,453
	Agriculture Balance	725	859	991	1,124	1,251	1,371
	Total Demand	23,078	25,494	27,280	29,242	31,436	34,001
	Total Supply						
	Groundwater	4,869	4,869	4,869	4,869	4,869	4,869
	Surface water	77,757	77,757	77,757	77,758	77,582	74,648
	Total Supply	82,626	82,626	82,626	82,626	82,450	79,517
	Total Balance	59,548	57,132	55,346	53,384	51,014	45,516

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-32. HOOD COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
ACTON MUD (P)						
Demand	2,862	4,460	5,497	6,024	6,631	7,308
Contractual Demand	335	335	335	335	335	335
Supply	7,507	7,507	7,507	7,507	7,507	7,507
Groundwater	1,460	1,460	1,460	1,460	1,460	1,460
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	7,252	7,252	7,252	7,252	7,252	7,252
SW Constrained Supply	6,048	6,048	6,048	6,048	6,048	6,048
Balance	4,310	2,712	1,675	1,148	541	(136)
HOOD COUNTY-OTHER						
Demand	2,823	2,184	1,903	1,933	1,819	1,588
Contractual Demand	71	86	100	114	129	145
Supply	1,926	1,926	1,926	1,926	1,926	1,926
Groundwater	1,591	1,591	1,591	1,591	1,591	1,591
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	676	676	676	676	676	676
SW Constrained Supply	335	335	335	335	335	335
Balance	(968)	(344)	(77)	(121)	(22)	193
CRESSON (P)						
Demand	56	76	89	101	111	118
Supply	65	71	76	81	87	86
Groundwater	65	71	76	81	87	86
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	9	(5)	(13)	(20)	(24)	(32)
GRANBURY						
Demand	1,216	1,432	1,586	1,725	1,837	1,925
Supply	2,106	2,106	2,106	2,083	2,083	2,083
Groundwater	706	706	706	706	706	706
GW Constrained Supply	NC	NC	723	683	683	683
Surface water	10,800	10,800	10,800	10,800	10,800	10,800
SW Constrained Supply	1,400	1,400	1,400	1,400	1,400	1,400
Balance	890	674	520	358	246	158
OAK TRAIL SHORES SUBDIVISION						
Demand	357	351	345	344	345	348
Supply	571	571	571	571	571	571
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	600	600	600	600	600	600
SW Constrained Supply	571	571	571	571	571	571
Balance	214	220	226	227	226	223

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-32 Continued. HOOD COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
TOLAR						
Demand	120	139	153	166	176	184
Supply	165	165	165	165	165	165
Groundwater	165	165	165	165	165	165
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	45	26	12	(1)	(11)	(19)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-33
JOHNSON County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	173,835	200,573	228,160	258,414	291,047	325,967

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	26,011	29,428	33,068	37,582	42,478	47,698
	Contractual Demand	8,201	8,750	9,318	9,870	10,444	11,071
	Municipal Existing Supply						
	Groundwater	10,158	10,150	10,139	10,128	10,117	10,115
	Surface water (Less Contractual Demand)[1]	47,137	46,925	46,541	46,185	46,173	46,168
	Total Existing Municipal Supply	57,295	57,076	56,680	56,313	56,290	56,283
	Municipal Balance	31,284	27,648	23,612	18,731	13,812	8,585
Industrial	Manufacturing Demand	2,517	2,903	3,295	3,646	3,994	4,375
	Manufacturing Existing Supply						
	Groundwater	271	271	271	271	271	271
	Surface water	2,337	2,723	3,116	3,467	3,814	4,196
	Total Manufacturing Supply	2,608	2,994	3,387	3,738	4,085	4,467
	Manufacturing Balance	91	91	92	92	91	92
	Steam-Electric Demand	7,000	7,000	7,000	7,000	7,000	7,000
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	1,344	1,344	1,344	1,344	1,344	1,344
	Total Steam-Electric Supply	1,344	1,344	1,344	1,344	1,344	1,344
	Steam-Electric Balance	(5,656)	(5,656)	(5,656)	(5,656)	(5,656)	(5,656)
	Mining Demand	4,126	2,788	1,515	1,013	1,161	1,336
	Mining Existing Supply						
	Groundwater	2,842	2,842	2,842	2,842	2,842	2,842
	Surface water	20	20	20	20	20	20
	Total Mining Supply	2,862	2,862	2,862	2,862	2,862	2,862
	Mining Balance	(1,264)	74	1,347	1,849	1,701	1,526
Agriculture	Irrigation Demand	141	141	141	141	141	141
	Irrigation Existing Supply						
	Groundwater	97	97	97	97	97	97
	Surface water	202	199	196	193	190	187
	Total Irrigation Supply	298	295	293	290	287	284
	Irrigation Balance	157	154	152	149	146	143
	Livestock Demand	1,613	1,613	1,613	1,613	1,613	1,613
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,613	1,613	1,613	1,613	1,613	1,613
	Total Livestock Supply	1,613	1,613	1,613	1,613	1,613	1,613
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	39,654	42,119	44,878	49,241	54,633	60,409
	Existing Municipal & Industrial Supply						
	Groundwater	3,113	3,113	3,113	3,113	3,113	3,113
	Surface water	50,838	51,012	51,021	51,016	51,351	51,728
	Total Municipal & Industrial Supply	53,951	54,126	54,134	54,130	54,464	54,842
	Municipal & Industrial Balance	14,297	12,007	9,256	4,889	(169)	(5,567)
	Agriculture Demand	1,754	1,754	1,754	1,754	1,754	1,754
	Existing Agricultural Supply						
	Groundwater	97	97	97	97	97	97
	Surface water	1,815	1,812	1,809	1,806	1,803	1,800
	Total Agriculture Supply	1,911	1,908	1,906	1,903	1,900	1,897
	Agriculture Balance	157	154	152	149	146	143
	Total Demand	41,408	43,873	46,632	50,995	56,387	62,163
	Total Supply						
	Groundwater	3,210	3,210	3,210	3,210	3,210	3,210
	Surface water	52,652	52,824	52,830	52,822	53,154	53,528
	Total Supply	55,862	56,034	56,040	56,032	56,364	56,738
	Total Balance	14,454	12,161	9,408	5,037	(23)	(5,425)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.
[2] Steam-Electric surface water supplies includes 1,344 acft from City of Cleburne reuse

C-34. JOHNSON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
ACTON MUD (P)						
Demand	56	76	98	122	149	177
Supply	153	153	153	153	153	153
Groundwater	30	30	30	30	30	30
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	148	148	148	148	148	148
SW Constrained Supply	123	123	123	123	123	123
Balance	97	77	55	31	4	(24)
ALVARADO						
Demand	456	493	536	589	653	722
Supply	2,551	2,551	2,551	2,551	2,551	2,551
Groundwater	310	310	310	310	310	310
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	2,241	2,241	2,241	2,241	2,241	2,241
SW Constrained Supply	2,241	2,241	2,241	2,241	2,241	2,241
Balance	2,095	2,058	2,015	1,962	1,898	1,829
BETHANY WSC						
Demand	367	396	430	472	524	581
Supply	1,554	1,554	1,554	1,554	1,554	1,554
Groundwater	433	433	433	433	433	433
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,120	1,120	1,120	1,120	1,120	1,120
SW Constrained Supply	1,120	1,120	1,120	1,120	1,120	1,120
Balance	1,187	1,158	1,124	1,082	1,030	973
BETHESDA WSC (P)						
Demand	3,259	3,679	4,126	4,641	5,218	5,841
Supply	2,321	2,393	2,434	2,521	2,617	2,704
Groundwater	1,442	1,442	1,442	1,442	1,442	1,442
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	879	952	992	1,079	1,175	1,262
SW Constrained Supply	879	952	992	1,079	1,175	1,262
Balance	(938)	(1,286)	(1,692)	(2,120)	(2,601)	(3,137)
BURLESON (P)						
Demand	5,315	6,333	7,298	7,920	8,782	9,855
Contractual Demand	2	2	2	2	2	2
Supply	3,875	3,875	3,875	3,875	3,875	3,875
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	3,875	3,875	3,875	3,875	3,875	3,875
SW Constrained Supply	3,875	3,875	3,875	3,875	3,875	3,875
Balance	(1,442)	(2,460)	(3,425)	(4,047)	(4,909)	(5,982)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-34 Continued. JOHNSON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
CLEBURNE						
Demand	5,927	6,446	7,010	7,678	8,445	9,276
Contractual Demand	2,329	2,714	3,105	3,455	3,801	4,182
Supply	11,430	11,361	11,292	11,223	11,154	11,085
Groundwater	1,292	1,292	1,292	1,292	1,292	1,292
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	19,838	19,697	19,556	19,415	19,274	19,133
SW Constrained Supply	10,138	10,069	10,000	9,931	9,862	9,793
Balance	3,174	2,201	1,177	90	(1,092)	(2,373)
CRESSON (P)						
Demand	24	31	39	47	57	67
Supply	27	29	32	34	36	46
Groundwater	27	29	32	34	36	46
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	NC	NC	NC	NC
Balance	3	(2)	(7)	(13)	(21)	(21)
CROWLEY						
Demand	10	14	19	25	31	37
Supply	1	2	2	2	2	2
Groundwater	1	2	2	2	2	2
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(9)	(12)	(17)	(23)	(29)	(35)
JOHNSON COUNTY-OTHER						
Demand	1,613	1,529	1,534	1,391	1,377	1,391
Supply	1,700	1,700	1,700	1,700	1,700	1,700
Groundwater	1,262	1,262	1,262	1,262	1,262	1,262
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	438	438	438	438	438	438
SW Constrained Supply	438	438	438	438	438	438
Balance	87	171	166	309	323	309
FORT WORTH						
Demand	-	-	-	951	1,520	1,899
Supply	-	-	-	192	282	326
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	192	282	326
SW Constrained Supply	-	-	-	192	282	326
Balance	-	-	-	(759)	(1,238)	(1,573)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-34 Continued. JOHNSON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
GODLEY						
Demand	115	125	137	151	167	184
Supply	159	159	159	159	159	159
Groundwater	159	159	159	159	159	159
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	44	34	22	8	(8)	(25)
GRANDVIEW						
Demand	182	197	214	234	260	287
Supply	369	369	369	369	369	369
Groundwater	369	369	369	369	369	369
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	187	172	155	135	109	82
JOHNSON COUNTY SUD (P)						
Demand	4,808	5,379	5,999	6,728	7,557	8,457
Contractual Demand	5,870	6,034	6,211	6,413	6,641	6,887
Supply	15,579	15,033	14,405	13,548	13,120	12,743
Groundwater	1,950	1,950	1,950	1,950	1,950	1,950
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	15,080	14,535	13,906	13,050	12,621	12,245
SW Constrained Supply	13,628	13,083	12,454	11,598	11,170	10,793
Balance	4,900	3,620	2,194	407	(1,078)	(2,601)
JOSHUA						
Demand	951	1,115	1,292	1,494	1,722	1,968
Supply	951	1,115	1,292	1,494	1,722	1,968
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	951	1,115	1,292	1,494	1,722	1,968
SW Constrained Supply	951	1,115	1,292	1,494	1,722	1,968
Balance	-	(0)	-	-	-	-
KEENE						
Demand	487	564	648	741	842	949
Supply	1,541	1,541	1,541	1,541	1,541	1,468
Groundwater	421	421	421	421	421	421
GW Constrained Supply	NC	NC	NC	NC	NC	348
Surface water	1,120	1,120	1,120	1,120	1,120	1,120
SW Constrained Supply	1,120	1,120	1,120	1,120	1,120	1,120
Balance	1,054	977	893	800	699	519

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-34 Continued. JOHNSON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
MANSFIELD						
Demand	721	1,024	1,337	1,681	2,055	2,455
Supply	678	880	1,044	1,191	1,317	1,431
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	678	880	1,044	1,191	1,317	1,431
SW Constrained Supply	678	--	--	--	--	--
Balance	(43)	(144)	(293)	(490)	(738)	(1,024)
MOUNTAIN PEAK SUD						
Demand	613	737	868	1,013	1,172	1,342
Supply	1,808	1,837	1,850	1,860	1,868	1,875
Groundwater	1,750	1,739	1,725	1,712	1,699	1,687
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	58	98	125	148	169	188
SW Constrained Supply	58	98	125	148	169	188
Balance	1,195	1,100	982	847	696	533
PARKER WSC (P)						
Demand	333	402	475	559	652	753
Supply	571	571	571	571	571	571
Groundwater	257	257	257	257	257	257
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	314	314	314	314	314	314
SW Constrained Supply	314	314	314	314	314	314
Balance	238	169	96	12	(81)	(182)
RIO VISTA						
Demand	150	178	207	241	279	320
Supply	249	249	249	249	249	249
Groundwater	249	249	249	249	249	249
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	99	71	42	8	(30)	(71)
VENUS (P)						
Demand	624	710	801	904	1,016	1,137
Supply	601	598	575	566	561	564
Groundwater	206	206	206	206	206	206
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	395	392	369	360	355	358
SW Constrained Supply	395	392	369	360	355	358
Balance	(23)	(112)	(226)	(338)	(455)	(573)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-35
JONES County
Population, Water Supply, and Water Demand Projections

Population Projection	2020	2030	2040	2050	2060	2070
	21,424	22,676	23,558	24,312	24,937	25,446

	Supply and Demand by Type of Use	2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	3,354	3,447	3,502	3,581	3,665	3,739
	Contractual Demand	1,443	1,444	1,444	1,445	1,447	1,449
	Municipal Existing Supply						
	Groundwater	264	264	264	264	264	264
	Surface water (Less Contractual Demand)[1]	11,416	11,275	11,133	10,992	10,852	10,712
	Total Existing Municipal Supply	11,679	11,539	11,397	11,256	11,116	10,976
	Municipal Balance	8,325	8,092	7,895	7,675	7,451	7,237
Industrial	Manufacturing Demand	0	0	0	0	0	0
	Manufacturing Existing Supply						
	Groundwater	44	44	44	44	44	44
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	44	44	44	44	44	44
	Manufacturing Balance	44	44	44	44	44	44
	Steam-Electric Demand	333	294	396	364	484	518
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	8,247	11,837	11,837	11,837	11,837	11,837
	Total Steam-Electric Supply	8,247	11,837	11,837	11,837	11,837	11,837
	Steam-Electric Balance	7,914	11,543	11,441	11,473	11,353	11,319
	Mining Demand	239	234	218	199	183	169
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(239)	(234)	(218)	(199)	(183)	(169)
Agriculture	Irrigation Demand	2,870	2,784	2,701	2,620	2,542	2,471
	Irrigation Existing Supply						
	Groundwater	2,610	2,610	2,610	2,610	2,610	2,610
	Surface water	674	660	646	632	618	604
	Total Irrigation Supply	3,284	3,270	3,256	3,242	3,228	3,214
	Irrigation Balance	414	486	555	622	686	743
	Livestock Demand	853	853	853	853	853	853
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	853	853	853	853	853	853
	Total Livestock Supply	853	853	853	853	853	853
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	3,926	3,975	4,116	4,144	4,332	4,426
	Existing Municipal & Industrial Supply						
	Groundwater	44	44	44	44	44	44
	Surface water	19,663	23,112	22,970	22,829	22,689	22,549
	Total Municipal & Industrial Supply	19,707	23,156	23,014	22,873	22,733	22,593
	Municipal & Industrial Balance	15,781	19,181	18,898	18,729	18,401	18,167
	Agriculture Demand	3,723	3,637	3,554	3,473	3,395	3,324
	Existing Agricultural Supply						
	Groundwater	2,610	2,610	2,610	2,610	2,610	2,610
	Surface water	1,527	1,513	1,499	1,485	1,471	1,457
	Total Agriculture Supply	4,137	4,123	4,109	4,095	4,081	4,067
	Agriculture Balance	414	486	555	622	686	743
	Total Demand	7,649	7,612	7,670	7,617	7,727	7,750
	Total Supply						
	Groundwater	2,654	2,654	2,654	2,654	2,654	2,654
	Surface water	21,190	24,625	24,469	24,314	24,160	24,006
	Total Supply	23,844	27,279	27,123	26,968	26,814	26,660
	Total Balance	16,195	19,667	19,453	19,351	19,087	18,910

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-36. JONES COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
ABILENE (P)						
Demand	992	1,023	1,041	1,062	1,087	1,109
Supply	1,495	852	844	837	829	822
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,583	1,560	1,536	1,513	1,490	1,467
SW Constrained Supply	1,495	852	844	837	829	822
Balance	503	(171)	(197)	(225)	(258)	(287)
ANSON						
Demand	367	375	378	388	397	405
Contractual Demand	1,117	1,117	1,117	1,117	1,117	1,117
Supply	2,128	2,128	2,128	2,128	2,128	2,128
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	2,602	2,602	2,602	2,602	2,602	2,602
SW Constrained Supply	2,128	2,128	2,128	2,128	2,128	2,128
Balance	644	636	633	623	614	606
JONES COUNTY-OTHER						
Demand	279	289	296	303	310	316
Supply	353	353	353	353	353	353
Groundwater	264	264	264	264	264	264
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	89	89	89	89	89	89
SW Constrained Supply	89	89	89	89	89	89
Balance	74	64	57	50	43	37
HAMLIN						
Demand	424	436	445	458	469	478
Contractual Demand	2	2	2	2	2	2
Supply	767	767	767	767	767	767
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,017	1,017	1,017	1,017	1,017	1,017
SW Constrained Supply	767	767	767	767	767	767
Balance	341	329	320	307	296	287
HAWLEY						
Demand	75	76	76	77	79	81
Supply	75	76	76	77	79	81
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	75	76	76	77	79	81
SW Constrained Supply	75	76	76	77	79	81
Balance	-	(0)	(0)	-	-	-

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-36 Continued. JONES COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
HAWLEY WSC (P)						
Demand	383	383	381	383	391	399
Contractual Demand	75	76	76	77	79	81
Supply	595	595	595	595	595	595
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	595	595	595	595	595	595
SW Constrained Supply	595	595	595	595	595	595
Balance	137	136	138	135	125	115
STAMFORD (P)						
Demand	834	865	885	910	932	951
Contractual Demand	249	249	249	249	249	249
Supply	1,444	1,444	1,444	1,444	1,444	1,444
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	5,455	5,336	5,217	5,098	4,980	4,861
SW Constrained Supply	1,444	1,444	1,444	1,444	1,444	1,444
Balance	361	330	310	285	263	244

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-37
KENT County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	798	816	816	816	816	816

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	125	123	121	121	120	120
Municipal	Contractual Demand	0	0	0	0	0	0
Municipal	Municipal Existing Supply						
Municipal	Groundwater	294	294	294	294	294	294
Municipal	Surface water (Less Contractual Demand)[1]	0	0	0	0	0	0
Municipal	Total Existing Municipal Supply	294	294	294	294	294	294
Municipal	Municipal Balance	169	171	173	173	174	174
Industrial	Manufacturing Demand	0	0	0	0	0	0
Industrial	Manufacturing Existing Supply						
Industrial	Groundwater	0	0	0	0	0	0
Industrial	Surface water	0	0	0	0	0	0
Industrial	Total Manufacturing Supply	0	0	0	0	0	0
Industrial	Manufacturing Balance	0	0	0	0	0	0
Industrial	Steam-Electric Demand	0	0	0	0	0	0
Industrial	Steam-Electric Existing Supply						
Industrial	Groundwater	0	0	0	0	0	0
Industrial	Surface water[2]	0	0	0	0	0	0
Industrial	Total Steam-Electric Supply	0	0	0	0	0	0
Industrial	Steam-Electric Balance	0	0	0	0	0	0
Industrial	Mining Demand	38	38	35	32	29	26
Industrial	Mining Existing Supply						
Industrial	Groundwater	459	459	459	459	459	459
Industrial	Surface water	0	0	0	0	0	0
Industrial	Total Mining Supply	459	459	459	459	459	459
Industrial	Mining Balance	421	421	424	427	430	433
Agriculture	Irrigation Demand	1,235	1,198	1,166	1,134	1,102	1,073
Agriculture	Irrigation Existing Supply						
Agriculture	Groundwater	1,444	1,444	1,444	1,444	1,444	1,444
Agriculture	Surface water	0	0	0	0	0	0
Agriculture	Total Irrigation Supply	1,444	1,444	1,444	1,444	1,444	1,444
Agriculture	Irrigation Balance	209	246	278	310	342	371
Agriculture	Livestock Demand	320	320	320	320	320	320
Agriculture	Livestock Existing Supply						
Agriculture	Groundwater	0	0	0	0	0	0
Agriculture	Surface water	320	320	320	320	320	320
Agriculture	Total Livestock Supply	320	320	320	320	320	320
Agriculture	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	163	161	156	153	149	146
Total	Existing Municipal & Industrial Supply						
Total	Groundwater	459	459	459	459	459	459
Total	Surface water	0	0	0	0	0	0
Total	Total Municipal & Industrial Supply	459	459	459	459	459	459
Total	Municipal & Industrial Balance	296	298	303	306	310	313
Total	Agriculture Demand	1,555	1,518	1,486	1,454	1,422	1,393
Total	Existing Agricultural Supply						
Total	Groundwater	1,444	1,444	1,444	1,444	1,444	1,444
Total	Surface water	320	320	320	320	320	320
Total	Total Agriculture Supply	1,764	1,764	1,764	1,764	1,764	1,764
Total	Agriculture Balance	209	246	278	310	342	371
Total	Total Demand	1,718	1,679	1,642	1,607	1,571	1,539
Total	Total Supply						
Total	Groundwater	1,903	1,903	1,903	1,903	1,903	1,903
Total	Surface water	320	320	320	320	320	320
Total	Total Supply	2,223	2,223	2,223	2,223	2,223	2,223
Total	Total Balance	505	544	581	616	652	684

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-38. KENT COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
KENT COUNTY-OTHER						
Demand	33	32	32	32	32	32
Supply	45	45	45	45	45	45
Groundwater	45	45	45	45	45	45
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	12	13	13	13	13	13
JAYTON						
Demand	92	91	89	89	88	88
Supply	-	-	-	-	-	-
Groundwater	249	249	249	249	249	249
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(92)	(91)	(89)	(89)	(88)	(88)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-39
KNOX County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	3,847	4,003	4,086	4,183	4,260	4,325

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	636	639	642	656	666	676
	Contractual Demand	0	0	0	0	0	0
	Municipal Existing Supply						
	Groundwater	121	121	121	121	121	121
	Surface water (Less Contractual Demand)[1]	511	430	349	269	188	107
	Total Existing Municipal Supply	632	551	470	390	309	228
	Municipal Balance	(4)	(88)	(172)	(266)	(357)	(448)
Industrial	Manufacturing Demand	0	0	0	0	0	0
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	0	0	0	0	0	0
	Manufacturing Balance	0	0	0	0	0	0
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	15	15	14	14	14	14
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(15)	(15)	(14)	(14)	(14)	(14)
Agriculture	Irrigation Demand	41,033	40,025	39,041	38,082	37,147	36,278
	Irrigation Existing Supply						
	Groundwater	37,752	34,368	30,412	28,693	31,103	31,103
	Surface water	160	142	124	106	88	70
	Total Irrigation Supply	37,912	34,510	30,536	28,799	31,191	31,173
	Irrigation Balance	(3,121)	(5,515)	(8,505)	(9,283)	(5,956)	(5,105)
	Livestock Demand	987	987	987	987	987	987
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	987	987	987	987	987	987
	Total Livestock Supply	987	987	987	987	987	987
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	651	654	656	670	680	690
	Existing Municipal & Industrial Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	511	430	349	269	188	107
	Total Municipal & Industrial Supply	511	430	349	269	188	107
	Municipal & Industrial Balance	(140)	(224)	(307)	(401)	(492)	(583)
	Agriculture Demand	42,020	41,012	40,028	39,069	38,134	37,265
	Existing Agricultural Supply						
	Groundwater	37,752	34,368	30,412	28,693	31,103	31,103
	Surface water	1,147	1,129	1,111	1,093	1,075	1,057
	Total Agriculture Supply	38,899	35,497	31,523	29,786	32,178	32,160
	Agriculture Balance	(3,121)	(5,515)	(8,505)	(9,283)	(5,956)	(5,105)
	Total Demand	42,671	41,666	40,684	39,739	38,814	37,955
	Total Supply						
	Groundwater	37,752	34,368	30,412	28,693	31,103	31,103
	Surface water	1,658	1,559	1,460	1,362	1,263	1,164
	Total Supply	39,409	35,927	31,872	30,054	32,366	32,267
	Total Balance	(3,262)	(5,739)	(8,812)	(9,685)	(6,448)	(5,688)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-ccunt demands and supplies available within a County.

C-40. KNOX COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
KNOX COUNTY-OTHER						
Demand	138	135	134	137	139	141
Supply	237	221	205	189	173	157
Groundwater	108	108	108	108	108	108
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	129	113	97	81	65	49
SW Constrained Supply	129	113	97	81	65	49
Balance	99	86	71	52	34	16
KNOX CITY						
Demand	242	245	248	253	257	261
Supply	194	162	130	99	67	35
Groundwater	6	6	6	6	6	6
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	188	156	124	93	61	29
SW Constrained Supply	188	156	124	93	61	29
Balance	(48)	(83)	(118)	(154)	(190)	(226)
MUNDAY						
Demand	256	259	260	266	270	274
Supply	201	168	135	102	70	37
Groundwater	7	7	7	7	7	7
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	194	161	128	95	63	30
SW Constrained Supply	194	161	128	95	63	30
Balance	(55)	(91)	(125)	(164)	(200)	(237)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-41
LAMPASAS County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	21,800	24,100	25,874	27,689	29,296	30,741

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	3,556	3,833	4,044	4,286	4,518	4,735
	Contractual Demand	2,073	2,101	2,130	2,159	2,190	2,220
	Municipal Existing Supply						
	Groundwater	390	390	390	390	390	390
	Surface water (Less Contractual Demand)[1]	6,802	6,725	6,702	6,473	6,467	6,486
	Total Existing Municipal Supply	7,192	7,115	7,092	6,863	6,857	6,876
	Municipal Balance	3,636	3,282	3,048	2,577	2,339	2,141
Industrial	Manufacturing Demand	185	199	213	226	243	261
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	185	199	213	226	243	261
	Total Manufacturing Supply	185	199	213	226	243	261
	Manufacturing Balance	0	0	0	0	0	0
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	198	221	241	261	286	313
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	25	25	25	25	25	25
	Total Mining Supply	25	25	25	25	25	25
	Mining Balance	(173)	(196)	(216)	(236)	(261)	(288)
Agriculture	Irrigation Demand	387	382	377	372	370	366
	Irrigation Existing Supply						
	Groundwater	64	64	64	64	64	64
	Surface water	103	103	103	103	103	103
	Total Irrigation Supply	166	166	166	166	166	166
	Irrigation Balance	(221)	(216)	(211)	(206)	(204)	(200)
	Livestock Demand	1,232	1,232	1,232	1,232	1,232	1,232
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,232	1,232	1,232	1,232	1,232	1,232
	Total Livestock Supply	1,232	1,232	1,232	1,232	1,232	1,232
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	3,939	4,253	4,498	4,773	5,047	5,309
	Existing Municipal & Industrial Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	7,012	6,949	6,940	6,724	6,735	6,772
	Total Municipal & Industrial Supply	7,012	6,949	6,940	6,724	6,735	6,772
	Municipal & Industrial Balance	3,073	2,696	2,442	1,951	1,688	1,463
	Agriculture Demand	1,619	1,614	1,609	1,604	1,602	1,598
	Existing Agricultural Supply						
	Groundwater	64	64	64	64	64	64
	Surface water	1,335	1,335	1,335	1,335	1,335	1,335
	Total Agriculture Supply	1,398	1,398	1,398	1,398	1,398	1,398
	Agriculture Balance	(221)	(216)	(211)	(206)	(204)	(200)
	Total Demand	5,558	5,867	6,107	6,377	6,649	6,907
	Total Supply						
	Groundwater	64	64	64	64	64	64
	Surface water	8,346	8,284	8,275	8,059	8,069	8,106
	Total Supply	8,410	8,348	8,339	8,122	8,133	8,170
	Total Balance	2,852	2,481	2,232	1,745	1,484	1,263

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-42. LAMPASAS COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
COPPERAS COVE (P)						
Demand	126	182	222	265	304	340
Supply	390	388	385	365	361	353
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	390	388	385	365	361	353
SW Constrained Supply	390	388	385	365	361	353
Balance	264	206	163	100	57	13
LAMPASAS COUNTY-OTHER						
Demand	317	292	275	256	240	227
Supply	377	377	377	377	377	377
Groundwater	377	377	377	377	377	377
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	60	85	102	121	137	150
KEMPNER						
Demand	202	219	231	246	259	272
Supply	195	209	225	240	254	267
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	195	209	225	240	254	267
SW Constrained Supply	195	209	225	240	254	267
Balance	(7)	(10)	(6)	(6)	(5)	(5)
KEMPNER WSC (P)						
Demand	1,539	1,669	1,770	1,882	1,987	2,084
Contractual Demand	1,936	1,950	1,965	1,981	1,995	2,007
Supply	2,383	2,383	2,383	2,383	2,383	2,383
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	2,898	2,821	2,794	2,649	2,613	2,556
SW Constrained Supply	2,383	2,383	2,383	2,383	2,383	2,383
Balance	(1,092)	(1,236)	(1,352)	(1,480)	(1,599)	(1,709)
LAMPASAS						
Demand	1,193	1,278	1,343	1,421	1,500	1,573
Contractual Demand	137	151	165	178	195	213
Supply	1,281	1,281	1,281	1,281	1,281	1,281
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	3,152	3,127	3,109	3,015	3,023	3,083
SW Constrained Supply	1,281	1,281	1,281	1,281	1,281	1,281
Balance	(49)	(148)	(227)	(318)	(414)	(505)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-42 Continued. LAMPASAS COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
LOMETA						
Demand	179	193	203	216	228	239
Supply	179	193	203	216	228	239
Groundwater	13	13	13	13	13	13
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	166	180	190	203	215	226
SW Constrained Supply	166	--	--	--	--	--
Balance	-	-	-	-	-	-

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

11/30/2015
1:56 PM

Table C-43
LEE County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	19,131	21,511	22,877	23,375	23,709	23,889

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	2,979	3,258	3,410	3,458	3,499	3,525
	Contractual Demand	13	14	15	16	17	18
	Municipal Existing Supply						
	Groundwater	6,187	6,215	6,229	6,235	6,245	6,249
	Surface water (Less Contractual Demand)[1]	0	0	0	0	0	0
	Total Existing Municipal Supply	6,187	6,215	6,229	6,235	6,245	6,249
	Municipal Balance	3,208	2,957	2,819	2,777	2,746	2,724
Industrial	Manufacturing Demand	13	14	15	16	17	18
	Manufacturing Existing Supply						
	Groundwater	13	14	15	16	17	18
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	13	14	15	16	17	18
	Manufacturing Balance	0	0	0	0	0	0
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	3,180	7,289	7,767	8,304	8,904	9,631
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(3,180)	(7,289)	(7,767)	(8,304)	(8,904)	(9,631)
Agriculture	Irrigation Demand	459	446	434	421	409	398
	Irrigation Existing Supply						
	Groundwater	476	476	476	476	476	476
	Surface water	20	20	20	20	20	20
	Total Irrigation Supply	496	496	496	496	496	496
	Irrigation Balance	37	50	62	75	87	98
	Livestock Demand	1,935	1,935	1,935	1,935	1,935	1,935
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,935	1,935	1,935	1,935	1,935	1,935
	Total Livestock Supply	1,935	1,935	1,935	1,935	1,935	1,935
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	6,172	10,561	11,192	11,778	12,420	13,174
	Existing Municipal & Industrial Supply						
	Groundwater	13	14	15	16	17	18
	Surface water	0	0	0	0	0	0
	Total Municipal & Industrial Supply	13	14	15	16	17	18
	Municipal & Industrial Balance	(6,159)	(10,547)	(11,177)	(11,762)	(12,403)	(13,156)
	Agriculture Demand	2,394	2,381	2,369	2,356	2,344	2,333
	Existing Agricultural Supply						
	Groundwater	476	476	476	476	476	476
	Surface water	1,955	1,955	1,955	1,955	1,955	1,955
	Total Agriculture Supply	2,431	2,431	2,431	2,431	2,431	2,431
	Agriculture Balance	37	50	62	75	87	98
	Total Demand	8,566	12,942	13,561	14,134	14,764	15,507
	Total Supply						
	Groundwater	489	490	491	492	493	494
	Surface water	1,955	1,955	1,955	1,955	1,955	1,955
	Total Supply	2,444	2,445	2,446	2,447	2,448	2,449
	Total Balance	(6,122)	(10,497)	(11,115)	(11,687)	(12,316)	(13,058)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-44. LEE COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
AQUA WSC						
Demand	466	511	536	544	551	555
Supply	466	511	536	544	551	555
Groundwater	466	511	536	544	551	555
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	-	-	-	-	-	-
LEE COUNTY-OTHER						
Demand	195	207	218	222	224	226
Supply	226	226	226	226	226	226
Groundwater	226	226	226	226	226	226
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	31	19	8	4	2	-
GIDDINGS						
Demand	1,120	1,231	1,289	1,307	1,324	1,334
Contractual Demand	13	14	15	16	17	18
Supply	1,747	1,747	1,747	1,747	1,747	1,747
Groundwater	1,747	1,747	1,747	1,747	1,747	1,747
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	614	502	443	424	406	395
LEE COUNTY WSC (P)						
Demand	908	991	1,035	1,048	1,060	1,067
Supply	3,014	3,001	2,997	2,989	2,989	2,989
Groundwater	3,014	3,001	2,997	2,989	2,989	2,989
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	2,106	2,010	1,962	1,941	1,929	1,922
LEXINGTON						
Demand	242	265	277	281	284	286
Supply	667	667	667	667	667	667
Groundwater	667	667	667	667	667	667
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	425	402	390	386	383	381

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-44 Continued. LEE COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
SOUTHWEST MILAM WSC (P)						
Demand	48	53	55	56	56	57
Supply	68	63	56	62	65	65
Groundwater	68	63	56	62	65	65
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	20	10	1	6	9	8

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

11/30/2015
1:56 PM

Table C-45
LIMESTONE County
Population, Water Supply, and Water Demand Projections

Population Projection	2020	2030	2040	2050	2060	2070
	25,136	26,615	27,817	29,134	30,206	31,152

	Supply and Demand by Type of Use	2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	2,548	2,602	2,645	2,720	2,800	2,878
	Contractual Demand	475	485	493	500	510	519
	Municipal Existing Supply						
	Groundwater	966	966	966	966	966	966
	Surface water (Less Contractual Demand)[1]	3,421	3,260	3,151	3,039	2,924	2,807
	Total Existing Municipal Supply	4,387	4,226	4,117	4,005	3,890	3,773
	Municipal Balance	1,839	1,624	1,472	1,285	1,090	895
Industrial	Manufacturing Demand	93	102	111	118	127	137
	Manufacturing Existing Supply						
	Groundwater	50	59	67	74	83	92
	Surface water	68	67	64	62	61	58
	Total Manufacturing Supply	118	126	131	136	144	150
	Manufacturing Balance	25	24	20	18	17	13
	Steam-Electric Demand	22,598	26,420	31,079	36,758	43,681	52,033
	Steam-Electric Existing Supply						
	Groundwater	839	839	839	839	839	839
	Surface water	21,837	21,530	21,223	20,916	20,609	20,302
	Total Steam-Electric Supply	22,676	22,369	22,062	21,755	21,447	21,140
	Steam-Electric Balance	78	(4,051)	(9,017)	(15,003)	(22,234)	(30,893)
	Mining Demand	10,317	9,925	9,865	10,339	10,805	11,425
	Mining Existing Supply						
	Groundwater	810	810	810	810	810	810
	Surface water	0	0	0	0	0	0
	Total Mining Supply	810	810	810	810	810	810
	Mining Balance	(9,508)	(9,116)	(9,056)	(9,530)	(9,996)	(10,616)
Agriculture	Irrigation Demand	0	0	0	0	0	0
	Irrigation Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	14	14	14	14	14	14
	Total Irrigation Supply	14	14	14	14	14	14
	Irrigation Balance	14	14	14	14	14	14
	Livestock Demand	1,704	1,704	1,704	1,704	1,704	1,704
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,704	1,704	1,704	1,704	1,704	1,704
	Total Livestock Supply	1,704	1,704	1,704	1,704	1,704	1,704
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	35,556	39,049	43,700	49,935	57,413	66,473
	Existing Municipal & Industrial Supply						
	Groundwater	1,698	1,707	1,715	1,722	1,731	1,740
	Surface water	25,326	24,857	24,438	24,017	23,593	23,167
	Total Municipal & Industrial Supply	27,024	26,564	26,153	25,739	25,325	24,907
	Municipal & Industrial Balance	(8,532)	(12,485)	(17,547)	(24,196)	(32,088)	(41,566)
	Agriculture Demand	1,704	1,704	1,704	1,704	1,704	1,704
	Existing Agricultural Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,718	1,718	1,718	1,718	1,718	1,718
	Total Agriculture Supply	1,718	1,718	1,718	1,718	1,718	1,718
	Agriculture Balance	14	14	14	14	14	14
	Total Demand	37,260	40,753	45,404	51,639	59,117	68,177
	Total Supply						
	Groundwater	1,698	1,707	1,715	1,722	1,731	1,740
	Surface water	27,044	26,575	26,156	25,735	25,311	24,885
	Total Supply	28,742	28,282	27,871	27,457	27,043	26,625
	Total Balance	(8,518)	(12,471)	(17,533)	(24,182)	(32,074)	(41,552)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-46. LIMESTONE COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
COOLIDGE						
Demand	180	195	207	222	235	247
Contractual Demand	50	59	67	74	83	92
Supply	301	242	236	226	213	199
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	301	242	236	226	213	199
SW Constrained Supply	301	242	236	226	213	199
Balance	71	(12)	(38)	(70)	(105)	(140)
LIMESTONE COUNTY-OTHER						
Demand	892	878	867	871	886	902
Contractual Demand	7	7	7	7	7	7
Supply	1,295	1,284	1,273	1,262	1,250	1,239
Groundwater	580	580	580	580	580	580
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	715	704	693	682	670	659
SW Constrained Supply	715	704	693	682	670	659
Balance	396	399	399	384	357	330
GROESBECK						
Demand	688	677	668	665	668	672
Supply	0	0	0	0	0	0
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	0	0	0	0	0	0
SW Constrained Supply	0	0	0	0	0	0
Balance	(688)	(677)	(668)	(665)	(668)	(672)
MART (P)						
Demand	1	2	2	2	2	3
Supply	1	1	1	1	1	1
Groundwater	1	1	1	1	1	1
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	0	(1)	(1)	(1)	(1)	(2)
MEXIA						
Demand	581	648	702	762	810	853
Contractual Demand	418	419	419	419	420	420
Supply	2,405	2,314	2,223	2,131	2,040	1,949
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	2,405	2,314	2,223	2,131	2,040	1,949
SW Constrained Supply	2,405	2,314	2,223	2,131	2,040	1,949
Balance	1,406	1,247	1,102	950	810	676

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-46 Continued. LIMESTONE COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
THORNTON						
Demand	70	68	66	65	65	65
Supply	272	272	272	272	272	272
Groundwater	272	272	272	272	272	272
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	202	204	206	207	207	207
TRI-COUNTY SUD (P)						
Demand	136	134	133	133	134	136
Supply	113	113	113	113	113	113
Groundwater	113	113	113	113	113	113
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(23)	(21)	(20)	(20)	(21)	(23)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-47
MCLENNAN County
Population, Water Supply, and Water Demand Projections

Population Projection	2020	2030	2040	2050	2060	2070
	252,211	272,216	289,887	307,661	325,373	342,757

	Supply and Demand by Type of Use	2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	51,013	54,030	56,768	59,888	63,349	66,821
	Contractual Demand	7,449	8,246	9,139	10,071	10,975	11,996
	Municipal Existing Supply						
	Groundwater	15,536	15,541	15,543	15,547	15,551	15,554
	Surface water (Less Contractual Demand)[1]	103,291	103,698	104,194	104,609	105,128	105,593
	Total Existing Municipal Supply	118,828	119,239	119,738	120,155	120,678	121,147
	Municipal Balance	67,815	65,209	62,970	60,267	57,329	54,326
Industrial	Manufacturing Demand	5,087	5,724	6,373	6,955	7,532	8,157
	Manufacturing Existing Supply						
	Groundwater	913	913	913	913	913	913
	Surface water	2,510	2,895	3,256	3,625	3,955	4,410
	Total Manufacturing Supply	3,423	3,808	4,169	4,538	4,868	5,323
	Manufacturing Balance	(1,664)	(1,916)	(2,204)	(2,417)	(2,664)	(2,834)
	Steam-Electric Demand	6,990	8,914	9,683	11,155	11,929	12,756
	Steam-Electric Existing Supply						
	Groundwater	178	178	178	178	178	178
	Surface water[2]	29,743	29,736	29,729	29,721	29,714	29,707
	Total Steam-Electric Supply	29,921	29,914	29,907	29,899	29,892	29,885
	Steam-Electric Balance	22,931	21,000	20,224	18,744	17,963	17,129
	Mining Demand	2,538	3,000	3,060	3,508	3,832	4,216
	Mining Existing Supply						
	Groundwater	274	274	274	274	274	274
	Surface water	0	0	0	0	0	0
	Total Mining Supply	274	274	274	274	274	274
	Mining Balance	(2,264)	(2,726)	(2,786)	(3,234)	(3,558)	(3,942)
Agriculture	Irrigation Demand	4,880	4,877	4,872	4,867	4,862	4,858
	Irrigation Existing Supply						
	Groundwater	1,158	1,158	1,158	1,158	1,158	1,158
	Surface water	1,424	1,406	1,389	1,372	1,354	1,337
	Total Irrigation Supply	2,581	2,564	2,547	2,529	2,512	2,495
	Irrigation Balance	(2,299)	(2,313)	(2,325)	(2,338)	(2,350)	(2,363)
	Livestock Demand	1,584	1,584	1,584	1,584	1,584	1,584
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,584	1,584	1,584	1,584	1,584	1,584
	Total Livestock Supply	1,584	1,584	1,584	1,584	1,584	1,584
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	65,628	71,668	75,884	81,506	86,642	91,950
	Existing Municipal & Industrial Supply						
	Groundwater	1,365	1,365	1,365	1,365	1,365	1,365
	Surface water	135,544	136,329	137,179	137,955	138,797	139,710
	Total Municipal & Industrial Supply	136,909	137,694	138,544	139,320	140,162	141,075
	Municipal & Industrial Balance	71,281	66,026	62,660	57,814	53,520	49,125
	Agriculture Demand	6,464	6,461	6,456	6,451	6,446	6,442
	Existing Agricultural Supply						
	Groundwater	1,158	1,158	1,158	1,158	1,158	1,158
	Surface water	3,008	2,990	2,973	2,956	2,938	2,921
	Total Agriculture Supply	4,165	4,148	4,131	4,113	4,096	4,079
	Agriculture Balance	(2,299)	(2,313)	(2,325)	(2,338)	(2,350)	(2,363)
	Total Demand	72,092	78,129	82,340	87,957	93,088	98,392
	Total Supply						
	Groundwater	2,523	2,523	2,523	2,523	2,523	2,523
	Surface water	138,552	139,319	140,152	140,911	141,735	142,631
	Total Supply	141,074	141,842	142,675	143,433	144,258	145,154
	Total Balance	68,982	63,713	60,335	55,476	51,170	46,762

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

[2] Steam-Electric surface water supplies includes 16,000 acft from WMARSS reuse

C-48. MCLENNAN COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
BELLMEAD						
Demand	1,241	1,269	1,296	1,339	1,397	1,457
Supply	1,502	1,502	1,502	1,502	1,502	1,502
Groundwater	1,502	1,502	1,502	1,502	1,502	1,502
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	261	233	206	163	105	45
BEVERLY HILLS						
Demand	252	261	268	281	297	312
Supply	252	261	268	281	297	312
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	252	261	268	281	297	312
SW Constrained Supply	252	261	268	281	297	312
Balance	-	-	-	-	(0)	-
BRUCEVILLE-EDDY (P)						
Demand	292	307	322	338	357	376
Supply	1,373	1,368	1,359	1,334	1,322	1,302
Groundwater	438	438	438	438	438	438
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	935	931	922	896	884	865
SW Constrained Supply	935	931	922	896	884	865
Balance	1,081	1,061	1,037	996	965	926
CHALK BLUFF WSC						
Demand	269	258	249	245	244	244
Supply	715	715	715	715	715	715
Groundwater	715	715	715	715	715	715
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	446	457	466	470	471	471
CORYELL CITY WATER SUPPLY DISTRICT (P)						
Demand	125	147	166	186	207	227
Supply	158	181	203	221	242	261
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	158	181	203	221	242	261
SW Constrained Supply	158	181	203	221	242	261
Balance	33	34	37	35	35	34

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-48 Continued. MCLENNAN COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
MCLENNAN COUNTY-OTHER						
Demand	3,533	3,409	3,306	3,249	3,236	3,233
Contractual Demand	210	213	216	221	226	231
Supply	3,827	3,826	3,823	3,814	3,811	3,804
Groundwater	2,799	2,799	2,799	2,799	2,799	2,799
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,028	1,027	1,024	1,015	1,012	1,005
SW Constrained Supply	1,028	1,027	1,024	1,015	1,012	1,005
Balance	84	204	301	344	349	340
CRAWFORD						
Demand	149	147	147	147	149	151
Supply	144	144	144	144	144	144
Groundwater	143	143	143	143	143	143
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1	1	1	1	1	1
SW Constrained Supply	1	--	NC	NC	NC	NC
Balance	(5)	(3)	(3)	(3)	(5)	(7)
CROSS COUNTRY WSC (P)						
Demand	409	406	403	405	409	413
Supply	486	486	486	416	416	416
Groundwater	486	486	486	486	486	486
GW Constrained Supply	NC	NC	NC	416	416	416
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	77	80	83	11	7	3
ELM CREEK WSC (P)						
Demand	200	221	241	262	285	308
Supply	251	250	247	241	237	232
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	251	250	247	241	237	232
SW Constrained Supply	251	250	247	241	237	232
Balance	51	29	6	(21)	(48)	(76)
GHOLSON						
Demand	155	167	178	190	204	218
Supply	927	927	927	927	927	927
Groundwater	927	927	927	927	927	927
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	772	760	749	737	723	709

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-48 Continued. MCLENNAN COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
GOLINDA (P)						
Demand	19	24	28	32	36	40
Supply	23	27	30	33	37	40
Groundwater	23	27	30	33	37	40
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	4	3	2	1	1	--
HALLSBURG						
Demand	81	84	87	92	97	102
Supply	81	84	87	92	97	102
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	81	84	87	92	97	102
SW Constrained Supply	81	--	--	--	--	--
Balance	-	-	-	-	-	-
HEWITT						
Demand	2,711	3,036	3,329	3,643	3,975	4,305
Supply	2,624	2,799	3,118	3,439	3,759	4,074
Groundwater	2,241	2,241	2,241	2,241	2,241	2,241
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	383	558	877	1,198	1,519	1,833
SW Constrained Supply	383	558	877	1,198	1,519	1,833
Balance	(87)	(237)	(211)	(204)	(216)	(231)
LACY-LAKEVIEW						
Demand	772	817	859	908	966	1,025
Supply	1,120	1,120	1,120	1,120	1,120	1,120
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,120	1,120	1,120	1,120	1,120	1,120
SW Constrained Supply	1,120	1,120	1,120	1,120	1,120	1,120
Balance	348	303	261	212	154	95
LORENA						
Demand	309	339	367	396	429	461
Supply	462	462	462	462	462	462
Groundwater	322	322	322	322	322	322
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,140	1,140	1,140	1,140	1,140	1,140
SW Constrained Supply	140	140	140	140	140	140
Balance	153	123	95	66	33	1

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-48 Continued. MCLENNAN COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
MART (P)						
Demand	352	368	383	401	423	445
Supply	202	202	202	202	202	202
Groundwater	202	202	202	202	202	202
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	(150)	(166)	(181)	(199)	(221)	(243)
MCGREGOR						
Demand	796	808	820	840	869	899
Supply	2,862	2,849	2,824	2,745	2,711	2,658
Groundwater	402	402	402	402	402	402
GW Constrained Supply	293	293	293	293	293	293
Surface water	2,569	2,556	2,531	2,451	2,418	2,365
SW Constrained Supply	2,569	2,556	2,531	2,451	2,418	2,365
Balance	2,066	2,041	2,004	1,905	1,842	1,759
MOODY						
Demand	189	196	202	211	223	235
Supply	612	610	606	595	590	582
Groundwater	211	211	211	211	211	211
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	401	399	395	384	379	371
SW Constrained Supply	401	399	395	384	379	371
Balance	423	414	404	384	367	347
NORTH BOSQUE WSC						
Demand	619	751	870	990	1,112	1,233
Supply	605	605	605	605	605	605
Groundwater	605	605	605	605	605	605
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(14)	(146)	(265)	(385)	(507)	(628)
RIESEL						
Demand	136	136	136	137	140	144
Supply	125	125	125	125	125	125
Groundwater	125	125	125	125	125	125
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(11)	(11)	(11)	(12)	(15)	(19)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

11/30/2015
1:56 PM

C-48 Continued. MCLENNAN COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
ROBINSON						
Demand	2,437	2,855	3,229	3,618	4,020	4,418
Contractual Demand	140	140	140	140	140	140
Supply	2,649	2,649	2,649	2,649	2,649	2,649
Groundwater	963	963	963	963	963	963
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	6,581	6,581	6,581	6,581	6,581	6,581
SW Constrained Supply	1,686	1,686	1,686	1,686	1,686	1,686
Balance	72	(346)	(720)	(1,109)	(1,511)	(1,909)
TRI-COUNTY SUD (P)						
Demand	21	23	25	28	31	33
Supply	23	23	23	23	23	23
Groundwater	23	23	23	23	23	23
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	NC	NC	NC	NC
Balance	2	(0)	(2)	(5)	(8)	(10)
VALLEY MILLS (P)						
Demand	5	7	8	10	11	13
Supply	12	12	12	12	12	12
Groundwater	12	12	12	12	12	12
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	7	5	4	2	1	(1)
WACO						
Demand	31,576	33,377	35,005	36,840	38,861	40,887
Contractual Demand	7,097	7,891	8,781	9,708	10,607	11,623
Supply	51,162	51,162	51,162	51,162	51,162	51,162
Groundwater	762	762	762	762	762	762
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	85,477	85,477	85,477	85,477	85,477	85,477
SW Constrained Supply	50,400	50,400	50,400	50,400	50,400	50,400
Balance	12,490	9,894	7,377	4,615	1,694	(1,348)
WEST						
Demand	490	495	500	509	523	538
Supply	1,388	1,388	1,388	1,388	1,388	1,388
Groundwater	268	268	268	268	268	268
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,120	1,120	1,120	1,120	1,120	1,120
SW Constrained Supply	1,120	1,120	1,120	1,120	1,120	1,120
Balance	898	893	888	879	865	850

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-48 Continued. MCLENNAN COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
WEST BRAZOS WSC (P)						
Demand	186	193	201	212	224	236
Supply	138	138	138	138	138	138
Groundwater	138	138	138	138	138	138
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	(48)	(55)	(63)	(74)	(86)	(98)
WESTERN HILLS WS						
Demand	212	226	238	250	262	274
Supply	544	544	544	544	544	544
Groundwater	544	544	544	544	544	544
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	332	318	306	294	282	270
WOODWAY						
Demand	3,477	3,703	3,905	4,129	4,362	4,594
Contractual Demand	2	2	2	2	2	2
Supply	3,479	3,698	3,887	4,074	4,290	4,493
Groundwater	1,686	1,686	1,686	1,686	1,686	1,686
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,793	2,013	2,202	2,389	2,604	2,808
SW Constrained Supply	1,793	2,013	2,202	2,389	2,604	2,808
Balance	-	(7)	(20)	(57)	(74)	(103)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-49
MILAM County
Population, Water Supply, and Water Demand Projections

Population Projection	2020	2030	2040	2050	2060	2070
	26,234	27,793	28,896	30,300	31,501	32,629

	Supply and Demand by Type of Use	2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	4,566	4,722	4,823	5,014	5,201	5,387
	Contractual Demand	393	393	393	393	393	393
	Municipal Existing Supply						
	Groundwater	4,155	3,887	3,249	3,597	3,756	3,761
	Surface water (Less Contractual Demand)[1]	4,776	4,776	4,776	4,776	4,776	4,776
	Total Existing Municipal Supply	8,931	8,662	8,025	8,372	8,531	8,536
	Municipal Balance	4,365	3,940	3,202	3,358	3,330	3,149
Industrial	Manufacturing Demand	12	12	12	14	14	14
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	14	14	14	14	14	14
	Total Manufacturing Supply	14	14	14	14	14	14
	Manufacturing Balance	2	2	2	0	0	0
	Steam-Electric Demand	32,023	32,023	32,023	40,989	40,989	40,989
	Steam-Electric Existing Supply						
	Groundwater	15,786	13,009	12,943	14,444	15,084	15,074
	Surface water	17,333	18,979	19,002	19,323	19,259	19,158
	Total Steam-Electric Supply	33,119	31,988	31,945	33,766	34,343	34,232
	Steam-Electric Balance	1,096	(35)	(78)	(7,223)	(6,646)	(6,757)
	Mining Demand	14	14	14	14	14	14
	Mining Existing Supply						
	Groundwater	14	14	14	14	14	14
	Surface water	0	0	0	0	0	0
	Total Mining Supply	14	14	14	14	14	14
	Mining Balance	0	0	0	0	0	0
Agriculture	Irrigation Demand	5,081	5,040	4,995	4,956	4,915	4,875
	Irrigation Existing Supply						
	Groundwater	5,356	5,204	4,966	5,181	5,273	5,273
	Surface water	42	42	42	42	42	42
	Total Irrigation Supply	5,397	5,245	5,007	5,222	5,314	5,314
	Irrigation Balance	316	205	12	266	399	439
	Livestock Demand	1,822	1,822	1,822	1,822	1,822	1,822
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,822	1,822	1,822	1,822	1,822	1,822
	Total Livestock Supply	1,822	1,822	1,822	1,822	1,822	1,822
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	36,615	36,771	36,872	46,031	46,218	46,404
	Existing Municipal & Industrial Supply						
	Groundwater	15,800	13,023	12,957	14,458	15,098	15,088
	Surface water	22,123	23,768	23,792	24,113	24,049	23,948
	Total Municipal & Industrial Supply	37,923	36,791	36,749	38,570	39,147	39,036
	Municipal & Industrial Balance	1,308	20	(123)	(7,461)	(7,071)	(7,368)
	Agriculture Demand	6,903	6,862	6,817	6,778	6,737	6,697
	Existing Agricultural Supply						
	Groundwater	5,356	5,204	4,966	5,181	5,273	5,273
	Surface water	1,864	1,864	1,864	1,864	1,864	1,864
	Total Agriculture Supply	7,219	7,067	6,829	7,044	7,136	7,136
	Agriculture Balance	316	205	12	266	399	439
	Total Demand	43,518	43,633	43,689	52,809	52,955	53,101
	Total Supply						
	Groundwater	21,156	18,227	17,923	19,638	20,370	20,360
	Surface water	23,986	25,632	25,655	25,976	25,912	25,812
	Total Supply	45,142	43,859	43,578	45,614	46,283	46,172
	Total Balance	1,624	226	(111)	(7,195)	(6,672)	(6,929)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands anc supplies available within a County.

C-50. MILAM COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
BUCKHOLTS						
Demand	68	70	71	73	76	79
Supply	244	244	244	244	244	244
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	244	244	244	244	244	244
SW Constrained Supply	244	244	244	244	244	244
Balance	176	174	173	171	168	165
BELL-MILAM FALLS WSC (P)						
Demand	255	264	269	279	290	300
Supply	761	761	761	761	761	761
Groundwater	77	77	77	77	77	77
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	684	684	684	684	684	684
SW Constrained Supply	684	684	684	684	684	684
Balance	506	497	492	482	471	461
CAMERON						
Demand	1,359	1,409	1,441	1,500	1,556	1,612
Contractual Demand	163	163	163	163	163	163
Supply	2,792	2,792	2,792	2,792	2,792	2,792
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	2,792	2,792	2,792	2,792	2,792	2,792
SW Constrained Supply	2,792	2,792	2,792	2,792	2,792	2,792
Balance	1,270	1,220	1,188	1,129	1,073	1,017
MILAM COUNTY-OTHER						
Demand	300	313	324	339	351	364
Supply	956	956	956	956	956	956
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	956	956	956	956	956	956
SW Constrained Supply	956	956	956	956	956	956
Balance	656	643	632	617	605	592
MILANO WSC (P)						
Demand	220	225	228	236	244	253
Supply	258	240	238	238	248	253
Groundwater	258	240	238	238	248	253
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	38	15	10	2	4	0

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

11/30/2015
1:56 PM

C-50 Continued. MILAM COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
ROCKDALE						
Demand	1,159	1,198	1,222	1,269	1,317	1,364
Supply	2,000	1,860	1,396	1,589	1,672	1,672
Groundwater	2,000	1,860	1,396	1,589	1,672	1,672
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	841	662	174	320	355	308
SOUTHWEST MILAM WSC (P)						
Demand	1,021	1,055	1,078	1,121	1,163	1,204
Contractual Demand	230	230	230	230	230	230
Supply	1,591	1,480	1,310	1,464	1,530	1,530
Groundwater	1,591	1,480	1,310	1,464	1,530	1,530
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	NC	NC	NC	NC
Balance	340	195	2	113	137	96
THORNDALE (P)						
Demand	184	188	190	197	204	211
Supply	229	229	229	229	229	229
Groundwater	229	229	229	229	229	229
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	100	100	100	100	100	100
SW Constrained Supply	-	-	-	-	-	-
Balance	45	41	39	32	25	18

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-51
NOLAN County
Population, Water Supply, and Water Demand Projections

Population Projection	2020	2030	2040	2050	2060	2070
	16,134	17,039	17,657	18,325	18,863	19,325

	Supply and Demand by Type of Use	2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	2,442	2,492	2,515	2,595	2,665	2,729
	Contractual Demand	2,038	2,038	2,038	2,038	2,038	2,038
	Municipal Existing Supply						
	Groundwater	3,081	3,081	3,081	3,081	3,081	3,081
	Surface water (Less Contractual Demand)[1]	1,948	1,947	1,946	1,945	1,944	1,943
	Total Existing Municipal Supply	5,029	5,028	5,027	5,026	5,025	5,024
	Municipal Balance	2,587	2,536	2,512	2,431	2,360	2,295
Industrial	Manufacturing Demand	1,420	1,611	1,799	1,965	2,130	2,309
	Manufacturing Existing Supply						
	Groundwater	539	539	539	539	539	539
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	539	539	539	539	539	539
	Manufacturing Balance	(881)	(1,072)	(1,260)	(1,426)	(1,591)	(1,770)
	Steam-Electric Demand	13,526	23,916	23,916	23,916	23,916	23,916
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	(13,526)	(23,916)	(23,916)	(23,916)	(23,916)	(23,916)
	Mining Demand	225	222	200	178	158	141
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(225)	(222)	(200)	(178)	(158)	(141)
Agriculture	Irrigation Demand	7,413	7,217	7,024	6,842	6,663	6,497
	Irrigation Existing Supply						
	Groundwater	4,890	4,890	4,890	4,890	4,890	4,890
	Surface water	40	40	40	40	40	40
	Total Irrigation Supply	4,930	4,930	4,930	4,930	4,930	4,930
	Irrigation Balance	(2,483)	(2,287)	(2,094)	(1,912)	(1,733)	(1,567)
	Livestock Demand	387	387	387	387	387	387
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	387	387	387	387	387	387
	Total Livestock Supply	387	387	387	387	387	387
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	17,613	28,241	28,430	28,654	28,869	29,095
	Existing Municipal & Industrial Supply						
	Groundwater	539	539	539	539	539	539
	Surface water	1,948	1,947	1,946	1,945	1,944	1,943
	Total Municipal & Industrial Supply	2,487	2,486	2,485	2,484	2,483	2,482
	Municipal & Industrial Balance	(15,126)	(25,755)	(25,945)	(26,170)	(26,386)	(26,613)
	Agriculture Demand	7,800	7,604	7,411	7,229	7,050	6,884
	Existing Agricultural Supply						
	Groundwater	4,890	4,890	4,890	4,890	4,890	4,890
	Surface water	427	427	427	427	427	427
	Total Agriculture Supply	5,317	5,317	5,317	5,317	5,317	5,317
	Agriculture Balance	(2,483)	(2,287)	(2,094)	(1,912)	(1,733)	(1,567)
	Total Demand	25,413	35,845	35,841	35,883	35,919	35,979
	Total Supply						
	Groundwater	5,429	5,429	5,429	5,429	5,429	5,429
	Surface water	2,375	2,374	2,373	2,372	2,371	2,370
	Total Supply	7,804	7,803	7,802	7,801	7,800	7,799
	Total Balance	(17,609)	(28,042)	(28,039)	(28,082)	(28,119)	(28,180)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-52. NOLAN COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
BITTER CREEK WSC (P)						
Demand	162	164	165	170	175	179
Supply	415	415	415	415	415	415
Groundwater	132	132	132	132	132	132
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	283	283	283	283	283	283
SW Constrained Supply	283	283	283	283	283	283
Balance	253	251	250	245	240	236
NOLAN COUNTY-OTHER						
Demand	228	231	232	237	243	249
Contractual Demand	1	1	1	1	1	1
Supply	125	125	125	125	125	125
Groundwater	125	125	125	125	125	125
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(104)	(107)	(108)	(113)	(119)	(125)
ROSCOE						
Demand	200	204	205	211	217	222
Supply	284	284	284	284	284	284
Groundwater	284	284	284	284	284	284
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	84	80	79	73	67	62
SWEETWATER						
Demand	1,852	1,893	1,913	1,977	2,030	2,079
Contractual Demand	2,037	2,037	2,037	2,037	2,037	2,037
Supply	2,540	2,540	2,540	2,540	2,540	2,540
Groundwater	2,540	2,540	2,540	2,540	2,540	2,540
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,665	1,664	1,663	1,662	1,661	1,660
SW Constrained Supply	-	-	-	-	-	-
Balance	(1,349)	(1,390)	(1,410)	(1,474)	(1,527)	(1,576)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-53
PALO PINTO County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	30,535	32,771	34,280	35,675	36,739	37,579

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	4,636	4,824	4,930	5,077	5,217	5,334
	Contractual Demand	2,352	2,352	2,352	2,352	2,352	2,352
	Municipal Existing Supply						
	Groundwater	100	100	100	100	100	100
	Surface water (Less Contractual Demand)[1]	10,969	11,061	11,106	11,164	11,220	11,264
	Total Existing Municipal Supply	11,069	11,161	11,206	11,264	11,320	11,364
	Municipal Balance	6,433	6,337	6,276	6,187	6,103	6,030
Industrial	Manufacturing Demand	49	53	57	61	67	74
	Manufacturing Existing Supply						
	Groundwater	1	1	1	1	1	1
	Surface water	1,210	1,210	1,210	1,210	1,210	1,210
	Total Manufacturing Supply	1,211	1,211	1,211	1,211	1,211	1,211
	Manufacturing Balance	1,162	1,158	1,154	1,150	1,144	1,137
	Steam-Electric Demand	4,000	4,000	4,000	4,000	4,000	4,000
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	13,842	13,412	13,028	12,627	12,227	11,839
	Total Steam-Electric Supply	13,842	13,412	13,028	12,627	12,227	11,839
	Steam-Electric Balance	9,842	9,412	9,028	8,627	8,227	7,839
	Mining Demand	656	847	625	480	336	235
	Mining Existing Supply						
	Groundwater	11	11	11	11	11	11
	Surface water	1,236	1,220	1,203	1,187	1,170	1,154
	Total Mining Supply	1,247	1,231	1,214	1,198	1,181	1,165
	Mining Balance	591	384	589	718	845	930
Agriculture	Irrigation Demand	3,138	3,097	3,063	3,022	2,981	2,944
	Irrigation Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	550	550	550	550	550	550
	Total Irrigation Supply	550	550	550	550	550	550
	Irrigation Balance	(2,588)	(2,547)	(2,513)	(2,472)	(2,431)	(2,394)
	Livestock Demand	915	915	915	915	915	915
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	915	915	915	915	915	915
	Total Livestock Supply	915	915	915	915	915	915
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	9,341	9,724	9,612	9,618	9,620	9,643
	Existing Municipal & Industrial Supply						
	Groundwater	12	12	12	12	12	12
	Surface water	27,257	26,903	26,546	26,188	25,827	25,467
	Total Municipal & Industrial Supply	27,269	26,915	26,558	26,200	25,839	25,479
	Municipal & Industrial Balance	17,928	17,191	16,946	16,582	16,219	15,836
	Agriculture Demand	4,053	4,012	3,978	3,937	3,896	3,859
	Existing Agricultural Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,465	1,465	1,465	1,465	1,465	1,465
	Total Agriculture Supply	1,465	1,465	1,465	1,465	1,465	1,465
	Agriculture Balance	(2,588)	(2,547)	(2,513)	(2,472)	(2,431)	(2,394)
	Total Demand	13,394	13,736	13,590	13,555	13,516	13,502
	Total Supply						
	Groundwater	12	12	12	12	12	12
	Surface water	28,722	28,368	28,011	27,653	27,292	26,932
	Total Supply	28,734	28,380	28,023	27,665	27,304	26,944
	Total Balance	15,340	14,644	14,433	14,110	13,788	13,442

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-54. PALO PINTO COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
PALO PINTO COUNTY-OTHER						
Demand	1,063	1,079	1,082	1,111	1,140	1,165
Contractual Demand	77	77	77	77	77	77
Supply	2,566	2,566	2,566	2,566	2,566	2,566
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	2,644	2,644	2,644	2,644	2,644	2,644
SW Constrained Supply	2,566	2,566	2,566	2,566	2,566	2,566
Balance	1,426	1,410	1,407	1,378	1,349	1,324
GRAFORD						
Demand	61	62	63	64	66	67
Supply	92	92	92	92	92	92
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	92	92	92	92	92	92
SW Constrained Supply	92	92	92	92	92	92
Balance	31	30	29	28	26	25
MINERAL WELLS						
Demand	2,593	2,708	2,775	2,856	2,935	3,002
Contractual Demand	2,225	2,225	2,225	2,225	2,225	2,225
Supply	4,818	4,933	5,000	5,081	5,160	5,227
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	7,338	7,430	7,474	7,533	7,589	7,633
SW Constrained Supply	4,818	4,933	5,000	5,081	5,160	5,227
Balance	-	-	-	-	-	-
POSSUM KINGDOM WSC (P)						
Demand	777	826	858	889	915	936
Supply	722	722	722	722	722	722
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	722	722	722	722	722	722
SW Constrained Supply	722	722	722	722	722	722
Balance	(56)	(105)	(137)	(168)	(194)	(215)
STEPHENS REGIONAL SUD (P)						
Demand	5	5	5	5	5	5
Supply	10	10	10	10	10	10
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	14	14	14	14	14	14
SW Constrained Supply	10	10	10	10	10	10
Balance	5	5	5	5	5	5

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-54 Continued. PALO PINTO COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
STRAWN						
Demand	137	144	147	152	156	159
Contractual Demand	50	50	50	50	50	50
Supply	260	260	260	260	260	260
Groundwater	100	100	100	100	100	100
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	160	160	160	160	160	160
SW Constrained Supply	160	160	160	160	160	160
Balance	73	66	63	58	54	51

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-55
ROBERTSON County
Population, Water Supply, and Water Demand Projections

Population Projection	2020	2030	2040	2050	2060	2070
	18,358	20,150	21,801	23,525	25,174	26,771

	Supply and Demand by Type of Use	2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	2,576	2,710	2,861	3,056	3,254	3,457
	Contractual Demand	7	7	7	7	7	7
	Municipal Existing Supply						
	Groundwater	6,341	6,362	6,367	6,365	6,363	6,361
	Surface water (Less Contractual Demand)[1]	648	622	597	571	545	519
	Total Existing Municipal Supply	6,989	6,984	6,963	6,935	6,908	6,881
	Municipal Balance	4,413	4,274	4,102	3,879	3,654	3,424
Industrial	Manufacturing Demand	133	154	176	197	214	232
	Manufacturing Existing Supply						
	Groundwater	251	251	251	251	251	251
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	251	251	251	251	251	251
	Manufacturing Balance	118	97	75	54	37	19
	Steam-Electric Demand	17,461	30,380	35,512	46,984	49,133	51,381
	Steam-Electric Existing Supply						
	Groundwater	6,014	6,014	6,014	6,014	6,014	6,014
	Surface water[2]	27,885	27,686	27,487	27,288	27,088	26,889
	Total Steam-Electric Supply	33,899	33,699	33,500	33,301	33,102	32,903
	Steam-Electric Balance	16,438	3,319	(2,012)	(13,683)	(16,031)	(18,478)
	Mining Demand	9,913	11,753	13,768	16,222	19,217	22,940
	Mining Existing Supply						
	Groundwater	10,205	10,205	10,205	10,205	10,205	10,205
	Surface water	0	0	0	0	0	0
	Total Mining Supply	10,205	10,205	10,205	10,205	10,205	10,205
	Mining Balance	292	(1,548)	(3,563)	(6,017)	(9,012)	(12,735)
Agriculture	Irrigation Demand	63,420	61,607	59,841	58,127	56,460	55,124
	Irrigation Existing Supply						
	Groundwater	9,896	9,996	10,096	10,144	10,144	10,144
	Surface water	535	535	535	535	535	535
	Total Irrigation Supply	10,431	10,531	10,631	10,679	10,679	10,679
	Irrigation Balance	(52,989)	(51,076)	(49,210)	(47,448)	(45,781)	(44,445)
	Livestock Demand	1,612	1,612	1,612	1,612	1,612	1,612
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,612	1,612	1,612	1,612	1,612	1,612
	Total Livestock Supply	1,612	1,612	1,612	1,612	1,612	1,612
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	30,083	44,997	52,317	66,459	71,818	78,010
	Existing Municipal & Industrial Supply						
	Groundwater	16,470	16,470	16,470	16,470	16,470	16,470
	Surface water	28,533	28,308	28,083	27,858	27,633	27,409
	Total Municipal & Industrial Supply	45,003	44,778	44,553	44,328	44,103	43,878
	Municipal & Industrial Balance	14,920	(219)	(7,764)	(22,131)	(27,715)	(34,132)
	Agriculture Demand	65,032	63,219	61,453	59,739	58,072	56,736
	Existing Agricultural Supply						
	Groundwater	9,896	9,996	10,096	10,144	10,144	10,144
	Surface water	2,147	2,147	2,147	2,147	2,147	2,147
	Total Agriculture Supply	12,043	12,143	12,243	12,291	12,291	12,291
	Agriculture Balance	(52,989)	(51,076)	(49,210)	(47,448)	(45,781)	(44,445)
	Total Demand	95,115	108,216	113,770	126,198	129,890	134,746
	Total Supply						
	Groundwater	26,366	26,466	26,566	26,613	26,613	26,613
	Surface water	30,680	30,455	30,230	30,006	29,781	29,556
	Total Supply	57,046	56,921	56,796	56,619	56,394	56,169
	Total Balance	(38,069)	(51,295)	(56,974)	(69,579)	(73,496)	(78,577)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-56. ROBERTSON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
BREMOND						
Demand	189	201	213	229	244	260
Supply	391	391	391	391	391	391
Groundwater	391	391	391	391	391	391
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	202	190	178	162	147	131
CALVERT						
Demand	190	183	180	180	179	179
Supply	529	529	529	529	529	529
Groundwater	529	529	529	529	529	529
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	339	346	349	349	350	350
ROBERTSON COUNTY-OTHER						
Demand	439	512	589	665	734	796
Supply	757	757	757	757	757	757
Groundwater	757	757	757	757	757	757
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	318	245	168	92	23	(39)
FRANKLIN						
Demand	256	272	288	307	328	348
Supply	628	628	628	628	628	628
Groundwater	628	628	628	628	628	628
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	372	356	340	321	300	280
HEARNE						
Demand	757	734	715	713	711	711
Contractual Demand	1	1	1	1	1	1
Supply	2,843	2,843	2,843	2,843	2,843	2,843
Groundwater	2,843	2,843	2,843	2,843	2,843	2,843
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	2,085	2,108	2,127	2,129	2,131	2,131

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

11/30/2015
1:56 PM

C-56 Continued. ROBERTSON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
ROBERTSON COUNTY WSC						
Demand	246	256	267	282	300	319
Contractual Demand	6	6	6	6	6	6
Supply	517	517	517	517	517	517
Groundwater	517	517	517	517	517	517
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	265	255	244	229	211	192
TRI-COUNTY SUD (P)						
Demand	115	121	128	136	145	154
Supply	112	112	112	112	112	112
Groundwater	112	112	112	112	112	112
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	NC	NC	NC	NC
Balance	(3)	(9)	(16)	(24)	(33)	(42)
WELLBORN SUD (P)						
Demand	356	401	450	511	578	653
Supply	687	709	717	717	717	717
Groundwater	506	528	535	535	535	535
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	648	622	597	571	545	519
SW Constrained Supply	181	181	181	181	181	181
Balance	331	308	267	206	139	64
WICKSON CREEK SUD (P)						
Demand	28	30	31	33	35	37
Supply	59	58	55	53	51	50
Groundwater	59	58	55	53	51	50
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	31	28	24	20	16	13

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-57
SHACKELFORD County
Population, Water Supply, and Water Demand Projections

Population Projection	Year					
	2020	2030	2040	2050	2060	2070
	3,558	3,666	3,657	3,667	3,667	3,667

	Supply and Demand by Type of Use	Year					
		2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	767	788	772	771	770	770
	Contractual Demand	125	113	108	107	107	107
	Municipal Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water (Less Contractual Demand)[1]	3,149	3,132	3,121	3,115	3,110	3,105
	Total Existing Municipal Supply	3,149	3,132	3,121	3,115	3,110	3,105
	Municipal Balance	2,382	2,344	2,349	2,344	2,340	2,335
Industrial	Manufacturing Demand	0	0	0	0	0	0
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	50	50	50	50	50	50
	Total Manufacturing Supply	50	50	50	50	50	50
	Manufacturing Balance	50	50	50	50	50	50
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	562	747	558	442	328	243
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	7	7	7	7	7	7
	Total Mining Supply	7	7	7	7	7	7
	Mining Balance	(555)	(740)	(551)	(435)	(321)	(236)
Agriculture	Irrigation Demand	0	0	0	0	0	0
	Irrigation Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Irrigation Supply	0	0	0	0	0	0
	Irrigation Balance	0	0	0	0	0	0
	Livestock Demand	840	840	840	840	840	840
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	840	840	840	840	840	840
	Total Livestock Supply	840	840	840	840	840	840
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	1,329	1,535	1,330	1,213	1,098	1,013
	Existing Municipal & Industrial Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	3,206	3,189	3,178	3,172	3,167	3,162
	Total Municipal & Industrial Supply	3,206	3,189	3,178	3,172	3,167	3,162
	Municipal & Industrial Balance	1,877	1,654	1,848	1,959	2,069	2,149
	Agriculture Demand	840	840	840	840	840	840
	Existing Agricultural Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	840	840	840	840	840	840
	Total Agriculture Supply	840	840	840	840	840	840
	Agriculture Balance	0	0	0	0	0	0
	Total Demand	2,169	2,375	2,170	2,053	1,938	1,853
	Total Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	4,046	4,029	4,018	4,012	4,007	4,002
	Total Supply	4,046	4,029	4,018	4,012	4,007	4,002
	Total Balance	1,877	1,654	1,848	1,959	2,069	2,149

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-58. SHACKELFORD COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
ALBANY						
Demand	640	673	662	662	661	661
Contractual Demand	125	113	108	107	107	107
Supply	953	953	953	953	953	953
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	2,580	2,580	2,580	2,580	2,580	2,580
SW Constrained Supply	953	953	953	953	953	953
Balance	188	167	183	184	185	185
SHACKELFORD COUNTY-OTHER						
Demand	125	113	108	107	107	107
Supply	125	113	108	107	107	107
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	563	546	536	530	525	520
SW Constrained Supply	125	113	108	107	107	107
Balance	-	-	-	-	-	-
STEPHENS REGIONAL SUD (P)						
Demand	2	2	2	2	2	2
Supply	4	4	4	4	4	4
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	6	6	6	6	6	6
SW Constrained Supply	4	4	4	4	4	4
Balance	2	2	2	2	2	2

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-59
SOMERVELL County
Population, Water Supply, and Water Demand Projections

Population Projection	Year					
	2020	2030	2040	2050	2060	2070
	9,482	10,594	11,395	12,013	12,539	12,958

	Supply and Demand by Type of Use	Year					
		2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	1,405	1,530	1,618	1,691	1,760	1,819
	Contractual Demand	0	0	0	0	0	0
	Municipal Existing Supply						
	Groundwater	724	724	724	724	724	724
	Surface water (Less Contractual Demand)[1]	2,000	2,000	2,000	2,000	2,000	2,000
	Total Existing Municipal Supply	2,724	2,724	2,724	2,724	2,724	2,724
	Municipal Balance	1,319	1,194	1,106	1,033	964	905
Industrial	Manufacturing Demand	8	9	10	11	12	13
	Manufacturing Existing Supply						
	Groundwater	20	20	20	20	20	20
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	20	20	20	20	20	20
	Manufacturing Balance	12	11	10	9	8	7
	Steam-Electric Demand	84,817	84,817	84,817	84,817	84,817	84,817
	Steam-Electric Existing Supply						
	Groundwater	36	36	36	36	36	36
	Surface water[2]	49,285	49,272	49,260	49,247	49,235	49,222
	Total Steam-Electric Supply	49,321	49,309	49,296	49,283	49,271	49,258
	Steam-Electric Balance	(35,496)	(35,508)	(35,521)	(35,534)	(35,546)	(35,559)
	Mining Demand	1,112	1,279	1,146	1,060	998	971
	Mining Existing Supply						
	Groundwater	705	705	705	705	705	705
	Surface water	0	0	0	0	0	0
	Total Mining Supply	705	705	705	705	705	705
	Mining Balance	(407)	(574)	(441)	(355)	(293)	(266)
Agriculture	Irrigation Demand	83	82	82	81	80	79
	Irrigation Existing Supply						
	Groundwater	104	104	104	104	104	104
	Surface water	0	0	0	0	0	0
	Total Irrigation Supply	104	104	104	104	104	104
	Irrigation Balance	21	22	22	23	24	25
	Livestock Demand	158	158	158	158	158	158
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	158	158	158	158	158	158
	Total Livestock Supply	158	158	158	158	158	158
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	87,342	87,635	87,591	87,579	87,587	87,620
	Existing Municipal & Industrial Supply						
	Groundwater	761	761	761	761	761	761
	Surface water	51,285	51,272	51,260	51,247	51,235	51,222
	Total Municipal & Industrial Supply	52,046	52,034	52,021	52,008	51,996	51,983
	Municipal & Industrial Balance	(35,296)	(35,601)	(35,570)	(35,571)	(35,591)	(35,637)
	Agriculture Demand	241	240	240	239	238	237
	Existing Agricultural Supply						
	Groundwater	104	104	104	104	104	104
	Surface water	158	158	158	158	158	158
	Total Agriculture Supply	262	262	262	262	262	262
	Agriculture Balance	21	22	22	23	24	25
	Total Demand	87,583	87,875	87,831	87,818	87,825	87,857
	Total Supply						
	Groundwater	865	865	865	865	865	865
	Surface water	51,443	51,430	51,418	51,405	51,393	51,380
	Total Supply	52,308	52,295	52,283	52,270	52,258	52,245
	Total Balance	(35,275)	(35,580)	(35,548)	(35,548)	(35,567)	(35,612)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-60. SOMERVELL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
SOMERVELL COUNTY-OTHER						
Demand	822	892	941	982	1,022	1,056
Supply	1,400	1,400	1,400	1,400	1,400	1,400
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	2,000	2,000	2,000	2,000	2,000	2,000
SW Constrained Supply	1,400	1,400	1,400	1,400	1,400	1,400
Balance	578	508	459	418	378	344
GLEN ROSE						
Demand	583	638	677	709	738	763
Supply	724	724	724	724	724	724
Groundwater	724	724	724	724	724	724
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	141	86	47	15	(14)	(39)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

11/30/2015
1:56 PM

Table C-61
STEPHENS County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	9,927	10,293	10,455	10,563	10,641	10,693

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	1,469	1,475	1,460	1,455	1,463	1,470
	Contractual Demand	99	99	99	99	99	99
	Municipal Existing Supply						
	Groundwater	207	207	207	207	207	207
	Surface water (Less Contractual Demand)[1]	3,838	3,835	3,832	3,830	3,827	3,825
	Total Existing Municipal Supply	4,045	4,042	4,039	4,037	4,034	4,032
	Municipal Balance	2,576	2,567	2,579	2,582	2,571	2,562
Industrial	Manufacturing Demand	9	10	11	12	13	14
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	9	10	11	12	13	14
	Total Manufacturing Supply	9	10	11	12	13	14
	Manufacturing Balance	0	0	0	0	0	0
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	5,064	5,141	4,458	3,825	3,257	2,773
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,000	1,000	1,000	1,000	1,000	1,000
	Total Mining Supply	1,000	1,000	1,000	1,000	1,000	1,000
	Mining Balance	(4,064)	(4,141)	(3,458)	(2,825)	(2,257)	(1,773)
Agriculture	Irrigation Demand	116	115	113	112	111	110
	Irrigation Existing Supply						
	Groundwater	86	86	86	86	86	86
	Surface water	0	0	0	0	0	0
	Total Irrigation Supply	86	86	86	86	86	86
	Irrigation Balance	(30)	(29)	(27)	(26)	(25)	(24)
	Livestock Demand	486	486	486	486	486	486
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	486	486	486	486	486	486
	Total Livestock Supply	486	486	486	486	486	486
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	6,542	6,626	5,929	5,292	4,733	4,257
	Existing Municipal & Industrial Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	4,847	4,845	4,843	4,842	4,840	4,839
	Total Municipal & Industrial Supply	4,847	4,845	4,843	4,842	4,840	4,839
	Municipal & Industrial Balance	(1,695)	(1,781)	(1,086)	(450)	107	582
	Agriculture Demand	602	601	599	598	597	596
	Existing Agricultural Supply						
	Groundwater	86	86	86	86	86	86
	Surface water	486	486	486	486	486	486
	Total Agriculture Supply	572	572	572	572	572	572
	Agriculture Balance	(30)	(29)	(27)	(26)	(25)	(24)
	Total Demand	7,144	7,227	6,528	5,890	5,330	4,853
	Total Supply						
	Groundwater	86	86	86	86	86	86
	Surface water	5,333	5,331	5,329	5,328	5,326	5,325
	Total Supply	5,419	5,417	5,416	5,414	5,413	5,411
	Total Balance	(1,725)	(1,810)	(1,112)	(476)	83	558

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-62. STEPHENS COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
BRECKENRIDGE						
Demand	1,012	1,020	1,013	1,011	1,017	1,022
Supply	1,891	1,891	1,891	1,891	1,891	1,891
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	3,100	3,097	3,094	3,092	3,089	3,087
SW Constrained Supply	1,891	1,891	1,891	1,891	1,891	1,891
Balance	879	871	878	880	874	869
POSSUM KINGDOM WSC (P)						
Demand	33	34	34	34	34	35
Supply	29	29	29	29	29	29
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	29	29	29	29	29	29
SW Constrained Supply	29	29	29	29	29	29
Balance	(5)	(6)	(6)	(6)	(6)	(7)
STEPHENS COUNTY-OTHER						
Demand	156	155	152	151	152	152
Supply	207	207	207	207	207	207
Groundwater	207	207	207	207	207	207
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	51	52	55	56	55	55
FORT BELKNAPP WSC (P)						
Demand	6	6	6	6	6	6
Supply	5	5	5	5	5	5
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	5	5	5	5	5	5
SW Constrained Supply	5	5	5	5	5	5
Balance	(1)	(1)	(1)	(1)	(1)	(1)
STEPHENS REGIONAL SUD (P)						
Demand	262	260	255	253	254	255
Contractual Demand	99	99	99	99	99	99
Supply	493	493	493	493	493	493
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	704	704	704	704	704	704
SW Constrained Supply	493	493	493	493	493	493
Balance	132	134	139	141	140	139

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-63
STONEWALL County
Population, Water Supply, and Water Demand Projections

Population Projection	2020	2030	2040	2050	2060	2070
	1,501	1,504	1,504	1,504	1,504	1,504

	Supply and Demand by Type of Use	2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	318	310	307	306	305	305
	Contractual Demand	0	0	0	0	0	0
	Municipal Existing Supply						
	Groundwater	396	386	371	372	379	379
	Surface water (Less Contractual Demand)[1]	85	71	56	42	28	13
	Total Existing Municipal Supply	482	457	428	414	407	393
	Municipal Balance	164	147	121	108	102	88
Industrial	Manufacturing Demand	0	0	0	0	0	0
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	0	0	0	0	0	0
	Manufacturing Balance	0	0	0	0	0	0
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	584	576	512	446	388	338
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	175	175	175	175	175	175
	Total Mining Supply	175	175	175	175	175	175
	Mining Balance	(409)	(401)	(337)	(271)	(213)	(163)
Agriculture	Irrigation Demand	165	160	155	150	146	142
	Irrigation Existing Supply						
	Groundwater	219	219	219	219	219	219
	Surface water	8	8	8	8	8	8
	Total Irrigation Supply	227	227	227	227	227	227
	Irrigation Balance	62	67	72	77	81	85
	Livestock Demand	458	458	458	458	458	458
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	458	458	458	458	458	458
	Total Livestock Supply	458	458	458	458	458	458
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	902	886	819	752	693	643
	Existing Municipal & Industrial Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	260	246	231	217	203	188
	Total Municipal & Industrial Supply	260	246	231	217	203	188
	Municipal & Industrial Balance	(642)	(640)	(588)	(535)	(490)	(455)
	Agriculture Demand	623	618	613	608	604	600
	Existing Agricultural Supply						
	Groundwater	219	219	219	219	219	219
	Surface water	466	466	466	466	466	466
	Total Agriculture Supply	685	685	685	685	685	685
	Agriculture Balance	62	67	72	77	81	85
	Total Demand	1,525	1,504	1,432	1,360	1,297	1,243
	Total Supply						
	Groundwater	219	219	219	219	219	219
	Surface water	726	712	697	683	669	654
	Total Supply	945	931	916	902	888	873
	Total Balance	(580)	(573)	(516)	(458)	(409)	(370)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-64. STONEWALL COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
ASPERMONT						
Demand	250	245	242	242	241	241
Supply	389	364	335	321	314	300
Groundwater	303	293	278	279	286	286
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	85	71	56	42	28	13
SW Constrained Supply	85	71	56	42	28	13
Balance	139	119	93	79	73	59
STONEWALL COUNTY-OTHER						
Demand	68	65	65	64	64	64
Supply	93	93	93	93	93	93
Groundwater	93	93	93	93	93	93
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	25	28	28	29	29	29

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-65
TAYLOR County
Population, Water Supply, and Water Demand Projections

Population Projection	2020	2030	2040	2050	2060	2070
	140,675	147,183	152,561	156,822	160,004	162,423

	Supply and Demand by Type of Use	2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	24,242	24,682	25,049	25,468	25,934	26,321
	Contractual Demand	4,121	4,268	4,410	4,531	4,706	4,895
	Municipal Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water (Less Contractual Demand)[1]	36,189	35,698	35,207	34,715	34,226	33,735
	Total Existing Municipal Supply	36,189	35,698	35,207	34,715	34,226	33,735
	Municipal Balance	11,947	11,016	10,158	9,247	8,292	7,414
Industrial	Manufacturing Demand	1,653	1,800	1,942	2,063	2,236	2,424
	Manufacturing Existing Supply						
	Groundwater	405	405	405	405	405	405
	Surface water	1,248	1,395	1,537	1,658	1,831	2,019
	Total Manufacturing Supply	1,653	1,800	1,942	2,063	2,236	2,424
	Manufacturing Balance	(0)	(0)	(0)	(0)	(0)	(0)
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	391	391	366	346	329	315
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(391)	(391)	(366)	(346)	(329)	(315)
Agriculture	Irrigation Demand	1,557	1,519	1,481	1,444	1,406	1,373
	Irrigation Existing Supply						
	Groundwater	500	500	500	500	500	500
	Surface water	0	0	0	0	0	0
	Total Irrigation Supply	500	500	500	500	500	500
	Irrigation Balance	(1,057)	(1,019)	(981)	(944)	(906)	(873)
	Livestock Demand	963	963	963	963	963	963
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	963	963	963	963	963	963
	Total Livestock Supply	963	963	963	963	963	963
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	26,286	26,873	27,357	27,877	28,499	29,060
	Existing Municipal & Industrial Supply						
	Groundwater	405	405	405	405	405	405
	Surface water	37,437	37,093	36,744	36,373	36,057	35,754
	Total Municipal & Industrial Supply	37,842	37,498	37,148	36,778	36,461	36,159
	Municipal & Industrial Balance	11,556	10,625	9,791	8,901	7,962	7,099
	Agriculture Demand	2,520	2,482	2,444	2,407	2,369	2,336
	Existing Agricultural Supply						
	Groundwater	500	500	500	500	500	500
	Surface water	963	963	963	963	963	963
	Total Agriculture Supply	1,463	1,463	1,463	1,463	1,463	1,463
	Agriculture Balance	(1,057)	(1,019)	(981)	(944)	(906)	(873)
	Total Demand	28,806	29,355	29,801	30,284	30,868	31,396
	Total Supply						
	Groundwater	905	905	905	905	905	905
	Surface water	38,400	38,056	37,707	37,336	37,020	36,717
	Total Supply	39,305	38,961	38,612	38,241	37,925	37,622
	Total Balance	10,499	9,606	8,811	7,957	7,057	6,226

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-66. TAYLOR COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
ABILENE (P)						
Demand	21,750	22,165	22,507	22,884	23,303	23,652
Contractual Demand	4,042	4,189	4,331	4,452	4,625	4,813
Supply	31,717	18,080	17,920	17,759	17,599	17,438
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	33,588	33,096	32,605	32,113	31,622	31,130
SW Constrained Supply	31,717	18,080	17,920	17,759	17,599	17,438
Balance	5,925	(8,274)	(8,918)	(9,577)	(10,329)	(11,027)
COLEMAN COUNTY SUD (P)						
Demand	13	13	13	13	14	14
Supply	7	7	7	7	7	7
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	7	7	7	7	7	7
SW Constrained Supply	7	7	7	7	7	7
Balance	(6)	(6)	(6)	(6)	(7)	(7)
TAYLOR COUNTY-OTHER						
Demand	660	660	662	678	690	700
Supply	1,078	1,078	1,078	1,078	1,078	1,078
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,308	1,308	1,308	1,308	1,308	1,308
SW Constrained Supply	1,078	1,078	1,078	1,078	1,078	1,078
Balance	418	418	416	400	388	378
HAWLEY WSC (P)						
Demand	40	40	40	40	40	41
Supply	62	62	62	62	62	62
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	62	62	62	62	62	62
SW Constrained Supply	62	62	62	62	62	62
Balance	22	22	22	22	22	21
MERKEL						
Demand	343	345	347	350	357	362
Supply	353	353	353	353	353	353
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	353	353	353	353	353	353
SW Constrained Supply	353	353	353	353	353	353
Balance	10	8	6	3	(4)	(9)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

11/30/2015
1:56 PM

C-66 Continued. TAYLOR COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
POTOSI WSC (P)						
Demand	761	779	794	809	823	836
Supply	302	302	302	302	302	302
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	302	302	302	302	302	302
SW Constrained Supply	302	--	--	--	--	--
Balance	(459)	(477)	(492)	(507)	(521)	(534)
STEAMBOAT MOUNTAIN WSC						
Demand	410	413	417	422	429	435
Contractual Demand	79	79	79	79	81	82
Supply	307	307	307	307	307	307
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	307	307	307	307	307	307
SW Constrained Supply	307	--	NC	NC	NC	NC
Balance	(182)	(185)	(189)	(194)	(203)	(210)
TUSCOLA						
Demand	79	79	79	79	81	82
Supply	79	79	79	79	81	82
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	79	79	79	79	81	82
SW Constrained Supply	79	79	79	79	81	82
Balance	-	-	-	-	-	-
TYE						
Demand	186	188	190	193	197	199
Supply	184	184	184	184	184	184
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	184	184	184	184	184	184
SW Constrained Supply	184	184	184	184	184	184
Balance	(2)	(4)	(6)	(9)	(13)	(15)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

11/30/2015
1:56 PM

Table C-67
THROCKMORTON County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	1,646	1,646	1,646	1,646	1,646	1,646

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	266	258	254	253	252	252
	Contractual Demand	0	0	0	0	0	0
	Municipal Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water (Less Contractual Demand)[1]	580	580	580	580	580	580
	Total Existing Municipal Supply	580	580	580	580	580	580
	Municipal Balance	314	322	326	327	328	328
Industrial	Manufacturing Demand	0	0	0	0	0	0
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Manufacturing Supply	0	0	0	0	0	0
	Manufacturing Balance	0	0	0	0	0	0
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	194	191	171	150	132	116
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(194)	(191)	(171)	(150)	(132)	(116)
Agriculture	Irrigation Demand	0	0	0	0	0	0
	Irrigation Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	8	8	8	8	8	8
	Total Irrigation Supply	8	8	8	8	8	8
	Irrigation Balance	8	8	8	8	8	8
	Livestock Demand	672	672	672	672	672	672
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	672	672	672	672	672	672
	Total Livestock Supply	672	672	672	672	672	672
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	460	449	425	403	384	368
	Existing Municipal & Industrial Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	580	580	580	580	580	580
	Total Municipal & Industrial Supply	580	580	580	580	580	580
	Municipal & Industrial Balance	120	131	155	177	196	212
	Agriculture Demand	672	672	672	672	672	672
	Existing Agricultural Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	680	680	680	680	680	680
	Total Agriculture Supply	680	680	680	680	680	680
	Agriculture Balance	8	8	8	8	8	8
	Total Demand	1,132	1,121	1,097	1,075	1,056	1,040
	Total Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,260	1,260	1,260	1,260	1,260	1,260
	Total Supply	1,260	1,260	1,260	1,260	1,260	1,260
	Total Balance	128	139	163	185	204	220

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-68. THROCKMORTON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
THROCKMORTON COUNTY-OTHER						
Demand	48	45	45	45	45	45
Supply	99	99	99	99	99	99
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	198	198	198	198	198	198
SW Constrained Supply	99	99	99	99	99	99
Balance	51	54	54	54	54	54
FORT BELKNAPP WSC (P)						
Demand	20	20	19	19	19	19
Supply	17	17	17	17	17	17
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	17	17	17	17	17	17
SW Constrained Supply	17	17	17	17	17	17
Balance	(3)	(3)	(2)	(2)	(2)	(2)
STEPHENS REGIONAL SUD (P)						
Demand	16	15	15	14	14	14
Supply	28	28	28	28	28	28
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	40	40	40	40	40	40
SW Constrained Supply	28	28	28	28	28	28
Balance	12	13	13	14	14	14
THROCKMORTON						
Demand	182	178	175	175	174	174
Supply	325	325	325	325	325	325
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	325	325	325	325	325	325
SW Constrained Supply	325	325	325	325	325	325
Balance	143	147	150	150	151	151

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

11/30/2015
1:56 PM

Table C-69
WASHINGTON County
Population, Water Supply, and Water Demand Projections

Population Projection	2020	2030	2040	2050	2060	2070
	36,199	38,516	40,095	41,664	42,884	43,880

	Supply and Demand by Type of Use	2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	6,503	6,797	6,978	7,210	7,427	7,615
	Contractual Demand	0	0	0	0	0	0
	Municipal Existing Supply						
	Groundwater	2,784	2,784	2,784	2,784	2,784	2,784
	Surface water (Less Contractual Demand)[1]	4,200	4,200	4,200	4,200	4,200	4,200
	Total Existing Municipal Supply	6,984	6,984	6,984	6,984	6,984	6,984
	Municipal Balance	481	187	6	(226)	(443)	(631)
Industrial	Manufacturing Demand	692	757	822	879	951	1,029
	Manufacturing Existing Supply						
	Groundwater	423	423	423	423	423	423
	Surface water	208	208	208	208	208	208
	Total Manufacturing Supply	631	631	631	631	631	631
	Manufacturing Balance	(62)	(127)	(192)	(249)	(321)	(399)
	Steam-Electric Demand	0	0	0	0	0	0
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	0	0	0	0	0	0
	Total Steam-Electric Supply	0	0	0	0	0	0
	Steam-Electric Balance	0	0	0	0	0	0
	Mining Demand	569	866	703	538	373	264
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	0	0	0	0	0	0
	Total Mining Supply	0	0	0	0	0	0
	Mining Balance	(569)	(866)	(703)	(538)	(373)	(264)
Agriculture	Irrigation Demand	299	299	299	299	299	299
	Irrigation Existing Supply						
	Groundwater	450	450	450	450	450	450
	Surface water	0	0	0	0	0	0
	Total Irrigation Supply	450	450	450	450	450	450
	Irrigation Balance	151	151	151	151	151	151
	Livestock Demand	1,661	1,661	1,661	1,661	1,661	1,661
	Livestock Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	1,661	1,661	1,661	1,661	1,661	1,661
	Total Livestock Supply	1,661	1,661	1,661	1,661	1,661	1,661
	Livestock Balance	0	0	0	0	0	0
Total	Municipal & Industrial Demand	7,764	8,420	8,503	8,627	8,751	8,908
	Existing Municipal & Industrial Supply						
	Groundwater	423	423	423	423	423	423
	Surface water	4,408	4,408	4,408	4,408	4,408	4,408
	Total Municipal & Industrial Supply	4,831	4,831	4,831	4,831	4,831	4,831
	Municipal & Industrial Balance	(2,934)	(3,590)	(3,673)	(3,797)	(3,921)	(4,078)
	Agriculture Demand	1,960	1,960	1,960	1,960	1,960	1,960
	Existing Agricultural Supply						
	Groundwater	450	450	450	450	450	450
	Surface water	1,661	1,661	1,661	1,661	1,661	1,661
	Total Agriculture Supply	2,111	2,111	2,111	2,111	2,111	2,111
	Agriculture Balance	151	151	151	151	151	151
	Total Demand	9,724	10,380	10,463	10,587	10,711	10,868
	Total Supply						
	Groundwater	873	873	873	873	873	873
	Surface water	6,069	6,069	6,069	6,069	6,069	6,069
	Total Supply	6,942	6,942	6,942	6,942	6,942	6,942
	Total Balance	(2,783)	(3,439)	(3,522)	(3,646)	(3,770)	(3,927)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-70. WASHINGTON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
BRENHAM						
Demand	4,079	4,359	4,542	4,747	4,922	5,070
Supply	4,142	4,142	4,142	4,142	4,142	4,142
Groundwater	234	234	234	234	234	234
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	4,200	4,200	4,200	4,200	4,200	4,200
SW Constrained Supply	3,909	3,909	3,909	3,909	3,909	3,909
Balance	63	(217)	(400)	(605)	(780)	(928)
WASHINGTON COUNTY-OTHER						
Demand	2,424	2,438	2,436	2,463	2,505	2,545
Supply	2,550	2,550	2,550	2,550	2,550	2,550
Groundwater	2,550	2,550	2,550	2,550	2,550	2,550
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	126	112	114	87	45	5

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Table C-71
WILLIAMSON County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	578,413	728,799	908,037	1,101,078	1,319,977	1,546,314

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	98,885	120,996	147,017	174,659	207,409	241,275
	Contractual Demand	9,744	10,328	11,035	12,172	13,566	15,020
	Municipal Existing Supply						
	Groundwater	10,893	10,851	10,776	10,946	11,058	11,125
	Surface water (Less Contractual Demand)[1]	107,524	111,137	111,201	109,869	111,461	113,129
	Total Existing Municipal Supply	118,417	121,987	121,977	120,814	122,519	124,253
	Municipal Balance	19,532	991	(25,040)	(53,845)	(84,890)	(117,022)
Industrial	Manufacturing Demand	599	584	576	572	571	570
	Manufacturing Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	788	788	788	788	788	788
	Total Manufacturing Supply	788	788	788	788	788	788
	Manufacturing Balance	189	204	212	216	217	218
	Steam-Electric Demand	996	1,243	1,556	1,892	2,274	2,670
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	935	1,062	1,204	1,403	1,687	1,982
	Total Steam-Electric Supply	935	1,062	1,204	1,403	1,687	1,982
	Steam-Electric Balance	(61)	(181)	(352)	(489)	(587)	(688)
	Mining Demand	577	719	900	1,095	1,315	1,544
	Mining Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	542	616	707	862	1,037	1,218
	Total Mining Supply	542	616	707	862	1,037	1,218
	Mining Balance	(35)	(103)	(193)	(233)	(278)	(326)
Agriculture	Irrigation Demand	834	1,034	1,290	1,566	1,882	2,210
	Irrigation Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	797	906	1,027	1,247	1,500	1,762
	Total Irrigation Supply	797	906	1,027	1,247	1,500	1,762
	Irrigation Balance	(37)	(128)	(263)	(319)	(382)	(448)
	Livestock Demand	279	289	300	316	331	347
	Livestock Existing Supply						
	Groundwater	370	370	380	380	380	380
	Surface water	74	70	69	69	68	67
	Total Livestock Supply	444	440	449	449	448	447
	Livestock Balance	165	151	149	133	117	100
Total	Municipal & Industrial Demand	101,057	123,542	150,049	178,218	211,569	246,059
	Existing Municipal & Industrial Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	109,789	113,603	113,901	112,921	114,973	117,116
	Total Municipal & Industrial Supply	109,789	113,603	113,901	112,921	114,973	117,116
	Municipal & Industrial Balance	8,732	(9,939)	(36,148)	(65,297)	(96,596)	(128,943)
	Agriculture Demand	1,113	1,323	1,590	1,882	2,213	2,557
	Existing Agricultural Supply						
	Groundwater	370	370	380	380	380	380
	Surface water	871	976	1,096	1,316	1,568	1,829
	Total Agriculture Supply	1,241	1,346	1,476	1,696	1,948	2,209
	Agriculture Balance	128	23	(114)	(186)	(265)	(348)
	Total Demand	102,170	124,865	151,639	180,100	213,782	248,616
	Total Supply						
	Groundwater	370	370	380	380	380	380
	Surface water	110,660	114,578	114,997	114,237	116,542	118,945
	Total Supply	111,030	114,948	115,377	114,617	116,922	119,325
	Total Balance	8,860	(9,917)	(36,262)	(65,483)	(96,860)	(129,291)

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-72. WILLIAMSON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
BARTLETT (P)						
Demand	197	205	217	232	251	270
Supply	39	39	39	39	39	39
Groundwater	39	39	39	39	39	39
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(158)	(166)	(178)	(193)	(212)	(231)
BELL-MILAM FALLS WSC (P)						
Demand	49	60	74	89	107	126
Supply	228	228	228	228	228	228
Groundwater	23	23	23	23	23	23
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	205	205	205	205	205	205
SW Constrained Supply	205	205	205	205	205	205
Balance	179	168	154	139	121	102
BLOCKHOUSE MUD						
Demand	845	828	819	814	812	811
Supply	1,098	1,098	1,098	1,098	1,098	1,098
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,098	1,098	1,098	1,098	1,098	1,098
SW Constrained Supply	1,098	1,098	1,098	1,098	1,098	1,098
Balance	253	270	279	284	286	287
BRUSHY CREEK MUD						
Demand	4,366	4,693	4,659	4,639	4,635	4,634
Supply	4,308	4,595	3,739	3,211	2,871	2,786
Groundwater	680	615	223	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	3,628	3,980	3,516	3,211	2,871	2,786
SW Constrained Supply	3,628	3,980	3,516	3,211	2,871	2,786
Balance	(58)	(98)	(920)	(1,428)	(1,764)	(1,848)
CEDAR PARK (P)						
Demand	14,753	16,263	16,182	16,154	16,140	16,133
Contractual Demand	2,890	3,012	3,133	3,242	3,343	3,455
Supply	15,840	15,840	15,840	15,840	15,840	15,840
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	15,840	15,840	15,840	15,840	15,840	15,840
SW Constrained Supply	15,840	15,840	15,840	15,840	15,840	15,840
Balance	(1,803)	(3,435)	(3,475)	(3,556)	(3,643)	(3,748)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-72 Continued. WILLIAMSON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
CHISHOLM TRAIL SUD (P)						
Demand	4,412	5,471	6,818	8,280	9,948	11,678
Contractual Demand	158	192	237	286	343	402
Supply	2,456	2,456	2,456	2,456	2,456	2,456
Groundwater	246	246	246	246	246	246
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	5,303	5,134	5,401	6,248	7,411	8,778
SW Constrained Supply	2,210	2,210	2,210	2,210	2,210	2,210
Balance	(2,114)	(3,207)	(4,599)	(6,110)	(7,835)	(9,624)
WILLIAMSON COUNTY-OTHER						
Demand	13,633	16,952	20,213	20,331	25,368	30,129
Contractual Demand	3	4	5	6	7	8
Supply	5,663	6,694	6,816	7,095	7,485	7,894
Groundwater	1,805	1,805	1,805	1,805	1,805	1,805
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	4,168	5,197	5,317	5,580	5,966	6,369
SW Constrained Supply	3,858	4,889	5,011	5,290	5,680	6,089
Balance	(7,973)	(10,262)	(13,402)	(13,242)	(17,890)	(22,243)
FERN BLUFF MUD						
Demand	1,216	1,204	1,196	1,191	1,189	1,189
Supply	1,153	1,043	943	930	930	930
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,153	1,043	943	930	930	930
SW Constrained Supply	1,153	1,043	943	930	930	930
Balance	(63)	(161)	(253)	(261)	(259)	(259)
FLORENCE						
Demand	119	121	125	132	141	152
Supply	60	60	60	60	60	60
Groundwater	60	60	60	60	60	60
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	(59)	(61)	(65)	(72)	(81)	(92)
GEORGETOWN						
Demand	15,944	19,787	24,665	29,960	36,006	42,273
Contractual Demand	100	116	131	145	158	172
Supply	17,644	17,709	18,101	18,324	18,324	18,324
Groundwater	115	180	572	795	795	795
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	30,143	32,160	31,851	30,214	29,804	29,156
SW Constrained Supply	17,529	17,529	17,529	17,529	17,529	17,529
Balance	1,600	(2,194)	(6,695)	(11,781)	(17,840)	(24,121)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-72 Continued. WILLIAMSON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
GRANGER						
Demand	212	220	232	247	268	289
Supply	99	99	99	99	99	99
Groundwater	99	99	99	99	99	99
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	(113)	(121)	(133)	(148)	(169)	(190)
HUTTO						
Demand	3,767	5,189	6,992	8,937	11,144	13,428
Supply	1,434	1,434	1,434	1,434	1,434	1,434
Groundwater	490	490	490	490	490	490
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	944	944	944	944	944	944
SW Constrained Supply	944	--	--	--	--	--
Balance	(2,333)	(3,755)	(5,558)	(7,503)	(9,710)	(11,994)
JARRELL						
Demand	109	129	156	187	222	259
Supply	109	129	156	187	222	259
Groundwater	109	129	156	187	222	259
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	-	-	-	-	-	-
JARRELL-SCHWERTNER WSC (P)						
Demand	461	561	690	833	1,000	1,174
Contractual Demand	106	125	151	181	215	251
Supply	1,316	1,418	1,572	1,534	1,524	1,509
Groundwater	83	83	83	83	83	83
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1,233	1,335	1,489	1,451	1,441	1,426
SW Constrained Supply	1,233	1,335	1,489	1,451	1,441	1,426
Balance	749	732	731	520	309	84
JONAH WATER SUD						
Demand	1,830	2,239	2,768	3,350	4,023	4,722
Contractual Demand	758	758	758	758	758	758
Supply	2,743	2,731	2,707	2,583	2,552	2,503
Groundwater	304	304	304	304	304	304
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	2,439	2,427	2,404	2,279	2,248	2,199
SW Constrained Supply	2,439	2,427	2,404	2,279	2,248	2,199
Balance	155	(266)	(819)	(1,525)	(2,229)	(2,977)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-72 Continued. WILLIAMSON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
LEANDER (P)						
Demand	4,905	8,145	13,470	21,914	27,724	34,098
Supply	5,197	5,197	5,197	5,197	5,197	5,197
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	5,197	5,197	5,197	5,197	5,197	5,197
SW Constrained Supply	5,197	--	--	--	--	--
Balance	292	(2,948)	(8,273)	(16,717)	(22,527)	(28,901)
LIBERTY HILL						
Demand	158	192	237	286	343	402
Supply	214	248	293	342	399	458
Groundwater	56	56	56	56	56	56
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	758	792	837	886	943	1,002
SW Constrained Supply	158	192	237	286	343	402
Balance	56	56	56	56	56	56
MANVILLE WSC						
Demand	1,452	1,789	2,220	2,691	3,233	3,794
Contractual Demand	727	727	727	727	727	727
Supply	5,350	5,323	5,282	5,319	5,335	5,335
Groundwater	5,350	5,323	5,282	5,319	5,335	5,335
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	3,171	2,807	2,335	1,901	1,375	814
PFLUGERVILLE						
Demand	76	95	118	144	173	203
Supply	76	95	118	144	173	203
Groundwater	76	95	118	144	173	203
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	-	-	-	-	-
Balance	-	-	-	-	-	-
ROUND ROCK (P)						
Demand	24,148	29,808	37,049	44,943	53,991	63,377
Contractual Demand	4,558	4,942	5,430	6,350	7,522	8,739
Supply	26,852	26,852	26,852	26,852	26,852	26,852
Groundwater	573	573	573	573	573	573
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	28,986	28,865	28,629	27,378	27,064	26,569
SW Constrained Supply	26,279	26,279	26,279	26,279	26,279	26,279
Balance	(1,853)	(7,898)	(15,627)	(24,441)	(34,661)	(45,263)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-72 Continued. WILLIAMSON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
SOUTHWEST MILAM WSC (P)						
Demand	297	363	448	541	649	762
Supply	780	726	642	717	750	750
Groundwater	780	726	642	717	750	750
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	-	-	-	-	-	-
SW Constrained Supply	-	--	--	--	--	--
Balance	483	363	194	176	101	(12)
TAYLOR						
Demand	2,840	3,006	3,241	3,522	3,869	4,232
Contractual Demand	444	451	463	476	492	508
Supply	3,284	3,457	3,704	3,998	4,361	4,740
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	3,284	3,457	3,704	3,998	4,361	4,740
SW Constrained Supply	3,284	--	NC	NC	NC	NC
Balance	-	-	-	-	0	0
THORNDALE (P)						
Demand	1	1	1	1	1	1
Supply	1	1	1	1	1	1
Groundwater	1	1	1	1	1	1
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	1	1	1	1	1	1
SW Constrained Supply	-	-	-	-	-	-
Balance	0	0	0	0	0	0
THRALL						
Demand	89	95	105	116	130	145
Supply	89	95	105	116	130	145
Groundwater	6	6	6	6	6	6
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	83	89	99	110	124	139
SW Constrained Supply	83	89	99	110	124	139
Balance	-	-	-	-	-	-
WILLIAMSON-TRAVIS COUNTY MUD #1 (P)						
Demand	599	584	576	572	571	570
Supply	788	788	788	788	788	788
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	788	788	788	788	788	788
SW Constrained Supply	788	788	788	788	788	788
Balance	189	204	212	216	217	218

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

C-72 Continued. WILLIAMSON COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
WILLIAMSON COUNTY MUD #10						
Demand	996	1,243	1,556	1,892	2,274	2,670
Supply	935	1,062	1,204	1,403	1,687	1,982
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	935	1,062	1,204	1,403	1,687	1,982
SW Constrained Supply	935	--	--	--	--	--
Balance	(61)	(181)	(352)	(489)	(587)	(688)
WILLIAMSON COUNTY MUD #11						
Demand	577	719	900	1,095	1,315	1,544
Supply	542	616	707	862	1,037	1,218
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	542	616	707	862	1,037	1,218
SW Constrained Supply	542	616	707	862	1,037	1,218
Balance	(35)	(103)	(193)	(233)	(278)	(326)
WILLIAMSON COUNTY MUD #9						
Demand	834	1,034	1,290	1,566	1,882	2,210
Supply	797	906	1,027	1,247	1,500	1,762
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	797	906	1,027	1,247	1,500	1,762
SW Constrained Supply	797	906	1,027	1,247	1,500	1,762
Balance	(37)	(128)	(263)	(319)	(382)	(448)

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

11/30/2015
1:56 PM

Table C-73
YOUNG County
Population, Water Supply, and Water Demand Projections

Population Projection	Year 2020	2030	2040	2050	2060	2070
	15,966	16,915	17,598	18,317	19,019	19,697

	Supply and Demand by Type of Use	Year 2020 (acft)	2030 (acft)	2040 (acft)	2050 (acft)	2060 (acft)	2070 (acft)
Municipal	Municipal Demand	3,425	3,543	3,626	3,740	3,872	4,006
	Contractual Demand	658	660	664	667	675	684
	Municipal Existing Supply						
	Groundwater	564	564	574	574	574	574
	Surface water (Less Contractual Demand)[1]	5,780	5,609	5,440	5,272	5,105	4,938
	Total Existing Municipal Supply	6,344	6,173	6,014	5,846	5,679	5,512
	Municipal Balance	2,919	2,630	2,388	2,106	1,807	1,506
Industrial	Manufacturing Demand	279	289	300	316	331	347
	Manufacturing Existing Supply						
	Groundwater	370	370	380	380	380	380
	Surface water	74	70	69	69	68	67
	Total Manufacturing Supply	444	440	449	449	448	447
	Manufacturing Balance	165	151	149	133	117	100
	Steam-Electric Demand	420	429	435	445	460	475
	Steam-Electric Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water[2]	396	396	396	396	396	396
	Total Steam-Electric Supply	396	396	396	396	396	396
	Steam-Electric Balance	(24)	(33)	(39)	(49)	(64)	(79)
	Mining Demand	2,666	2,764	2,830	2,918	3,018	3,119
	Mining Existing Supply						
	Groundwater	194	194	194	194	194	194
	Surface water	5,250	5,082	4,914	4,746	4,578	4,410
	Total Mining Supply	5,444	5,276	5,108	4,940	4,772	4,604
	Mining Balance	2,778	2,512	2,278	2,022	1,754	1,485
Agriculture	Irrigation Demand	60	61	61	61	63	65
	Irrigation Existing Supply						
	Groundwater	0	0	0	0	0	0
	Surface water	60	61	61	61	63	65
	Total Irrigation Supply	60	61	61	61	63	65
	Irrigation Balance	0	0	0	0	0	0
	Livestock Demand	1,903	2,093	2,289	2,491	2,705	2,917
	Livestock Existing Supply						
	Groundwater	842	842	842	842	842	842
	Surface water	513	555	579	630	686	737
	Total Livestock Supply	1,355	1,397	1,421	1,472	1,528	1,579
	Livestock Balance	(548)	(696)	(868)	(1,019)	(1,177)	(1,338)
Total	Municipal & Industrial Demand	6,790	7,025	7,191	7,419	7,681	7,947
	Existing Municipal & Industrial Supply						
	Groundwater	564	564	574	574	574	574
	Surface water	11,501	11,158	10,820	10,484	10,148	9,812
	Total Municipal & Industrial Supply	12,065	11,722	11,394	11,058	10,722	10,386
	Municipal & Industrial Balance	5,275	4,697	4,203	3,639	3,041	2,439
	Agriculture Demand	1,963	2,154	2,350	2,552	2,768	2,982
	Existing Agricultural Supply						
	Groundwater	842	842	842	842	842	842
	Surface water	573	616	640	691	749	802
	Total Agriculture Supply	1,415	1,458	1,482	1,533	1,591	1,644
	Agriculture Balance	(548)	(696)	(868)	(1,019)	(1,177)	(1,338)
	Total Demand	8,753	9,179	9,541	9,971	10,449	10,929
	Total Supply						
	Groundwater	1,406	1,406	1,416	1,416	1,416	1,416
	Surface water	12,074	11,774	11,460	11,175	10,897	10,614
	Total Supply	13,480	13,180	12,876	12,590	12,312	12,029
	Total Balance	4,727	4,001	3,335	2,619	1,863	1,100

[1] Contractual demands are subtracted from the supplies available to municipal water user groups in order to not double-count demands and supplies available within a County.

C-74. YOUNG COUNTY
Brazos G Regional Water Planning Area
Municipal Water Demand & Supply By City/County
(acft)

City	2020	2030	2040	2050	2060	2070
YOUNG COUNTY-OTHER						
Demand	279	289	300	316	331	347
Contractual Demand	57	62	67	70	77	85
Supply	444	440	449	449	448	447
Groundwater	370	370	380	380	380	380
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	74	70	69	69	68	67
SW Constrained Supply	74	70	69	69	68	67
Balance	108	89	82	63	40	15
FORT BELKNAPP WSC (P)						
Demand	420	429	435	445	460	475
Supply	396	396	396	396	396	396
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	396	396	396	396	396	396
SW Constrained Supply	396	396	396	396	396	396
Balance	(24)	(33)	(39)	(49)	(64)	(79)
GRAHAM						
Demand	2,666	2,764	2,830	2,918	3,018	3,119
Contractual Demand	601	598	597	597	598	599
Supply	3,806	3,806	3,806	3,806	3,806	3,806
Groundwater	194	194	194	194	194	194
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	5,250	5,082	4,914	4,746	4,578	4,410
SW Constrained Supply	3,612	3,612	3,612	3,612	3,612	3,612
Balance	539	444	379	291	190	88
NEWCASTLE						
Demand	60	61	61	61	63	65
Supply	60	61	61	61	63	65
Groundwater	-	-	-	-	-	-
GW Constrained Supply	NC	NC	NC	NC	NC	NC
Surface water	60	61	61	61	63	65
SW Constrained Supply	60	61	61	61	63	65
Balance	-	-	-	-	-	-

(P) Indicates city is in multiple counties. Projections shown are for this county's portion only.
Dash represents a value of zero (0)
NC indicates the supply is "not constrained"

Appendix D
Water Rights-Permitted and Actual Use

[The information contained for this appendix has been submitted to TWDB in electronic format and can be found on the TWDB website and at www.brazosgwater.org.]

This page intentionally left blank

Appendix E
Detailed Description of Vegetative Regions and Biotic Provinces

[The information contained for this appendix has been submitted to TWDB in electronic format and can be found on the TWDB website and at www.brazosgwater.org.]

This page intentionally left blank

Appendix F
Detailed Information for Agricultural Resources

[The information contained for this appendix has been submitted to TWDB in electronic format and can be found on the TWDB website and at www.brazosgwater.org.]

This page intentionally left blank

Appendix G
Surface Water Supplies

[The information contained for this appendix has been submitted to TWDB in electronic format and can be found on the TWDB website and at www.brazosgwater.org.]

This page intentionally left blank

Appendix H
Economic Impacts of Not Meeting Needs

[The information contained for this appendix has been submitted to TWDB in electronic format and can be found on the TWDB website and at www.brazosgwater.org.]

This page intentionally left blank

Appendix I

Appendix I

Written Comments Received on the Initially Prepared Plan

This page intentionally left Blank

[Comments received from the Texas Water Development Board, Texas Parks and Wildlife, and the Brazos River Authority are included in the following hard copy appendix. All other comments received are included in the digital appendix.]

This page intentionally left Blank

Texas Water Development Board
P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

August 6, 2015

Mr. Wayne Wilson, Chair
Brazos Regional Water Planning Group
7026 East OSR
Bryan, Texas 77808

Mr. Trey Buzbee
Brazos River Authority
P.O. Box 7555
Waco, Texas 76714

Re: Texas Water Development Board Comments on the Brazos Regional Water Planning Group (Region G) Initially Prepared Plan, Contract No. 1148301318

Dear Mr. Wilson and Mr. Buzbee:

Texas Water Development Board (TWDB) staff completed a review of the Initially Prepared Plan (IPP) submitted by May 1, 2015 on behalf of the Region G Regional Water Planning Group. The attached comments follow this format:

- **Level 1:** Comments, questions, and online regional water planning database revisions that must be satisfactorily addressed in order to meet statutory, agency rule, and/or contract requirements; and,

- **Level 2:** Comments and suggestions for consideration that may improve the readability and overall understanding of the regional water plan.

The TWDB's statutory requirement for review of potential interregional conflicts under Title 31 Texas Administrative Code (TAC) §357.62 will not be completed until submittal and review of adopted regional water plans. However, as previously requested by our Executive Administrator, please inform TWDB in advance of your final plan if your planning group believes that an interregional conflict exists. Additionally, subsequent review will be performed as the planning group completes its data entry into the regional water planning database (DB17). If issues arise during our ongoing data review, they will be communicated promptly to the planning group to resolve.

Title 31 TAC§357.50(d) requires the regional water planning group to consider timely agency and public comment. Section 357.50(e) requires the final adopted plan include summaries of all timely written and oral comments received, along with a response explaining any resulting revisions or why changes are not warranted. Copies of TWDB's Level 1 and 2 written comments and the region's responses must be included in the final, adopted regional water plan. While the comments included in this letter represent TWDB's review to date, please anticipate the need to respond to additional comments regarding data integrity, including any water source overallocations, in the regional water planning database (DB17) once data entry is completed by the region.

Standard to all planning groups is the need to include certain content in the final regional water plans that was not yet available at the time that IPPs were prepared and submitted. In your final regional water plan, however please be sure to also incorporate the following:

a) Completed results from the regional planning group's infrastructure financing survey (IFR) for sponsors of recommended projects with capital costs *[31 TAC §357.44]*;
b) Completed results from the implementation survey *[31 TAC §357.45(a)]*;
c) The socioeconomic impact evaluation provided by TWDB at the request of the planning group *[31 TAC §357.33(c)]*;
d) Documentation that comments received on the IPP were considered in the development of the final plan *[31 TAC §357.50(d)]*;
e) Evidence, such as a certification, that the final, adopted regional water plan is complete and adopted by the planning group *[31 TAC §357.50(j)(1)]*; and,
f) The required DB17 reports, as made available by TWDB, in the executive summary or elsewhere in the plan as specified in the Contract *[31 TAC §357.50(e)(2)(B), Contract Scope of Work Task 4D(p), Contract Exhibit 'C', Table 2]*. Please ensure that the numerical values presented in the tables throughout the final, adopted regional water plan are consistent with the data provided in DB17. For the purpose of development of the 2017 State Water Plan, water management strategy and other data entered by the regional water group in DB17 (and as presented in the regional plan) shall take precedence over any conflicting data presented in the final regional water plan. *[Contract Exhibit 'C', Sections 12.1.3. and 12.2.2]*

The following items must accompany, separately, the submission of the final, adopted regional water plan:

- The prioritized list of all recommended projects in the regional water plan *[Texas Water Code 15.436(a), Contract Scope of Work Task 13]*; and,
- Any remaining hydrologic modeling files or GIS files that may not have been provided at the time of the submission of the IPP but that were used in developing the final plan. *[31 TAC §357.50(e)(2)(C), Contract Exhibit 'C', Section 12.2.1; Contract Scope of Work Task 3-III-13]*

Note that provision of certain content in an electronic-only form is permissible as follows: Internet links are permissible as a method for including model conservation and drought contingency plans within the final regional water plan; hydrologic modeling files may be submitted as electronic appendices, however all other regional water plan appendices should be incorporated in hard copy format within each plan. *[31 TAC §357.50(e)(2)(C), Contract Scope of Work Task 5e, Contract Exhibit 'C', Section 12.2.1]*

The following general requirements that apply to recommended water management strategies must be adhered to in all final regional water plans including:

- Regional water plans must not include any strategies or costs that are associated with simply maintaining existing water supplies or replacing existing infrastructure. Plans may include only infrastructure costs that are associated with volumetric increases of treated water supplies delivered to water user groups or that result in more efficient use of existing supplies *[31 TAC §357.10(28), §357.34(d)(3)(A), Contract Exhibit 'C", Section 5.1.2.2, Section 5.1.2.3]*; and,
- Regional water plans must not include any retail distribution-level infrastructure costs (other than those costs related to conservation strategies such as water loss reduction). *[31 TAC §357.10(28), §357.34(d)(3)(A), Contract Exhibit 'C", Section 5.1.2.3]*

To facilitate efficient and timely completion, and Board approval, of your final regional water plan, please provide your TWDB project manager with early drafts of your responses to these IPP comments for preliminary review and feedback.

If you have any questions regarding these comments or would like to discuss your approach to addressing any of these comments, please do not hesitate to contact Lann Bookout at (512) 936-9439. TWDB staff will be available to assist you in any way possible to ensure successful completion of your final regional water plan.

Sincerely,

Jeff Walker
Deputy Executive Administrator
Water Supply and Infrastructure

Attachments

cc w/att: Mr. David Dunn, HDR, Inc.

TWDB Comments on the Initially Prepared 2016 Brazos (Region G) Regional Water Plan

Level 1: Comments and questions must be satisfactorily addressed in order to meet statutory, agency rule, and/or contract requirements.

1. Tables 2-5 through 2-10 present water user group (WUG) demands by category of use, but do not include demand projections over the planning horizon for wholesale water providers (WWP) by water use category and by county. Please include WWP demands by category of use and county in the final, adopted regional water plan. *[31 Texas Administrative Code (TAC) §357.31(b)]*

2. Page 3-51, Table 3.4-1 and Appendix B, page B-13: The Dockum Aquifer table of availability in Appendix B presents water volumes that differ from Table 3.4-1. Please reconcile Table 3.4-1 for the Dockum Aquifer in Nolan County with Appendix B information in the final, adopted regional water plan. *[31 TAC §357.32(d)]*

3. Volume I, Section 3.2.4 and Volume II, Section 1.2: Section 3.2.4 states that water availability was determined as the minimum annual supply for run-of-river rights; however, in Vol. II, Section 1.2, the methodology states the use of a 75/75 criteria for water right availability. Water availability for water management strategies must represent the anticipated diversion volume under drought of record conditions. Please confirm annual run-of-river availability and whether it is anticipated to be available under drought of record conditions. If necessary, please adjust strategy yields to reflect the volume of the run-of-river supplies that would be available under drought of record conditions in the final, adopted regional water plan. *[31 TAC §357.34(d)(3)(A); Contract Exhibit 'C', Section 3.4]*

4. Volume I, Table 5.39-2: The Summary of Recommended Strategies includes "Out of Region." It is not clear what this strategy rollup represents and an associated technical memorandum in Volume II could not be identified. Please clarify the "Out of Region" water management strategy(s) in the final, adopted regional water plan. *[Contract Exhibit 'C', Section 12.1.2]*

5. Please describe how publicly available plans of major agricultural, municipal, manufacturing and commercial water users were considered in the final, adopted regional water plan. *[31 TAC §357.22(a)(4)]*

6. Please provide a statement regarding any water availability requirements promulgated by a county commissioners court pursuant to Texas Water Code §35.019, which in Region G applies to the North - Central Texas Trinity and Woodbine Aquifers and Central Texas - Trinity Priority Groundwater Management Areas. *[31 TAC §357.22(a)(6)]*

7. The plan does not include a subchapter in Chapter 5 consolidating the planning group's recommendations regarding water conservation and model water conservation plans. Please consolidate this information in the final, adopted regional water plan. *[31 TAC §357.34(g)]*

8. The plan does not appear to document the planning group's process for identifying potentially feasible water management strategies. Please include this documentation in the final, adopted regional water plan. *[31 TAC §357.12(b) and §357.34(b)]*

9. The plan in some instances, does not appear to include a quantitative reporting of impacts to agricultural resources. For example, Volume II strategy evaluation 4.7 identifies crops present in the reservoir and pipeline footprint, but does not appear to include quantified impacts to agricultural resources. Other strategy evaluations (e.g., 4.1, 4.2) do not appear to quantify impacts, including no impacts. Please include quantitative reporting of impacts, including if negligble, to agricultural resources in the final, adopted regional water plan. *[31 TAC §357.34 (d)(3)(C)]*

10. Pages 5.10-4, 5.33-3: The plan does not appear to consider conservation as a potentially feasible strategy for all identified water supply needs. For example, West Brazos WSC and Steamboat Mountain WSC have identified water needs but no conservation strategy is summarized as potentially feasible. Please include documentation that conservation water management strategies were considered to meet identified needs and, if not recommended, please document the reason in the final, adopted regional water plan. *[31 TAC §357.34(f)(2)(B)]*

11. Tables 5.39-2 and 5.39-6: The plan appears to include the Lake Granger ASR recommended strategy also in the summary of alternative strategies. Both tables include identical costs and strategy volumes and the technical evaluations in Volume II do not describe an alternative configuration. Please reconile in the final, adopted regional water plan. *[31 TAC §357.34(e)]*

12. The plan does not appear to include model water conservation plans. Please include in the final, adopted regional water plan for example, as an online link. *[31 TAC §357.34(g)]*

13. The technical evaluations of the water management strategies do not appear to estimate water losses from the associated strategies. Please include an estimate of water losses in the final, adopted regional water plan, for example as an estimated percent loss. *[31 TAC §357.34(d)(3)(A); Contract Exhibit 'C', Section 5.1.1]*

14. Volume II, Page 3.5-41: The City of Cleburne reuse strategy appears to include retail distribution-level infrastructure in the strategy evaluation (i.e., 6-inch spur line to the sports complex). Please remove all distribution-level infrastructures and associated costs from the plan and confirm water management evaluations throughout the plan. *[31 TAC §357.34(d)(3)(A), Conforms with Contract Exhibit 'C', Section 5.1.2.3]*

15. Volume II, Strategy Evaluation 7.2: The plan does not appear to include consideration given to the highest practicable level of water conservation achievable by water users as relates to the interbasin transfer water management strategy Brushy Creek Regional Utility Authority System. Please include this documentation in the final, adopted regional water plan. *[31 TAC §357.34(f)(2)(C), Contract Exhibit 'C', Section 5.1]*

16. Volume II, Strategy Evaluation 7.11: The plan does not appear to report system gain as a separate permitted amount from the system in the analysis of the "BRA System Operation of Reservoirs". Please present the methodology used and the system gain volume separate from the system volume in the final, adopted regional water plan. *[Contract Exhibit 'C', Section 3.5]*

Level 2: Comments and suggestions for consideration that may improve the readability and overall understanding of the regional water plan.

1. In the Volume II, Table of Contents, the table heading number 3 for "Reuse" appears to have been omitted. Please consider revising in the final, adopted regional water plan.
2. Tables 5.39-2 and 5.39-6: Recommend clarifying that the numbers listed in the column "WUG/WWP using Strategy" are the number of entites using the strategy in the final, adopted regional water plan.
3. Tables 5.39-2 and 5.39-6: The "Supply Developed" for the "Reuse" alternative strategy appears to only account for the City of Bryan and does not account for WMARSS reuse (WMARSS is indicated as an alternative strategy for Cities of Mart, Riesel, and Waco). Suggest confirming supply volumes in the final, adopted regional water plan.
4. Table 5.39-6: It appears that the following Alternative Strategies are missing from Table 5.39-6: Voluntary Transfers such as Lake Whitney diversion to Cleburne (City of Cleburne), supply from City of Caldwell (Burleson Co. Manufacturing), supply for City of Gatesville (Coryell Co. – Other), supply from City of Granbury (City of Tolar), supply from Acton MUD (Hood Co. – Other), and supply from Somervell Co. water supply project (City of Glen Rose); Groundwater development of Edwards BFZ (Bell Co. Manufacturing); and WMARSS – Reuse (Cities of Mart, Riesel, and Waco). Please consider adding these alternative strategies to the table in the final, adopted regional water plan.

TEXAS PARKS & WILDLIFE

Life's better outside.®

August 14, 2015

Mr. Trey Buzbee, Administrative Agent for
Region G Regional Water Planning Group
c/o Brazos River Authority
4600 Cobbs Drive
Waco, Texas 76710

Re: 2016 Brazos G Initially Prepared Regional Water Plan

Dear Mr. Buzbee:

Thank you for seeking review and comment from the Texas Parks and Wildlife Department ("TPWD") on the 2016 Initially Prepared Regional Water Plan for Brazos G (IPP). As you know, water impacts every aspect of TPWD's mission to manage and conserve the natural and cultural resources of Texas. As the agency charged with primary responsibility for protecting the state's fish and wildlife resources, TPWD is positioned to provide technical assistance during the water planning process. Although TPWD has limited regulatory authority over the use of state waters, TPWD is committed to working with stakeholders and others to provide science-based information during the water planning process intended to avoid or minimize impacts to state fish and wildlife resources.

TPWD understands that regional water planning groups are guided by 31 TAC §357 when preparing regional water plans. These water planning rules spell out requirements related to natural resource and environmental protection. Accordingly, TPWD staff reviewed the IPP with a focus on the following questions:

- Does the IPP include a quantitative reporting of environmental factors including the effects on environmental water needs and habitat?
- Does the IPP include a description of natural resources and threats to natural resources due to water quantity or quality problems?
- Does the IPP discuss how these threats will be addressed?
- Does the IPP describe how it is consistent with long-term protection of natural resources?
- Does the IPP include water conservation as a water management strategy?
- Does the IPP include Drought Contingency Plans?
- Does the IPP recommend any stream segments be nominated as ecologically unique?
- If the IPP includes strategies identified in the 2010 regional water plan, does it address concerns raised by TPWD in connection with the 2010 Water Plan.

4200 SMITH SCHOOL ROAD
AUSTIN, TEXAS 78744-3291
512.389.4800

www.tpwd.texas.gov

The Brazos G planning region encompasses 37 counties making it the largest water planning region in the state. The population of Brazos G was nearly 2 million in 2010 and is expected to more than double to over 4 million by 2070. Regional water use, which was about 850,000 acre-feet in 2010, is expected to increase by 74 percent to 1.48 million acre-feet by 2070. Approximately 69 percent of the current water use in Region G is for municipal and irrigation supply. In addition, about 51 percent of the water use in Region G in 2010 was supplied by groundwater. To address future water demands, the IPP recommends new supplies totaling nearly 400,000 acre-feet.

According to the IPP, water conservation in the 2016 Plan is much more aggressively considered than in the 2011 Plan. Total municipal conservation savings in the 2060 decade in the 2011 Plan was 21,366 acre-feet/year versus 73,835 acre-feet/yr in the 2016 Plan. There appears to be an error on page ES-16 stating municipal conservation savings in the 2016 plan are 21,366 acre-feet/year. TPWD staff applauds increased emphasis on conservation and with it, the projected reduction in average gallons per capita per day (gpcd) from 146 to 130, lower than the statewide goal of 140.

In addition to conservation and reuse, a number of new water management strategies (WMS) are proposed. New on-channel reservoirs include Brushy Creek, Cedar Ridge, Lake Creek, South Bend, and Throckmorton. New off-channel reservoirs include Coryell, City of Groesbeck, Hamilton County, Palo Pinto, Little River, Main Stem, Meridian, and Peach Creek. Existing Lake Palo Pinto is proposed to be enlarged with the addition of Turkey Peak Dam. TPWD is pleased that the proposed Millican Panther Creek Reservoir is no longer included as a recommended WMS in the Brazos G IPP.

The System Operation of Brazos River Authority (BRA) Reservoirs is proposed as a WMS. TPWD collaborated with the BRA to ensure impacts to environmental flows were minimized. Five new aquifer storage and recovery (ASR) projects are also proposed as well as a number of brackish groundwater development projects. From the perspective of environmental impacts, ASR projects are generally preferred over surface reservoirs since habitat impacts can be minimized. Impacts from brackish groundwater development can be minimized by disposing of brine concentrate via deep well injection.

The upper basin in Brazos G may be experiencing a new drought of record. Drought contingency plans are discussed in Chapter 7 but are not included as recommended water management strategies. However, the IPP does suggest that water user groups without drought contingency plans review plans from other districts and create a plan appropriate for their area. TPWD supports each Water User Group in having a drought contingency plan.

Chapter 1 describes the natural resources in Brazos G and the threats to those resources. Threats to natural resources include land use disturbance, reduced stream flows from drought and water diversions, and reduced lake levels. Water quality concerns discussed include those resulting from improper wastewater disposal, high-density agricultural activities, and high concentrations of chlorides. High nutrient and bacteria issues also occur in the upper and lower Central Basin in creeks and reservoirs. The IPP notes that Aquilla Creek and Aquilla Lake have been placed on the State's 303 (d) list for water quality impairments due to high concentrations of atrazine.

According to the IPP, there are few major springs in Brazos G. The three largest springs are Salado Springs, Berry Springs and San Gabriel Springs. TWDB planning rules now require that groundwater supplies not exceed the Modeled Available Groundwater (MAG) values that were determined to meet the desired future conditions (DFCs) of the groundwater source. No water management strategies are recommended that would increase groundwater withdrawal beyond the MAGs established by the county and aquifer. Projected GW conditions are expected to be within the DFCs. DFCs designed to protect the flow of Salado Springs have been adopted. Ultimately TPWD would like to see DFCs adopted to protect additional springs in other areas.

Zebra mussels and aquatic invasive species are not mentioned in the IPP. Please include updated information to help clarify the present status of zebra mussels in Texas. The present known distribution (as of July 27, 2015) of zebra mussels in Texas reservoirs includes two reservoirs in Brazos G: Lake Waco and Belton Reservoir. Other reservoirs in Texas with known zebra mussels include Texoma, Lake Ray Roberts, Lewisville, Bridgeport, and Lavon. Zebra mussels have also been found on isolated occasions in the Red River below Texoma, the Elm Fork of the Trinity River below Lake Ray Roberts, Sister Grove Creek above Lake Lavon, and a boat with zebra mussels attached was found in Lake Ray Hubbard. Transporting zebra mussels is illegal. To prevent the transmission of invasive species TPWD recommends avoiding transport of water from basins where these species are known to occur. If this is unavoidable these transfers of water should be directly to water treatment plants.

According to the IPP, new reservoirs (Lake Creek Reservoir, Cedar Ridge Reservoir, Throckmorton Reservoir, Turkey Peak Reservoir, Coryell County Off- Channel Reservoir, City of Groesbeck Off-Channel, Little River Off-Channel Reservoir, and Brushy Creek Reservoir) will inundate more than 17,400 acres, reducing wildlife habitat including bottomland hardwoods forest. TPWD has concerns about reservoirs impacts to fish and wildlife, especially main-stem reservoirs like Cedar Ridge Reservoir. The proposed Cedar Ridge Reservoir in Shackelford County on the Clear Fork of the Brazos River would inundate 6,635 surface acres at the conservation pool elevation. The IPP notes the importance of flow variability to the instream biological community as well as the riparian community. Even though the project was evaluated using environmental flow standards adopted by TCEQ, streamflow variability downstream will be altered substantially and median monthly flows reduced significantly (Figure 4.2-4). The reservoir could also potentially affect up to 27 threatened, endangered, and rare species, including the recently listed federally endangered Smalleye Shiner *Notropis buccula* and Sharpnose Shiner *Notropis oxyrhynchus*.

If constructed, Cedar Ridge Reservoir would impound fresh water from the Clear Fork of the Brazos, reducing fresh water inflow into Possum Kingdom. Possum Kingdom presently experiences issues arising from golden algae. Scientific evidence demonstrates a link between increasing levels of salinity and toxic blooms of golden algae. The Clear Fork of the Brazos contains lower levels of dissolved salts and minerals than the Salt Fork and the Double Mountain Fork. Without the current flows from the Clear Fork, TPWD expects concentrations of dissolved salts and minerals in Possum Kingdom and releases from Possum Kingdom to increase. If Cedar Ridge is constructed, it would also appear that lake levels at Possum Kingdom will experience greater fluctuations.

TPWD staff recognizes the water supply constraints caused by natural salt brine springs. These water sources contribute to environmental conditions in the upper Brazos drainages that support a unique prairie stream ecosystem. Alterations in hydrologic and water quality conditions due to reservoir construction and operation, water diversions, control of brine sources, and consequent effects may disrupt the dynamics of the unique ecosystem and render habitat unsuitable for species adapted to prairie streams, including pupfish, killifish and minnows. Once known from throughout the Brazos River and its major tributaries, two prairie stream minnows, Smalleye Shiner *Notropis buccula* and Sharpnose Shiner *Notropis oxyrhynchus,* are now largely restricted to the drainages of the upper Brazos River (upstream of Lake Possum Kingdom) and have recently been listed as endangered by the U.S. Fish and Wildlife Service.

The IPP does not recommend any stream segments be nominated as ecologically unique. No explanation is provided for the lack of recommendations. TPWD continues to see importance in recommending and designating significant stream segments and will support Brazos G in this regard if requested in the next planning cycle.

We appreciate the opportunity to provide these comments. While TPWD values and appreciates the need to meet future water supply demands, we must do so in a thoughtful and sound manner that ensures the ecological health of our state's aquatic and natural resources. If you have any questions, or if we can be of any assistance, please feel to contact Cindy Loeffler at 512-389-8715. Thank you.

Sincerely,

Ross Melinchuk
Deputy Executive Director, Natural Resources

RM:CL:ms

cc: Craig Bonds, Division Director, Inland Fisheries Division, TPWD
Clayton Wolf, Division Director, Wildlife Division, TPWD
Jennifer Bronson-Warren, Water Resources Branch, Coastal Fisheries Division, TPWD

Brazos River Authority

August 21, 2015

Mr. Wayne Wilson
Chair
Brazos G Regional Water Planning Group
P.O. Box 7555
Waco, Texas 76714

RE: Brazos River Authority Comments on 2016 Initially Prepared Brazos G Regional Water Plan

Dear Chair Wilson:

The Brazos River Authority (BRA) appreciates the efforts of the Brazos G Regional Water Planning Group (Brazos G), the Texas Water Development Board (TWDB), and the many others that have contributed their time and resources to develop the 2016 Initially Prepared Brazos G Regional Water Plan (2016 IPP) and the opportunity to provide comments on the 2016 IPP. I also want to thank you for your leadership and commitment as Chair of Brazos G and the effort you and the other voting members devoted to this planning process.

As you know, the BRA is committed to working through the regional water planning process with our customers and other Brazos River basin stakeholders to address the challenges of meeting future water needs in the Brazos G region. The Plan that has been developed will provide the framework for meeting those needs over the next 50 years.

We have reviewed the 2016 IPP and offer the attached suggestions, comments, and questions (Attachment A) for consideration in finalizing the 2016 Brazos G Regional Water Plan.

In addition to the attached comments, the BRA would also like to emphasize its position on several major points and assumptions that are contained in the 2016 IPP. These include subordination of BRA supplies, BRA's System Operation Permit, and the proposed Little River Off-Channel Reservoir (LROCR) water management strategy.

Subordination

Brazos G's consultant, HDR, Inc., has assumed that BRA can subordinate its water supplies for certain upstream reservoir projects recommended in the 2016 IPP. In some cases, the feasibility of these water management strategies is dependent upon a subordination agreement with BRA.

The BRA wants to make Brazos G and HDR, Inc. aware that all of BRA's existing water supplies are fully contracted, so subordination agreements for these reservoir projects may not be possible as the water is already committed to BRA long-term water supply customers. The BRA requests that Brazos G and HDR, Inc. include a caveat in every water management strategy that assumes a subordination agreement with BRA that clearly states subordination may not be possible.

4600 Cobbs Drive • P.O. Box 7555 • Waco, Texas 76714-7555
254-761-3100 • FAX 254-761-3215

System Operation Permit

There are frequent references that subordination for some recommended water management strategies will be possible upon issuance of BRA's System Operation Permit. It is possible that this may be the case in some circumstances, but it is not a certainty and will have to be further evaluated on a case-by-case basis. BRA does not want sponsors of other recommended water management strategies to assume that a subordination agreement with BRA is "automatic." The System Operation Permit may offer no additional solution to subordinations.

Additionally, it appears that the volume of water resulting from use of the BRA System Operation Permit as a recommended water management strategy exceeds the amount discussed by BRA and HDR, Inc. earlier in the planning cycle. BRA believes that the total amount of water assumed to be available from the System Operation Permit as a recommended water management strategy should not significantly exceed the volume contained in the 2011 Plan until effects of the recent drought are evaluated. We strongly recommend that HDR, Inc. revisit the use of BRA's System Operation Permit as a recommended water management strategy to address this concern.

Little River Off-Channel Reservoir

The BRA is identified as the default sponsor for the LROCR because it is the major wholesale water supplier for much of the Brazos G region. Since the project's inception, there has been significant local opposition to the project.

Later this year, Brazos G will decide whether to remove the project or leave it in the final 2016 Brazos G Regional Water Plan as a recommended water management strategy. If Brazos G opts to leave the LROCR project in the 2016 plan, the BRA has no objections to being listed as the sponsor for planning purposes. However, I want to clarify that the BRA's Board of Directors has taken no action directing BRA staff to implement this reservoir project.

Thank you again for the opportunity to provide comments. The BRA looks forward to completing the 2016 Brazos G Regional Water Plan and continued participation in the regional water planning process. Please contact my office if you have any questions.

Sincerely,

Phil Ford

Phil Ford
General Manager/CEO

PF:kld
Attachment

Attachment A

Brazos River Authority Comments
2016 Brazos G IPP (Dated May 2015)

BRA has identified two potentially significant issues within the 2016 Brazos G IPP that are associated with BRA's role as a wholesale raw water provider.

1. Strategies that involve subordination of BRA's existing water rights, and

2. Allocation of supply under the System Operation Permit.

<u>Strategies that involve subordination of BRA's existing water rights</u>

A number of strategies within the IPP either assume subordination of BRA's water rights and/or state that a subordination agreement from BRA may be needed if a certain strategy is implemented. A list of instances where BRA subordination is referenced within the IPP is provided below, but this may not be an exhaustive list.

BRA's existing water supply system is fully contracted, so new subordination agreements with entities may not be possible due to the supply already being committed to long-term water customers. The BRA requests that Brazos G and HDR, Inc. include a caveat in every water management strategy that assumes a subordination agreement with BRA that clearly states subordination may not be possible.

<u>Comments and locations within the IPP that are associated with general subordination of BRA water rights:</u>

a. Volume II, Page 4.3-1: Coryell County Off-Channel Reservoir is a project whereby a subordination agreement at Lake Belton must be implemented in order for the project to be viable.

b. Volume II, Pg. 4.4-4, Third paragraph: Suggest including additional information that states that the diversion amounts from the Navasota River into the off-channel reservoir will not exceed the original water right for the City. Any additional water diverted above the prior authorization could require subordination of BRA's water rights or a contract with the BRA for that volume of water, provided that BRA has water in that location available.

c. Volume II, Page 4.5-1: First paragraph discusses the need for BRA subordination at Lake Belton.

d. Volume II, Page 4.5-3, First paragraph: This paragraph discusses BRA subordination of Lake Belton water rights.

e. Volume II, Page 4.10-1, Section 4.10.1, Second paragraph: The discussion states that a subordination agreement with Possum Kingdom Reservoir would allow for these inflows to be impounded by Lake Creek Reservoir and it goes on to state that "*Any subordination agreement with the BRA is dependent on the BRA being able to successfully obtain the System Operation permit (See Section 7.12), currently pending at the Texas Commission on Environmental Quality. A subordination agreement would have to be negotiated and acquired for this strategy to be implemented as presented in this section.*"

f. Volume II, Page 4.10-4, First paragraph: This paragraph discusses subordination in the context of the yield impact that the Lake Creek Reservoir project has on Possum Kingdom Reservoir. The second sentence states "*....the Possum Kingdom subordination (subject to BRA obtaining the System Operations permit) and the Brazos River diversions.*" The second to the last sentence in this paragraph again ties any subordination agreement to the System Operation permit.

g. Volume II, Page 4.10-16: First sentence, states "*The project may also have an impact on the firm yield of Possum Kingdom, which may require mitigation with the Brazos River Authority in terms of a water supply contract in the amount of the firm yield impact.*"

h. Volume II, Page 4.14-18, Section 4.14.5 Implementation Issues: Second paragraph states, "*The project may also have an impact on the firm yield of Navasota River, which may require mitigation with the Brazos River Authority in terms of a water supply contract in the amount of the firm yield impact.*"

<u>Subordination dependent upon BRA obtaining the System Operation Permit</u>

Additionally, during the review of the IPP it was observed that numerous locations within the plan referenced subordination of BRA water rights and cited a dependency of the subordination on the BRA obtaining the System Operation Permit. A list of instances that reference subordination and the dependency of BRA obtaining the System Operation Permit can be found below. Again, it should be noted that this may not be an exhaustive list of each occurrence.

Obtaining the System Operation Permit does not automatically guarantee that a subordination agreement will be possible. There are a number of factors that would need to be more fully evaluated, and in many cases, the System Operation Permit may offer no additional solution to subordinations.

Comments and locations within the IPP concerning subordination agreements dependent upon BRA obtaining the System Operation Permit:

a. Volume I, Page 5.14-1, under City of Haskell's water supply plan and cost source for Lake Creek Reservoir: Bullet states that the *project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operation permit.*

b. Volume I, Page 5.14-2, under City of Haskell's water supply plan and cost source for Millers Creek Reservoir Augmentation strategy: Bullet states that the *project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operation permit.*

c. Volume I, Page 5.14-3, under City of Rule's water supply plan under Lake Creek Reservoir and Millers Creek Reservoir Augmentation strategy by NCTMWA: Bullet states that the *project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operation permit.*

d. Volume I, Page 5.14-4, Haskell County-Other: Under Millers Creek Reservoir Augmentation strategy by NCTMWA: Bullet states that the *project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operation permit.*

e. Volume I, Page 5.20-2, first bullet at top of page: Bullet states that the *project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operation permit.*

f. Volume I, Page 5.23-3, Groesbeck Off-Channel Reservoir – bullet immediately beneath cost source: Bullet states that the project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operation permit.

g. Volume I, Page 5.32-2: *....Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit.*

h. Volume I, Page 5.34-2: *....Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit.*

i. Volume I, Page 5.38-16: ....*Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit.*

j. Volume I, Page 5.38-29, bullet c, Coryell County Off-Channel Reservoir: Bullet states....*Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit.*

k. Volume II, Page 4.4-16 – 4.4-17: The sentence reads: *Note that any subordination agreement would need to be negotiated with BRA and is dependent on the BRA successfully obtaining the System Operations permit from the TCEQ. Compensation could be required to BRA as part of the subordination agreement.*

l. Volume II, Page 4.10-1, Section 4.10.1, Second paragraph: The discussion states that a subordination agreement with Possum Kingdom Reservoir would allow for these inflows to be impounded by Lake Creek Reservoir and it goes on to state that *Any subordination agreement with the BRA is dependent on the BRA being able to successfully obtain the System Operation permit (See Section 7.12), currently pending at the Texas Commission on Environmental Quality. A subordination agreement would have to be negotiated and acquired for this strategy to be implemented as presented in this section.*

m. Volume II, Page 4.10-4, First paragraph: This paragraph discusses subordination in the context of the yield impact that the Lake Creek Reservoir project has on Possum Kingdom Reservoir. The second sentence states ....*the Possum Kingdom subordination (subject to BRA obtaining the System Operations permit) and the Brazos River diversions.* The second to the last sentence in this paragraph again ties any subordination agreement to the System Operation permit.

n. Volume II, Page 4.10-14, last sentence in paragraph: Another sentence that states that a subordination agreement is dependent on the BRA successfully obtaining the System Operations permit from TCEQ.

o. Volume II, Page 4.10-16, last bullet point under the State and Federal Permits may require the following studies and plans: The bullet states *Coordination with BRA on any potential subordination agreement, subject to availability under the System Operations permit.*

p. Volume II, Page 4.12-1, Section 4.12.2, Second paragraph: Discusses subordination of Possum Kingdom Reservoir and the dependency of subordination with obtaining the System Operation permit.

q. Volume II, Page 4.12-11, Section 4.12.4: Another area discussing subordination and the System Operation permit.

r. Volume II, Page 4.12-13, Section 4.12.5: Last bullet, under *State and Federal Permits may require the following studies and plans*, discusses subordination subject to availability under the System Operation permit.

s. Volume II, Page 7.5-5, Last paragraph: This paragraph discusses subordination for the yield impact on Possum Kingdom Reservoir and the dependency of the subordination on the BRA being able to successfully obtain the System Operation permit.

t. Volume II, Page 7.5-12, First paragraph: Additional discussion regarding subordination and the dependency of the subordination on the BRA being able to successfully obtain the System Operation permit.

u. Volume II, Page 7.5-13 under Engineering and Costing: Additional discussion on subordination and the dependency of the subordination on the BRA being able to successfully obtain the System Operation permit.

v. Volume II, Page 7.5-15 under State and Federal Permitting Requirements: last bullet discusses subordination and the dependency of the subordination on the BRA being able to successfully obtain the System Operation permit.

<u>System Operation Permit Water Supply Allocations</u>

It appears that the BRA System Operation Permit is a recommended water management strategy for various water user groups totaling 166,952 acft/yr. This value includes the System Operation Permit supply recommended in both the Brazos G and Region H planning areas.

In a meeting between BRA and consultants for Brazos G and Region H it was discussed that the new supply from the System Operation Permit strategy be limited to roughly what was included in the previous 2011 regional water plans.

It was further explained that the reason for keeping the allocations consistent with the previous plans is associated with possible decreases in water availability under System Operations due to the recent drought. The previous plans included 25,350 acft/yr of supply for entities in Region H and 84,899 acft/yr of supply for entities in Brazos G. This sums to 110,249 acft/yr of total supply from System Operations. The supply allocated to System Operations in the 2016

Brazos G IPP appears to be almost 57,000 acft/yr more than the 2011 Brazos G Plan.

BRA plans to initiate a hydrologic analysis that will evaluate the most recent drought and study the impact of the drought on the BRA System, but the results of this analysis will not be available in time for inclusion in the 2016 regional plans.

Therefore, BRA recommends that the Brazos G consultant revisit the use of BRA's System Operation Permit as a recommended water management strategy and limit the new supply to a volume closer to the 84,899 acft/yr that is contained in the 2011 Brazos G Plan.

Volume I

Executive Summary

a. Page ES-2: Correct formatting on last bullet point.
b. Page ES-4: Update name of LCRA and TDA non-voting representatives.
c. Page ES-15, last paragraph, last sentence: This sentence notes Appendix M as a detailed listing of water management strategies. Appendix M contains Water Availability Modeling Files not the detailed listing of water management strategies.

1. Region Description

a. Page 1-4: Remove "Error..." statement from paragraph.
b. Page 1-4: Remove "Error..." statement from voting member table.
c. Page 1-5: Update name of LCRA and TDA non-voting representatives.
d. Page 1-60: First bullet point, update font style of "is" in sentence.
e. Page 1-60: 2001 Plan new reservoir bullet list; are colons (:) needed after each bullet point?
f. Formatting error found in Title heading of Table 1 on page 1-4.

2. Demands

a. Page 2-40: Title for Section 2.3.4 seems inconsistent with other titles and the first paragraph under 2.3.4 is repeated under 2.3.5.
b. Section 2.3.4, Page 2-40: The title of this section appears to be a sentence from the paragraph above (Section 2.3.3). The table of contents also needs to be corrected to include the correct title of this section. It appears that this entire section needs to be deleted. Recommend removing the text that begins with the sentence "The steam-electric generation process uses water in boilers and for cooling." And goes to just before the Table 2-6 begins. This paragraph repeats in the appropriate place just below this table in Section 2.3.5.
c. In Table 2-7 on page 2-43: Historical and Projected Steam-Electric Water Demand in the Brazos G Area, it appears that the projected steam-electric

water demand for Somervell County in 2020 was inadvertently copied left into the historical 2010 column. The historical 2010 steam-electric water use for Somervell County should be on the order of 40,000-50,000 acft.

3. Supplies

a. Page 3-16 formatting: Table 3.1-3. Move “Aquilla Water Supply” to top of table on page 3-17.
b. Page 3-17 formatting: Table 3.1-3. Move “Central Texas WSC” to top of table on page 3-18.
c. Page 3-32: First paragraph section 3.2.4, “Appendix G” is highlighted.
d. Page 3-56: Formatting of reference to Figure 3.4-6 in second sentence of first paragraph.
e. Page 3-57: Formatting of first paragraph, section 3.4.4.
f. Page 3-11, Table 3.1-1. Major Reservoirs of the Brazos River Basin. Priority date for Lake Abilene is listed in the future (1/23/2018).
g. Table 3.1-3 in the BRA (main stem) section: Footnote 1 is incorrectly noted with a superscript indicator in the table by the City of Lubbock. A superscript indicator for footnote 2 in the table was not found. The superscript for footnote 3 is difficult to read, placement and font sizing may need to be adjusted.
h. Table 3.2-2.: Footnote number 3 concerning Lake Davis does not have a superscript indicator in the table next to the text that this references.
i. Table 3.5-1. The superscript indicator for footnote No. 2 in the table is difficult to read as it appears to be cut off by the formatting of the table borders.

4. Identification of Needs

a. Section 4.3.1 Brazos River Authority, Page 4-13, Second paragraph, second sentence: This sentence needs to be clarified further. Suggest including the following text at the end of this sentence. *.....all of these contracts are long term and considered perpetual through 2070* ***for regional water planning purposes. However, in reality, the BRA will consider contract renewals on a case by case basis as contracts expire.***
b. Page 4-15, Table 4.3-1. Projected Demands, Supplies and Balance for BRA. Regarding the comment that the shortages are largely overstated because it includes some irrigation and mining demands that will go unmet. Suggest specifying, possibly in a footnote in this table, how much irrigation/mining demands will go unmet and where these demands are located.
c. Page 4-36, Table 4.3-22. Footnote 2 doesn’t have a superscript indicator in the table.

5. County Plans

a. Page 5.1-7. The last sentence under the description of supply for Fort Hood refers to Table 5-1.1. The table referenced should be Table 5.1-7.
b. Page 5.1-10. First sentence under the Water Supply Plan references City of Lorena instead of City of Killeen.
c. Table 5.1-15. Recommended Plan Costs by Decade for Bell County – Steam Electric. Data appears to be missing from portions of this table.
d. Table 5.1-16. Recommended Plan Costs by Decade for Bell County – Mining. Same comment as comment 4 above.

e. Page 5.24-11, Section 5.24.13 City of McGregor: Recommend revising to read "...from surface water from Lake Belton via *a contract with the Brazos River Authority.* Bluebonnet WSC *treats and delivers water to the City from Lake Belton.*
f. Page 5.36-13, Section 5.36.12 Jarrell-Schwertner WSC: Suggest mentioning the contract that Jarrell-Schwertner WSC holds with BRA for water in Stillhouse Hollow Lake within this paragraph. They do not currently utilize this contract water.
g. Page 5.36-13, Section 5.36.13 Jonah Water SUD: Suggest rewording the first sentence to say something similar to the following, "Jonah SUD obtains its water supply from groundwater from the Edwards-BFZ (Northern Segment) Aquifer and a contract with the BRA for treated supply through the East Williamson County WTP. Additionally, Jonah Water SUD also holds a long-term water supply contract for water within Stillhouse Hollow Reservoir with BRA.
h. Page 5.36-15, Section 5.36.15 Liberty Hill: Suggest revising the Description of Supply paragraph to include mention of the HB1437 contract water of 600 acft/yr with BRA.
i. Page 5.36-17, Section 5.36.19 City of Taylor: Suggest revising first sentence. "The City of Taylor obtains its water supply from a contract with the Brazos River Authority for water from Lake Granger *through the East Williamson County WTP."*

6. Impacts/Consistency/Protection

a. Chapter 6 appears to be incomplete. Missing page 6-19.
b. Page footers in Chapter 6 reference both May 2014 & May 2015.

7. Drought Response Activities and Recommendations

a. Page 7.1-2, 2nd paragraph, last sentence in 7.1.3 Drought Indicators: Suggest revising the following sentence to clarify the description of the most recent drought. "....; however it also does not capture the entirety of the 2007-2009 drought or the *drought that plagued parts of the region between 2011 and the Spring 2015.*

8. Policy Recommendations

a. Page 8-2: Section 8.3, paragraph indentation not consistent with other sections.

b. Page 8-3: Use consistent enumeration style for each "Issue..." listed in Chapter 8.

11. Implementation with 2011 Plan

a. Page footers in Chapter 11 reference both May 2014 & May 2015.
b. Page 11-1: Section 11.1, first paragraph, second sentence references "TRWDB". Should this be TWDB?
c. Page 11-2: Section 11.2, revise last sentence of section... *(such as... for irrigation supply).*
d. Page 11-9, New Reservoirs paragraph: Does Little River OCR need to be included as a new reservoir?

<u>Volume II</u>

References to "TNRCC" permits in Volume II; update to TCEQ?

- Page 4.9-10, Section 4.9.5 a. & f.
- Page 7.3-51, footnote in Table 7.3-23 (reference may be correct in this instance)
- Page 7.11-8, Section 7.11.4 f.

1. Methodology

a. Page 1.2-2, Section 1.2 – Is the 75/75 criteria for water supply reliability for agricultural needs correctly stated in this section?

3. Reuse

a. Page 3.2-81, Table 3.2-1. The last entry in this table does not specify an associated water right with the application.

4. New Reservoirs

4.2 Cedar Ridge Reservoir

a. Pg. 4.2-1, Section 4.2.2 – Available Yield: First sentence should read, "*The City has applied for a water right.....*"

4.3 Coryell County Reservoir

a. Page 4.3-4 last paragraph. Sentence "The largest change in the Navasota River would......" Navasota River should be replaced with Cowhouse Creek in this sentence.
b. Page 4.3-9 (top of the page, starting on second line) Reference to Table 4.3-2. Endangered, Threatened, Candidate and Species of Concern Listed for Coryell County should be changed to Table 4.3-1. Median Monthly Streamflow: Cowhouse Creek Diversion Site.
c. Page 4.3-1, Section 4.3.2, second paragraph: First sentence of paragraph reads, *This strategy could potential be provided supply under the BRA System Operation permit (See Section 7.12), currently*

pending at the Texas Commission on Environmental Quality. Suggest using potentially in this sentence instead of potential. There are a number of other sentences similar to this sentence throughout Chapter 4 that should be updated regarding the use of potential versus potentially.

d. Page 4.3-4: Line 10, Cowhouse Creek near Pidcock, TX should read Pidcoke, TX.

4.4 Groesbeck Off-Channel Reservoir

a. Pg. 4.4-4, Third paragraph: Suggest including additional information that states that the diversion amounts from the Navasota River into the off-channel reservoir will not exceed the original water right for the City. Any additional water diverted above the prior authorization could require subordination of BRA's water rights. See previous comments regarding subordination above and below.

4.7 Little River Off-Channel Reservoir

a. Page 4.7-20, Bottom paragraph: *Supplies developed and stored in the Little River OCR could potentially be used to meet needs in Williamson County.* Supplies developed by the Little River OCR could also potentially be used to meet needs in Milam County in the 2050 to 2070 timeframe (steam electric demands).

4.8 Main Stem Off-Channel Reservoir

a. Page 4.8-4, Section 4.8.3: Need to restate per Section 4.8.1 that if an entity other than BRA sponsors these projects, then an agreement with the BRA may be required to address concerns related to potential subordination of the BRA's water rights.

4.10 Lake Creek Reservoir

a. Page 4.10-13, Table 4.10-2 Cost Estimate for Lake Creek Reservoir. Is the "Purchase of Water" line item referring to the compensation of yield impacts to PK? If so it lists a system rate of $65.65/acft instead of the current system rate

5. Acquisition of Existing Supplies

5.1 Lake Aquilla Augmentation

a. Page 5.1-4, Third paragraph, third sentence: Suggest rewording *If the yield of Lake Aquilla decreases as indicated by recent BRA analysis*.....to "If the yield of Lake Aquilla decreases as indicated by previous analyses...."

b. Page 5.1-4, Third paragraph, fifth sentence: Suggest rewording this sentence to the following: *This strategy could potential be provided supply under the BRA System Operation permit*.....to "This strategy could potentially be provided supply under the BRA System Operation permit......"

6. Conjunctive Use

6.1 Lake Granger Augmentation

a. Page 6.1-6 (last paragraph) the text states that two test wells were drilled in 2013. Should read that one test well was drilled in 2013.

7. Management of Existing Supplies

7.1 Belhouse Pipeline

a. Page 7.1-3, Section 7.1.2, second paragraph, fifth sentence: *The demands at Lake Georgetown are met by releases from both Lake Stillhouse Hollow and Lake Georgetown.* This sentence should be reworded to read, "Under this strategy the demands at Lake Georgetown are being met by water pumped from both Lake Stillhouse Hollow through the Williamson County Regional Raw Water Line that connects Lake Stillhouse Hollow to Lake Georgetown and Lake Belton through the Lake Belton to Lake Stillhouse Hollow pipeline."

7.2 Brushy Creek Regional Utility Authority

a. Page 7.2-3, Section 7.2.2, Table 7.2-2 Allocation of New Highland Lake Supply in Williamson County: The totals (fifth column) for Round Rock and Unallocated should read 20,928 acft/yr and 3,472 acft/yr, respectively.

7.3 Chloride Control

a. Page 7.3-2, Section 7.3.1, second to the last sentence: The text "Figure 7.3-2" appears twice in this sentence.

7.6 Lake Aquilla Storage Reallocation

a. Page 7.6-1 and 7.6-2. Table 7.6-1 Lake Aquilla Characteristics: It appears that not all of the footnotes to Table 7.6-1 are located at the bottom of page 7.6-2. Footnote 1 appears on the bottom of page 7.6-1. Additionally, it would be beneficial if the footnotes appeared in numerical order within the table. (AA)
b. Page 7.6-4, second paragraph, sixth sentence: *This strategy could potential be provided supply under the BRA System Operation permit (See Section 7.12)......* Recommend using potentially instead of potential within this sentence.
c. Page 7.6-4, second full sentence: It's recommended to use USACE as the acronym for U.S. Army Corps of Engineers instead of USCOE. This is consistent with other sections of the IPP.

7.8 Lake Stillhouse Hollow Reallocation

a. Page 7.8-4, first paragraph, sixth sentence: *This strategy could potential be provided supply under the BRA System Operation permit (See Section 7.12) ...* Recommend using potentially instead of potential within this sentence.

b. Page 7.8-5, first paragraph, third full sentence: The font of the text differs in this sentence from the surrounding text.

7.9 Lake Whitney Reallocation

a. Page 7.9-3, second to the last sentence: *This strategy could potential be provided supply under the BRA System Operation permit (See Section 7.12) ...* Recommend using potentially instead of potential within this sentence.

7.10 BRA Sediment Reduction Program

a. Page 7.10-2, last paragraph, last sentence: An extraneous numeral 7 is present at the end of the sentence ......*21 acres of participating cropland7.*

7.11 Brazos River Authority System Operation of Reservoirs

a. Page 7.11-1 through 7.11-2, Section 7.11.1 Description of Option and Section 7.11.2 Available Yield: These sections refer to previous draft permits of the System Operation permit that are currently out of date with respect to the requested authorization. Please refer to the following link on the BRA website that houses information related to the System Operation Permit and Water Management Plan. https://www.brazos.org/SysOpsWMP.asp
b. Page 7.11-2 and 7.11-3: The diversion amount for the expansion at Comanche Peak is referenced as 76,270 acre-feet per year on page 7.11-2 (third paragraph) and 76,120 acre-feet per year on page 7.11-3 (within Table 7.11-1).
c. Page 7.11-3, Table 7.11-1: Water availability numbers for Abilene at Possum Kingdom shows 14,400 acft/year which is different than the City's supply plan (Section 5.38.15) that indicates that the System Operations permit could provide 14,800 acft/yr to the City.
d. Page 7.11-3 – 7.11-4: Based on information in Volume I (Section 5.38.2) and in this section of Volume II (Section 7.11) a total of 166,952 acft/yr of supply is recommended under the System Operations Permit. Based on a meeting between HDR, Freese and Nichols (Region H consultant), and BRA staff, earlier in 2015, it was discussed that the supply from System Operations should be limited to roughly what was included in the previous 2011 regional water plans. The reason for keeping the allocations consistent with the previous plan is associated with possible decreases in yield under System Operations due to the recent drought. The previous plan included 25,350 acft/yr of supply for entities in Region H and 84,899 acft/yr of supply for entities in Brazos G. This sums to 110,249 acft/yr of total supply from System Operations in the 2012 State Water Plan. The supply allocated to System Operations in the 2016 IPP appears to be almost 57,000 acft/yr more than the 2012 State Water Plan. BRA recommends that the supply allocated to System Operation be

reevaluated and adjusted downward to be more consistent with the previous plan.

8. Regional Water Supply Projects

8.1 Bosque County Regional Project

a. Page 8.1-1: First paragraph, third sentence, correct foot-note "1" style.

8.4 West Central Brazos Water Distribution System

a. Page 8.4-1, in paragraph one instead of industrial use, it should be for municipal, irrigation and mining purposes.
b. Page 8.4-1, paragraph two should include the City of Abilene. They have made a request for water and have contracted with BRA for 4,481 AF.
c. Page 8.4-1, paragraph two remove Graham, Shackelford WSC and Stephens Regional SUD from the list. They already have an executed contract with BRA.
d. Page 8.4-1, paragraph two remove the word "industrial."
e. Page 8.4-1, paragraph two reference to Table 8.3-1 should be 8.4-1.
f. Page 8.4-1, paragraph three remove the word "only" in first sentence.
g. Page 8.4-1, paragraph three add the City of Abilene as one of the entities that could be served.
h. Page 8.4-1, paragraph four, remove "for the Midway Group participants: Shackelford Water Supply Corporation (WSC), Stephens Regional SUD, the City of Throckmorton and the City of Breckenridge. The Midway Group provides much of the water in Shackelford, Stephens and Throckmorton Counties," And insert "by several west Texas entities including many from the 2004 study."
i. Page 8.4-1, paragraph four, remove any reference to the Midway Group. Entities are seeking to utilize the existing line and right of way, but are looking to develop treatment options independent of one another.
j. Page 8.4-2, Table 8.4-1, remove "Industrial."
k. Page 8.4-2, Table 8.4-1, Shackelford is now called Fort Griffin SUD
l. Page 8.4-2, Table 8.4-1, neither Shackelford (Ft. Griffin), Breckenridge, Stephens Regional SUD, or Throckmorton have requested additional water.
m. Page 8.4-3, delete Figure 8.4-1 Schematic of Midway Group Interconnections Using the WCBWDS Facilities. This plan is no longer being pursued.
n. Page 8.4-3, paragraph one, successfully instead of "successful."
o. Page 8.4-4, paragraph two, remove any reference regarding the injection of brine water into the WCBWDS. This will not ever be pursued.
p. Page 8.4-4, any reference to Shackelford WSC should be Fort Griffin SUD.

q. Page 8.4-4, paragraph four, Ft. Griffin SUD plans to build their own WTP.
r. Page 8.4-4, paragraph five, remove reference to new regional water treatment plant. There is not one currently in place and will not be constructed. Entities in the area are building their own treatment facilities.
s. Page 8.4-5, Table 8.4-2, remove reference to regional water treatment plant near Breckenridge. Abilene is making upgrades to the WTP in Breckenridge, but those upgrades will benefit Abilene and probably Breckenridge only.
t. Page 8.4-5, Table 8.4-2, For Fish and Wildlife Habitat section, it will be more than a low to moderate impacts if brine effluent is discharged to surface water streams. The Sharp Nose Shiner has already precluded Abilene from discharging in the river above PK. Same comment for Threatened and Endangered Species below.
u. Page 8.4-5, Engineering and Costing, this may no longer be applicable if a regional water treatment plant strategy is not pursued.
v. Page 8.4-7, paragraph 3, "requires" should be requirements.

9. Groundwater

9.2 City of College Station

a. Font style in Table 9.2-2 is inconsistent with other font styles.

9.3 Williamson County

a. Section 9.3.1: Remove hyphens in well production values ...1,500-gpm...
b. Font style in Table 9.3-2 & 9.3-3 are inconsistent with other font styles.

10. Aquifer Storage and Recovery

10.3 Johnson County SUD and Acton MUD ASR

a. Page 10.3-1: 10.3.1 Description of Option: The first bullet point states that the surface water rights in Lake Granbury are owned by Johnson County SUD and Acton MUD. These surface water rights are owned by the BRA. This water is purchased by Johnson County SUD and Acton MUD through a contract with the Brazos River Authority. Johnson County SUD has contracts totaling 9,210 acft/yr with the BRA and Acton MUD has contracts totaling 7,000 acft/yr with the BRA.

Appendix J
Requested Population and Demand Revisions

[The information contained for this appendix has been submitted to TWDB in electronic format and can be found on the TWDB website and at www.brazosgwater.org.]

This page intentionally left blank

Appendix K

Appendix K
Water Management Strategies from Other Regions for Brazos G

This page intentionally left blank

Region C

Table K-1 Summary of out of region strategies adapted from IPP Table 5.D149, 5D.355, 5C.10, & 5C.11 in 2016 Region C Water Plan

Water User Group	Strategy	1st Year	Quantity** (acft/Yr)	Capital Costs	Unit Costs ($/1000 gal) With Debt Service	Unit Costs ($/1000 gal) After Debt Service	Table for Detail
Bethesda WSC *	Conservation	2020	117	$139,100	$3.21	$1.00	Q-10
	Additional Fort Worth	2020	3,496	$0	$1.96	$1.96	None
	Supply from Arlington	2020	2,614	$0	$2.50	$2.50	None
	Connection to Arlington	*2020*	*2,614*	$18,698,000	$2.16	$0.32	Q-184
Burleson*	Conservation	2020	55	$37,638	$0.88	$0.00	Q-10
	Additional Fort Worth (TRWD)	2020	10,244	$0	$1.96	$1.96	None
	Increase delivery infrastructure from Fort Worth	*2040*	*5,541*	$21,780,000	$1.23	$0.22	Q-186
Crowley	Conservation	2020	113	$342,055	$4.39	$0.00	Q-10
	Additional Fort Worth (TRWD)	2020	3,588	$0	$1.96	$1.96	None
	Increase delivery infrastructure from Fort Worth	*2030*	*3,028*	$11,558,000	$1.21	$1.21	Q-187
Johnson County SUD	Conservation	2020	10	$4,470	$0.57	$0.00	Q-10
	Additional Mansfield (TRWD)	2020	6,229	$0	$2.50	$2.50	None
	Supply from Grand Prairie	2020	6,726	$0	$2.50	$2.50	None
	Connect to Grand Prairie	*2020*	*6,726*	$86,140,000	$3.83	$0.60	Q-188
Venus	Conservation	2020	2	$740	$1.13	$0.00	Q-10
	Additional Midlothian	2020	602	$0	$2.50	$2.50	None
Fort Worth	Conservation (Retail)	2020	16,721	$80,176,073	$4.11	$0.48	Q-10
	Alliance Direct Reuse	2020	2,800	$16,083,000	$0.49	$0.06	Q-68
	Future Direct Reuse	2020	2,688	$129,976,000	$4.18	$0.82	Q-67
	Purchase from TRWD	2030	216,971	$0	$0.97	$0.97	None
Files Valley WSC	Conservation	2020	7	$2,010	$0.52	$0.00	Q-10
	Connect to Waxahachie (TRWD through TRA)	2030	72	See Waxahachie in Section 5.2			

Notes: Water User Groups marked with an * extend into more than one county.

** Quantities listed are for the WUG only. They do not include the WUG's customers.

Bethesda Water Supply Corporation (Region C RWP)

Bethesda WSC serves an estimated 29,000 people in southern Tarrant County and northern Johnson County. (Johnson County is in the Brazos G water planning region.)

Water management strategies for Bethesda WSC include:

- Conservation implemented or enhanced by 2020 with a maximum savings of 117 acft/yr at a unit cost of $3.21/1,000 gallons.
- Additional water from Fort Worth beginning in 2020 utilizing existing infrastructure with a unit cost of $1.96/1,000 gallons for water purchase. Increased contractual amounts vary over the planning period up to 3,496 acft/yr.
- Connection to and purchase of water from the City of Arlington (which gets raw water from TRWD). Increased contractual amounts vary over the planning period up to 2,614 acft/yr at a unit cost of water $2.50/1,000 gallons. The connection to Arlington will involve a capital cost of $18,698,000 adding $2.16/1,000 gallons to the unit cost of water from Arlington.

Burleson (Region C RWP)

Burleson is a city of about 40,000 people located in southern Tarrant County and northern Johnson County. (Johnson County is in the Brazos G water planning region.)

Water management strategies for Burleson Include:

- Conservation implemented or enhanced by 2020 with a maximum savings of 55 acft/yr at a unit cost of $.88/1,000 gallons.
- Increased delivery Infrastructure and purchase of water from the City of Fort Worth. Increased contractual amounts vary over the planning period up to 10,244 acft/yr at a unit cost of water $1.96/1,000 gallons. The infrastructure expansion to Fort Worth will involve a capital cost of $21,780,000 adding $1.23/1,000 gallons to the unit cost of water from Fort Worth.

Crowley (Region C RWP)

Crowley is a city of about 14,000 people located in southern Tarrant County.

Water management strategies for Crowley Include:

- Conservation implemented or enhanced by 2020 with a maximum savings of 113 acft/yr at a unit cost of $4.39/1,000 gallons.
- Increased delivery Infrastructure and purchase of water from the City of Fort Worth. Increased contractual amounts vary over the planning period up to 3,588 acft/yr at a unit cost of water $1.96/1,000 gallons. The infrastructure expansion to Fort Worth will involve a capital cost of $11,558,000 adding $1.21/1,000 gallons to the unit cost of water from Fort Worth.

Venus (Region C RWP)

Venus is a city of about 2,960 people in eastern Johnson County and western Ellis County. Most of the population is in Johnson County which is in Region G.

Water management strategies for Venus include:

- Conservation implemented or enhanced by 2020 with a maximum savings of 2 acft/yr at a unit cost of $1.13/1,000 gallons.
- Additional water from Midlothian beginning in 2020 utilizing existing infrastructure with a unit cost of $2.50/1,000 gallons for water purchase. Increased contractual amounts vary over the planning period up to 602 acft/yr.

City of Fort Worth (Region C RWP)

The City of Fort Worth obtains raw water from the Tarrant Regional Water District (TRWD) and treats and distributes treated water to about 30 other water user groups in Tarrant County and surrounding counties.

Water management strategies for the City of Fort Worth include:

- Conservation implemented or enhanced by 2020 with a maximum savings of 16,721 acft/yr at a unit cost of $4.11/1,000 gallons.
- Alliance Corridor Direct Reuse: This project would involve a partnership between the City of Fort Worth, Trinity River Authority and Hillwood Corporation to serve developments in the Alliance Airport area. It would use effluent supplied from the Trinity River Authority's Denton Creek Regional Wastewater System. The project is projected to provide up to 2,688 acft/yr of supply at a unit cost of $0.49/1,000 gallons.
- Fort Worth Future Direct Reuse: Fort Worth plans to further expand its direct reuse system by constructing additional conveyance and/or treatment facilities in other areas of the City. This project would provide up to 2,688 acft/yr at a unit cost of $4.18/1,000 gallons
- Additional water from TRWD beginning in 2030 utilizing existing infrastructure with a unit cost of $0.97/1,000 gallons for water purchase. Increased contractual amounts vary over the planning period up to 216,971 acft/yr.

Files Valley Water Supply Corporation (Region C RWP)

Files Valley WSC serves about 3,000 people in western Ellis and eastern Hill Counties. Files Valley provides water to residents in its service area as well as residents of Milford.

Water management strategies for Files Valley WSC include:

- Conservation implemented or enhanced by 2020 with a maximum savings of 7 acft/yr at a unit cost of $0.52/1,000 gallons.
- Water purchase from Waxahachie will be made possible by 2030 as part of the Ellis County Water Supply project. The Ellis County Water Supply Corporation will include a joint delivery system to multiple wholesale customers in Southern Ellis County. Files Valley expects to receive up to 72 acft of supply from the project by 2070.

Region F

Lake Coleman and Oak Creek Reservoir Subordination (\ Region F RWP)

5C.1 Subordination of Downstream Senior Water Rights

The TWDB requires the use of the TCEQ Water Availability Models (WAM) for regional water planning. Most of the water rights in Region F are in the Colorado River Basin. Chapter 3 discusses the use of the WAM models for water supply estimates and the impacts to the available supplies in the upper Colorado River Basin. The Colorado WAM assumes that senior lower basin water rights would continuously make priority calls on Region F water rights. That assumption is not consistent with the historical operation of the Colorado River Basin and likely underestimates the amount surface water supplies available in Region F.

Although the Colorado WAM does not give an accurate assessment of water supplies based on the way the basin has historically been operated, TWDB requires the regional water planning groups to use the WAM to determine supplies. Using WAM supplies causes several sources in Region F have no supply by definition, even though in practice their supply may be greater than indicated by the WAM. According to the WAM, the cities of Ballinger, Brady, Coleman, Junction, and Winters and their customers have no water supply. The Morgan Creek power plant has no supply to generate power. The cities of Big Spring, Bronte, Coahoma, Midland, Miles, Odessa, Robert Lee, San Angelo, Snyder and Stanton do not have sufficient water to meet current demands. Overall, the Colorado WAM supplies show shortages that are the result of modeling assumptions and regional water planning rules and are inconsistent with the historical operation of the Colorado Basin. This would indicate Region F needs to immediately spend significant funds on new water supplies, when in reality the magnitude of the indicated water shortages are not justified. Conversely, the WAM model shows more water in Region K (Lower Colorado Basin) than may actually be available.

One way for the planning process to reserve water supplies for these communities and their customers is to assume that downstream senior water rights holders subordinate their priority rights to major Region F municipal water rights, a strategy referred to as subordination in this plan. This assumption has been implanted to evaluate water supplies in previous water plans.

Because the subordination strategy impacts water supplies outside of Region F, coordination with the Lower Colorado Regional Water Planning Group (Region K) was conducted. For the development of the 2006 regional water plans, a joint modeling effort was conducted with Region K and an agreement was reached for planning purposes. In subsequent planning cycles, Region K developed its own version of this subordination strategy, called the "cutoff model" that modified the priority dates for all water rights above Lakes Ivie and Brownwood. Region F has adopted the premise of the Region K's cutoff model with only minor variations for purposes of the subordination strategy in this plan. The Region F model makes two major assumptions 1) senior water rights in the lower Colorado basin (Region K) do not make priority calls on the upper basin, and 2) these upper basin water rights do not make calls on each other. **Error! Reference source not found.** shows the divide between the upper and lower basin and depict which reservoirs were included in the subordination modeling. For this Regional Water Plan, the hydrology developed by TCEQ through December 2013 was used for the subordination modeling.

The Region F model differs from the Region K model by including the City of Junction's run-of-river rights in the upper basin. Other refinements to the subordination modeling include modifications for the

Pecan Bayou. As discussed above, the assumption that upper basin water rights do not make calls on each other is consistent with general operations in the basin, but it may not be appropriate for determining water supplies during drought in the Pecan Bayou watershed. To better reflect reality, an assumption was made that the upstream reservoirs hold inflows that would have been passed to Lake Brownwood under strict priority analysis if Lake Brownwood is above 50 percent of the conservation capacity. This scenario provides additional supplies in the upper watershed while allowing Lake Brownwood to make priority calls at certain times during drought (i.e. when Lake Brownwood is below 50 percent of the conservation pool).

Two reservoirs providing water to the Brazos G planning region were included in the subordination analysis. Lake Clyde is located in Callahan County and provides water to the City of Clyde. Oak Creek Reservoir is located in Region F and supplies a small amount of water to water user groups within Regions F and G. Oak Creek Reservoir is owned and operated by the City of Sweetwater, which is in the Brazos G Region. Both Clyde and Sweetwater have other sources of water in addition to the supplies in the Colorado Basin.

The subordination strategy modeling was conducted for regional water planning purposes only. By adopting this strategy, the Region F RWPG does not imply that the water rights holders have agreed to relinquish the ability to make priority calls on junior water rights. The Region F RWPG does not have the authority to create or enforce subordination agreements. Such agreements must be developed by the water rights holders themselves. Region F recommends and supports ongoing discussions on water rights issues in the Colorado Basin that may eventually lead to formal agreements that reserve water for Region F water rights.

Over 56,000 acre-feet of additional supply is available through the subordination strategy in 2020 and over 52,000 acre-feet in 2070. **Table 5C- 1** compares the 2020 and 2070 Region F water supply sources with and without subordination.

Table 5C- 1
Region F Surface Water Supplies with and without Subordination

Reservoir	2020 Supply WAM Run 3	2020 Supply Subordination	2070 Supply WAM Run 3	2070 Supply Subordination
Lake Colorado City	0	2,240	0	1,940
Champion Creek Reservoir	0	1,480	0	1,380
Colorado City/Champion System	*0*	*3,720*	*0*	*3,320*
Oak Creek Reservoir	0	1,493	0	960
Lake Ballinger	0	779	0	750
Lake Winters	0	191	0	170
Twin Buttes Reservoir/Lake Nasworthy	0	2,797	0	2,342
O.C. Fisher Reservoir	0	1,538	0	1,030
San Angelo System	*0*	*4,335*	*0*	*3,372*
Hords Creek Reservoir	0	358	0	300
Lake Coleman	0	2,915	0	2,740
Coleman System	*0*	*3,273*	*0*	*3,040*
Lake Clyde	0	150		150
Brady Creek Reservoir	0	1,892	0	1,700
Lake Thomas	0	4,864	0	4,779
Spence Reservoir (CRMWD system)	0	23,116	0	22,982
Spence Reservoir (Non-system)	0	1,475	0	1,467
Spence Reservoir Total	*0*	*24,591*	*0*	*24,449*
Ivie Reservoir (CRMWD system)	18,152	17,242	15,583	14,681
Ivie Reservoir (Non-system)	17,878	16,981	15,347	14,459
Ivie Reservoir Total	*36,030*	*34,223*	*30,930*	*29,140*
CRMWD Total (Thomas, Spence & Ivie)	*36,030*	*63,678*	*30,930*	*58,368*
CRMWD Diverted Water System(Brackish)	*0*	*5,760*	*0*	*5,760*
Lake Brownwood	18,760	25,741	*18,060*	23,600
City of Junction	0	412	0	412
Mountain Creek	0	80	0	80
TOTAL	***54,790***	***111,092***	***48,990***	***101,270***
Increase with Subordination	***56,302***		***52,280***	

A list of the water user groups that could potentially benefit from subordination and the amount assumed for planning are shown in **Table 5C- 2**. The reduction in supplies shown for Midland is associated with a reduced safe yield of Lake Ivie with the subordination assumptions. These reductions also impact the subordination supplies to San Angelo. The contracts for water for both of these cities is based on a percentage of the safe yield of Lake Ivie.

Table 5C- 2
Subordination Supplies by WUG

WUG Name	Additional Supplies Made Available through the Subordination Strategy					
	2020	2030	2040	2050	2060	2070
Bronte	176	176	176	176	176	176
Robert Lee	224	224	224	224	224	224
Coke County Mining	38	36	34	32	30	28
Coleman	2,102	2,061	2,024	1,985	1,938	1,891
Coleman County SUD	214	211	206	202	202	203
Coleman County Irrigation	743	743	743	743	743	743
Odessa	11,671	7,523	10,146	13,053	16,214	19,491
Ector County Irrigation	189	110	134	157	179	196
Big Spring	3,677	2,190	2,682	3,115	3,523	3,885
Howard County Mining	1,000	1,000	1,000	982	320	43
Junction	412	412	412	412	412	412
Stanton	253	160	202	248	291	331
Brady	1,892	1,854	1,816	1,778	1,740	1,700
Millersview-Doole WSC	782	665	701	236	267	294
Midland	8,527	(299)	(298)	(297)	(297)	(296)
Mitchell County Steam Electric Power	1,480	1,460	1,440	1,420	1,400	1,380
Ballinger	752	675	693	563	558	554
Miles	112	124	121	119	119	119
Winters	186	182	178	174	170	165
Runnels County Manufacturing	11	10	10	11	11	11
Snyder	1,268	807	1,030	1,280	1,544	1,812
San Angelo	4,036	3,843	3,651	3,459	3,266	3,076
Tom Green County Manufacturing (Sales from San Angelo)	467	445	438	420	403	386
BCWID (non-allocated)	6,981	6,693	6,405	6,117	5,829	5,540
CRMWD (non-allocated)	4,949	20,257	16,740	12,987	9,647	5,865
Oak Creek (non-allocated)	104	104	104	104	104	104

[1]Due to assumptions concerning the priority date of Lake Ivie in the TCEQ WAM and the subordination model, Lake Ivie has less yield under subordination since it must pass water to other Region F water right holders. Thus, in certain cases, the yield from the subordination strategy is negative.

The reliability of this strategy is considered to be medium based on the uncertainty of implementing this strategy. The subordination strategy defined for the Region F Water Plan is for planning purposes. If an entity chooses to enter into a subordination agreement with a senior downstream water right holder, the details of the agreement (including costs, if any) will be between the participating parties. Therefore strategy costs will not be determined for the subordination strategy. For planning purposes, capital and annual costs for the subordination strategy are assumed to be $0.

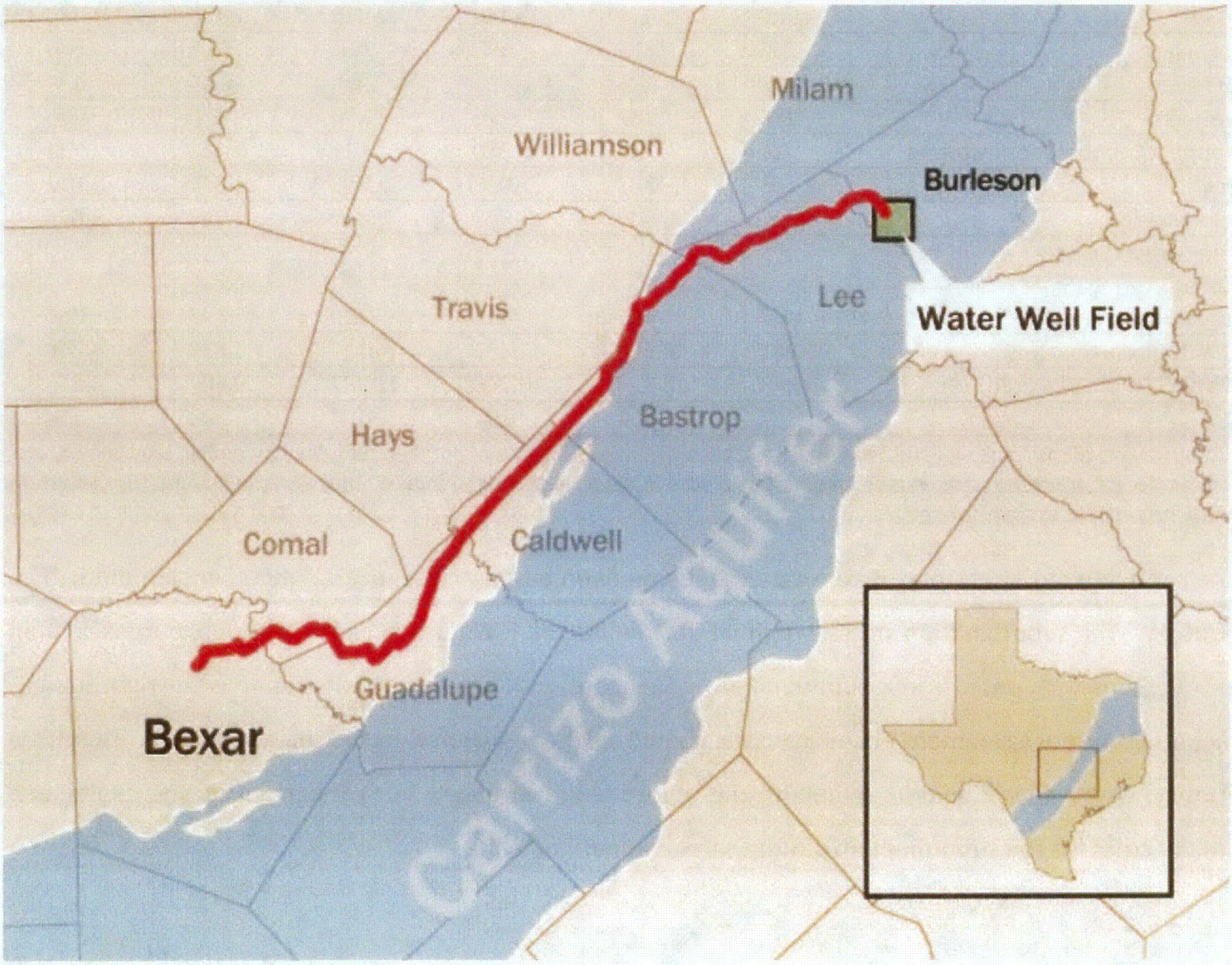
Region L

SAWS Vista Ridge Project (Region L RWP)

DESCRIPTION OF WATER MANAGEMENT STRATEGY

The San Antonio Water System (SAWS) has contracted with Vista Ridge Consortium for up to 50,000 acft/yr of groundwater supply from Burleson County, Texas. Vista Ridge holds permits from the Post Oak Savannah Groundwater Conservation District (GCD) for up to 70,000 acft/yr in the Carrizo–Wilcox Aquifer in Burleson County. The project includes a well field, collection system, treatment, and 143 miles of 54-inch and 60-inch transmission facilities, and will deliver water to northern Bexar County for eventual delivery the SAWS distribution system. The table below shows the well field location and the proposed pipeline route. In addition, SAWS will be upgrading their integration facilities to accommodate the new water. Costs associated with this integration is not included in this water management strategy, but information can be found in Facilities Expansions.

VISTA RIDGE PROJECT LOCATION



SAWS VISTA RIDGE PROJECT COST ESTIMATE – MAG-LIMITED

Item	*Estimated Costs for Facilities*
Intake Pump Stations (32.8 MGD)	$7,242,000
Transmission Pipeline (48 in dia., 143 miles)	$264,379,000
Transmission Pump Station(s) & Storage Tank(s)	$23,328,000
Well Fields (Wells, Pumps, and Piping)	$34,838,000
Water Treatment Plant (32.8 MGD)	$49,308,000
Integration, Relocations, & Other	$10,468,000
TOTAL COST OF FACILITIES	**$389,563,000**
Engineering and Feasibility Studies, Legal Assistance, Financing, Bond Counsel, and Contingencies (30% for pipes & 35% for all other facilities)	$123,128,000
Environmental & Archaeology Studies and Mitigation	$3,990,000
Land Acquisition and Surveying (1772 acres)	$9,257,000
Interest During Construction (4% for 2.5 years with a 1% ROI)	$46,020,000
TOTAL COST OF PROJECT	**$571,958,000**
ANNUAL COST	
Debt Service (5.5 percent, 20 years)	$47,861,000
Operation and Maintenance	
Intake, Pipeline, Pump Station (1% of Cost of Facilities)	$3,686,000
Water Treatment Plant (2.5% of Cost of Facilities)	$9,862,000
Pumping Energy Costs (110000740 kW-hr @ 0.09 $/kW-hr)	$9,900,000
Purchase of Water (34894 acft/yr @ 125 $/acft)	$4,658,000
TOTAL ANNUAL COST	**$75,967,000**
Available Project Yield (acft/yr), based on a Peaking Factor of 1	34,894
Annual Cost of Water ($ per acft)	$2,177
Annual Cost of Water ($ per 1,000 gallons)	$6.68

This page intentionally left blank.

Appendix L

Appendix L
TWDB Required Reports from DB17

This page intentionally left blank.

List of Tables included:

Number	Table 2 Guidelines Name	Summary of Report Content	Included in Hard Copy Appendix
1	Population Projections*	population projections by WUG, county, and river basin.	X
2	Water Demands*	population and water demand projections by WWP and WUG, county, and river basin to include separate information on water supply commitments to other entities.	X
2	Population Projection and Water Demand – Summary*	population and water demand projections by WUG category.	
3	Water Availability*	water availability by source and location.	X
4	Existing Water Supplies*	existing water supplies by WUG, county, and river basin.	X
5	Existing Water Supplies – Summary*	existing water supplies by WUG category by decade.	
6	Categories of water use for WWPs considering counties and basins*	WWP water demands by county and basin.	
7	Identified Water Needs/Surpluses*	identified water needs and or surpluses by WUG and WWP, county, and river basin.	X
8	Identified Water Need – Summary*	identified water needs by WUG category by decade.	
9	Second-Tier Identified Water Need	identified water needs by: WWP; and WUG, county, and river basin after implementation of conservation and direct reuse strategies.	X
10	Second-Tier Identified Water Need - Summary	identified water needs by WUG category and decade after implementation of conservation and direct reuse strategies.	X
11	Source Water Balance report	presenting total water use from each source. Must show no over allocation of source availability (except for those sources that are thereby revealed in IPPs as potentially overallocated and thereby creating potential interregional conflicts).	X
12	Unmet Needs	report presenting all unmet needs by WUG.	X
13	Unmet Needs-Summary	presenting all unmet needs by category and decade including a list enumerating each municipal WUG, if any, with unmet needs.	X

14	Recommended Water Management Strategy WUG	presenting a table with all recommended water management strategies for each WUG; including the strategy names, total yield of the WMS for all decades and total capital costs.	X
15	Recommended Water Management Strategy WWP	presenting a table with all recommended water management strategies to be implemented by each WWP; including the strategy names, total yield of the WMS for all decades and total capital costs.	
16	Recommended Water Management Strategy - Roll-Up Summary	presenting a rolled-up table with all recommended water management strategies for each WUG; including the strategy names, total yield of the WMS for all decades and total capital costs; Similar to Appx A.2 of the 2012 State Water Plan.	
17	Recommended Water Management Strategy User Summary	presenting project type, water source, Seller, and WUG users for each recommended WMS.	
18	Alternative Water Management Strategy - Summary	presenting a table with all included alternative water management strategies presenting the same data as in the recommended water management strategy summary report.	X
19	Management Supply Factor	for each WUG and WWP as described in Section 5.2 of this document.	X
20	Recommended Water Management Strategy – Project Water Association (WMS-tier analysis)	WMS-tier analysis) report presenting how WMSs relate to each other.	
21	Potentially Impacted Population	presenting populations that could benefit from each recommended WMS.	
22	Summary of WMS Users by WMS	presenting the WMS Projects and the associated Sources and WUGs;	
23	Summary of WMS Users by Source	presenting Sources used by WMSs and associated WUGs by source.	
24	Summary of WMSs Implementation	based on data collected by RWPGs.	

Water User Group (WUG) Category Summary

REGION G	2020	2030	2040	2050	2060	2070
MUNICIPAL						
POPULATION	2,052,854	2,373,753	2,713,083	3,093,516	3,468,428	3,856,114
DEMANDS (acre-feet per year)	362,711	407,517	455,417	511,562	569,831	630,472
EXISTING SUPPLIES (acre-feet per year)	475,109	473,037	469,939	462,157	459,100	456,266
NEEDS (acre-feet per year)*	(23,116)	(50,914)	(87,636)	(134,096)	(181,183)	(232,185)
COUNTY-OTHER						
POPULATION	318,210	346,943	383,924	401,028	449,769	494,928
DEMANDS (acre-feet per year)	40,383	43,281	47,866	49,815	56,767	63,357
EXISTING SUPPLIES (acre-feet per year)	40,169	40,031	40,057	40,170	40,676	40,914
NEEDS (acre-feet per year)*	(9,198)	(10,862)	(14,496)	(15,548)	(21,313)	(27,217)
MANUFACTURING						
DEMANDS (acre-feet per year)	21,848	24,554	27,270	29,687	32,223	34,977
EXISTING SUPPLIES (acre-feet per year)	26,247	28,795	30,077	31,270	32,494	33,940
NEEDS (acre-feet per year)*	(7,179)	(7,263)	(8,620)	(9,771)	(11,040)	(12,319)
MINING						
DEMANDS (acre-feet per year)	61,586	70,381	68,875	70,949	75,038	81,409
EXISTING SUPPLIES (acre-feet per year)	21,165	21,133	21,099	21,067	21,033	21,001
NEEDS (acre-feet per year)*	(41,731)	(50,127)	(50,494)	(53,675)	(57,802)	(64,121)
STEAM ELECTRIC POWER						
DEMANDS (acre-feet per year)	239,299	272,711	288,696	322,702	341,364	362,386
EXISTING SUPPLIES (acre-feet per year)	279,241	280,555	279,298	280,080	279,340	275,170
NEEDS (acre-feet per year)*	(70,834)	(88,264)	(99,300)	(128,694)	(144,204)	(162,658)
LIVESTOCK						
DEMANDS (acre-feet per year)	49,650	49,650	49,650	49,650	49,650	49,650
EXISTING SUPPLIES (acre-feet per year)	49,650	49,650	49,650	49,650	49,650	49,650
NEEDS (acre-feet per year)*	0	0	0	0	0	0
IRRIGATION						
DEMANDS (acre-feet per year)	292,091	284,321	276,847	268,840	262,305	256,044
EXISTING SUPPLIES (acre-feet per year)	215,562	209,152	202,681	202,413	205,381	204,856
NEEDS (acre-feet per year)*	(83,218)	(83,258)	(83,455)	(77,447)	(70,261)	(67,066)
REGION TOTALS						
POPULATION	2,371,064	2,720,696	3,097,007	3,494,544	3,918,197	4,351,042
DEMANDS (acre-feet per year)	1,067,568	1,152,415	1,214,621	1,303,205	1,387,178	1,478,295
EXISTING SUPPLIES (acre-feet per year)	1,107,143	1,102,353	1,092,801	1,086,807	1,087,674	1,081,797
NEEDS (acre-feet per year)*	(235,276)	(290,688)	(344,001)	(419,231)	(485,803)	(565,566)

*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.

Water User Group (WUG) Population

REGION G	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
BELL COUNTY						
BRAZOS BASIN						
439 WSC	7,584	8,435	9,318	10,292	11,369	12,559
ARMSTRONG WSC	2,283	2,416	2,561	2,710	2,856	3,000
BARTLETT	828	958	1,101	1,247	1,390	1,531
BELL-MILAM FALLS WSC	2,301	2,442	2,596	2,754	2,909	3,061
BELTON	21,841	25,287	29,041	32,897	36,680	40,404
CHISHOLM TRAIL SUD	2,971	3,440	3,951	4,476	4,990	5,497
DOG RIDGE WSC	3,145	3,642	4,182	4,737	5,282	5,818
EAST BELL WSC	3,641	4,240	4,893	5,563	6,221	6,868
ELM CREEK WSC	2,376	2,784	3,229	3,686	4,134	4,575
FORT HOOD	17,282	17,282	17,282	17,282	17,282	17,282
HARKER HEIGHTS	32,012	37,064	42,566	48,218	53,763	59,222
HOLLAND	1,138	1,154	1,171	1,189	1,206	1,223
JARRELL-SCHWERTNER WSC	1,369	1,584	1,820	2,061	2,298	2,531
KEMPNER WSC	2,004	2,320	2,664	3,018	3,365	3,707
KILLEEN	153,371	177,572	203,934	231,012	257,581	283,732
LITTLE RIVER-ACADEMY	2,231	2,488	2,768	3,056	3,338	3,616
MOFFAT WSC	4,101	4,263	4,440	4,621	4,799	4,974
MORGAN'S POINT RESORT	5,179	6,139	7,184	8,258	9,312	10,349
NOLANVILLE	6,061	7,774	9,640	11,557	13,438	15,289
PENDLETON WSC	2,075	2,174	2,283	2,395	2,504	2,612
ROGERS	1,305	1,388	1,478	1,570	1,661	1,750
SALADO WSC	5,453	5,950	6,491	7,047	7,592	8,129
TEMPLE	79,253	91,759	105,381	119,374	133,103	146,616
TROY	1,874	2,091	2,328	2,571	2,810	3,045
WEST BELL COUNTY WSC	5,112	5,456	5,456	5,456	5,456	5,456
COUNTY-OTHER	5,166	10,545	16,824	23,205	29,347	35,261
BRAZOS BASIN TOTAL POPULATION	**371,956**	**430,647**	**494,582**	**560,252**	**624,686**	**688,107**
BELL COUNTY TOTAL POPULATION	**371,956**	**430,647**	**494,582**	**560,252**	**624,686**	**688,107**
BOSQUE COUNTY						
BRAZOS BASIN						
CHILDRESS CREEK WSC	2,656	2,901	3,027	3,105	3,155	3,186
CLIFTON	3,838	4,192	4,374	4,488	4,560	4,604
CROSS COUNTRY WSC	736	803	838	860	874	882
MERIDIAN	1,664	1,818	1,897	1,946	1,978	1,997
VALLEY MILLS	1,327	1,449	1,512	1,551	1,576	1,591
WALNUT SPRINGS	922	1,007	1,051	1,078	1,095	1,106
COUNTY-OTHER	9,167	10,014	10,448	10,719	10,891	10,996
BRAZOS BASIN TOTAL POPULATION	**20,310**	**22,184**	**23,147**	**23,747**	**24,129**	**24,362**
BOSQUE COUNTY TOTAL POPULATION	**20,310**	**22,184**	**23,147**	**23,747**	**24,129**	**24,362**

Water User Group (WUG) Population

REGION G	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
BRAZOS COUNTY						
BRAZOS BASIN						
BRYAN	88,434	93,544	119,410	138,980	159,588	181,797
COLLEGE STATION	102,140	132,690	141,952	164,492	188,719	215,545
TEXAS A & M UNIVERSITY	11,851	12,000	12,000	12,000	12,000	12,000
WELLBORN SUD	9,309	10,667	12,073	13,793	15,636	17,668
WICKSON CREEK SUD	9,752	11,724	13,767	16,266	18,943	21,895
COUNTY-OTHER	6,168	4,040	3,795	4,363	5,249	6,624
BRAZOS BASIN TOTAL POPULATION	**227,654**	**264,665**	**302,997**	**349,894**	**400,135**	**455,529**
BRAZOS COUNTY TOTAL POPULATION	**227,654**	**264,665**	**302,997**	**349,894**	**400,135**	**455,529**
BURLESON COUNTY						
BRAZOS BASIN						
CALDWELL	4,896	5,060	5,275	5,312	5,412	5,498
DEANVILLE WSC	3,598	3,663	3,816	3,790	3,840	3,885
MILANO WSC	1,867	2,008	2,098	2,188	2,259	2,318
SNOOK	552	594	620	647	668	685
SOMERVILLE	1,485	1,597	1,669	1,741	1,797	1,844
SOUTHWEST MILAM WSC	800	860	899	938	968	993
COUNTY-OTHER	5,341	6,164	6,461	7,119	7,498	7,799
BRAZOS BASIN TOTAL POPULATION	**18,539**	**19,946**	**20,838**	**21,735**	**22,442**	**23,022**
BURLESON COUNTY TOTAL POPULATION	**18,539**	**19,946**	**20,838**	**21,735**	**22,442**	**23,022**
CALLAHAN COUNTY						
BRAZOS BASIN						
BAIRD	1,496	1,496	1,496	1,496	1,496	1,496
CLYDE	3,101	3,320	3,440	3,501	3,547	3,576
POTOSI WSC	75	81	84	85	86	87
COUNTY-OTHER	4,368	4,781	5,006	5,125	5,211	5,266
BRAZOS BASIN TOTAL POPULATION	**9,040**	**9,678**	**10,026**	**10,207**	**10,340**	**10,425**
COLORADO BASIN						
CLYDE	870	931	964	982	994	1,003
COLEMAN COUNTY SUD	161	172	178	182	184	185
CROSS PLAINS	1,051	1,125	1,165	1,186	1,201	1,211
COUNTY-OTHER	3,360	3,598	3,728	3,794	3,845	3,876
COLORADO BASIN TOTAL POPULATION	**5,442**	**5,826**	**6,035**	**6,144**	**6,224**	**6,275**
CALLAHAN COUNTY TOTAL POPULATION	**14,482**	**15,504**	**16,061**	**16,351**	**16,564**	**16,700**
COMANCHE COUNTY						
BRAZOS BASIN						
COMANCHE	4,499	4,678	4,799	4,956	5,090	5,217
DE LEON	2,331	2,424	2,486	2,568	2,637	2,703
COUNTY-OTHER	7,577	7,877	8,081	8,346	8,572	8,784
BRAZOS BASIN TOTAL POPULATION	**14,407**	**14,979**	**15,366**	**15,870**	**16,299**	**16,704**

Water User Group (WUG) Population

REGION G	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
COMANCHE COUNTY						
COLORADO BASIN						
COUNTY-OTHER	95	99	101	104	107	110
COLORADO BASIN TOTAL POPULATION	**95**	**99**	**101**	**104**	**107**	**110**
COMANCHE COUNTY TOTAL POPULATION	**14,502**	**15,078**	**15,467**	**15,974**	**16,406**	**16,814**
CORYELL COUNTY						
BRAZOS BASIN						
COPPERAS COVE	35,928	40,796	46,213	50,948	55,996	61,021
CORYELL CITY WATER SUPPLY DISTRICT	4,950	5,620	6,367	7,019	7,715	8,407
ELM CREEK WSC	408	464	525	579	637	694
FORT HOOD	16,051	16,429	16,429	16,429	16,429	16,429
GATESVILLE	17,990	20,427	23,139	25,510	28,038	30,554
KEMPNER WSC	3,097	3,517	3,984	4,392	4,827	5,260
MULTI-COUNTY WSC	2,874	3,264	3,697	4,076	4,480	4,882
COUNTY-OTHER	4,807	7,254	10,398	13,148	16,077	18,993
BRAZOS BASIN TOTAL POPULATION	**86,105**	**97,771**	**110,752**	**122,101**	**134,199**	**146,240**
CORYELL COUNTY TOTAL POPULATION	**86,105**	**97,771**	**110,752**	**122,101**	**134,199**	**146,240**
EASTLAND COUNTY						
BRAZOS BASIN						
CISCO	4,048	4,136	4,140	4,141	4,141	4,141
EASTLAND	4,111	4,201	4,205	4,205	4,205	4,205
GORMAN	1,125	1,149	1,150	1,150	1,150	1,150
RANGER	2,562	2,618	2,621	2,621	2,621	2,621
RISING STAR	867	886	887	887	887	887
STEPHENS REGIONAL SUD	126	129	129	129	129	129
COUNTY-OTHER	6,138	6,274	6,279	6,280	6,280	6,280
BRAZOS BASIN TOTAL POPULATION	**18,977**	**19,393**	**19,411**	**19,413**	**19,413**	**19,413**
COLORADO BASIN						
COUNTY-OTHER	312	319	319	319	319	319
COLORADO BASIN TOTAL POPULATION	**312**	**319**	**319**	**319**	**319**	**319**
EASTLAND COUNTY TOTAL POPULATION	**19,289**	**19,712**	**19,730**	**19,732**	**19,732**	**19,732**
ERATH COUNTY						
BRAZOS BASIN						
DUBLIN	4,063	4,525	4,915	5,287	5,639	5,964
STEPHENVILLE	19,041	21,205	23,033	24,777	26,425	27,948
COUNTY-OTHER	19,031	21,193	23,020	24,763	26,410	27,932
BRAZOS BASIN TOTAL POPULATION	**42,135**	**46,923**	**50,968**	**54,827**	**58,474**	**61,844**
ERATH COUNTY TOTAL POPULATION	**42,135**	**46,923**	**50,968**	**54,827**	**58,474**	**61,844**
FALLS COUNTY						
BRAZOS BASIN						
BELL-MILAM FALLS WSC	1,302	1,368	1,383	1,350	1,391	1,433

Water User Group (WUG) Population

REGION G	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
FALLS COUNTY						
BRAZOS BASIN						
BRUCEVILLE-EDDY	4	4	4	4	4	4
EAST BELL WSC	325	342	346	337	348	358
GOLINDA	448	471	476	465	479	493
LOTT	824	866	875	855	880	907
MARLIN	6,483	6,812	6,883	6,721	6,925	7,135
ROSEBUD	1,534	1,612	1,628	1,590	1,638	1,688
TRI-COUNTY SUD	2,856	3,001	3,032	2,961	3,051	3,143
WEST BRAZOS WSC	1,484	1,559	1,575	1,538	1,585	1,633
COUNTY-OTHER	4,153	4,362	4,408	4,305	4,435	4,570
BRAZOS BASIN TOTAL POPULATION	**19,413**	**20,397**	**20,610**	**20,126**	**20,736**	**21,364**
FALLS COUNTY TOTAL POPULATION	**19,413**	**20,397**	**20,610**	**20,126**	**20,736**	**21,364**
FISHER COUNTY						
BRAZOS BASIN						
BITTER CREEK WSC	845	845	845	845	845	845
ROBY	648	648	648	648	648	648
ROTAN	1,519	1,519	1,519	1,519	1,519	1,519
COUNTY-OTHER	989	989	989	989	989	989
BRAZOS BASIN TOTAL POPULATION	**4,001**	**4,001**	**4,001**	**4,001**	**4,001**	**4,001**
FISHER COUNTY TOTAL POPULATION	**4,001**	**4,001**	**4,001**	**4,001**	**4,001**	**4,001**
GRIMES COUNTY						
BRAZOS BASIN						
DOBBIN-PLANTERSVILLE WSC	560	648	716	787	846	897
G & W WSC	3,322	4,447	5,301	6,203	6,951	7,604
NAVASOTA	7,291	7,525	7,703	7,891	8,047	8,183
WICKSON CREEK SUD	2,965	3,201	3,379	3,568	3,725	3,862
COUNTY-OTHER	6,488	6,723	6,902	7,090	7,247	7,384
BRAZOS BASIN TOTAL POPULATION	**20,626**	**22,544**	**24,001**	**25,539**	**26,816**	**27,930**
SAN JACINTO BASIN						
DOBBIN-PLANTERSVILLE WSC	1,803	2,089	2,305	2,534	2,724	2,890
G & W WSC	438	586	698	817	916	1,002
COUNTY-OTHER	3,723	3,844	3,937	4,034	4,114	4,184
SAN JACINTO BASIN TOTAL POPULATION	**5,964**	**6,519**	**6,940**	**7,385**	**7,754**	**8,076**
TRINITY BASIN						
WICKSON CREEK SUD	403	435	460	486	507	526
COUNTY-OTHER	2,448	2,681	2,857	3,044	3,200	3,335
TRINITY BASIN TOTAL POPULATION	**2,851**	**3,116**	**3,317**	**3,530**	**3,707**	**3,861**
GRIMES COUNTY TOTAL POPULATION	**29,441**	**32,179**	**34,258**	**36,454**	**38,277**	**39,867**

Water User Group (WUG) Population

REGION G	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
HAMILTON COUNTY						
BRAZOS BASIN						
HAMILTON	3,114	3,172	3,172	3,172	3,172	3,172
HICO	1,385	1,404	1,404	1,404	1,404	1,404
MULTI-COUNTY WSC	676	696	696	696	696	696
COUNTY-OTHER	3,387	3,431	3,431	3,431	3,431	3,431
BRAZOS BASIN TOTAL POPULATION	**8,562**	**8,703**	**8,703**	**8,703**	**8,703**	**8,703**
HAMILTON COUNTY TOTAL POPULATION	**8,562**	**8,703**	**8,703**	**8,703**	**8,703**	**8,703**
HASKELL COUNTY						
BRAZOS BASIN						
HASKELL	3,330	3,364	3,382	3,415	3,466	3,540
RULE	638	644	648	654	664	678
STAMFORD	34	34	34	34	35	36
COUNTY-OTHER	1,911	1,931	1,940	1,961	1,988	2,031
BRAZOS BASIN TOTAL POPULATION	**5,913**	**5,973**	**6,004**	**6,064**	**6,153**	**6,285**
HASKELL COUNTY TOTAL POPULATION	**5,913**	**5,973**	**6,004**	**6,064**	**6,153**	**6,285**
HILL COUNTY						
BRAZOS BASIN						
BRANDON-IRENE WSC	416	443	461	480	495	506
FILES VALLEY WSC	784	835	869	905	932	953
HILL COUNTY WSC	3,141	3,344	3,482	3,624	3,731	3,818
HILLSBORO	9,117	9,707	10,106	10,518	10,830	11,083
ITASCA	1,654	1,762	1,833	1,908	1,965	2,011
JOHNSON COUNTY SUD	179	191	199	207	213	218
PARKER WSC	247	262	273	285	293	300
WHITE BLUFF COMMUNITY WS	2,022	2,153	2,241	2,333	2,402	2,458
WHITNEY	2,250	2,396	2,495	2,596	2,673	2,736
WOODROW-OSCEOLA WSC	4,205	4,477	4,661	4,851	4,995	5,112
COUNTY-OTHER	7,727	8,227	8,569	8,915	9,179	9,396
BRAZOS BASIN TOTAL POPULATION	**31,742**	**33,797**	**35,189**	**36,622**	**37,708**	**38,591**
TRINITY BASIN						
BRANDON-IRENE WSC	1,521	1,619	1,686	1,754	1,806	1,848
FILES VALLEY WSC	1,857	1,977	2,058	2,142	2,205	2,257
HUBBARD	1,535	1,634	1,701	1,770	1,823	1,866
ITASCA	119	126	132	137	141	144
JOHNSON COUNTY SUD	39	41	43	45	46	47
PARKER WSC	50	54	56	58	60	61
COUNTY-OTHER	965	1,029	1,070	1,115	1,148	1,175
TRINITY BASIN TOTAL POPULATION	**6,086**	**6,480**	**6,746**	**7,021**	**7,229**	**7,398**
HILL COUNTY TOTAL POPULATION	**37,828**	**40,277**	**41,935**	**43,643**	**44,937**	**45,989**

Water User Group (WUG) Population

REGION G	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
HOOD COUNTY						
BRAZOS BASIN						
ACTON MUD	19,725	31,885	39,831	43,891	48,381	53,347
CRESSON	282	389	465	530	580	619
GRANBURY	10,249	12,441	14,012	15,365	16,404	17,200
OAK TRAIL SHORES SUBDIVISION	3,113	3,175	3,219	3,257	3,286	3,308
TOLAR	858	1,029	1,152	1,257	1,338	1,400
COUNTY-OTHER	26,979	21,998	19,242	19,647	18,554	16,209
BRAZOS BASIN TOTAL POPULATION	**61,206**	**70,917**	**77,921**	**83,947**	**88,543**	**92,083**
TRINITY BASIN						
CRESSON	90	123	147	168	184	196
COUNTY-OTHER	20	59	43	32	58	60
TRINITY BASIN TOTAL POPULATION	**110**	**182**	**190**	**200**	**242**	**256**
HOOD COUNTY TOTAL POPULATION	**61,316**	**71,099**	**78,111**	**84,147**	**88,785**	**92,339**
JOHNSON COUNTY						
BRAZOS BASIN						
ACTON MUD	382	542	707	888	1,083	1,292
BETHESDA WSC	730	843	959	1,086	1,223	1,370
BURLESON	35	43	50	54	60	68
CLEBURNE	32,501	36,195	40,006	44,185	48,693	53,517
CRESSON	50	68	86	106	127	150
GODLEY	1,133	1,278	1,427	1,591	1,767	1,956
JOHNSON COUNTY SUD	9,931	11,458	13,034	14,762	16,627	18,622
JOSHUA	4,384	5,314	6,273	7,326	8,461	9,676
KEENE	994	1,164	1,340	1,532	1,740	1,962
PARKER WSC	2,422	3,031	3,659	4,347	5,090	5,884
RIO VISTA	1,080	1,321	1,570	1,843	2,137	2,452
COUNTY-OTHER	7,812	9,649	11,547	11,634	11,882	12,286
BRAZOS BASIN TOTAL POPULATION	**61,454**	**70,906**	**80,658**	**89,354**	**98,890**	**109,235**
TRINITY BASIN						
ALVARADO	4,257	4,808	5,377	6,001	6,674	7,394
BETHANY WSC	3,909	4,426	4,959	5,544	6,175	6,850
BETHESDA WSC	14,811	17,088	19,438	22,016	24,796	27,771
BURLESON	35,132	42,802	49,972	54,581	60,651	68,102
CRESSON	104	140	177	218	262	309
CROWLEY	61	96	132	171	213	258
FORT WORTH	0	0	0	5,000	8,000	10,000
GRANDVIEW	1,754	1,980	2,213	2,468	2,743	3,037
JOHNSON COUNTY SUD	27,403	31,618	35,967	40,736	45,880	51,384
JOSHUA	2,838	3,440	4,062	4,743	5,478	6,264
KEENE	6,160	7,213	8,299	9,491	10,776	12,151
MANSFIELD	2,630	3,772	4,950	6,242	7,636	9,128
MOUNTAIN PEAK SUD	1,951	2,378	2,819	3,302	3,823	4,381

Water User Group (WUG) Population

REGION G	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
JOHNSON COUNTY						
TRINITY BASIN						
PARKER WSC	717	897	1,083	1,287	1,506	1,742
VENUS	3,335	3,848	4,377	4,957	5,583	6,253
COUNTY-OTHER	7,319	5,161	3,677	2,303	1,961	1,708
TRINITY BASIN TOTAL POPULATION	**112,381**	**129,667**	**147,502**	**169,060**	**192,157**	**216,732**
JOHNSON COUNTY TOTAL POPULATION	**173,835**	**200,573**	**228,160**	**258,414**	**291,047**	**325,967**
JONES COUNTY						
BRAZOS BASIN						
ABILENE	5,457	5,776	6,000	6,192	6,351	6,481
ANSON	2,577	2,728	2,834	2,925	3,000	3,061
HAMLIN	2,253	2,385	2,477	2,557	2,622	2,676
HAWLEY	673	712	740	763	783	799
HAWLEY WSC	4,966	5,256	5,460	5,635	5,780	5,898
STAMFORD	3,278	3,470	3,605	3,720	3,816	3,894
COUNTY-OTHER	2,220	2,349	2,442	2,520	2,585	2,637
BRAZOS BASIN TOTAL POPULATION	**21,424**	**22,676**	**23,558**	**24,312**	**24,937**	**25,446**
JONES COUNTY TOTAL POPULATION	**21,424**	**22,676**	**23,558**	**24,312**	**24,937**	**25,446**
KENT COUNTY						
BRAZOS BASIN						
JAYTON	528	540	540	540	540	540
COUNTY-OTHER	270	276	276	276	276	276
BRAZOS BASIN TOTAL POPULATION	**798**	**816**	**816**	**816**	**816**	**816**
KENT COUNTY TOTAL POPULATION	**798**	**816**	**816**	**816**	**816**	**816**
KNOX COUNTY						
BRAZOS BASIN						
KNOX CITY	1,169	1,217	1,242	1,271	1,295	1,315
MUNDAY	1,345	1,400	1,429	1,463	1,490	1,512
COUNTY-OTHER	1,197	1,244	1,270	1,301	1,324	1,345
BRAZOS BASIN TOTAL POPULATION	**3,711**	**3,861**	**3,941**	**4,035**	**4,109**	**4,172**
RED BASIN						
COUNTY-OTHER	136	142	145	148	151	153
RED BASIN TOTAL POPULATION	**136**	**142**	**145**	**148**	**151**	**153**
KNOX COUNTY TOTAL POPULATION	**3,847**	**4,003**	**4,086**	**4,183**	**4,260**	**4,325**
LAMPASAS COUNTY						
BRAZOS BASIN						
COPPERAS COVE	1,061	1,588	1,994	2,410	2,778	3,109
KEMPNER	1,207	1,334	1,432	1,533	1,622	1,702
KEMPNER WSC	8,817	9,747	10,465	11,199	11,849	12,433
LAMPASAS	7,402	8,183	8,786	9,402	9,947	10,438
LOMETA	318	351	377	404	427	448

Water User Group (WUG) Population

REGION G	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
LAMPASAS COUNTY						
BRAZOS BASIN						
COUNTY-OTHER	1,876	1,660	1,492	1,320	1,169	1,033
BRAZOS BASIN TOTAL POPULATION	**20,681**	**22,863**	**24,546**	**26,268**	**27,792**	**29,163**
COLORADO BASIN						
LOMETA	631	698	749	801	848	890
COUNTY-OTHER	488	539	579	620	656	688
COLORADO BASIN TOTAL POPULATION	**1,119**	**1,237**	**1,328**	**1,421**	**1,504**	**1,578**
LAMPASAS COUNTY TOTAL POPULATION	**21,800**	**24,100**	**25,874**	**27,689**	**29,296**	**30,741**
LEE COUNTY						
BRAZOS BASIN						
AQUA WSC	2,833	3,185	3,387	3,461	3,510	3,537
GIDDINGS	2,726	3,065	3,260	3,331	3,379	3,404
LEE COUNTY WSC	5,157	5,798	6,167	6,301	6,391	6,439
LEXINGTON	1,355	1,524	1,620	1,656	1,679	1,692
SOUTHWEST MILAM WSC	297	334	355	363	368	371
COUNTY-OTHER	959	1,079	1,148	1,171	1,189	1,199
BRAZOS BASIN TOTAL POPULATION	**13,327**	**14,985**	**15,937**	**16,283**	**16,516**	**16,642**
COLORADO BASIN						
GIDDINGS	2,895	3,255	3,461	3,537	3,587	3,615
LEE COUNTY WSC	1,998	2,247	2,389	2,441	2,476	2,495
COUNTY-OTHER	911	1,024	1,090	1,114	1,130	1,137
COLORADO BASIN TOTAL POPULATION	**5,804**	**6,526**	**6,940**	**7,092**	**7,193**	**7,247**
LEE COUNTY TOTAL POPULATION	**19,131**	**21,511**	**22,877**	**23,375**	**23,709**	**23,889**
LIMESTONE COUNTY						
BRAZOS BASIN						
COOLIDGE	623	690	745	805	855	898
GROESBECK	4,377	4,419	4,453	4,490	4,520	4,547
MART	5	8	10	12	14	16
MEXIA	4,992	5,567	6,034	6,546	6,963	7,330
THORNTON	529	532	534	536	538	540
TRI-COUNTY SUD	1,108	1,132	1,151	1,172	1,189	1,204
COUNTY-OTHER	8,668	9,149	9,540	9,970	10,218	10,526
BRAZOS BASIN TOTAL POPULATION	**20,302**	**21,497**	**22,467**	**23,531**	**24,297**	**25,061**
TRINITY BASIN						
COOLIDGE	473	525	567	613	650	683
MEXIA	3,645	4,065	4,406	4,780	5,084	5,353
COUNTY-OTHER	716	528	377	210	175	55
TRINITY BASIN TOTAL POPULATION	**4,834**	**5,118**	**5,350**	**5,603**	**5,909**	**6,091**
LIMESTONE COUNTY TOTAL POPULATION	**25,136**	**26,615**	**27,817**	**29,134**	**30,206**	**31,152**

Water User Group (WUG) Population

REGION G	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
MCLENNAN COUNTY						
BRAZOS BASIN						
BELLMEAD	10,457	11,100	11,668	12,239	12,808	13,367
BEVERLY HILLS	2,142	2,312	2,462	2,613	2,764	2,911
BRUCEVILLE-EDDY	1,580	1,705	1,816	1,927	2,038	2,147
CHALK BLUFF WSC	2,646	2,646	2,646	2,646	2,646	2,646
CORYELL CITY WATER SUPPLY DISTRICT	763	915	1,049	1,184	1,319	1,451
CRAWFORD	727	739	749	759	769	779
CROSS COUNTRY WSC	2,439	2,474	2,505	2,536	2,567	2,598
ELM CREEK WSC	1,865	2,135	2,373	2,613	2,852	3,087
GHOLSON	1,174	1,305	1,420	1,536	1,652	1,765
GOLINDA	194	250	299	349	398	446
HALLSBURG	545	588	626	665	703	740
HEWITT	15,543	17,848	19,884	21,932	23,973	25,976
LACY-LAKEVIEW	7,076	7,755	8,354	8,957	9,558	10,148
LORENA	1,900	2,142	2,356	2,571	2,785	2,995
MART	2,370	2,558	2,724	2,891	3,057	3,221
MCGREGOR	5,198	5,442	5,657	5,874	6,090	6,302
MOODY	1,472	1,589	1,692	1,796	1,899	2,001
NORTH BOSQUE WSC	2,436	2,998	3,494	3,993	4,490	4,978
RIESEL	1,035	1,067	1,096	1,125	1,154	1,182
ROBINSON	12,665	15,157	17,358	19,572	21,779	23,945
TRI-COUNTY SUD	165	193	217	242	267	291
VALLEY MILLS	22	32	41	50	59	68
WACO	133,769	144,132	153,286	162,493	171,668	180,673
WEST	2,901	3,009	3,105	3,201	3,297	3,391
WEST BRAZOS WSC	1,297	1,400	1,491	1,583	1,674	1,763
WESTERN HILLS WS	3,142	3,348	3,530	3,713	3,896	4,075
WOODWAY	9,075	9,795	10,431	11,070	11,708	12,333
COUNTY-OTHER	27,613	27,582	27,558	27,531	27,503	27,478
BRAZOS BASIN TOTAL POPULATION	**252,211**	**272,216**	**289,887**	**307,661**	**325,373**	**342,757**
MCLENNAN COUNTY TOTAL POPULATION	**252,211**	**272,216**	**289,887**	**307,661**	**325,373**	**342,757**
MILAM COUNTY						
BRAZOS BASIN						
BELL-MILAM FALLS WSC	1,707	1,808	1,880	1,971	2,049	2,122
BUCKHOLTS	546	579	602	631	656	679
CAMERON	5,884	6,233	6,481	6,796	7,065	7,318
MILANO WSC	1,938	2,053	2,134	2,238	2,326	2,410
ROCKDALE	5,929	6,282	6,531	6,848	7,120	7,375
SOUTHWEST MILAM WSC	6,378	6,756	7,025	7,366	7,658	7,932
THORNDALE	1,414	1,498	1,558	1,633	1,698	1,759

Water User Group (WUG) Population

REGION G	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
MILAM COUNTY						
BRAZOS BASIN						
COUNTY-OTHER	2,438	2,584	2,685	2,817	2,929	3,034
BRAZOS BASIN TOTAL POPULATION	**26,234**	**27,793**	**28,896**	**30,300**	**31,501**	**32,629**
MILAM COUNTY TOTAL POPULATION	**26,234**	**27,793**	**28,896**	**30,300**	**31,501**	**32,629**
NOLAN COUNTY						
BRAZOS BASIN						
BITTER CREEK WSC	1,220	1,288	1,335	1,385	1,426	1,461
ROSCOE	1,402	1,481	1,535	1,593	1,639	1,679
SWEETWATER	11,564	12,213	12,656	13,135	13,520	13,852
COUNTY-OTHER	1,112	1,174	1,216	1,263	1,301	1,332
BRAZOS BASIN TOTAL POPULATION	**15,298**	**16,156**	**16,742**	**17,376**	**17,886**	**18,324**
COLORADO BASIN						
COUNTY-OTHER	836	883	915	949	977	1,001
COLORADO BASIN TOTAL POPULATION	**836**	**883**	**915**	**949**	**977**	**1,001**
NOLAN COUNTY TOTAL POPULATION	**16,134**	**17,039**	**17,657**	**18,325**	**18,863**	**19,325**
PALO PINTO COUNTY						
BRAZOS BASIN						
GRAFORD	635	681	713	742	764	781
MINERAL WELLS	15,907	17,072	17,858	18,585	19,139	19,577
POSSUM KINGDOM WSC	1,812	1,945	2,035	2,117	2,180	2,230
STEPHENS REGIONAL SUD	39	41	43	45	46	47
STRAWN	710	762	797	829	854	873
COUNTY-OTHER	11,432	12,270	12,834	13,357	13,756	14,071
BRAZOS BASIN TOTAL POPULATION	**30,535**	**32,771**	**34,280**	**35,675**	**36,739**	**37,579**
PALO PINTO COUNTY TOTAL POPULATION	**30,535**	**32,771**	**34,280**	**35,675**	**36,739**	**37,579**
ROBERTSON COUNTY						
BRAZOS BASIN						
BREMOND	1,027	1,127	1,219	1,315	1,407	1,497
CALVERT	1,192	1,192	1,192	1,192	1,192	1,192
FRANKLIN	1,728	1,896	2,052	2,214	2,369	2,519
HEARNE	4,459	4,459	4,459	4,459	4,459	4,459
ROBERTSON COUNTY WSC	3,049	3,346	3,620	3,907	4,181	4,446
TRI-COUNTY SUD	934	1,025	1,109	1,196	1,280	1,361
WELLBORN SUD	1,804	2,067	2,340	2,673	3,031	3,425
WICKSON CREEK SUD	275	297	319	341	363	385
COUNTY-OTHER	3,890	4,741	5,491	6,228	6,892	7,487
BRAZOS BASIN TOTAL POPULATION	**18,358**	**20,150**	**21,801**	**23,525**	**25,174**	**26,771**
ROBERTSON COUNTY TOTAL POPULATION	**18,358**	**20,150**	**21,801**	**23,525**	**25,174**	**26,771**

Water User Group (WUG) Population

REGION G	WUG POPULATION					
	2020	**2030**	**2040**	**2050**	**2060**	**2070**
SHACKELFORD COUNTY						
BRAZOS BASIN						
ALBANY	2,302	2,463	2,450	2,465	2,466	2,466
STEPHENS REGIONAL SUD	14	14	14	14	14	14
COUNTY-OTHER	1,242	1,189	1,193	1,188	1,187	1,187
BRAZOS BASIN TOTAL POPULATION	**3,558**	**3,666**	**3,657**	**3,667**	**3,667**	**3,667**
SHACKELFORD COUNTY TOTAL POPULATION	**3,558**	**3,666**	**3,657**	**3,667**	**3,667**	**3,667**
SOMERVELL COUNTY						
BRAZOS BASIN						
GLEN ROSE	2,730	3,050	3,281	3,459	3,610	3,731
COUNTY-OTHER	6,752	7,544	8,114	8,554	8,929	9,227
BRAZOS BASIN TOTAL POPULATION	**9,482**	**10,594**	**11,395**	**12,013**	**12,539**	**12,958**
SOMERVELL COUNTY TOTAL POPULATION	**9,482**	**10,594**	**11,395**	**12,013**	**12,539**	**12,958**
STEPHENS COUNTY						
BRAZOS BASIN						
BRECKENRIDGE	5,959	6,178	6,276	6,340	6,387	6,419
FORT BELKNAPP WSC	50	52	53	53	54	54
POSSUM KINGDOM WSC	76	79	80	81	81	82
STEPHENS REGIONAL SUD	2,395	2,483	2,523	2,549	2,567	2,580
COUNTY-OTHER	1,447	1,501	1,523	1,540	1,552	1,558
BRAZOS BASIN TOTAL POPULATION	**9,927**	**10,293**	**10,455**	**10,563**	**10,641**	**10,693**
STEPHENS COUNTY TOTAL POPULATION	**9,927**	**10,293**	**10,455**	**10,563**	**10,641**	**10,693**
STONEWALL COUNTY						
BRAZOS BASIN						
ASPERMONT	926	928	928	928	928	928
COUNTY-OTHER	575	576	576	576	576	576
BRAZOS BASIN TOTAL POPULATION	**1,501**	**1,504**	**1,504**	**1,504**	**1,504**	**1,504**
STONEWALL COUNTY TOTAL POPULATION	**1,501**	**1,504**	**1,504**	**1,504**	**1,504**	**1,504**
TAYLOR COUNTY						
BRAZOS BASIN						
ABILENE	119,722	125,260	129,837	133,464	136,172	138,230
HAWLEY WSC	518	542	562	578	589	598
MERKEL	2,771	2,899	3,005	3,089	3,152	3,199
POTOSI WSC	4,927	5,154	5,343	5,492	5,603	5,688
STEAMBOAT MOUNTAIN WSC	3,825	4,002	4,148	4,264	4,350	4,416
TUSCOLA	484	507	525	540	551	559
TYE	1,329	1,391	1,441	1,482	1,512	1,534
COUNTY-OTHER	4,930	5,159	5,348	5,496	5,608	5,695
BRAZOS BASIN TOTAL POPULATION	**138,506**	**144,914**	**150,209**	**154,405**	**157,537**	**159,919**
COLORADO BASIN						

Water User Group (WUG) Population

REGION G	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
TAYLOR COUNTY						
COLORADO BASIN						
COLEMAN COUNTY SUD	102	107	111	114	116	118
STEAMBOAT MOUNTAIN WSC	973	1,018	1,056	1,085	1,107	1,124
TUSCOLA	310	324	336	345	352	358
COUNTY-OTHER	784	820	849	873	892	904
COLORADO BASIN TOTAL POPULATION	**2,169**	**2,269**	**2,352**	**2,417**	**2,467**	**2,504**
TAYLOR COUNTY TOTAL POPULATION	**140,675**	**147,183**	**152,561**	**156,822**	**160,004**	**162,423**
THROCKMORTON COUNTY						
BRAZOS BASIN						
FORT BELKNAPP WSC	180	180	180	180	180	180
STEPHENS REGIONAL SUD	139	139	139	139	139	139
THROCKMORTON	831	831	831	831	831	831
COUNTY-OTHER	496	496	496	496	496	496
BRAZOS BASIN TOTAL POPULATION	**1,646**	**1,646**	**1,646**	**1,646**	**1,646**	**1,646**
THROCKMORTON COUNTY TOTAL POPULATION	**1,646**	**1,646**	**1,646**	**1,646**	**1,646**	**1,646**
WASHINGTON COUNTY						
BRAZOS BASIN						
BRENHAM	17,355	18,886	19,929	20,966	21,772	22,430
COUNTY-OTHER	18,795	19,578	20,111	20,641	21,054	21,390
BRAZOS BASIN TOTAL POPULATION	**36,150**	**38,464**	**40,040**	**41,607**	**42,826**	**43,820**
COLORADO BASIN						
COUNTY-OTHER	49	52	55	57	58	60
COLORADO BASIN TOTAL POPULATION	**49**	**52**	**55**	**57**	**58**	**60**
WASHINGTON COUNTY TOTAL POPULATION	**36,199**	**38,516**	**40,095**	**41,664**	**42,884**	**43,880**
WILLIAMSON COUNTY						
BRAZOS BASIN						
BARTLETT	1,027	1,097	1,184	1,278	1,384	1,494
BELL-MILAM FALLS WSC	327	411	515	628	755	887
BLOCK HOUSE MUD	6,417	6,417	6,417	6,417	6,417	6,417
BRUSHY CREEK MUD	17,636	19,198	19,198	19,198	19,198	19,198
CEDAR PARK	71,518	79,329	79,329	79,329	79,329	79,329
CHISHOLM TRAIL SUD	23,739	29,821	37,396	45,554	54,804	64,369
FERN BLUFF MUD	5,932	5,932	5,932	5,932	5,932	5,932
FLORENCE	1,238	1,313	1,407	1,508	1,623	1,742
GEORGETOWN	72,507	91,085	114,220	139,136	167,390	196,604
GRANGER	1,568	1,678	1,816	1,964	2,132	2,306
HUTTO	31,492	43,919	59,394	76,060	94,959	114,500
JARRELL	1,446	1,787	2,212	2,670	3,189	3,726
JARRELL-SCHWERTNER WSC	3,389	4,258	5,339	6,504	7,825	9,191
JONAH WATER SUD	12,985	16,312	20,456	24,918	29,978	35,210
LEANDER	41,071	69,551	115,635	188,502	238,648	293,630

Water User Group (WUG) Population

REGION G	WUG POPULATION					
	2020	2030	2040	2050	2060	2070
WILLIAMSON COUNTY						
BRAZOS BASIN						
LIBERTY HILL	1,479	1,858	2,330	2,838	3,414	4,010
MANVILLE WSC	9,320	11,708	14,682	17,885	21,517	25,272
PFLUGERVILLE	458	576	722	880	1,059	1,244
ROUND ROCK	150,712	189,329	237,417	289,207	347,936	408,660
SOUTHWEST MILAM WSC	1,850	2,325	2,915	3,551	4,273	5,018
TAYLOR	17,209	18,702	20,561	22,563	24,834	27,182
THORNDALE	3	3	4	5	7	8
THRALL	1,000	1,119	1,267	1,426	1,607	1,794
WILLIAMSON COUNTY MUD #10	4,660	5,855	7,342	8,944	10,760	12,638
WILLIAMSON COUNTY MUD #11	2,863	3,597	4,510	5,495	6,610	7,764
WILLIAMSON COUNTY MUD #9	4,143	5,205	6,527	7,951	9,566	11,236
WILLIAMSON-TRAVIS COUNTY MUD #1	4,596	4,596	4,596	4,596	4,596	4,596
COUNTY-OTHER	53,182	66,113	83,270	78,513	105,600	130,474
BRAZOS BASIN TOTAL POPULATION	**543,767**	**683,094**	**856,593**	**1,043,452**	**1,255,342**	**1,474,431**
COLORADO BASIN						
COUNTY-OTHER	17,988	22,597	28,336	34,518	41,527	48,775
COLORADO BASIN TOTAL POPULATION	**17,988**	**22,597**	**28,336**	**34,518**	**41,527**	**48,775**
WILLIAMSON COUNTY TOTAL POPULATION	**561,755**	**705,691**	**884,929**	**1,077,970**	**1,296,869**	**1,523,206**
YOUNG COUNTY						
BRAZOS BASIN						
FORT BELKNAPP WSC	3,665	3,868	4,012	4,165	4,314	4,458
GRAHAM	9,281	9,792	10,159	10,546	10,924	11,289
NEWCASTLE	610	644	668	693	718	742
COUNTY-OTHER	1,458	1,536	1,596	1,656	1,715	1,773
BRAZOS BASIN TOTAL POPULATION	**15,014**	**15,840**	**16,435**	**17,060**	**17,671**	**18,262**
TRINITY BASIN						
FORT BELKNAPP WSC	119	125	130	135	140	145
COUNTY-OTHER	299	316	327	340	352	363
TRINITY BASIN TOTAL POPULATION	**418**	**441**	**457**	**475**	**492**	**508**
YOUNG COUNTY TOTAL POPULATION	**15,432**	**16,281**	**16,892**	**17,535**	**18,163**	**18,770**
REGION G TOTAL POPULATION	**2,371,064**	**2,720,696**	**3,097,007**	**3,494,544**	**3,918,197**	**4,351,042**

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
BELL COUNTY						
BRAZOS BASIN						
439 WSC	1,044	1,134	1,233	1,351	1,489	1,644
ARMSTRONG WSC	406	418	434	454	478	502
BARTLETT	159	179	202	226	252	277
BELL-MILAM FALLS WSC	344	356	371	390	411	432
BELTON	3,807	4,306	4,872	5,480	6,099	6,715
CHISHOLM TRAIL SUD	553	632	721	814	906	998
DOG RIDGE WSC	438	488	547	613	682	751
EAST BELL WSC	442	497	560	630	702	775
ELM CREEK WSC	254	288	327	370	413	457
FORT HOOD	3,954	3,870	3,815	3,810	3,804	3,804
HARKER HEIGHTS	6,224	7,079	8,042	9,061	10,087	11,106
HOLLAND	112	108	106	105	106	107
JARRELL-SCHWERTNER WSC	186	209	235	264	294	324
KEMPNER WSC	350	398	451	507	565	622
KILLEEN	19,467	21,902	24,713	27,748	30,864	33,969
LITTLE RIVER-ACADEMY	377	409	447	490	534	578
MOFFAT WSC	479	481	487	500	517	536
MORGAN'S POINT RESORT	595	684	787	897	1,009	1,121
NOLANVILLE	1,382	1,749	2,154	2,575	2,991	3,401
PENDLETON WSC	245	246	255	266	277	289
ROGERS	172	177	183	192	202	213
SALADO WSC	1,726	1,863	2,017	2,182	2,348	2,514
TEMPLE	19,485	22,186	25,212	28,415	31,644	34,842
TROY	169	180	193	209	228	247
WEST BELL COUNTY WSC	789	816	800	798	797	797
COUNTY-OTHER	870	1,716	2,711	3,733	4,719	5,668
MANUFACTURING	1,370	1,490	1,607	1,711	1,847	1,994
MINING	3,242	3,980	4,599	5,349	6,105	6,968
STEAM ELECTRIC POWER	4,220	4,934	5,804	6,865	8,157	9,693
LIVESTOCK	1,009	1,009	1,009	1,009	1,009	1,009
IRRIGATION	2,205	2,174	2,147	2,117	2,086	2,058
BRAZOS BASIN TOTAL DEMAND	**76,075**	**85,958**	**97,041**	**109,131**	**121,622**	**134,411**
BELL COUNTY TOTAL DEMAND	**76,075**	**85,958**	**97,041**	**109,131**	**121,622**	**134,411**
BOSQUE COUNTY						
BRAZOS BASIN						
CHILDRESS CREEK WSC	410	436	446	453	459	464
CLIFTON	700	745	763	775	786	793
CROSS COUNTRY WSC	124	132	135	138	139	141
MERIDIAN	222	234	238	241	244	246
VALLEY MILLS	259	276	284	288	293	295
WALNUT SPRINGS	97	101	102	103	105	106
COUNTY-OTHER	1,271	1,357	1,395	1,420	1,440	1,453
MANUFACTURING	2,739	3,058	3,372	3,643	3,959	4,302
MINING	1,972	2,071	1,892	1,872	1,833	1,821
STEAM ELECTRIC POWER	6,188	7,235	8,510	10,065	11,961	14,214
LIVESTOCK	989	989	989	989	989	989

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	**2030**	**2040**	**2050**	**2060**	**2070**
BOSQUE COUNTY						
BRAZOS BASIN						
IRRIGATION	2,128	2,094	2,060	2,029	1,998	1,968
BRAZOS BASIN TOTAL DEMAND	**17,099**	**18,728**	**20,186**	**22,016**	**24,206**	**26,792**
BOSQUE COUNTY TOTAL DEMAND	**17,099**	**18,728**	**20,186**	**22,016**	**24,206**	**26,792**
BRAZOS COUNTY						
BRAZOS BASIN						
BRYAN	15,696	16,243	20,342	23,492	26,926	30,652
COLLEGE STATION	19,178	24,320	25,726	29,619	33,927	38,728
TEXAS A & M UNIVERSITY	6,322	6,350	6,309	6,292	6,289	6,288
WELLBORN SUD	1,837	2,070	2,318	2,634	2,982	3,368
WICKSON CREEK SUD	991	1,155	1,332	1,558	1,809	2,088
COUNTY-OTHER	904	590	551	629	752	947
MANUFACTURING	2,456	2,779	3,109	3,405	3,694	4,008
MINING	1,088	1,610	1,433	1,144	923	814
STEAM ELECTRIC POWER	503	406	460	312	405	384
LIVESTOCK	1,322	1,322	1,322	1,322	1,322	1,322
IRRIGATION	26,050	24,791	23,594	22,459	21,374	20,438
BRAZOS BASIN TOTAL DEMAND	**76,347**	**81,636**	**86,496**	**92,866**	**100,403**	**109,037**
BRAZOS COUNTY TOTAL DEMAND	**76,347**	**81,636**	**86,496**	**92,866**	**100,403**	**109,037**
BURLESON COUNTY						
BRAZOS BASIN						
CALDWELL	1,027	1,043	1,073	1,073	1,091	1,108
DEANVILLE WSC	465	471	490	487	493	499
MILANO WSC	212	220	224	231	237	243
SNOOK	184	195	201	209	216	221
SOMERVILLE	266	277	285	296	305	313
SOUTHWEST MILAM WSC	129	135	138	143	147	151
COUNTY-OTHER	615	673	703	771	809	841
MANUFACTURING	139	161	183	203	221	241
MINING	995	1,923	1,512	1,100	686	428
LIVESTOCK	1,508	1,508	1,508	1,508	1,508	1,508
IRRIGATION	22,855	21,904	21,057	20,115	19,216	18,469
BRAZOS BASIN TOTAL DEMAND	**28,395**	**28,510**	**27,374**	**26,136**	**24,929**	**24,022**
BURLESON COUNTY TOTAL DEMAND	**28,395**	**28,510**	**27,374**	**26,136**	**24,929**	**24,022**
CALLAHAN COUNTY						
BRAZOS BASIN						
BAIRD	241	233	227	226	226	226
CLYDE	253	256	254	252	254	257
POTOSI WSC	12	13	13	13	13	13
COUNTY-OTHER	346	357	360	360	365	368
MINING	119	118	111	105	99	94
LIVESTOCK	368	368	368	368	368	368
IRRIGATION	125	123	121	119	117	116
BRAZOS BASIN TOTAL DEMAND	**1,464**	**1,468**	**1,454**	**1,443**	**1,442**	**1,442**
COLORADO BASIN						
CLYDE	71	71	71	71	72	72

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
CALLAHAN COUNTY						
COLORADO BASIN						
COLEMAN COUNTY SUD	20	21	21	21	21	22
CROSS PLAINS	179	186	188	191	193	194
COUNTY-OTHER	267	270	268	267	269	271
MINING	109	109	103	96	91	86
LIVESTOCK	552	552	552	552	552	552
IRRIGATION	448	441	434	427	420	413
COLORADO BASIN TOTAL DEMAND	**1,646**	**1,650**	**1,637**	**1,625**	**1,618**	**1,610**
CALLAHAN COUNTY TOTAL DEMAND	**3,110**	**3,118**	**3,091**	**3,068**	**3,060**	**3,052**
COMANCHE COUNTY						
BRAZOS BASIN						
COMANCHE	521	519	515	522	535	548
DE LEON	223	220	216	219	224	230
COUNTY-OTHER	795	790	781	790	808	828
MANUFACTURING	36	39	41	43	46	49
MINING	444	525	363	276	188	128
LIVESTOCK	3,774	3,774	3,774	3,774	3,774	3,774
IRRIGATION	27,458	27,175	26,894	26,617	26,342	26,076
BRAZOS BASIN TOTAL DEMAND	**33,251**	**33,042**	**32,584**	**32,241**	**31,917**	**31,633**
COLORADO BASIN						
COUNTY-OTHER	10	10	10	10	11	11
LIVESTOCK	121	121	121	121	121	121
COLORADO BASIN TOTAL DEMAND	**131**	**131**	**131**	**131**	**132**	**132**
COMANCHE COUNTY TOTAL DEMAND	**33,382**	**33,173**	**32,715**	**32,372**	**32,049**	**31,765**
CORYELL COUNTY						
BRAZOS BASIN						
COPPERAS COVE	4,266	4,655	5,133	5,586	6,122	6,666
CORYELL CITY WATER SUPPLY DISTRICT	809	899	1,006	1,101	1,208	1,316
ELM CREEK WSC	44	48	54	58	64	70
FORT HOOD	3,672	3,679	3,627	3,622	3,617	3,616
GATESVILLE	4,424	4,939	5,532	6,066	6,658	7,253
KEMPNER WSC	541	602	674	738	810	882
MULTI-COUNTY WSC	278	302	333	362	396	431
COUNTY-OTHER	564	838	1,195	1,507	1,840	2,172
MANUFACTURING	10	11	12	13	14	15
MINING	1,510	1,072	491	363	398	437
LIVESTOCK	1,471	1,471	1,471	1,471	1,471	1,471
IRRIGATION	214	214	214	214	214	214
BRAZOS BASIN TOTAL DEMAND	**17,803**	**18,730**	**19,742**	**21,101**	**22,812**	**24,543**
CORYELL COUNTY TOTAL DEMAND	**17,803**	**18,730**	**19,742**	**21,101**	**22,812**	**24,543**
EASTLAND COUNTY						
BRAZOS BASIN						
CISCO	719	716	701	693	691	691
EASTLAND	648	643	629	621	619	619
GORMAN	99	95	91	90	90	90
RANGER	463	460	450	448	447	447
RISING STAR	100	98	95	93	93	93

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
EASTLAND COUNTY						
BRAZOS BASIN						
STEPHENS REGIONAL SUD	14	14	14	13	13	13
COUNTY-OTHER	555	538	516	503	501	501
MANUFACTURING	72	77	82	85	91	97
MINING	1,123	1,132	896	689	500	417
LIVESTOCK	1,088	1,088	1,088	1,088	1,088	1,088
IRRIGATION	6,343	6,352	6,360	6,362	6,365	6,372
BRAZOS BASIN TOTAL DEMAND	**11,224**	**11,213**	**10,922**	**10,685**	**10,498**	**10,428**
COLORADO BASIN						
COUNTY-OTHER	28	27	26	26	26	26
MINING	41	41	33	25	18	15
LIVESTOCK	39	39	39	39	39	39
IRRIGATION	476	477	477	478	478	478
COLORADO BASIN TOTAL DEMAND	**584**	**584**	**575**	**568**	**561**	**558**
EASTLAND COUNTY TOTAL DEMAND	**11,808**	**11,797**	**11,497**	**11,253**	**11,059**	**10,986**
ERATH COUNTY						
BRAZOS BASIN						
DUBLIN	382	403	421	444	472	499
STEPHENVILLE	2,659	2,867	3,047	3,241	3,448	3,645
COUNTY-OTHER	2,665	2,880	3,066	3,264	3,472	3,671
MANUFACTURING	80	88	96	103	112	122
MINING	505	536	376	304	232	177
LIVESTOCK	6,702	6,702	6,702	6,702	6,702	6,702
IRRIGATION	6,383	6,290	6,198	6,107	6,018	5,933
BRAZOS BASIN TOTAL DEMAND	**19,376**	**19,766**	**19,906**	**20,165**	**20,456**	**20,749**
ERATH COUNTY TOTAL DEMAND	**19,376**	**19,766**	**19,906**	**20,165**	**20,456**	**20,749**
FALLS COUNTY						
BRAZOS BASIN						
BELL-MILAM FALLS WSC	195	200	198	191	197	203
BRUCEVILLE-EDDY	1	1	1	1	1	1
EAST BELL WSC	40	41	40	39	40	41
GOLINDA	44	44	44	42	43	45
LOTT	75	75	73	70	71	73
MARLIN	1,771	1,827	1,820	1,772	1,823	1,878
ROSEBUD	173	174	170	165	170	175
TRI-COUNTY SUD	350	355	348	335	344	354
WEST BRAZOS WSC	213	215	212	206	212	218
COUNTY-OTHER	526	531	520	504	518	533
MANUFACTURING	1	1	1	1	1	1
MINING	225	246	259	286	307	331
LIVESTOCK	1,878	1,878	1,878	1,878	1,878	1,878
IRRIGATION	4,301	4,163	4,027	3,898	3,772	3,658
BRAZOS BASIN TOTAL DEMAND	**9,793**	**9,751**	**9,591**	**9,388**	**9,377**	**9,389**
FALLS COUNTY TOTAL DEMAND	**9,793**	**9,751**	**9,591**	**9,388**	**9,377**	**9,389**
FISHER COUNTY						
BRAZOS BASIN						
BITTER CREEK WSC	112	108	104	104	104	104
ROBY	121	118	116	115	114	114

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
FISHER COUNTY						
BRAZOS BASIN						
ROTAN	178	170	165	164	163	163
COUNTY-OTHER	115	110	106	106	105	105
MANUFACTURING	225	255	284	310	336	364
MINING	407	402	359	313	273	238
LIVESTOCK	634	634	634	634	634	634
IRRIGATION	4,488	4,354	4,224	4,098	3,974	3,862
BRAZOS BASIN TOTAL DEMAND	**6,280**	**6,151**	**5,992**	**5,844**	**5,703**	**5,584**
FISHER COUNTY TOTAL DEMAND	**6,280**	**6,151**	**5,992**	**5,844**	**5,703**	**5,584**
GRIMES COUNTY						
BRAZOS BASIN						
DOBBIN-PLANTERSVILLE WSC	44	49	53	58	62	66
G & W WSC	385	501	591	688	769	841
NAVASOTA	1,428	1,439	1,446	1,466	1,493	1,518
WICKSON CREEK SUD	302	316	327	342	356	368
COUNTY-OTHER	917	915	912	933	951	968
MANUFACTURING	361	408	455	497	539	585
MINING	210	391	306	221	136	83
STEAM ELECTRIC POWER	22,232	23,212	24,262	25,662	27,762	30,034
LIVESTOCK	873	873	873	873	873	873
BRAZOS BASIN TOTAL DEMAND	**26,752**	**28,104**	**29,225**	**30,740**	**32,941**	**35,336**
SAN JACINTO BASIN						
DOBBIN-PLANTERSVILLE WSC	138	156	170	185	198	210
G & W WSC	51	67	78	91	102	111
COUNTY-OTHER	526	524	520	531	540	549
MINING	94	175	137	99	61	37
STEAM ELECTRIC POWER	9,528	9,948	10,398	10,998	11,898	12,871
LIVESTOCK	370	370	370	370	370	370
SAN JACINTO BASIN TOTAL DEMAND	**10,707**	**11,240**	**11,673**	**12,274**	**13,169**	**14,148**
TRINITY BASIN						
WICKSON CREEK SUD	41	43	45	47	49	51
COUNTY-OTHER	346	365	378	401	420	438
MINING	19	36	28	20	12	8
LIVESTOCK	260	260	260	260	260	260
TRINITY BASIN TOTAL DEMAND	**666**	**704**	**711**	**728**	**741**	**757**
GRIMES COUNTY TOTAL DEMAND	**38,125**	**40,048**	**41,609**	**43,742**	**46,851**	**50,241**
HAMILTON COUNTY						
BRAZOS BASIN						
HAMILTON	534	529	517	511	510	510
HICO	180	176	171	168	167	167
MULTI-COUNTY WSC	66	65	63	62	62	62
COUNTY-OTHER	423	411	397	395	394	394
MANUFACTURING	5	6	7	8	9	10
MINING	393	236	101	0	0	0
LIVESTOCK	1,677	1,677	1,677	1,677	1,677	1,677
IRRIGATION	507	504	495	471	448	436

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
HAMILTON COUNTY						
BRAZOS BASIN TOTAL DEMAND	**3,785**	**3,604**	**3,428**	**3,292**	**3,267**	**3,256**
HAMILTON COUNTY TOTAL DEMAND	**3,785**	**3,604**	**3,428**	**3,292**	**3,267**	**3,256**
HASKELL COUNTY						
BRAZOS BASIN						
HASKELL	519	509	498	496	502	513
RULE	89	86	84	85	86	88
STAMFORD	9	9	9	9	9	9
COUNTY-OTHER	255	247	243	245	248	253
MINING	93	92	83	74	66	59
STEAM ELECTRIC POWER	336	393	462	547	650	720
LIVESTOCK	676	676	676	676	676	676
IRRIGATION	47,844	46,422	45,040	43,072	42,405	41,207
BRAZOS BASIN TOTAL DEMAND	**49,821**	**48,434**	**47,095**	**45,204**	**44,642**	**43,525**
HASKELL COUNTY TOTAL DEMAND	**49,821**	**48,434**	**47,095**	**45,204**	**44,642**	**43,525**
HILL COUNTY						
BRAZOS BASIN						
BRANDON-IRENE WSC	55	57	57	59	61	62
FILES VALLEY WSC	121	125	127	131	135	138
HILL COUNTY WSC	425	444	457	473	486	497
HILLSBORO	1,945	2,027	2,077	2,144	2,204	2,255
ITASCA	145	147	147	150	154	156
JOHNSON COUNTY SUD	24	24	25	26	26	27
PARKER WSC	27	27	27	28	29	30
WHITE BLUFF COMMUNITY WS	434	458	474	491	505	517
WHITNEY	431	449	461	475	488	500
WOODROW-OSCEOLA WSC	384	385	388	402	412	421
COUNTY-OTHER	860	898	926	957	982	1,005
MANUFACTURING	45	50	55	60	65	70
MINING	1,307	952	620	322	349	378
LIVESTOCK	944	944	944	944	944	944
IRRIGATION	392	392	392	392	382	379
BRAZOS BASIN TOTAL DEMAND	**7,539**	**7,379**	**7,177**	**7,054**	**7,222**	**7,379**
TRINITY BASIN						
BRANDON-IRENE WSC	201	205	208	214	220	225
FILES VALLEY WSC	284	294	301	310	318	325
HUBBARD	151	153	152	158	162	166
ITASCA	11	11	11	11	11	12
JOHNSON COUNTY SUD	5	5	5	5	6	6
PARKER WSC	5	6	6	6	6	6
COUNTY-OTHER	108	113	116	120	123	126
MINING	327	238	155	81	87	94
LIVESTOCK	240	240	240	240	240	240
IRRIGATION	190	190	190	190	186	184
TRINITY BASIN TOTAL DEMAND	**1,522**	**1,455**	**1,384**	**1,335**	**1,359**	**1,384**
HILL COUNTY TOTAL DEMAND	**9,061**	**8,834**	**8,561**	**8,389**	**8,581**	**8,763**

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
HOOD COUNTY						
BRAZOS BASIN						
ACTON MUD	2,862	4,460	5,497	6,024	6,631	7,308
CRESSON	42	57	67	76	84	89
GRANBURY	1,216	1,432	1,586	1,725	1,837	1,925
OAK TRAIL SHORES SUBDIVISION	357	351	345	344	345	348
TOLAR	120	139	153	166	176	184
COUNTY-OTHER	2,820	2,179	1,898	1,930	1,814	1,582
MANUFACTURING	25	27	29	31	34	37
MINING	2,061	2,417	2,204	2,116	2,027	2,041
STEAM ELECTRIC POWER	5,814	6,796	7,995	9,456	11,238	13,354
LIVESTOCK	520	520	520	520	520	520
IRRIGATION	7,205	7,071	6,939	6,807	6,680	6,560
BRAZOS BASIN TOTAL DEMAND	**23,042**	**25,449**	**27,233**	**29,195**	**31,386**	**33,948**
TRINITY BASIN						
CRESSON	14	19	22	25	27	29
COUNTY-OTHER	3	5	5	3	5	6
MINING	17	19	18	17	16	16
LIVESTOCK	2	2	2	2	2	2
TRINITY BASIN TOTAL DEMAND	**36**	**45**	**47**	**47**	**50**	**53**
HOOD COUNTY TOTAL DEMAND	**23,078**	**25,494**	**27,280**	**29,242**	**31,436**	**34,001**
JOHNSON COUNTY						
BRAZOS BASIN						
ACTON MUD	56	76	98	122	149	177
BETHESDA WSC	154	173	194	219	246	275
BURLESON	6	7	8	8	9	10
CLEBURNE	5,927	6,446	7,010	7,678	8,445	9,276
CRESSON	8	10	13	16	19	22
GODLEY	115	125	137	151	167	184
JOHNSON COUNTY SUD	1,279	1,431	1,596	1,790	2,011	2,250
JOSHUA	577	676	784	906	1,045	1,194
KEENE	68	79	91	103	117	132
PARKER WSC	256	310	366	431	503	580
RIO VISTA	150	178	207	241	279	320
COUNTY-OTHER	833	996	1,163	1,161	1,182	1,221
MANUFACTURING	2,499	2,883	3,272	3,620	3,966	4,344
MINING	2,075	1,402	762	510	584	672
STEAM ELECTRIC POWER	7,000	7,000	7,000	7,000	7,000	7,000
LIVESTOCK	1,290	1,290	1,290	1,290	1,290	1,290
IRRIGATION	71	71	71	71	71	71
BRAZOS BASIN TOTAL DEMAND	**22,364**	**23,153**	**24,062**	**25,317**	**27,083**	**29,018**
TRINITY BASIN						
ALVARADO	456	493	536	589	653	722
BETHANY WSC	367	396	430	472	524	581
BETHESDA WSC	3,105	3,506	3,932	4,422	4,972	5,566
BURLESON	5,309	6,326	7,290	7,912	8,773	9,845
CRESSON	16	21	26	31	38	45
CROWLEY	10	14	19	25	31	37
FORT WORTH	0	0	0	951	1,520	1,899

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
JOHNSON COUNTY						
TRINITY BASIN						
GRANDVIEW	182	197	214	234	260	287
JOHNSON COUNTY SUD	3,529	3,948	4,403	4,938	5,546	6,207
JOSHUA	374	439	508	588	677	774
KEENE	419	485	557	638	725	817
MANSFIELD	721	1,024	1,337	1,681	2,055	2,455
MOUNTAIN PEAK SUD	613	737	868	1,013	1,172	1,342
PARKER WSC	77	92	109	128	149	173
VENUS	624	710	801	904	1,016	1,137
COUNTY-OTHER	780	533	371	230	195	170
MANUFACTURING	18	20	23	26	28	31
MINING	2,051	1,386	753	503	577	664
LIVESTOCK	323	323	323	323	323	323
IRRIGATION	70	70	70	70	70	70
TRINITY BASIN TOTAL DEMAND	**19,044**	**20,720**	**22,570**	**25,678**	**29,304**	**33,145**
JOHNSON COUNTY TOTAL DEMAND	**41,408**	**43,873**	**46,632**	**50,995**	**56,387**	**62,163**
JONES COUNTY						
BRAZOS BASIN						
ABILENE	992	1,023	1,041	1,062	1,087	1,109
ANSON	367	375	378	388	397	405
HAMLIN	424	436	445	458	469	478
HAWLEY	75	76	76	77	79	81
HAWLEY WSC	383	383	381	383	391	399
STAMFORD	834	865	885	910	932	951
COUNTY-OTHER	279	289	296	303	310	316
MINING	239	234	218	199	183	169
STEAM ELECTRIC POWER	333	294	396	364	484	518
LIVESTOCK	853	853	853	853	853	853
IRRIGATION	2,870	2,784	2,701	2,620	2,542	2,471
BRAZOS BASIN TOTAL DEMAND	**7,649**	**7,612**	**7,670**	**7,617**	**7,727**	**7,750**
JONES COUNTY TOTAL DEMAND	**7,649**	**7,612**	**7,670**	**7,617**	**7,727**	**7,750**
KENT COUNTY						
BRAZOS BASIN						
JAYTON	92	91	89	89	88	88
COUNTY-OTHER	33	32	32	32	32	32
MINING	38	38	35	32	29	26
LIVESTOCK	320	320	320	320	320	320
IRRIGATION	1,235	1,198	1,166	1,134	1,102	1,073
BRAZOS BASIN TOTAL DEMAND	**1,718**	**1,679**	**1,642**	**1,607**	**1,571**	**1,539**
KENT COUNTY TOTAL DEMAND	**1,718**	**1,679**	**1,642**	**1,607**	**1,571**	**1,539**
KNOX COUNTY						
BRAZOS BASIN						
KNOX CITY	242	245	248	253	257	261
MUNDAY	256	259	260	266	270	274
COUNTY-OTHER	124	121	120	123	124	126
MINING	12	12	11	11	11	11
LIVESTOCK	790	790	790	790	790	790

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	**2030**	**2040**	**2050**	**2060**	**2070**
KNOX COUNTY						
BRAZOS BASIN						
IRRIGATION	32,826	32,020	31,233	30,466	29,718	29,022
BRAZOS BASIN TOTAL DEMAND	**34,250**	**33,447**	**32,662**	**31,909**	**31,170**	**30,484**
RED BASIN						
COUNTY-OTHER	14	14	14	14	15	15
MINING	3	3	3	3	3	3
LIVESTOCK	197	197	197	197	197	197
IRRIGATION	8,207	8,005	7,808	7,616	7,429	7,256
RED BASIN TOTAL DEMAND	**8,421**	**8,219**	**8,022**	**7,830**	**7,644**	**7,471**
KNOX COUNTY TOTAL DEMAND	**42,671**	**41,666**	**40,684**	**39,739**	**38,814**	**37,955**
LAMPASAS COUNTY						
BRAZOS BASIN						
COPPERAS COVE	126	182	222	265	304	340
KEMPNER	202	219	231	246	259	272
KEMPNER WSC	1,539	1,669	1,770	1,882	1,987	2,084
LAMPASAS	1,193	1,278	1,343	1,421	1,500	1,573
LOMETA	60	65	68	73	77	80
COUNTY-OTHER	251	220	198	174	153	136
MANUFACTURING	185	199	213	226	243	261
MINING	148	166	181	196	214	235
LIVESTOCK	783	783	783	783	783	783
IRRIGATION	47	47	46	45	45	45
BRAZOS BASIN TOTAL DEMAND	**4,534**	**4,828**	**5,055**	**5,311**	**5,565**	**5,809**
COLORADO BASIN						
LOMETA	119	128	135	143	151	159
COUNTY-OTHER	66	72	77	82	87	91
MINING	50	55	60	65	72	78
LIVESTOCK	449	449	449	449	449	449
IRRIGATION	340	335	331	327	325	321
COLORADO BASIN TOTAL DEMAND	**1,024**	**1,039**	**1,052**	**1,066**	**1,084**	**1,098**
LAMPASAS COUNTY TOTAL DEMAND	**5,558**	**5,867**	**6,107**	**6,377**	**6,649**	**6,907**
LEE COUNTY						
BRAZOS BASIN						
AQUA WSC	466	511	536	544	551	555
GIDDINGS	544	597	626	634	643	647
LEE COUNTY WSC	654	714	746	755	764	769
LEXINGTON	242	265	277	281	284	286
SOUTHWEST MILAM WSC	48	53	55	56	56	57
COUNTY-OTHER	100	106	112	114	115	116
MINING	2,480	5,685	6,058	6,477	6,945	7,512
LIVESTOCK	1,623	1,623	1,623	1,623	1,623	1,623
IRRIGATION	449	436	424	412	400	389
BRAZOS BASIN TOTAL DEMAND	**6,606**	**9,990**	**10,457**	**10,896**	**11,381**	**11,954**
COLORADO BASIN						
GIDDINGS	576	634	663	673	681	687
LEE COUNTY WSC	254	277	289	293	296	298
COUNTY-OTHER	95	101	106	108	109	110
MANUFACTURING	13	14	15	16	17	18

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
LEE COUNTY						
COLORADO BASIN						
MINING	700	1,604	1,709	1,827	1,959	2,119
LIVESTOCK	312	312	312	312	312	312
IRRIGATION	10	10	10	9	9	9
COLORADO BASIN TOTAL DEMAND	**1,960**	**2,952**	**3,104**	**3,238**	**3,383**	**3,553**
LEE COUNTY TOTAL DEMAND	**8,566**	**12,942**	**13,561**	**14,134**	**14,764**	**15,507**
LIMESTONE COUNTY						
BRAZOS BASIN						
COOLIDGE	102	110	117	126	133	140
GROESBECK	688	677	668	665	668	672
MART	1	2	2	2	2	3
MEXIA	336	374	405	440	468	493
THORNTON	70	68	66	65	65	65
TRI-COUNTY SUD	136	134	133	133	134	136
COUNTY-OTHER	824	831	834	853	871	897
MANUFACTURING	23	26	28	30	32	34
MINING	9,492	9,131	9,076	9,512	9,941	10,511
STEAM ELECTRIC POWER	22,598	26,420	31,079	36,758	43,681	52,033
LIVESTOCK	1,522	1,522	1,522	1,522	1,522	1,522
BRAZOS BASIN TOTAL DEMAND	**35,792**	**39,295**	**43,930**	**50,106**	**57,517**	**66,506**
TRINITY BASIN						
COOLIDGE	78	85	90	96	102	107
MEXIA	245	274	297	322	342	360
COUNTY-OTHER	68	47	33	18	15	5
MANUFACTURING	70	76	83	88	95	103
MINING	825	794	789	827	864	914
LIVESTOCK	182	182	182	182	182	182
TRINITY BASIN TOTAL DEMAND	**1,468**	**1,458**	**1,474**	**1,533**	**1,600**	**1,671**
LIMESTONE COUNTY TOTAL DEMAND	**37,260**	**40,753**	**45,404**	**51,639**	**59,117**	**68,177**
MCLENNAN COUNTY						
BRAZOS BASIN						
BELLMEAD	1,241	1,269	1,296	1,339	1,397	1,457
BEVERLY HILLS	252	261	268	281	297	312
BRUCEVILLE-EDDY	292	307	322	338	357	376
CHALK BLUFF WSC	269	258	249	245	244	244
CORYELL CITY WATER SUPPLY DISTRICT	125	147	166	186	207	227
CRAWFORD	149	147	147	147	149	151
CROSS COUNTRY WSC	409	406	403	405	409	413
ELM CREEK WSC	200	221	241	262	285	308
GHOLSON	155	167	178	190	204	218
GOLINDA	19	24	28	32	36	40
HALLSBURG	81	84	87	92	97	102
HEWITT	2,711	3,036	3,329	3,643	3,975	4,305
LACY-LAKEVIEW	772	817	859	908	966	1,025
LORENA	309	339	367	396	429	461
MART	352	368	383	401	423	445
MCGREGOR	796	808	820	840	869	899

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
MCLENNAN COUNTY						
BRAZOS BASIN						
MOODY	189	196	202	211	223	235
NORTH BOSQUE WSC	619	751	870	990	1,112	1,233
RIESEL	136	136	136	137	140	144
ROBINSON	2,437	2,855	3,229	3,618	4,020	4,418
TRI-COUNTY SUD	21	23	25	28	31	33
VALLEY MILLS	5	7	8	10	11	13
WACO	31,576	33,377	35,005	36,840	38,861	40,887
WEST	490	495	500	509	523	538
WEST BRAZOS WSC	186	193	201	212	224	236
WESTERN HILLS WS	212	226	238	250	262	274
WOODWAY	3,477	3,703	3,905	4,129	4,362	4,594
COUNTY-OTHER	3,533	3,409	3,306	3,249	3,236	3,233
MANUFACTURING	5,087	5,724	6,373	6,955	7,532	8,157
MINING	2,538	3,000	3,060	3,508	3,832	4,216
STEAM ELECTRIC POWER	6,990	8,914	9,683	11,155	11,929	12,756
LIVESTOCK	1,584	1,584	1,584	1,584	1,584	1,584
IRRIGATION	4,880	4,877	4,872	4,867	4,862	4,858
BRAZOS BASIN TOTAL DEMAND	**72,092**	**78,129**	**82,340**	**87,957**	**93,088**	**98,392**
MCLENNAN COUNTY TOTAL DEMAND	**72,092**	**78,129**	**82,340**	**87,957**	**93,088**	**98,392**
MILAM COUNTY						
BRAZOS BASIN						
BELL-MILAM FALLS WSC	255	264	269	279	290	300
BUCKHOLTS	68	70	71	73	76	79
CAMERON	1,359	1,409	1,441	1,500	1,556	1,612
MILANO WSC	220	225	228	236	244	253
ROCKDALE	1,159	1,198	1,222	1,269	1,317	1,364
SOUTHWEST MILAM WSC	1,021	1,055	1,078	1,121	1,163	1,204
THORNDALE	184	188	190	197	204	211
COUNTY-OTHER	300	313	324	339	351	364
MANUFACTURING	12	12	12	14	14	14
MINING	14	14	14	14	14	14
STEAM ELECTRIC POWER	32,023	32,023	32,023	40,989	40,989	40,989
LIVESTOCK	1,822	1,822	1,822	1,822	1,822	1,822
IRRIGATION	5,081	5,040	4,995	4,956	4,915	4,875
BRAZOS BASIN TOTAL DEMAND	**43,518**	**43,633**	**43,689**	**52,809**	**52,955**	**53,101**
MILAM COUNTY TOTAL DEMAND	**43,518**	**43,633**	**43,689**	**52,809**	**52,955**	**53,101**
NOLAN COUNTY						
BRAZOS BASIN						
BITTER CREEK WSC	162	164	165	170	175	179
ROSCOE	200	204	205	211	217	222
SWEETWATER	1,852	1,893	1,913	1,977	2,030	2,079
COUNTY-OTHER	130	132	132	135	139	142
MANUFACTURING	1,420	1,611	1,799	1,965	2,130	2,309
MINING	101	100	90	80	71	63
STEAM ELECTRIC POWER	13,526	23,916	23,916	23,916	23,916	23,916
LIVESTOCK	232	232	232	232	232	232

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
NOLAN COUNTY						
BRAZOS BASIN						
IRRIGATION	4,448	4,330	4,214	4,105	3,998	3,898
BRAZOS BASIN TOTAL DEMAND	**22,071**	**32,582**	**32,666**	**32,791**	**32,908**	**33,040**
COLORADO BASIN						
COUNTY-OTHER	98	99	100	102	104	107
MINING	124	122	110	98	87	78
LIVESTOCK	155	155	155	155	155	155
IRRIGATION	2,965	2,887	2,810	2,737	2,665	2,599
COLORADO BASIN TOTAL DEMAND	**3,342**	**3,263**	**3,175**	**3,092**	**3,011**	**2,939**
NOLAN COUNTY TOTAL DEMAND	**25,413**	**35,845**	**35,841**	**35,883**	**35,919**	**35,979**
PALO PINTO COUNTY						
BRAZOS BASIN						
GRAFORD	61	62	63	64	66	67
MINERAL WELLS	2,593	2,708	2,775	2,856	2,935	3,002
POSSUM KINGDOM WSC	777	826	858	889	915	936
STEPHENS REGIONAL SUD	5	5	5	5	5	5
STRAWN	137	144	147	152	156	159
COUNTY-OTHER	1,063	1,079	1,082	1,111	1,140	1,165
MANUFACTURING	49	53	57	61	67	74
MINING	656	847	625	480	336	235
STEAM ELECTRIC POWER	4,000	4,000	4,000	4,000	4,000	4,000
LIVESTOCK	915	915	915	915	915	915
IRRIGATION	3,138	3,097	3,063	3,022	2,981	2,944
BRAZOS BASIN TOTAL DEMAND	**13,394**	**13,736**	**13,590**	**13,555**	**13,516**	**13,502**
PALO PINTO COUNTY TOTAL DEMAND	**13,394**	**13,736**	**13,590**	**13,555**	**13,516**	**13,502**
ROBERTSON COUNTY						
BRAZOS BASIN						
BREMOND	189	201	213	229	244	260
CALVERT	190	183	180	180	179	179
FRANKLIN	256	272	288	307	328	348
HEARNE	757	734	715	713	711	711
ROBERTSON COUNTY WSC	246	256	267	282	300	319
TRI-COUNTY SUD	115	121	128	136	145	154
WELLBORN SUD	356	401	450	511	578	653
WICKSON CREEK SUD	28	30	31	33	35	37
COUNTY-OTHER	439	512	589	665	734	796
MANUFACTURING	133	154	176	197	214	232
MINING	9,913	11,753	13,768	16,222	19,217	22,940
STEAM ELECTRIC POWER	17,461	30,380	35,512	46,984	49,133	51,381
LIVESTOCK	1,612	1,612	1,612	1,612	1,612	1,612
IRRIGATION	63,420	61,607	59,841	58,127	56,460	55,124
BRAZOS BASIN TOTAL DEMAND	**95,115**	**108,216**	**113,770**	**126,198**	**129,890**	**134,746**
ROBERTSON COUNTY TOTAL DEMAND	**95,115**	**108,216**	**113,770**	**126,198**	**129,890**	**134,746**
SHACKELFORD COUNTY						
BRAZOS BASIN						
ALBANY	640	673	662	662	661	661
STEPHENS REGIONAL SUD	2	2	2	2	2	2
COUNTY-OTHER	125	113	108	107	107	107

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
SHACKELFORD COUNTY						
BRAZOS BASIN						
MINING	562	747	558	442	328	243
LIVESTOCK	840	840	840	840	840	840
BRAZOS BASIN TOTAL DEMAND	**2,169**	**2,375**	**2,170**	**2,053**	**1,938**	**1,853**
SHACKELFORD COUNTY TOTAL DEMAND	**2,169**	**2,375**	**2,170**	**2,053**	**1,938**	**1,853**
SOMERVELL COUNTY						
BRAZOS BASIN						
GLEN ROSE	583	638	677	709	738	763
COUNTY-OTHER	822	892	941	982	1,022	1,056
MANUFACTURING	8	9	10	11	12	13
MINING	1,112	1,279	1,146	1,060	998	971
STEAM ELECTRIC POWER	84,817	84,817	84,817	84,817	84,817	84,817
LIVESTOCK	158	158	158	158	158	158
IRRIGATION	83	82	82	81	80	79
BRAZOS BASIN TOTAL DEMAND	**87,583**	**87,875**	**87,831**	**87,818**	**87,825**	**87,857**
SOMERVELL COUNTY TOTAL DEMAND	**87,583**	**87,875**	**87,831**	**87,818**	**87,825**	**87,857**
STEPHENS COUNTY						
BRAZOS BASIN						
BRECKENRIDGE	1,012	1,020	1,013	1,011	1,017	1,022
FORT BELKNAPP WSC	6	6	6	6	6	6
POSSUM KINGDOM WSC	33	34	34	34	34	35
STEPHENS REGIONAL SUD	262	260	255	253	254	255
COUNTY-OTHER	156	155	152	151	152	152
MANUFACTURING	9	10	11	12	13	14
MINING	5,064	5,141	4,458	3,825	3,257	2,773
LIVESTOCK	486	486	486	486	486	486
IRRIGATION	116	115	113	112	111	110
BRAZOS BASIN TOTAL DEMAND	**7,144**	**7,227**	**6,528**	**5,890**	**5,330**	**4,853**
STEPHENS COUNTY TOTAL DEMAND	**7,144**	**7,227**	**6,528**	**5,890**	**5,330**	**4,853**
STONEWALL COUNTY						
BRAZOS BASIN						
ASPERMONT	250	245	242	242	241	241
COUNTY-OTHER	68	65	65	64	64	64
MINING	584	576	512	446	388	338
LIVESTOCK	458	458	458	458	458	458
IRRIGATION	165	160	155	150	146	142
BRAZOS BASIN TOTAL DEMAND	**1,525**	**1,504**	**1,432**	**1,360**	**1,297**	**1,243**
STONEWALL COUNTY TOTAL DEMAND	**1,525**	**1,504**	**1,432**	**1,360**	**1,297**	**1,243**
TAYLOR COUNTY						
BRAZOS BASIN						
ABILENE	21,750	22,165	22,507	22,884	23,303	23,652
HAWLEY WSC	40	40	40	40	40	41
MERKEL	343	345	347	350	357	362
POTOSI WSC	761	779	794	809	823	836
STEAMBOAT MOUNTAIN WSC	326	329	332	336	342	346
TUSCOLA	48	48	48	48	49	50
TYE	186	188	190	193	197	199

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
TAYLOR COUNTY						
BRAZOS BASIN						
COUNTY-OTHER	570	570	571	585	595	604
MANUFACTURING	1,653	1,800	1,942	2,063	2,236	2,424
MINING	293	293	274	259	247	236
LIVESTOCK	681	681	681	681	681	681
IRRIGATION	352	343	335	326	318	310
BRAZOS BASIN TOTAL DEMAND	**27,003**	**27,581**	**28,061**	**28,574**	**29,188**	**29,741**
COLORADO BASIN						
COLEMAN COUNTY SUD	13	13	13	13	14	14
STEAMBOAT MOUNTAIN WSC	84	84	85	86	87	89
TUSCOLA	31	31	31	31	32	32
COUNTY-OTHER	90	90	91	93	95	96
MINING	98	98	92	87	82	79
LIVESTOCK	282	282	282	282	282	282
IRRIGATION	1,205	1,176	1,146	1,118	1,088	1,063
COLORADO BASIN TOTAL DEMAND	**1,803**	**1,774**	**1,740**	**1,710**	**1,680**	**1,655**
TAYLOR COUNTY TOTAL DEMAND	**28,806**	**29,355**	**29,801**	**30,284**	**30,868**	**31,396**
THROCKMORTON COUNTY						
BRAZOS BASIN						
FORT BELKNAPP WSC	20	20	19	19	19	19
STEPHENS REGIONAL SUD	16	15	15	14	14	14
THROCKMORTON	182	178	175	175	174	174
COUNTY-OTHER	48	45	45	45	45	45
MINING	194	191	171	150	132	116
LIVESTOCK	672	672	672	672	672	672
BRAZOS BASIN TOTAL DEMAND	**1,132**	**1,121**	**1,097**	**1,075**	**1,056**	**1,040**
THROCKMORTON COUNTY TOTAL DEMAND	**1,132**	**1,121**	**1,097**	**1,075**	**1,056**	**1,040**
WASHINGTON COUNTY						
BRAZOS BASIN						
BRENHAM	4,079	4,359	4,542	4,747	4,922	5,070
COUNTY-OTHER	2,417	2,431	2,429	2,456	2,498	2,538
MANUFACTURING	692	757	822	879	951	1,029
MINING	569	866	703	538	373	264
LIVESTOCK	1,654	1,654	1,654	1,654	1,654	1,654
IRRIGATION	299	299	299	299	299	299
BRAZOS BASIN TOTAL DEMAND	**9,710**	**10,366**	**10,449**	**10,573**	**10,697**	**10,854**
COLORADO BASIN						
COUNTY-OTHER	7	7	7	7	7	7
LIVESTOCK	7	7	7	7	7	7
COLORADO BASIN TOTAL DEMAND	**14**	**14**	**14**	**14**	**14**	**14**
WASHINGTON COUNTY TOTAL DEMAND	**9,724**	**10,380**	**10,463**	**10,587**	**10,711**	**10,868**
WILLIAMSON COUNTY						
BRAZOS BASIN						
BARTLETT	197	205	217	232	251	270
BELL-MILAM FALLS WSC	49	60	74	89	107	126
BLOCK HOUSE MUD	845	828	819	814	812	811
BRUSHY CREEK MUD	4,366	4,693	4,659	4,639	4,635	4,634
CEDAR PARK	14,753	16,263	16,182	16,154	16,140	16,133

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
WILLIAMSON COUNTY						
BRAZOS BASIN						
CHISHOLM TRAIL SUD	4,412	5,471	6,818	8,280	9,948	11,678
FERN BLUFF MUD	1,216	1,204	1,196	1,191	1,189	1,189
FLORENCE	119	121	125	132	141	152
GEORGETOWN	15,944	19,787	24,665	29,960	36,006	42,273
GRANGER	212	220	232	247	268	289
HUTTO	3,767	5,189	6,992	8,937	11,144	13,428
JARRELL	109	129	156	187	222	259
JARRELL-SCHWERTNER WSC	461	561	690	833	1,000	1,174
JONAH WATER SUD	1,830	2,239	2,768	3,350	4,023	4,722
LEANDER	4,905	8,145	13,470	21,914	27,724	34,098
LIBERTY HILL	158	192	237	286	343	402
MANVILLE WSC	1,452	1,789	2,220	2,691	3,233	3,794
PFLUGERVILLE	76	95	118	144	173	203
ROUND ROCK	24,148	29,808	37,049	44,943	53,991	63,377
SOUTHWEST MILAM WSC	297	363	448	541	649	762
TAYLOR	2,840	3,006	3,241	3,522	3,869	4,232
THORNDALE	1	1	1	1	1	1
THRALL	89	95	105	116	130	145
WILLIAMSON COUNTY MUD #10	996	1,243	1,556	1,892	2,274	2,670
WILLIAMSON COUNTY MUD #11	577	719	900	1,095	1,315	1,544
WILLIAMSON COUNTY MUD #9	834	1,034	1,290	1,566	1,882	2,210
WILLIAMSON-TRAVIS COUNTY MUD #1	599	584	576	572	571	570
COUNTY-OTHER	8,254	10,022	12,494	11,725	15,735	19,425
MANUFACTURING	2,354	2,692	3,032	3,339	3,626	3,938
MINING	5,163	6,247	7,364	8,555	9,782	11,186
LIVESTOCK	1,455	1,455	1,455	1,455	1,455	1,455
IRRIGATION	151	151	151	151	151	151
BRAZOS BASIN TOTAL DEMAND	**102,629**	**124,611**	**151,300**	**179,553**	**212,790**	**247,301**
COLORADO BASIN						
COUNTY-OTHER	2,793	3,426	4,252	5,155	6,189	7,263
COLORADO BASIN TOTAL DEMAND	**2,793**	**3,426**	**4,252**	**5,155**	**6,189**	**7,263**
WILLIAMSON COUNTY TOTAL DEMAND	**105,422**	**128,037**	**155,552**	**184,708**	**218,979**	**254,564**
YOUNG COUNTY						
BRAZOS BASIN						
FORT BELKNAPP WSC	406	415	421	431	445	460
GRAHAM	2,666	2,764	2,830	2,918	3,018	3,119
NEWCASTLE	60	61	61	61	63	65
COUNTY-OTHER	178	179	182	188	194	201
MANUFACTURING	59	64	69	72	79	87
MINING	163	240	171	131	91	64
STEAM ELECTRIC POWER	1,730	2,023	2,379	2,814	3,344	3,706
LIVESTOCK	839	839	839	839	839	839
IRRIGATION	51	50	48	47	45	44
BRAZOS BASIN TOTAL DEMAND	**6,152**	**6,635**	**7,000**	**7,501**	**8,118**	**8,585**
TRINITY BASIN						
FORT BELKNAPP WSC	14	14	14	14	15	15

Water User Group (WUG) Demand

REGION G	WUG DEMAND (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
YOUNG COUNTY						
TRINITY BASIN						
COUNTY-OTHER	36	36	37	39	40	41
MINING	24	36	25	20	14	9
LIVESTOCK	137	137	137	137	137	137
TRINITY BASIN TOTAL DEMAND	**211**	**223**	**213**	**210**	**206**	**202**
YOUNG COUNTY TOTAL DEMAND	**6,363**	**6,858**	**7,213**	**7,711**	**8,324**	**8,787**
REGION G TOTAL DEMAND	**1,067,568**	**1,152,415**	**1,214,621**	**1,303,205**	**1,387,178**	**1,478,295**

Source Availability

REGION G

GROUNDWATER	COUNTY	BASIN	SALINITY	SOURCE AVAILABILITY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
BLAINE AQUIFER	FISHER	BRAZOS	FRESH	5,062	5,062	5,062	5,062	5,062	5,062
BLAINE AQUIFER	KNOX	BRAZOS	FRESH	700	700	700	700	700	700
BLAINE AQUIFER	NOLAN	BRAZOS	FRESH	100	100	100	100	100	100
BLAINE AQUIFER	STONEWALL	BRAZOS	FRESH	8,700	8,700	8,700	8,700	8,700	8,700
BRAZOS RIVER ALLUVIUM AQUIFER	BOSQUE	BRAZOS	FRESH	830	830	830	830	830	830
BRAZOS RIVER ALLUVIUM AQUIFER	BRAZOS	BRAZOS	FRESH	12,500	12,500	12,500	12,500	12,500	12,500
BRAZOS RIVER ALLUVIUM AQUIFER	BURLESON	BRAZOS	FRESH	22,056	22,056	22,056	22,056	22,056	22,056
BRAZOS RIVER ALLUVIUM AQUIFER	FALLS	BRAZOS	FRESH	16,684	16,684	16,684	16,684	16,684	16,684
BRAZOS RIVER ALLUVIUM AQUIFER	GRIMES	BRAZOS	FRESH	5,112	5,112	5,112	5,112	5,112	5,112
BRAZOS RIVER ALLUVIUM AQUIFER	HILL	BRAZOS	FRESH	632	632	632	632	632	632
BRAZOS RIVER ALLUVIUM AQUIFER	MCLENNAN	BRAZOS	FRESH	15,023	15,023	15,023	15,023	15,023	15,023
BRAZOS RIVER ALLUVIUM AQUIFER	MILAM	BRAZOS	FRESH	3,082	3,082	3,082	3,082	3,082	3,082
BRAZOS RIVER ALLUVIUM AQUIFER	ROBERTSON	BRAZOS	FRESH	6,300	6,300	6,300	6,300	6,300	6,300
BRAZOS RIVER ALLUVIUM AQUIFER	WASHINGTON	BRAZOS	FRESH	5,770	5,770	5,770	5,770	5,770	5,770
CARRIZO-WILCOX AQUIFER	BRAZOS	BRAZOS	FRESH	38,835	44,847	49,421	53,970	57,169	57,169
CARRIZO-WILCOX AQUIFER	BURLESON	BRAZOS	FRESH	23,249	28,047	32,518	36,492	38,701	38,701
CARRIZO-WILCOX AQUIFER	FALLS	BRAZOS	FRESH	867	875	884	895	895	895
CARRIZO-WILCOX AQUIFER	GRIMES	BRAZOS	FRESH	2,850	2,850	2,850	2,850	2,850	2,850
CARRIZO-WILCOX AQUIFER	GRIMES	SAN JACINTO	FRESH	3,517	3,517	3,517	3,517	3,517	3,517
CARRIZO-WILCOX AQUIFER	GRIMES	TRINITY	FRESH	5,424	5,424	5,424	5,424	5,424	5,424
CARRIZO-WILCOX AQUIFER	LEE	BRAZOS	FRESH	23,036	22,341	23,513	25,464	25,989	25,989
CARRIZO-WILCOX AQUIFER	LEE	COLORADO	FRESH	987	1,061	1,111	1,363	1,391	1,391
CARRIZO-WILCOX AQUIFER	LIMESTONE	BRAZOS	FRESH	11,306	11,436	11,616	11,918	11,918	11,918
CARRIZO-WILCOX AQUIFER	LIMESTONE	TRINITY	FRESH	988	988	988	988	988	988
CARRIZO-WILCOX AQUIFER	MILAM	BRAZOS	FRESH	23,923	20,206	19,112	21,359	22,319	22,319
CARRIZO-WILCOX AQUIFER	ROBERTSON	BRAZOS	FRESH	45,435	45,814	46,238	46,582	46,583	46,583
CARRIZO-WILCOX AQUIFER	WILLIAMSON	BRAZOS	FRESH	7	7	7	7	7	7
CARRIZO-WILCOX AQUIFER	WILLIAMSON	COLORADO	FRESH	0	0	0	0	0	0
DOCKUM AQUIFER	FISHER	BRAZOS	FRESH	2,880	2,880	2,880	2,880	2,880	2,880
DOCKUM AQUIFER	KENT	BRAZOS	FRESH	6,250	6,250	6,250	6,250	6,250	6,250
DOCKUM AQUIFER	NOLAN	BRAZOS	FRESH	2,824	2,824	2,824	2,824	2,824	2,824

Source Availability

REGION G

GROUNDWATER	COUNTY	BASIN	SALINITY	SOURCE AVAILABILITY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
DOCKUM AQUIFER	NOLAN	COLORADO	FRESH	2,926	2,926	2,926	2,926	2,926	2,926
EDWARDS-BFZ AQUIFER	BELL	BRAZOS	FRESH	6,469	6,469	6,469	6,469	6,469	6,469
EDWARDS-BFZ AQUIFER	WILLIAMSON	BRAZOS	FRESH	3,351	3,351	3,351	3,351	3,351	3,351
EDWARDS-BFZ AQUIFER	WILLIAMSON	COLORADO	FRESH	101	101	101	101	101	101
EDWARDS-TRINITY-PLATEAU AQUIFER	NOLAN	BRAZOS	FRESH	302	302	302	302	302	302
EDWARDS-TRINITY-PLATEAU AQUIFER	NOLAN	COLORADO	FRESH	391	391	391	391	391	391
EDWARDS-TRINITY-PLATEAU AQUIFER	TAYLOR	BRAZOS	FRESH	331	331	331	331	331	331
EDWARDS-TRINITY-PLATEAU AQUIFER	TAYLOR	COLORADO	FRESH	158	158	158	158	158	158
ELLENBURGER-SAN SABA AQUIFER	LAMPASAS	BRAZOS	FRESH	620	620	620	620	620	620
ELLENBURGER-SAN SABA AQUIFER	LAMPASAS	COLORADO	FRESH	1,973	1,973	1,973	1,973	1,973	1,973
GULF COAST AQUIFER	BRAZOS	BRAZOS	FRESH	1,189	1,189	1,189	1,189	1,189	1,189
GULF COAST AQUIFER	GRIMES	BRAZOS	FRESH	10,889	10,889	10,889	10,889	10,889	10,889
GULF COAST AQUIFER	GRIMES	SAN JACINTO	FRESH	2,197	2,197	2,197	2,197	2,197	2,197
GULF COAST AQUIFER	GRIMES	TRINITY	FRESH	764	223	0	0	0	0
GULF COAST AQUIFER	WASHINGTON	BRAZOS	FRESH	12,972	12,972	12,604	12,604	12,604	12,604
GULF COAST AQUIFER	WASHINGTON	COLORADO	FRESH	73	73	73	73	73	73
HICKORY AQUIFER	LAMPASAS	BRAZOS	FRESH	66	66	66	66	66	66
HICKORY AQUIFER	LAMPASAS	COLORADO	FRESH	47	47	47	47	47	47
HICKORY AQUIFER	WILLIAMSON	BRAZOS	FRESH	15	15	15	15	15	15
HICKORY AQUIFER	WILLIAMSON	COLORADO	FRESH	0	0	0	0	0	0
MARBLE FALLS AQUIFER	LAMPASAS	BRAZOS	FRESH	513	513	513	513	513	513
MARBLE FALLS AQUIFER	LAMPASAS	COLORADO	FRESH	2,324	2,324	2,324	2,324	2,324	2,324
NAVASOTA RIVER ALLUVIUM AQUIFER	GRIMES	BRAZOS	FRESH	2,216	2,216	2,216	2,216	2,216	2,216
OTHER AQUIFER	SHACKELFORD	BRAZOS	FRESH	809	809	809	809	809	809
OTHER AQUIFER	STEPHENS	BRAZOS	FRESH	705	705	705	705	705	705
OTHER AQUIFER	THROCKMORTON	BRAZOS	FRESH	364	364	364	364	364	364
OTHER AQUIFER	WILLIAMSON	BRAZOS	FRESH	665	665	665	665	665	665
OTHER AQUIFER	YOUNG	BRAZOS	FRESH	799	799	799	799	799	799
OTHER AQUIFER	YOUNG	RED	FRESH	163	163	163	163	163	163
OTHER AQUIFER	YOUNG	TRINITY	FRESH	219	219	219	219	219	219
QUEEN CITY AQUIFER	BRAZOS	BRAZOS	FRESH	604	634	587	533	529	529
QUEEN CITY AQUIFER	BURLESON	BRAZOS	FRESH	415	446	446	446	446	446
QUEEN CITY AQUIFER	GRIMES	BRAZOS	FRESH	555	555	555	555	555	555
QUEEN CITY AQUIFER	GRIMES	TRINITY	FRESH	82	82	82	82	82	82
QUEEN CITY AQUIFER	LEE	BRAZOS	FRESH	72	61	58	54	54	54
QUEEN CITY AQUIFER	LEE	COLORADO	FRESH	48	54	55	57	57	57
QUEEN CITY AQUIFER	MILAM	BRAZOS	FRESH	53	56	56	56	56	56
QUEEN CITY AQUIFER	ROBERTSON	BRAZOS	FRESH	0	0	0	0	0	0
QUEEN CITY AQUIFER	WASHINGTON	BRAZOS	FRESH	1	1	1	1	1	1

Source Availability

REGION G

GROUNDWATER	COUNTY	BASIN	SALINITY	SOURCE AVAILABILITY (ACRE-FEET PER YEAR)					
				2020	2030	2040	2050	2060	2070
SEYMOUR AQUIFER	FISHER	BRAZOS	FRESH	2,935	2,931	2,920	2,915	2,733	2,733
SEYMOUR AQUIFER	HASKELL	BRAZOS	FRESH	46,180	44,575	42,358	42,524	43,617	43,617
SEYMOUR AQUIFER	JONES	BRAZOS	FRESH	2,918	2,918	2,918	2,918	2,918	2,918
SEYMOUR AQUIFER	KENT	BRAZOS	FRESH	1,181	1,180	1,180	1,179	1,179	1,179
SEYMOUR AQUIFER	KNOX	BRAZOS	FRESH	37,628	34,244	30,288	28,569	30,979	30,979
SEYMOUR AQUIFER	KNOX	RED	FRESH	1,591	1,365	1,213	1,136	1,061	1,061
SEYMOUR AQUIFER	STONEWALL	BRAZOS	FRESH	233	230	224	215	214	214
SEYMOUR AQUIFER	THROCKMORTON	BRAZOS	FRESH	115	115	115	115	115	115
SEYMOUR AQUIFER	YOUNG	BRAZOS	FRESH	309	258	258	258	258	258
SPARTA AQUIFER	BRAZOS	BRAZOS	FRESH	5,941	7,308	7,305	7,307	7,307	7,307
SPARTA AQUIFER	BURLESON	BRAZOS	FRESH	2,245	4,041	5,612	6,734	6,734	6,734
SPARTA AQUIFER	GRIMES	BRAZOS	FRESH	1,280	1,280	1,280	1,280	1,280	1,280
SPARTA AQUIFER	GRIMES	SAN JACINTO	FRESH	20	20	20	20	20	20
SPARTA AQUIFER	GRIMES	TRINITY	FRESH	1,271	1,271	1,271	1,271	1,271	1,271
SPARTA AQUIFER	LEE	BRAZOS	FRESH	151	143	141	135	135	135
SPARTA AQUIFER	LEE	COLORADO	FRESH	172	168	164	159	159	159
SPARTA AQUIFER	ROBERTSON	BRAZOS	FRESH	300	400	500	616	616	616
SPARTA AQUIFER	WASHINGTON	BRAZOS	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	BELL	BRAZOS	FRESH	7,068	7,068	7,068	7,068	7,068	7,068
TRINITY AQUIFER	BOSQUE	BRAZOS	FRESH	5,849	5,849	5,849	5,849	5,849	5,849
TRINITY AQUIFER	CALLAHAN	BRAZOS	FRESH	1,792	1,792	1,792	1,792	1,792	1,792
TRINITY AQUIFER	CALLAHAN	COLORADO	FRESH	1,985	1,985	1,985	1,985	1,985	1,985
TRINITY AQUIFER	COMANCHE	BRAZOS	FRESH	32,115	32,115	32,115	32,115	32,115	32,115
TRINITY AQUIFER	COMANCHE	COLORADO	FRESH	120	120	120	120	120	120
TRINITY AQUIFER	CORYELL	BRAZOS	FRESH	3,716	3,716	3,716	3,716	3,716	3,716
TRINITY AQUIFER	EASTLAND	BRAZOS	FRESH	4,489	4,489	4,489	4,489	4,489	4,489
TRINITY AQUIFER	EASTLAND	COLORADO	FRESH	231	231	231	231	231	231
TRINITY AQUIFER	ERATH	BRAZOS	FRESH	32,926	32,926	32,926	32,926	32,926	32,926
TRINITY AQUIFER	FALLS	BRAZOS	FRESH	169	169	169	169	169	169
TRINITY AQUIFER	HAMILTON	BRAZOS	FRESH	2,144	2,144	2,144	2,144	2,144	2,144
TRINITY AQUIFER	HILL	BRAZOS	FRESH	3,086	3,086	3,086	3,086	3,086	3,086
TRINITY AQUIFER	HILL	TRINITY	FRESH	61	61	61	61	61	61
TRINITY AQUIFER	HOOD	BRAZOS	FRESH	11,081	11,081	11,081	11,081	11,081	11,081
TRINITY AQUIFER	HOOD	TRINITY	FRESH	64	64	64	64	64	64
TRINITY AQUIFER	JOHNSON	BRAZOS	FRESH	4,940	4,940	4,940	4,940	4,940	4,940
TRINITY AQUIFER	JOHNSON	TRINITY	FRESH	7,931	7,931	7,931	7,931	7,931	7,931
TRINITY AQUIFER	LAMPASAS	BRAZOS	FRESH	2,925	2,925	2,925	2,925	2,925	2,925
TRINITY AQUIFER	LAMPASAS	COLORADO	FRESH	192	192	192	192	192	192
TRINITY AQUIFER	LIMESTONE	BRAZOS	FRESH	69	69	69	69	69	69
TRINITY AQUIFER	LIMESTONE	TRINITY	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	MCLENNAN	BRAZOS	FRESH	20,690	20,690	20,690	20,690	20,690	20,690
TRINITY AQUIFER	MILAM	BRAZOS	FRESH	288	288	288	288	288	288

Source Availability

REGION G

GROUNDWATER	COUNTY	BASIN	SALINITY	SOURCE AVAILABILITY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
TRINITY AQUIFER	PALO PINTO	BRAZOS	FRESH	12	12	12	12	12	12
TRINITY AQUIFER	SOMERVELL	BRAZOS	FRESH	2,485	2,485	2,485	2,485	2,485	2,485
TRINITY AQUIFER	TAYLOR	BRAZOS	FRESH	153	153	153	153	153	153
TRINITY AQUIFER	TAYLOR	COLORADO	FRESH	278	278	278	278	278	278
TRINITY AQUIFER	WILLIAMSON	BRAZOS	FRESH	1,514	1,514	1,514	1,514	1,514	1,514
TRINITY AQUIFER	WILLIAMSON	COLORADO	FRESH	68	68	68	68	68	68
WOODBINE AQUIFER	HILL	BRAZOS	FRESH	1,249	1,249	1,249	1,249	1,249	1,249
WOODBINE AQUIFER	HILL	TRINITY	FRESH	1,012	1,012	1,012	1,012	1,012	1,012
WOODBINE AQUIFER	JOHNSON	BRAZOS	FRESH	141	141	141	141	141	141
WOODBINE AQUIFER	JOHNSON	TRINITY	FRESH	4,591	4,591	4,591	4,591	4,591	4,591
WOODBINE AQUIFER	LIMESTONE	BRAZOS	FRESH	34	34	34	34	34	34
WOODBINE AQUIFER	MCLENNAN	BRAZOS	FRESH	5	5	5	5	5	5
YEGUA-JACKSON AQUIFER	BRAZOS	BRAZOS	FRESH	7,071	7,071	7,071	7,071	7,071	7,071
YEGUA-JACKSON AQUIFER	BURLESON	BRAZOS	FRESH	12,923	12,923	12,923	12,923	12,923	12,923
YEGUA-JACKSON AQUIFER	GRIMES	BRAZOS	FRESH	1,954	1,954	1,954	1,954	1,954	1,954
YEGUA-JACKSON AQUIFER	GRIMES	SAN JACINTO	FRESH	80	80	80	80	80	80
YEGUA-JACKSON AQUIFER	GRIMES	TRINITY	FRESH	1,244	1,244	1,244	1,244	1,244	1,244
YEGUA-JACKSON AQUIFER	LEE	BRAZOS	FRESH	297	297	297	297	297	297
YEGUA-JACKSON AQUIFER	LEE	COLORADO	FRESH	338	338	338	338	338	338
YEGUA-JACKSON AQUIFER	WASHINGTON	BRAZOS	FRESH	134	134	134	134	134	134
YEGUA-JACKSON AQUIFER	WASHINGTON	COLORADO	FRESH	0	0	0	0	0	0
GROUNDWATER TOTAL SOURCE AVAILABILITY				**634,354**	**638,838**	**643,304**	**656,462**	**666,625**	**666,625**

REGION G

REUSE	COUNTY	BASIN	SALINITY	SOURCE AVAILABILITY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
DIRECT REUSE	TAYLOR	BRAZOS	FRESH	1,016	1,016	1,016	1,016	1,016	1,016
DIRECT REUSE - CLEBURNE | CLEBURNE/CLEBURNE	JOHNSON	BRAZOS	FRESH	1,344	1,344	1,344	1,344	1,344	1,344
DIRECT REUSE - WMARSS | WACO/WACO	MCLENNAN	BRAZOS	FRESH	27,035	28,902	30,769	32,636	34,503	36,730
DIRECT REUSE | ROUND ROCK WWTP/ROUND ROCK IRRIGATION	WILLIAMSON	BRAZOS	FRESH	4,320	4,320	4,320	4,320	4,320	4,320
REUSE TOTAL SOURCE AVAILABILITY				**33,715**	**35,582**	**37,449**	**39,316**	**41,183**	**43,410**

REGION G

SURFACE WATER	COUNTY	BASIN	SALINITY	SOURCE AVAILABILITY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
ABILENE LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	1,075	940	805	670	535	400

Source Availability

REGION G

SURFACE WATER	COUNTY	BASIN	SALINITY	SOURCE AVAILABILITY (ACRE-FEET PER YEAR)					
				2020	2030	2040	2050	2060	2070
ALCOA LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	14,000	14,000	14,000	14,000	14,000	14,000
ALVARADO LAKE/RESERVOIR	RESERVOIR	TRINITY	FRESH	800	800	800	800	800	800
ANSON NORTH LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	202	202	202	202	202	202
BAIRD LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	230	230	230	230	230	230
BRAZOS LIVESTOCK LOCAL SUPPLY	BELL	BRAZOS	FRESH	1,009	1,009	1,009	1,009	1,009	1,009
BRAZOS LIVESTOCK LOCAL SUPPLY	BOSQUE	BRAZOS	FRESH	989	989	989	989	989	989
BRAZOS LIVESTOCK LOCAL SUPPLY	BRAZOS	BRAZOS	FRESH	1,322	1,322	1,322	1,322	1,322	1,322
BRAZOS LIVESTOCK LOCAL SUPPLY	BURLESON	BRAZOS	FRESH	1,508	1,508	1,508	1,508	1,508	1,508
BRAZOS LIVESTOCK LOCAL SUPPLY	CALLAHAN	BRAZOS	FRESH	368	368	368	368	368	368
BRAZOS LIVESTOCK LOCAL SUPPLY	COMANCHE	BRAZOS	FRESH	3,774	3,774	3,774	3,774	3,774	3,774
BRAZOS LIVESTOCK LOCAL SUPPLY	CORYELL	BRAZOS	FRESH	1,471	1,471	1,471	1,471	1,471	1,471
BRAZOS LIVESTOCK LOCAL SUPPLY	EASTLAND	BRAZOS	FRESH	1,088	1,088	1,088	1,088	1,088	1,088
BRAZOS LIVESTOCK LOCAL SUPPLY	ERATH	BRAZOS	FRESH	6,702	6,702	6,702	6,702	6,702	6,702
BRAZOS LIVESTOCK LOCAL SUPPLY	FALLS	BRAZOS	FRESH	1,878	1,878	1,878	1,878	1,878	1,878
BRAZOS LIVESTOCK LOCAL SUPPLY	FISHER	BRAZOS	FRESH	634	634	634	634	634	634
BRAZOS LIVESTOCK LOCAL SUPPLY	GRIMES	BRAZOS	FRESH	873	873	873	873	873	873
BRAZOS LIVESTOCK LOCAL SUPPLY	HAMILTON	BRAZOS	FRESH	1,677	1,677	1,677	1,677	1,677	1,677
BRAZOS LIVESTOCK LOCAL SUPPLY	HASKELL	BRAZOS	FRESH	676	676	676	676	676	676
BRAZOS LIVESTOCK LOCAL SUPPLY	HILL	BRAZOS	FRESH	944	944	944	944	944	944
BRAZOS LIVESTOCK LOCAL SUPPLY	HOOD	BRAZOS	FRESH	520	520	520	520	520	520
BRAZOS LIVESTOCK LOCAL SUPPLY	JOHNSON	BRAZOS	FRESH	1,290	1,290	1,290	1,290	1,290	1,290
BRAZOS LIVESTOCK LOCAL SUPPLY	JONES	BRAZOS	FRESH	853	853	853	853	853	853
BRAZOS LIVESTOCK LOCAL SUPPLY	KENT	BRAZOS	FRESH	320	320	320	320	320	320
BRAZOS LIVESTOCK LOCAL SUPPLY	KNOX	BRAZOS	FRESH	790	790	790	790	790	790
BRAZOS LIVESTOCK LOCAL SUPPLY	LAMPASAS	BRAZOS	FRESH	783	783	783	783	783	783
BRAZOS LIVESTOCK LOCAL SUPPLY	LEE	BRAZOS	FRESH	1,623	1,623	1,623	1,623	1,623	1,623
BRAZOS LIVESTOCK LOCAL SUPPLY	LIMESTONE	BRAZOS	FRESH	1,522	1,522	1,522	1,522	1,522	1,522
BRAZOS LIVESTOCK LOCAL SUPPLY	MCLENNAN	BRAZOS	FRESH	1,584	1,584	1,584	1,584	1,584	1,584
BRAZOS LIVESTOCK LOCAL SUPPLY	MILAM	BRAZOS	FRESH	1,822	1,822	1,822	1,822	1,822	1,822

Source Availability

REGION G									
				SOURCE AVAILABILITY (ACRE-FEET PER YEAR)					
SURFACE WATER	COUNTY	BASIN	SALINITY	2020	2030	2040	2050	2060	2070
BRAZOS LIVESTOCK LOCAL SUPPLY	NOLAN	BRAZOS	FRESH	232	232	232	232	232	232
BRAZOS LIVESTOCK LOCAL SUPPLY	PALO PINTO	BRAZOS	FRESH	915	915	915	915	915	915
BRAZOS LIVESTOCK LOCAL SUPPLY	ROBERTSON	BRAZOS	FRESH	1,612	1,612	1,612	1,612	1,612	1,612
BRAZOS LIVESTOCK LOCAL SUPPLY	SHACKELFORD	BRAZOS	FRESH	840	840	840	840	840	840
BRAZOS LIVESTOCK LOCAL SUPPLY	SOMERVELL	BRAZOS	FRESH	158	158	158	158	158	158
BRAZOS LIVESTOCK LOCAL SUPPLY	STEPHENS	BRAZOS	FRESH	486	486	486	486	486	486
BRAZOS LIVESTOCK LOCAL SUPPLY	STONEWALL	BRAZOS	FRESH	458	458	458	458	458	458
BRAZOS LIVESTOCK LOCAL SUPPLY	TAYLOR	BRAZOS	FRESH	681	681	681	681	681	681
BRAZOS LIVESTOCK LOCAL SUPPLY	THROCKMORTON	BRAZOS	FRESH	672	672	672	672	672	672
BRAZOS LIVESTOCK LOCAL SUPPLY	WASHINGTON	BRAZOS	FRESH	1,654	1,654	1,654	1,654	1,654	1,654
BRAZOS LIVESTOCK LOCAL SUPPLY	WILLIAMSON	BRAZOS	FRESH	1,455	1,455	1,455	1,455	1,455	1,455
BRAZOS LIVESTOCK LOCAL SUPPLY	YOUNG	BRAZOS	FRESH	839	839	839	839	839	839
BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	RESERVOIR	BRAZOS	FRESH	13,315	13,072	12,829	12,585	12,342	12,099
BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	RESERVOIR	BRAZOS	FRESH	211,294	210,249	209,204	208,159	207,114	206,069
BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	RESERVOIR	BRAZOS	FRESH	420,470	414,567	408,664	402,761	396,858	390,955
BRAZOS RUN-OF-RIVER	BELL	BRAZOS	FRESH	14,061	13,833	13,606	13,378	13,150	12,923
BRAZOS RUN-OF-RIVER	BOSQUE	BRAZOS	FRESH	132	132	132	131	131	131
BRAZOS RUN-OF-RIVER	BRAZOS	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	CORYELL	BRAZOS	FRESH	530	530	530	530	530	530
BRAZOS RUN-OF-RIVER	EASTLAND	BRAZOS	FRESH	460	458	456	454	452	450
BRAZOS RUN-OF-RIVER	ERATH	BRAZOS	FRESH	101	100	100	99	99	98
BRAZOS RUN-OF-RIVER	FALLS	BRAZOS	FRESH	1,724	1,724	1,724	1,724	1,724	1,724
BRAZOS RUN-OF-RIVER	FISHER	BRAZOS	FRESH	17	17	17	17	17	17
BRAZOS RUN-OF-RIVER	GRIMES	BRAZOS	FRESH	100	100	100	100	100	100
BRAZOS RUN-OF-RIVER	HAMILTON	BRAZOS	FRESH	54	53	51	50	49	47
BRAZOS RUN-OF-RIVER	HILL	BRAZOS	FRESH	9	9	9	9	9	9
BRAZOS RUN-OF-RIVER	JOHNSON	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	JONES	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	KNOX	BRAZOS	FRESH	34	34	34	34	34	34
BRAZOS RUN-OF-RIVER	LAMPASAS	BRAZOS	FRESH	151	151	151	151	151	151
BRAZOS RUN-OF-RIVER	LEE	BRAZOS	FRESH	20	20	20	20	20	20
BRAZOS RUN-OF-RIVER	LIMESTONE	BRAZOS	FRESH	14	14	14	14	14	14

Source Availability

REGION G

SURFACE WATER	COUNTY	BASIN	SALINITY	SOURCE AVAILABILITY (ACRE-FEET PER YEAR)					
				2020	2030	2040	2050	2060	2070
BRAZOS RUN-OF-RIVER	MCLENNAN	BRAZOS	FRESH	7,445	7,427	7,410	7,393	7,375	7,358
BRAZOS RUN-OF-RIVER	MILAM	BRAZOS	FRESH	3,484	3,484	3,484	3,484	3,484	3,484
BRAZOS RUN-OF-RIVER	NOLAN	BRAZOS	FRESH	40	40	40	40	40	40
BRAZOS RUN-OF-RIVER	ROBERTSON	BRAZOS	FRESH	535	535	535	535	535	535
BRAZOS RUN-OF-RIVER	SHACKELFORD	BRAZOS	FRESH	57	57	57	57	57	57
BRAZOS RUN-OF-RIVER	SOMERVELL	BRAZOS	FRESH	2,000	2,000	2,000	2,000	2,000	2,000
BRAZOS RUN-OF-RIVER	STONEWALL	BRAZOS	FRESH	8	8	8	8	8	8
BRAZOS RUN-OF-RIVER	THROCKMORTON	BRAZOS	FRESH	8	8	8	8	8	8
BRAZOS RUN-OF-RIVER	WILLIAMSON	BRAZOS	FRESH	152	152	152	152	152	152
CISCO LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	1,090	1,087	1,084	1,081	1,078	1,075
CITY OF HAMLIN LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	250	250	250	250	250	250
CLIFTON LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	730	730	730	730	730	730
CLYDE LAKE/RESERVOIR	RESERVOIR	COLORADO	FRESH	500	500	500	500	500	500
COLORADO LIVESTOCK LOCAL SUPPLY	CALLAHAN	COLORADO	FRESH	552	552	552	552	552	552
COLORADO LIVESTOCK LOCAL SUPPLY	COMANCHE	COLORADO	FRESH	121	121	121	121	121	121
COLORADO LIVESTOCK LOCAL SUPPLY	EASTLAND	COLORADO	FRESH	39	39	39	39	39	39
COLORADO LIVESTOCK LOCAL SUPPLY	LAMPASAS	COLORADO	FRESH	449	449	449	449	449	449
COLORADO LIVESTOCK LOCAL SUPPLY	LEE	COLORADO	FRESH	312	312	312	312	312	312
COLORADO LIVESTOCK LOCAL SUPPLY	NOLAN	COLORADO	FRESH	155	155	155	155	155	155
COLORADO LIVESTOCK LOCAL SUPPLY	TAYLOR	COLORADO	FRESH	282	282	282	282	282	282
COLORADO LIVESTOCK LOCAL SUPPLY	WASHINGTON	COLORADO	FRESH	7	7	7	7	7	7
COOLIDGE LAKE/RESERVOIR	RESERVOIR	TRINITY	FRESH	162	162	162	162	162	162
CRAWFORD LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	1	1	1	1	1	1
DANIEL LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	200	197	195	192	190	187
DANSBY POWER PLANT/BRYAN UTILITIES LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	85	85	85	85	85	85
EASTLAND LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	460	458	456	454	452	450
FORT PHANTOM HILL LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	11,650	11,384	11,118	10,852	10,586	10,320
GIBBONS CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	9,740	9,740	9,740	9,740	9,740	9,740
GORDON LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	5	5	5	5	5	5
GRAHAM/EDDLEMAN LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	4,250	4,082	3,914	3,746	3,578	3,410
HUBBARD CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	27,010	26,871	26,733	26,594	26,456	26,317
KIRBY LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	525	514	503	492	481	470

Source Availability

REGION G									
				SOURCE AVAILABILITY (ACRE-FEET PER YEAR)					
SURFACE WATER	COUNTY	BASIN	SALINITY	2020	2030	2040	2050	2060	2070
LAKE CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	9,835	9,830	9,825	9,820	9,815	9,810
LAKE DAVIS LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	160	142	124	106	88	70
LEON LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	5,488	5,456	5,425	5,394	5,362	5,331
LYTLE LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	230	230	230	230	230	230
MCCARTY LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	380	380	380	380	380	380
MEXIA LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	1,135	1,028	921	814	707	600
MILLERS CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	2,200	1,830	1,460	1,090	720	350
MORAN LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	85	85	85	85	85	85
PALO PINTO LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	7,655	7,481	7,307	7,133	6,959	6,785
PAT CLEBURNE LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	5,040	4,968	4,896	4,824	4,752	4,680
RED LIVESTOCK LOCAL SUPPLY	KNOX	RED	FRESH	197	197	197	197	197	197
SAN JACINTO LIVESTOCK LOCAL SUPPLY	GRIMES	SAN JACINTO	FRESH	370	370	370	370	370	370
SQUAW CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	9,285	9,272	9,260	9,247	9,234	9,222
STAMFORD LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	5,510	5,390	5,270	5,150	5,030	4,910
STRAWN LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	160	160	160	160	160	160
SWEETWATER LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	1,120	1,119	1,118	1,117	1,116	1,115
THROCKMORTON LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	325	325	325	325	325	325
TRADINGHOUSE CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	4,967	4,975	4,983	4,992	5,000	5,000
TRAMMEL LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	545	545	545	545	545	545
TRINITY LIVESTOCK LOCAL SUPPLY	GRIMES	TRINITY	FRESH	260	260	260	260	260	260
TRINITY LIVESTOCK LOCAL SUPPLY	HILL	TRINITY	FRESH	240	240	240	240	240	240
TRINITY LIVESTOCK LOCAL SUPPLY	HOOD	TRINITY	FRESH	2	2	2	2	2	2
TRINITY LIVESTOCK LOCAL SUPPLY	JOHNSON	TRINITY	FRESH	323	323	323	323	323	323
TRINITY LIVESTOCK LOCAL SUPPLY	LIMESTONE	TRINITY	FRESH	182	182	182	182	182	182
TRINITY LIVESTOCK LOCAL SUPPLY	YOUNG	TRINITY	FRESH	137	137	137	137	137	137
TURTLE CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	4,908	4,906	4,904	4,901	4,899	4,897
TWIN OAK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	2,885	2,867	2,849	2,831	2,813	2,795
WACO LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	79,877	79,877	79,877	79,877	79,877	79,877

Source Availability

REGION G

SURFACE WATER	COUNTY	BASIN	SALINITY	SOURCE AVAILABILITY (ACRE-FEET PER YEAR)					
				2020	2030	2040	2050	2060	2070
WHEELER BRANCH OFF-CHANNEL LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	1,800	1,800	1,800	1,800	1,800	1,800
WOODSON LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	99	99	99	99	99	99
SURFACE WATER TOTAL SOURCE AVAILABILITY				**942,519**	**933,427**	**924,341**	**915,249**	**906,160**	**897,063**
REGION G TOTAL SOURCE AVAILABILITY				**1,610,588**	**1,607,847**	**1,605,094**	**1,611,027**	**1,613,968**	**1,607,098**

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
		2020	2030	2040	2050	2060	2070
BELL COUNTY							
BRAZOS BASIN							
439 WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,499	1,489	1,475	1,398	1,443	1,550
BARTLETT	G | TRINITY AQUIFER | WILLIAMSON COUNTY	33	34	36	37	37	37
BELL-MILAM FALLS WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	475	471	474	478	476	474
BELL-MILAM FALLS WSC	G | TRINITY AQUIFER | BELL COUNTY	582	575	580	585	583	581
BELTON	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	7,349	7,305	7,235	6,864	6,771	6,625
BELTON	G | TRINITY AQUIFER | BELL COUNTY	50	50	50	50	50	50
CHISHOLM TRAIL SUD	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	259	238	216	197	180	165
CHISHOLM TRAIL SUD	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	31	28	27	25	23	22
DOG RIDGE WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,638	1,631	1,623	1,583	1,573	1,557
ELM CREEK WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	334	337	339	336	335	331
FORT HOOD	G | BRAZOS RUN-OF-RIVER	5,732	5,479	5,290	5,102	4,913	4,725
HARKER HEIGHTS	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	7,155	7,103	7,103	7,565	8,112	7,935
HOLLAND	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	166	166	166	166	166	166
HOLLAND	G | TRINITY AQUIFER | BELL COUNTY	323	323	323	323	323	323
JARRELL-SCHWERTNER WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	457	466	485	444	412	381
JARRELL-SCHWERTNER WSC	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	17	13	9	5	1	0
KEMPNER WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	277	283	293	302	311	319
KILLEEN	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	39,957	39,761	39,377	37,343	36,833	36,028
LITTLE RIVER-ACADEMY	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	323	323	323	323	323	323
LITTLE RIVER-ACADEMY	G | TRINITY AQUIFER | BELL COUNTY	65	65	65	65	65	65
MOFFAT WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,112	1,107	1,095	1,059	1,044	1,021
MOFFAT WSC	G | TRINITY AQUIFER | BELL COUNTY	206	206	206	206	206	206
NOLANVILLE	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	990	985	976	925	913	893
NOLANVILLE	G | TRINITY AQUIFER | BELL COUNTY	320	320	320	320	320	320
PENDLETON WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	380	378	373	361	355	345
PENDLETON WSC	G | TRINITY AQUIFER | BELL COUNTY	122	122	122	122	122	122
ROGERS	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	400	400	400	400	400	400
ROGERS	G | TRINITY AQUIFER | BELL COUNTY	207	207	207	207	207	207
SALADO WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	183	183	183	183	183	183
SALADO WSC	G | EDWARDS-BFZ AQUIFER | BELL COUNTY	2,053	2,053	2,053	2,053	2,053	2,053
TEMPLE	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	19,952	18,494	19,018	18,384	18,158	19,586

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
BELL COUNTY							
BRAZOS BASIN							
TEMPLE	G | BRAZOS RUN-OF-RIVER	1,706	1,739	1,771	1,804	1,836	1,869
TEMPLE	G | TRINITY AQUIFER | BELL COUNTY	50	50	50	50	50	50
TROY	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	959	959	959	959	959	959
TROY	G | TRINITY AQUIFER | BELL COUNTY	221	221	221	221	221	221
WEST BELL COUNTY WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,660	1,660	1,660	1,660	1,660	1,660
MORGAN'S POINT RESORT	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,935	1,935	1,935	1,935	1,935	1,935
ARMSTRONG WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	392	392	392	392	392	392
ARMSTRONG WSC	G | TRINITY AQUIFER | BELL COUNTY	879	879	879	879	879	879
EAST BELL WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	317	320	323	326	327	329
EAST BELL WSC	G | TRINITY AQUIFER | BELL COUNTY	1,018	1,027	1,037	1,046	1,051	1,056
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,297	1,293	1,286	1,248	1,238	1,223
COUNTY-OTHER	G | TRINITY AQUIFER | BELL COUNTY	657	657	657	657	657	657
MANUFACTURING	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	497	497	497	497	497	497
MINING	G | BRAZOS RUN-OF-RIVER	0	0	0	0	0	0
STEAM ELECTRIC POWER	G | EDWARDS-BFZ AQUIFER | BELL COUNTY	0	0	0	0	0	0
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,009	1,009	1,009	1,009	1,009	1,009
IRRIGATION	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	308	307	304	288	284	278
IRRIGATION	G | BRAZOS RUN-OF-RIVER	355	355	356	356	357	357
IRRIGATION	G | EDWARDS-BFZ AQUIFER | BELL COUNTY	220	220	220	220	220	220
IRRIGATION	G | TRINITY AQUIFER | BELL COUNTY	165	165	165	165	165	165
BRAZOS BASIN TOTAL EXISTING SUPPLY		**106,292**	**104,280**	**104,163**	**101,123**	**100,628**	**100,749**
BELL COUNTY TOTAL EXISTING SUPPLY		**106,292**	**104,280**	**104,163**	**101,123**	**100,628**	**100,749**
BOSQUE COUNTY							
BRAZOS BASIN							
CHILDRESS CREEK WSC	G | TRINITY AQUIFER | BOSQUE COUNTY	448	448	448	448	448	448
CLIFTON	G | CLIFTON LAKE/RESERVOIR	565	565	565	565	565	565
CLIFTON	G | TRINITY AQUIFER | BOSQUE COUNTY	469	469	469	469	469	434
CROSS COUNTRY WSC	G | TRINITY AQUIFER | BOSQUE COUNTY	30	30	30	0	0	0
CROSS COUNTRY WSC	G | TRINITY AQUIFER | MCLENNAN COUNTY	131	131	131	11	7	3
MERIDIAN	G | TRINITY AQUIFER | BOSQUE COUNTY	487	487	487	487	487	487
VALLEY MILLS	G | TRINITY AQUIFER | BOSQUE COUNTY	300	298	298	296	295	293
WALNUT SPRINGS	G | TRINITY AQUIFER | BOSQUE COUNTY	195	195	195	195	195	195
COUNTY-OTHER	G | TRINITY AQUIFER | BOSQUE COUNTY	1,519	1,519	1,519	1,519	1,519	1,519
MANUFACTURING	G | CLIFTON LAKE/RESERVOIR	1	1	1	1	1	1
MANUFACTURING	G | TRINITY AQUIFER | BOSQUE COUNTY	870	870	870	870	870	870
MINING	G | TRINITY AQUIFER | BOSQUE COUNTY	129	129	129	129	129	129

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
BOSQUE COUNTY							
BRAZOS BASIN							
STEAM ELECTRIC POWER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	6,500	6,374	6,248	6,122	5,996	5,870
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	989	989	989	989	989	989
IRRIGATION	G | BRAZOS RIVER ALLUVIUM AQUIFER | BOSQUE COUNTY	830	830	830	830	830	830
IRRIGATION	G | BRAZOS RUN-OF-RIVER	132	132	132	131	131	131
IRRIGATION	G | TRINITY AQUIFER | BOSQUE COUNTY	630	630	630	630	630	630
BRAZOS BASIN TOTAL EXISTING SUPPLY		**14,225**	**14,097**	**13,971**	**13,692**	**13,561**	**13,394**
BOSQUE COUNTY TOTAL EXISTING SUPPLY		**14,225**	**14,097**	**13,971**	**13,692**	**13,561**	**13,394**
BRAZOS COUNTY							
BRAZOS BASIN							
BRYAN	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	11,611	14,205	14,040	10,848	7,367	3,305
BRYAN	G | SPARTA AQUIFER | BRAZOS COUNTY	750	769	769	769	769	769
COLLEGE STATION	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	13,679	15,757	17,815	21,407	25,303	29,788
COLLEGE STATION	G | SPARTA AQUIFER | BRAZOS COUNTY	526	539	539	539	539	539
WELLBORN SUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	938	938	938	938	938	938
WELLBORN SUD	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	1,276	1,222	1,080	850	596	316
WICKSON CREEK SUD	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	1,499	1,451	1,375	1,311	1,249	1,201
WICKSON CREEK SUD	G | SPARTA AQUIFER | BRAZOS COUNTY	1,027	1,082	1,111	1,139	1,164	1,188
TEXAS A & M UNIVERSITY	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	9,606	11,093	11,615	11,615	11,615	11,615
TEXAS A & M UNIVERSITY	G | SPARTA AQUIFER | BRAZOS COUNTY	1,969	2,017	2,017	2,017	2,017	2,017
COUNTY-OTHER	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	106	122	128	128	128	128
COUNTY-OTHER	G | QUEEN CITY AQUIFER | BRAZOS COUNTY	400	400	400	400	400	400
COUNTY-OTHER	G | SPARTA AQUIFER | BRAZOS COUNTY	437	447	447	447	447	447
MANUFACTURING	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	100	100	100	100	100	100
MANUFACTURING	G | SPARTA AQUIFER | BRAZOS COUNTY	556	1,793	1,790	1,792	1,792	1,792
MINING	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	0	0	0	0	0	0
STEAM ELECTRIC POWER	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	147	170	178	178	178	178
STEAM ELECTRIC POWER	G | DANSBY POWER PLANT/BRYAN UTILITIES LAKE/RESERVOIR	85	85	85	85	85	85
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,322	1,322	1,322	1,322	1,322	1,322
IRRIGATION	G | BRAZOS RIVER ALLUVIUM AQUIFER | BRAZOS COUNTY	12,500	12,500	12,500	12,500	12,500	12,500
IRRIGATION	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	350	349	347	346	345	344
IRRIGATION	G | GULF COAST AQUIFER | BRAZOS COUNTY	659	659	659	659	659	659
IRRIGATION	G | SPARTA AQUIFER | BRAZOS COUNTY	289	296	296	296	296	296
IRRIGATION	G | YEGUA-JACKSON AQUIFER | BRAZOS COUNTY	1,318	1,318	1,318	1,318	1,318	1,318
BRAZOS BASIN TOTAL EXISTING SUPPLY		**61,150**	**68,634**	**70,869**	**71,004**	**71,127**	**71,245**
BRAZOS COUNTY TOTAL EXISTING SUPPLY		**61,150**	**68,634**	**70,869**	**71,004**	**71,127**	**71,245**

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
BURLESON COUNTY							
BRAZOS BASIN							
CALDWELL	G | CARRIZO-WILCOX AQUIFER | BURLESON COUNTY	2,352	2,352	2,352	2,352	2,352	2,352
MILANO WSC	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	250	234	232	232	241	245
SNOOK	G | SPARTA AQUIFER | BURLESON COUNTY	475	475	475	475	475	475
SOMERVILLE	G | SPARTA AQUIFER | BURLESON COUNTY	891	891	891	891	891	891
SOUTHWEST MILAM WSC	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	205	184	154	167	167	158
DEANVILLE WSC	G | CARRIZO-WILCOX AQUIFER | BURLESON COUNTY	701	701	701	701	701	701
COUNTY-OTHER	G | CARRIZO-WILCOX AQUIFER | BURLESON COUNTY	550	550	550	550	550	550
COUNTY-OTHER	G | QUEEN CITY AQUIFER | BURLESON COUNTY	323	323	323	323	323	323
MANUFACTURING	G | SPARTA AQUIFER | BURLESON COUNTY	139	139	139	139	139	139
MINING	G | CARRIZO-WILCOX AQUIFER | BURLESON COUNTY	0	0	0	0	0	0
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,508	1,508	1,508	1,508	1,508	1,508
IRRIGATION	G | BRAZOS RIVER ALLUVIUM AQUIFER | BURLESON COUNTY	21,640	21,640	21,640	21,640	21,640	21,640
IRRIGATION	G | CARRIZO-WILCOX AQUIFER | BURLESON COUNTY	204	204	204	204	204	204
IRRIGATION	G | YEGUA-JACKSON AQUIFER | BURLESON COUNTY	1,118	1,118	1,118	1,118	1,118	1,118
BRAZOS BASIN TOTAL EXISTING SUPPLY		**30,356**	**30,319**	**30,287**	**30,300**	**30,309**	**30,304**
BURLESON COUNTY TOTAL EXISTING SUPPLY		**30,356**	**30,319**	**30,287**	**30,300**	**30,309**	**30,304**
CALLAHAN COUNTY							
BRAZOS BASIN							
BAIRD	G | BAIRD LAKE/RESERVOIR	230	230	230	230	230	230
BAIRD	G | FORT PHANTOM HILL LAKE/RESERVOIR	77	77	77	77	77	77
CLYDE	G | CLYDE LAKE/RESERVOIR	218	218	218	218	217	218
CLYDE	G | HUBBARD CREEK LAKE/RESERVOIR	240	240	240	240	239	240
POTOSI WSC	G | HUBBARD CREEK LAKE/RESERVOIR	5	5	5	5	5	5
COUNTY-OTHER	G | HUBBARD CREEK LAKE/RESERVOIR	34	35	35	35	35	35
COUNTY-OTHER	G | TRINITY AQUIFER | CALLAHAN COUNTY	332	334	337	337	337	338
MINING	G | TRINITY AQUIFER | CALLAHAN COUNTY	0	0	0	0	0	0
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	368	368	368	368	368	368
IRRIGATION	G | TRINITY AQUIFER | CALLAHAN COUNTY	151	151	151	151	151	151
BRAZOS BASIN TOTAL EXISTING SUPPLY		**1,655**	**1,658**	**1,661**	**1,661**	**1,659**	**1,662**
COLORADO BASIN							
CLYDE	G | CLYDE LAKE/RESERVOIR	61	61	61	61	62	61
CLYDE	G | HUBBARD CREEK LAKE/RESERVOIR	67	67	67	67	68	67
CROSS PLAINS	G | TRINITY AQUIFER | CALLAHAN COUNTY	411	411	411	411	411	411
COLEMAN COUNTY SUD	F | BROWNWOOD LAKE/RESERVOIR	10	11	11	11	11	11
COLEMAN COUNTY SUD	F | COLEMAN LAKE/RESERVOIR	0	0	0	0	0	0
COLEMAN COUNTY SUD	F | HORDS CREEK LAKE/RESERVOIR	0	0	0	0	0	0
COUNTY-OTHER	G | HUBBARD CREEK LAKE/RESERVOIR	27	26	26	26	26	26

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
CALLAHAN COUNTY							
COLORADO BASIN							
COUNTY-OTHER	G | TRINITY AQUIFER | CALLAHAN COUNTY	255	253	250	250	250	249
MINING	G | TRINITY AQUIFER | CALLAHAN COUNTY	0	0	0	0	0	0
LIVESTOCK	G | COLORADO LIVESTOCK LOCAL SUPPLY	552	552	552	552	552	552
IRRIGATION	G | TRINITY AQUIFER | CALLAHAN COUNTY	591	591	591	591	591	591
COLORADO BASIN TOTAL EXISTING SUPPLY		**1,974**	**1,972**	**1,969**	**1,969**	**1,971**	**1,968**
CALLAHAN COUNTY TOTAL EXISTING SUPPLY		**3,629**	**3,630**	**3,630**	**3,630**	**3,630**	**3,630**
COMANCHE COUNTY							
BRAZOS BASIN							
COMANCHE	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	680	671	662	618	605	586
DE LEON	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	307	305	301	283	279	272
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	9	9	9	9	9	9
COUNTY-OTHER	G | TRINITY AQUIFER | COMANCHE COUNTY	637	637	637	637	636	636
MANUFACTURING	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	26	29	31	33	36	39
MANUFACTURING	G | TRINITY AQUIFER | COMANCHE COUNTY	10	10	10	10	10	10
MINING	G | TRINITY AQUIFER | COMANCHE COUNTY	26	26	26	26	26	26
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	3,774	3,774	3,774	3,774	3,774	3,774
IRRIGATION	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	4,968	3,616	3,474	4,557	3,988	3,511
IRRIGATION	G | TRINITY AQUIFER | COMANCHE COUNTY	21,597	21,597	21,597	21,597	21,597	21,597
BRAZOS BASIN TOTAL EXISTING SUPPLY		**32,034**	**30,674**	**30,521**	**31,544**	**30,960**	**30,460**
COLORADO BASIN							
COUNTY-OTHER	G | TRINITY AQUIFER | COMANCHE COUNTY	10	10	10	10	11	11
LIVESTOCK	G | COLORADO LIVESTOCK LOCAL SUPPLY	121	121	121	121	121	121
COLORADO BASIN TOTAL EXISTING SUPPLY		**131**	**131**	**131**	**131**	**132**	**132**
COMANCHE COUNTY TOTAL EXISTING SUPPLY		**32,165**	**30,805**	**30,652**	**31,675**	**31,092**	**30,592**
CORYELL COUNTY							
BRAZOS BASIN							
COPPERAS COVE	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	8,816	8,694	8,577	8,114	7,989	7,811
ELM CREEK WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	57	56	56	53	52	51
FORT HOOD	G | BRAZOS RUN-OF-RIVER	5,324	5,209	5,030	4,850	4,671	4,491
GATESVILLE	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	4,452	4,310	4,126	3,710	3,506	3,258
KEMPNER WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	428	429	438	440	445	451
CORYELL CITY WATER SUPPLY DISTRICT	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,012	1,110	1,225	1,315	1,419	1,522
MULTI-COUNTY WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	198	202	206	209	212	214
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	820	818	815	800	1,055	1,043
COUNTY-OTHER	G | TRINITY AQUIFER | CORYELL COUNTY	614	614	614	614	614	614
MANUFACTURING	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	10	11	12	13	14	15

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
		2020	2030	2040	2050	2060	2070
CORYELL COUNTY							
BRAZOS BASIN							
MINING	G | TRINITY AQUIFER | CORYELL COUNTY	0	0	0	0	0	0
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,471	1,471	1,471	1,471	1,471	1,471
IRRIGATION	G | BRAZOS RUN-OF-RIVER	530	530	530	530	530	530
IRRIGATION	G | TRINITY AQUIFER | CORYELL COUNTY	240	240	240	240	240	240
BRAZOS BASIN TOTAL EXISTING SUPPLY		**23,972**	**23,694**	**23,340**	**22,359**	**22,218**	**21,711**
CORYELL COUNTY TOTAL EXISTING SUPPLY		**23,972**	**23,694**	**23,340**	**22,359**	**22,218**	**21,711**
EASTLAND COUNTY							
BRAZOS BASIN							
CISCO	G | CISCO LAKE/RESERVOIR	943	940	937	934	931	928
EASTLAND	G | BRAZOS RUN-OF-RIVER	0	0	0	0	0	8
EASTLAND	G | LEON LAKE/RESERVOIR	3,194	3,194	3,194	3,194	3,194	3,186
GORMAN	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	169	168	166	156	153	149
RANGER	G | LEON LAKE/RESERVOIR	2,025	2,025	2,025	2,025	2,025	2,025
RISING STAR	G | TRINITY AQUIFER | EASTLAND COUNTY	100	100	100	100	100	100
STEPHENS REGIONAL SUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	21	22	22	22	21	21
COUNTY-OTHER	G | CISCO LAKE/RESERVOIR	140	140	140	140	140	140
COUNTY-OTHER	G | CLYDE LAKE/RESERVOIR	210	210	210	210	210	210
COUNTY-OTHER	G | LEON LAKE/RESERVOIR	114	114	114	114	114	114
COUNTY-OTHER	G | TRINITY AQUIFER | EASTLAND COUNTY	109	109	109	109	109	109
MANUFACTURING	G | BRAZOS RUN-OF-RIVER	110	115	120	122	129	134
MINING	G | BRAZOS RUN-OF-RIVER	0	0	0	0	0	0
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,088	1,088	1,088	1,088	1,088	1,088
IRRIGATION	G | BRAZOS RUN-OF-RIVER	77	76	76	76	75	75
IRRIGATION	G | TRINITY AQUIFER | EASTLAND COUNTY	4,284	4,284	4,284	4,284	4,284	4,284
BRAZOS BASIN TOTAL EXISTING SUPPLY		**12,584**	**12,585**	**12,585**	**12,574**	**12,573**	**12,571**
COLORADO BASIN							
COUNTY-OTHER	G | CISCO LAKE/RESERVOIR	7	7	7	7	7	7
COUNTY-OTHER	G | CLYDE LAKE/RESERVOIR	11	11	11	11	11	11
COUNTY-OTHER	G | LEON LAKE/RESERVOIR	6	6	6	6	6	6
COUNTY-OTHER	G | TRINITY AQUIFER | EASTLAND COUNTY	6	6	6	6	6	6
MINING	G | BRAZOS RUN-OF-RIVER	0	0	0	0	0	0
LIVESTOCK	G | COLORADO LIVESTOCK LOCAL SUPPLY	39	39	39	39	39	39
IRRIGATION	G | TRINITY AQUIFER | EASTLAND COUNTY	220	220	220	220	220	220
COLORADO BASIN TOTAL EXISTING SUPPLY		**289**	**289**	**289**	**289**	**289**	**289**
EASTLAND COUNTY TOTAL EXISTING SUPPLY		**12,873**	**12,874**	**12,874**	**12,863**	**12,862**	**12,860**
ERATH COUNTY							
BRAZOS BASIN							
DUBLIN	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	521	519	518	517	516	514
STEPHENVILLE	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,862	1,847	1,826	1,717	1,690	1,646
STEPHENVILLE	G | TRINITY AQUIFER | ERATH COUNTY	4,319	4,313	4,306	4,300	4,293	4,284

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
ERATH COUNTY							
BRAZOS BASIN							
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	72	72	72	72	72	72
COUNTY-OTHER	G | PALO PINTO LAKE/RESERVOIR	75	75	75	75	75	75
COUNTY-OTHER	G | TRINITY AQUIFER | ERATH COUNTY	3,210	3,210	3,210	3,210	3,209	3,209
MANUFACTURING	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	5	7	8	9	10	12
MANUFACTURING	G | TRINITY AQUIFER | ERATH COUNTY	75	81	88	94	102	111
MINING	G | TRINITY AQUIFER | ERATH COUNTY	511	511	511	511	511	511
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	6,702	6,702	6,702	6,702	6,702	6,702
IRRIGATION	G | BRAZOS RUN-OF-RIVER	101	100	100	99	99	98
IRRIGATION	G | TRINITY AQUIFER | ERATH COUNTY	6,923	6,923	6,923	6,923	6,923	6,923
BRAZOS BASIN TOTAL EXISTING SUPPLY		**24,376**	**24,360**	**24,339**	**24,229**	**24,202**	**24,157**
ERATH COUNTY TOTAL EXISTING SUPPLY		**24,376**	**24,360**	**24,339**	**24,229**	**24,202**	**24,157**
FALLS COUNTY							
BRAZOS BASIN							
BELL-MILAM FALLS WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	269	265	253	234	228	223
BELL-MILAM FALLS WSC	G | TRINITY AQUIFER | BELL COUNTY	330	324	309	287	279	273
BRUCEVILLE-EDDY	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	3	3	3	3	2	2
BRUCEVILLE-EDDY	G | TRINITY AQUIFER | MCLENNAN COUNTY	1	1	1	1	1	1
LOTT	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	117	117	117	117	117	117
LOTT	G | TRINITY AQUIFER | BELL COUNTY	117	117	117	117	117	117
MARLIN	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,200	1,200	1,200	1,200	1,200	1,200
MARLIN	G | BRAZOS RUN-OF-RIVER	1,550	1,550	1,550	1,550	1,550	1,550
ROSEBUD	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	500	500	500	500	500	500
ROSEBUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	100	100	100	100	100	100
TRI-COUNTY SUD	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	237	236	231	223	221	220
TRI-COUNTY SUD	G | TRINITY AQUIFER | FALLS COUNTY	67	67	65	63	63	62
WEST BRAZOS WSC	G | TRINITY AQUIFER | FALLS COUNTY	6	6	5	5	4	4
WEST BRAZOS WSC	G | TRINITY AQUIFER | MCLENNAN COUNTY	123	121	118	113	112	110
GOLINDA	G | CARRIZO-WILCOX AQUIFER | FALLS COUNTY	39	38	38	35	36	37
GOLINDA	G | TRINITY AQUIFER | FALLS COUNTY	8	8	8	7	8	8
EAST BELL WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	29	26	23	20	19	17
EAST BELL WSC	G | TRINITY AQUIFER | BELL COUNTY	93	84	74	65	60	55
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	45	45	45	45	45	45
COUNTY-OTHER	G | CARRIZO-WILCOX AQUIFER | FALLS COUNTY	570	567	565	564	560	556
MANUFACTURING	G | BRAZOS RUN-OF-RIVER	0	0	0	0	0	0
MINING	G | TRINITY AQUIFER | FALLS COUNTY	0	0	0	0	0	0
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,878	1,878	1,878	1,878	1,878	1,878

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
		2020	2030	2040	2050	2060	2070
FALLS COUNTY							
BRAZOS BASIN							
IRRIGATION	G | BRAZOS RIVER ALLUVIUM AQUIFER | FALLS COUNTY	6,331	6,331	6,331	6,331	6,331	6,331
IRRIGATION	G | BRAZOS RUN-OF-RIVER	174	174	174	174	174	174
BRAZOS BASIN TOTAL EXISTING SUPPLY		**13,787**	**13,758**	**13,705**	**13,632**	**13,605**	**13,580**
FALLS COUNTY TOTAL EXISTING SUPPLY		**13,787**	**13,758**	**13,705**	**13,632**	**13,605**	**13,580**
FISHER COUNTY							
BRAZOS BASIN							
BITTER CREEK WSC	G | DOCKUM AQUIFER | FISHER COUNTY	88	85	83	82	80	79
BITTER CREEK WSC	G | DOCKUM AQUIFER | NOLAN COUNTY	188	183	178	175	171	169
ROBY	G | DOCKUM AQUIFER | NOLAN COUNTY	350	350	350	350	350	350
ROBY	G | SEYMOUR AQUIFER | FISHER COUNTY	34	34	34	34	34	34
ROTAN	F | COLORADO RIVER MWD LAKE/RESERVOIR SYSTEM	56	73	64	58	52	47
ROTAN	F | DIRECT REUSE	6	8	7	7	6	6
ROTAN	F | OGALLALA AQUIFER | MARTIN COUNTY	1	2	1	2	1	1
ROTAN	F | PECOS VALLEY AQUIFER | WARD COUNTY	26	37	33	30	28	25
COUNTY-OTHER	G | SEYMOUR AQUIFER | FISHER COUNTY	156	156	156	156	156	156
MANUFACTURING	F | PECOS VALLEY AQUIFER | WARD COUNTY	4	4	4	4	4	4
MANUFACTURING	G | DOCKUM AQUIFER | FISHER COUNTY	199	199	199	199	199	199
MANUFACTURING	G | HUBBARD CREEK LAKE/RESERVOIR	2	2	2	2	2	2
MINING	G | BRAZOS RUN-OF-RIVER	0	0	0	0	0	0
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	634	634	634	634	634	634
IRRIGATION	G | BLAINE AQUIFER | FISHER COUNTY	3,515	3,515	3,515	3,515	3,515	3,515
IRRIGATION	G | BRAZOS RUN-OF-RIVER	17	17	17	17	17	17
IRRIGATION	G | SEYMOUR AQUIFER | FISHER COUNTY	1,758	1,758	1,758	1,758	1,758	1,758
BRAZOS BASIN TOTAL EXISTING SUPPLY		**7,034**	**7,057**	**7,035**	**7,023**	**7,007**	**6,996**
FISHER COUNTY TOTAL EXISTING SUPPLY		**7,034**	**7,057**	**7,035**	**7,023**	**7,007**	**6,996**
GRIMES COUNTY							
BRAZOS BASIN							
NAVASOTA	G | GULF COAST AQUIFER | GRIMES COUNTY	2,089	2,089	2,089	2,089	2,065	2,020
WICKSON CREEK SUD	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	456	397	337	288	246	213
WICKSON CREEK SUD	G | SPARTA AQUIFER | BRAZOS COUNTY	313	296	273	250	229	209
DOBBIN-PLANTERSVILLE WSC	G | GULF COAST AQUIFER | GRIMES COUNTY	44	49	53	58	62	66
G & W WSC	G | GULF COAST AQUIFER | GRIMES COUNTY	385	501	591	688	769	841
COUNTY-OTHER	G | GULF COAST AQUIFER | GRIMES COUNTY	1,084	1,075	1,068	1,057	1,047	1,034
MANUFACTURING	G | BRAZOS RUN-OF-RIVER	100	100	100	100	100	100
MANUFACTURING	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	3	3	3	3	4	5
MANUFACTURING	G | GULF COAST AQUIFER | GRIMES COUNTY	412	412	411	411	435	480
MINING		0	0	0	0	0	0
STEAM ELECTRIC POWER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	2,520	2,460	2,399	2,339	2,278	2,218

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
GRIMES COUNTY							
BRAZOS BASIN							
STEAM ELECTRIC POWER	G | GIBBONS CREEK LAKE/RESERVOIR	9,740	9,740	9,740	9,740	9,740	9,740
STEAM ELECTRIC POWER	G | GULF COAST AQUIFER | GRIMES COUNTY	5	5	5	5	5	5
STEAM ELECTRIC POWER	H | LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	4,704	4,704	4,704	4,704	4,704	4,704
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	873	873	873	873	873	873
BRAZOS BASIN TOTAL EXISTING SUPPLY		**22,728**	**22,704**	**22,646**	**22,605**	**22,557**	**22,508**
SAN JACINTO BASIN							
DOBBIN-PLANTERSVILLE WSC	G | GULF COAST AQUIFER | GRIMES COUNTY	138	156	170	185	198	210
G & W WSC	G | GULF COAST AQUIFER | GRIMES COUNTY	51	67	78	91	102	111
COUNTY-OTHER	G | CARRIZO-WILCOX AQUIFER | GRIMES COUNTY	37	37	37	37	37	37
COUNTY-OTHER	G | GULF COAST AQUIFER | GRIMES COUNTY	554	544	538	526	517	512
MINING	G | GULF COAST AQUIFER | GRIMES COUNTY	33	33	33	33	33	33
STEAM ELECTRIC POWER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,080	1,054	1,028	1,002	976	950
STEAM ELECTRIC POWER	G | GULF COAST AQUIFER | GRIMES COUNTY	30	30	30	30	30	30
STEAM ELECTRIC POWER	H | LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	2,016	2,016	2,016	2,016	2,016	2,016
LIVESTOCK	G | SAN JACINTO LIVESTOCK LOCAL SUPPLY	370	370	370	370	370	370
SAN JACINTO BASIN TOTAL EXISTING SUPPLY		**4,309**	**4,307**	**4,300**	**4,290**	**4,279**	**4,269**
TRINITY BASIN							
WICKSON CREEK SUD	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	62	54	46	39	34	29
WICKSON CREEK SUD	G | SPARTA AQUIFER | BRAZOS COUNTY	43	40	38	34	32	29
COUNTY-OTHER	G | CARRIZO-WILCOX AQUIFER | GRIMES COUNTY	136	136	136	136	136	136
COUNTY-OTHER	G | GULF COAST AQUIFER | GRIMES COUNTY	210	229	242	265	284	302
MINING		0	0	0	0	0	0
LIVESTOCK	G | TRINITY LIVESTOCK LOCAL SUPPLY	260	260	260	260	260	260
TRINITY BASIN TOTAL EXISTING SUPPLY		**711**	**719**	**722**	**734**	**746**	**756**
GRIMES COUNTY TOTAL EXISTING SUPPLY		**27,748**	**27,730**	**27,668**	**27,629**	**27,582**	**27,533**
HAMILTON COUNTY							
BRAZOS BASIN							
HAMILTON	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	673	665	654	599	584	562
HICO	G | TRINITY AQUIFER | HAMILTON COUNTY	383	383	383	383	383	383
MULTI-COUNTY WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	47	43	39	36	33	31
COUNTY-OTHER	G | TRINITY AQUIFER | HAMILTON COUNTY	572	572	572	572	572	572
MANUFACTURING	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	3	4	5	6	7	8
MANUFACTURING	G | TRINITY AQUIFER | HAMILTON COUNTY	3	3	3	3	3	3
MINING	G | TRINITY AQUIFER | HAMILTON COUNTY	13	13	13	13	13	13
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,677	1,677	1,677	1,677	1,677	1,677
IRRIGATION	G | BRAZOS RUN-OF-RIVER	54	53	51	50	49	47

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
		2020	2030	2040	2050	2060	2070
HAMILTON COUNTY							
BRAZOS BASIN							
IRRIGATION	G | TRINITY AQUIFER | HAMILTON COUNTY	383	383	383	383	383	383
BRAZOS BASIN TOTAL EXISTING SUPPLY		**3,808**	**3,796**	**3,780**	**3,722**	**3,704**	**3,679**
HAMILTON COUNTY TOTAL EXISTING SUPPLY		**3,808**	**3,796**	**3,780**	**3,722**	**3,704**	**3,679**
HASKELL COUNTY							
BRAZOS BASIN							
HASKELL	G | MILLERS CREEK LAKE/RESERVOIR	461	383	305	227	149	71
RULE	G | MILLERS CREEK LAKE/RESERVOIR	33	27	22	16	11	5
RULE	G | SEYMOUR AQUIFER | HASKELL COUNTY	128	123	118	118	121	121
STAMFORD	G | STAMFORD LAKE/RESERVOIR	13	12	12	12	12	11
COUNTY-OTHER	G | MILLERS CREEK LAKE/RESERVOIR	245	203	162	120	79	38
COUNTY-OTHER	G | SEYMOUR AQUIFER | HASKELL COUNTY	130	125	119	120	123	123
COUNTY-OTHER	G | STAMFORD LAKE/RESERVOIR	160	160	160	160	160	160
MINING	G | SEYMOUR AQUIFER | HASKELL COUNTY	0	0	0	0	0	0
STEAM ELECTRIC POWER	G | STAMFORD LAKE/RESERVOIR	2,200	2,200	2,200	2,200	2,200	2,200
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	676	676	676	676	676	676
IRRIGATION	G | SEYMOUR AQUIFER | HASKELL COUNTY	45,619	44,034	41,843	42,007	43,087	43,087
BRAZOS BASIN TOTAL EXISTING SUPPLY		**49,665**	**47,943**	**45,617**	**45,656**	**46,618**	**46,492**
HASKELL COUNTY TOTAL EXISTING SUPPLY		**49,665**	**47,943**	**45,617**	**45,656**	**46,618**	**46,492**
HILL COUNTY							
BRAZOS BASIN							
BRANDON-IRENE WSC	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	43	48	46	46	45	44
BRANDON-IRENE WSC	G | TRINITY AQUIFER | HILL COUNTY	31	31	31	30	30	29
FILES VALLEY WSC	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	264	285	268	254	240	225
HILLSBORO	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	3,833	3,633	3,631	3,630	3,629	3,628
ITASCA	G | TRINITY AQUIFER | HILL COUNTY	224	224	224	225	225	224
JOHNSON COUNTY SUD	C | TRWD LAKE/RESERVOIR SYSTEM	32	26	22	17	14	12
JOHNSON COUNTY SUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	16	13	12	10	8	7
JOHNSON COUNTY SUD	G | TRINITY AQUIFER | JOHNSON COUNTY	10	9	9	8	6	6
PARKER WSC	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	24	21	18	16	14	13
PARKER WSC	G | TRINITY AQUIFER | JOHNSON COUNTY	20	17	15	13	12	11
WHITE BLUFF COMMUNITY WS	G | TRINITY AQUIFER | HILL COUNTY	600	600	600	600	600	600
WHITNEY	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	0	0	0	0	0
WHITNEY	G | TRINITY AQUIFER | HILL COUNTY	600	600	600	600	600	600
WOODROW-OSCEOLA WSC	G | TRINITY AQUIFER | HILL COUNTY	605	605	605	605	605	605
HILL COUNTY WSC	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	210	230	230	230	230	230
HILL COUNTY WSC	G | TRINITY AQUIFER | HILL COUNTY	642	642	642	642	642	642

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
HILL COUNTY							
BRAZOS BASIN							
COUNTY-OTHER	C | NAVARRO MILLS LAKE/RESERVOIR	358	243	232	215	193	171
COUNTY-OTHER	C | RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION	72	49	46	43	39	34
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	229	237	237	238	239	240
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	53	53	53	53	53	53
COUNTY-OTHER	G | WOODBINE AQUIFER | HILL COUNTY	585	580	576	571	567	562
MANUFACTURING	G | WOODBINE AQUIFER | HILL COUNTY	45	50	55	60	65	70
MINING	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,000	952	843	901	878	855
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	944	944	944	944	944	944
IRRIGATION	G | BRAZOS RIVER ALLUVIUM AQUIFER | HILL COUNTY	205	205	205	205	205	205
IRRIGATION	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,000	1,000	1,000	1,000	1,000	1,000
IRRIGATION	G | BRAZOS RUN-OF-RIVER	9	9	9	9	9	9
BRAZOS BASIN TOTAL EXISTING SUPPLY		**11,654**	**11,306**	**11,153**	**11,165**	**11,092**	**11,019**
TRINITY BASIN							
BRANDON-IRENE WSC	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	158	172	169	166	162	158
BRANDON-IRENE WSC	G | TRINITY AQUIFER | HILL COUNTY	115	113	112	110	108	106
FILES VALLEY WSC	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	619	668	636	602	565	528
HUBBARD	C | NAVARRO MILLS LAKE/RESERVOIR	126	82	76	71	63	57
HUBBARD	C | RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION	25	17	15	14	13	11
HUBBARD	G | TRINITY AQUIFER | HILL COUNTY	29	29	29	29	29	29
ITASCA	G | TRINITY AQUIFER | HILL COUNTY	17	17	17	16	16	17
JOHNSON COUNTY SUD	C | TRWD LAKE/RESERVOIR SYSTEM	7	5	4	3	3	3
JOHNSON COUNTY SUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	3	3	2	2	2	2
JOHNSON COUNTY SUD	G | TRINITY AQUIFER | JOHNSON COUNTY	2	2	2	1	1	1
PARKER WSC	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	5	5	4	3	3	3
PARKER WSC	G | TRINITY AQUIFER | JOHNSON COUNTY	4	4	3	3	2	2
COUNTY-OTHER	C | NAVARRO MILLS LAKE/RESERVOIR	45	30	29	27	24	21
COUNTY-OTHER	C | RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION	9	6	6	5	5	4
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	29	30	31	31	31	31
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	7	7	7	7	7	7
COUNTY-OTHER	G | WOODBINE AQUIFER | HILL COUNTY	73	73	72	72	71	71
MINING	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	32	124	50	56	63
MINING	G | TRINITY AQUIFER | HILL COUNTY	31	31	31	31	31	31
LIVESTOCK	G | TRINITY LIVESTOCK LOCAL SUPPLY	240	240	240	240	240	240
IRRIGATION	G | BRAZOS RIVER ALLUVIUM AQUIFER | HILL COUNTY	200	200	200	200	200	200

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
		2020	2030	2040	2050	2060	2070
HILL COUNTY							
TRINITY BASIN TOTAL EXISTING SUPPLY		**1,744**	**1,766**	**1,809**	**1,683**	**1,632**	**1,585**
HILL COUNTY TOTAL EXISTING SUPPLY		**13,398**	**13,072**	**12,962**	**12,848**	**12,724**	**12,604**
HOOD COUNTY							
BRAZOS BASIN							
ACTON MUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	5,724	5,738	5,734	5,720	5,708	5,698
ACTON MUD	G | TRINITY AQUIFER | HOOD COUNTY	1,460	1,464	1,463	1,459	1,456	1,454
GRANBURY	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,400	1,400	1,400	1,400	1,400	1,400
GRANBURY	G | TRINITY AQUIFER | HOOD COUNTY	706	706	706	683	683	683
OAK TRAIL SHORES SUBDIVISION	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	571	571	571	571	571	571
TOLAR	G | TRINITY AQUIFER | HOOD COUNTY	165	165	165	165	165	165
CRESSON	G | TRINITY AQUIFER | HOOD COUNTY	35	44	45	42	39	35
CRESSON	G | WOODBINE AQUIFER | JOHNSON COUNTY	13	14	15	15	14	14
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	335	335	335	335	335	335
COUNTY-OTHER	G | TRINITY AQUIFER | HOOD COUNTY	1,517	1,500	1,486	1,474	1,457	1,435
MANUFACTURING	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	10,000	10,000	10,000	10,000	10,000	10,000
MANUFACTURING	G | TRINITY AQUIFER | HOOD COUNTY	25	25	25	25	25	25
MINING	G | TRINITY AQUIFER | HOOD COUNTY	1,224	1,224	1,224	1,224	1,224	1,224
STEAM ELECTRIC POWER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	43,447	43,447	43,447	43,447	43,271	40,337
STEAM ELECTRIC POWER	G | TRINITY AQUIFER | HOOD COUNTY	150	150	150	150	150	150
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	520	520	520	520	520	520
IRRIGATION	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	4,060	4,060	4,060	4,060	4,060	4,060
IRRIGATION	G | TRINITY AQUIFER | HOOD COUNTY	3,470	3,470	3,470	3,470	3,470	3,470
BRAZOS BASIN TOTAL EXISTING SUPPLY		**74,822**	**74,833**	**74,816**	**74,760**	**74,548**	**71,576**
TRINITY BASIN							
CRESSON	G | TRINITY AQUIFER | HOOD COUNTY	12	15	16	18	18	19
CRESSON	G | WOODBINE AQUIFER | JOHNSON COUNTY	4	5	5	5	5	4
COUNTY-OTHER	G | TRINITY AQUIFER | HOOD COUNTY	3	5	5	3	5	11
MINING		0	0	0	0	0	0
LIVESTOCK	G | TRINITY LIVESTOCK LOCAL SUPPLY	2	2	2	2	2	2
TRINITY BASIN TOTAL EXISTING SUPPLY		**21**	**27**	**28**	**28**	**30**	**36**
HOOD COUNTY TOTAL EXISTING SUPPLY		**74,843**	**74,860**	**74,844**	**74,788**	**74,578**	**71,612**
JOHNSON COUNTY							
BRAZOS BASIN							
ACTON MUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	112	98	102	116	128	138
ACTON MUD	G | TRINITY AQUIFER | HOOD COUNTY	29	25	26	30	33	35
BETHESDA WSC	C | TRINITY AQUIFER | TARRANT COUNTY	9	9	9	9	9	10
BETHESDA WSC	C | TRWD LAKE/RESERVOIR SYSTEM	43	45	48	52	58	63
BETHESDA WSC	G | TRINITY AQUIFER | JOHNSON COUNTY	59	59	60	61	61	62
BURLESON	C | TRWD LAKE/RESERVOIR SYSTEM	4	4	4	4	4	4

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
		2020	2030	2040	2050	2060	2070
JOHNSON COUNTY							
BRAZOS BASIN							
CLEBURNE	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	5,300	5,235	5,039	4,864	4,691	4,501
CLEBURNE	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	0	0	0	0	0
CLEBURNE	G | DIRECT REUSE - CLEBURNE	0	0	0	0	0	0
CLEBURNE	G | PAT CLEBURNE LAKE/RESERVOIR	3,801	3,412	3,148	2,904	2,662	2,402
CLEBURNE	G | TRINITY AQUIFER | JOHNSON COUNTY	0	0	0	0	0	0
GODLEY	G | TRINITY AQUIFER | JOHNSON COUNTY	159	159	159	159	159	159
JOHNSON COUNTY SUD	C | TRWD LAKE/RESERVOIR SYSTEM	1,710	1,567	1,402	1,175	1,062	961
JOHNSON COUNTY SUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	827	787	744	694	639	576
JOHNSON COUNTY SUD	G | TRINITY AQUIFER | JOHNSON COUNTY	518	519	520	520	521	522
JOSHUA	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	577	676	784	906	1,045	1,194
KEENE	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	156	157	157	156	156	156
KEENE	G | TRINITY AQUIFER | JOHNSON COUNTY	59	59	59	59	59	48
PARKER WSC	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	236	239	242	244	246	247
PARKER WSC	G | TRINITY AQUIFER | JOHNSON COUNTY	192	195	197	199	201	201
RIO VISTA	G | TRINITY AQUIFER | JOHNSON COUNTY	249	249	249	249	249	249
CRESSON	G | TRINITY AQUIFER | HOOD COUNTY	7	7	8	11	14	14
CRESSON	G | WOODBINE AQUIFER | JOHNSON COUNTY	3	3	2	2	3	3
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	438	438	438	438	438	438
COUNTY-OTHER	G | TRINITY AQUIFER | JOHNSON COUNTY	395	558	725	723	744	783
MANUFACTURING	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	6	72	270	446	620	811
MANUFACTURING	G | PAT CLEBURNE LAKE/RESERVOIR	1,037	1,357	1,552	1,727	1,900	2,091
MANUFACTURING	G | TRINITY AQUIFER | JOHNSON COUNTY	1,534	1,534	1,534	1,534	1,534	1,534
MINING	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	10	10	10	10	10	10
MINING	G | TRINITY AQUIFER | JOHNSON COUNTY	1,429	1,429	1,429	1,431	1,430	1,430
STEAM ELECTRIC POWER	G | DIRECT REUSE - CLEBURNE	1,344	1,344	1,344	1,344	1,344	1,344
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,290	1,290	1,290	1,290	1,290	1,290
IRRIGATION	G | PAT CLEBURNE LAKE/RESERVOIR	102	100	99	97	96	94
IRRIGATION	G | TRINITY AQUIFER | JOHNSON COUNTY	22	22	22	22	22	22
IRRIGATION	G | WOODBINE AQUIFER | JOHNSON COUNTY	66	66	66	66	66	66
BRAZOS BASIN TOTAL EXISTING SUPPLY		**21,723**	**21,724**	**21,738**	**21,542**	**21,494**	**21,458**
TRINITY BASIN							
FORT WORTH	C | DIRECT REUSE	0	0	0	2	3	3
FORT WORTH	C | TRINITY INDIRECT REUSE	0	0	0	222	343	417
FORT WORTH	C | TRWD LAKE/RESERVOIR SYSTEM	0	0	0	371	527	586
MANSFIELD	C | TRWD LAKE/RESERVOIR SYSTEM	537	677	766	786	868	939
ALVARADO	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	2,241	2,241	2,241	2,241	2,241	2,241

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
JOHNSON COUNTY							
TRINITY BASIN							
ALVARADO	G | TRINITY AQUIFER | JOHNSON COUNTY	310	310	310	310	310	310
BETHANY WSC	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,120	1,120	1,120	1,120	1,120	1,120
BETHANY WSC	G | TRINITY AQUIFER | JOHNSON COUNTY	433	433	433	433	433	433
BETHESDA WSC	C | TRINITY AQUIFER | TARRANT COUNTY	183	185	187	189	191	194
BETHESDA WSC	C | TRWD LAKE/RESERVOIR SYSTEM	858	916	962	1,060	1,168	1,270
BETHESDA WSC	G | TRINITY AQUIFER | JOHNSON COUNTY	1,190	1,202	203	37	0	0
BURLESON	C | TRWD LAKE/RESERVOIR SYSTEM	3,869	3,982	4,016	3,836	3,765	3,769
CROWLEY	C | TRINITY AQUIFER | TARRANT COUNTY	1	2	2	2	2	2
CROWLEY	C | TRWD LAKE/RESERVOIR SYSTEM	7	8	10	11	10	11
GRANDVIEW	G | WOODBINE AQUIFER | JOHNSON COUNTY	369	369	369	369	369	369
JOHNSON COUNTY SUD	C | TRWD LAKE/RESERVOIR SYSTEM	4,718	4,325	3,867	3,242	2,929	2,652
JOHNSON COUNTY SUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	2,282	2,173	2,053	1,917	1,761	1,594
JOHNSON COUNTY SUD	G | TRINITY AQUIFER | JOHNSON COUNTY	1,430	1,432	1,434	1,437	1,438	1,440
JOSHUA	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	374	439	508	588	677	774
KEENE	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	964	963	963	964	964	964
KEENE	G | TRINITY AQUIFER | JOHNSON COUNTY	362	362	362	362	362	300
MOUNTAIN PEAK SUD	G | TRINITY AQUIFER | JOHNSON COUNTY	1,413	1,413	1,413	1,413	1,413	1,413
PARKER WSC	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	71	71	72	73	73	73
PARKER WSC	G | TRINITY AQUIFER | JOHNSON COUNTY	58	58	59	59	59	60
VENUS	C | TRWD LAKE/RESERVOIR SYSTEM	269	274	262	260	261	268
VENUS	G | WOODBINE AQUIFER | JOHNSON COUNTY	211	211	211	211	211	211
CRESSON	G | TRINITY AQUIFER | HOOD COUNTY	14	16	19	22	25	30
CRESSON	G | WOODBINE AQUIFER | JOHNSON COUNTY	5	5	6	6	6	7
COUNTY-OTHER	G | TRINITY AQUIFER | JOHNSON COUNTY	726	563	396	398	377	338
COUNTY-OTHER	G | WOODBINE AQUIFER | JOHNSON COUNTY	141	141	141	141	141	141
MANUFACTURING	C | TRWD LAKE/RESERVOIR SYSTEM	2	2	2	2	2	2
MANUFACTURING	G | TRINITY AQUIFER | JOHNSON COUNTY	29	29	29	29	29	29
MINING	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	10	10	10	10	10	10
MINING	G | TRINITY AQUIFER | JOHNSON COUNTY	1,413	1,413	1,413	1,411	1,412	1,412
LIVESTOCK	G | TRINITY LIVESTOCK LOCAL SUPPLY	323	323	323	323	323	323
IRRIGATION	G | PAT CLEBURNE LAKE/RESERVOIR	100	99	97	96	94	93
IRRIGATION	G | TRINITY AQUIFER | JOHNSON COUNTY	2	2	2	2	2	2
IRRIGATION	G | WOODBINE AQUIFER | JOHNSON COUNTY	7	7	7	7	7	7
TRINITY BASIN TOTAL EXISTING SUPPLY		**26,042**	**25,776**	**24,268**	**23,962**	**23,926**	**23,807**
JOHNSON COUNTY TOTAL EXISTING SUPPLY		**47,765**	**47,500**	**46,006**	**45,504**	**45,420**	**45,265**

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
		2020	2030	2040	2050	2060	2070
JONES COUNTY							
BRAZOS BASIN							
ABILENE	F | OH IVIE LAKE/RESERVOIR NON-SYSTEM PORTION	210	206	200	194	189	183
ABILENE	G | FORT PHANTOM HILL LAKE/RESERVOIR	433	429	420	412	405	398
ABILENE	G | HUBBARD CREEK LAKE/RESERVOIR	318	151	139	128	115	101
ABILENE	G | KIRBY LAKE/RESERVOIR	0	0	0	0	0	0
ANSON	G | ANSON NORTH LAKE/RESERVOIR	0	0	0	0	0	0
ANSON	G | HUBBARD CREEK LAKE/RESERVOIR	1,011	1,011	1,011	1,011	1,011	1,011
HAMLIN	G | CITY OF HAMLIN LAKE/RESERVOIR	0	0	0	0	0	0
HAMLIN	G | HUBBARD CREEK LAKE/RESERVOIR	765	765	765	765	765	765
HAWLEY	G | HUBBARD CREEK LAKE/RESERVOIR	75	76	76	77	79	81
HAWLEY WSC	G | HUBBARD CREEK LAKE/RESERVOIR	459	457	457	455	453	449
STAMFORD	G | STAMFORD LAKE/RESERVOIR	1,196	1,197	1,197	1,197	1,197	1,198
COUNTY-OTHER	G | SEYMOUR AQUIFER | JONES COUNTY	264	264	264	264	264	264
COUNTY-OTHER	G | STAMFORD LAKE/RESERVOIR	89	89	89	89	89	89
MINING	G | BRAZOS RUN-OF-RIVER	0	0	0	0	0	0
STEAM ELECTRIC POWER	G | HUBBARD CREEK LAKE/RESERVOIR	8,247	11,837	11,837	11,837	11,837	11,837
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	853	853	853	853	853	853
IRRIGATION	G | SEYMOUR AQUIFER | JONES COUNTY	2,610	2,610	2,610	2,610	2,610	2,610
BRAZOS BASIN TOTAL EXISTING SUPPLY		**16,530**	**19,945**	**19,918**	**19,892**	**19,867**	**19,839**
JONES COUNTY TOTAL EXISTING SUPPLY		**16,530**	**19,945**	**19,918**	**19,892**	**19,867**	**19,839**
KENT COUNTY							
BRAZOS BASIN							
JAYTON	G | SEYMOUR AQUIFER | KENT COUNTY	0	0	0	0	0	0
COUNTY-OTHER	G | SEYMOUR AQUIFER | KENT COUNTY	45	45	45	45	45	45
MINING	G | SEYMOUR AQUIFER | KENT COUNTY	459	459	459	459	459	459
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	320	320	320	320	320	320
IRRIGATION	G | DOCKUM AQUIFER | KENT COUNTY	1,313	1,313	1,313	1,313	1,313	1,313
IRRIGATION	G | SEYMOUR AQUIFER | KENT COUNTY	131	131	131	131	131	131
BRAZOS BASIN TOTAL EXISTING SUPPLY		**2,268**	**2,268**	**2,268**	**2,268**	**2,268**	**2,268**
KENT COUNTY TOTAL EXISTING SUPPLY		**2,268**	**2,268**	**2,268**	**2,268**	**2,268**	**2,268**
KNOX COUNTY							
BRAZOS BASIN							
KNOX CITY	G | BLAINE AQUIFER | KNOX COUNTY	6	6	6	6	6	6
KNOX CITY	G | MILLERS CREEK LAKE/RESERVOIR	188	156	124	93	61	29
MUNDAY	G | BLAINE AQUIFER | KNOX COUNTY	7	7	7	7	7	7
MUNDAY	G | MILLERS CREEK LAKE/RESERVOIR	194	161	128	95	63	30
COUNTY-OTHER	G | BLAINE AQUIFER | KNOX COUNTY	33	33	33	33	33	33
COUNTY-OTHER	G | BRAZOS RUN-OF-RIVER	34	34	34	34	34	34
COUNTY-OTHER	G | MILLERS CREEK LAKE/RESERVOIR	85	71	56	42	28	13
COUNTY-OTHER	G | SEYMOUR AQUIFER | KNOX COUNTY	62	62	62	62	62	62
MINING	G | BRAZOS RUN-OF-RIVER	0	0	0	0	0	0
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	790	790	790	790	790	790

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
		2020	2030	2040	2050	2060	2070
KNOX COUNTY							
BRAZOS BASIN							
IRRIGATION	G | BLAINE AQUIFER | KNOX COUNTY	81	81	81	72	81	81
IRRIGATION	G | LAKE DAVIS LAKE/RESERVOIR	160	142	124	106	88	70
IRRIGATION	G | SEYMOUR AQUIFER | KNOX COUNTY	32,493	31,705	30,239	28,520	29,457	28,779
BRAZOS BASIN TOTAL EXISTING SUPPLY		**34,133**	**33,248**	**31,684**	**29,860**	**30,710**	**29,934**
RED BASIN							
COUNTY-OTHER	G | BLAINE AQUIFER | KNOX COUNTY	6	6	6	6	6	6
COUNTY-OTHER	G | MILLERS CREEK LAKE/RESERVOIR	10	8	7	5	3	2
COUNTY-OTHER	G | SEYMOUR AQUIFER | KNOX COUNTY	7	7	7	7	7	7
MINING	G | BRAZOS RUN-OF-RIVER	0	0	0	0	0	0
LIVESTOCK	G | RED LIVESTOCK LOCAL SUPPLY	197	197	197	197	197	197
IRRIGATION	G | BLAINE AQUIFER | KNOX COUNTY	92	92	92	101	92	92
IRRIGATION	G | SEYMOUR AQUIFER | KNOX COUNTY	5,086	2,490	0	0	1,473	2,151
RED BASIN TOTAL EXISTING SUPPLY		**5,398**	**2,800**	**309**	**316**	**1,778**	**2,455**
KNOX COUNTY TOTAL EXISTING SUPPLY		**39,531**	**36,048**	**31,993**	**30,176**	**32,488**	**32,389**
LAMPASAS COUNTY							
BRAZOS BASIN							
COPPERAS COVE	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	260	339	371	385	397	398
KEMPNER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	195	209	225	240	254	267
KEMPNER WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,189	1,143	1,087	1,041	994	950
LAMPASAS	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,144	1,130	1,116	1,103	1,086	1,068
LOMETA	G | ELLENBURGER-SAN SABA AQUIFER | LAMPASAS COUNTY	9	13	13	13	13	13
LOMETA	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	56	61	64	69	73	76
COUNTY-OTHER	G | MARBLE FALLS AQUIFER | LAMPASAS COUNTY	6	6	6	6	6	6
COUNTY-OTHER	G | TRINITY AQUIFER | LAMPASAS COUNTY	305	299	294	289	284	280
MANUFACTURING	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	137	151	165	178	195	213
MANUFACTURING	G | BRAZOS RUN-OF-RIVER	48	48	48	48	48	48
MINING	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	25	25	25	25	25	25
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	783	783	783	783	783	783
IRRIGATION	G | BRAZOS RUN-OF-RIVER	103	103	103	103	103	103
IRRIGATION	G | MARBLE FALLS AQUIFER | LAMPASAS COUNTY	2	2	2	2	2	2
IRRIGATION	G | TRINITY AQUIFER | LAMPASAS COUNTY	40	40	40	40	40	40
BRAZOS BASIN TOTAL EXISTING SUPPLY		**4,302**	**4,352**	**4,342**	**4,325**	**4,303**	**4,272**
COLORADO BASIN							
LOMETA	G | ELLENBURGER-SAN SABA AQUIFER | LAMPASAS COUNTY	4	0	0	0	0	0
LOMETA	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	110	119	126	134	142	150
COUNTY-OTHER	G | TRINITY AQUIFER | LAMPASAS COUNTY	66	72	77	82	87	91
MINING		0	0	0	0	0	0
LIVESTOCK	G | COLORADO LIVESTOCK LOCAL SUPPLY	449	449	449	449	449	449

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
LAMPASAS COUNTY							
COLORADO BASIN							
IRRIGATION	G | MARBLE FALLS AQUIFER | LAMPASAS COUNTY	11	11	11	11	11	11
IRRIGATION	G | TRINITY AQUIFER | LAMPASAS COUNTY	111	111	111	111	111	111
COLORADO BASIN TOTAL EXISTING SUPPLY		**751**	**762**	**774**	**787**	**800**	**812**
LAMPASAS COUNTY TOTAL EXISTING SUPPLY		**5,053**	**5,114**	**5,116**	**5,112**	**5,103**	**5,084**
LEE COUNTY							
BRAZOS BASIN							
AQUA WSC	L | CARRIZO-WILCOX AQUIFER | CALDWELL COUNTY	555	555	555	555	555	555
GIDDINGS	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	842	840	841	840	840	839
LEE COUNTY WSC	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	2,045	2,012	1,962	1,883	1,792	1,686
LEE COUNTY WSC	G | QUEEN CITY AQUIFER | LEE COUNTY	39	34	31	28	27	25
LEE COUNTY WSC	G | SPARTA AQUIFER | LEE COUNTY	85	79	76	70	67	63
LEXINGTON	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	667	667	667	667	667	667
SOUTHWEST MILAM WSC	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	76	73	61	65	63	60
COUNTY-OTHER	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	131	125	120	118	117	116
MINING	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	0	0	0	0	0	0
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,623	1,623	1,623	1,623	1,623	1,623
IRRIGATION	G | BRAZOS RUN-OF-RIVER	20	20	20	20	20	20
IRRIGATION	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	429	416	404	392	380	369
BRAZOS BASIN TOTAL EXISTING SUPPLY		**6,512**	**6,444**	**6,360**	**6,261**	**6,151**	**6,023**
COLORADO BASIN							
GIDDINGS	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	892	893	891	891	890	890
LEE COUNTY WSC	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	794	781	760	731	694	653
LEE COUNTY WSC	G | QUEEN CITY AQUIFER | LEE COUNTY	15	13	12	11	10	10
LEE COUNTY WSC	G | SPARTA AQUIFER | LEE COUNTY	33	31	30	27	26	24
COUNTY-OTHER	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	95	101	106	108	109	110
MANUFACTURING	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	13	14	15	16	17	18
MINING	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	0	0	0	0	0	0
LIVESTOCK	G | COLORADO LIVESTOCK LOCAL SUPPLY	312	312	312	312	312	312
IRRIGATION	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	47	60	72	84	96	107
COLORADO BASIN TOTAL EXISTING SUPPLY		**2,201**	**2,205**	**2,198**	**2,180**	**2,154**	**2,124**
LEE COUNTY TOTAL EXISTING SUPPLY		**8,713**	**8,649**	**8,558**	**8,441**	**8,305**	**8,147**
LIMESTONE COUNTY							
BRAZOS BASIN							
COOLIDGE	C | NAVARRO MILLS LAKE/RESERVOIR	85	59	58	56	52	48
COOLIDGE	C | RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION	15	12	12	11	11	10
COOLIDGE	G | MEXIA LAKE/RESERVOIR	40	32	25	19	11	3
GROESBECK	G | BRAZOS RUN-OF-RIVER	0	0	0	0	0	0
MART	G | TRINITY AQUIFER | MCLENNAN COUNTY	1	1	1	1	1	1
MEXIA	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	734	732	732	733	733	733
MEXIA	G | MEXIA LAKE/RESERVOIR	415	361	309	256	203	151

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
LIMESTONE COUNTY							
BRAZOS BASIN							
THORNTON	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	272	272	272	272	272	272
TRI-COUNTY SUD	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	92	90	88	88	87	84
TRI-COUNTY SUD	G | TRINITY AQUIFER | FALLS COUNTY	26	25	25	25	24	24
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	200	200	200	200	200	200
COUNTY-OTHER	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	629	629	629	629	629	629
COUNTY-OTHER	G | MEXIA LAKE/RESERVOIR	297	286	274	264	253	241
COUNTY-OTHER	G | TRINITY AQUIFER | LIMESTONE COUNTY	62	62	62	62	62	62
MANUFACTURING	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	11	11	11	11	11	11
MANUFACTURING	G | MEXIA LAKE/RESERVOIR	12	15	17	19	21	23
MINING	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	803	803	803	803	803	803
MINING	G | TRINITY AQUIFER | LIMESTONE COUNTY	7	7	7	7	7	7
STEAM ELECTRIC POWER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	21,837	21,530	21,223	20,916	20,609	20,302
STEAM ELECTRIC POWER	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	839	839	839	839	839	839
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,522	1,522	1,522	1,522	1,522	1,522
BRAZOS BASIN TOTAL EXISTING SUPPLY		**27,899**	**27,488**	**27,109**	**26,733**	**26,350**	**25,965**
TRINITY BASIN							
COOLIDGE	C | NAVARRO MILLS LAKE/RESERVOIR	65	46	45	43	40	36
COOLIDGE	C | RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION	15	9	9	9	8	7
COOLIDGE	G | MEXIA LAKE/RESERVOIR	31	25	20	14	8	3
MEXIA	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	536	537	537	536	535	535
MEXIA	G | MEXIA LAKE/RESERVOIR	302	265	226	187	149	110
COUNTY-OTHER	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	100	100	100	100	100	100
MANUFACTURING	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	32	33	33	33	34	34
MANUFACTURING	G | MEXIA LAKE/RESERVOIR	38	44	50	55	62	69
MINING		0	0	0	0	0	0
LIVESTOCK	G | TRINITY LIVESTOCK LOCAL SUPPLY	182	182	182	182	182	182
TRINITY BASIN TOTAL EXISTING SUPPLY		**1,301**	**1,241**	**1,202**	**1,159**	**1,118**	**1,076**
LIMESTONE COUNTY TOTAL EXISTING SUPPLY		**29,200**	**28,729**	**28,311**	**27,892**	**27,468**	**27,041**
MCLENNAN COUNTY							
BRAZOS BASIN							
WACO	G | DIRECT REUSE - WMARSS	12,035	13,902	15,769	17,636	19,503	21,370
WACO	G | TRINITY AQUIFER | MCLENNAN COUNTY	762	762	762	762	762	762
WACO	G | WACO LAKE/RESERVOIR	31,268	28,607	25,850	23,056	20,290	17,407
BELLMEAD	G | TRINITY AQUIFER | MCLENNAN COUNTY	1,502	1,502	1,502	1,502	1,502	1,502
BEVERLY HILLS	G | WACO LAKE/RESERVOIR	252	261	268	281	297	312
BRUCEVILLE-EDDY	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	935	930	921	896	884	865

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
MCLENNAN COUNTY							
BRAZOS BASIN							
BRUCEVILLE-EDDY	G | TRINITY AQUIFER | MCLENNAN COUNTY	438	438	438	438	438	438
CHALK BLUFF WSC	G | TRINITY AQUIFER | MCLENNAN COUNTY	715	715	715	715	715	715
CRAWFORD	G | CRAWFORD LAKE/RESERVOIR	1	1	1	1	1	1
CRAWFORD	G | TRINITY AQUIFER | MCLENNAN COUNTY	143	143	143	143	143	143
CROSS COUNTRY WSC	G | TRINITY AQUIFER | BOSQUE COUNTY	54	54	54	84	84	84
CROSS COUNTRY WSC	G | TRINITY AQUIFER | MCLENNAN COUNTY	431	431	431	321	325	329
ELM CREEK WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	263	258	250	238	231	223
GHOLSON	G | TRINITY AQUIFER | MCLENNAN COUNTY	927	927	927	927	927	927
HALLSBURG	G | TRINITY AQUIFER | MCLENNAN COUNTY	81	84	87	92	97	102
HEWITT	G | TRINITY AQUIFER | MCLENNAN COUNTY	2,241	2,241	2,241	2,241	2,241	2,241
HEWITT	G | WACO LAKE/RESERVOIR	383	558	877	1,198	1,519	1,833
LACY-LAKEVIEW	G | WACO LAKE/RESERVOIR	1,120	1,120	1,120	1,120	1,120	1,120
LORENA	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	0	0	0	0	0
LORENA	G | TRINITY AQUIFER | MCLENNAN COUNTY	322	322	322	322	322	322
LORENA	G | WACO LAKE/RESERVOIR	140	140	140	140	140	140
MART	G | TRINITY AQUIFER | MCLENNAN COUNTY	202	202	202	202	202	202
MCGREGOR	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	2,569	2,555	2,531	2,451	2,418	2,365
MCGREGOR	G | TRINITY AQUIFER | MCLENNAN COUNTY	293	293	293	293	293	293
MOODY	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	401	399	395	384	379	371
MOODY	G | TRINITY AQUIFER | MCLENNAN COUNTY	211	211	211	211	211	211
NORTH BOSQUE WSC	G | TRINITY AQUIFER | MCLENNAN COUNTY	605	605	605	605	605	605
RIESEL	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	125	125	125	125	125	125
ROBINSON	G | BRAZOS RUN-OF-RIVER	1,126	1,126	1,126	1,126	1,126	1,126
ROBINSON	G | TRINITY AQUIFER | FALLS COUNTY	27	27	27	27	27	27
ROBINSON	G | TRINITY AQUIFER | MCLENNAN COUNTY	936	936	936	936	936	936
ROBINSON	G | WACO LAKE/RESERVOIR	420	420	420	420	420	420
TRI-COUNTY SUD	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	14	15	17	19	20	21
TRI-COUNTY SUD	G | TRINITY AQUIFER | FALLS COUNTY	4	4	5	5	6	6
VALLEY MILLS	G | TRINITY AQUIFER | BOSQUE COUNTY	6	8	8	10	11	13
WEST	G | TRINITY AQUIFER | MCLENNAN COUNTY	268	268	268	268	268	268
WEST	G | WACO LAKE/RESERVOIR	1,120	1,120	1,120	1,120	1,120	1,120
WEST BRAZOS WSC	G | TRINITY AQUIFER | FALLS COUNTY	6	5	5	5	5	4
WEST BRAZOS WSC	G | TRINITY AQUIFER | MCLENNAN COUNTY	107	109	112	117	118	120
WESTERN HILLS WS	G | TRINITY AQUIFER | MCLENNAN COUNTY	544	544	544	544	544	544
WOODWAY	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,362	1,355	1,342	1,305	1,288	1,259

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
MCLENNAN COUNTY							
BRAZOS BASIN							
WOODWAY	G | TRINITY AQUIFER | MCLENNAN COUNTY	1,686	1,686	1,686	1,686	1,686	1,686
WOODWAY	G | WACO LAKE/RESERVOIR	429	655	857	1,081	1,314	1,546
CORYELL CITY WATER SUPPLY DISTRICT	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	156	181	202	222	243	262
GOLINDA	G | CARRIZO-WILCOX AQUIFER | FALLS COUNTY	17	21	23	27	30	33
GOLINDA	G | TRINITY AQUIFER | FALLS COUNTY	3	4	5	6	6	7
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	176	175	172	163	160	153
COUNTY-OTHER	G | TRINITY AQUIFER | MCLENNAN COUNTY	2,717	2,714	2,711	2,706	2,701	2,696
COUNTY-OTHER	G | WACO LAKE/RESERVOIR	724	724	724	724	724	724
MANUFACTURING	G | TRINITY AQUIFER | MCLENNAN COUNTY	915	915	915	915	915	915
MANUFACTURING	G | WACO LAKE/RESERVOIR	2,508	2,893	3,254	3,623	3,953	4,408
MINING	G | BRAZOS RIVER ALLUVIUM AQUIFER | MCLENNAN COUNTY	274	274	274	274	274	274
STEAM ELECTRIC POWER	G | DIRECT REUSE - WMARSS	15,000	15,000	15,000	15,000	15,000	15,000
STEAM ELECTRIC POWER	G | LAKE CREEK LAKE/RESERVOIR	9,835	9,830	9,825	9,820	9,815	9,810
STEAM ELECTRIC POWER	G | TRINITY AQUIFER | MCLENNAN COUNTY	178	178	178	178	178	178
STEAM ELECTRIC POWER	G | TURTLE CREEK LAKE/RESERVOIR	4,908	4,906	4,904	4,901	4,899	4,897
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,584	1,584	1,584	1,584	1,584	1,584
IRRIGATION	G | BRAZOS RIVER ALLUVIUM AQUIFER | MCLENNAN COUNTY	1,023	1,023	1,023	1,023	1,023	1,023
IRRIGATION	G | BRAZOS RUN-OF-RIVER	1,424	1,406	1,389	1,372	1,354	1,337
IRRIGATION	G | TRINITY AQUIFER | MCLENNAN COUNTY	135	135	135	135	135	135
BRAZOS BASIN TOTAL EXISTING SUPPLY		**108,051**	**108,027**	**107,971**	**107,726**	**107,657**	**107,540**
MCLENNAN COUNTY TOTAL EXISTING SUPPLY		**108,051**	**108,027**	**107,971**	**107,726**	**107,657**	**107,540**
MILAM COUNTY							
BRAZOS BASIN							
BELL-MILAM FALLS WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	352	349	343	342	336	329
BELL-MILAM FALLS WSC	G | TRINITY AQUIFER | BELL COUNTY	431	428	420	419	412	403
CAMERON	G | BRAZOS RUN-OF-RIVER	2,615	2,615	2,615	2,615	2,615	2,615
MILANO WSC	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	260	240	237	237	249	255
ROCKDALE	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	2,000	1,860	1,396	1,589	1,672	1,672
SOUTHWEST MILAM WSC	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	1,625	1,443	1,202	1,307	1,314	1,261
THORNDALE	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	229	229	229	229	229	229
BUCKHOLTS	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	122	122	122	122	122	122
BUCKHOLTS	G | TRINITY AQUIFER | BELL COUNTY	122	122	122	122	122	122
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	793	793	793	793	793	793
COUNTY-OTHER	G | BRAZOS RUN-OF-RIVER	163	163	163	163	163	163
MANUFACTURING	G | BRAZOS RUN-OF-RIVER	14	14	14	14	14	14
MINING	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	14	14	14	14	14	14

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
		2020	2030	2040	2050	2060	2070
MILAM COUNTY							
BRAZOS BASIN							
MINING	G | TRINITY AQUIFER | MILAM COUNTY	0	0	0	0	0	0
STEAM ELECTRIC POWER	G | ALCOA LAKE/RESERVOIR	14,000	14,000	14,000	14,000	14,000	14,000
STEAM ELECTRIC POWER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	2,683	4,329	4,352	4,673	4,609	4,508
STEAM ELECTRIC POWER	G | BRAZOS RUN-OF-RIVER	650	650	650	650	650	650
STEAM ELECTRIC POWER	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	15,786	13,009	12,943	14,444	15,084	15,074
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,822	1,822	1,822	1,822	1,822	1,822
IRRIGATION	G | BRAZOS RIVER ALLUVIUM AQUIFER | MILAM COUNTY	3,082	3,082	3,082	3,082	3,082	3,082
IRRIGATION	G | BRAZOS RUN-OF-RIVER	42	42	42	42	42	42
IRRIGATION	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	2,221	2,066	1,828	2,043	2,135	2,135
IRRIGATION	G | QUEEN CITY AQUIFER | MILAM COUNTY	53	56	56	56	56	56
BRAZOS BASIN TOTAL EXISTING SUPPLY		**49,079**	**47,448**	**46,445**	**48,778**	**49,535**	**49,361**
MILAM COUNTY TOTAL EXISTING SUPPLY		**49,079**	**47,448**	**46,445**	**48,778**	**49,535**	**49,361**
NOLAN COUNTY							
BRAZOS BASIN							
SWEETWATER	F | OAK CREEK LAKE/RESERVOIR	0	0	0	0	0	0
SWEETWATER	G | DOCKUM AQUIFER | NOLAN COUNTY	503	503	503	503	503	503
SWEETWATER	G | SWEETWATER LAKE/RESERVOIR	0	0	0	0	0	0
SWEETWATER	G | TRAMMEL LAKE/RESERVOIR	0	0	0	0	0	0
BITTER CREEK WSC	G | DOCKUM AQUIFER | FISHER COUNTY	127	130	132	133	135	136
BITTER CREEK WSC	G | DOCKUM AQUIFER | NOLAN COUNTY	272	277	282	285	289	291
ROSCOE	G | DOCKUM AQUIFER | NOLAN COUNTY	284	284	284	284	284	284
COUNTY-OTHER	G | EDWARDS-TRINITY-PLATEAU AQUIFER | NOLAN COUNTY	26	25	24	22	20	17
MANUFACTURING	G | DOCKUM AQUIFER | NOLAN COUNTY	368	368	368	368	368	368
MANUFACTURING	G | EDWARDS-TRINITY-PLATEAU AQUIFER | NOLAN COUNTY	171	171	171	171	171	171
MINING	G | BLAINE AQUIFER | NOLAN COUNTY	0	0	0	0	0	0
STEAM ELECTRIC POWER	G | DOCKUM AQUIFER | NOLAN COUNTY	0	0	0	0	0	0
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	232	232	232	232	232	232
IRRIGATION	G | BRAZOS RUN-OF-RIVER	24	24	24	24	24	24
IRRIGATION	G | DOCKUM AQUIFER | FISHER COUNTY	1,118	1,118	1,118	1,118	1,118	1,118
IRRIGATION	G | DOCKUM AQUIFER | NOLAN COUNTY	1,756	1,756	1,755	1,756	1,756	1,756
IRRIGATION	G | EDWARDS-TRINITY-PLATEAU AQUIFER | NOLAN COUNTY	60	60	60	60	60	60
BRAZOS BASIN TOTAL EXISTING SUPPLY		**4,941**	**4,948**	**4,953**	**4,956**	**4,960**	**4,960**
COLORADO BASIN							
COUNTY-OTHER	G | EDWARDS-TRINITY-PLATEAU AQUIFER | NOLAN COUNTY	98	99	100	102	104	107
MINING	G | BLAINE AQUIFER | NOLAN COUNTY	0	0	0	0	0	0
LIVESTOCK	G | COLORADO LIVESTOCK LOCAL SUPPLY	155	155	155	155	155	155
IRRIGATION	G | BRAZOS RUN-OF-RIVER	16	16	16	16	16	16

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
		2020	2030	2040	2050	2060	2070
NOLAN COUNTY							
COLORADO BASIN							
IRRIGATION	G | DOCKUM AQUIFER | FISHER COUNTY	746	746	746	746	746	746
IRRIGATION	G | DOCKUM AQUIFER | NOLAN COUNTY	1,170	1,170	1,171	1,170	1,170	1,170
IRRIGATION	G | EDWARDS-TRINITY-PLATEAU AQUIFER | NOLAN COUNTY	40	40	40	40	40	40
COLORADO BASIN TOTAL EXISTING SUPPLY		**2,225**	**2,226**	**2,228**	**2,229**	**2,231**	**2,234**
NOLAN COUNTY TOTAL EXISTING SUPPLY		**7,166**	**7,174**	**7,181**	**7,185**	**7,191**	**7,194**
PALO PINTO COUNTY							
BRAZOS BASIN							
GRAFORD	G | PALO PINTO LAKE/RESERVOIR	92	92	92	92	92	92
MINERAL WELLS	G | PALO PINTO LAKE/RESERVOIR	2,593	2,708	2,775	2,856	2,935	3,002
STRAWN	G | STRAWN LAKE/RESERVOIR	160	160	160	160	160	160
STEPHENS REGIONAL SUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	8	8	8	8	8	8
POSSUM KINGDOM WSC	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	719	720	721	722	723	723
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,124	1,124	1,124	1,124	1,124	1,124
COUNTY-OTHER	G | GORDON LAKE/RESERVOIR	4	4	4	4	4	4
COUNTY-OTHER	G | PALO PINTO LAKE/RESERVOIR	1,241	1,241	1,241	1,241	1,241	1,241
MANUFACTURING	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,200	1,200	1,200	1,200	1,200	1,200
MANUFACTURING	G | PALO PINTO LAKE/RESERVOIR	10	10	10	10	10	10
MANUFACTURING	G | TRINITY AQUIFER | PALO PINTO COUNTY	1	1	1	1	1	1
MINING	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,236	1,220	1,203	1,187	1,170	1,154
MINING	G | TRINITY AQUIFER | PALO PINTO COUNTY	11	11	11	11	11	11
STEAM ELECTRIC POWER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	11,600	11,445	11,290	11,134	10,979	10,824
STEAM ELECTRIC POWER	G | GORDON LAKE/RESERVOIR	1	1	1	1	1	1
STEAM ELECTRIC POWER	G | PALO PINTO LAKE/RESERVOIR	2,241	1,966	1,737	1,492	1,247	1,014
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	915	915	915	915	915	915
IRRIGATION	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	550	550	550	550	550	550
BRAZOS BASIN TOTAL EXISTING SUPPLY		**23,706**	**23,376**	**23,043**	**22,708**	**22,371**	**22,034**
PALO PINTO COUNTY TOTAL EXISTING SUPPLY		**23,706**	**23,376**	**23,043**	**22,708**	**22,371**	**22,034**
ROBERTSON COUNTY							
BRAZOS BASIN							
BREMOND	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	391	391	391	391	391	391
CALVERT	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	529	529	529	529	529	529
FRANKLIN	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	628	628	628	628	628	628
HEARNE	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	2,842	2,842	2,842	2,842	2,842	2,842
ROBERTSON COUNTY WSC	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	511	511	511	511	511	511
TRI-COUNTY SUD	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	78	80	85	91	93	96
TRI-COUNTY SUD	G | TRINITY AQUIFER | FALLS COUNTY	22	23	24	26	26	27

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
ROBERTSON COUNTY							
BRAZOS BASIN							
WELLBORN SUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	182	182	182	182	182	182
WELLBORN SUD	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	247	236	210	165	116	61
WICKSON CREEK SUD	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	43	37	33	28	24	21
WICKSON CREEK SUD	G | SPARTA AQUIFER | BRAZOS COUNTY	29	29	25	24	22	21
COUNTY-OTHER	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	757	757	757	757	757	757
MANUFACTURING	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	251	251	251	251	251	251
MINING	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	10,205	10,205	10,205	10,205	10,205	10,205
STEAM ELECTRIC POWER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	25,000	24,819	24,638	24,457	24,275	24,094
STEAM ELECTRIC POWER	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	6,014	6,014	6,014	6,014	6,014	6,014
STEAM ELECTRIC POWER	G | TWIN OAK LAKE/RESERVOIR	2,885	2,867	2,749	2,831	2,813	2,795
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,612	1,612	1,612	1,612	1,612	1,612
IRRIGATION	G | BRAZOS RIVER ALLUVIUM AQUIFER | ROBERTSON COUNTY	6,300	6,300	6,300	6,300	6,300	6,300
IRRIGATION	G | BRAZOS RUN-OF-RIVER	535	535	535	535	535	535
IRRIGATION	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	3,296	3,296	3,296	3,296	3,296	3,296
IRRIGATION	G | SPARTA AQUIFER | ROBERTSON COUNTY	300	400	500	548	548	548
BRAZOS BASIN TOTAL EXISTING SUPPLY		**62,657**	**62,544**	**62,317**	**62,223**	**61,970**	**61,716**
ROBERTSON COUNTY TOTAL EXISTING SUPPLY		**62,657**	**62,544**	**62,317**	**62,223**	**61,970**	**61,716**
SHACKELFORD COUNTY							
BRAZOS BASIN							
ALBANY	G | HUBBARD CREEK LAKE/RESERVOIR	448	460	465	466	466	466
ALBANY	G | MCCARTY LAKE/RESERVOIR	380	380	380	380	380	380
STEPHENS REGIONAL SUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	3	3	3	3	3	3
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	0	0	0	0	0
COUNTY-OTHER	G | HUBBARD CREEK LAKE/RESERVOIR	125	113	108	107	107	107
COUNTY-OTHER	G | MORAN LAKE/RESERVOIR	0	0	0	0	0	0
MINING	G | BRAZOS RUN-OF-RIVER	5	5	5	5	5	5
MINING	G | MORAN LAKE/RESERVOIR	2	2	2	2	2	2
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	838	838	838	838	838	838
LIVESTOCK	G | BRAZOS RUN-OF-RIVER	2	2	2	2	2	2
BRAZOS BASIN TOTAL EXISTING SUPPLY		**1,803**	**1,803**	**1,803**	**1,803**	**1,803**	**1,803**
SHACKELFORD COUNTY TOTAL EXISTING SUPPLY		**1,803**	**1,803**	**1,803**	**1,803**	**1,803**	**1,803**
SOMERVELL COUNTY							
BRAZOS BASIN							
GLEN ROSE	G | TRINITY AQUIFER | SOMERVELL COUNTY	724	724	724	724	724	724
COUNTY-OTHER	G | BRAZOS RUN-OF-RIVER	1,400	1,400	1,400	1,400	1,400	1,400
MANUFACTURING	G | TRINITY AQUIFER | SOMERVELL COUNTY	20	20	20	20	20	20

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
		2020	2030	2040	2050	2060	2070
SOMERVELL COUNTY							
BRAZOS BASIN							
MINING	G | TRINITY AQUIFER | SOMERVELL COUNTY	705	705	705	705	705	705
STEAM ELECTRIC POWER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	40,000	40,000	40,000	40,000	40,000	40,000
STEAM ELECTRIC POWER	G | SQUAW CREEK LAKE/RESERVOIR	9,285	9,272	9,260	9,247	9,234	9,222
STEAM ELECTRIC POWER	G | TRINITY AQUIFER | SOMERVELL COUNTY	36	36	36	36	36	36
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	158	158	158	158	158	158
IRRIGATION	G | TRINITY AQUIFER | SOMERVELL COUNTY	104	104	104	104	104	104
BRAZOS BASIN TOTAL EXISTING SUPPLY		**52,432**	**52,419**	**52,407**	**52,394**	**52,381**	**52,369**
SOMERVELL COUNTY TOTAL EXISTING SUPPLY		**52,432**	**52,419**	**52,407**	**52,394**	**52,381**	**52,369**
STEPHENS COUNTY							
BRAZOS BASIN							
BRECKENRIDGE	G | DANIEL LAKE/RESERVOIR	191	187	184	180	177	173
BRECKENRIDGE	G | HUBBARD CREEK LAKE/RESERVOIR	1,700	1,703	1,707	1,711	1,714	1,718
FORT BELKNAPP WSC	G | GRAHAM/EDDLEMAN LAKE/RESERVOIR	6	6	5	5	5	5
STEPHENS REGIONAL SUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	404	405	404	406	407	407
POSSUM KINGDOM WSC	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	31	30	29	28	27	27
COUNTY-OTHER	G | OTHER AQUIFER | STEPHENS COUNTY	207	207	207	207	207	207
MANUFACTURING	G | DANIEL LAKE/RESERVOIR	9	10	11	12	13	14
MINING	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,000	1,000	1,000	1,000	1,000	1,000
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	486	486	486	486	486	486
IRRIGATION	G | OTHER AQUIFER | STEPHENS COUNTY	86	86	86	86	86	86
BRAZOS BASIN TOTAL EXISTING SUPPLY		**4,120**	**4,120**	**4,119**	**4,121**	**4,122**	**4,123**
STEPHENS COUNTY TOTAL EXISTING SUPPLY		**4,120**	**4,120**	**4,119**	**4,121**	**4,122**	**4,123**
STONEWALL COUNTY							
BRAZOS BASIN							
ASPERMONT	G | MILLERS CREEK LAKE/RESERVOIR	85	71	56	42	28	13
ASPERMONT	G | SEYMOUR AQUIFER | HASKELL COUNTY	303	293	278	279	286	286
COUNTY-OTHER	G | SEYMOUR AQUIFER | STONEWALL COUNTY	93	93	93	93	93	93
MINING	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	175	175	175	175	175	175
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	458	458	458	458	458	458
IRRIGATION	G | BLAINE AQUIFER | STONEWALL COUNTY	129	129	129	129	129	129
IRRIGATION	G | BRAZOS RUN-OF-RIVER	8	8	8	8	8	8
IRRIGATION	G | SEYMOUR AQUIFER | STONEWALL COUNTY	90	90	90	90	90	90
BRAZOS BASIN TOTAL EXISTING SUPPLY		**1,341**	**1,317**	**1,287**	**1,274**	**1,267**	**1,252**
STONEWALL COUNTY TOTAL EXISTING SUPPLY		**1,341**	**1,317**	**1,287**	**1,274**	**1,267**	**1,252**
TAYLOR COUNTY							
BRAZOS BASIN							
ABILENE	F | OH IVIE LAKE/RESERVOIR NON-SYSTEM PORTION	4,601	4,462	4,325	4,189	4,051	3,914
ABILENE	G | FORT PHANTOM HILL LAKE/RESERVOIR	9,490	9,286	9,087	8,887	8,686	8,485
ABILENE	G | HUBBARD CREEK LAKE/RESERVOIR	6,980	3,271	3,003	2,754	2,456	2,143

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
TAYLOR COUNTY							
BRAZOS BASIN							
ABILENE	G | KIRBY LAKE/RESERVOIR	0	0	0	0	0	0
HAWLEY WSC	G | HUBBARD CREEK LAKE/RESERVOIR	48	48	48	48	46	46
MERKEL	G | HUBBARD CREEK LAKE/RESERVOIR	353	353	353	353	353	353
POTOSI WSC	G | HUBBARD CREEK LAKE/RESERVOIR	302	302	302	302	302	302
STEAMBOAT MOUNTAIN WSC	G | HUBBARD CREEK LAKE/RESERVOIR	181	182	182	182	180	179
TUSCOLA	G | HUBBARD CREEK LAKE/RESERVOIR	48	48	48	48	49	50
TYE	G | HUBBARD CREEK LAKE/RESERVOIR	184	184	184	184	184	184
COUNTY-OTHER	G | DOCKUM AQUIFER | NOLAN COUNTY	187	187	187	187	187	187
COUNTY-OTHER	G | HUBBARD CREEK LAKE/RESERVOIR	791	791	791	791	791	791
COUNTY-OTHER	G | LYTLE LAKE/RESERVOIR	0	0	0	0	0	0
MANUFACTURING	G | EDWARDS-TRINITY-PLATEAU AQUIFER | TAYLOR COUNTY	405	405	405	405	405	405
MANUFACTURING	G | HUBBARD CREEK LAKE/RESERVOIR	1,248	1,395	1,537	1,658	1,831	2,019
MINING	G | EDWARDS-TRINITY-PLATEAU AQUIFER | TAYLOR COUNTY	0	0	0	0	0	0
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	681	681	681	681	681	681
IRRIGATION	G | EDWARDS-TRINITY-PLATEAU AQUIFER | TAYLOR COUNTY	49	49	49	49	49	49
IRRIGATION	G | TRINITY AQUIFER | TAYLOR COUNTY	153	153	153	153	153	153
BRAZOS BASIN TOTAL EXISTING SUPPLY		**25,701**	**21,797**	**21,335**	**20,871**	**20,404**	**19,941**
COLORADO BASIN							
STEAMBOAT MOUNTAIN WSC	G | HUBBARD CREEK LAKE/RESERVOIR	47	46	46	46	46	46
TUSCOLA	G | HUBBARD CREEK LAKE/RESERVOIR	31	31	31	31	32	32
COLEMAN COUNTY SUD	F | BROWNWOOD LAKE/RESERVOIR	7	7	7	7	7	7
COLEMAN COUNTY SUD	F | COLEMAN LAKE/RESERVOIR	0	0	0	0	0	0
COLEMAN COUNTY SUD	F | HORDS CREEK LAKE/RESERVOIR	0	0	0	0	0	0
COUNTY-OTHER	G | HUBBARD CREEK LAKE/RESERVOIR	100	100	100	100	100	100
MINING	G | EDWARDS-TRINITY-PLATEAU AQUIFER | TAYLOR COUNTY	0	0	0	0	0	0
LIVESTOCK	G | COLORADO LIVESTOCK LOCAL SUPPLY	282	282	282	282	282	282
IRRIGATION	G | EDWARDS-TRINITY-PLATEAU AQUIFER | TAYLOR COUNTY	21	21	21	21	21	21
IRRIGATION	G | TRINITY AQUIFER | TAYLOR COUNTY	278	278	278	278	278	278
COLORADO BASIN TOTAL EXISTING SUPPLY		**766**	**765**	**765**	**765**	**766**	**766**
TAYLOR COUNTY TOTAL EXISTING SUPPLY		**26,467**	**22,562**	**22,100**	**21,636**	**21,170**	**20,707**
THROCKMORTON COUNTY							
BRAZOS BASIN							
FORT BELKNAPP WSC	G | GRAHAM/EDDLEMAN LAKE/RESERVOIR	19	18	18	18	17	16
THROCKMORTON	G | THROCKMORTON LAKE/RESERVOIR	325	325	325	325	325	325
STEPHENS REGIONAL SUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	25	23	24	22	22	22
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	99	99	99	99	99	99
COUNTY-OTHER	G | WOODSON LAKE/RESERVOIR	0	0	0	0	0	0

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
THROCKMORTON COUNTY							
BRAZOS BASIN							
MINING	G | SEYMOUR AQUIFER | THROCKMORTON COUNTY	0	0	0	0	0	0
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	672	672	672	672	672	672
BRAZOS BASIN TOTAL EXISTING SUPPLY		**1,140**	**1,137**	**1,138**	**1,136**	**1,135**	**1,134**
THROCKMORTON COUNTY TOTAL EXISTING SUPPLY		**1,140**	**1,137**	**1,138**	**1,136**	**1,135**	**1,134**
WASHINGTON COUNTY							
BRAZOS BASIN							
BRENHAM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	3,909	3,909	3,909	3,909	3,909	3,909
BRENHAM	G | GULF COAST AQUIFER | WASHINGTON COUNTY	234	234	234	234	234	234
COUNTY-OTHER	G | GULF COAST AQUIFER | WASHINGTON COUNTY	2,543	2,543	2,543	2,543	2,543	2,543
MANUFACTURING	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	208	208	208	208	208	208
MANUFACTURING	G | GULF COAST AQUIFER | WASHINGTON COUNTY	423	423	423	423	423	423
MINING	G | GULF COAST AQUIFER | WASHINGTON COUNTY	0	0	0	0	0	0
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,654	1,654	1,654	1,654	1,654	1,654
IRRIGATION	G | BRAZOS RIVER ALLUVIUM AQUIFER | WASHINGTON COUNTY	82	82	82	82	82	82
IRRIGATION	G | GULF COAST AQUIFER | WASHINGTON COUNTY	368	368	368	368	368	368
BRAZOS BASIN TOTAL EXISTING SUPPLY		**9,421**	**9,421**	**9,421**	**9,421**	**9,421**	**9,421**
COLORADO BASIN							
COUNTY-OTHER	G | GULF COAST AQUIFER | WASHINGTON COUNTY	7	7	7	7	7	7
LIVESTOCK	G | COLORADO LIVESTOCK LOCAL SUPPLY	7	7	7	7	7	7
COLORADO BASIN TOTAL EXISTING SUPPLY		**14**	**14**	**14**	**14**	**14**	**14**
WASHINGTON COUNTY TOTAL EXISTING SUPPLY		**9,435**	**9,435**	**9,435**	**9,435**	**9,435**	**9,435**
WILLIAMSON COUNTY							
BRAZOS BASIN							
CEDAR PARK	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	13,183	13,350	13,221	12,982	12,980	12,979
ROUND ROCK	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	20,548	20,135	19,509	17,419	16,016	14,387
ROUND ROCK	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	133	133	133	133	133	133
ROUND ROCK	G | DIRECT REUSE	3,711	3,629	3,505	3,365	3,233	3,090
ROUND ROCK	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	101	30	0	0	0	0
ROUND ROCK	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	0	0	0	0	0	0
BARTLETT	G | TRINITY AQUIFER | WILLIAMSON COUNTY	41	40	38	37	37	37
BELL-MILAM FALLS WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	68	79	94	110	124	138
BELL-MILAM FALLS WSC	G | TRINITY AQUIFER | BELL COUNTY	82	98	116	134	151	168
BRUSHY CREEK MUD	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	3,628	3,980	3,516	3,211	2,871	2,786
BRUSHY CREEK MUD	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	680	615	223	0	0	0
CHISHOLM TRAIL SUD	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	2,037	2,011	1,975	1,934	1,884	1,832

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
		2020	2030	2040	2050	2060	2070
WILLIAMSON COUNTY							
BRAZOS BASIN							
CHISHOLM TRAIL SUD	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	246	249	251	253	255	256
FERN BLUFF MUD	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,153	1,043	943	930	930	930
FLORENCE	G | TRINITY AQUIFER | WILLIAMSON COUNTY	60	60	60	60	60	60
GEORGETOWN	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	17,279	17,263	17,248	17,234	17,221	17,207
GEORGETOWN	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	265	330	722	945	945	945
GRANGER	G | TRINITY AQUIFER | WILLIAMSON COUNTY	99	99	99	99	99	99
HUTTO	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	944	944	944	944	944	944
HUTTO	G | CARRIZO-WILCOX AQUIFER | WILLIAMSON COUNTY	7	7	7	7	7	7
HUTTO	K | EDWARDS-BFZ AQUIFER | TRAVIS COUNTY	483	483	483	483	483	483
JARRELL-SCHWERTNER WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,134	1,251	1,424	1,400	1,402	1,380
JARRELL-SCHWERTNER WSC	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	41	36	27	16	3	1
JONAH WATER SUD	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,681	1,669	1,646	1,521	1,490	1,441
JONAH WATER SUD	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	304	304	304	304	304	304
LEANDER	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	5,198	4,716	4,662	5,131	5,321	5,459
LIBERTY HILL	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	158	192	237	286	343	402
LIBERTY HILL	G | TRINITY AQUIFER | WILLIAMSON COUNTY	56	56	56	56	56	56
LIBERTY HILL	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	600	600	600	600	600	600
MANVILLE WSC	G | CARRIZO-WILCOX AQUIFER | BURLESON COUNTY	367	372	387	398	415	431
MANVILLE WSC	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	1,359	1,378	1,436	1,475	1,538	1,983
MANVILLE WSC	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	383	356	315	352	368	368
MANVILLE WSC	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	385	385	385	385	385	385
MANVILLE WSC	G | OTHER AQUIFER | WILLIAMSON COUNTY	91	93	96	99	103	107
MANVILLE WSC	K | EDWARDS-BFZ AQUIFER | TRAVIS COUNTY	143	145	151	155	161	168
MANVILLE WSC	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	150	152	158	162	169	176
MANVILLE WSC	K | TRINITY AQUIFER | TRAVIS COUNTY	150	152	158	163	170	176
PFLUGERVILLE	K | EDWARDS-BFZ AQUIFER | TRAVIS COUNTY	5	5	5	5	5	5
PFLUGERVILLE	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	138	138	138	139	168	198
SOUTHWEST MILAM WSC	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	473	497	500	631	733	798
TAYLOR	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	2,840	3,006	3,241	3,522	3,869	4,232
THORNDALE	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	1	1	1	1	1	1
THRALL	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	83	89	99	110	124	139
THRALL	G | OTHER AQUIFER | WILLIAMSON COUNTY	6	6	6	6	6	6
WILLIAMSON-TRAVIS COUNTY MUD #1	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	788	788	788	787	788	787

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
WILLIAMSON COUNTY							
BRAZOS BASIN							
JARRELL	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	53	63	76	91	108	141
JARRELL	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	53	62	75	90	107	110
JARRELL	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	3	4	5	6	7	8
WILLIAMSON COUNTY MUD #10	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	935	1,062	1,204	1,403	1,687	1,982
WILLIAMSON COUNTY MUD #11	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	542	616	707	862	1,037	1,218
WILLIAMSON COUNTY MUD #9	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	797	906	1,027	1,247	1,500	1,762
BLOCK HOUSE MUD	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	1,098	1,098	1,098	1,098	1,098	1,098
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	501	584	703	860	1,173	1,490
COUNTY-OTHER	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	208	208	208	208	208	208
COUNTY-OTHER	G | OTHER AQUIFER | WILLIAMSON COUNTY	380	380	380	380	380	380
COUNTY-OTHER	G | TRINITY AQUIFER | WILLIAMSON COUNTY	1,216	1,216	1,216	1,216	1,216	1,216
MANUFACTURING	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	389	448	507	561	612	666
MANUFACTURING	G | DIRECT REUSE	565	651	780	924	1,059	1,205
MANUFACTURING	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	596	668	698	698	698	698
MANUFACTURING	G | TRINITY AQUIFER | WILLIAMSON COUNTY	3	3	3	3	3	3
MANUFACTURING	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	790	912	1,033	1,142	1,243	1,355
MINING	G | DIRECT REUSE	3	3	3	3	3	3
MINING	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	412	412	412	412	412	412
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	1,455	1,455	1,455	1,455	1,455	1,455
IRRIGATION	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	15	15	15	14	14	14
IRRIGATION	G | BRAZOS RUN-OF-RIVER	52	52	52	52	52	52
IRRIGATION	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	7	7	7	7	7	7
IRRIGATION	G | TRINITY AQUIFER | WILLIAMSON COUNTY	6	6	6	6	6	6
BRAZOS BASIN TOTAL EXISTING SUPPLY		**91,361**	**91,796**	**91,577**	**90,722**	**90,980**	**91,573**
COLORADO BASIN							
COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	165	195	235	373	457	552
COUNTY-OTHER	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	600	598	596	594	592	590
COLORADO BASIN TOTAL EXISTING SUPPLY		**765**	**793**	**831**	**967**	**1,049**	**1,142**
WILLIAMSON COUNTY TOTAL EXISTING SUPPLY		**92,126**	**92,589**	**92,408**	**91,689**	**92,029**	**92,715**
YOUNG COUNTY							
BRAZOS BASIN							
FORT BELKNAPP WSC	G | GRAHAM/EDDLEMAN LAKE/RESERVOIR	381	382	383	384	384	385
GRAHAM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,000	1,000	1,000	1,000	1,000	1,000
GRAHAM	G | GRAHAM/EDDLEMAN LAKE/RESERVOIR	2,011	2,014	2,015	2,015	2,014	2,013
GRAHAM	G | OTHER AQUIFER | YOUNG COUNTY	194	194	194	194	194	194

Water User Group (WUG) Existing Water Supply

REGION G	SOURCE REGION | SOURCE NAME	EXISTING SUPPLY (ACRE-FEET PER YEAR)					
		2020	2030	2040	2050	2060	2070
YOUNG COUNTY							
BRAZOS BASIN							
NEWCASTLE	G | GRAHAM/EDDLEMAN LAKE/RESERVOIR	60	61	61	61	63	65
COUNTY-OTHER	G | GRAHAM/EDDLEMAN LAKE/RESERVOIR	74	70	69	69	68	67
COUNTY-OTHER	G | OTHER AQUIFER | YOUNG COUNTY	162	157	152	149	142	134
MANUFACTURING	G | GRAHAM/EDDLEMAN LAKE/RESERVOIR	2	2	2	2	2	2
MANUFACTURING	G | OTHER AQUIFER | YOUNG COUNTY	57	62	67	70	77	85
MINING	G | OTHER AQUIFER | YOUNG COUNTY	0	0	0	0	0	0
STEAM ELECTRIC POWER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	14,000	14,000	14,000	14,000	14,000	14,000
STEAM ELECTRIC POWER	G | GRAHAM/EDDLEMAN LAKE/RESERVOIR	248	248	248	248	248	248
LIVESTOCK	G | BRAZOS LIVESTOCK LOCAL SUPPLY	839	839	839	839	839	839
IRRIGATION	G | OTHER AQUIFER | YOUNG COUNTY	0	0	0	0	0	0
BRAZOS BASIN TOTAL EXISTING SUPPLY		**19,028**	**19,029**	**19,030**	**19,031**	**19,031**	**19,032**
TRINITY BASIN							
FORT BELKNAPP WSC	G | GRAHAM/EDDLEMAN LAKE/RESERVOIR	13	13	13	12	13	13
COUNTY-OTHER	G | OTHER AQUIFER | YOUNG COUNTY	61	61	61	61	61	61
MINING	G | OTHER AQUIFER | YOUNG COUNTY	0	0	0	0	0	0
LIVESTOCK	G | TRINITY LIVESTOCK LOCAL SUPPLY	137	137	137	137	137	137
TRINITY BASIN TOTAL EXISTING SUPPLY		**211**	**211**	**211**	**210**	**211**	**211**
YOUNG COUNTY TOTAL EXISTING SUPPLY		**19,239**	**19,240**	**19,241**	**19,241**	**19,242**	**19,243**
REGION G TOTAL EXISTING SUPPLY		**1,107,143**	**1,102,353**	**1,092,801**	**1,086,807**	**1,087,674**	**1,081,797**

Water User Group (WUG) Needs/Surplus

REGION G	WUG (NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
BELL COUNTY						
BRAZOS BASIN						
439 WSC	455	355	242	47	(46)	(94)
ARMSTRONG WSC	865	853	837	817	793	769
BARTLETT	(126)	(145)	(166)	(189)	(215)	(240)
BELL-MILAM FALLS WSC	713	690	683	673	648	623
BELTON	3,592	3,049	2,413	1,434	722	(40)
CHISHOLM TRAIL SUD	(263)	(366)	(478)	(592)	(703)	(811)
DOG RIDGE WSC	1,200	1,143	1,076	970	891	806
EAST BELL WSC	893	850	800	742	676	610
ELM CREEK WSC	80	49	12	(34)	(78)	(126)
FORT HOOD	1,778	1,609	1,475	1,292	1,109	921
HARKER HEIGHTS	931	24	(939)	(1,496)	(1,975)	(3,171)
HOLLAND	377	381	383	384	383	382
JARRELL-SCHWERTNER WSC	288	270	259	185	119	57
KEMPNER WSC	(73)	(115)	(158)	(205)	(254)	(303)
KILLEEN	20,490	17,859	14,664	9,595	5,969	2,059
LITTLE RIVER-ACADEMY	11	(21)	(59)	(102)	(146)	(190)
MOFFAT WSC	839	832	814	765	733	691
MORGAN'S POINT RESORT	1,340	1,251	1,148	1,038	926	814
NOLANVILLE	(72)	(444)	(858)	(1,330)	(1,758)	(2,188)
PENDLETON WSC	257	254	240	217	200	178
ROGERS	435	430	424	415	405	394
SALADO WSC	510	373	219	54	(112)	(278)
TEMPLE	2,223	(1,903)	(4,373)	(8,177)	(11,600)	(13,337)
TROY	1,011	1,000	987	971	952	933
WEST BELL COUNTY WSC	871	844	860	862	863	863
COUNTY-OTHER	1,084	234	(768)	(1,828)	(2,824)	(3,788)
MANUFACTURING	(873)	(993)	(1,110)	(1,214)	(1,350)	(1,497)
MINING	(3,242)	(3,980)	(4,599)	(5,349)	(6,105)	(6,968)
STEAM ELECTRIC POWER	(4,220)	(4,934)	(5,804)	(6,865)	(8,157)	(9,693)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(1,157)	(1,127)	(1,102)	(1,088)	(1,060)	(1,038)
BOSQUE COUNTY						
BRAZOS BASIN						
CHILDRESS CREEK WSC	38	12	2	(5)	(11)	(16)
CLIFTON	334	289	271	259	248	206
CROSS COUNTRY WSC	37	29	26	(127)	(132)	(138)
MERIDIAN	265	253	249	246	243	241
VALLEY MILLS	41	22	14	8	2	(2)
WALNUT SPRINGS	98	94	93	92	90	89
COUNTY-OTHER	248	162	124	99	79	66
MANUFACTURING	(1,868)	(2,187)	(2,501)	(2,772)	(3,088)	(3,431)
MINING	(1,843)	(1,942)	(1,763)	(1,743)	(1,704)	(1,692)
STEAM ELECTRIC POWER	312	(861)	(2,262)	(3,943)	(5,965)	(8,344)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(536)	(502)	(468)	(438)	(407)	(377)

Water User Group (WUG) Needs/Surplus

REGION G	WUG (NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
BRAZOS COUNTY						
BRAZOS BASIN						
BRYAN	(3,335)	(1,269)	(5,533)	(11,875)	(18,790)	(26,578)
COLLEGE STATION	(4,973)	(8,024)	(7,372)	(7,673)	(8,085)	(8,401)
TEXAS A & M UNIVERSITY	5,253	6,760	7,323	7,340	7,343	7,344
WELLBORN SUD	377	90	(300)	(846)	(1,448)	(2,114)
WICKSON CREEK SUD	1,535	1,378	1,154	892	604	301
COUNTY-OTHER	39	379	424	346	223	28
MANUFACTURING	(1,800)	(886)	(1,219)	(1,513)	(1,802)	(2,116)
MINING	(1,088)	(1,610)	(1,433)	(1,144)	(923)	(814)
STEAM ELECTRIC POWER	(271)	(151)	(197)	(49)	(142)	(121)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(10,934)	(9,669)	(8,474)	(7,340)	(6,256)	(5,321)
BURLESON COUNTY						
BRAZOS BASIN						
CALDWELL	1,325	1,309	1,279	1,279	1,261	1,244
DEANVILLE WSC	236	230	211	214	208	202
MILANO WSC	38	14	8	1	4	2
SNOOK	291	280	274	266	259	254
SOMERVILLE	625	614	606	595	586	578
SOUTHWEST MILAM WSC	76	49	16	24	20	7
COUNTY-OTHER	258	200	170	102	64	32
MANUFACTURING	0	(22)	(44)	(64)	(82)	(102)
MINING	(995)	(1,923)	(1,512)	(1,100)	(686)	(428)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	107	1,058	1,905	2,847	3,746	4,493
CALLAHAN COUNTY						
BRAZOS BASIN						
BAIRD	66	74	80	81	81	81
CLYDE	205	202	204	206	202	201
POTOSI WSC	(7)	(8)	(8)	(8)	(8)	(8)
COUNTY-OTHER	20	12	12	12	7	5
MINING	(119)	(118)	(111)	(105)	(99)	(94)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	26	28	30	32	34	35
COLORADO BASIN						
CLYDE	57	57	57	57	58	56
COLEMAN COUNTY SUD	(10)	(10)	(10)	(10)	(10)	(11)
CROSS PLAINS	232	225	223	220	218	217
COUNTY-OTHER	15	9	8	9	7	4
MINING	(109)	(109)	(103)	(96)	(91)	(86)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	143	150	157	164	171	178
COMANCHE COUNTY						
BRAZOS BASIN						
COMANCHE	159	152	147	96	70	38
DE LEON	84	85	85	64	55	42
COUNTY-OTHER	(149)	(144)	(135)	(144)	(163)	(183)
MANUFACTURING	0	0	0	0	0	0

Water User Group (WUG) Needs/Surplus

REGION G	WUG (NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
COMANCHE COUNTY						
BRAZOS BASIN						
MINING	(418)	(499)	(337)	(250)	(162)	(102)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(893)	(1,962)	(1,823)	(463)	(757)	(968)
COLORADO BASIN						
COUNTY-OTHER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
CORYELL COUNTY						
BRAZOS BASIN						
COPPERAS COVE	4,550	4,039	3,444	2,528	1,867	1,145
CORYELL CITY WATER SUPPLY DISTRICT	203	211	219	214	211	206
ELM CREEK WSC	13	8	2	(5)	(12)	(19)
FORT HOOD	1,652	1,530	1,403	1,228	1,054	875
GATESVILLE	28	(629)	(1,406)	(2,356)	(3,152)	(3,995)
KEMPNER WSC	(113)	(173)	(236)	(298)	(365)	(431)
MULTI-COUNTY WSC	(80)	(100)	(127)	(153)	(184)	(217)
COUNTY-OTHER	870	594	234	(93)	(171)	(515)
MANUFACTURING	0	0	0	0	0	0
MINING	(1,510)	(1,072)	(491)	(363)	(398)	(437)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	556	556	556	556	556	556
EASTLAND COUNTY						
BRAZOS BASIN						
CISCO	224	224	236	241	240	237
EASTLAND	2,546	2,551	2,565	2,573	2,575	2,575
GORMAN	70	73	75	66	63	59
RANGER	1,562	1,565	1,575	1,577	1,578	1,578
RISING STAR	0	2	5	7	7	7
STEPHENS REGIONAL SUD	7	8	8	9	8	8
COUNTY-OTHER	18	35	57	70	72	72
MANUFACTURING	38	38	38	37	38	37
MINING	(1,123)	(1,132)	(896)	(689)	(500)	(417)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(1,982)	(1,992)	(2,000)	(2,002)	(2,006)	(2,013)
COLORADO BASIN						
COUNTY-OTHER	2	3	4	4	4	4
MINING	(41)	(41)	(33)	(25)	(18)	(15)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(256)	(257)	(257)	(258)	(258)	(258)
ERATH COUNTY						
BRAZOS BASIN						
DUBLIN	139	116	97	73	44	15
STEPHENVILLE	3,522	3,293	3,085	2,776	2,535	2,285
COUNTY-OTHER	692	477	291	93	(116)	(315)
MANUFACTURING	0	0	0	0	0	1
MINING	6	(25)	135	207	279	334
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	641	733	825	915	1,004	1,088

Water User Group (WUG) Needs/Surplus

REGION G	WUG (NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
FALLS COUNTY						
BRAZOS BASIN						
BELL-MILAM FALLS WSC	404	389	364	330	310	293
BRUCEVILLE-EDDY	3	3	3	3	2	2
EAST BELL WSC	82	69	57	46	39	31
GOLINDA	3	2	2	0	1	0
LOTT	159	159	161	164	163	161
MARLIN	979	923	930	978	927	872
ROSEBUD	427	426	430	435	430	425
TRI-COUNTY SUD	(46)	(52)	(52)	(49)	(60)	(72)
WEST BRAZOS WSC	(84)	(88)	(89)	(88)	(96)	(104)
COUNTY-OTHER	89	81	90	105	87	68
MANUFACTURING	(1)	(1)	(1)	(1)	(1)	(1)
MINING	(225)	(246)	(259)	(286)	(307)	(331)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	2,204	2,342	2,478	2,607	2,733	2,847
FISHER COUNTY						
BRAZOS BASIN						
BITTER CREEK WSC	164	160	157	153	147	144
ROBY	263	266	268	269	270	270
ROTAN	(89)	(50)	(60)	(67)	(76)	(84)
COUNTY-OTHER	41	46	50	50	51	51
MANUFACTURING	(20)	(50)	(79)	(105)	(131)	(159)
MINING	(407)	(402)	(359)	(313)	(273)	(238)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	802	936	1,066	1,192	1,316	1,428
GRIMES COUNTY						
BRAZOS BASIN						
DOBBIN-PLANTERSVILLE WSC	0	0	0	0	0	0
G & W WSC	0	0	0	0	0	0
NAVASOTA	661	650	643	623	572	502
WICKSON CREEK SUD	467	377	283	196	119	54
COUNTY-OTHER	167	160	156	124	96	66
MANUFACTURING	154	107	59	17	0	0
MINING	(210)	(391)	(306)	(221)	(136)	(83)
STEAM ELECTRIC POWER	(5,263)	(6,303)	(7,414)	(8,874)	(11,035)	(13,367)
LIVESTOCK	0	0	0	0	0	0
SAN JACINTO BASIN						
DOBBIN-PLANTERSVILLE WSC	0	0	0	0	0	0
G & W WSC	0	0	0	0	0	0
COUNTY-OTHER	65	57	55	32	14	0
MINING	(61)	(142)	(104)	(66)	(28)	(4)
STEAM ELECTRIC POWER	(6,402)	(6,848)	(7,324)	(7,950)	(8,876)	(9,875)
LIVESTOCK	0	0	0	0	0	0
TRINITY BASIN						
WICKSON CREEK SUD	64	51	39	26	17	7
COUNTY-OTHER	0	0	0	0	0	0
MINING	(19)	(36)	(28)	(20)	(12)	(8)
LIVESTOCK	0	0	0	0	0	0

Water User Group (WUG) Needs/Surplus

REGION G	WUG (NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
HAMILTON COUNTY						
BRAZOS BASIN						
HAMILTON	139	136	137	88	74	52
HICO	203	207	212	215	216	216
MULTI-COUNTY WSC	(19)	(22)	(24)	(26)	(29)	(31)
COUNTY-OTHER	149	161	175	177	178	178
MANUFACTURING	1	1	1	1	1	1
MINING	(380)	(223)	(88)	13	13	13
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(70)	(68)	(61)	(38)	(16)	(6)
HASKELL COUNTY						
BRAZOS BASIN						
HASKELL	(58)	(126)	(193)	(269)	(353)	(442)
RULE	72	64	56	49	46	38
STAMFORD	4	3	3	3	3	2
COUNTY-OTHER	280	241	198	155	114	68
MINING	(93)	(92)	(83)	(74)	(66)	(59)
STEAM ELECTRIC POWER	1,864	1,807	1,738	1,653	1,550	1,480
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(2,225)	(2,388)	(3,197)	(1,065)	682	1,880
HILL COUNTY						
BRAZOS BASIN						
BRANDON-IRENE WSC	19	22	20	17	14	11
FILES VALLEY WSC	143	160	141	123	105	87
HILL COUNTY WSC	427	428	415	399	386	375
HILLSBORO	1,888	1,606	1,554	1,486	1,425	1,373
ITASCA	79	77	77	75	71	68
JOHNSON COUNTY SUD	34	24	18	9	2	(2)
PARKER WSC	17	11	6	1	(3)	(6)
WHITE BLUFF COMMUNITY WS	166	142	126	109	95	83
WHITNEY	169	151	139	125	112	100
WOODROW-OSCEOLA WSC	221	220	217	203	193	184
COUNTY-OTHER	437	264	218	163	109	55
MANUFACTURING	0	0	0	0	0	0
MINING	(307)	0	223	579	529	477
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	822	822	822	822	832	835
TRINITY BASIN						
BRANDON-IRENE WSC	72	80	73	62	50	39
FILES VALLEY WSC	335	374	335	292	247	203
HUBBARD	29	(25)	(32)	(44)	(57)	(69)
ITASCA	6	6	6	5	5	5
JOHNSON COUNTY SUD	7	5	3	1	0	0
PARKER WSC	4	3	1	0	(1)	(1)
COUNTY-OTHER	55	33	29	22	15	8
MINING	(296)	(175)	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	10	10	10	10	14	16

Water User Group (WUG) Needs/Surplus

REGION G	WUG (NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
HOOD COUNTY						
BRAZOS BASIN						
ACTON MUD	4,322	2,742	1,700	1,155	533	(156)
CRESSON	6	1	(7)	(19)	(31)	(40)
GRANBURY	890	674	520	358	246	158
OAK TRAIL SHORES SUBDIVISION	214	220	226	227	226	223
TOLAR	45	26	12	(1)	(11)	(19)
COUNTY-OTHER	(968)	(344)	(77)	(121)	(22)	188
MANUFACTURING	10,000	9,998	9,996	9,994	9,991	9,988
MINING	(837)	(1,193)	(980)	(892)	(803)	(817)
STEAM ELECTRIC POWER	37,783	36,801	35,602	34,141	32,183	27,133
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	325	459	591	723	850	970
TRINITY BASIN						
CRESSON	2	1	(1)	(2)	(4)	(6)
COUNTY-OTHER	0	0	0	0	0	5
MINING	(17)	(19)	(18)	(17)	(16)	(16)
LIVESTOCK	0	0	0	0	0	0
JOHNSON COUNTY						
BRAZOS BASIN						
ACTON MUD	85	47	30	24	12	(4)
BETHESDA WSC	(43)	(60)	(77)	(97)	(118)	(140)
BURLESON	(2)	(3)	(4)	(4)	(5)	(6)
CLEBURNE	3,174	2,201	1,177	90	(1,092)	(2,373)
CRESSON	2	0	(3)	(3)	(2)	(5)
GODLEY	44	34	22	8	(8)	(25)
JOHNSON COUNTY SUD	1,776	1,442	1,070	599	211	(191)
JOSHUA	0	0	0	0	0	0
KEENE	147	137	125	112	98	72
PARKER WSC	172	124	73	12	(56)	(132)
RIO VISTA	99	71	42	8	(30)	(71)
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	78	80	84	87	88	92
MINING	(636)	37	677	931	856	768
STEAM ELECTRIC POWER	(5,656)	(5,656)	(5,656)	(5,656)	(5,656)	(5,656)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	119	117	116	114	113	111
TRINITY BASIN						
ALVARADO	2,095	2,058	2,015	1,962	1,898	1,829
BETHANY WSC	1,186	1,157	1,123	1,081	1,029	972
BETHESDA WSC	(874)	(1,203)	(2,580)	(3,136)	(3,613)	(4,102)
BURLESON	(1,440)	(2,344)	(3,274)	(4,076)	(5,008)	(6,076)
CRESSON	3	0	(1)	(3)	(7)	(8)
CROWLEY	(2)	(4)	(7)	(12)	(19)	(24)
FORT WORTH	0	0	0	(356)	(647)	(893)
GRANDVIEW	187	172	155	135	109	82
JOHNSON COUNTY SUD	4,901	3,982	2,951	1,658	582	(521)
JOSHUA	0	0	0	0	0	0
KEENE	907	840	768	688	601	447

Water User Group (WUG) Needs/Surplus

REGION G	WUG (NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
JOHNSON COUNTY						
TRINITY BASIN						
MANSFIELD	(184)	(347)	(571)	(895)	(1,187)	(1,516)
MOUNTAIN PEAK SUD	800	676	545	400	241	71
PARKER WSC	52	37	22	4	(17)	(40)
VENUS	(144)	(225)	(328)	(433)	(544)	(658)
COUNTY-OTHER	87	171	166	309	323	309
MANUFACTURING	13	11	8	5	3	0
MINING	(628)	37	670	918	845	758
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	39	38	36	35	33	32
JONES COUNTY						
BRAZOS BASIN						
ABILENE	(31)	(237)	(282)	(328)	(378)	(427)
ANSON	644	636	633	623	614	606
HAMLIN	341	329	320	307	296	287
HAWLEY	0	0	0	0	0	0
HAWLEY WSC	76	74	76	72	62	50
STAMFORD	362	332	312	287	265	247
COUNTY-OTHER	74	64	57	50	43	37
MINING	(239)	(234)	(218)	(199)	(183)	(169)
STEAM ELECTRIC POWER	7,914	11,543	11,441	11,473	11,353	11,319
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(260)	(174)	(91)	(10)	68	139
KENT COUNTY						
BRAZOS BASIN						
JAYTON	(92)	(91)	(89)	(89)	(88)	(88)
COUNTY-OTHER	12	13	13	13	13	13
MINING	421	421	424	427	430	433
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	209	246	278	310	342	371
KNOX COUNTY						
BRAZOS BASIN						
KNOX CITY	(48)	(83)	(118)	(154)	(190)	(226)
MUNDAY	(55)	(91)	(125)	(164)	(200)	(237)
COUNTY-OTHER	90	79	65	48	33	16
MINING	(12)	(12)	(11)	(11)	(11)	(11)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(92)	(92)	(789)	(1,768)	(92)	(92)
RED BASIN						
COUNTY-OTHER	9	7	6	4	1	0
MINING	(3)	(3)	(3)	(3)	(3)	(3)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(3,029)	(5,423)	(7,716)	(7,515)	(5,864)	(5,013)
LAMPASAS COUNTY						
BRAZOS BASIN						
COPPERAS COVE	134	157	149	120	93	58
KEMPNER	(7)	(10)	(6)	(6)	(5)	(5)
KEMPNER WSC	(350)	(526)	(683)	(841)	(993)	(1,134)

Water User Group (WUG) Needs/Surplus

REGION G	WUG (NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
LAMPASAS COUNTY						
BRAZOS BASIN						
LAMPASAS	(49)	(148)	(227)	(318)	(414)	(505)
LOMETA	5	9	9	9	9	9
COUNTY-OTHER	60	85	102	121	137	150
MANUFACTURING	0	0	0	0	0	0
MINING	(123)	(141)	(156)	(171)	(189)	(210)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	98	98	99	100	100	100
COLORADO BASIN						
LOMETA	(5)	(9)	(9)	(9)	(9)	(9)
COUNTY-OTHER	0	0	0	0	0	0
MINING	(50)	(55)	(60)	(65)	(72)	(78)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(218)	(213)	(209)	(205)	(203)	(199)
LEE COUNTY						
BRAZOS BASIN						
AQUA WSC	89	44	19	11	4	0
GIDDINGS	298	243	215	206	197	192
LEE COUNTY WSC	1,515	1,411	1,323	1,226	1,122	1,005
LEXINGTON	425	402	390	386	383	381
SOUTHWEST MILAM WSC	28	20	6	9	7	3
COUNTY-OTHER	31	19	8	4	2	0
MINING	(2,480)	(5,685)	(6,058)	(6,477)	(6,945)	(7,512)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
COLORADO BASIN						
GIDDINGS	316	259	228	218	209	203
LEE COUNTY WSC	588	548	513	476	434	389
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	(700)	(1,604)	(1,709)	(1,827)	(1,959)	(2,119)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	37	50	62	75	87	98
LIMESTONE COUNTY						
BRAZOS BASIN						
COOLIDGE	38	(7)	(22)	(40)	(59)	(79)
GROESBECK	(688)	(677)	(668)	(665)	(668)	(672)
MART	0	(1)	(1)	(1)	(1)	(2)
MEXIA	813	719	636	549	468	391
THORNTON	202	204	206	207	207	207
TRI-COUNTY SUD	(18)	(19)	(20)	(20)	(23)	(28)
COUNTY-OTHER	364	346	331	302	273	235
MANUFACTURING	0	0	0	0	0	0
MINING	(8,682)	(8,321)	(8,266)	(8,702)	(9,131)	(9,701)
STEAM ELECTRIC POWER	78	(4,051)	(9,017)	(15,003)	(22,233)	(30,892)
LIVESTOCK	0	0	0	0	0	0
TRINITY BASIN						
COOLIDGE	33	(5)	(16)	(30)	(46)	(61)

Water User Group (WUG) Needs/Surplus

REGION G	WUG (NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
LIMESTONE COUNTY						
TRINITY BASIN						
MEXIA	593	528	466	401	342	285
COUNTY-OTHER	32	53	67	82	85	95
MANUFACTURING	0	1	0	0	1	0
MINING	(825)	(794)	(789)	(827)	(864)	(914)
LIVESTOCK	0	0	0	0	0	0
MCLENNAN COUNTY						
BRAZOS BASIN						
BELLMEAD	261	233	206	163	105	45
BEVERLY HILLS	0	0	0	0	0	0
BRUCEVILLE-EDDY	1,081	1,061	1,037	996	965	927
CHALK BLUFF WSC	446	457	466	470	471	471
CORYELL CITY WATER SUPPLY DISTRICT	31	34	36	36	36	35
CRAWFORD	(5)	(3)	(3)	(3)	(5)	(7)
CROSS COUNTRY WSC	76	79	82	0	0	0
ELM CREEK WSC	63	37	9	(24)	(54)	(85)
GHOLSON	772	760	749	737	723	709
GOLINDA	1	1	0	1	0	0
HALLSBURG	0	0	0	0	0	0
HEWITT	(87)	(237)	(211)	(204)	(215)	(231)
LACY-LAKEVIEW	348	303	261	212	154	95
LORENA	153	123	95	66	33	1
MART	(150)	(166)	(181)	(199)	(221)	(243)
MCGREGOR	2,066	2,040	2,004	1,904	1,842	1,759
MOODY	423	414	404	384	367	347
NORTH BOSQUE WSC	(14)	(146)	(265)	(385)	(507)	(628)
RIESEL	(11)	(11)	(11)	(12)	(15)	(19)
ROBINSON	72	(346)	(720)	(1,109)	(1,511)	(1,909)
TRI-COUNTY SUD	(3)	(4)	(3)	(4)	(5)	(6)
VALLEY MILLS	1	1	0	0	0	0
WACO	12,489	9,894	7,376	4,614	1,694	(1,348)
WEST	898	893	888	879	865	850
WEST BRAZOS WSC	(73)	(79)	(84)	(90)	(101)	(112)
WESTERN HILLS WS	332	318	306	294	282	270
WOODWAY	0	(7)	(20)	(57)	(74)	(103)
COUNTY-OTHER	84	204	301	344	349	340
MANUFACTURING	(1,664)	(1,916)	(2,204)	(2,417)	(2,664)	(2,834)
MINING	(2,264)	(2,726)	(2,786)	(3,234)	(3,558)	(3,942)
STEAM ELECTRIC POWER	22,931	21,000	20,224	18,744	17,963	17,129
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(2,298)	(2,313)	(2,325)	(2,337)	(2,350)	(2,363)
MILAM COUNTY						
BRAZOS BASIN						
BELL-MILAM FALLS WSC	528	513	494	482	458	432
BUCKHOLTS	176	174	173	171	168	165
CAMERON	1,256	1,206	1,174	1,115	1,059	1,003
MILANO WSC	40	15	9	1	5	2
ROCKDALE	841	662	174	320	355	308

Water User Group (WUG) Needs/Surplus

REGION G	WUG (NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
MILAM COUNTY						
BRAZOS BASIN						
SOUTHWEST MILAM WSC	604	388	124	186	151	57
THORNDALE	45	41	39	32	25	18
COUNTY-OTHER	656	643	632	617	605	592
MANUFACTURING	2	2	2	0	0	0
MINING	0	0	0	0	0	0
STEAM ELECTRIC POWER	1,096	(35)	(78)	(7,222)	(6,646)	(6,757)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	317	206	13	267	400	440
NOLAN COUNTY						
BRAZOS BASIN						
BITTER CREEK WSC	237	243	249	248	249	248
ROSCOE	84	80	79	73	67	62
SWEETWATER	(1,349)	(1,390)	(1,410)	(1,474)	(1,527)	(1,576)
COUNTY-OTHER	(104)	(107)	(108)	(113)	(119)	(125)
MANUFACTURING	(881)	(1,072)	(1,260)	(1,426)	(1,591)	(1,770)
MINING	(101)	(100)	(90)	(80)	(71)	(63)
STEAM ELECTRIC POWER	(13,526)	(23,916)	(23,916)	(23,916)	(23,916)	(23,916)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(1,490)	(1,372)	(1,257)	(1,147)	(1,040)	(940)
COLORADO BASIN						
COUNTY-OTHER	0	0	0	0	0	0
MINING	(124)	(122)	(110)	(98)	(87)	(78)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(993)	(915)	(837)	(765)	(693)	(627)
PALO PINTO COUNTY						
BRAZOS BASIN						
GRAFORD	31	30	29	28	26	25
MINERAL WELLS	0	0	0	0	0	0
POSSUM KINGDOM WSC	(58)	(106)	(137)	(167)	(192)	(213)
STEPHENS REGIONAL SUD	3	3	3	3	3	3
STRAWN	23	16	13	8	4	1
COUNTY-OTHER	1,306	1,290	1,287	1,258	1,229	1,204
MANUFACTURING	1,162	1,158	1,154	1,150	1,144	1,137
MINING	591	384	589	718	845	930
STEAM ELECTRIC POWER	9,842	9,412	9,028	8,627	8,227	7,839
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(2,588)	(2,547)	(2,513)	(2,472)	(2,431)	(2,394)
ROBERTSON COUNTY						
BRAZOS BASIN						
BREMOND	202	190	178	162	147	131
CALVERT	339	346	349	349	350	350
FRANKLIN	372	356	340	321	300	280
HEARNE	2,085	2,108	2,127	2,129	2,131	2,131
ROBERTSON COUNTY WSC	265	255	244	229	211	192
TRI-COUNTY SUD	(15)	(18)	(19)	(19)	(26)	(31)
WELLBORN SUD	73	17	(58)	(164)	(280)	(410)
WICKSON CREEK SUD	44	36	27	19	11	5

Water User Group (WUG) Needs/Surplus

REGION G	WUG (NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
ROBERTSON COUNTY						
BRAZOS BASIN						
COUNTY-OTHER	318	245	168	92	23	(39)
MANUFACTURING	118	97	75	54	37	19
MINING	292	(1,548)	(3,563)	(6,017)	(9,012)	(12,735)
STEAM ELECTRIC POWER	16,438	3,320	(2,111)	(13,682)	(16,031)	(18,478)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(52,989)	(51,076)	(49,210)	(47,448)	(45,781)	(44,445)
SHACKELFORD COUNTY						
BRAZOS BASIN						
ALBANY	188	167	183	184	185	185
STEPHENS REGIONAL SUD	1	1	1	1	1	1
COUNTY-OTHER	0	0	0	0	0	0
MINING	(555)	(740)	(551)	(435)	(321)	(236)
LIVESTOCK	0	0	0	0	0	0
SOMERVELL COUNTY						
BRAZOS BASIN						
GLEN ROSE	141	86	47	15	(14)	(39)
COUNTY-OTHER	578	508	459	418	378	344
MANUFACTURING	12	11	10	9	8	7
MINING	(407)	(574)	(441)	(355)	(293)	(266)
STEAM ELECTRIC POWER	(35,496)	(35,509)	(35,521)	(35,534)	(35,547)	(35,559)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	21	22	22	23	24	25
STEPHENS COUNTY						
BRAZOS BASIN						
BRECKENRIDGE	879	870	878	880	874	869
FORT BELKNAPP WSC	0	0	(1)	(1)	(1)	(1)
POSSUM KINGDOM WSC	(2)	(4)	(5)	(6)	(7)	(8)
STEPHENS REGIONAL SUD	142	145	149	153	153	152
COUNTY-OTHER	51	52	55	56	55	55
MANUFACTURING	0	0	0	0	0	0
MINING	(4,064)	(4,141)	(3,458)	(2,825)	(2,257)	(1,773)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(30)	(29)	(27)	(26)	(25)	(24)
STONEWALL COUNTY						
BRAZOS BASIN						
ASPERMONT	138	119	92	79	73	58
COUNTY-OTHER	25	28	28	29	29	29
MINING	(409)	(401)	(337)	(271)	(213)	(163)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	62	67	72	77	81	85
TAYLOR COUNTY						
BRAZOS BASIN						
ABILENE	(679)	(5,146)	(6,092)	(7,054)	(8,110)	(9,110)
HAWLEY WSC	8	8	8	8	6	5
MERKEL	10	8	6	3	(4)	(9)
POTOSI WSC	(459)	(477)	(492)	(507)	(521)	(534)
STEAMBOAT MOUNTAIN WSC	(145)	(147)	(150)	(154)	(162)	(167)

Water User Group (WUG) Needs/Surplus

REGION G	WUG (NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
TAYLOR COUNTY						
BRAZOS BASIN						
TUSCOLA	0	0	0	0	0	0
TYE	(2)	(4)	(6)	(9)	(13)	(15)
COUNTY-OTHER	408	408	407	393	383	374
MANUFACTURING	0	0	0	0	0	0
MINING	(293)	(293)	(274)	(259)	(247)	(236)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(150)	(141)	(133)	(124)	(116)	(108)
COLORADO BASIN						
COLEMAN COUNTY SUD	(6)	(6)	(6)	(6)	(7)	(7)
STEAMBOAT MOUNTAIN WSC	(37)	(38)	(39)	(40)	(41)	(43)
TUSCOLA	0	0	0	0	0	0
COUNTY-OTHER	10	10	9	7	5	4
MINING	(98)	(98)	(92)	(87)	(82)	(79)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(906)	(877)	(847)	(819)	(789)	(764)
THROCKMORTON COUNTY						
BRAZOS BASIN						
FORT BELKNAPP WSC	(1)	(2)	(1)	(1)	(2)	(3)
STEPHENS REGIONAL SUD	9	8	9	8	8	8
THROCKMORTON	143	147	150	150	151	151
COUNTY-OTHER	51	54	54	54	54	54
MINING	(194)	(191)	(171)	(150)	(132)	(116)
LIVESTOCK	0	0	0	0	0	0
WASHINGTON COUNTY						
BRAZOS BASIN						
BRENHAM	64	(216)	(399)	(604)	(779)	(927)
COUNTY-OTHER	126	112	114	87	45	5
MANUFACTURING	(61)	(126)	(191)	(248)	(320)	(398)
MINING	(569)	(866)	(703)	(538)	(373)	(264)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	151	151	151	151	151	151
COLORADO BASIN						
COUNTY-OTHER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
WILLIAMSON COUNTY						
BRAZOS BASIN						
BARTLETT	(156)	(165)	(179)	(195)	(214)	(233)
BELL-MILAM FALLS WSC	101	117	136	155	168	180
BLOCK HOUSE MUD	253	270	279	284	286	287
BRUSHY CREEK MUD	(58)	(98)	(920)	(1,428)	(1,764)	(1,848)
CEDAR PARK	(1,570)	(2,913)	(2,961)	(3,172)	(3,160)	(3,154)
CHISHOLM TRAIL SUD	(2,129)	(3,211)	(4,592)	(6,093)	(7,809)	(9,590)
FERN BLUFF MUD	(63)	(161)	(253)	(261)	(259)	(259)
FLORENCE	(59)	(61)	(65)	(72)	(81)	(92)
GEORGETOWN	1,600	(2,194)	(6,695)	(11,781)	(17,840)	(24,121)
GRANGER	(113)	(121)	(133)	(148)	(169)	(190)
HUTTO	(2,333)	(3,755)	(5,558)	(7,503)	(9,710)	(11,994)

Water User Group (WUG) Needs/Surplus

REGION G	WUG (NEEDS)/SURPLUS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
WILLIAMSON COUNTY						
BRAZOS BASIN						
JARRELL	0	0	0	0	0	0
JARRELL-SCHWERTNER WSC	714	726	761	583	405	207
JONAH WATER SUD	155	(266)	(818)	(1,525)	(2,229)	(2,977)
LEANDER	293	(3,429)	(8,808)	(16,783)	(22,403)	(28,639)
LIBERTY HILL	656	656	656	656	656	656
MANVILLE WSC	1,576	1,244	866	498	76	0
PFLUGERVILLE	67	48	25	0	0	0
ROUND ROCK	345	(5,881)	(13,902)	(24,026)	(34,609)	(45,767)
SOUTHWEST MILAM WSC	176	134	52	90	84	36
TAYLOR	0	0	0	0	0	0
THORNDALE	0	0	0	0	0	0
THRALL	0	0	0	0	0	0
WILLIAMSON COUNTY MUD #10	(61)	(181)	(352)	(489)	(587)	(688)
WILLIAMSON COUNTY MUD #11	(35)	(103)	(193)	(233)	(278)	(326)
WILLIAMSON COUNTY MUD #9	(37)	(128)	(263)	(319)	(382)	(448)
WILLIAMSON-TRAVIS COUNTY MUD #1	189	204	212	215	217	217
COUNTY-OTHER	(5,949)	(7,634)	(9,987)	(9,061)	(12,758)	(16,131)
MANUFACTURING	(11)	(10)	(11)	(11)	(11)	(11)
MINING	(4,748)	(5,832)	(6,949)	(8,140)	(9,367)	(10,771)
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(71)	(71)	(71)	(72)	(72)	(72)
COLORADO BASIN						
COUNTY-OTHER	(2,028)	(2,633)	(3,421)	(4,188)	(5,140)	(6,121)
YOUNG COUNTY						
BRAZOS BASIN						
FORT BELKNAPP WSC	(25)	(33)	(38)	(47)	(61)	(75)
GRAHAM	539	444	379	291	190	88
NEWCASTLE	0	0	0	0	0	0
COUNTY-OTHER	58	48	39	30	16	0
MANUFACTURING	0	0	0	0	0	0
MINING	(163)	(240)	(171)	(131)	(91)	(64)
STEAM ELECTRIC POWER	12,518	12,225	11,869	11,434	10,904	10,542
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	(51)	(50)	(48)	(47)	(45)	(44)
TRINITY BASIN						
FORT BELKNAPP WSC	(1)	(1)	(1)	(2)	(2)	(2)
COUNTY-OTHER	25	25	24	22	21	20
MINING	(24)	(36)	(25)	(20)	(14)	(9)
LIVESTOCK	0	0	0	0	0	0

Water User Group (WUG) Second-Tier Identified Water Need

REGION G	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
BELL COUNTY						
BRAZOS BASIN						
439 WSC	0	0	0	0	46	74
ARMSTRONG WSC	0	0	0	0	0	0
BARTLETT	121	126	137	155	163	169
BELL-MILAM FALLS WSC	0	0	0	0	0	0
BELTON	0	0	0	0	0	0
CHISHOLM TRAIL SUD	240	290	377	437	485	524
DOG RIDGE WSC	0	0	0	0	0	0
EAST BELL WSC	0	0	0	0	0	0
ELM CREEK WSC	0	0	0	34	78	126
FORT HOOD	0	0	0	0	0	0
HARKER HEIGHTS	0	0	0	0	134	1,167
HOLLAND	0	0	0	0	0	0
JARRELL-SCHWERTNER WSC	0	0	0	0	0	0
KEMPNER WSC	59	81	125	171	217	263
KILLEEN	0	0	0	0	0	0
LITTLE RIVER-ACADEMY	0	2	46	91	135	179
MOFFAT WSC	0	0	0	0	0	0
MORGAN'S POINT RESORT	0	0	0	0	0	0
NOLANVILLE	5	220	414	609	874	1,185
PENDLETON WSC	0	0	0	0	0	0
ROGERS	0	0	0	0	0	0
SALADO WSC	0	0	0	0	0	0
TEMPLE	0	0	0	453	829	1,487
TROY	0	0	0	0	0	0
WEST BELL COUNTY WSC	0	0	0	0	0	0
COUNTY-OTHER	0	0	695	1,734	2,707	3,650
MANUFACTURING	832	918	998	1,094	1,221	1,357
MINING	3,145	3,781	4,277	4,975	5,678	6,480
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	1,091	1,018	952	940	914	894
BOSQUE COUNTY						
BRAZOS BASIN						
CHILDRESS CREEK WSC	0	0	0	5	11	16
CLIFTON	0	0	0	0	0	0
CROSS COUNTRY WSC	0	0	0	124	130	136
MERIDIAN	0	0	0	0	0	0
VALLEY MILLS	0	0	0	0	0	0
WALNUT SPRINGS	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	1,786	2,034	2,265	2,517	2,811	3,130
MINING	1,784	1,838	1,631	1,612	1,576	1,565
STEAM ELECTRIC POWER	0	499	1,666	3,238	5,128	7,349
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	472	397	324	296	267	239
BRAZOS COUNTY						
BRAZOS BASIN						
BRYAN	0	0	898	7,159	13,872	21,416

Water User Group (WUG) Second-Tier Identified Water Need

REGION G	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
BRAZOS COUNTY						
BRAZOS BASIN						
COLLEGE STATION	4,294	5,439	3,907	3,850	3,753	3,475
TEXAS A & M UNIVERSITY	0	0	0	0	0	0
WELLBORN SUD	0	0	0	374	918	1,517
WICKSON CREEK SUD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	1,726	747	1,001	1,275	1,543	1,835
MINING	1,055	1,529	1,333	1,064	858	757
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	10,152	8,429	6,822	5,768	4,760	3,890
BURLESON COUNTY						
BRAZOS BASIN						
CALDWELL	0	0	0	0	0	0
DEANVILLE WSC	0	0	0	0	0	0
MILANO WSC	0	0	0	0	0	0
SNOOK	0	0	0	0	0	0
SOMERVILLE	0	0	0	0	0	0
SOUTHWEST MILAM WSC	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	14	31	50	67	85
MINING	965	1,827	1,406	1,023	638	398
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
CALLAHAN COUNTY						
BRAZOS BASIN						
BAIRD	0	0	0	0	0	0
CLYDE	0	0	0	0	0	0
POTOSI WSC	7	8	8	8	8	8
COUNTY-OTHER	0	0	0	0	0	0
MINING	115	112	103	98	92	87
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
COLORADO BASIN						
CLYDE	0	0	0	0	0	0
COLEMAN COUNTY SUD	9	9	9	9	9	10
CROSS PLAINS	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	106	104	96	89	85	80
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
COMANCHE COUNTY						
BRAZOS BASIN						
COMANCHE	0	0	0	0	0	0
DE LEON	0	0	0	0	0	0
COUNTY-OTHER	149	144	135	144	163	183
MANUFACTURING	0	0	0	0	0	0
MINING	404	473	311	231	149	93
LIVESTOCK	0	0	0	0	0	0

Water User Group (WUG) Second-Tier Identified Water Need

REGION G	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
COMANCHE COUNTY						
BRAZOS BASIN						
IRRIGATION	69	603	0	0	0	0
COLORADO BASIN						
COUNTY-OTHER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
CORYELL COUNTY						
BRAZOS BASIN						
COPPERAS COVE	0	0	0	0	0	0
CORYELL CITY WATER SUPPLY DISTRICT	0	0	0	0	0	0
ELM CREEK WSC	0	0	0	5	12	19
FORT HOOD	0	0	0	0	0	0
GATESVILLE	0	19	309	712	891	1,533
KEMPNER WSC	92	122	187	249	312	374
MULTI-COUNTY WSC	80	100	127	153	184	217
COUNTY-OTHER	0	0	0	93	171	515
MANUFACTURING	0	0	0	0	0	0
MINING	1,465	1,018	457	338	370	406
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
EASTLAND COUNTY						
BRAZOS BASIN						
CISCO	0	0	0	0	0	0
EASTLAND	0	0	0	0	0	0
GORMAN	0	0	0	0	0	0
RANGER	0	0	0	0	0	0
RISING STAR	0	0	0	0	0	0
STEPHENS REGIONAL SUD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	1,089	1,075	833	641	465	388
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	1,791	1,675	1,554	1,556	1,560	1,566
COLORADO BASIN						
COUNTY-OTHER	0	0	0	0	0	0
MINING	40	39	31	23	17	14
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	242	233	224	225	225	225
ERATH COUNTY						
BRAZOS BASIN						
DUBLIN	0	0	0	0	0	0
STEPHENVILLE	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	116	315
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
FALLS COUNTY						
BRAZOS BASIN						
BELL-MILAM FALLS WSC	0	0	0	0	0	0

Water User Group (WUG) Second-Tier Identified Water Need

REGION G	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
FALLS COUNTY						
BRAZOS BASIN						
BRUCEVILLE-EDDY	0	0	0	0	0	0
EAST BELL WSC	0	0	0	0	0	0
GOLINDA	0	0	0	0	0	0
LOTT	0	0	0	0	0	0
MARLIN	0	0	0	0	0	0
ROSEBUD	0	0	0	0	0	0
TRI-COUNTY SUD	46	52	52	49	60	72
WEST BRAZOS WSC	84	88	89	88	96	104
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	1	1	1	1	1	1
MINING	218	234	241	266	286	308
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
FISHER COUNTY						
BRAZOS BASIN						
BITTER CREEK WSC	0	0	0	0	0	0
ROBY	0	0	0	0	0	0
ROTAN	89	50	60	67	76	84
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	13	37	59	83	107	134
MINING	395	382	334	291	254	221
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
GRIMES COUNTY						
BRAZOS BASIN						
DOBBIN-PLANTERSVILLE WSC	0	0	0	0	0	0
G & W WSC	0	0	0	0	0	0
NAVASOTA	0	0	0	0	0	0
WICKSON CREEK SUD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	204	372	285	205	126	78
STEAM ELECTRIC POWER	3,524	3,524	3,526	3,524	3,526	3,525
LIVESTOCK	0	0	0	0	0	0
SAN JACINTO BASIN						
DOBBIN-PLANTERSVILLE WSC	0	0	0	0	0	0
G & W WSC	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	58	133	94	59	24	1
STEAM ELECTRIC POWER	5,656	5,657	5,658	5,658	5,657	5,658
LIVESTOCK	0	0	0	0	0	0
TRINITY BASIN						
WICKSON CREEK SUD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	18	34	26	19	11	7
LIVESTOCK	0	0	0	0	0	0

Water User Group (WUG) Second-Tier Identified Water Need

REGION G	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
HAMILTON COUNTY						
BRAZOS BASIN						
HAMILTON	0	0	0	0	0	0
HICO	0	0	0	0	0	0
MULTI-COUNTY WSC	19	22	24	26	29	31
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	368	211	81	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	55	43	26	5	0	0
HASKELL COUNTY						
BRAZOS BASIN						
HASKELL	58	126	193	269	353	442
RULE	0	0	0	0	0	0
STAMFORD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	90	87	77	69	61	55
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	790	67	44	0	0	0
HILL COUNTY						
BRAZOS BASIN						
BRANDON-IRENE WSC	0	0	0	0	0	0
FILES VALLEY WSC	0	0	0	0	0	0
HILL COUNTY WSC	0	0	0	0	0	0
HILLSBORO	0	0	0	0	0	0
ITASCA	0	0	0	0	0	0
JOHNSON COUNTY SUD	0	0	0	0	0	2
PARKER WSC	0	0	0	0	3	6
WHITE BLUFF COMMUNITY WS	0	0	0	0	0	0
WHITNEY	0	0	0	0	0	0
WOODROW-OSCEOLA WSC	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	268	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
TRINITY BASIN						
BRANDON-IRENE WSC	0	0	0	0	0	0
FILES VALLEY WSC	0	0	0	0	0	0
HUBBARD	0	25	32	44	57	69
ITASCA	0	0	0	0	0	0
JOHNSON COUNTY SUD	0	0	0	0	0	0
PARKER WSC	0	0	0	0	1	1
COUNTY-OTHER	0	0	0	0	0	0
MINING	286	163	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0

Water User Group (WUG) Second-Tier Identified Water Need

REGION G	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
HOOD COUNTY						
BRAZOS BASIN						
ACTON MUD	0	0	0	0	0	156
CRESSON	0	0	7	19	30	39
GRANBURY	0	0	0	0	0	0
OAK TRAIL SHORES SUBDIVISION	0	0	0	0	0	0
TOLAR	0	0	0	1	11	19
COUNTY-OTHER	968	344	77	121	22	0
MANUFACTURING	0	0	0	0	0	0
MINING	776	1,072	825	744	661	674
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
TRINITY BASIN						
CRESSON	0	0	1	2	4	6
COUNTY-OTHER	0	0	0	0	0	0
MINING	16	18	17	16	15	15
LIVESTOCK	0	0	0	0	0	0
JOHNSON COUNTY						
BRAZOS BASIN						
ACTON MUD	0	0	0	0	0	4
BETHESDA WSC	38	47	52	63	80	96
BURLESON	2	3	4	4	5	6
CLEBURNE	0	0	0	0	283	1,490
CRESSON	0	0	3	3	2	5
GODLEY	0	0	0	0	8	25
JOHNSON COUNTY SUD	0	0	0	0	0	191
JOSHUA	0	0	0	0	0	0
KEENE	0	0	0	0	0	0
PARKER WSC	0	0	0	0	56	132
RIO VISTA	0	0	0	0	30	71
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	574	0	0	0	0	0
STEAM ELECTRIC POWER	5,446	5,306	5,166	5,166	5,166	5,166
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
TRINITY BASIN						
ALVARADO	0	0	0	0	0	0
BETHANY WSC	0	0	0	0	0	0
BETHESDA WSC	777	920	2,070	2,454	2,837	3,221
BURLESON	1,431	2,331	3,262	4,055	4,976	6,033
CRESSON	0	0	1	3	7	8
CROWLEY	2	4	7	12	18	23
FORT WORTH	0	0	0	241	482	707
GRANDVIEW	0	0	0	0	0	0
JOHNSON COUNTY SUD	0	0	0	0	0	521
JOSHUA	0	0	0	0	0	0
KEENE	0	0	0	0	0	0
MANSFIELD	171	322	533	842	1,115	1,423

Water User Group (WUG) Second-Tier Identified Water Need

REGION G	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
JOHNSON COUNTY						
TRINITY BASIN						
MOUNTAIN PEAK SUD	0	0	0	0	0	0
PARKER WSC	0	0	0	0	17	40
VENUS	127	138	215	309	407	506
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	566	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
JONES COUNTY						
BRAZOS BASIN						
ABILENE	0	134	183	237	287	334
ANSON	0	0	0	0	0	0
HAMLIN	0	0	0	0	0	0
HAWLEY	0	0	0	0	0	0
HAWLEY WSC	0	0	0	0	0	0
STAMFORD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	232	222	203	185	170	157
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	174	35	0	0	0	0
KENT COUNTY						
BRAZOS BASIN						
JAYTON	89	85	85	85	85	85
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
KNOX COUNTY						
BRAZOS BASIN						
KNOX CITY	39	58	73	100	136	171
MUNDAY	47	65	89	127	164	200
COUNTY-OTHER	0	0	0	0	0	0
MINING	12	11	10	10	10	10
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
RED BASIN						
COUNTY-OTHER	0	0	0	0	0	0
MINING	3	3	3	3	3	3
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	2,031	3,514	5,773	6,618	3,356	2,566
LAMPASAS COUNTY						
BRAZOS BASIN						
COPPERAS COVE	0	0	0	0	0	0
KEMPNER	0	0	0	0	0	0
KEMPNER WSC	290	386	554	715	863	999
LAMPASAS	22	148	227	318	414	505
LOMETA	0	0	0	0	0	0

Water User Group (WUG) Second-Tier Identified Water Need

REGION G	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
LAMPASAS COUNTY						
BRAZOS BASIN						
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	119	133	143	157	174	193
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
COLORADO BASIN						
LOMETA	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	48	52	56	61	67	73
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	207	196	186	182	180	176
LEE COUNTY						
BRAZOS BASIN						
AQUA WSC	0	0	0	0	0	0
GIDDINGS	0	0	0	0	0	0
LEE COUNTY WSC	0	0	0	0	0	0
LEXINGTON	0	0	0	0	0	0
SOUTHWEST MILAM WSC	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	2,406	5,401	5,634	6,024	6,459	6,986
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
COLORADO BASIN						
GIDDINGS	0	0	0	0	0	0
LEE COUNTY WSC	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	679	1,524	1,589	1,699	1,822	1,971
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
LIMESTONE COUNTY						
BRAZOS BASIN						
COOLIDGE	0	5	21	40	59	79
GROESBECK	686	677	668	665	668	672
MART	0	1	1	1	1	2
MEXIA	0	0	0	0	0	0
THORNTON	0	0	0	0	0	0
TRI-COUNTY SUD	18	19	20	20	23	28
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	8,397	7,865	7,630	8,036	8,435	8,965
STEAM ELECTRIC POWER	0	0	0	2,430	7,962	7,129
LIVESTOCK	0	0	0	0	0	0
TRINITY BASIN						
COOLIDGE	0	3	16	30	46	61
MEXIA	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0

Water User Group (WUG) Second-Tier Identified Water Need

REGION G	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
LIMESTONE COUNTY						
TRINITY BASIN						
MINING	800	754	734	769	804	850
LIVESTOCK	0	0	0	0	0	0
MCLENNAN COUNTY						
BRAZOS BASIN						
BELLMEAD	0	0	0	0	0	0
BEVERLY HILLS	0	0	0	0	0	0
BRUCEVILLE-EDDY	0	0	0	0	0	0
CHALK BLUFF WSC	0	0	0	0	0	0
CORYELL CITY WATER SUPPLY DISTRICT	0	0	0	0	0	0
CRAWFORD	0	0	0	0	0	0
CROSS COUNTRY WSC	0	0	0	0	0	0
ELM CREEK WSC	0	0	0	24	54	85
GHOLSON	0	0	0	0	0	0
GOLINDA	0	0	0	0	0	0
HALLSBURG	0	0	0	0	0	0
HEWITT	0	0	0	0	0	0
LACY-LAKEVIEW	0	0	0	0	0	0
LORENA	0	0	0	0	0	0
MART	150	165	181	199	221	242
MCGREGOR	0	0	0	0	0	0
MOODY	0	0	0	0	0	0
NORTH BOSQUE WSC	0	47	82	105	117	176
RIESEL	11	11	11	12	15	19
ROBINSON	0	30	213	560	906	1,246
TRI-COUNTY SUD	3	4	3	4	5	6
VALLEY MILLS	0	0	0	0	0	0
WACO	0	0	0	0	0	0
WEST	0	0	0	0	0	0
WEST BRAZOS WSC	73	79	84	90	101	112
WESTERN HILLS WS	0	0	0	0	0	0
WOODWAY	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	1,377	1,765	1,761	2,177	2,479	2,836
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	2,152	2,069	1,984	1,996	2,010	2,023
MILAM COUNTY						
BRAZOS BASIN						
BELL-MILAM FALLS WSC	0	0	0	0	0	0
BUCKHOLTS	0	0	0	0	0	0
CAMERON	0	0	0	0	0	0
MILANO WSC	0	0	0	0	0	0
ROCKDALE	0	0	0	0	0	0
SOUTHWEST MILAM WSC	0	0	0	0	0	0
THORNDALE	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0

Water User Group (WUG) Second-Tier Identified Water Need

REGION G	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
MILAM COUNTY						
BRAZOS BASIN						
MINING	0	0	0	0	0	0
STEAM ELECTRIC POWER	0	0	0	4,353	3,777	3,888
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
NOLAN COUNTY						
BRAZOS BASIN						
BITTER CREEK WSC	0	0	0	0	0	0
ROSCOE	0	0	0	0	0	0
SWEETWATER	1,310	1,390	1,410	1,474	1,527	1,576
COUNTY-OTHER	104	107	108	113	119	125
MANUFACTURING	838	991	1,134	1,288	1,442	1,608
MINING	98	95	84	75	66	59
STEAM ELECTRIC POWER	7,914	18,304	18,304	18,304	17,955	16,702
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	1,357	1,155	962	860	760	667
COLORADO BASIN						
COUNTY-OTHER	0	0	0	0	0	0
MINING	120	116	102	91	81	72
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	904	771	640	573	507	445
PALO PINTO COUNTY						
BRAZOS BASIN						
GRAFORD	0	0	0	0	0	0
MINERAL WELLS	0	0	0	0	0	0
POSSUM KINGDOM WSC	7	0	0	0	0	0
STEPHENS REGIONAL SUD	0	0	0	0	0	0
STRAWN	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
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	2,494	2,392	2,299	2,260	2,222	2,188
ROBERTSON COUNTY						
BRAZOS BASIN						
BREMOND	0	0	0	0	0	0
CALVERT	0	0	0	0	0	0
FRANKLIN	0	0	0	0	0	0
HEARNE	0	0	0	0	0	0
ROBERTSON COUNTY WSC	0	0	0	0	0	0
TRI-COUNTY SUD	15	18	19	19	26	31
WELLBORN SUD	0	0	0	73	177	294
WICKSON CREEK SUD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	39
MANUFACTURING	0	0	0	0	0	0
MINING	0	960	2,599	4,881	7,667	11,129
STEAM ELECTRIC POWER	0	0	0	1,393	3,592	5,881
LIVESTOCK	0	0	0	0	0	0

Water User Group (WUG) Second-Tier Identified Water Need

REGION G	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
ROBERTSON COUNTY						
BRAZOS BASIN						
IRRIGATION	51,086	47,996	45,021	43,379	41,829	40,586
SHACKELFORD COUNTY						
BRAZOS BASIN						
ALBANY	0	0	0	0	0	0
STEPHENS REGIONAL SUD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	538	703	512	404	298	219
LIVESTOCK	0	0	0	0	0	0
SOMERVELL COUNTY						
BRAZOS BASIN						
GLEN ROSE	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	374	510	361	281	223	198
STEAM ELECTRIC POWER	35,496	35,509	35,521	35,534	35,547	35,559
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
STEPHENS COUNTY						
BRAZOS BASIN						
BRECKENRIDGE	0	0	0	0	0	0
FORT BELKNAPP WSC	0	0	1	1	1	1
POSSUM KINGDOM WSC	0	0	0	0	0	0
STEPHENS REGIONAL SUD	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	3,912	3,884	3,146	2,557	2,029	1,579
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	26	23	19	18	17	16
STONEWALL COUNTY						
BRAZOS BASIN						
ASPERMONT	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	391	372	301	240	186	139
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
TAYLOR COUNTY						
BRAZOS BASIN						
ABILENE	0	2,918	3,945	5,100	6,161	7,136
HAWLEY WSC	0	0	0	0	0	0
MERKEL	0	0	0	0	4	9
POTOSI WSC	459	477	492	507	521	534
STEAMBOAT MOUNTAIN WSC	145	147	150	154	162	167
TUSCOLA	0	0	0	0	0	0
TYE	2	4	6	9	13	15
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	284	278	255	241	230	220
LIVESTOCK	0	0	0	0	0	0

Water User Group (WUG) Second-Tier Identified Water Need

REGION G	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
TAYLOR COUNTY						
BRAZOS BASIN						
IRRIGATION	139	124	109	101	94	86
COLORADO BASIN						
COLEMAN COUNTY SUD	5	5	5	5	6	6
STEAMBOAT MOUNTAIN WSC	37	38	39	40	41	43
TUSCOLA	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	95	93	85	81	76	73
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	870	818	767	741	713	690
THROCKMORTON COUNTY						
BRAZOS BASIN						
FORT BELKNAPP WSC	1	2	1	1	2	3
STEPHENS REGIONAL SUD	0	0	0	0	0	0
THROCKMORTON	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MINING	188	181	159	139	123	108
LIVESTOCK	0	0	0	0	0	0
WASHINGTON COUNTY						
BRAZOS BASIN						
BRENHAM	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	40	88	133	186	253	326
MINING	552	823	654	500	347	246
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
COLORADO BASIN						
COUNTY-OTHER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
WILLIAMSON COUNTY						
BRAZOS BASIN						
BARTLETT	149	144	147	161	163	163
BELL-MILAM FALLS WSC	0	0	0	0	0	0
BLOCK HOUSE MUD	0	0	0	0	0	0
BRUSHY CREEK MUD	0	0	0	11	12	0
CEDAR PARK	1,030	1,106	85	0	0	0
CHISHOLM TRAIL SUD	1,946	2,550	3,645	4,518	5,419	6,226
FERN BLUFF MUD	0	0	0	0	0	0
FLORENCE	59	61	65	72	81	92
GEORGETOWN	0	0	1,627	3,640	6,472	8,275
GRANGER	113	121	133	148	169	190
HUTTO	2,333	3,755	5,558	7,503	9,710	11,994
JARRELL	0	0	0	0	0	0
JARRELL-SCHWERTNER WSC	0	0	0	0	0	0
JONAH WATER SUD	0	266	818	1,525	2,229	2,977
LEANDER	0	3,429	8,808	16,783	22,403	28,639
LIBERTY HILL	0	0	0	0	0	0
MANVILLE WSC	0	0	0	0	0	0
PFLUGERVILLE	0	0	0	0	0	0

Water User Group (WUG) Second-Tier Identified Water Need

REGION G	WUG SECOND-TIER NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
WILLIAMSON COUNTY						
BRAZOS BASIN						
ROUND ROCK	0	5,763	12,852	21,225	29,339	37,380
SOUTHWEST MILAM WSC	0	0	0	0	0	0
TAYLOR	0	0	0	0	0	0
THORNDALE	0	0	0	0	0	0
THRALL	0	0	0	0	0	0
WILLIAMSON COUNTY MUD #10	0	0	0	0	0	0
WILLIAMSON COUNTY MUD #11	0	0	0	0	0	0
WILLIAMSON COUNTY MUD #9	0	0	0	0	0	0
WILLIAMSON-TRAVIS COUNTY MUD #1	0	0	0	0	0	0
COUNTY-OTHER	5,949	7,634	9,945	8,667	11,730	14,243
MANUFACTURING	0	0	0	0	0	0
MINING	4,593	5,520	6,434	7,541	8,682	9,988
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	66	63	60	61	61	61
COLORADO BASIN						
COUNTY-OTHER	2,028	2,633	3,407	4,015	4,736	5,415
YOUNG COUNTY						
BRAZOS BASIN						
FORT BELKNAPP WSC	25	33	38	47	61	75
GRAHAM	0	0	0	0	0	0
NEWCASTLE	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	158	228	159	121	85	60
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	49	47	45	44	42	41
TRINITY BASIN						
FORT BELKNAPP WSC	1	1	1	2	2	2
COUNTY-OTHER	0	0	0	0	0	0
MINING	23	34	23	19	13	8
LIVESTOCK	0	0	0	0	0	0

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

Water User Group (WUG) Second-Tier Identified Water Need Summary

REGION G

	2020	2030	2040	2050	2060	2070
MUNICIPAL	16,816	34,689	55,505	89,499	122,970	160,278
COUNTY-OTHER	9,198	10,862	14,367	14,887	19,764	24,485
MANUFACTURING	5,236	4,830	5,622	6,494	7,445	8,476
MINING	39,404	46,029	45,095	48,055	51,895	57,769
STEAM ELECTRIC POWER	58,036	68,799	69,841	79,600	88,310	90,857
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	76,217	71,668	67,811	65,623	59,517	56,359

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

Source Water Balance (Availability- WUG Supply)

REGION G

GROUNDWATER	COUNTY	BASIN	SALINITY	SOURCE WATER BALANCE (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
BLAINE AQUIFER	FISHER	BRAZOS	FRESH	1,547	1,547	1,547	1,547	1,547	1,547
BLAINE AQUIFER	KNOX	BRAZOS	FRESH	475	475	475	475	475	475
BLAINE AQUIFER	NOLAN	BRAZOS	FRESH	100	100	100	100	100	100
BLAINE AQUIFER	STONEWALL	BRAZOS	FRESH	8,571	8,571	8,571	8,571	8,571	8,571
BRAZOS RIVER ALLUVIUM AQUIFER	BOSQUE	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RIVER ALLUVIUM AQUIFER	BRAZOS	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RIVER ALLUVIUM AQUIFER	BURLESON	BRAZOS	FRESH	416	416	416	416	416	416
BRAZOS RIVER ALLUVIUM AQUIFER	FALLS	BRAZOS	FRESH	10,353	10,353	10,353	10,353	10,353	10,353
BRAZOS RIVER ALLUVIUM AQUIFER	GRIMES	BRAZOS	FRESH	5,112	5,112	5,112	5,112	5,112	5,112
BRAZOS RIVER ALLUVIUM AQUIFER	HILL	BRAZOS	FRESH	227	227	227	227	227	227
BRAZOS RIVER ALLUVIUM AQUIFER	MCLENNAN	BRAZOS	FRESH	13,726	13,726	13,726	13,726	13,726	13,726
BRAZOS RIVER ALLUVIUM AQUIFER	MILAM	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RIVER ALLUVIUM AQUIFER	ROBERTSON	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RIVER ALLUVIUM AQUIFER	WASHINGTON	BRAZOS	FRESH	5,688	5,688	5,688	5,688	5,688	5,688
CARRIZO-WILCOX AQUIFER	BRAZOS	BRAZOS	FRESH	0	0	2,461	7,010	10,209	10,209
CARRIZO-WILCOX AQUIFER	BURLESON	BRAZOS	FRESH	17,122	21,920	26,391	30,365	32,574	32,574
CARRIZO-WILCOX AQUIFER	FALLS	BRAZOS	FRESH	241	249	258	269	269	269
CARRIZO-WILCOX AQUIFER	GRIMES	BRAZOS	FRESH	2,850	2,850	2,850	2,850	2,850	2,850
CARRIZO-WILCOX AQUIFER	GRIMES	SAN JACINTO	FRESH	3,480	3,480	3,480	3,480	3,480	3,480
CARRIZO-WILCOX AQUIFER	GRIMES	TRINITY	FRESH	5,288	5,288	5,288	5,288	5,288	5,288
CARRIZO-WILCOX AQUIFER	LEE	BRAZOS	FRESH	12,254	11,559	12,731	14,682	15,207	15,207
CARRIZO-WILCOX AQUIFER	LEE	COLORADO	FRESH	876	950	1,000	1,252	1,280	1,280
CARRIZO-WILCOX AQUIFER	LIMESTONE	BRAZOS	FRESH	7,293	7,423	7,603	7,905	7,905	7,905
CARRIZO-WILCOX AQUIFER	LIMESTONE	TRINITY	FRESH	888	888	888	888	888	888
CARRIZO-WILCOX AQUIFER	MILAM	BRAZOS	FRESH	400	0	0	48	49	49
CARRIZO-WILCOX AQUIFER	ROBERTSON	BRAZOS	FRESH	19,590	19,969	20,393	20,737	20,738	20,738
CARRIZO-WILCOX AQUIFER	WILLIAMSON	BRAZOS	FRESH	0	0	0	0	0	0
CARRIZO-WILCOX AQUIFER	WILLIAMSON	COLORADO	FRESH	0	0	0	0	0	0
DOCKUM AQUIFER	FISHER	BRAZOS	FRESH	602	602	602	602	602	602
DOCKUM AQUIFER	KENT	BRAZOS	FRESH	4,937	4,937	4,937	4,937	4,937	4,937
DOCKUM AQUIFER	NOLAN	BRAZOS	FRESH	672	672	672	672	672	672

Source Water Balance (Availability- WUG Supply)

REGION G

GROUNDWATER	COUNTY	BASIN	SALINITY	SOURCE WATER BALANCE (ACRE-FEET PER YEAR)					
				2020	2030	2040	2050	2060	2070
DOCKUM AQUIFER	NOLAN	COLORADO	FRESH	0	0	0	0	0	0
EDWARDS-BFZ AQUIFER	BELL	BRAZOS	FRESH	4,196	4,196	4,196	4,196	4,196	4,196
EDWARDS-BFZ AQUIFER	WILLIAMSON	BRAZOS	FRESH	0	0	0	0	0	0
EDWARDS-BFZ AQUIFER	WILLIAMSON	COLORADO	FRESH	101	101	101	101	101	101
EDWARDS-TRINITY-PLATEAU AQUIFER	NOLAN	BRAZOS	FRESH	32	32	32	32	32	32
EDWARDS-TRINITY-PLATEAU AQUIFER	NOLAN	COLORADO	FRESH	266	266	266	266	266	266
EDWARDS-TRINITY-PLATEAU AQUIFER	TAYLOR	BRAZOS	FRESH	0	0	0	0	0	0
EDWARDS-TRINITY-PLATEAU AQUIFER	TAYLOR	COLORADO	FRESH	14	14	14	14	14	14
ELLENBURGER-SAN SABA AQUIFER	LAMPASAS	BRAZOS	FRESH	607	607	607	607	607	607
ELLENBURGER-SAN SABA AQUIFER	LAMPASAS	COLORADO	FRESH	1,973	1,973	1,973	1,973	1,973	1,973
GULF COAST AQUIFER	BRAZOS	BRAZOS	FRESH	530	530	530	530	530	530
GULF COAST AQUIFER	GRIMES	BRAZOS	FRESH	6,766	6,645	6,551	6,449	6,364	6,288
GULF COAST AQUIFER	GRIMES	SAN JACINTO	FRESH	1,286	1,252	1,227	1,199	1,175	1,154
GULF COAST AQUIFER	GRIMES	TRINITY	FRESH	763	222	0	0	0	0
GULF COAST AQUIFER	WASHINGTON	BRAZOS	FRESH	9,407	9,407	9,039	9,039	9,039	9,039
GULF COAST AQUIFER	WASHINGTON	COLORADO	FRESH	63	63	63	63	63	63
HICKORY AQUIFER	LAMPASAS	BRAZOS	FRESH	66	66	66	66	66	66
HICKORY AQUIFER	LAMPASAS	COLORADO	FRESH	47	47	47	47	47	47
HICKORY AQUIFER	WILLIAMSON	BRAZOS	FRESH	15	15	15	15	15	15
HICKORY AQUIFER	WILLIAMSON	COLORADO	FRESH	0	0	0	0	0	0
MARBLE FALLS AQUIFER	LAMPASAS	BRAZOS	FRESH	505	505	505	505	505	505
MARBLE FALLS AQUIFER	LAMPASAS	COLORADO	FRESH	2,313	2,313	2,313	2,313	2,313	2,313
NAVASOTA RIVER ALLUVIUM AQUIFER	GRIMES	BRAZOS	FRESH	2,216	2,216	2,216	2,216	2,216	2,216
OTHER AQUIFER	SHACKELFORD	BRAZOS	FRESH	809	809	809	809	809	809
OTHER AQUIFER	STEPHENS	BRAZOS	FRESH	412	412	412	412	412	412
OTHER AQUIFER	THROCKMORTON	BRAZOS	FRESH	364	364	364	364	364	364
OTHER AQUIFER	WILLIAMSON	BRAZOS	FRESH	0	0	0	0	0	0
OTHER AQUIFER	YOUNG	BRAZOS	FRESH	320	320	310	310	310	310
OTHER AQUIFER	YOUNG	RED	FRESH	163	163	163	163	163	163
OTHER AQUIFER	YOUNG	TRINITY	FRESH	134	134	134	134	134	134
QUEEN CITY AQUIFER	BRAZOS	BRAZOS	FRESH	204	234	187	133	129	129
QUEEN CITY AQUIFER	BURLESON	BRAZOS	FRESH	92	123	123	123	123	123
QUEEN CITY AQUIFER	GRIMES	BRAZOS	FRESH	555	555	555	555	555	555
QUEEN CITY AQUIFER	GRIMES	TRINITY	FRESH	82	82	82	82	82	82
QUEEN CITY AQUIFER	LEE	BRAZOS	FRESH	3	0	0	0	0	0
QUEEN CITY AQUIFER	LEE	COLORADO	FRESH	48	54	55	57	57	57
QUEEN CITY AQUIFER	MILAM	BRAZOS	FRESH	0	0	0	0	0	0
QUEEN CITY AQUIFER	ROBERTSON	BRAZOS	FRESH	0	0	0	0	0	0
QUEEN CITY AQUIFER	WASHINGTON	BRAZOS	FRESH	1	1	1	1	1	1

Source Water Balance (Availability- WUG Supply)

REGION G									
				SOURCE WATER BALANCE (ACRE-FEET PER YEAR)					
GROUNDWATER	COUNTY	BASIN	SALINITY	2020	2030	2040	2050	2060	2070
SEYMOUR AQUIFER	FISHER	BRAZOS	FRESH	987	983	972	967	785	785
SEYMOUR AQUIFER	HASKELL	BRAZOS	FRESH	0	0	0	0	0	0
SEYMOUR AQUIFER	JONES	BRAZOS	FRESH	44	44	44	44	44	44
SEYMOUR AQUIFER	KENT	BRAZOS	FRESH	546	545	545	544	544	544
SEYMOUR AQUIFER	KNOX	BRAZOS	FRESH	0	0	0	0	0	0
SEYMOUR AQUIFER	KNOX	RED	FRESH	1,571	1,345	1,193	1,116	1,041	1,041
SEYMOUR AQUIFER	STONEWALL	BRAZOS	FRESH	50	47	41	32	31	31
SEYMOUR AQUIFER	THROCKMORTON	BRAZOS	FRESH	115	115	115	115	115	115
SEYMOUR AQUIFER	YOUNG	BRAZOS	FRESH	309	258	258	258	258	258
SPARTA AQUIFER	BRAZOS	BRAZOS	FRESH	2	0	0	0	0	0
SPARTA AQUIFER	BURLESON	BRAZOS	FRESH	740	2,536	4,107	5,229	5,229	5,229
SPARTA AQUIFER	GRIMES	BRAZOS	FRESH	1,280	1,280	1,280	1,280	1,280	1,280
SPARTA AQUIFER	GRIMES	SAN JACINTO	FRESH	20	20	20	20	20	20
SPARTA AQUIFER	GRIMES	TRINITY	FRESH	1,271	1,271	1,271	1,271	1,271	1,271
SPARTA AQUIFER	LEE	BRAZOS	FRESH	0	0	0	0	0	0
SPARTA AQUIFER	LEE	COLORADO	FRESH	172	168	164	159	159	159
SPARTA AQUIFER	ROBERTSON	BRAZOS	FRESH	0	0	0	68	68	68
SPARTA AQUIFER	WASHINGTON	BRAZOS	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	BELL	BRAZOS	FRESH	1,028	1,028	1,028	1,028	1,028	1,028
TRINITY AQUIFER	BOSQUE	BRAZOS	FRESH	712	712	712	712	712	747
TRINITY AQUIFER	CALLAHAN	BRAZOS	FRESH	1,291	1,291	1,291	1,291	1,291	1,291
TRINITY AQUIFER	CALLAHAN	COLORADO	FRESH	746	746	746	746	746	746
TRINITY AQUIFER	COMANCHE	BRAZOS	FRESH	9,854	9,854	9,854	9,854	9,854	9,854
TRINITY AQUIFER	COMANCHE	COLORADO	FRESH	101	101	101	101	101	101
TRINITY AQUIFER	CORYELL	BRAZOS	FRESH	2,862	2,862	2,862	2,862	2,862	2,862
TRINITY AQUIFER	EASTLAND	BRAZOS	FRESH	1	1	1	1	1	1
TRINITY AQUIFER	EASTLAND	COLORADO	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	ERATH	BRAZOS	FRESH	17,888	17,888	17,888	17,888	17,888	17,888
TRINITY AQUIFER	FALLS	BRAZOS	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	HAMILTON	BRAZOS	FRESH	790	790	790	790	790	790
TRINITY AQUIFER	HILL	BRAZOS	FRESH	229	229	229	229	229	229
TRINITY AQUIFER	HILL	TRINITY	FRESH	1	1	1	1	1	1
TRINITY AQUIFER	HOOD	BRAZOS	FRESH	2,272	2,272	2,272	2,295	2,295	2,295
TRINITY AQUIFER	HOOD	TRINITY	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	JOHNSON	BRAZOS	FRESH	1	1	1	1	1	1
TRINITY AQUIFER	JOHNSON	TRINITY	FRESH	1	1	1	1	1	74
TRINITY AQUIFER	LAMPASAS	BRAZOS	FRESH	2,549	2,549	2,549	2,549	2,549	2,549
TRINITY AQUIFER	LAMPASAS	COLORADO	FRESH	46	46	46	46	46	46
TRINITY AQUIFER	LIMESTONE	BRAZOS	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	LIMESTONE	TRINITY	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	MCLENNAN	BRAZOS	FRESH	4,075	4,075	4,075	4,305	4,305	4,305
TRINITY AQUIFER	MILAM	BRAZOS	FRESH	288	288	288	288	288	288

Source Water Balance (Availability- WUG Supply)

REGION G

GROUNDWATER	COUNTY	BASIN	SALINITY	SOURCE WATER BALANCE (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
TRINITY AQUIFER	PALO PINTO	BRAZOS	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	SOMERVELL	BRAZOS	FRESH	896	896	896	896	896	896
TRINITY AQUIFER	TAYLOR	BRAZOS	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	TAYLOR	COLORADO	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	WILLIAMSON	BRAZOS	FRESH	0	0	0	0	0	0
TRINITY AQUIFER	WILLIAMSON	COLORADO	FRESH	68	68	68	68	68	68
WOODBINE AQUIFER	HILL	BRAZOS	FRESH	546	546	546	546	546	546
WOODBINE AQUIFER	HILL	TRINITY	FRESH	1,012	1,012	1,012	1,012	1,012	1,012
WOODBINE AQUIFER	JOHNSON	BRAZOS	FRESH	75	75	75	75	75	75
WOODBINE AQUIFER	JOHNSON	TRINITY	FRESH	3,817	3,817	3,817	3,817	3,817	3,817
WOODBINE AQUIFER	LIMESTONE	BRAZOS	FRESH	34	34	34	34	34	34
WOODBINE AQUIFER	MCLENNAN	BRAZOS	FRESH	5	5	5	5	5	5
YEGUA-JACKSON AQUIFER	BRAZOS	BRAZOS	FRESH	5,753	5,753	5,753	5,753	5,753	5,753
YEGUA-JACKSON AQUIFER	BURLESON	BRAZOS	FRESH	11,805	11,805	11,805	11,805	11,805	11,805
YEGUA-JACKSON AQUIFER	GRIMES	BRAZOS	FRESH	1,954	1,954	1,954	1,954	1,954	1,954
YEGUA-JACKSON AQUIFER	GRIMES	SAN JACINTO	FRESH	80	80	80	80	80	80
YEGUA-JACKSON AQUIFER	GRIMES	TRINITY	FRESH	1,244	1,244	1,244	1,244	1,244	1,244
YEGUA-JACKSON AQUIFER	LEE	BRAZOS	FRESH	297	297	297	297	297	297
YEGUA-JACKSON AQUIFER	LEE	COLORADO	FRESH	338	338	338	338	338	338
YEGUA-JACKSON AQUIFER	WASHINGTON	BRAZOS	FRESH	134	134	134	134	134	134
YEGUA-JACKSON AQUIFER	WASHINGTON	COLORADO	FRESH	0	0	0	0	0	0
GROUNDWATER TOTAL SOURCE WATER BALANCE				**236,961**	**242,128**	**251,528**	**264,123**	**269,715**	**269,726**

REGION G

REUSE	COUNTY	BASIN	SALINITY	SOURCE WATER BALANCE (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
DIRECT REUSE	TAYLOR	BRAZOS	FRESH	1,016	1,016	1,016	1,016	1,016	1,016
DIRECT REUSE - CLEBURNE | CLEBURNE/CLEBURNE	JOHNSON	BRAZOS	FRESH	0	0	0	0	0	0
DIRECT REUSE - WMARSS | WACO/WACO	MCLENNAN	BRAZOS	FRESH	0	0	0	0	0	360
DIRECT REUSE | ROUND ROCK WWTP/ROUND ROCK IRRIGATION	WILLIAMSON	BRAZOS	FRESH	0	0	0	0	0	0
REUSE TOTAL SOURCE WATER BALANCE				**1,016**	**1,016**	**1,016**	**1,016**	**1,016**	**1,376**

REGION G

SURFACE WATER	COUNTY	BASIN	SALINITY	SOURCE WATER BALANCE (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
ABILENE LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	1,075	940	805	670	535	400

Source Water Balance (Availability- WUG Supply)

REGION G									
				SOURCE WATER BALANCE (ACRE-FEET PER YEAR)					
SURFACE WATER	COUNTY	BASIN	SALINITY	2020	2030	2040	2050	2060	2070
ALCOA LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
ALVARADO LAKE/RESERVOIR	RESERVOIR	TRINITY	FRESH	800	800	800	800	800	800
ANSON NORTH LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	202	202	202	202	202	202
BAIRD LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	BELL	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	BOSQUE	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	BRAZOS	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	BURLESON	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	CALLAHAN	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	COMANCHE	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	CORYELL	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	EASTLAND	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	ERATH	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	FALLS	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	FISHER	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	GRIMES	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	HAMILTON	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	HASKELL	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	HILL	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	HOOD	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	JOHNSON	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	JONES	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	KENT	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	KNOX	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	LAMPASAS	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	LEE	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	LIMESTONE	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	MCLENNAN	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	MILAM	BRAZOS	FRESH	0	0	0	0	0	0

Source Water Balance (Availability- WUG Supply)

REGION G

SURFACE WATER	COUNTY	BASIN	SALINITY	SOURCE WATER BALANCE (ACRE-FEET PER YEAR)					
				2020	2030	2040	2050	2060	2070
BRAZOS LIVESTOCK LOCAL SUPPLY	NOLAN	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	PALO PINTO	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	ROBERTSON	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	SHACKELFORD	BRAZOS	FRESH	2	2	2	2	2	2
BRAZOS LIVESTOCK LOCAL SUPPLY	SOMERVELL	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	STEPHENS	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	STONEWALL	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	TAYLOR	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	THROCKMORTON	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	WASHINGTON	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	WILLIAMSON	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS LIVESTOCK LOCAL SUPPLY	YOUNG	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	RESERVOIR	BRAZOS	FRESH	1,913	1,670	1,427	1,183	940	697
BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	RESERVOIR	BRAZOS	FRESH	26,662	26,664	26,196	29,190	29,448	29,435
BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	RESERVOIR	BRAZOS	FRESH	64,738	59,903	55,070	50,235	45,579	43,674
BRAZOS RUN-OF-RIVER	BELL	BRAZOS	FRESH	944	1,051	1,159	1,266	1,373	1,481
BRAZOS RUN-OF-RIVER	BOSQUE	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	BRAZOS	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	CORYELL	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	EASTLAND	BRAZOS	FRESH	273	267	260	256	248	233
BRAZOS RUN-OF-RIVER	ERATH	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	FALLS	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	FISHER	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	GRIMES	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	HAMILTON	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	HILL	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	JOHNSON	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	JONES	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	KNOX	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	LAMPASAS	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	LEE	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	LIMESTONE	BRAZOS	FRESH	14	14	14	14	14	14

Source Water Balance (Availability- WUG Supply)

REGION G									
				SOURCE WATER BALANCE (ACRE-FEET PER YEAR)					
SURFACE WATER	COUNTY	BASIN	SALINITY	2020	2030	2040	2050	2060	2070
BRAZOS RUN-OF-RIVER	MCLENNAN	BRAZOS	FRESH	4,895	4,895	4,895	4,895	4,895	4,895
BRAZOS RUN-OF-RIVER	MILAM	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	NOLAN	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	ROBERTSON	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	SHACKELFORD	BRAZOS	FRESH	50	50	50	50	50	50
BRAZOS RUN-OF-RIVER	SOMERVELL	BRAZOS	FRESH	600	600	600	600	600	600
BRAZOS RUN-OF-RIVER	STONEWALL	BRAZOS	FRESH	0	0	0	0	0	0
BRAZOS RUN-OF-RIVER	THROCKMORTON	BRAZOS	FRESH	8	8	8	8	8	8
BRAZOS RUN-OF-RIVER	WILLIAMSON	BRAZOS	FRESH	100	100	100	100	100	100
CISCO LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
CITY OF HAMLIN LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	250	250	250	250	250	250
CLIFTON LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	164	164	164	164	164	164
CLYDE LAKE/RESERVOIR	RESERVOIR	COLORADO	FRESH	0	0	0	0	0	0
COLORADO LIVESTOCK LOCAL SUPPLY	CALLAHAN	COLORADO	FRESH	0	0	0	0	0	0
COLORADO LIVESTOCK LOCAL SUPPLY	COMANCHE	COLORADO	FRESH	0	0	0	0	0	0
COLORADO LIVESTOCK LOCAL SUPPLY	EASTLAND	COLORADO	FRESH	0	0	0	0	0	0
COLORADO LIVESTOCK LOCAL SUPPLY	LAMPASAS	COLORADO	FRESH	0	0	0	0	0	0
COLORADO LIVESTOCK LOCAL SUPPLY	LEE	COLORADO	FRESH	0	0	0	0	0	0
COLORADO LIVESTOCK LOCAL SUPPLY	NOLAN	COLORADO	FRESH	0	0	0	0	0	0
COLORADO LIVESTOCK LOCAL SUPPLY	TAYLOR	COLORADO	FRESH	0	0	0	0	0	0
COLORADO LIVESTOCK LOCAL SUPPLY	WASHINGTON	COLORADO	FRESH	0	0	0	0	0	0
COOLIDGE LAKE/RESERVOIR	RESERVOIR	TRINITY	FRESH	162	162	162	162	162	162
CRAWFORD LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
DANIEL LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
DANSBY POWER PLANT/BRYAN UTILITIES LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
EASTLAND LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	460	458	456	454	452	450
FORT PHANTOM HILL LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	1,650	1,592	1,534	1,476	1,418	1,360
GIBBONS CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
GORDON LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
GRAHAM/EDDLEMAN LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	1,390	1,222	1,054	886	718	550
HUBBARD CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	3,174	3,172	3,168	3,165	3,164	3,162
KIRBY LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	525	514	503	492	481	470

Source Water Balance (Availability- WUG Supply)

REGION G

SURFACE WATER	COUNTY	BASIN	SALINITY	SOURCE WATER BALANCE (ACRE-FEET PER YEAR) 2020	2030	2040	2050	2060	2070
LAKE CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
LAKE DAVIS LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
LEON LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	149	117	86	55	23	0
LYTLE LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	230	230	230	230	230	230
MCCARTY LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
MEXIA LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
MILLERS CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	752	603	481	361	238	121
MORAN LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	83	83	83	83	83	83
PALO PINTO LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	75	75	75	75	75	75
PAT CLEBURNE LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
RED LIVESTOCK LOCAL SUPPLY	KNOX	RED	FRESH	0	0	0	0	0	0
SAN JACINTO LIVESTOCK LOCAL SUPPLY	GRIMES	SAN JACINTO	FRESH	0	0	0	0	0	0
SQUAW CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
STAMFORD LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	1,852	1,732	1,612	1,492	1,372	1,252
STRAWN LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
SWEETWATER LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	1,120	1,119	1,118	1,117	1,116	1,115
THROCKMORTON LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
TRADINGHOUSE CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	4,967	4,975	4,983	4,992	5,000	5,000
TRAMMEL LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	545	545	545	545	545	545
TRINITY LIVESTOCK LOCAL SUPPLY	GRIMES	TRINITY	FRESH	0	0	0	0	0	0
TRINITY LIVESTOCK LOCAL SUPPLY	HILL	TRINITY	FRESH	0	0	0	0	0	0
TRINITY LIVESTOCK LOCAL SUPPLY	HOOD	TRINITY	FRESH	0	0	0	0	0	0
TRINITY LIVESTOCK LOCAL SUPPLY	JOHNSON	TRINITY	FRESH	0	0	0	0	0	0
TRINITY LIVESTOCK LOCAL SUPPLY	LIMESTONE	TRINITY	FRESH	0	0	0	0	0	0
TRINITY LIVESTOCK LOCAL SUPPLY	YOUNG	TRINITY	FRESH	0	0	0	0	0	0
TURTLE CREEK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	0	0	0	0
TWIN OAK LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	0	0	100	0	0	0
WACO LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	41,513	43,379	45,247	47,114	48,980	50,847

Source Water Balance (Availability- WUG Supply)

REGION G									
				SOURCE WATER BALANCE (ACRE-FEET PER YEAR)					
SURFACE WATER	COUNTY	BASIN	SALINITY	2020	2030	2040	2050	2060	2070
WHEELER BRANCH OFF-CHANNEL LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	1,800	1,800	1,800	1,800	1,800	1,800
WOODSON LAKE/RESERVOIR	RESERVOIR	BRAZOS	FRESH	99	99	99	99	99	99
SURFACE WATER TOTAL SOURCE WATER BALANCE				**163,236**	**159,457**	**155,338**	**154,483**	**151,164**	**150,326**
REGION G TOTAL SOURCE WATER BALANCE				**401,213**	**402,601**	**407,882**	**419,622**	**421,895**	**421,428**

Water User Group (WUG) Unmet Needs

REGION G	WUG UNMET NEEDS (ACRE-FEET PER YEAR)					
	2020	2030	2040	2050	2060	2070
BELL COUNTY						
BRAZOS BASIN						
MINING	459	1,023	1,614	3,216	4,915	6,360
BOSQUE COUNTY						
BRAZOS BASIN						
MINING	1,784	1,838	1,631	1,612	1,576	1,565
BRAZOS COUNTY						
BRAZOS BASIN						
MINING	1,055	1,529	1,333	1,064	858	757
BURLESON COUNTY						
BRAZOS BASIN						
MINING	225	1,087	666	283	0	0
JONES COUNTY						
BRAZOS BASIN						
MINING	232	222	203	185	170	157
IRRIGATION	174	35	0	0	0	0
LEE COUNTY						
BRAZOS BASIN						
MINING	2,406	5,401	5,634	6,024	6,459	6,986
COLORADO BASIN						
MINING	679	1,524	1,589	1,699	1,822	1,971
LIMESTONE COUNTY						
BRAZOS BASIN						
MINING	3,431	2,876	2,572	2,797	3,295	3,923
TRINITY BASIN						
MINING	368	320	294	314	357	412
NOLAN COUNTY						
BRAZOS BASIN						
IRRIGATION	1,357	1,155	962	860	760	667
COLORADO BASIN						
IRRIGATION	904	771	640	573	507	445
PALO PINTO COUNTY						
BRAZOS BASIN						
POSSUM KINGDOM WSC	7	0	0	0	0	0
ROBERTSON COUNTY						
BRAZOS BASIN						
MINING	0	960	2,599	4,881	7,667	11,129
IRRIGATION	35,322	31,853	28,799	28,207	32,917	39,407
STEPHENS COUNTY						
BRAZOS BASIN						
MINING	3,912	3,884	3,146	2,557	2,029	1,579
WILLIAMSON COUNTY						
BRAZOS BASIN						
MINING	4,593	5,520	6,434	7,541	8,682	9,988

Water User Group (WUG) Unmet Needs

*WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The unmet needs shown in the WUG Unmet Needs report are calculated by first deducting the WUG split's projected demand from the sum of its total existing water supply volume and all associated recommended water management strategy water volumes. If the WUG split has a greater future supply volume than projected demand in any given decade, this amount is considered a surplus volume. In order to display only unmet needs associated with the WUG split, these surplus volumes are updated to a zero and the unmet needs water volumes are shown as absolute values.

Water User Group (WUG) Unmet Needs Summary

REGION G

	2020	2030	2040	2050	2060	2070
MUNICIPAL	7	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	19,144	26,184	27,715	32,173	37,830	44,827
STEAM ELECTRIC POWER	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
IRRIGATION	37,757	33,814	30,401	29,640	34,184	40,519

*WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The unmet needs shown in the WUG Unmet Needs Summary report are calculated by first deducting the WUG split's projected demand from the sum of its total existing water supply volume and all associated recommended water management strategy water volumes. If the WUG split has a greater future 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 unmet needs in the decade are included with the Needs totals. Unmet needs water volumes are shown as absolute values.

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Primary Region: G

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
439 WSC	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	4	11	49	59	74	N/A	$0
439 WSC	G	REUSE- BCWCID #1 SOUTH	G | DIRECT REUSE	0	0	0	0	0	20	N/A	$930
ABILENE	G	BRUSH CONTROL-FORT PHANTOM HILL WATERSHED	G | FORT PHANTOM HILL LAKE/RESERVOIR	0	0	0	0	0	0	N/A	N/A
ABILENE	G	CEDAR RIDGE RESERVOIR	G | CEDAR RIDGE LAKE/RESERVOIR	23,794	7,614	8,228	9,437	10,549	11,570	$1031	$238
ABILENE	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	710	2,331	2,246	2,045	2,040	2,067	$474	$474
ACTON MUD	G	REALLOCATION OF SWATS CAPACITY TO ACTON MUD	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	0	0	0	0	200	N/A	$552
ALBANY	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	32	85	133	181	225	267	$474	$474
AQUILLA WSD - UNASSIGNED WATER VOLUMES	G	BRA SYSTEM OPERATION MAIN STEM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	750	750	750	750	750	750	$926	$473
ARMSTRONG WSC	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	14	39	32	29	30	32	$470	$470
ASPERMONT	G	MILLERS CREEK AUGMENTATION	G | MILLERS CREEK LAKE/RESERVOIR	33	47	62	76	90	105	$0	$0
ASPERMONT	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	13	30	48	66	82	95	$474	$4[illegible]
BAIRD	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	6	0	0	0	0	0	$496	N/A
BARTLETT	G	ADDITIONAL ADVANCED CONSERVATION	DEMAND REDUCTION	0	0	0	6	35	68	N/A	$470
BARTLETT	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	12	40	61	62	68	73	$470	$470
BARTLETT	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | BELL COUNTY	323	323	323	323	645	645	$2827	$2150
BELL COUNTY WCID #1 - UNASSIGNED WATER VOLUMES	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	0	0	0	0	N/A	N/A
BELL COUNTY WCID #1 - UNASSIGNED WATER VOLUMES	G	REUSE- BCWCID #1 SOUTH	G | DIRECT REUSE	0	0	0	0	0	0	N/A	N/A
BELL COUNTY WCID #1 - UNASSIGNED WATER VOLUMES	G	REUSE-BCWCID #1 NORTH	G | DIRECT REUSE	0	0	0	0	0	0	N/A	N/A
BELLMEAD	G	REUSE- WMARSS BELLMEAD/ LACY-LAKEVIEW	G | DIRECT REUSE	1,120	1,120	1,120	1,120	1,120	1,120	$324	$108
BELTON	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	119	340	318	321	347	379	$470	$470
BELTON	G	TRINITY - WILLIAMSON COUNTY ASR	G | TRINITY AQUIFER ASR | WILLIAMSON COUNTY	0	29	87	390	466	586	N/A	$0
BETHESDA WSC	C	ARLINGTON UNALLOCATED SUPPLY UTILIZATION	C | TRWD LAKE/RESERVOIR SYSTEM	1,416	1,473	1,474	1,472	1,480	1,479	$0	$0
BETHESDA WSC	C	CONSERVATION - BETHESDA WSC	DEMAND REDUCTION	25	45	69	83	99	116	$24977	$38[illegible]
BETHESDA WSC	C	CONSERVATION, WATER LOSS CONTROL - BETHESDA WSC	DEMAND REDUCTION	10	10	0	0	0	0	$11640	N/A
BETHESDA WSC	C	FORT WORTH UNALLOCATED SUPPLY UTILIZATION	C | TRWD LAKE/RESERVOIR SYSTEM	0	194	278	264	233	185	N/A	$0

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
BETHESDA WSC	C	LAKE PALESTINE	I | PALESTINE LAKE/RESERVOIR	0	0	0	0	395	0	N/A	N/A
BETHESDA WSC	C	SULPHUR BASIN SUPPLY	D | MARVIN NICHOLS LAKE/RESERVOIR	0	0	0	0	0	506	N/A	$1061
BETHESDA WSC	C	SULPHUR BASIN SUPPLY	D | MARVIN NICHOLS LAKE/RESERVOIR	0	0	0	0	0	1,524	N/A	$1061
BETHESDA WSC	C	SULPHUR BASIN SUPPLY	D | WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	265	131	172	N/A	$1061
BETHESDA WSC	C	SULPHUR BASIN SUPPLY	D | WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	250	428	516	N/A	$1061
BETHESDA WSC	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRINITY INDIRECT REUSE	0	35	62	51	62	46	N/A	$239
BETHESDA WSC	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRINITY INDIRECT REUSE	631	336	305	190	203	140	$1084	$239
BETHESDA WSC	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRWD LAKE/RESERVOIR SYSTEM	0	8	16	15	25	62	N/A	$239
BETHESDA WSC	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRWD LAKE/RESERVOIR SYSTEM	401	78	77	57	80	186	$1084	$239
BETHESDA WSC	C	TRWD - CEDAR CREEK WETLANDS	C | TRINITY INDIRECT REUSE	0	88	177	166	238	213	N/A	$114
BETHESDA WSC	C	TRWD - CEDAR CREEK WETLANDS	C | TRINITY INDIRECT REUSE	0	76	199	725	345	302	N/A	$114
BETHESDA WSC	C	TRWD - TEHUACANA	C | TEHUACANA LAKE/RESERVOIR	0	0	84	79	77	101	N/A	$149
BETHESDA WSC	C	TRWD - TEHUACANA	C | TEHUACANA LAKE/RESERVOIR	0	0	411	197	252	303	N/A	$149
BETHESDA WSC	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	126	410	763	1,018	1,138	1,271	$470	$470
BETHESDA WSC	I	UNM-ROR-NECHES RUN OF RIVER	I | NECHES RUN-OF-RIVER	0	0	0	0	561	0	N/A	N/A
BISTONE MWSD - UNASSIGNED WATER VOLUMES	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	2,467	2,561	2,658	2,755	2,740	2,804	$817	$244
BLUEBONNET WSC - UNASSIGNED WATER VOLUMES	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	0	0	0	0	N/A	N/A
BRANDON-IRENE WSC	C	CONSERVATION - BRANDON-IRENE WSC	DEMAND REDUCTION	0	0	0	1	1	1	N/A	$0
BRANDON-IRENE WSC	C	CONSERVATION, WATER LOSS CONTROL - BRANDON-IRENE WSC	DEMAND REDUCTION	0	0	0	0	0	0	N/A	N/A
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	CHLORIDE CONTROL PROJECT-BRA	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	2,475	2,475	2,475	2,475	2,475	2,475	$5830	$0
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE AQUILLA POOL REALLOCATION	G | BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	2,400	2,400	2,400	2,400	2,400	2,400	$865	$102
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION (RECOMMENDED)	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	0	0	0	0	N/A	N/A
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION (RECOMMENDED)	G | TRINITY AQUIFER | WILLIAMSON COUNTY	0	0	0	0	0	0	N/A	N/A
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LITTLE RIVER OCR	G | LITTLE RIVER OFF-CHANNEL LAKE/RESERVOIR	0	53,888	33,969	27,809	22,229	9,831	N/A	$81

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	H	NEW / EXPANDED CONTRACT WITH BRA	H | ALLENS CREEK LAKE/RESERVOIR	9,284	930	0	0	0	0	$0	N/A
BRECKENRIDGE	G	BRA SYSTEM OPERATION MAIN STEM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	550	550	550	550	550	550	$2492	$1228
BRECKENRIDGE	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	30	51	29	17	15	15	$496	$496
BREMOND	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	6	20	22	23	23	25	$470	$470
BRENHAM	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	190	531	889	1,272	1,508	1,553	$496	$496
BRUCEVILLE-EDDY	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	5	14	39	51	71	N/A	$500
BRUCEVILLE-EDDY	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	11	33	38	36	38	40	$470	$470
BRUSHY CREEK MUD	G	ADDITIONAL ADVANCED CONSERVATION	DEMAND REDUCTION	39	81	111	135	152	430	$470	$470
BRUSHY CREEK MUD	G	EDWARDS AQUIFER DEVELOPMENT	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	0	0	0	11	12	12	N/A	$752
BRUSHY CREEK MUD	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	197	589	947	1,282	1,600	1,623	$470	$470
BRYAN	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	0	0	0	5,100	5,100	5,100	N/A	$200
BRYAN	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	493	1,573	1,616	1,697	1,899	2,143	$474	$474
BRYAN	G	REUSE- BRYAN (OPTION 2)	G | DIRECT REUSE	2,419	2,419	2,419	2,419	2,419	2,419	$1577	$740
BRYAN	G	REUSE- MIRAMONT	G | DIRECT REUSE	600	600	600	600	600	600	$408	$53
BRYAN	G	SIMSBORO - BRAZOS COUNTY ASR	G | SIMSBORO AQUIFER ASR | BRAZOS COUNTY	2,841	2,841	3,917	5,581	12,294	19,839	$262	$262
BURLESON	C	CONSERVATION - BURLESON	DEMAND REDUCTION	4	9	15	27	41	55	$0	$0
BURLESON	C	CONSERVATION, WATER LOSS CONTROL - BURLESON	DEMAND REDUCTION	7	7	0	0	0	0	$3150	N/A
BURLESON	C	LAKE PALESTINE	I | PALESTINE LAKE/RESERVOIR	0	0	0	0	2,263	0	N/A	N/A
BURLESON	C	SULPHUR BASIN SUPPLY	D | MARVIN NICHOLS LAKE/RESERVOIR	0	0	0	0	0	4,715	N/A	$1061
BURLESON	C	SULPHUR BASIN SUPPLY	D | WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	824	1,370	1,597	N/A	$1061
BURLESON	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRINITY INDIRECT REUSE	1,900	1,157	1,038	627	649	431	$1084	$239
BURLESON	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRWD LAKE/RESERVOIR SYSTEM	1,209	267	266	189	256	577	$1084	$239
BURLESON	C	TRWD - CEDAR CREEK WETLANDS	C | TRINITY INDIRECT REUSE	0	1,902	2,049	2,535	1,836	1,497	N/A	$114
BURLESON	C	TRWD - TEHUACANA	C | TEHUACANA LAKE/RESERVOIR	0	0	1,401	1,402	805	938	N/A	$149
BURLESON	I	UNM-ROR-NECHES RUN OF RIVER	I | NECHES RUN-OF-RIVER	0	0	0	0	798	0	N/A	N/A
CALDWELL	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	40	121	203	240	242	246	$470	$470
CALVERT	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	3	0	0	0	0	0	$470	N/A
CAMERON	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	58	163	269	389	448	464	$496	$496

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies							
				2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
CEDAR PARK	G	BRUSHY CREEK RUA-EXISTING CONTRACTS	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	1,200	1,281	100	0	0	0	$836	N/A
CEDAR PARK	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	629	2,094	3,368	3,714	3,700	3,693	$470	$470
CEDAR PARK	K	DROUGHT MANAGEMENT	DEMAND REDUCTION	486	516	553	553	552	552	$50	$50
CEDAR PARK	K	MUNICIPAL CONSERVATION - CEDAR PARK	DEMAND REDUCTION	246	479	614	724	822	921	$289	$289
CENTRAL TEXAS WSC - UNASSIGNED WATER VOLUMES	G	EAST WILLIAMSON COUNTY WATER SUPPLY PLAN	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,112	592	333	2,240	2,240	2,240	$1173	$754
CENTRAL TEXAS WSC - UNASSIGNED WATER VOLUMES	G	TRINITY - WILLIAMSON COUNTY ASR	G | TRINITY AQUIFER ASR | WILLIAMSON COUNTY	1,289	2,258	2,606	169	1,287	1,473	$0	$0
CHILDRESS CREEK WSC	G	BOSQUE COUNTY REGIONAL PROJECT	G | CLIFTON LAKE/RESERVOIR	203	203	203	203	203	203	$2074	$256
CHILDRESS CREEK WSC	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | BOSQUE COUNTY	0	0	0	161	161	161	N/A	$6
CHISHOLM TRAIL SUD	G	ADDITIONAL ADVANCED CONSERVATION	DEMAND REDUCTION	0	0	6	503	1,159	1,967	N/A	$470
CHISHOLM TRAIL SUD	G	CHISHOLM TRAIL SUD WTP EXPANSION	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	3,527	3,334	3,639	4,604	5,931	7,489	$712	$328
CHISHOLM TRAIL SUD	G	GEORGETOWN WTP EXPANSION	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	400	400	0	0	N/A	N/A
CHISHOLM TRAIL SUD	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	209	747	1,055	1,248	1,477	1,720	$470	$470
CISCO	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	23	67	52	44	42	42	$496	$496
CLEBURNE	G	BRA SYSTEM OPERATION MAIN STEM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	72	144	216	288	1,189	N/A	$473
CLEBURNE	G	LAKE AQUILLA AUGMENTATION - A (SURPLUS)	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	6,285	6,353	6,421	6,349	6,277	5,016	$663	$242
CLEBURNE	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	207	685	736	749	809	883	$470	$470
CLEBURNE - UNASSIGNED WATER VOLUMES	G	REUSE- CLEBURNE	G | DIRECT REUSE	2,031	2,031	2,031	2,031	2,031	2,031	$736	$157
CLIFTON	G	BOSQUE COUNTY REGIONAL PROJECT	G | CLIFTON LAKE/RESERVOIR	397	397	397	397	397	397	$1076	$136
CLIFTON	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	21	74	77	71	71	71	$474	$474
COLLEGE STATION	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	679	2,585	3,465	3,823	4,332	4,926	$474	$474
COLLEGE STATION	G	YEGUA-JACKSON AQUIFER DEVELOPMENT	G | YEGUA-JACKSON AQUIFER | BRAZOS COUNTY	4,452	5,565	5,565	5,565	5,565	5,565	$656	$221
COLLEGE STATION - UNASSIGNED WATER VOLUMES	G	COLLEGE STATION ASR	G | DIRECT REUSE	2,800	2,800	2,800	2,800	2,800	2,800	$3068	$1160
COLLEGE STATION - UNASSIGNED WATER VOLUMES	G	REUSE- COLLEGE STATION	G | DIRECT REUSE	103	103	103	103	103	103	$1680	$291
COOLIDGE	C	CORSICANA - HALBERT/RICHLAND CHAMBERS NEW WTP	C | RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION	0	0	0	39	79	100	N/A	$0

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit [illegible]
COOLIDGE	C	CORSICANA UNALLOCATED SUPPLY UTILIZATION	C | NAVARRO MILLS LAKE/RESERVOIR	0	69	83	64	45	46	N/A	$0
COOLIDGE	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	104	109	113	118	123	128	$0	$0
COOLIDGE	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	5	4	1	0	0	0	$496	N/A
CORYELL CITY WATER SUPPLY DISTRICT	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	34	21	9	1	0	0	$470	N/A
COUNTY-OTHER, BELL	G	EDWARDS AQUIFER DEVELOPMENT	G | EDWARDS-BFZ AQUIFER | BELL COUNTY	0	0	161	718	1,417	2,081	N/A	$50
COUNTY-OTHER, BELL	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	14	62	73	94	117	138	$496	$496
COUNTY-OTHER, BELL	G	PURCHASE FROM CENTRAL TEXAS WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	500	500	500	500	N/A	$250
COUNTY-OTHER, BELL	G	TRINITY - WILLIAMSON COUNTY ASR	G | TRINITY AQUIFER ASR | WILLIAMSON COUNTY	0	4	34	516	790	1,069	N/A	$186
COUNTY-OTHER, BELL - UNASSIGNED WATER VOLUMES	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	23	467	731	995	N/A	$186
COUNTY-OTHER, COMANCHE	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | COMANCHE COUNTY	161	161	161	161	242	242	$924	$455
COUNTY-OTHER, CORYELL	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | CORYELL COUNTY	0	0	0	100	200	525	N/A	$1[illegible]
COUNTY-OTHER, ERATH	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | ERATH COUNTY	0	0	0	0	121	363	N/A	$6[illegible]
COUNTY-OTHER, FALLS	G	WTP UPGRADE FOR ARSENIC REMOVAL	G | CARRIZO-WILCOX AQUIFER | FALLS COUNTY	53	53	53	53	53	53	$2117	$1830
COUNTY-OTHER, HASKELL	G	MILLERS CREEK AUGMENTATION	G | MILLERS CREEK LAKE/RESERVOIR	33	47	62	76	90	105	$0	$0
COUNTY-OTHER, HILL	C	CORSICANA - HALBERT/RICHLAND CHAMBERS NEW WTP	C | RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION	0	0	0	93	187	230	N/A	$0
COUNTY-OTHER, HILL	C	CORSICANA UNALLOCATED SUPPLY UTILIZATION	C | NAVARRO MILLS LAKE/RESERVOIR	0	178	208	156	105	106	N/A	$0
COUNTY-OTHER, HILL	G	WTP UPGRADE FOR ARSENIC REMOVAL	G | WOODBINE AQUIFER | HILL COUNTY	250	250	250	250	250	250	$1453	$1108
COUNTY-OTHER, HOOD	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | HOOD COUNTY	968	968	968	968	968	968	$703	$560
COUNTY-OTHER, LIMESTONE	G	WTP UPGRADE FOR ARSENIC REMOVAL	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	268	268	268	268	268	268	$1414	$1067
COUNTY-OTHER, MCLENNAN	G	WTP UPGRADE FOR ARSENIC REMOVAL	G | TRINITY AQUIFER | MCLENNAN COUNTY	917	917	917	917	917	917	$1021	$673
COUNTY-OTHER, NOLAN	G	CEDAR RIDGE RESERVOIR	G | CEDAR RIDGE LAKE/RESERVOIR	168	168	168	168	168	168	$1031	$1031
COUNTY-OTHER, ROBERTSON	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	0	0	0	0	0	81	N/A	$1079
COUNTY-OTHER, SHACKELFORD	G	BRA SYSTEM OPERATION MAIN STEM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	250	250	250	250	250	250	$2492	$1228
COUNTY-OTHER, WILLIAMSON	G	ADDITIONAL ADVANCED CONSERVATION	DEMAND REDUCTION	0	0	56	567	1,432	2,594	N/A	$4[illegible]

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
COUNTY-OTHER, WILLIAMSON	G	EAST WILLIAMSON COUNTY WATER SUPPLY PLAN	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	2,300	2,300	2,300	2,300	2,300	2,300	$1173	$754
COUNTY-OTHER, WILLIAMSON	G	LITTLE RIVER OCR	G | LITTLE RIVER OFF-CHANNEL LAKE/RESERVOIR	0	2,267	5,352	5,346	8,466	11,658	N/A	$350
COUNTY-OTHER, WILLIAMSON	L	VISTA RIDGE PROJECT	G | CARRIZO-WILCOX AQUIFER | BURLESON COUNTY	5,700	5,700	5,700	5,700	5,700	5,700	$680	$611
COUNTY-OTHER, YOUNG	B	MUNICIPAL CONSERVATION - YOUNG COUNTY OTHER	DEMAND REDUCTION	0	0	0	0	3	5	N/A	$844
CRAWFORD	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	7	16	27	28	28	29	$470	$470
CRESSON	C	CONSERVATION - CRESSON	DEMAND REDUCTION	0	1	1	1	2	2	N/A	$0
CRESSON	C	CONSERVATION, WATER LOSS CONTROL - CRESSON	DEMAND REDUCTION	0	0	0	0	0	0	N/A	N/A
CRESSON	C	CRESSON NEW WELLS IN TRINITY AQUIFER	C | TRINITY AQUIFER | PARKER COUNTY	113	113	113	113	113	113	$941	$259
CRESSON	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | HOOD COUNTY	0	0	60	60	60	60	N/A	$573
CROSS COUNTRY WSC	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	20	24	14	10	8	8	$470	$470
CROSS COUNTRY WSC	G	TRINITY - MCLENNAN COUNTY ASR	G | TRINITY AQUIFER ASR | MCLENNAN COUNTY	0	0	0	150	150	150	N/A	$1833
CROSS PLAINS	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	5	10	5	5	5	4	$496	$496
EASTLAND	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	3	0	0	0	0	0	$496	N/A
ELM CREEK WSC	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	0	63	144	230	N/A	$0
FERN BLUFF MUD	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	63	161	253	261	259	259	$470	$470
FILES VALLEY WSC	C	CONSERVATION - FILES VALLEY WSC	DEMAND REDUCTION	0	1	2	3	5	7	N/A	$0
FILES VALLEY WSC	C	CONSERVATION, WATER LOSS CONTROL - FILES VALLEY WSC	DEMAND REDUCTION	1	1	0	0	0	0	$168	N/A
FILES VALLEY WSC	C	SULPHUR BASIN SUPPLY	D | MARVIN NICHOLS LAKE/RESERVOIR	0	0	0	0	0	33	N/A	$1061
FILES VALLEY WSC	C	SULPHUR BASIN SUPPLY	D | WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	7	11	11	N/A	$1061
FILES VALLEY WSC	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRINITY INDIRECT REUSE	0	15	11	6	6	3	N/A	$239
FILES VALLEY WSC	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRWD LAKE/RESERVOIR SYSTEM	0	3	2	1	2	4	N/A	$239
FILES VALLEY WSC	C	TRWD - CEDAR CREEK WETLANDS	C | TRINITY INDIRECT REUSE	0	37	31	31	19	14	N/A	$114
FILES VALLEY WSC	C	TRWD - TEHUACANA	C | TEHUACANA LAKE/RESERVOIR	0	0	15	18	6	7	N/A	$149
FILES VALLEY WSC	I	UNM-ROR-NECHES RUN OF RIVER	I | NECHES RUN-OF-RIVER	0	0	0	0	24	0	N/A	N/A
FLORENCE	G	EDWARDS AQUIFER DEVELOPMENT	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	0	0	0	0	13	24	N/A	$1093
FLORENCE	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | BELL COUNTY	121	121	121	121	121	121	$5795	$2158
FORT BELKNAPP WSC	G	GRAHAM REDUCTION TO FORT BELKNAP WSC	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	85	85	85	85	85	85	$880	$880

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
FORT HOOD	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	293	842	1,376	1,946	2,134	2,133	$470	$470
GATESVILLE	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	29	86	386	461	580	N/A	$0
GATESVILLE	G	CORYELL COUNTY OCR	G | CORYELL COUNTY OFF-CHANNEL LAKE/RESERVOIR	0	2,835	2,835	2,835	2,835	2,835	N/A	$435
GATESVILLE	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	208	610	1,097	1,644	2,261	2,462	$470	$470
GEORGETOWN	G	ADDITIONAL ADVANCED CONSERVATION	DEMAND REDUCTION	0	0	0	0	1,612	4,404	N/A	$470
GEORGETOWN	G	BELTON TO STILLHOUSE PIPELINE-BRA	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	0	0	0	0	N/A	N/A
GEORGETOWN	G	GEORGETOWN WTP EXPANSION	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	11,626	11,626	11,626	11,626	11,304	N/A	$266
GEORGETOWN	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	734	2,507	5,068	8,141	9,756	11,442	$470	$470
GIDDINGS	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	39	131	231	230	232	233	$496	$496
GLEN ROSE	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	24	73	128	167	172	178	$474	$474
GODLEY	G	WOODBINE AQUIFER DEVELOPMENT	G | WOODBINE AQUIFER | JOHNSON COUNTY	0	0	0	0	30	30	N/A	$1[illegible]
GRAHAM	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	140	354	568	795	1,029	1,260	$474	$474
GRANGER	G	EAST WILLIAMSON COUNTY WATER SUPPLY PLAN	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	200	200	200	200	200	200	$1173	$754
GROESBECK	G	GROESBECK OCR	G | GROESBECK OFF-CHANNEL LAKE/RESERVOIR	1,755	1,755	1,755	1,755	1,755	1,755	$617	$121
GROESBECK	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	2	0	0	0	0	0	$496	N/A
HAMILTON	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	18	32	20	14	13	13	$474	$474
HAMLIN	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	14	43	57	57	58	58	$470	$470
HARKER HEIGHTS	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,645	1,697	1,697	1,235	688	865	$0	$0
HARKER HEIGHTS	G	KILLEEN REDUCTION TO HARKER HEIGHTS	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	0	0	0	302	N/A	$1791
HARKER HEIGHTS	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	262	836	1,367	1,499	1,656	1,819	$470	$470
HARKER HEIGHTS	G	REUSE- BCWCID #1 SOUTH	G | DIRECT REUSE	185	185	185	185	185	185	$930	$201
HASKELL	G	MILLERS CREEK AUGMENTATION	G | MILLERS CREEK LAKE/RESERVOIR	176	254	332	410	488	566	$0	$0
HEARNE	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	22	35	16	14	12	12	$470	$[illegible]
HEWITT	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	22	35	16	14	12	12	$470	$470
HEWITT	G	REUSE- WMARSS BULLHIDE CREEK	G | DIRECT REUSE	1,223	1,223	1,223	1,223	1,223	1,223	$381	$149

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
HILLSBORO	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	79	230	385	495	506	517	$474	$474
HUBBARD	C	CORSICANA - HALBERT/RICHLAND CHAMBERS NEW WTP	C | RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION	0	0	0	27	55	67	N/A	$0
HUBBARD	C	CORSICANA UNALLOCATED SUPPLY UTILIZATION	C | NAVARRO MILLS LAKE/RESERVOIR	0	54	61	46	31	31	N/A	$0
HUTTO	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | LEE COUNTY	5,593	5,593	5,593	7,503	9,710	11,994	$1619	$732
IRRIGATION, BELL	G	EDWARDS AQUIFER DEVELOPMENT	G | EDWARDS-BFZ AQUIFER | BELL COUNTY	1,091	1,019	953	940	915	754	$1120	$93
IRRIGATION, BELL	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	66	109	150	148	146	144	$230	$230
IRRIGATION, BELL	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | BELL COUNTY	0	0	0	0	0	140	N/A	$1656
IRRIGATION, BOSQUE	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	64	105	144	142	140	138	$230	$230
IRRIGATION, BOSQUE	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | BOSQUE COUNTY	475	475	475	475	475	475	$2119	$17
IRRIGATION, BRAZOS	G	BRA SYSTEM OPERATION MAIN STEM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	10,200	8,500	6,900	5,800	4,800	3,900	$66	$66
IRRIGATION, BRAZOS	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	782	1,240	1,652	1,572	1,496	1,431	$230	$230
IRRIGATION, COMANCHE	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	824	1,359	1,883	1,863	1,844	1,825	$230	$230
IRRIGATION, COMANCHE	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | COMANCHE COUNTY	69	603	0	0	0	0	$1666	N/A
IRRIGATION, EASTLAND	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	205	341	479	479	479	480	$230	$230
IRRIGATION, EASTLAND	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | ERATH COUNTY	2,033	1,908	1,778	1,781	1,785	1,791	$1089	$90
IRRIGATION, HAMILTON	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	15	25	35	33	31	31	$230	$230
IRRIGATION, HAMILTON	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | HAMILTON COUNTY	60	60	60	60	0	0	$1779	N/A
IRRIGATION, HASKELL	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	1,435	2,321	3,153	3,015	0	0	$230	N/A
IRRIGATION, HASKELL	G	REALLOCATION OF HASKELL CO. SE TO MINING AND IRRIGATION	G | STAMFORD LAKE/RESERVOIR	790	67	44	0	0	0	$250	N/A
IRRIGATION, JONES	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	86	139	189	183	0	0	$230	N/A
IRRIGATION, KNOX	G	BLAINE AQUIFER DEVELOPMENT	G | BLAINE AQUIFER | KNOX COUNTY	460	460	460	460	460	460	$482	$39
IRRIGATION, KNOX	G	BLAINE AQUIFER DEVELOPMENT	G | BLAINE AQUIFER | STONEWALL COUNTY	0	1,709	4,120	5,042	1,855	1,065	N/A	$250
IRRIGATION, KNOX	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	1,231	2,001	2,733	2,666	2,600	2,539	$230	$230
IRRIGATION, KNOX	G	SEYMOUR AQUIFER DEVELOPMENT	G | SEYMOUR AQUIFER | KNOX COUNTY	1,571	1,345	1,193	1,116	1,041	1,041	$571	$46
IRRIGATION, LAMPASAS	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	12	19	26	26	26	26	$230	$230
IRRIGATION, LAMPASAS	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | LAMPASAS COUNTY	210	210	210	210	210	210	$1327	$108
IRRIGATION, MCLENNAN	G	BRAZOS RIVER ALLUVIUM DEVELOPMENT	G | BRAZOS RIVER ALLUVIUM AQUIFER | MCLENNAN COUNTY	2,200	2,200	2,200	2,200	2,200	2,200	$696	$56
IRRIGATION, MCLENNAN	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	146	244	341	341	340	340	$230	$230
IRRIGATION, NOLAN	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	222	361	492	479	466	455	$230	$230

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
IRRIGATION, PALO PINTO	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	94	155	214	212	209	206	$230	$230
IRRIGATION, PALO PINTO	G	TURKEY PEAK RESERVOIR	G | TURKEY PEAK LAKE/RESERVOIR	2,494	2,392	2,299	2,260	2,222	2,188	$479	$479
IRRIGATION, ROBERTSON	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	15,764	16,143	16,222	15,172	8,912	1,179	$726	$61
IRRIGATION, ROBERTSON	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	1,903	3,080	4,189	4,069	3,952	3,859	$230	$230
IRRIGATION, STEPHENS	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	4	6	8	8	8	8	$230	$230
IRRIGATION, STEPHENS	G	OTHER AQUIFER DEVELOPMENT	G | OTHER AQUIFER | STEPHENS COUNTY	26	26	26	26	26	26	$2254	$177
IRRIGATION, TAYLOR	G	CEDAR RIDGE RESERVOIR	G | CEDAR RIDGE LAKE/RESERVOIR	1,010	943	877	842	807	776	$100	$100
IRRIGATION, TAYLOR	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	47	76	104	101	98	96	$230	$230
IRRIGATION, WILLIAMSON	G	EDWARDS AQUIFER DEVELOPMENT	G | EDWARDS-BFZ AQUIFER | WILLIAMSON COUNTY	66	63	60	61	61	62	$1679	$133
IRRIGATION, WILLIAMSON	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	5	8	11	11	11	11	$230	$230
IRRIGATION, YOUNG	G	IRRIGATION WATER CONSERVATION	DEMAND REDUCTION	2	3	3	3	3	3	$230	$230
IRRIGATION, YOUNG	G	OTHER AQUIFER DEVELOPMENT	G | OTHER AQUIFER | YOUNG COUNTY	50	50	50	50	50	50	$2148	$168
JARRELL	G	EAST WILLIAMSON COUNTY WATER SUPPLY PLAN	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	100	100	100	100	100	100	$1173	$754
JAYTON	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	3	6	4	4	3	3	$474	$474
JAYTON	G	NEW WTP(0.4 MGD) FOR JAYTON	G | SEYMOUR AQUIFER | KENT COUNTY	249	249	249	249	249	249	$2451	$1129
JOHNSON COUNTY SUD	C	ARLINGTON UNALLOCATED SUPPLY UTILIZATION	C | TRWD LAKE/RESERVOIR SYSTEM	77	63	72	64	77	69	$0	$0
JOHNSON COUNTY SUD	C	CONSERVATION - JOHNSON COUNTY SUD	DEMAND REDUCTION	1	2	4	5	7	10	$0	$0
JOHNSON COUNTY SUD	C	CONSERVATION, WATER LOSS CONTROL - JOHNSON COUNTY SUD	DEMAND REDUCTION	1	1	0	0	0	0	$374	N/A
JOHNSON COUNTY SUD	C	DWU - MAIN STEM REUSE	C | TRINITY INDIRECT REUSE	49	50	92	256	260	251	$153	$653
JOHNSON COUNTY SUD	C	DWU - MAIN STEM REUSE	C | TRINITY INDIRECT REUSE	0	0	0	0	1,271	0	N/A	N/A
JOHNSON COUNTY SUD	C	FORT WORTH UNALLOCATED SUPPLY UTILIZATION	C | TRWD LAKE/RESERVOIR SYSTEM	0	18	18	14	11	7	N/A	$0
JOHNSON COUNTY SUD	C	GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	C | JOE POOL LAKE/RESERVOIR	221	192	179	179	180	180	$0	$0
JOHNSON COUNTY SUD	C	GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	C | RAY HUBBARD LAKE/RESERVOIR	181	177	159	141	123	113	$0	$0
JOHNSON COUNTY SUD	C	GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	C | RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	436	389	339	292	248	218	$0	$0
JOHNSON COUNTY SUD	C	GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	C | TRINITY AQUIFER | DALLAS COUNTY	2,100	2,100	2,100	2,100	2,100	2,100	$0	$0
JOHNSON COUNTY SUD	C	GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	C | TRINITY AQUIFER | TARRANT COUNTY	2,100	2,100	2,100	2,100	2,100	2,100	$0	$0
JOHNSON COUNTY SUD	C	GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	C | TRINITY INDIRECT REUSE	119	139	136	164	196	220	$0	$0

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
JOHNSON COUNTY SUD	C	GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	C | TRWD LAKE/RESERVOIR SYSTEM	400	321	280	260	236	214	$0	$0
JOHNSON COUNTY SUD	C	GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	D | FORK LAKE/RESERVOIR	184	200	198	194	187	188	$0	$0
JOHNSON COUNTY SUD	C	GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	D | TAWAKONI LAKE/RESERVOIR	639	614	544	476	413	375	$0	$0
JOHNSON COUNTY SUD	C	LAKE PALESTINE	I | PALESTINE LAKE/RESERVOIR	0	153	292	233	206	182	N/A	$515
JOHNSON COUNTY SUD	C	MANSFIELD UNALLOCATED SUPPLY UTILIZATION	C | TRWD LAKE/RESERVOIR SYSTEM	231	157	102	90	78	68	$0	$0
JOHNSON COUNTY SUD	C	MANSFIELD UNALLOCATED SUPPLY UTILIZATION	C | TRWD LAKE/RESERVOIR SYSTEM	135	141	134	145	138	130	$0	$0
JOHNSON COUNTY SUD	C	SULPHUR BASIN SUPPLY	D | MARVIN NICHOLS LAKE/RESERVOIR	0	0	0	0	0	121	N/A	$1061
JOHNSON COUNTY SUD	C	SULPHUR BASIN SUPPLY	D | MARVIN NICHOLS LAKE/RESERVOIR	0	0	0	0	0	1,969	N/A	$1061
JOHNSON COUNTY SUD	C	SULPHUR BASIN SUPPLY	D | WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	19	35	41	N/A	$1061
JOHNSON COUNTY SUD	C	SULPHUR BASIN SUPPLY	D | WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	326	569	667	N/A	$1131
JOHNSON COUNTY SUD	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRINITY INDIRECT REUSE	0	14	21	15	15	11	N/A	$239
JOHNSON COUNTY SUD	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRINITY INDIRECT REUSE	0	9	17	14	16	12	N/A	$239
JOHNSON COUNTY SUD	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRWD LAKE/RESERVOIR SYSTEM	0	3	5	5	6	15	N/A	$239
JOHNSON COUNTY SUD	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRWD LAKE/RESERVOIR SYSTEM	0	2	4	4	7	16	N/A	$239
JOHNSON COUNTY SUD	C	TRWD - CEDAR CREEK WETLANDS	C | TRINITY INDIRECT REUSE	0	37	61	68	58	51	N/A	$114
JOHNSON COUNTY SUD	C	TRWD - CEDAR CREEK WETLANDS	C | TRINITY INDIRECT REUSE	0	508	971	1,393	1,032	829	N/A	$114
JOHNSON COUNTY SUD	C	TRWD - TEHUACANA	C | TEHUACANA LAKE/RESERVOIR	0	0	28	35	21	25	N/A	$149
JOHNSON COUNTY SUD	C	TRWD - TEHUACANA	C | TEHUACANA LAKE/RESERVOIR	0	0	459	770	334	392	N/A	$149
JOHNSON COUNTY SUD	I	ANRA-COL - LAKE COLUMBIA	I | COLUMBIA LAKE/RESERVOIR	0	0	0	0	0	96	N/A	$1010
JOHNSON COUNTY SUD	I	UNM-ROR-NECHES RUN OF RIVER	I | NECHES RUN-OF-RIVER	0	0	0	0	91	81	N/A	$1010
JONAH WATER SUD	G	EAST WILLIAMSON COUNTY WATER SUPPLY PLAN	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	0	2,752	2,223	1,582	N/A	$754
JONAH WATER SUD	G	TRINITY - WILLIAMSON COUNTY ASR	G | TRINITY AQUIFER ASR | WILLIAMSON COUNTY	3,000	3,000	3,000	248	777	1,418	$1173	$754
KEMPNER	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	7	10	6	6	5	5	$470	$470
KEMPNER WSC	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	4,056	4,058	4,024	4,174	4,138	4,142	$0	$0
KEMPNER WSC	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	100	239	225	222	234	248	$470	$470
KILLEEN	G	REUSE- BCWCID #1 SOUTH	G | DIRECT REUSE	563	563	563	563	563	543	$811	$811
KILLEEN	G	REUSE-BCWCID #1 NORTH	G | DIRECT REUSE	1,925	1,925	1,925	1,925	1,925	1,925	$811	$811

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
KNOX CITY	G	MILLERS CREEK AUGMENTATION	G | MILLERS CREEK LAKE/RESERVOIR	72	104	136	167	199	231	$0	$0
KNOX CITY	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	9	25	45	54	54	55	$496	$496
LACY-LAKEVIEW	G	REUSE- WMARSS BELLMEAD/ LACY-LAKEVIEW	G | DIRECT REUSE	1,120	1,120	1,120	1,120	1,120	1,120	$324	$108
LAMPASAS	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	22	148	227	318	414	505	$500	$500
LAMPASAS	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	27	0	0	0	0	0	$470	N/A
LEANDER	G	BRUSHY CREEK RUA-EXISTING CONTRACTS	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	15,800	15,719	16,900	17,000	17,000	17,000	$1128	$645
LEANDER	K	DROUGHT MANAGEMENT	DEMAND REDUCTION	170	436	753	813	843	882	$50	$50
LEANDER	K	LCRA - LANE CITY RESERVOIR	K | LCRA NEW OFF-CHANNEL RESERVOIRS (2020 DECADE)	0	0	0	3,336	9,347	15,976	N/A	$151
LEE COUNTY WSC	K	DROUGHT MANAGEMENT	DEMAND REDUCTION	30	33	35	37	38	40	$50	$50
LEXINGTON	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	8	26	23	21	21	21	$496	$496
LIBERTY HILL	G	BRUSHY CREEK RUA-EXISTING CONTRACTS	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	600	600	600	600	600	600	$1128	$645
LITTLE RIVER-ACADEMY	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	180	180	180	180	180	N/A	$977
LITTLE RIVER-ACADEMY	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	12	19	13	11	11	11	$470	$470
LOMETA	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	7	21	26	27	28	29	$470	$470
LORENA	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	10	3	0	0	0	0	$470	N/A
LORENA	G	REUSE- WMARSS BULLHIDE CREEK	G | DIRECT REUSE	448	448	448	448	448	448	$381	$149
MANUFACTURING, BELL	G	EDWARDS AQUIFER DEVELOPMENT	G | EDWARDS-BFZ AQUIFER | BELL COUNTY	1,000	1,000	1,000	1,360	1,360	1,360	$883	$297
MANUFACTURING, BELL	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	41	75	112	120	129	140	$0	$0
MANUFACTURING, BOSQUE	G	BRA SYSTEM OPERATION MAIN STEM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,035	1,280	1,510	1,765	2,060	2,375	$66	$66
MANUFACTURING, BOSQUE	G	CLIFTON REDUCTION TO BOSQUE MANUFACTURING	G | TRINITY AQUIFER | BOSQUE COUNTY	426	426	426	426	426	426	$1076	$1076
MANUFACTURING, BOSQUE	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	82	153	236	255	277	301	$0	$0
MANUFACTURING, BOSQUE	G	MERIDIAN REDUCTION TO BOSQUE MANUFACTURING	G | TRINITY AQUIFER | BOSQUE COUNTY	330	330	330	330	330	330	$1223	$1223
MANUFACTURING, BRAZOS	G	GULF COAST AQUIFER DEVELOPMENT	G | GULF COAST AQUIFER | BRAZOS COUNTY	530	530	530	530	530	530	$1815	$469
MANUFACTURING, BRAZOS	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	74	139	218	238	259	281	$0	$0
MANUFACTURING, BRAZOS	G	TEXAS A&M REDUCTION TO BRAZOS MANUFACTURING	G | CARRIZO-WILCOX AQUIFER | BRAZOS COUNTY	1,200	300	500	800	1,100	1,400	$977	$977
MANUFACTURING, BURLESON	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	4	8	13	14	15	17	$0	$0
MANUFACTURING, BURLESON	G	SPARTA AQUIFER DEVELOPMENT	G | SPARTA AQUIFER | BURLESON COUNTY	0	50	50	50	85	85	N/A	$418

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
MANUFACTURING, FALLS	G	MARLIN REDUCTION TO FALLS MANUFACTURING	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1	1	1	1	1	1	$1522	$1522
MANUFACTURING, FISHER	G	DOCKUM AQUIFER DEVELOPMENT	G | DOCKUM AQUIFER | FISHER COUNTY	50	50	140	140	140	140	$14040	$7614
MANUFACTURING, FISHER	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	7	13	20	22	24	25	$0	$0
MANUFACTURING, GRIMES	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	0	0	0	0	38	41	N/A	$0
MANUFACTURING, MCLENNAN	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	153	286	446	487	527	571	$0	$0
MANUFACTURING, MCLENNAN	G	REUSE- WMARSS FLAT CREEK	G | DIRECT REUSE	1,600	1,700	1,800	2,000	2,200	2,500	$205	$105
MANUFACTURING, NOLAN	G	CEDAR RIDGE RESERVOIR	G | CEDAR RIDGE LAKE/RESERVOIR	0	0	0	0	0	33	N/A	$1031
MANUFACTURING, NOLAN	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	43	81	126	138	149	162	$0	$0
MANUFACTURING, NOLAN	G	OAK CREEK RESERVOIR-CONJUNCTIVE USE	F | OAK CREEK LAKE/RESERVOIR	838	991	1,134	1,288	1,442	1,575	$1031	$1031
MANUFACTURING, TAYLOR	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	50	90	136	144	157	170	$0	$0
MANUFACTURING, WASHINGTON	G	GULF COAST AQUIFER DEVELOPMENT	G | GULF COAST AQUIFER | WASHINGTON COUNTY	41	89	134	187	254	326	$1209	$405
MANUFACTURING, WASHINGTON	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	21	38	58	62	67	72	$0	$0
MANUFACTURING, WILLIAMSON	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	71	135	212	234	254	276	$0	$0
MARLIN	G	BRUSHY CREEK RESERVOIR	G | BRUSHY CREEK LAKE/RESERVOIR	1,450	1,450	1,450	1,450	1,450	1,450	$481	$97
MARLIN	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	86	226	357	480	619	756	$474	$474
MART	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	0	1	0	0	0	1	N/A	$470
MART	G	TRINITY - MCLENNAN COUNTY ASR	G | TRINITY AQUIFER ASR | MCLENNAN COUNTY	250	250	250	250	250	250	$3028	$1264
MERIDIAN	G	BOSQUE COUNTY REGIONAL PROJECT	G | CLIFTON LAKE/RESERVOIR	224	224	224	224	224	224	$1223	$179
MERKEL	G	CEDAR RIDGE RESERVOIR	G | CEDAR RIDGE LAKE/RESERVOIR	0	0	0	0	4	9	N/A	$100
MINERAL WELLS	C	CONSERVATION - MINERAL WELLS	DEMAND REDUCTION	4	7	3	4	5	6	$6046	$0
MINERAL WELLS	C	CONSERVATION, WATER LOSS CONTROL - MINERAL WELLS	DEMAND REDUCTION	2	2	0	0	0	0	$535	N/A
MINERAL WELLS	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	70	31	0	0	0	0	$496	N/A
MINING, BELL	G	EDWARDS AQUIFER DEVELOPMENT	G | EDWARDS-BFZ AQUIFER | BELL COUNTY	2,104	2,176	2,081	1,177	503	0	$589	N/A
MINING, BELL	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	97	199	322	374	427	488	$0	$0
MINING, BELL	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | BELL COUNTY	582	582	582	582	260	120	$884	$79
MINING, BOSQUE	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	59	104	132	131	128	127	$0	$0
MINING, BRAZOS	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	33	81	100	80	65	57	$0	$0
MINING, BURLESON	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	30	96	106	77	48	30	$0	$0
MINING, BURLESON	G	SPARTA AQUIFER DEVELOPMENT	G | SPARTA AQUIFER | BURLESON COUNTY	740	740	740	740	740	740	$678	$58
MINING, CALLAHAN	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	7	11	15	14	13	13	$0	$0

Recommended Water User Group (WUG) Water Management Strategies (WMS)

Water Management Strategy Supplies

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
MINING, CALLAHAN	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | CALLAHAN COUNTY	225	225	225	225	225	225	$692	$61
MINING, COMANCHE	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	14	26	26	19	13	9	$0	$0
MINING, COMANCHE	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | COMANCHE COUNTY	404	473	311	320	149	93	$871	$78
MINING, CORYELL	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	45	54	34	25	28	31	$0	$0
MINING, CORYELL	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | CORYELL COUNTY	1,500	1,500	500	500	500	500	$1236	$107
MINING, EASTLAND	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	35	59	65	50	36	30	$0	$0
MINING, EASTLAND	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | ERATH COUNTY	1,150	1,150	900	700	500	500	$560	$52
MINING, ERATH	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	0	27	0	0	0	0	N/A	N/A
MINING, FALLS	G	FALLS COUNTY IRRIGATION REALLOCATION TO FALLS COUNTY MINING	G | BRAZOS RIVER ALLUVIUM AQUIFER | FALLS COUNTY	218	234	241	266	286	308	$0	$0
MINING, FALLS	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	7	12	18	20	21	23	$0	$0
MINING, FISHER	G	DOCKUM AQUIFER DEVELOPMENT	G | DOCKUM AQUIFER | FISHER COUNTY	400	400	400	400	400	400	$696	$59
MINING, FISHER	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	12	20	25	22	19	17	$0	$0
MINING, GRIMES	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | GRIMES COUNTY	300	550	550	300	300	100	$1764	$131
MINING, GRIMES	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	10	30	33	24	15	9	$0	$0
MINING, HAMILTON	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	12	12	7	0	0	0	$0	N/A
MINING, HAMILTON	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | HAMILTON COUNTY	370	370	370	0	0	0	$680	N/A
MINING, HASKELL	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	3	5	6	5	5	4	$0	$0
MINING, HASKELL	G	REALLOCATION OF HASKELL CO. SE TO MINING AND IRRIGATION	G | STAMFORD LAKE/RESERVOIR	90	87	77	69	61	55	$250	$250
MINING, HILL	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	49	60	0	0	0	0	$0	N/A
MINING, HILL	G	WOODBINE AQUIFER DEVELOPMENT	G | WOODBINE AQUIFER | HILL COUNTY	560	560	0	0	0	0	$767	N/A
MINING, HOOD	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	62	122	156	149	143	144	$0	$0
MINING, HOOD	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | HOOD COUNTY	1,120	1,120	1,120	1,120	1,120	1,120	$508	$44
MINING, JOHNSON	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	124	0	0	0	0	0	$0	N/A
MINING, JOHNSON	G	WOODBINE AQUIFER DEVELOPMENT	G | WOODBINE AQUIFER | JOHNSON COUNTY	1,140	0	0	0	0	0	$383	N/A
MINING, JONES	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	7	12	15	14	13	12	$0	$0
MINING, KNOX	G	BLAINE AQUIFER DEVELOPMENT	G | BLAINE AQUIFER | KNOX COUNTY	15	15	15	15	15	15	$1388	$121
MINING, KNOX	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	0	1	1	1	1	1	N/A	$0
MINING, LAMPASAS	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	6	11	17	18	20	22	$0	$0
MINING, LAMPASAS	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | LAMPASAS COUNTY	185	185	225	225	275	275	$743	[illegible]
MINING, LEE	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	95	364	544	581	623	674	$0	$0
MINING, LIMESTONE	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	5,398	5,423	5,498	5,694	5,587	5,480	$603	$54

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
MINING, LIMESTONE	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	310	496	691	724	756	800	$0	$0
MINING, MCLENNAN	G	BRAZOS RIVER ALLUVIUM DEVELOPMENT	G | BRAZOS RIVER ALLUVIUM AQUIFER | MCLENNAN COUNTY	1,800	1,800	1,800	2,500	2,500	2,900	$364	$244
MINING, MCLENNAN	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	76	150	214	246	268	295	$0	$0
MINING, MCLENNAN	G	REUSE- WMARSS FLAT CREEK	G | DIRECT REUSE	811	811	811	811	811	811	$205	$105
MINING, NOLAN	G	EDWARDS AQUIFER DEVELOPMENT	G | EDWARDS-TRINITY-PLATEAU AQUIFER | NOLAN COUNTY	220	220	220	220	220	220	$1018	$86
MINING, NOLAN	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	7	11	14	12	11	10	$0	$0
MINING, ROBERTSON	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	0	588	964	1,136	1,345	1,606	N/A	$0
MINING, SHACKELFORD	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	17	37	39	31	23	17	$0	$0
MINING, SHACKELFORD	G	OTHER AQUIFER DEVELOPMENT	G | OTHER AQUIFER | SHACKELFORD COUNTY	710	710	710	710	710	710	$1044	$85
MINING, SOMERVELL	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	33	64	80	74	70	68	$0	$0
MINING, SOMERVELL	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | SOMERVELL COUNTY	550	550	550	550	550	550	$583	$50
MINING, STEPHENS	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	152	257	312	268	228	194	$0	$0
MINING, STONEWALL	G	BLAINE AQUIFER DEVELOPMENT	G | BLAINE AQUIFER | STONEWALL COUNTY	400	400	400	400	400	400	$790	$68
MINING, STONEWALL	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	18	29	36	31	27	24	$0	$0
MINING, TAYLOR	G	CEDAR RIDGE RESERVOIR	G | CEDAR RIDGE LAKE/RESERVOIR	379	371	340	322	306	293	$100	$100
MINING, TAYLOR	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	12	20	26	24	23	22	$0	$0
MINING, THROCKMORTON	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	6	10	12	11	9	8	$0	$0
MINING, THROCKMORTON	G	OTHER AQUIFER DEVELOPMENT	G | OTHER AQUIFER | THROCKMORTON COUNTY	200	200	200	200	200	200	$1072	$87
MINING, WASHINGTON	G	GULF COAST AQUIFER DEVELOPMENT	G | GULF COAST AQUIFER | WASHINGTON COUNTY	552	823	654	500	347	246	$695	$58
MINING, WASHINGTON	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	17	43	49	38	26	18	$0	$0
MINING, WILLIAMSON	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	155	312	515	599	685	783	$0	$0
MINING, YOUNG	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	6	14	14	11	7	5	$0	$0
MINING, YOUNG	G	OTHER AQUIFER DEVELOPMENT	G | OTHER AQUIFER | YOUNG COUNTY	270	270	260	260	260	260	$1084	$85
MULTI-COUNTY WSC	G	CORYELL COUNTY OCR	G | CORYELL COUNTY OFF-CHANNEL LAKE/RESERVOIR	0	300	300	300	300	300	N/A	$435
MULTI-COUNTY WSC	G	HAMILTON REDUCTION TO MULTI WSC	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	100	100	0	0	0	0	$250	N/A
MUNDAY	G	MILLERS CREEK AUGMENTATION	G | MILLERS CREEK LAKE/RESERVOIR	74	107	140	173	205	238	$0	$0
MUNDAY	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	8	26	36	37	36	37	$496	$496
NAVASOTA	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	55	158	238	229	231	235	$470	$470

Recommended Water User Group (WUG) Water Management Strategies (WMS)

Water Management Strategy Supplies

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	2020	2030	2040	2050	2060	2070	Unit Cost 2020	Un[illegible] C[illegible] 20[illegible]
NOLANVILLE	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	5	14	65	77	97	N/A	$0
NOLANVILLE	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	67	224	444	721	884	1,003	$470	$470
NOLANVILLE	G	VOLUNTARY REDISTRIBUTION OF BELL COUNTY WCID#1 SUPPLY	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	5	215	401	544	798	1,088	$186	$186
NORTH BOSQUE WSC	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	33	99	183	280	390	452	$470	$470
NORTH BOSQUE WSC	G	TRINITY - MCLENNAN COUNTY ASR	G | TRINITY AQUIFER ASR | MCLENNAN COUNTY	0	200	200	200	200	200	N/A	$1405
NORTH CENTRAL TEXAS MUNICIPAL WATER AUTHORITY - UNASSIGNED WATER VOLUMES	G	MILLERS CREEK AUGMENTATION	G | MILLERS CREEK LAKE/RESERVOIR	2,025	1,848	1,670	1,494	1,319	1,140	$2958	$384
PALO PINTO COUNTY MWD #1 - UNASSIGNED WATER VOLUMES	G	TURKEY PEAK RESERVOIR	G | TURKEY PEAK LAKE/RESERVOIR	5,606	5,708	5,801	5,840	5,878	5,912	$749	$73
PARKER WSC	G	WOODBINE AQUIFER DEVELOPMENT	G | WOODBINE AQUIFER | JOHNSON COUNTY	0	0	0	0	180	180	N/A	$737
POSSUM KINGDOM WSC	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	53	126	198	271	342	410	$496	$496
POTOSI WSC	G	CEDAR RIDGE RESERVOIR	G | CEDAR RIDGE LAKE/RESERVOIR	466	485	500	515	529	542	$100	$[illegible]
RANGER	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	15	46	39	37	36	36	$496	$496
RIESEL	G	RMS WSC REDUCTION FOR RIESEL	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	20	20	20	20	20	20	$977	$977
RIO VISTA	G	WOODBINE AQUIFER DEVELOPMENT	G | WOODBINE AQUIFER | JOHNSON COUNTY	0	0	0	0	1,179	1,179	N/A	$75
ROBINSON	G	INCREASE WTP CAPACITY-ROBINSON	G | BRAZOS RUN-OF-RIVER	0	2,240	2,240	2,240	2,240	2,240	N/A	$420
ROBINSON	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	91	316	507	549	605	663	$470	$470
ROBY	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	5	13	14	13	12	12	$496	$496
ROCKDALE	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	43	128	198	195	200	207	$496	$496
ROTAN	F	SUBORDINATION - CRMWD SYSTEM	F | COLORADO RIVER MWD LAKE/RESERVOIR SYSTEM	89	50	60	67	76	84	$0	$0
ROUND ROCK	G	ADDITIONAL ADVANCED CONSERVATION	DEMAND REDUCTION	0	0	1,060	2,825	5,310	8,446	N/A	$474
ROUND ROCK	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	122	361	1,626	1,943	2,443	N/A	$0
ROUND ROCK	G	BRUSHY CREEK RUA-EXISTING CONTRACTS	K | HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	24,400	24,400	24,400	24,400	24,400	24,400	$976	$976
ROUND ROCK	G	LITTLE RIVER OCR	G | LITTLE RIVER OFF-CHANNEL LAKE/RESERVOIR	0	0	0	0	3,300	10,800	N/A	$1[illegible]
ROUND ROCK	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	520	119	0	0	0	0	$470	N/A
ROUND ROCK	K	DROUGHT MANAGEMENT	DEMAND REDUCTION	19	21	24	26	29	31	$50	$50

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
ROUND ROCK	K	MUNICIPAL CONSERVATION - ROUND ROCK	DEMAND REDUCTION	13	11	10	8	9	10	$395	$395
RULE	G	MILLERS CREEK AUGMENTATION	G | MILLERS CREEK LAKE/RESERVOIR	12	18	23	29	34	40	$0	$0
SALADO WSC	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	97	255	431	624	830	1,044	$470	$470
SNOOK	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	11	26	42	59	76	91	$496	$496
SOMERVILLE	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	8	26	23	23	23	24	$470	$470
SOUTHWEST MILAM WSC	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	33	1	0	0	0	0	$496	N/A
STAMFORD	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	40	105	172	246	316	344	$470	$470
STEAM ELECTRIC POWER, BELL	G	REUSE- TEMPLE	G | DIRECT REUSE	8,407	8,407	8,407	8,407	8,407	9,707	$138	$138
STEAM ELECTRIC POWER, BOSQUE	G	BRA SYSTEM OPERATION MAIN STEM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	500	1,670	3,240	5,130	7,350	N/A	$66
STEAM ELECTRIC POWER, BOSQUE	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	0	362	596	705	837	995	N/A	$0
STEAM ELECTRIC POWER, BRAZOS	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	15	20	32	22	28	27	$0	$0
STEAM ELECTRIC POWER, BRAZOS	G	REUSE- BRYAN (OPTION 1)	G | DIRECT REUSE	256	131	165	27	114	94	$1547	$304
STEAM ELECTRIC POWER, GRIMES	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | GRIMES COUNTY	343	343	343	343	343	343	$2971	$1023
STEAM ELECTRIC POWER, GRIMES	G	GIBBONS CREEK RESERVOIR EXPANSION	G | GIBBONS CREEK LAKE/RESERVOIR	2,605	2,605	2,605	2,605	2,605	2,605	$359	$48
STEAM ELECTRIC POWER, GRIMES	G	GULF COAST AQUIFER DEVELOPMENT	G | GULF COAST AQUIFER | GRIMES COUNTY	6,236	6,236	6,236	6,236	6,236	6,236	$423	$144
STEAM ELECTRIC POWER, GRIMES	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	953	1,658	2,426	2,566	2,776	3,003	$0	$0
STEAM ELECTRIC POWER, GRIMES	G	REUSE- BRYAN	G | DIRECT REUSE	766	1,156	1,564	2,538	3,976	5,528	$304	$304
STEAM ELECTRIC POWER, GRIMES	G	REUSE- COLLEGE STATION	G | DIRECT REUSE	766	1,156	1,564	2,538	3,976	5,528	$304	$304
STEAM ELECTRIC POWER, JOHNSON	G	BRA SYSTEM OPERATION MAIN STEM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	3,415	3,275	3,135	3,135	3,135	3,135	$926	$473
STEAM ELECTRIC POWER, JOHNSON	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	210	350	490	490	490	490	$0	$0
STEAM ELECTRIC POWER, JOHNSON	G	LAKE AQUILLA AUGMENTATION - A (SURPLUS)	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	3,415	3,275	3,135	3,135	3,135	3,135	$926	$473
STEAM ELECTRIC POWER, LIMESTONE	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	0	1,321	2,176	2,573	3,058	3,642	N/A	$0
STEAM ELECTRIC POWER, LIMESTONE	G	MCLENNAN CO. SE REDUCTION TO LIMESTONE CO. SE	G | DIRECT REUSE	0	2,730	6,842	10,000	10,000	10,000	N/A	$250
STEAM ELECTRIC POWER, LIMESTONE	G	MCLENNAN CO. SE REDUCTION TO LIMESTONE CO. SE	G | LAKE CREEK LAKE/RESERVOIR	0	0	0	2,430	7,963	7,129	N/A	$250
STEAM ELECTRIC POWER, LIMESTONE	G	REDUCE DEMAND THROUGH ALTERNATIVE COOLING	DEMAND REDUCTION	0	0	0	0	1,213	10,121	N/A	$0
STEAM ELECTRIC POWER, MILAM	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	0	1,601	2,869	2,869	2,869	2,869	N/A	$0
STEAM ELECTRIC POWER, MILAM	G	LITTLE RIVER OCR	G | LITTLE RIVER OFF-CHANNEL LAKE/RESERVOIR	0	0	0	4,353	4,000	4,000	N/A	$710
STEAM ELECTRIC POWER, NOLAN	G	CEDAR RIDGE RESERVOIR	G | CEDAR RIDGE LAKE/RESERVOIR	0	9,999	9,298	7,901	6,602	5,383	N/A	$100

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	U[illegible] C[illegible] 2[illegible]
STEAM ELECTRIC POWER, NOLAN	G	JONES COUNTY REALLOCATION TO NOLAN COUNTY SE	G | HUBBARD CREEK LAKE/RESERVOIR	7,914	11,543	11,441	11,473	11,353	11,319	$250	$250
STEAM ELECTRIC POWER, NOLAN	G	REDUCE DEMAND THROUGH ALTERNATIVE COOLING	DEMAND REDUCTION	5,612	5,612	5,612	5,612	5,961	7,214	$0	$0
STEAM ELECTRIC POWER, ROBERTSON	G	BRA SYSTEM OPERATION MAIN STEM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	0	0	2,000	4,000	6,000	N/A	$66
STEAM ELECTRIC POWER, ROBERTSON	G	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION	0	0	2,486	3,289	3,439	3,597	N/A	$0
STEAM ELECTRIC POWER, ROBERTSON	G	PURCHASE FROM WALNUT CREEK MINE-REUSE	G | DIRECT REUSE	0	0	0	9,000	9,000	9,000	N/A	$500
STEAM ELECTRIC POWER, SOMERVELL	G	BRA SYSTEM OPERATION MAIN STEM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	76,120	76,120	76,120	76,120	76,120	76,120	$285	$160
STEAM ELECTRIC POWER, SOMERVELL	G	HOOD COUNTY SE REALLOCATION TO SOMERVELL COUNTY SE	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	27,133	27,133	27,133	27,133	27,133	27,133	$0	$0
STEAM ELECTRIC POWER, SOMERVELL	G	SOMERVELL COUNTY WSP	G | BRAZOS RUN-OF-RIVER	300	300	484	484	484	484	$1059	$3493
STEAMBOAT MOUNTAIN WSC	G	CEDAR RIDGE RESERVOIR	G | CEDAR RIDGE LAKE/RESERVOIR	182	185	189	194	203	210	$100	$100
STEPHENS REGIONAL SUD	G	BRA SYSTEM OPERATION MAIN STEM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	400	400	400	400	400	400	$2492	$1228
STRAWN	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	5	16	22	22	22	22	$496	$496
SWEETWATER	G	CEDAR RIDGE RESERVOIR	G | CEDAR RIDGE LAKE/RESERVOIR	574	806	969	1,187	1,394	1,576	$815	$201
SWEETWATER	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	39	0	0	0	0	0	$496	N/A
SWEETWATER	G	OAK CREEK RESERVOIR-CONJUNCTIVE USE	F | OAK CREEK LAKE/RESERVOIR	737	584	441	287	133	0	$0	N/A
TAYLOR	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	75	73	17	0	0	0	$470	N/A
TEMPLE	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	3,080	4,262	3,994	314	2,447	2,245	$0	$0
TEMPLE	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	914	2,740	5,015	7,724	10,771	11,850	$474	$474
TEMPLE	G	TRINITY - WILLIAMSON COUNTY ASR	G | TRINITY AQUIFER ASR | WILLIAMSON COUNTY	4,761	3,759	3,323	7,727	5,730	4,504	$0	$0
TEXAS A & M UNIVERSITY	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	416	942	1,418	1,869	2,289	2,670	$470	$470
THROCKMORTON	G	BRA SYSTEM OPERATION MAIN STEM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	193	193	193	193	193	193	$2492	$1228
THROCKMORTON	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	8	20	32	45	44	44	$474	$474
THROCKMORTON	G	THROCKMORTON OCR	G | THROCKMORTON LAKE/RESERVOIR	1,125	1,125	1,125	1,125	1,125	1,125	$1760	$207
TOLAR	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | HOOD COUNTY	0	0	0	12	12	24	N/A	$[illegible]
TRI-COUNTY SUD	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | LIMESTONE COUNTY	202	202	202	202	202	202	$1329	$729
TYE	G	CEDAR RIDGE RESERVOIR	G | CEDAR RIDGE LAKE/RESERVOIR	2	4	6	9	13	15	$100	$100

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
UPPER LEON MWD - UNASSIGNED WATER VOLUMES	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,457	1,896	1,940	2,173	2,231	2,323	$0	$0
UPPER LEON MWD - UNASSIGNED WATER VOLUMES	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | COMANCHE COUNTY	2,040	2,040	2,040	2,040	2,040	2,040	$319	$100
VALLEY MILLS	G	BOSQUE COUNTY REGIONAL PROJECT	G | CLIFTON LAKE/RESERVOIR	182	182	182	182	182	182	$2126	$236
VALLEY MILLS	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	10	31	48	47	48	48	$474	$474
VENUS	C	CONSERVATION - VENUS	DEMAND REDUCTION	0	0	1	1	2	2	N/A	$738
VENUS	C	CONSERVATION, WATER LOSS CONTROL - VENUS	DEMAND REDUCTION	0	0	0	0	0	0	N/A	N/A
VENUS	C	MIDLOTHIAN UNALLOCATED SUPPLY UTILIZATION	C | TRWD LAKE/RESERVOIR SYSTEM	160	198	232	255	273	281	$0	$0
VENUS	C	SULPHUR BASIN SUPPLY	D | MARVIN NICHOLS LAKE/RESERVOIR	0	0	0	0	0	193	N/A	$1131
VENUS	C	SULPHUR BASIN SUPPLY	D | WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	24	49	65	N/A	$1131
VENUS	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRINITY INDIRECT REUSE	0	12	22	18	23	18	N/A	$239
VENUS	C	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	C | TRWD LAKE/RESERVOIR SYSTEM	0	3	6	6	8	24	N/A	$239
VENUS	C	TRWD - CEDAR CREEK WETLANDS	C | TRINITY INDIRECT REUSE	0	31	62	104	89	81	N/A	$114
VENUS	C	TRWD - TEHUACANA	C | TEHUACANA LAKE/RESERVOIR	0	0	29	56	29	38	N/A	$149
VENUS	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	30	90	115	127	140	156	$470	$470
VENUS	I	UNM-ROR-NECHES RUN OF RIVER	I | NECHES RUN-OF-RIVER	0	0	0	0	109	0	N/A	N/A
WACO	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	1,462	4,033	6,781	9,781	11,940	12,554	$474	$474
WACO	G	REUSE- WMARSS BELLMEAD/ LACY-LAKEVIEW	G | DIRECT REUSE	0	0	0	0	0	0	N/A	N/A
WACO	G	TRINITY - MCLENNAN COUNTY ASR	G | TRINITY AQUIFER ASR | MCLENNAN COUNTY	7,750	7,550	7,550	7,400	7,400	7,400	$677	$218
WACO - UNASSIGNED WATER VOLUMES	G	REUSE- WMARSS FLAT CREEK	G | DIRECT REUSE	7,847	7,847	7,847	7,847	7,847	7,847	$205	$105
WALNUT SPRINGS	G	BOSQUE COUNTY REGIONAL PROJECT	G | CLIFTON LAKE/RESERVOIR	64	64	64	64	64	64	$5344	$547
WELLBORN SUD	G	BRA SYSTEM OPERATION MAIN STEM	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	0	2,240	2,240	2,240	2,240	N/A	$2240
WELLBORN SUD	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	78	279	508	563	633	713	$474	$474
WEST	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	15	23	13	7	6	6	$470	$470
WEST BRAZOS WSC	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | FALLS COUNTY	202	202	202	202	202	216	$1446	$319
WHITE BLUFF COMMUNITY WS	G	MUNICIPAL WATER CONSERVATION (RURAL)	DEMAND REDUCTION	24	63	103	125	128	132	$474	$474
WHITNEY	G	MUNICIPAL WATER CONSERVATION (URBAN)	DEMAND REDUCTION	17	50	70	68	69	71	$474	$474
WILLIAMSON COUNTY MUD #10	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	61	181	352	489	587	688	$470	$470
WILLIAMSON COUNTY MUD #11	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	35	103	193	233	278	326	$470	$470

Recommended Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
WILLIAMSON COUNTY MUD #9	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	37	128	263	319	382	448	$470	$470
WILLIAMSON-TRAVIS COUNTY MUD #1	K	DROUGHT MANAGEMENT	DEMAND REDUCTION	23	22	22	22	22	22	$50	$50
WOODWAY	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	7	20	57	74	103	N/A	$500
WOODWAY	G	MUNICIPAL WATER CONSERVATION (SUBURBAN)	DEMAND REDUCTION	208	512	832	1,180	1,541	1,906	$470	$470
Region G Total RecommendedWMS Supplies				434,239	534,111	558,364	614,106	657,541	705,820		

Recommended Projects Associated with Water Management Strategies

Project Sponosr Region: G

Sponsor Name	Is Sponsor a WWP?	Project Name	Project Description	Capital Cost	Online Decade
ABILENE	Y	BRUSH CONTROL	BRUSH CONTROL CAPITAL COST	$7,532,000	2020
ABILENE	Y	CEDAR RIDGE RESERVOIR	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$290,868,000	2020
ABILENE	Y	WTP EXPANSION (23.2 MGD)-ABILENE	WATER TREATMENT PLANT EXPANSION	$48,257,000	2020
AQUILLA WSD	Y	LAKE AQUILLA AUGMENTATION-A	CONVEYANCE/TRANSMISSION PIPELINE; INJECTION WELL; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT; PUMP STATION; STORAGE TANK	$5,714,856	2020
BARTLETT	N	TRINITY AQUIFER DEVELOPMENT- BARTLETT	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$10,428,000	2020
BELL COUNTY WCID #1	Y	BELL COUNTY WCID #1- NORTH REUSE	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK	$12,146,000	2020
BELL COUNTY WCID #1	Y	BELL COUNTY WCID #1- SOUTH REUSE	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; NEW WATER TREATMENT PLANT	$6,529,000	2020
BELLMEAD	N	REUSE- BELLMEAD/ LACY-LAKE	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$2,884,000	2020
BELL-MILAM FALLS WSC	N	EAST WILLIAMSON COUNTY WATER PROJECT	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; STORAGE TANK	$2,808,467	2020
BISTONE MWSD	Y	CARRIZO (BRAZOS) DEVELOPMENT-BISTONE MWSD	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$22,689,000	2020
BRAZOS RIVER AUTHORITY	Y	BELTON TO STILLHOUSE PIPELINE-BRA	CONVEYANCE/TRANSMISSION PIPELINE; DIVERSION AND CONTROL STRUCTURE; NEW SURFACE WATER INTAKE	$38,069,000	2020
BRAZOS RIVER AUTHORITY	Y	BRA SYSTEM OPERATION-MAIN STEM	NEW AGREEMENT	$23,581,674	2020
BRAZOS RIVER AUTHORITY	Y	BRA SYSTEM OPERATIONS-LITTLE RIVER	NEW WATER RIGHT/PERMIT	$23,581,674	2050
BRAZOS RIVER AUTHORITY	Y	CHLORIDE CONTROL PROJECT-BRA	INJECTION WELL; NEW WATER TREATMENT PLANT	$172,652,000	2020
BRAZOS RIVER AUTHORITY	Y	LAKE AQUILLA REALLOCATION- BRA	RAISE CONSERVATION POOL	$21,887,000	2020
BRAZOS RIVER AUTHORITY	Y	LAKE GRANGER ASR	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$99,820,000	2020
BRAZOS RIVER AUTHORITY	Y	LAKE GRANGER AUGMENTATION-PHASE 1-BRA	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; PUMP STATION; WATER TREATMENT PLANT EXPANSION	$85,170,000	2020
BRAZOS RIVER AUTHORITY	Y	LAKE GRANGER AUGMENTATION-PHASE 2-BRA	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$637,057,000	2020
BRAZOS RIVER AUTHORITY	Y	LITTLE RIVER OCR-BRA	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION	$487,611,000	2030
BRECKENRIDGE	N	WEST CENTRAL BRAZOS WATER DISTRIBUTION SYSTEM	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT	$8,308,142	2020
BRUSHY CREEK MUD	N	EDWARDS AQUIFER DEVELOPMENT-BRUSHY CREEK MUD	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$182,000	2050
BRYAN	Y	BRYAN ASR (CARRIZO-WILCOX)	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT; PUMP STATION	$57,328,000	2020
BRYAN	Y	CARRIZO-WILCOX DEVELOPMENT-BRYAN	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; PUMP STATION; WATER TREATMENT PLANT EXPANSION	$24,569,609	2020
BRYAN	Y	REUSE- BRYAN (OPTION 1)	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$8,989,000	2020
BRYAN	Y	REUSE- MIRAMONT	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$2,544,000	2020
CEDAR PARK	Y	BRUSHY CREEK RUA WATER SUPPLY	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; NEW WATER TREATMENT PLANT	$69,665,771	2020

Recommended Projects Associated with Water Management Strategies

Sponsor Name	Is Sponsor a WWP?	Project Name	Project Description	Capital Cost	Online Decade
CENTRAL TEXAS WSC	Y	EAST WILLIAMSON COUNTY WATER PROJECT	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; STORAGE TANK	$11,233,867	2020
CHILDRESS CREEK WSC	N	BOSQUE COUNTY-RWSP	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$5,074,000	2020
CHILDRESS CREEK WSC	N	TRINITY WELL REHAB-CHILDRESS CREEK WSC	DEEPEN WELL	$15,000	2050
CHISHOLM TRAIL SUD	N	CHISHOLM TRAIL SUD WTP EXPANSION	NEW WATER TREATMENT PLANT	$31,675,000	2020
CLEBURNE	Y	LAKE AQUILLA AUGMENTATION-A	CONVEYANCE/TRANSMISSION PIPELINE; INJECTION WELL; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT; PUMP STATION; STORAGE TANK	$73,912,144	2020
CLEBURNE	Y	REUSE- CLEBURNE	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$14,059,000	2020
CLIFTON	N	BOSQUE COUNTY-RWSP	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$5,135,000	2020
COLLEGE STATION	N	COLLEGE STATION ASR (REUSE)	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT; PUMP STATION	$63,850,000	2020
COLLEGE STATION	N	REUSE-COLLEGE STATION	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$1,705,000	2020
COLLEGE STATION	N	YEGUA-JACKSON DEVELOPMENT-COLLEGE STATION	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$32,957,000	2020
COUNTY-OTHER, BELL	N	EDWARDS AQUIFER DEVELOPMENT-BELL COUNTY OTHER	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$3,736,000	2040
COUNTY-OTHER, COMANCHE	N	TRINITY AQUIFER DEVELOPMENT- COMANCHE COUNTY-OTHER	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$2,033,000	2020
COUNTY-OTHER, CORYELL	N	TRINITY AQUIFER DEVELOPMENT- CORYELL COUNTY-OTHER	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$4,428,000	2050
COUNTY-OTHER, ERATH	N	TRINITY AQUIFER DEVELOPMENT- ERATH COUNTY-OTHER	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$2,195,000	2060
COUNTY-OTHER, FALLS	N	UPGRADE WTP FOR ARSENIC-FALLS COUNTY-OTHER	WATER TREATMENT PLANT EXPANSION	$220,000	2020
COUNTY-OTHER, HILL	N	UPGRADE WTP FOR ARSENIC-HILL COUNTY-OTHER	WATER TREATMENT PLANT EXPANSION	$1,042,000	2020
COUNTY-OTHER, HOOD	N	TRINITY AQUIFER DEVELOPMENT- HOOD COUNTY-OTHER	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$6,164,000	2020
COUNTY-OTHER, LIMESTONE	N	UPGRADE WTP FOR ARSENIC-LIMESTONE COUNTY-OTHER	WATER TREATMENT PLANT EXPANSION	$1,115,000	2020
COUNTY-OTHER, MCLENNAN	N	UPGRADE WTP FOR ARSENIC-MCLENNAN COUNTY OTHER	WATER TREATMENT PLANT EXPANSION	$3,811,000	2020
COUNTY-OTHER, ROBERTSON	N	CARRIZO AQUIFER DEVELOPMENT-ROBERTSON COUNTY-OTHER	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$825,000	2070
COUNTY-OTHER, SHACKELFORD	N	WEST CENTRAL BRAZOS WATER DISTRIBUTION SYSTEM	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT	$3,776,429	2020
COUNTY-OTHER, SOMERVELL	N	SOMERVELLE COUNTY WATER SUPPLY PROJECTS PHASES 1-4, 7A, 9-17	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$35,249,000	2020
COUNTY-OTHER, WILLIAMSON	N	EAST WILLIAMSON COUNTY WATER PROJECT	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; STORAGE TANK	$11,534,774	2020
CRESSON	N	TRINITY AQUIFER DEVELOPMENT- CRESSON	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$771,000	2040
CROSS COUNTRY WSC	N	INTERCONNECT FROM WACO TO CROSS COUNTRY WSC	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; NEW SURFACE WATER INTAKE	$2,579,000	2050
FLORENCE	N	EDWARDS AQUIFER DEVELOPMENT-FLORENCE	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$218,000	2060
FLORENCE	N	TRINITY AQUIFER DEVELOPMENT (BELL CO.)-FLORENCE	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$3,778,000	2020
GEORGETOWN	N	EXPAND WTP (21 MGD)- GEORGETOWN	WATER TREATMENT PLANT EXPANSION	$44,534,000	2030
GODLEY	N	WOODBINE AQUIFER DEVELOPMENT-GODLEY	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$375,000	2060

Recommended Projects Associated with Water Management Strategies

Sponsor Name	Is Sponsor a WWP?	Project Name	Project Description	Capital Cost	Online Decade
GRANGER	N	EAST WILLIAMSON COUNTY WATER PROJECT	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; STORAGE TANK	$1,003,024	2020
GROESBECK	N	GROESBECK OCR- GROESBECK	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION	$11,909,000	2020
HARKER HEIGHTS	N	INTERCONNECT FROM KILLEEN TO HARKER HEIGHTS	CONVEYANCE/TRANSMISSION PIPELINE; STORAGE TANK; PUMP STATION	$2,580,000	2070
HEART OF TEXAS WATER SUPPLIERS LLC	Y	CARRIZO AQUIFER DEVELOPMENT-HUTTO (HEART OF TEXAS-LEE CO.)	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT; PUMP STATION	$127,086,000	2020
HEWITT	N	REUSE- BULLHIDE CREEK	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$4,657,000	2020
IRRIGATION, BELL	N	EDWARDS AQUIFER DEVELOPMENT-BELL COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$13,384,000	2020
IRRIGATION, BELL	N	TRINITY AQUIFER DEVELOPMENT-BELL COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$2,541,000	2070
IRRIGATION, BOSQUE	N	TRINITY AQUIFER DEVELOPMENT-BOSQUE COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$11,048,000	2020
IRRIGATION, COMANCHE	N	TRINITY AQUIFER DEVELOPMENT- COMANCHE COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$11,015,000	2050
IRRIGATION, EASTLAND	N	TRINITY AQUIFER DEVELOPMENT- EASTLAND COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$24,210,000	2020
IRRIGATION, HAMILTON	N	TRINITY AQUIFER DEVELOPMENT- HAMILTON COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$1,173,000	2020
IRRIGATION, KNOX	N	3LAINE AQUIFER DEVELOPMENT- KNOX COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$2,436,000	2020
IRRIGATION, KNOX	N	SEYMOUR AQUIFER DEVELOPMENT- KNOX COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$9,817,000	2020
IRRIGATION, LAMPASAS	N	TRINITY AQUIFER DEVELOPMENT- LAMPASAS COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$3,049,000	2020
IRRIGATION, MCLENNAN	N	BRAZOS RIVER ALLUVIUM DEVELOPMENT-MCLENNAN COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$16,763,000	2020
IRRIGATION, ROBERTSON	N	CARRIZO AQUIFER DEVELOPMENT-ROBERTSON COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$128,018,000	2020
IRRIGATION, STEPHENS	N	OTHER AQUIFER DEVELOPMENT-STEPHENS IRRIGATION	MULTIPLE WELLS/WELL FIELD	$640,000	2020
IRRIGATION, WILLIAMSON	N	EDWARDS AQUIFER DEVELOPMENT-WILLIAMSON IRRIGATION	MULTIPLE WELLS/WELL FIELD	$1,220,000	2020
IRRIGATION, YOUNG	N	OTHER AQUIFER DEVELOPMENT-YOUNG IRRIGATION	MULTIPLE WELLS/WELL FIELD	$1,172,000	2020
JARRELL	N	EAST WILLIAMSON COUNTY WATER PROJECT	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; STORAGE TANK	$501,512	2020
JAYTON	N	NEW WTP(0.4 MGD)-JAYTON	WATER TREATMENT PLANT EXPANSION	$3,537,000	2020
JONAH WATER SUD	N	EAST WILLIAMSON COUNTY WATER PROJECT	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; STORAGE TANK	$15,045,357	2020
LACY-LAKEVIEW	N	REUSE- BELLMEAD/ LACY-LAKE	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$2,884,000	2020
LEANDER	N	BRUSHY CREEK RUA WATER SUPPLY	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; NEW WATER TREATMENT PLANT	$142,186,421	2020
LIBERTY HILL	N	BRUSHY CREEK RUA WATER SUPPLY	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; NEW WATER TREATMENT PLANT	$3,554,660	2020
LORENA	N	REUSE- BULLHIDE CREEK	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$2,884,000	2020
MANUFACTURING, BRAZOS	N	GULF COAST DEVELOPMENT-BRAZOS COUNTY MANUFACTURING	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$8,932,000	2020
MANUFACTURING, BURLESON	N	SPARTA AQUIFER DEVELOPMENT-BURLESON COUNTY MANUFACTURING	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$932,000	2020
MANUFACTURING, FISHER	N	DOCKUM AQUIFER DEVELOPMENT- FISHER COUNTY MANUFACTURING	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$10,081,000	2020
MANUFACTURING, WASHINGTON	N	GULF COAST DEVELOPMENT-WASHINGTON MININGMANUFACTURING	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$3,380,000	2020

Recommended Projects Associated with Water Management Strategies

Sponsor Name	Is Sponsor a WWP?	Project Name	Project Description	Capital Cost	Online Decade
MARLIN	N	BRUSHY CREEK RESERVOIR- MARLIN	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK	$20,836,000	2020
MART	N	INTERCONNECT FROM WACO TO MART	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; NEW SURFACE WATER INTAKE	$5,617,000	2020
MART	N	INTERCONNECT FROM WACO TO NORTH BOSQUE	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; NEW SURFACE WATER INTAKE	$2,203,000	2030
MERIDIAN	N	BOSQUE COUNTY-RWSP	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$3,220,000	2020
MINING, BELL	N	EDWARDS AQUIFER DEVELOPMENT-BELL COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$13,846,000	2020
MINING, BELL	N	TRINITY AQUIFER DEVELOPMENT-BELL COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$14,731,000	2020
MINING, BURLESON	N	SPARTA AQUIFER DEVELOPMENT-BURLESON COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$5,466,000	2020
MINING, CALLAHAN	N	TRINITY AQUIFER DEVELOPMENT CALLAHAN MINING	MULTIPLE WELLS/WELL FIELD	$1,695,000	2020
MINING, COMANCHE	N	TRINITY AQUIFER DEVELOPMENT- COMANCHE COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$4,475,000	2020
MINING, CORYELL	N	TRINITY AQUIFER DEVELOPMENT- CORYELL COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$20,220,000	2020
MINING, EASTLAND	N	TRINITY AQUIFER DEVELOPMENT- EASTLAND COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$8,202,000	2020
MINING, FISHER	N	DOCKUM AQUIFER DEVELOPMENT- FISHER COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$3,035,000	2020
MINING, GRIMES	N	CARRIZO AQUIFER DEVELOPMENT-GRIMES COUNTY MINING	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$5,805,000	2020
MINING, HAMILTON	N	TRINITY AQUIFER DEVELOPMENT HAMILTON MINING	MULTIPLE WELLS/WELL FIELD	$2,734,000	2020
MINING, HILL	N	WOODBINE AQUIFER DEVELOPMENT- HILL COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$4,684,000	2020
MINING, HOOD	N	TRINITY AQUIFER DEVELOPMENT- HOOD COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$6,197,000	2020
MINING, JOHNSON	N	WOODBINE AQUIFER DEVELOPMENT- JOHNSON COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$4,684,000	2020
MINING, KNOX	N	3LAINE AQUIFER DEVELOPMENT- KNOX COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$223,000	2020
MINING, LAMPASAS	N	TRINITY AQUIFER DEVELOPMENT- LAMPASAS COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$2,219,000	2020
MINING, LIMESTONE	N	CARRIZO (BRAZOS) DEVELOPMENT-LIMESTONE COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$31,546,000	2020
MINING, LIMESTONE	N	CARRIZO (TRINITY) DEVELOPMENT-LIMESTONE COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$5,871,000	2020
MINING, MCLENNAN	N	BRAZOS RIVER ALLUVIUM DEVELOPMENT- MCLENNAN COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$7,185,000	2020
MINING, NOLAN	N	EDWARDS AQUIFER DEVELOPMENT-NOLAN COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$2,448,000	2020
MINING, SHACKELFORD	N	OTHER AQUIFER DEVELOPMENT-SHACKELFORD MINING	MULTIPLE WELLS/WELL FIELD	$8,095,000	2020
MINING, SOMERVELL	N	TRINITY AQUIFER DEVELOPMENT- SOMERVELL COUNTY MINING	MULTIPLE WELLS/WELL FIELD	$3,502,000	2020
MINING, STONEWALL	N	BLAINE AQUIFER DEVELOPMENT- STONEWALL MINING	MULTIPLE WELLS/WELL FIELD	$3,434,000	2020
MINING, THROCKMORTON	N	OTHER AQUIFER DEVELOPMENT- THROCKMORTON MINING	MULTIPLE WELLS/WELL FIELD	$2,344,000	2020
MINING, WASHINGTON	N	GULF COAST DEVELOPMENT-WASHINGTON MINING	MULTIPLE WELLS/WELL FIELD	$6,245,000	2020
MINING, YOUNG	N	OTHER AQUIFER DEVELOPMENT-YOUNG MINING	MULTIPLE WELLS/WELL FIELD	$3,089,000	2020
MULTI-COUNTY WSC	N	CORYELL COUNTY OCR-BRA	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION	$42,246,000	2030
NORTH BOSQUE WSC	N	INTERCONNECT FROM WACO TO NORTH BOSQUE	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK; NEW SURFACE WATER INTAKE	$2,203,000	2030

Recommended Projects Associated with Water Management Strategies

Sponsor Name	Is Sponsor a WWP?	Project Name	Project Description	Capital Cost	Online Decade
NORTH CENTRAL TEXAS MUNICIPAL WATER AUTHORITY	Y	MILLERS CREEK AUGMENTATION-NCTWA	RESERVOIR CONSTRUCTION	$74,399,000	2020
PALO PINTO COUNTY MWD #1	Y	TURKEY PEAK RESERVOIR	RESERVOIR CONSTRUCTION	$71,988,000	2020
PARKER WSC	N	WOODBINE AQUIFER DEVELOPMENT- PARKER WSC	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$1,128,000	2060
RIO VISTA	N	WOODBINE AQUIFER DEVELOPMENT-RIO VISTA	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$753,000	2020
ROBINSON	N	EXPAND WTP(4MGD)-ROBINSON	WATER TREATMENT PLANT EXPANSION	$13,153,000	2020
ROUND ROCK	Y	BRUSHY CREEK RUA WATER SUPPLY	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION; NEW WATER TREATMENT PLANT	$102,994,808	2020
STEAM ELECTRIC POWER, GRIMES	N	CARRIZO AQUIFER DEVELOPMENT-GRIMES COUNTY STEAM-ELECTRIC	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$8,182,000	2020
STEAM ELECTRIC POWER, GRIMES	N	GIBBONS CREEK RESERVOIR-GRIMES SE	RAISE CONSERVATION POOL	$12,979,000	2020
STEAM ELECTRIC POWER, GRIMES	N	GULF COAST DEVELOPMENT-GRIMES COUNTY STEAM-ELECTRIC	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$22,459,000	2020
STEAM ELECTRIC POWER, SOMERVELL	N	BRA SYSTEM OPS INFRASTRUCTURE-SOMERVELL SE	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; PUMP STATION	$128,162,000	2020
STEPHENS REGIONAL SUD	N	WEST CENTRAL BRAZOS WATER DISTRIBUTION SYSTEM	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT	$6,042,286	2020
SWEETWATER	Y	INTERCONNECT FROM ABILENE TO SWEETWATER	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; STORAGE TANK	$13,036,000	2020
THROCKMORTON	N	THROCKMORTON RESERVOIR-THROCKMORTON	RESERVOIR CONSTRUCTION	$28,041,000	2020
THROCKMORTON	N	WEST CENTRAL BRAZOS WATER DISTRIBUTION SYSTEM	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT	$2,915,403	2020
TOLAR	N	TRINITY WELL REHAB- TOLAR	DEEPEN WELL	$20,000	2050
TRI-COUNTY SUD	N	CARRIZO-WILCOX DEVELOPMENT-TRI-COUNTY SUD	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$1,445,000	2020
UPPER LEON MWD	Y	TRINITY AQUIFER DEVELOPMENT- UPPER LEON (FROM PECAN ORCHARD)	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$5,347,000	2020
VALLEY MILLS	N	BOSQUE COUNTY-RWSP	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$4,730,000	2020
WACO	Y	MCLENNAN COUNTY ASR (WACO)	MULTIPLE WELLS/WELL FIELD	$43,940,000	2020
WACO	Y	REUSE- FLAT CREEK	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION; STORAGE TANK	$9,371,000	2020
WALNUT SPRINGS	N	BOSQUE COUNTY-RWSP	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$4,213,000	2020
WELLBORN SUD	N	EXPAND WTP (4MGD)- WELLBORN SUD	WATER TREATMENT PLANT EXPANSION	$13,153,000	2040
WEST BRAZOS WSC	N	CARRIZO AQUIFER DEVELOPMENT-WEST BRAZOS WSC	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$2,752,000	2020

Region G Total Recommended Capital Cost	**$3,926,014,878**

***Projects with a capital cost of zero are excluded from the report list.**

Alternative Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Primary Region: G

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	Water Management Strategy Supplies 2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
ABILENE	G	POSSUM KINGDOM TO ABILENE	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	14,800	14,800	14,800	14,800	14,800	14,800	$2586	$1063
ASPERMONT	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	33	47	62	76	90	105	$0	$0
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION-PH 1	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	17,017	17,017	17,017	17,017	17,017	17,017	$0	$0
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION-PH 1	G | TRINITY AQUIFER | WILLIAMSON COUNTY	8,509	8,509	8,509	8,509	8,509	8,509	$584	$305
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION-PH 2	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	18,107	18,107	18,107	18,107	18,107	18,107	$0	$0
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE GRANGER AUGMENTATION-PH 2	G | CARRIZO-WILCOX AQUIFER | MILAM COUNTY	28,118	28,118	28,118	28,118	28,118	28,118	$1611	$458
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	SEDIMENT REDUCTION PROGRAM (LAKE LIMESTONE WATERSHED)	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	177	355	532	710	888	N/A	$167
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	STORAGE REALLOCATION OF LAKE GRANGER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,940	1,940	1,940	1,940	1,940	1,940	$1552	$314
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	STORAGE REALLOCATION OF LAKE WHITNEY	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	20,842	20,842	20,842	20,842	20,842	20,842	$361	$4
BRAZOS RIVER AUTHORITY - UNASSIGNED WATER VOLUMES	G	STORAGE REALLOCATION OF STILLHOUSE HOLLOW RESERVOIR	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	2,643	2,643	2,643	2,643	2,643	2,643	$1177	$19
BRYAN	G	CARRIZO AQUIFER DEVELOPMENT	G | CARRIZO-WILCOX AQUIFER | ROBERTSON COUNTY	3,826	3,826	4,171	5,565	11,826	19,478	$1006	$323
COLLEGE STATION	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	6,000	6,000	6,000	6,000	6,000	6,000	$1065	$547
COLLEGE STATION - UNASSIGNED WATER VOLUMES	G	DPR- COLLEGE STATION	G | DIRECT REUSE	2,800	2,800	2,800	2,800	2,800	2,800	$3484	$1805
COUNTY-OTHER, CORYELL	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	0	100	200	525	N/A	$1309
COUNTY-OTHER, HASKELL	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	53	76	100	123	146	170	$0	$0
COUNTY-OTHER, HOOD	G	ACTON MUD REDUCTION TO HOOD COUNTY-OTHER	G | BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	968	344	77	121	22	0	$977	N[illegible]
GLEN ROSE	G	SOMERVELL COUNTY WSP	G | BRAZOS RUN-OF-RIVER	0	0	0	0	50	50	N/A	$1059

Alternative Water User Group (WUG) Water Management Strategies (WMS)

WUG Entity Name	WMS Sponsor Region	WMS Name	Source Name	2020	2030	2040	2050	2060	2070	Unit Cost 2020	Unit Cost 2070
				Water Management Strategy Supplies							
HALLSBURG	G	REUSE- WMARSS WACO EAST	G | DIRECT REUSE	31	31	31	31	31	31	$869	$191
HASKELL	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	176	254	332	410	488	566	$0	$0
HUTTO	G	LITTLE RIVER OCR	G | LITTLE RIVER OFF-CHANNEL LAKE/RESERVOIR	0	378	2,181	4,001	6,215	8,499	N/A	$350
IRRIGATION, BELL	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,200	1,200	1,200	1,200	1,200	1,250	$66	$66
IRRIGATION, MCLENNAN	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	1,200	1,200	1,200	1,200	1,200	1,200	$66	$66
IRRIGATION, MCLENNAN	G	TRINITY AQUIFER DEVELOPMENT	G | TRINITY AQUIFER | MCLENNAN COUNTY	1,000	1,000	1,000	1,000	1,000	1,000	$1047	$86
IRRIGATION, PALO PINTO	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	2,494	2,392	2,299	2,260	2,222	2,188	$66	$66
JOHNSON COUNTY SUD	G	TRINITY - JOHNSON COUNTY ASR	G | TRINITY AQUIFER ASR | JOHNSON COUNTY	2,000	2,000	2,000	2,000	2,000	2,000	$1131	$640
KNOX CITY	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	72	104	136	167	199	231	$0	$0
MANUFACTURING, BELL	G	REUSE-BCWCID #1 NORTH	G | DIRECT REUSE	1,000	1,000	1,000	1,360	1,360	1,360	$765	$765
MANUFACTURING, BURLESON	G	CALDWELL REDUCTION TO BURLESON MANUFACTURING	G | CARRIZO-WILCOX AQUIFER | BURLESON COUNTY	0	50	50	50	85	85	N/A	$500
MART	G	REUSE- WMARSS WACO EAST	G | DIRECT REUSE	134	134	134	134	134	134	$869	$191
MERIDIAN	G	MERIDIAN OCR	G | MERIDIAN OFF-CHANNEL LAKE/RESERVOIR	615	615	615	615	615	615	$3961	$1220
MINING, MCLENNAN	G	BRA SYSTEM OPERATIONS-LITTLE RIVER	G | BRAZOS RIVER AUTHORITY LITTLE RIVER LAKE/RESERVOIR SYSTEM	0	0	0	1,050	1,050	1,050	N/A	$66
MUNDAY	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	74	107	140	173	205	238	$0	$0
NORTH CENTRAL TEXAS MUNICIPAL WATER AUTHORITY - UNASSIGNED WATER VOLUMES	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	13,815	13,511	13,208	12,905	12,601	12,298	$1308	$313
PALO PINTO COUNTY MWD #1 - UNASSIGNED WATER VOLUMES	G	PALO PINTO OCR	G | LAKE PALO PINTO OFF-CHANNEL LAKE/RESERVOIR	3,110	3,110	3,110	3,110	3,110	3,110	$980	$169
RIESEL	G	REUSE- WMARSS WACO EAST	G | DIRECT REUSE	43	43	43	43	43	43	$869	$191
ROUND ROCK	G	TRINITY - WILLIAMSON COUNTY ASR	G | TRINITY AQUIFER ASR | WILLIAMSON COUNTY	0	0	0	0	9,050	9,050	N/A	$368
RULE	G	LAKE CREEK RESERVOIR	G | LAKE CREEK LAKE/RESERVOIR	12	18	23	29	34	40	$0	$0
VENUS	G	WOODBINE AQUIFER DEVELOPMENT	G | WOODBINE AQUIFER | JOHNSON COUNTY	0	150	150	450	450	450	N/A	$203
WACO - UNASSIGNED WATER VOLUMES	G	REUSE- WMARSS WACO EAST	G | DIRECT REUSE	0	0	0	0	0	0	N/A	N/A
			Region G Total Alternative WMS Supplies	152,632	152,543	154,393	159,481	177,112	187,430		

Alternative Projects Associated with Water Management Strategies

Project Sponsor Region: G

Sponsor Name	Is Sponsor a WWP?	Project Name	Project Description	Capital Cost	Online Decade
ABILENE	Y	POSSUM KINGDOM RESERVOIR PURCHASE AND USE- ABILENE	CONVEYANCE/TRANSMISSION PIPELINE; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT; PUMP STATION; STORAGE TANK	$269,334,000	2020
BRAZOS RIVER AUTHORITY	Y	SEDIMENT REDUCTION PROGRAM-BRA	NEW AGREEMENT	$1,075,000	2020
BRAZOS RIVER AUTHORITY	Y	STORAGE REALLOCATION OF GRANGER-BRA	RAISE CONSERVATION POOL	$28,710,000	2020
BRAZOS RIVER AUTHORITY	Y	STORAGE REALLOCATION OF LAKE WHITNEY-BRA	RAISE CONSERVATION POOL	$89,948,000	2020
BRAZOS RIVER AUTHORITY	Y	STORAGE REALLOCATION OF STILLHOUSE HOLLOW-BRA	RAISE CONSERVATION POOL	$36,553,000	2020
BRYAN	Y	REUSE- BRYAN (OPTION 2)	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; STORAGE TANK	$24,206,000	2020
BRYAN	Y	ROBERTSON CARRIZO AQUIFER DEVELOPMENT-BRYAN	CONVEYANCE/TRANSMISSION PIPELINE; MULTIPLE WELLS/WELL FIELD; PUMP STATION; WATER TREATMENT PLANT EXPANSION	$81,595,921	2020
CLEBURNE	Y	LAKE WHITNEY TO CLEBURNE ONLY	CONVEYANCE/TRANSMISSION PIPELINE; INJECTION WELL; NEW SURFACE WATER INTAKE; NEW WATER TREATMENT PLANT; PUMP STATION; STORAGE TANK	$46,676,000	2020
COLLEGE STATION	N	BRA SYSTEM OPERATION INTERCONNECT-COLLEGE STATION	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION; STORAGE TANK; WATER TREATMENT PLANT EXPANSION	$37,109,000	2020
COLLEGE STATION	N	COLLEGE STATION - DPR	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT	$63,850,000	2020
HALLSBURG	N	REUSE- WACO EAST	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$250,970	2020
IRRIGATION, MCLENNAN	N	TRINITY AQUIFER DEVELOPMENT- MCLENNAN COUNTY IRRIGATION	MULTIPLE WELLS/WELL FIELD	$11,477,000	2020
JOHNSON COUNTY SUD	Y	JOHNSON COUNTY ASR	MULTIPLE WELLS/WELL FIELD	$11,725,000	2020
MANUFACTURING, BELL	N	EDWARDS AQUIFER DEVELOPMENT-BELL COUNTY MANUFACTURING	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$10,290,000	2020
MART	N	REUSE- WACO EAST	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$1,085,000	2020
MERIDIAN	N	MERIDIAN OCR-MERIDIAN	PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK	$21,702,000	2020
NORTH CENTRAL TEXAS MUNICIPAL WATER AUTHORITY	Y	LAKE CREEK RESERVOIR	CONVEYANCE/TRANSMISSION PIPELINE; PUMP STATION; RESERVOIR CONSTRUCTION; WATER TREATMENT PLANT EXPANSION	$193,524,000	2020
PALO PINTO COUNTY MWD #1	Y	LAKE PALO PINTO OCR	PUMP STATION; RESERVOIR CONSTRUCTION; STORAGE TANK	$34,118,000	2020
RIESEL	N	REUSE- WACO EAST	CONVEYANCE/TRANSMISSION PIPELINE; NEW WATER TREATMENT PLANT; PUMP STATION	$348,000	2020
VENUS	N	WOODBINE AQUIFER DEVELOPMENT- VENUS	MULTIPLE WELLS/WELL FIELD; NEW WATER TREATMENT PLANT	$753,000	2060

Region G Total Alternative Capital Cost	**$964,329,891**

***Projects with a capital cost of zero are excluded from the report list.**

Water User Group (WUG) Management Supply Factor

REGION G	WUG MANAGEMENT SUPPLY FACTOR					
	2020	2030	2040	2050	2060	2070
439 WSC	1.4	1.3	1.2	1.1	1.0	1.0
ABILENE	1.9	1.0	1.0	1.0	1.0	1.0
ACTON MUD	2.2	1.5	1.3	1.2	1.1	1.0
ALBANY	1.3	1.4	1.5	1.6	1.6	1.7
ALVARADO	5.6	5.2	4.8	4.3	3.9	3.5
ANSON	2.8	2.7	2.7	2.6	2.5	2.5
ARMSTRONG WSC	3.2	3.1	3.0	2.9	2.7	2.6
ASPERMONT	1.7	1.8	1.8	1.9	2.0	2.1
BAIRD	1.3	1.3	1.4	1.4	1.4	1.4
BARTLETT	1.1	1.1	1.1	1.0	1.6	1.6
BELLMEAD	2.1	2.1	2.0	2.0	1.9	1.8
BELL-MILAM FALLS WSC	3.1	2.9	2.8	2.7	2.6	2.4
BELTON	2.0	1.8	1.6	1.4	1.3	1.1
BETHANY WSC	4.2	3.9	3.6	3.3	3.0	2.7
BETHESDA WSC	1.2	1.1	1.2	1.2	1.2	1.3
BEVERLY HILLS	1.0	1.0	1.0	1.0	1.0	1.0
BITTER CREEK WSC	2.5	2.5	2.5	2.5	2.4	2.4
BLOCK HOUSE MUD	1.3	1.3	1.3	1.3	1.4	1.4
BRANDON-IRENE WSC	1.4	1.4	1.4	1.3	1.2	1.2
BRECKENRIDGE	2.4	2.4	2.4	2.4	2.4	2.4
BREMOND	2.1	2.0	1.9	1.8	1.7	1.6
BRENHAM	1.1	1.1	1.1	1.1	1.1	1.1
BRUCEVILLE-EDDY	4.7	4.6	4.4	4.2	3.9	3.8
BRUSHY CREEK MUD	1.0	1.1	1.0	1.0	1.0	1.0
BRYAN	1.2	1.4	1.1	1.1	1.1	1.1
BUCKHOLTS	3.6	3.5	3.4	3.3	3.2	3.1
BURLESON	1.2	1.1	1.1	1.0	1.1	1.2
CALDWELL	2.3	2.3	2.3	2.3	2.2	2.2
CALVERT	2.8	2.9	2.9	2.9	3.0	3.0
CAMERON	2.0	2.0	2.0	2.0	2.0	1.9
CEDAR PARK	1.0	1.0	1.0	1.0	1.0	1.0
CHALK BLUFF WSC	2.7	2.8	2.9	2.9	2.9	2.9
CHILDRESS CREEK WSC	1.6	1.5	1.5	1.8	1.8	1.8
CHISHOLM TRAIL SUD	1.3	1.1	1.0	1.0	1.0	1.1
CISCO	1.3	1.4	1.4	1.4	1.4	1.4
CLEBURNE	2.6	2.4	2.2	2.0	1.7	1.5
CLIFTON	1.5	1.4	1.4	1.4	1.4	1.3
CLYDE	1.8	1.8	1.8	1.8	1.8	1.8
COLLEGE STATION	1.0	1.0	1.1	1.1	1.1	1.1
COMANCHE	1.3	1.3	1.3	1.2	1.1	1.1
COOLIDGE	2.0	1.9	1.8	1.7	1.6	1.5
COPPERAS COVE	2.1	1.9	1.7	1.5	1.3	1.2
CORYELL CITY WATER SUPPLY DISTRICT	1.3	1.3	1.2	1.2	1.2	1.2
COUNTY-OTHER, BELL	2.3	1.2	1.0	1.0	1.0	1.0
COUNTY-OTHER, BOSQUE	1.2	1.1	1.1	1.1	1.1	1.0
COUNTY-OTHER, BRAZOS	1.0	1.6	1.8	1.6	1.3	1.0
COUNTY-OTHER, BURLESON	1.4	1.3	1.2	1.1	1.1	1.0
COUNTY-OTHER, CALLAHAN	1.1	1.0	1.0	1.0	1.0	1.0
COUNTY-OTHER, COMANCHE	1.0	1.0	1.0	1.0	1.1	1.1
COUNTY-OTHER, CORYELL	2.5	1.7	1.2	1.0	1.0	1.0

Water User Group (WUG) Management Supply Factor

REGION G	WUG MANAGEMENT SUPPLY FACTOR					
	2020	2030	2040	2050	2060	2070
COUNTY-OTHER, EASTLAND	1.0	1.1	1.1	1.1	1.1	1.1
COUNTY-OTHER, ERATH	1.3	1.2	1.1	1.0	1.0	1.0
COUNTY-OTHER, FALLS	1.2	1.2	1.2	1.2	1.2	1.1
COUNTY-OTHER, FISHER	1.4	1.4	1.5	1.5	1.5	1.5
COUNTY-OTHER, GRIMES	1.1	1.1	1.1	1.1	1.1	1.0
COUNTY-OTHER, HAMILTON	1.4	1.4	1.4	1.4	1.5	1.5
COUNTY-OTHER, HASKELL	2.2	2.2	2.1	1.9	1.8	1.7
COUNTY-OTHER, HILL	1.5	1.5	1.4	1.4	1.4	1.4
COUNTY-OTHER, HOOD	1.0	1.3	1.5	1.4	1.5	1.7
COUNTY-OTHER, JOHNSON	1.1	1.1	1.1	1.2	1.2	1.2
COUNTY-OTHER, JONES	1.3	1.2	1.2	1.2	1.1	1.1
COUNTY-OTHER, KENT	1.4	1.4	1.4	1.4	1.4	1.4
COUNTY-OTHER, KNOX	1.7	1.6	1.5	1.4	1.2	1.1
COUNTY-OTHER, LAMPASAS	1.2	1.3	1.4	1.5	1.6	1.7
COUNTY-OTHER, LEE	1.2	1.1	1.0	1.0	1.0	1.0
COUNTY-OTHER, LIMESTONE	1.4	1.5	1.5	1.4	1.4	1.4
COUNTY-OTHER, MCLENNAN	1.0	1.1	1.1	1.1	1.1	1.1
COUNTY-OTHER, MILAM	3.2	3.1	3.0	2.8	2.7	2.6
COUNTY-OTHER, NOLAN	1.3	1.3	1.3	1.2	1.2	1.2
COUNTY-OTHER, PALO PINTO	2.2	2.2	2.2	2.1	2.1	2.0
COUNTY-OTHER, ROBERTSON	1.7	1.5	1.3	1.1	1.0	1.1
COUNTY-OTHER, SHACKELFORD	3.0	3.2	3.3	3.3	3.3	3.3
COUNTY-OTHER, SOMERVELL	1.7	1.6	1.5	1.4	1.4	1.3
COUNTY-OTHER, STEPHENS	1.3	1.3	1.4	1.4	1.4	1.4
COUNTY-OTHER, STONEWALL	1.4	1.4	1.4	1.5	1.5	1.5
COUNTY-OTHER, TAYLOR	1.6	1.6	1.6	1.6	1.6	1.5
COUNTY-OTHER, THROCKMORTON	2.1	2.2	2.2	2.2	2.2	2.2
COUNTY-OTHER, WASHINGTON	1.1	1.0	1.0	1.0	1.0	1.0
COUNTY-OTHER, WILLIAMSON	1.0	1.0	1.0	1.0	1.0	1.0
COUNTY-OTHER, YOUNG	1.4	1.3	1.3	1.2	1.1	1.1
CRAWFORD	1.0	1.1	1.2	1.2	1.2	1.1
CRESSON	1.9	1.6	1.8	1.6	1.5	1.4
CROSS COUNTRY WSC	1.2	1.2	1.2	1.1	1.0	1.0
CROSS PLAINS	2.3	2.3	2.2	2.2	2.2	2.1
DE LEON	1.4	1.4	1.4	1.3	1.2	1.2
DEANVILLE WSC	1.5	1.5	1.4	1.4	1.4	1.4
DOG RIDGE WSC	3.7	3.3	3.0	2.6	2.3	2.1
DUBLIN	1.4	1.3	1.2	1.2	1.1	1.0
EAST BELL WSC	3.0	2.7	2.4	2.2	2.0	1.8
EASTLAND	4.9	5.0	5.1	5.1	5.2	5.2
ELM CREEK WSC	1.3	1.2	1.0	1.0	1.0	1.0
FERN BLUFF MUD	1.0	1.0	1.0	1.0	1.0	1.0
FILES VALLEY WSC	2.2	2.4	2.2	2.0	1.9	1.7
FLORENCE	1.5	1.5	1.4	1.4	1.4	1.3
FORT BELKNAPP WSC	1.1	1.1	1.1	1.1	1.0	1.0
FORT HOOD	1.5	1.5	1.6	1.6	1.6	1.5
FRANKLIN	2.5	2.3	2.2	2.0	1.9	1.8
GATESVILLE	1.1	1.6	1.5	1.4	1.4	1.3
GEORGETOWN	1.0	1.6	1.4	1.3	1.1	1.1
GHOLSON	6.0	5.6	5.2	4.9	4.5	4.3

Water User Group (WUG) Management Supply Factor

REGION G	WUG MANAGEMENT SUPPLY FACTOR					
	2020	2030	2040	2050	2060	2070
GIDDINGS	1.6	1.5	1.5	1.5	1.5	1.5
GLEN ROSE	1.3	1.2	1.3	1.3	1.3	1.2
GODLEY	1.4	1.3	1.2	1.1	1.1	1.0
GOLINDA	1.1	1.0	1.0	1.0	1.0	1.0
GORMAN	1.7	1.8	1.8	1.7	1.7	1.7
GRAFORD	1.5	1.5	1.5	1.4	1.4	1.4
GRAHAM	1.2	1.3	1.3	1.3	1.4	1.4
GRANBURY	1.7	1.5	1.3	1.2	1.1	1.1
GRANDVIEW	2.0	1.9	1.7	1.6	1.4	1.3
GRANGER	1.4	1.4	1.3	1.2	1.1	1.0
GROESBECK	2.6	2.6	2.6	2.6	2.6	2.6
HALLSBURG	1.0	1.0	1.0	1.0	1.0	1.0
HAMILTON	1.1	1.1	1.3	1.2	1.2	1.1
HAMLIN	1.8	1.9	1.8	1.8	1.8	1.7
HARKER HEIGHTS	1.5	1.4	1.3	1.2	1.1	1.0
HASKELL	1.2	1.3	1.3	1.3	1.3	1.2
HAWLEY	1.0	1.0	1.0	1.0	1.0	1.0
HAWLEY WSC	1.2	1.2	1.2	1.2	1.2	1.1
HEARNE	3.8	3.9	4.0	4.0	4.0	4.0
HEWITT	1.4	1.3	1.3	1.3	1.3	1.2
HICO	2.1	2.2	2.2	2.3	2.3	2.3
HILL COUNTY WSC	2.0	2.0	1.9	1.8	1.8	1.8
HILLSBORO	2.0	1.9	1.9	1.9	1.9	1.8
HOLLAND	4.4	4.5	4.6	4.7	4.6	4.6
HUBBARD	1.2	1.2	1.2	1.2	1.2	1.2
HUTTO	1.9	1.4	1.0	1.0	1.0	1.0
IRRIGATION, BELL	1.0	1.0	1.0	1.0	1.0	1.0
IRRIGATION, BOSQUE	1.0	1.0	1.1	1.1	1.1	1.1
IRRIGATION, BRAZOS	1.0	1.0	1.0	1.0	1.0	1.0
IRRIGATION, BURLESON	1.0	1.0	1.1	1.1	1.2	1.2
IRRIGATION, CALLAHAN	1.3	1.3	1.3	1.4	1.4	1.4
IRRIGATION, COMANCHE	1.0	1.0	1.0	1.1	1.0	1.0
IRRIGATION, CORYELL	3.6	3.6	3.6	3.6	3.6	3.6
IRRIGATION, EASTLAND	1.0	1.0	1.0	1.0	1.0	1.0
IRRIGATION, ERATH	1.1	1.1	1.1	1.1	1.2	1.2
IRRIGATION, FALLS	1.5	1.5	1.6	1.6	1.6	1.7
IRRIGATION, FISHER	1.2	1.2	1.3	1.3	1.3	1.4
IRRIGATION, HAMILTON	1.0	1.0	1.1	1.1	1.0	1.1
IRRIGATION, HASKELL	1.0	1.0	1.0	1.0	1.0	1.0
IRRIGATION, HILL	2.4	2.4	2.4	2.4	2.5	2.5
IRRIGATION, HOOD	1.0	1.1	1.1	1.1	1.1	1.1
IRRIGATION, JOHNSON	2.1	2.1	2.1	2.1	2.0	2.0
IRRIGATION, JONES	0.9	1.0	1.0	1.1	1.0	1.1
IRRIGATION, KENT	1.2	1.2	1.2	1.3	1.3	1.3
IRRIGATION, KNOX	1.0	1.0	1.0	1.0	1.0	1.0
IRRIGATION, LAMPASAS	1.3	1.3	1.3	1.4	1.4	1.4
IRRIGATION, LEE	1.1	1.1	1.1	1.2	1.2	1.2
IRRIGATION, MCLENNAN	1.0	1.0	1.0	1.0	1.0	1.0
IRRIGATION, MILAM	1.1	1.0	1.0	1.1	1.1	1.1
IRRIGATION, NOLAN	0.7	0.7	0.8	0.8	0.8	0.8

Water User Group (WUG) Management Supply Factor

REGION G	WUG MANAGEMENT SUPPLY FACTOR					
	2020	2030	2040	2050	2060	2070
IRRIGATION, PALO PINTO	1.0	1.0	1.0	1.0	1.0	1.0
IRRIGATION, ROBERTSON	0.4	0.5	0.5	0.5	0.4	0.3
IRRIGATION, SOMERVELL	1.3	1.3	1.3	1.3	1.3	1.3
IRRIGATION, STEPHENS	1.0	1.0	1.1	1.1	1.1	1.1
IRRIGATION, STONEWALL	1.4	1.4	1.5	1.5	1.6	1.6
IRRIGATION, TAYLOR	1.0	1.0	1.0	1.0	1.0	1.0
IRRIGATION, WASHINGTON	1.5	1.5	1.5	1.5	1.5	1.5
IRRIGATION, WILLIAMSON	1.0	1.0	1.0	1.0	1.0	1.0
IRRIGATION, YOUNG	1.0	1.1	1.1	1.1	1.2	1.2
ITASCA	1.5	1.5	1.5	1.5	1.5	1.4
JARRELL	1.9	1.8	1.6	1.5	1.5	1.4
JARRELL-SCHWERTNER WSC	2.5	2.3	2.1	1.7	1.4	1.2
JAYTON	2.7	2.8	2.8	2.8	2.9	2.9
JOHNSON COUNTY SUD	3.7	3.3	3.0	2.6	2.4	2.1
JONAH WATER SUD	2.7	2.2	1.8	1.4	1.2	1.0
JOSHUA	1.0	1.0	1.0	1.0	1.0	1.0
KEENE	3.2	2.7	2.4	2.1	1.8	1.5
KEMPNER	1.0	1.0	1.0	1.0	1.0	1.0
KEMPNER WSC	2.4	2.2	2.0	1.9	1.8	1.7
KILLEEN	2.2	1.9	1.7	1.4	1.2	1.1
KNOX CITY	1.1	1.2	1.3	1.3	1.2	1.2
LACY-LAKEVIEW	2.9	2.7	2.6	2.5	2.3	2.2
LAMPASAS	1.0	1.0	1.0	1.0	1.0	1.0
LEANDER	3.7	2.0	1.3	1.0	1.0	1.0
LEE COUNTY WSC	3.3	3.0	2.8	2.6	2.5	2.3
LEXINGTON	2.8	2.6	2.5	2.4	2.4	2.4
LIBERTY HILL	8.9	7.5	6.3	5.4	4.7	4.1
LITTLE RIVER-ACADEMY	1.1	1.4	1.3	1.2	1.1	1.0
LIVESTOCK, BELL	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, BOSQUE	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, BRAZOS	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, BURLESON	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, CALLAHAN	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, COMANCHE	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, CORYELL	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, EASTLAND	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, ERATH	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, FALLS	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, FISHER	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, GRIMES	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, HAMILTON	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, HASKELL	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, HILL	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, HOOD	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, JOHNSON	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, JONES	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, KENT	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, KNOX	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, LAMPASAS	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, LEE	1.0	1.0	1.0	1.0	1.0	1.0

Water User Group (WUG) Management Supply Factor

REGION G	WUG MANAGEMENT SUPPLY FACTOR					
	2020	2030	2040	2050	2060	2070
LIVESTOCK, LIMESTONE	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, MCLENNAN	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, MILAM	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, NOLAN	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, PALO PINTO	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, ROBERTSON	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, SHACKELFORD	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, SOMERVELL	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, STEPHENS	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, STONEWALL	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, TAYLOR	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, THROCKMORTON	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, WASHINGTON	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, WILLIAMSON	1.0	1.0	1.0	1.0	1.0	1.0
LIVESTOCK, YOUNG	1.0	1.0	1.0	1.0	1.0	1.0
LOMETA	1.0	1.1	1.1	1.1	1.1	1.1
LORENA	3.0	2.7	2.5	2.3	2.1	2.0
LOTT	3.1	3.1	3.2	3.3	3.3	3.2
MANUFACTURING, BELL	1.1	1.1	1.0	1.2	1.1	1.0
MANUFACTURING, BOSQUE	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, BRAZOS	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, BURLESON	1.0	1.2	1.1	1.0	1.1	1.0
MANUFACTURING, COMANCHE	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, CORYELL	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, EASTLAND	1.5	1.5	1.5	1.4	1.4	1.4
MANUFACTURING, ERATH	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, FALLS	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, FISHER	1.2	1.1	1.3	1.2	1.1	1.0
MANUFACTURING, GRIMES	1.4	1.3	1.1	1.0	1.1	1.1
MANUFACTURING, HAMILTON	1.2	1.2	1.1	1.1	1.1	1.1
MANUFACTURING, HILL	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, HOOD	401.0	371.3	345.7	323.4	294.9	270.9
MANUFACTURING, JOHNSON	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, LAMPASAS	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, LEE	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, LIMESTONE	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, MCLENNAN	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, MILAM	1.2	1.2	1.2	1.0	1.0	1.0
MANUFACTURING, NOLAN	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, PALO PINTO	24.7	22.8	21.2	19.9	18.1	16.4
MANUFACTURING, ROBERTSON	1.9	1.6	1.4	1.3	1.2	1.1
MANUFACTURING, SOMERVELL	2.5	2.2	2.0	1.8	1.7	1.5
MANUFACTURING, STEPHENS	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, TAYLOR	1.0	1.1	1.1	1.1	1.1	1.1
MANUFACTURING, WASHINGTON	1.0	1.0	1.0	1.0	1.0	1.0
MANUFACTURING, WILLIAMSON	1.0	1.0	1.1	1.1	1.1	1.1
MANUFACTURING, YOUNG	1.0	1.0	1.0	1.0	1.0	1.0
MARLIN	2.4	2.4	2.5	2.6	2.6	2.6
MART	1.3	1.2	1.2	1.1	1.1	1.0
MCGREGOR	3.6	3.5	3.4	3.3	3.1	3.0

Water User Group (WUG) Management Supply Factor

REGION G	WUG MANAGEMENT SUPPLY FACTOR					
	2020	2030	2040	2050	2060	2070
MERIDIAN	1.7	1.6	1.6	1.6	1.6	1.5
MERKEL	1.0	1.0	1.0	1.0	1.0	1.0
MEXIA	3.4	2.9	2.6	2.2	2.0	1.8
MILANO WSC	1.2	1.1	1.0	1.0	1.0	1.0
MINERAL WELLS	1.0	1.0	1.0	1.0	1.0	1.0
MINING, BELL	0.9	0.7	0.6	0.4	0.2	0.1
MINING, BOSQUE	0.1	0.1	0.1	0.1	0.1	0.1
MINING, BRAZOS	0.0	0.1	0.1	0.1	0.1	0.1
MINING, BURLESON	0.8	0.4	0.6	0.7	1.1	1.8
MINING, CALLAHAN	1.0	1.0	1.1	1.2	1.3	1.3
MINING, COMANCHE	1.0	1.0	1.0	1.3	1.0	1.0
MINING, CORYELL	1.0	1.4	1.1	1.4	1.3	1.2
MINING, EASTLAND	1.0	1.0	1.0	1.1	1.0	1.2
MINING, ERATH	1.0	1.0	1.4	1.7	2.2	2.9
MINING, FALLS	1.0	1.0	1.0	1.0	1.0	1.0
MINING, FISHER	1.0	1.0	1.2	1.3	1.5	1.8
MINING, GRIMES	1.1	1.0	1.3	1.1	1.7	1.1
MINING, HAMILTON	1.0	1.7	3.9	0.0	0.0	0.0
MINING, HASKELL	1.0	1.0	1.0	1.0	1.0	1.0
MINING, HILL	1.0	1.4	1.3	2.4	2.2	2.0
MINING, HOOD	1.2	1.0	1.1	1.2	1.2	1.2
MINING, JOHNSON	1.0	1.0	1.9	2.8	2.5	2.1
MINING, JONES	0.0	0.1	0.1	0.1	0.1	0.1
MINING, KENT	12.1	12.1	13.1	14.3	15.8	17.7
MINING, KNOX	1.0	1.1	1.1	1.1	1.1	1.1
MINING, LAMPASAS	1.1	1.0	1.1	1.0	1.1	1.0
MINING, LEE	0.0	0.0	0.1	0.1	0.1	0.1
MINING, LIMESTONE	0.6	0.7	0.7	0.7	0.7	0.6
MINING, MCLENNAN	1.2	1.0	1.0	1.1	1.0	1.0
MINING, MILAM	1.0	1.0	1.0	1.0	1.0	1.0
MINING, NOLAN	1.0	1.0	1.2	1.3	1.5	1.6
MINING, PALO PINTO	1.9	1.5	1.9	2.5	3.5	5.0
MINING, ROBERTSON	1.0	0.9	0.8	0.7	0.6	0.5
MINING, SHACKELFORD	1.3	1.0	1.4	1.7	2.3	3.0
MINING, SOMERVELL	1.2	1.0	1.2	1.3	1.3	1.4
MINING, STEPHENS	0.2	0.2	0.3	0.3	0.4	0.4
MINING, STONEWALL	1.0	1.0	1.2	1.4	1.6	1.8
MINING, TAYLOR	1.0	1.0	1.0	1.0	1.0	1.0
MINING, THROCKMORTON	1.1	1.1	1.2	1.4	1.6	1.8
MINING, WASHINGTON	1.0	1.0	1.0	1.0	1.0	1.0
MINING, WILLIAMSON	0.1	0.1	0.1	0.1	0.1	0.1
MINING, YOUNG	1.5	1.0	1.4	1.8	2.5	3.6
MOFFAT WSC	2.8	2.7	2.7	2.5	2.4	2.3
MOODY	3.2	3.1	3.0	2.8	2.6	2.5
MORGAN'S POINT RESORT	3.3	2.8	2.5	2.2	1.9	1.7
MULTI-COUNTY WSC	1.0	1.8	1.4	1.3	1.2	1.1
MUNDAY	1.1	1.2	1.2	1.2	1.2	1.1
NAVASOTA	1.5	1.6	1.6	1.6	1.5	1.5
NEWCASTLE	1.0	1.0	1.0	1.0	1.0	1.0
NOLANVILLE	1.0	1.0	1.0	1.0	1.0	1.0

Water User Group (WUG) Management Supply Factor

REGION G	WUG MANAGEMENT SUPPLY FACTOR					
	2020	2030	2040	2050	2060	2070
NORTH BOSQUE WSC	1.0	1.2	1.1	1.1	1.1	1.0
OAK TRAIL SHORES SUBDIVISION	1.6	1.6	1.7	1.7	1.7	1.6
PARKER WSC	1.7	1.4	1.2	1.0	1.1	1.0
PENDLETON WSC	2.0	2.0	1.9	1.8	1.7	1.6
POSSUM KINGDOM WSC	1.0	1.0	1.1	1.1	1.2	1.2
POTOSI WSC	1.0	1.0	1.0	1.0	1.0	1.0
RANGER	4.4	4.5	4.6	4.6	4.6	4.6
RIESEL	1.1	1.1	1.1	1.1	1.0	1.0
RIO VISTA	1.7	1.4	1.2	1.0	5.1	4.5
RISING STAR	1.0	1.0	1.1	1.1	1.1	1.1
ROBERTSON COUNTY WSC	2.1	2.0	1.9	1.8	1.7	1.6
ROBINSON	1.1	1.8	1.6	1.5	1.3	1.2
ROBY	3.2	3.4	3.4	3.5	3.5	3.5
ROCKDALE	1.8	1.7	1.3	1.4	1.4	1.4
ROGERS	3.5	3.4	3.3	3.2	3.0	2.8
ROSCOE	1.4	1.4	1.4	1.3	1.3	1.3
ROSEBUD	3.5	3.4	3.5	3.6	3.5	3.4
ROTAN	1.0	1.0	1.0	1.0	1.0	1.0
ROUND ROCK	2.0	1.6	1.3	1.1	1.0	1.0
RULE	1.9	2.0	1.9	1.9	1.9	1.9
SALADO WSC	1.4	1.3	1.3	1.3	1.3	1.3
SNOOK	2.6	2.6	2.6	2.6	2.6	2.6
SOMERVILLE	3.4	3.3	3.2	3.1	3.0	2.9
SOUTHWEST MILAM WSC	1.6	1.4	1.1	1.2	1.1	1.0
STAMFORD	1.5	1.5	1.5	1.6	1.6	1.6
STEAM ELECTRIC POWER, BELL	2.0	1.7	1.4	1.2	1.0	1.0
STEAM ELECTRIC POWER, BOSQUE	1.1	1.0	1.0	1.0	1.0	1.0
STEAM ELECTRIC POWER, BRAZOS	1.0	1.0	1.0	1.0	1.0	1.0
STEAM ELECTRIC POWER, GRIMES	1.0	1.0	1.0	1.0	1.0	1.0
STEAM ELECTRIC POWER, HASKELL	3.9	5.2	4.5	3.9	3.3	3.0
STEAM ELECTRIC POWER, HOOD	2.8	2.4	2.1	1.7	1.4	1.0
STEAM ELECTRIC POWER, JOHNSON	1.2	1.2	1.2	1.2	1.2	1.2
STEAM ELECTRIC POWER, JONES	1.0	1.0	1.0	1.0	1.0	1.0
STEAM ELECTRIC POWER, LIMESTONE	1.0	1.0	1.0	1.0	1.0	1.0
STEAM ELECTRIC POWER, MCLENNAN	4.3	3.0	2.4	1.6	1.0	1.0
STEAM ELECTRIC POWER, MILAM	1.0	1.0	1.1	1.0	1.0	1.0
STEAM ELECTRIC POWER, NOLAN	1.0	1.1	1.1	1.0	1.0	1.0
STEAM ELECTRIC POWER, PALO PINTO	3.5	3.4	3.3	3.2	3.1	3.0
STEAM ELECTRIC POWER, ROBERTSON	1.9	1.1	1.0	1.0	1.0	1.0
STEAM ELECTRIC POWER, SOMERVELL	1.8	1.8	1.8	1.8	1.8	1.8
STEAM ELECTRIC POWER, YOUNG	8.2	7.0	6.0	5.1	4.3	3.8
STEAMBOAT MOUNTAIN WSC	1.0	1.0	1.0	1.0	1.0	1.0
STEPHENS REGIONAL SUD	2.9	2.9	3.0	3.0	3.0	3.0
STEPHENVILLE	2.3	2.1	2.0	1.9	1.7	1.6
STRAWN	1.2	1.2	1.2	1.2	1.2	1.1
SWEETWATER	1.0	1.0	1.0	1.0	1.0	1.0
TAYLOR	1.0	1.0	1.0	1.0	1.0	1.0
TEMPLE	1.6	1.4	1.3	1.3	1.2	1.2
TEXAS A & M UNIVERSITY	1.7	2.2	2.3	2.3	2.4	2.4
THORNDALE	1.2	1.2	1.2	1.2	1.1	1.1

Water User Group (WUG) Management Supply Factor

REGION G	WUG MANAGEMENT SUPPLY FACTOR					
	2020	2030	2040	2050	2060	2070
THORNTON	3.9	4.0	4.1	4.2	4.2	4.2
THRALL	1.0	1.0	1.0	1.0	1.0	1.0
THROCKMORTON	9.1	9.3	9.6	9.6	9.7	9.7
TOLAR	1.4	1.2	1.1	1.1	1.0	1.0
TRI-COUNTY SUD	1.2	1.2	1.2	1.2	1.1	1.1
TROY	7.0	6.6	6.1	5.6	5.2	4.8
TUSCOLA	1.0	1.0	1.0	1.0	1.0	1.0
TYE	1.0	1.0	1.0	1.0	1.0	1.0
VALLEY MILLS	1.9	1.8	1.8	1.8	1.8	1.7
VENUS	1.0	1.1	1.1	1.1	1.1	1.1
WACO	1.7	1.6	1.6	1.6	1.5	1.5
WALNUT SPRINGS	2.7	2.6	2.5	2.5	2.5	2.4
WELLBORN SUD	1.2	1.2	1.9	1.6	1.3	1.1
WEST	2.9	2.9	2.8	2.7	2.7	2.6
WEST BELL COUNTY WSC	2.1	2.0	2.1	2.1	2.1	2.1
WEST BRAZOS WSC	1.1	1.1	1.1	1.1	1.0	1.0
WESTERN HILLS WS	2.6	2.4	2.3	2.2	2.1	2.0
WHITE BLUFF COMMUNITY WS	1.4	1.4	1.5	1.5	1.4	1.4
WHITNEY	1.4	1.4	1.5	1.4	1.4	1.3
WICKSON CREEK SUD	2.5	2.2	1.9	1.6	1.3	1.1
WILLIAMSON COUNTY MUD #10	1.0	1.0	1.0	1.0	1.0	1.0
WILLIAMSON COUNTY MUD #11	1.0	1.0	1.0	1.0	1.0	1.0
WILLIAMSON COUNTY MUD #9	1.0	1.0	1.0	1.0	1.0	1.0
WILLIAMSON-TRAVIS COUNTY MUD #1	1.3	1.4	1.4	1.4	1.4	1.4
WOODROW-OSCEOLA WSC	1.6	1.6	1.6	1.5	1.5	1.4
WOODWAY	1.1	1.1	1.2	1.3	1.4	1.4

*WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. To calculate the Management Supply Factor for each WUG as a whole, not split by region-county-basin the combined total of existing and future supply is divided by the total projected demand.

Appendix M
Water Availability Model Files

[The information contained for this appendix has been submitted to TWDB in electronic format and can be found on the TWDB website and at www.brazosgwater.org.]

This page intentionally left blank

Appendix N
Implementation of the 2011 Brazos G Regional Water Plan

[The information contained for this appendix has been submitted to TWDB in electronic format and can be found on the TWDB website and at www.brazosgwater.org.]

This page intentionally left blank