

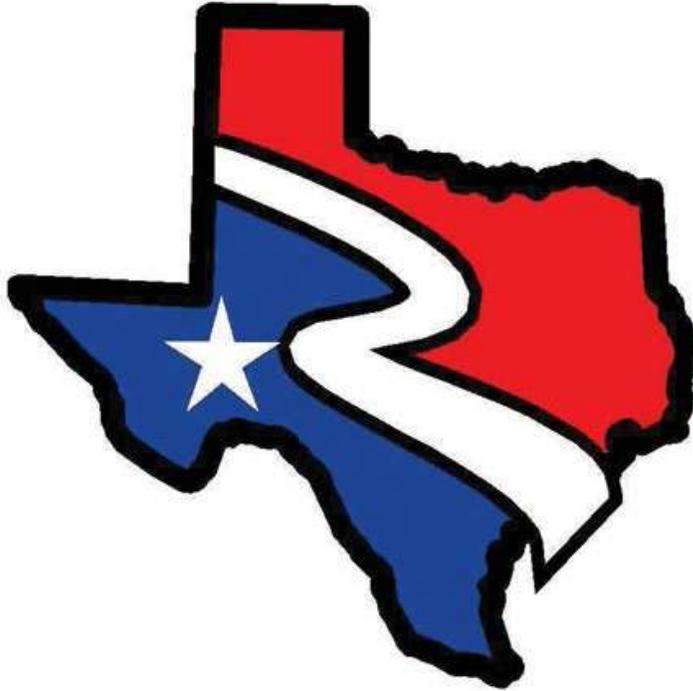
## Appendix E-2

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### Water Conservation Plan

# **Brazos River Authority**

4600 Cobbs Drive  
Waco, Texas 76710  
(254) 761-3100



## **Water Conservation Plan**

**REVISED:**

**April 2014**

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## ***Introduction***

As a wholesale and agricultural irrigation water supplier, the Brazos River Authority (BRA) is required to adopt a Water Conservation Plan in conformance with the rules governing Water Conservation Plans for Wholesale Water Providers and Water Conservation Plans for Agricultural Use. These rules are set forth by the Texas Administrative Code, Title 30, Chapter 288, Subchapter A, Rule 288.5 and 288.4, respectively. Copies of the rules are contained in Appendix A.

This Water Conservation plan, dated April 28, 2014, supersedes the Water Conservation Plan for Wholesale Water Providers dated October 29, 2012, and the Water Conservation Plan for Irrigation Use dated October 26, 2009.

Water conservation planning helps the BRA effectively convey to its customers the benefits of water conservation. Water conservation can:

- Delay expensive capital investments to upgrade or expand existing water facilities.
- Delay the need for new or expanded wastewater treatment facilities.
- Conserve energy as less water needs to be treated, pumped and distributed to the consumers.
- Reduce stream diversions, thereby enhancing water quality, environmental and recreational functions.
- Improve water levels in reservoirs.

## ***Regulatory Requirements***

### **Description of BRA's Service Area**

The BRA's service area consists of the Brazos River Basin in Texas (Figure 1). The Brazos River Basin in Texas covers approximately 42,000 square miles and includes all or part of 70 counties. The main stem of the Brazos River begins in eastern Stonewall County, Texas and extends to the Gulf of Mexico. As the Brazos makes its way downstream, it gathers flows from tributary rivers, such as the Clear Fork, Bosque, Lampasas, Leon, Little River, and Navasota. The BRA has statutory responsibility for conserving and developing the water resources of the Brazos River Basin in Texas and making them available for beneficial use. The BRA also supplies water to the San Jacinto-Brazos Coastal Basin and a small part of the Trinity River Basin.

### **Water Supply System Data**

The BRA holds Texas water rights for three reservoirs that it owns and operates for water supply – Possum Kingdom Lake, Lake Granbury, and Lake Limestone. The BRA also holds Texas water rights and contracts with the U.S. Army Corps of Engineers for storage space in eight multi-purpose federal reservoirs – Lakes Whitney, Belton, Proctor, Somerville, Stillhouse Hollow, Granger, Georgetown and Aquilla. Additionally, the BRA holds a water right jointly with the City of Houston and the Texas Water Development Board for the proposed Allens Creek Reservoir. BRA is currently a thirty percent owner

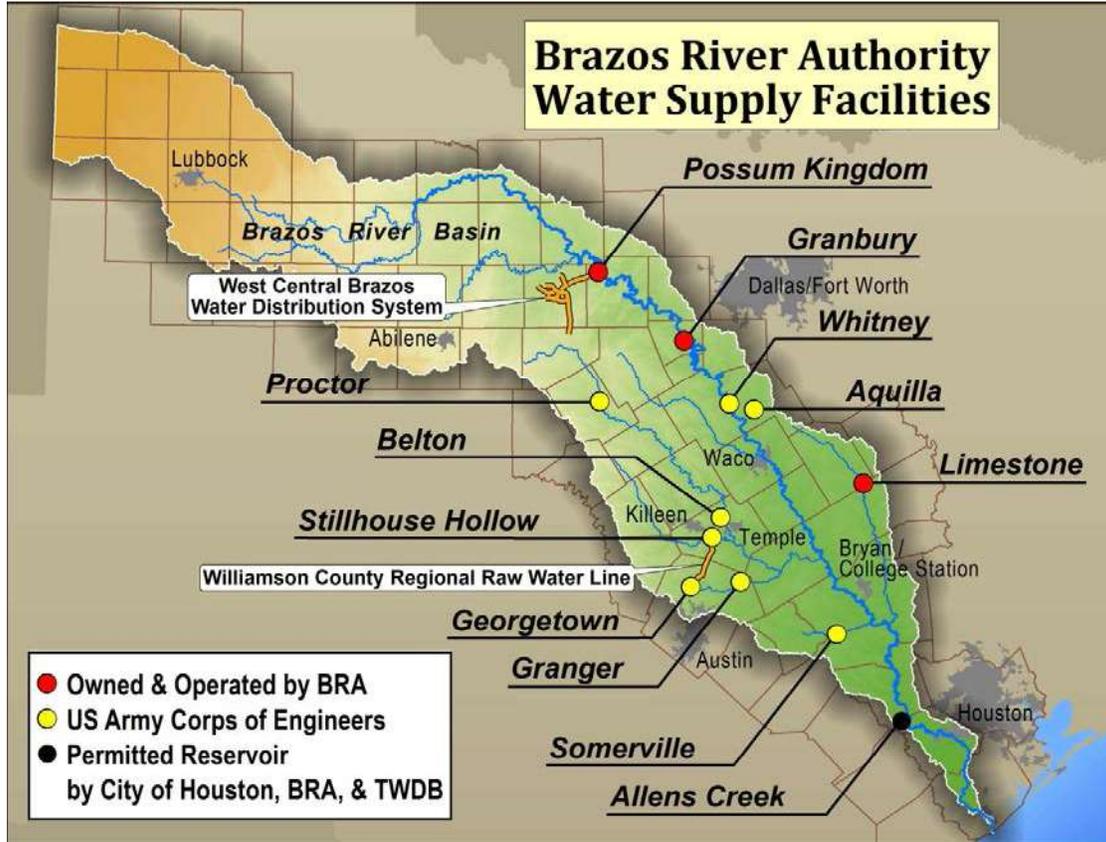
in this proposed project. Figure 1 shows the location of the existing reservoirs for which the BRA has water rights.

The BRA makes water available on a wholesale basis from the 11 existing reservoirs to municipal, industrial, mining and agricultural irrigation water customers. Altogether and including BRA's thirty percent share of Allens Creek Reservoir, the BRA has total authorized priority diversions of 691,796 acre-feet per year. Additionally, the BRA has contractual arrangements to divert water under permits issued to the Lower Colorado River Authority, City of Stamford, City of Abilene and Palo Pinto County Municipal Water District No. 1.

In addition to its reservoirs, the BRA operates two pipeline delivery systems: the Williamson County Regional Raw Water Line (WCRRWL) connecting Lake Stillhouse Hollow to Lake Georgetown, and the West Central Brazos Water Distribution System (WCBWDS), which delivers water from Lake Possum Kingdom to Stephens County and Eastland County. The WCRRWL began operation in 2006. The WCBWDS currently supplies water for mining, irrigation, and municipal purposes.

The BRA owns and operates the East Williamson County Regional Water System (EWCRRWS) adjacent to Lake Granger. Customers of the EWCRRWS include the City of Taylor (from which the BRA initially acquired the facility prior to its expansion by the BRA) and Jonah Water Special Utility District.

**Figure 1: Brazos River Authority Water Supply Facilities**



**Reservoir System Operation Plan**

To the maximum extent possible within regulatory, institutional, and physical constraints, the BRA seeks to optimize water supply from its reservoirs and run-of-the-river supplies through coordinated system operation. In order to achieve the goal of optimal management of the water resources of the Brazos River Basin, the BRA is in the process of acquiring additional appropriations of state water and may seek changes to its existing water rights to allow more efficient operation of its system.

The most productive conservation measure directly available to the BRA is the effective operation and management of the reservoirs. The System Operation Order gives the BRA the flexibility to operate the BRA’s reservoirs as a system. The System Operation Order has been incorporated into the water rights for Lakes Possum Kingdom, Granbury, Whitney, Aquilla, Proctor, Belton, Stillhouse Hollow, Georgetown, Granger, Limestone and Somerville. (The proposed Allens Creek Reservoir is not included in the System Operation Order.) The total sum of BRA’s priority rights for the 11 reservoirs included in the System Operation Order is 661,901 acre-feet. The System Operation Order allows non-priority diversion from any reservoir to exceed the priority right for that reservoir as long as:

- The sum of the annual diversions from the 11 reservoirs included in the System Operation Order does not exceed 661,901 acre-feet,

## Water Conservation Plan

- The annual amount diverted from an individual reservoir does not exceed the sum of the amounts authorized for all purposes for the reservoir, and
- Downstream releases for system operation may not be made from a reservoir, except for local needs, when its authorized storage is less than 30 percent full unless the authorized storage of all system reservoirs is less than 30 percent full.

The BRA also has the ability under Certificate of Adjudication 12-5166 to utilize unappropriated flows at specific locations in the lower Brazos River Basin to meet customer demands on a non-priority basis, accounting for these diversions by assigning them to a BRA reservoir included in the System Operation Order. However, additional water that is available through system operation is not recognized by these existing water rights.

### **Specification of Conservation Goals**

Water conservation will become an increasingly critical element in meeting the water supply needs within the Brazos River Basin. This section presents the BRA's water conservation goals.

The Brazos River Basin is very large and has highly varied climatic conditions. The basin includes a multitude of water users, some of which purchase water from the BRA and others which store and divert water under their own water rights. Upon request, the BRA provides assistance to its customers (industries, municipalities, and irrigators) in the development and implementation of conservation programs. The BRA adopts the following conservation goals:

- Conservation Pricing: Encourage water rate structures that communicate the value of water and that will effectively promote its long-term efficient use.
- Water Supply Operations: To the maximum extent possible within regulatory, institutional, and physical constraints, optimize benefits from the BRA's reservoirs through system operation and coordinated use of excess unregulated flows.
- Leak Detection: Maintain a program of regular inspection, maintenance and repair of pipelines and pump stations in the BRA's delivery system. Emphasize control of leaks and water losses.
- Education and Public Awareness: Continue to develop and improve the BRA's existing water conservation education and information program, with the objective to enhance public cooperation and support for water conservation.
- Reuse: Pursue wastewater reuse as opportunities arise and support opportunities for customers to pursue wastewater reuse projects.
- Water Resource Projects: When authorized by the BRA's Board of Directors, cooperate with various local entities in planning, developing and operating regional water resource projects and pollution prevention and abatement programs.

## Water Conservation Plan

- **Environmental Leadership Policy:** Implement the Environmental Leadership Policy of the BRA to enhance and protect the water quality in the Brazos River Basin and adjacent coastal basins.
- **Data Collection and Sharing:** Cooperate with federal and state agencies in monitoring, developing, and disseminating water quantity and quality data.
- **Site-Specific Activities:** Develop and implement appropriate water conservation plans and programs to meet the needs of specific projects, areas, or circumstances.
- **Wholesale Water Sale Contracts:** As new contracts are executed and existing contracts are renewed or amended, require contract holders to develop and implement conservation plans pursuant to TCEQ rules. Long-term contract holders shall submit copies of their water conservation and drought contingency plans to the BRA.

The BRA will provide contract holders with information on ways to reduce water consumption and be water wise. The information may include methods and recommendations to reduce water consumption and water waste plus methods for improving water use efficiency as applicable to the water contract holder's type of use.

- **Promotion of Conservation Activities:** Encourage wholesale water customers and other users that supply potable water to others to consider and implement the following conservation activities, as appropriate:
  - Set specific conservation goals including, where appropriate, per capita water use targets, maximum acceptable water loss, and a time frame for achieving these goals.
  - Establish conservation-oriented rate structures such as uniform or increasing block rates and/or seasonal rates to inhibit the waste or inefficient use of water. Similar rate structures should also be applied to wastewater returned to the sewerage system for treatment.
  - Establish an aggressive program for calibrating water meters and for repairing or replacing those found to have an error of five percent or more. The program should focus initially on master meters and those of major users, then expand to include the meters of all users.
  - Establish and maintain an active leak detection and repair program to identify sections of distribution systems with excessive water losses. Implement maintenance programs which will result in long-term solutions to repetitive line breaks or other events which result in the loss of water.
  - Establish a goal to reduce annual water loss in distribution systems to no more than 12 percent within five years of the date of the water conservation plan and maintain unaccounted losses at no more than 12 percent for each year thereafter. (Water suppliers in rural areas with large distances between customers may set a goal higher than 12 percent, if appropriate.)

## Water Conservation Plan

- Publicize the financial benefits of water conservation to the community by avoiding the cost of expanding the water supply and wastewater treatment systems.
- Encourage the use of landscaping that will minimize water requirements.
- Publicize and encourage demand reduction practices, i.e., off-peak watering of lawns, etc.

The BRA will adopt any other water conservation practice, method, or technique which the BRA finds to be appropriate for achieving the stated goals of this Water Conservation Plan.

### **Description of Practices Utilized to Measure and Account for Diversions**

Under the BRA's current raw water contract forms, all diversions of water by the BRA's water customers (excepting those uses not exceeding five acre-feet of water per year) must be metered or otherwise measured with an error of less than plus or minus five percent and reported to the BRA in a timely manner. The BRA includes the following clause addressing water metering in every new, renewed, and amended contract:

**METERING.** *Purchaser agrees that, at its sole cost and expense, it shall own, install, operate and maintain meters for the accurate measuring of all water diverted by Purchaser under this Agreement in order to aid BRA in accurately reporting water usage to the TCEQ as required by applicable law or regulation. Such meter or meters shall be tested and calibrated for accuracy by and at the expense of Purchaser once each Contract Year at intervals of approximately 12 months and a report of such test and calibration shall be furnished to BRA. BRA shall be given at least two prior days notice of the time of any test and calibration of Purchaser's meters, or any of them, and BRA shall have the right to have a representative present at each test to observe the test and any adjustments found thereby to be necessary. BRA shall have the right to inspect and check the accuracy of Purchaser's meter or meters at any time during usual business hours after not less than one nor more than five (5) days notice. In the event any question arises at any time as to the accuracy of any such meter, such meter shall be tested promptly upon demand of BRA, the expense of such test to be borne by BRA if the meter is found to be correct and by Purchaser if it is found to be incorrect. Readings within 5% of accuracy, plus or minus, shall be considered correct. If, as a result of any test, any meter is found to be registering inaccurately (i.e., in excess of 5% or accuracy, plus or minus), the readings of such meter shall be corrected at the rate of its inaccuracy for any period which is definitely known and agreed upon, but in case the period is not definitely known and agreed upon, the period shall be extended back 180 days from the date of the initial BRA demand for meter testing, and the records of readings shall be adjusted accordingly. Following each test of a meter, Purchaser shall cause the same to be calibrated to register accurately.*

**Monitoring and Record Management Program**

The U.S. Geological Survey operates numerous stream gaging stations throughout the basin which provide information on BRA reservoirs and stream flows, including releases from the reservoirs. The BRA and the U.S. Army Corps of Engineers also perform daily water balance accounting for all reservoirs in the BRA System.

The BRA monitors surface water rights in the basin and water supply releases to ensure that its water rights and releases for customers are protected. The BRA has developed a plan for cooperative water rights monitoring for the lower Brazos River Basin based on daily flows.

The BRA includes the following clause addressing water use reporting in every new, renewed, and amended contract:

**REPORTING.** *Purchaser agrees that it will keep accurate records of the daily readings from the meter or meters installed pursuant to Section 13., Metering, above. These records shall be subject to inspection by BRA at reasonable times and places. Purchaser shall submit reports to BRA by the 10th day of each month showing the amount of water diverted under this Agreement each day during the preceding month. Failure to comply with this reporting requirement will be deemed a material breach of contract and may result in termination of this Agreement.*

The BRA preserves its records in accordance with its Records Retention Policy, which is modeled after the procedures used by the Texas State Library. This policy is consistent with the provisions of the Local Government Records Act (Texas Water Code § 49.065(c); Texas Local Government Code §§ 201.001-205.009).

**Metering, Leak Detection, and Repair**

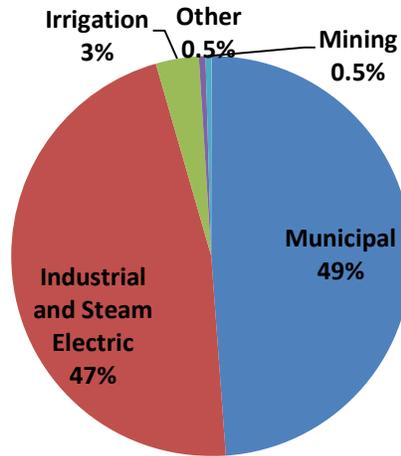
Currently the BRA uses lakeside diversion or the bed and banks of the Brazos River and its tributaries to deliver water to the majority of its customers. The BRA also delivers some water by pipeline in the WCBWDS and the WCRRWL. Deliveries through both of these facilities are expected to increase over time. The BRA has implemented a program of regular inspection, maintenance, and repair of pipelines and pump stations, focusing on the monitoring of water loss and the detection and repair of leaks.

**BRA Long Term Contracts by Type of Use**

Of the 704,901 acre-feet available for diversion under BRA water rights and contractual arrangements (excludes the Allens Creek water right), approximately 696,609 acre-feet is contracted with municipalities, water supply districts, water supply corporations, electric utilities and industries, irrigators, mining operations, and other uses throughout the basin. For this report, customers that are authorized to divert water for multiple uses are categorized by the type of use they primarily report under. The combined amount contracted to Industrial and Steam Electric companies is 325,077 acre-feet, which represents 47% of total contracted amount. Municipal commitments add up to 340,423 acre-feet, representing 49% of the total contracted amount, and approximately 20,915 acre-feet are committed to irrigation uses, representing 3% of the total contracted

amount. The remaining 1% of the contracted amount is committed to mining and other uses<sup>1</sup>. Figure 2 shows the breakdown of the BRA's current long term commitments.

**Figure 2: Current Long Term Commitments – 696,609 acre-feet**



**Conservation Requirements in BRA Contracts**

The BRA includes the following clause addressing water conservation in every new, renewed, and amended contract:

**Conservation of Water and Drought Contingency Plan** *It is the intent of the parties to this Agreement to provide to the maximum extent practicable for the conservation of water, and Purchaser agrees that it is a condition of this Agreement that it shall maintain and operate its facilities in a manner that will prevent unnecessary waste of water. BRA, in accordance with applicable law or regulation, may from time to time adopt reasonable rules and regulations relating to water conservation. Purchaser agrees to abide by the current “Brazos River Authority Drought Contingency Policy”, or any subsequent Drought Contingency Policy duly adopted by the Board and any Drought Contingency Plans developed under the Drought Contingency Policy. If required by applicable law or regulation or by BRA, Purchaser agrees to implement a water conservation and drought management program in accordance with a water conservation plan and that the water made available and diverted by Purchaser pursuant to this Agreement will be used in accordance with such conservation plan. If required by applicable law or regulation Purchaser agrees that, in the event Purchaser furnishes water or water services to a third party that in turn will furnish the water or services to the ultimate consumer, the requirements relative to water conservation shall be met through contractual agreements between Purchaser and the third party providing for the establishment and implementation of a water conservation program in compliance with such applicable law or regulation.*

<sup>1</sup> Other uses include uses under non-revenue generating commitments, such as firefighting, roadside parks, state parks, fish hatchery and environmental flows.

**Documentation of Coordination with Regional Water Planning Groups**

The BRA is providing a copy of this Water Conservation Plan to each of the Regional Water Planning Groups located within the Brazos River Basin (Region B, Region C, Region F, Brazos G, Region H, Lower Colorado (Region K) and Llano-Estacado (Region O)).

**Means for Implementation and Enforcement**

This Water Conservation Plan and all plans developed hereunder are required to be followed by purchasers in all of the BRA's water availability agreements. Violation of the Plan is a violation of the agreement provision and will be treated as such.

A copy of the resolution by the Board of Directors (Board) of the BRA adopting this Water Conservation Plan may be found in Appendix B.

**Review and Update of Water Conservation Plan**

The BRA will review and update this Water Conservation Plan, as appropriate, every five years to coincide with development of the Regional Water Plans prepared by the Regional Water Planning Groups located within the Brazos River Basin. Each update will include an assessment of water conservation goals and new or updated information.

## Part I: Water Conservation Plan for Wholesale Water Providers

### Population Data

Figure 3 shows the location of the Brazos River Basin, the San Jacinto-Brazos Coastal Basin, and the Brazos Colorado Coastal Basin. Table 1 shows the projected populations for the Brazos River Basin and the San Jacinto-Brazos and Brazos-Colorado Coastal Basins as approved by the Texas Water Development Board for the 2012 State Water Plan. For 2010, the population of the Brazos River Basin was 2.5 million, the population of the San Jacinto-Brazos Coastal Basin was 1.0 million and the population of the Brazos-Colorado Coastal Basin was 84,776. The projected year 2060 population for the Brazos River Basin is 4.44 million, the projected year 2060 population for the San Jacinto-Brazos Coastal Basin is 2.02 million, and the projected 2060 population for the Brazos-Colorado Coastal Basin is 107,172.

**Figure 3: Brazos River Basin Location Map**



**Table 1: Population Projections for the Brazos River Basin and the San Jacinto-Brazos and Brazos-Colorado Coastal Basins**

<b>Year</b>	<b>Projected Brazos River Basin Population</b>	<b>Projected San Jacinto-Brazos Population</b>	<b>Projected Brazos-Colorado Population</b>
2010	2,542,177	1,049,777	84,766
2020	2,896,984	1,247,872	90,030
2030	3,261,722	1,417,726	95,677
2040	3,635,252	1,591,117	99,958
2050	4,032,975	1,793,914	103,689
2060	4,435,477	2,018,691	107,172

**Customer Data**

As of March 2014, the BRA had approximately 696,609 acre-feet of water per year committed under long-term contracts. Table 2 lists customers with long-term contracts for 5,000 acre-feet per year or more. Appendix C lists projected population, demand, and per capita water use for the BRA's major municipal customers as contained in the 2012 State Water Plan.

**Table 2: Brazos River Authority Long-Term Contracts for 5,000 Acre-Feet per Year or More**

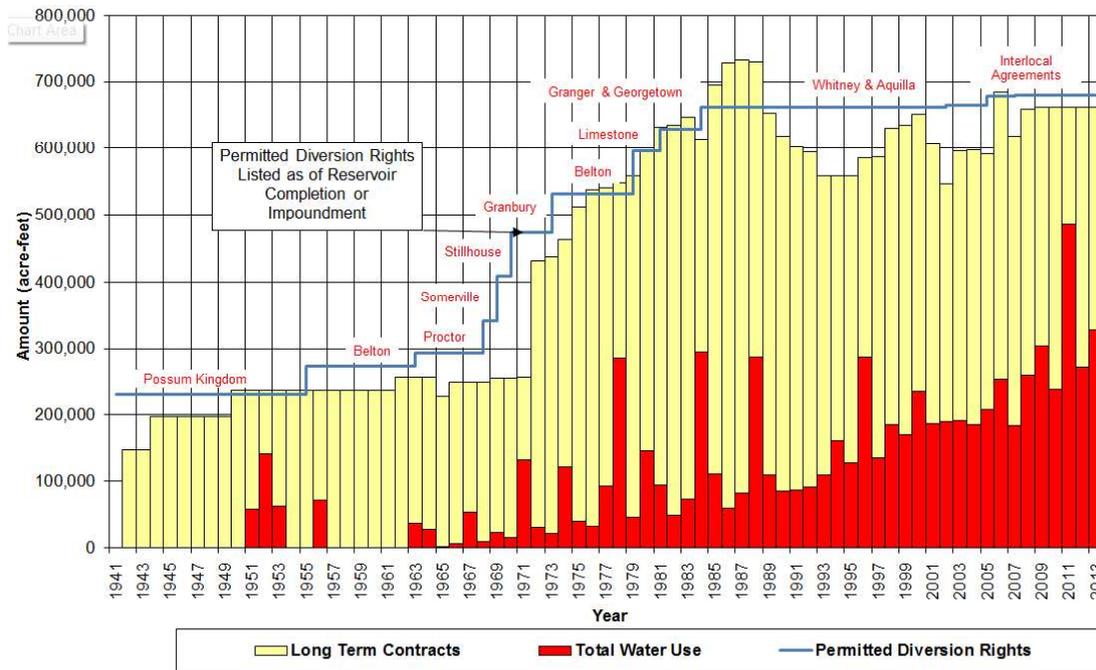
<b>Entity</b>	<b>Contract Amount (Acre-Feet per Year)</b>
TXU (Luminant)	126,285
NRG Texas	104,837
Bell Country WCID #1	62,509
Gulf Coast Water Authority	46,780
City of Round Rock	45,782
City of Georgetown	32,168
City of Temple	30,453
Dow Pipeline Company	16,000
City of Cleburne	15,000
Central Texas WSC	12,045
Johnson County SUD	9,210
Chisholm Trail SUD	11,100
City of Granbury	10,800
Exelon Generation Co.	10,000
Brazos Electric Company	8,000
Bluebonnet WSC	8,301
Kempner WSC	8,900
Acton MUD	7,000
Calpine Bosque Energy Center, LLC.	6,500

<b>Entity</b>	<b>Contract Amount (Acre-Feet per Year)</b>
Upper Leon River MWD	6,437
Sugar Land	6,388
Aquilla WSD	5,953
City of Gatesville	5,898
Aluminum Company of America	5,000

**Water Use Data**

Figure 4 shows the history of annual water use from BRA water rights and the BRA's total permitted diversions. The BRA's annual use (through its wholesale customers) has been increasing over the years, with high water use in dry years, including 1978, 1984, 1988, 1996, 2000, 2006, 2008, 2009, 2011, and 2013.

**Figure 4: Permitted Diversion Rights and Total Annual Water Use**



**Wastewater Data**

The BRA currently operates seven (7) wastewater treatment facilities – the Temple-Belton Regional Sewerage System, the Brushy Creek East and Brushy Creek West Regional Sewerage Systems, the Clute-Richwood Regional Sewerage System, the Sugar Land North and Sugar Land South Wastewater Treatment Plants, and the City of Hutto Wastewater Treatment Plant.

**Water Conservation Goals for Municipal Users**

In accordance with 30 TAC §288.5, the BRA has set specific, quantified five-year and ten-year targets for water savings. These goals include targets for municipal use in gallons per capita per day (gpcd) for the BRA's service area and maximum acceptable water loss.

Most of BRA's municipal customers are located within the Brazos G Regional Water Planning Area. The Texas Water Development Board's 2012 State Water Plan (State Plan) recommends water conservation strategies for every municipal water user group in the area whose water use is greater than 140 gpcd (page 72 of the State Plan). Therefore, the BRA adopts 140 gpcd as its ten-year goal. BRA's five-year goal is 147 gpcd and represents the level of water use an entity would need to achieve in five years if it is to reach 140 gpcd in 10 years, assuming a one percent (1%) reduction per year. An annual one percent (1%) reduction was identified as a minimum consideration in the 2004 Water Conservation Implementation Task Force report.

The maximum acceptable water loss goal for distribution systems within the BRA's service area is 12 percent. (Water suppliers in rural areas with large distances between customers may set a goal higher than 12 percent, if appropriate.)

These goals are used as a recommendation to the BRA's customers at the end user level. BRA customers that are already meeting these goals or achieving even lower gpcd use and/or meeting the water loss goal are commended and encouraged to continue to do so.

The goals contained in this Plan are provided as guidance for customers within the Brazos River Basin. Current or future BRA water sales, contracts or other agreements will not depend upon adoption or achievement of these goals by BRA customers. The BRA will continue to encourage customers to adopt goals based on criteria specific to the customer's situation.

## Part II: Water Conservation Plan for Agricultural Users

### BRA Water Rights Authorized for Irrigation Use

Of the twelve (12) water rights held by the BRA that are associated with reservoirs, the water rights for Lake Aquilla and Lake Whitney do not authorize diversions of stored water for irrigation use. Table 3 shows the authorized storage capacity and diversion right amount for each of the BRA reservoirs, excluding the proposed Allens Creek Reservoir.

**Table 3: BRA Irrigation Water Rights in Existing Reservoirs**

Water Right	Reservoir or Source	Storage Capacity (acre-feet)	Authorized Irrigation Use (acre-feet)*
CA 5155	Possum Kingdom	724,739	250,000
CA 5156	Granbury	155,000	14,500
CA 5159	Proctor	59,400	18,000
CA 5160	Belton	457,600	149,500
CA 5161	Stillhouse Hollow	235,700	73,700
CA 5162	Georgetown	37,100	4,100
CA 5163	Granger	65,500	5,500
CA 5164	Somerville	160,110	50,000
CA 5165	Limestone	225,400	70,000
CA 5158	Aquilla	52,400	0
CA 5157	Whitney	50,000	0
<b>TOTAL</b>		<b>2,222,949</b>	<b>635,300</b>

\* System Operation Order authorizes diversions in excess of the amount listed in this table for the purpose of irrigation, but may not exceed the total authorized diversions for all purposes from that reservoir in any year.

### Irrigation and Agricultural Irrigation Contracts

As of March 2014, the BRA has 22 customers with 20,915 acre-feet of water per year committed under long-term irrigation contracts. Of those 22 customers 11 are for agricultural irrigation use totaling 16,260 acre-feet. Irrigation customers that meet the definition of agricultural use in the TAC Title 30, Part 1, Rule §288.1 pay the BRA Agriculture Water Rate which is equal to 70 percent of the System Water Rate. Table 4 lists the current irrigation and agricultural irrigation customers of the BRA.

**Table 4: BRA Irrigation and Agricultural Irrigation Contracts**

Entity	Contract Amount (Acre-Feet per Year)
<b>Agricultural Rate Irrigation Customers<sup>1</sup></b>	
GULF COAST WATER AUTHORITY	5,625
LAKE PROCTOR IRRIGATION AUTH.	3,743
NORTH LEON RIVER IRRIGATION	2,909

<b>Table 4: Continued</b>	
<b>Entity</b>	<b>Contract Amount (Acre-Feet per Year)</b>
LENMO INC.	2,000
KING RANCH TURFGRASS, LP	1,300
HORIZON TURF GRASS, INC.	350
MM TERRY RANCH, LTD	125
JERRY GLAZE	100
CARR-THOMAS RANCH	50
ALL SEASONS TURF GRASS	50
COUNTRY HARVEST	8
<b>Non-Agricultural Rate Irrigation Customers<sup>2</sup></b>	
DOUBLE DIAMOND, INC.	1,000
WHITE BLUFF PROPERTY OWNERS	1,000
PECAN PLANTATION OWNER'S ASSOC	750
SUGAR TREE, INC.	500
DECORDOVA BEND ESTATES OWNERS	400
HILL COUNTRY HARBOR VILLAGE, L.P.	250
RANCH OWNER'S ASSOCIATION	250
REX R. WORRELL	240
MOUNTAIN LAKES RANCH PROPERTY	200
GRANBURY RECREATIONAL ASSOC.	50
SUN CITY GEORGETOWN	15
<sup>1</sup> Agricultural Rate Customers – Irrigation customers that meet the Agricultural definition in the <i>Texas Administrative Code</i> Title 30, Part 1, Rule §288.1. These customers pay the BRA Agricultural Rate for their water, which is equal to 70 percent of the BRA System Rate. <sup>2</sup> Non-Agricultural Rate Customers – Irrigation customers that do not qualify for the Agricultural Rate.	

**Practices Used to Account for Water Deliveries**

The BRA uses the bed and banks of the Brazos River to provide stored water to lakeside and downstream irrigation customers. When a customer requests a release of stored water, the BRA releases what the customer intends to divert plus the amount needed to cover the estimated transportation loss. The estimated transportation loss is determined using the appropriate channel loss factor from Table 5 considering the location of the reservoir from which the release will be made and the customer diversion location.

**Delivery Efficiency**

The BRA supplies irrigation water for lakeside diversion from BRA reservoirs, uses the natural bed and banks of the Brazos River and its tributaries, and the West Central Brazos Water Delivery System (WCBWCS) to deliver water. Delivery efficiency is achieved through reservoir management decisions that seek to minimize evaporation, transportation, and other losses when possible. Transportation losses are channel losses in the natural stream channel, which may consist of evaporation, transpiration,

filling of bank storage, alluvium recharge and illegal diversions. Channel losses are variable with season, antecedent weather conditions, temperature and location. Channel loss estimates used by the BRA, shown in Table 5, are consistent with those used by TCEQ in modeling associated with water right permit evaluations.

**Table 5: Estimated Channel Loss Factors**

RESERVOIR	USGS Stream Gages				
	WACO	HIGHBANK	BRYAN	HEMPSTEAD	RICHMOND
Possum Kingdom	7%	8%	10%	12%	15%
Granbury	3%	5%	6%	9%	11%
Whitney	1%	2%	4%	6%	9%
Aquilla	1%	2%	4%	6%	9%
Lake Belton			5%	7%	10%
Stillhouse			5%	7%	10%
Granger			4%	6%	9%
Limestone			1%	5%	8%
Somerville				2%	5%

**Historical Diversions**

Figure 5 shows the history of annual irrigation water use from BRA water rights. The BRA’s annual irrigation water use has generally been decreasing through time, with spikes in water use occurring in dry years including 1971, 1974, 1978, 1980, 1984, 1988, 1996, and 2011.

Figure 6 shows the history of annual water use for municipal, irrigation, industrial and mining from BRA water rights. Over the last 20 years irrigation use has ranged from 38 percent to 1 percent of total water delivered by the BRA in any one year. The average annual amount of water delivered by the BRA for irrigation use over the last ten years is 21,479 acre-feet, or nine percent of total water delivered.

Figure 5: Permitted Diversions Rights and Irrigation Water Use

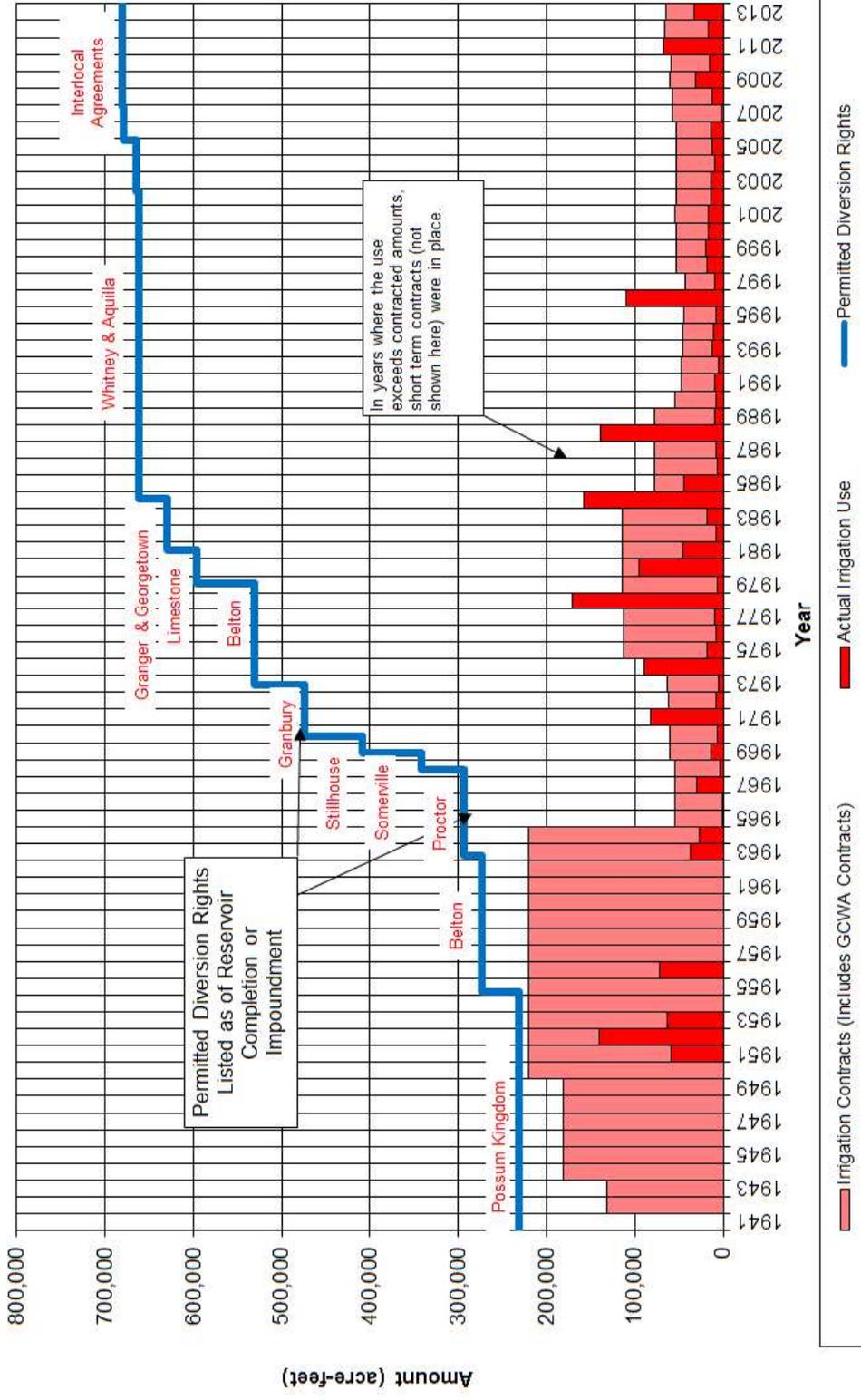
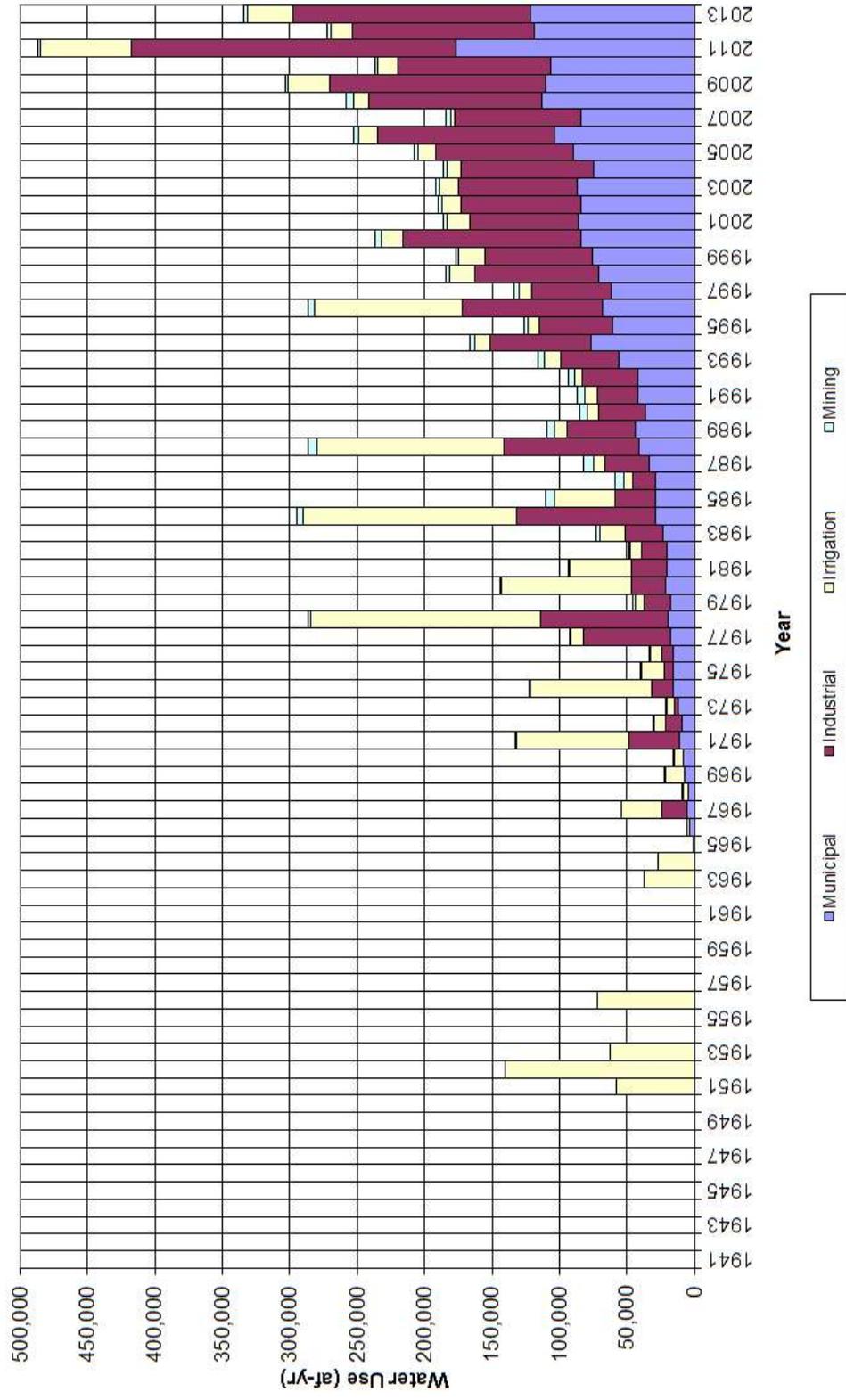


Figure 6: Permitted Diversions Rights and Total Water Use by Type



**Water Pricing Policy**

In October 2004, the BRA Board of Directors first adopted a temporary policy for pricing water for agricultural use. Previously, water for agricultural use was priced at the same rate as all other uses. In July 2009, the Board adopted a formal policy for pricing water for agricultural use. Appendix D contains the agriculture water pricing policy. The pricing policy sets the Agriculture Rate equal to seventy percent (70%) of the System Rate. Only those customers strictly meeting the Agricultural definition in Texas Administrative Code, Title 30, Rule 288.1 qualify for the reduced Agricultural Rate.

**Water Conservation Goals for Agricultural Irrigation Users**

In accordance with 30 TAC §288.4, the BRA has established 12 percent as both the quantified five and ten-year target for water savings that includes maximum acceptable water losses for agricultural irrigation use storage and distribution systems.

The five and ten-year target is to encourage agricultural irrigation customers to reduce annual water loss in storage and distribution systems to no more than 12 percent.

These goals are provided as guidance for BRA's agricultural irrigation customers. Current or future BRA water sales, contracts or other agreements will not depend upon adoption or achievement of these goals by BRA customers. The BRA will continue to encourage customers to adopt goals based on criteria specific to the customer's situation.



**APPENDIX A**

**Texas Administrative Code  
Title 30, Part 1, Chapter 288, Subchapter A, Rules 288. 4 and 288.5**

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### **TITLE 30**

ENVIRONMENTAL QUALITY

### **PART 1**

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

### **CHAPTER 288**

WATER CONSERVATION PLANS, DROUGHT CONTINGENCY PLANS, GUIDELINES AND REQUIREMENTS

### **SUBCHAPTER A** WATER CONSERVATION PLANS

#### **RULE §288.4** Water Conservation Plans for Agricultural Use

---

(a) A water conservation plan for agricultural use of water must provide information in response to the following subsections. If the plan does not provide information for each requirement, the agricultural water user must include in the plan an explanation of why the requirement is not applicable.

(1) For an individual agricultural user other than irrigation:

(A) a description of the use of the water in the production process, including how the water is diverted and transported from the source(s) of supply, how the water is utilized in the production process, and the estimated quantity of water consumed in the production process and therefore unavailable for reuse, discharge, or other means of disposal;

(B) specific, quantified five-year and ten-year targets for water savings and the basis for the development of such goals. The goals established by agricultural water users under this subparagraph are not enforceable;

(C) a description of the device(s) and/or method(s) within an accuracy of plus or minus 5.0% to be used in order to measure and account for the amount of water diverted from the source of supply;

(D) leak-detection, repair, and accounting for water loss in the water distribution system;

(E) application of state-of-the-art equipment and/or process modifications to improve water use efficiency; and

(F) any other water conservation practice, method, or technique which the user shows to be appropriate for achieving the stated goal or goals of the water conservation plan.

(2) For an individual irrigation user:

(A) a description of the irrigation production process which shall include, but is not limited to, the type of crops and acreage of each crop to be irrigated, monthly irrigation diversions, any seasonal or annual crop rotation, and soil types of the land to be irrigated;

(B) a description of the irrigation method, or system, and equipment including pumps, flow rates, plans, and/or sketches of the system layout;

(C) a description of the device(s) and/or methods, within an accuracy of plus or minus 5.0%, to be used in order to measure and account for the amount of water diverted from the source of supply;

(D) specific, quantified five-year and ten-year targets for water savings including, where appropriate, quantitative goals for irrigation water use efficiency and a pollution abatement and prevention plan. The goals established by an individual irrigation water user under this subparagraph are not enforceable;

## Water Conservation Plan

- (E) water-conserving irrigation equipment and application system or method including, but not limited to, surge irrigation, low pressure sprinkler, drip irrigation, and nonleaking pipe;
  - (F) leak-detection, repair, and water-loss control;
  - (G) scheduling the timing and/or measuring the amount of water applied (for example, soil moisture monitoring);
  - (H) land improvements for retaining or reducing runoff, and increasing the infiltration of rain and irrigation water including, but not limited to, land leveling, furrow diking, terracing, and weed control;
  - (I) tailwater recovery and reuse; and
  - (J) any other water conservation practice, method, or technique which the user shows to be appropriate for preventing waste and achieving conservation.
- (3) For a system providing agricultural water to more than one user:
- (A) a system inventory for the supplier's:
    - (i) structural facilities including the supplier's water storage, conveyance, and delivery structures;
    - (ii) management practices, including the supplier's operating rules and regulations, water pricing policy, and a description of practices and/or devices used to account for water deliveries; and
    - (iii) a user profile including square miles of the service area, the number of customers taking delivery of water by the system, the types of crops, the types of irrigation systems, the types of drainage systems, and total acreage under irrigation, both historical and projected;
  - (B) specific, quantified five-year and ten-year targets for water savings including maximum allowable losses for the storage and distribution system. The goals established by a system providing agricultural water to more than one user under this subparagraph are not enforceable;
  - (C) a description of the practice(s) and/or device(s) which will be utilized to measure and account for the amount of water diverted from the source(s) of supply;
  - (D) a monitoring and record management program of water deliveries, sales, and losses;
  - (E) a leak-detection, repair, and water loss control program;
  - (F) a program to assist customers in the development of on-farm water conservation and pollution prevention plans and/or measures;
  - (G) a requirement in every wholesale water supply contract entered into or renewed after official adoption of the plan (by either ordinance, resolution, or tariff), and including any contract extension, that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements in this chapter. If the customer intends to resell the water, the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures in accordance with applicable provisions of this chapter;
  - (H) official adoption of the water conservation plan and goals, by ordinance, rule, resolution, or tariff, indicating that the plan reflects official policy of the supplier;
  - (I) any other water conservation practice, method, or technique which the supplier shows to be appropriate for achieving conservation; and
  - (J) documentation of coordination with the regional water planning groups, in order to

## Water Conservation Plan

ensure consistency with appropriate approved regional water plans.

(b) A water conservation plan prepared in accordance with the rules of the United States Department of Agriculture Natural Resource Conservation Service, the Texas State Soil and Water Conservation Board, or other federal or state agency and substantially meeting the requirements of this section and other applicable commission rules may be submitted to meet application requirements in accordance with a memorandum of understanding between the commission and that agency.

(c) An agricultural water user shall review and update its water conservation plan, as appropriate, based on an assessment of previous five-year and ten-year targets and any other new or updated information. An agricultural water user shall review and update the next revision of its water conservation plan every five years to coincide with the regional water planning group.

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**Source Note:** The provisions of this §288.4 adopted to be effective May 3, 1993, 18 TexReg 2558; amended to be effective February 21, 1999, 24 TexReg 949; amended to be effective April 27, 2000, 25 TexReg 3544; amended to be effective August 15, 2002, 27 TexReg 7146; amended to be effective October 7, 2004, 29 TexReg 9384; amended to be effective December 6, 2012, 37 TexReg 9515

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## **Texas Administrative Code**

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### **TITLE 30**

ENVIRONMENTAL QUALITY

### **PART 1**

TEXAS COMMISSION ON ENVIRONMENTAL  
QUALITY

### **CHAPTER 288**

WATER CONSERVATION PLANS, DROUGHT  
CONTINGENCY PLANS, GUIDELINES AND  
REQUIREMENTS

### **SUBCHAPTER A WATER CONSERVATION PLANS**

#### **RULE §288.5 Water Conservation Plans for Wholesale Water Suppliers**

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A water conservation plan for a wholesale water supplier must provide information in response to each of the following paragraphs. If the plan does not provide information for each requirement, the wholesale water supplier shall include in the plan an explanation of why the requirement is not applicable.

- (1) Minimum requirements. All water conservation plans for wholesale water suppliers must include the following elements:
  - (A) a description of the wholesaler's service area, including population and customer data, water use data, water supply system data, and wastewater data;
  - (B) specific, quantified five-year and ten-year targets for water savings including, where appropriate, target goals for municipal use in gallons per capita per day for the wholesaler's service area, maximum acceptable water loss, and the basis for the development of these goals. The goals established by wholesale water suppliers under this subparagraph are not enforceable;
  - (C) a description as to which practice(s) and/or device(s) will be utilized to measure and account for the amount of water diverted from the source(s) of supply;
  - (D) a monitoring and record management program for determining water deliveries, sales, and losses;
  - (E) a program of metering and leak detection and repair for the wholesaler's water storage, delivery, and distribution system;
  - (F) a requirement in every water supply contract entered into or renewed after official adoption of the water conservation plan, and including any contract extension, that each successive wholesale customer develop and implement a water conservation plan or water conservation measures using the applicable elements of this chapter. If the customer intends to resell the water, then the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation requirements so that each successive customer in the resale of the water will be required to implement water conservation measures in accordance with applicable provisions of this chapter;
  - (G) a reservoir systems operations plan, if applicable, providing for the coordinated operation of reservoirs owned by the applicant within a common watershed or river basin. The reservoir systems operations plans shall include optimization of water supplies as

## Water Conservation Plan

one of the significant goals of the plan;

(H) a means for implementation and enforcement, which shall be evidenced by a copy of the ordinance, rule, resolution, or tariff, indicating official adoption of the water conservation plan by the water supplier; and a description of the authority by which the water supplier will implement and enforce the conservation plan; and

(I) documentation of coordination with the regional water planning groups for the service area of the wholesale water supplier in order to ensure consistency with the appropriate approved regional water plans.

(2) Additional conservation strategies. Any combination of the following strategies shall be selected by the water wholesaler, in addition to the minimum requirements of paragraph (1) of this section, if they are necessary in order to achieve the stated water conservation goals of the plan. The commission may require by commission order that any of the following strategies be implemented by the water supplier if the commission determines that the strategies are necessary in order for the conservation plan to be achieved:

(A) conservation-oriented water rates and water rate structures such as uniform or increasing block rate schedules, and/or seasonal rates, but not flat rate or decreasing block rates;

(B) a program to assist agricultural customers in the development of conservation pollution prevention and abatement plans;

(C) a program for reuse and/or recycling of wastewater and/or graywater; and

(D) any other water conservation practice, method, or technique which the wholesaler shows to be appropriate for achieving the stated goal or goals of the water conservation plan.

(3) Review and update requirements. The wholesale water supplier shall review and update its water conservation plan, as appropriate, based on an assessment of previous five-year and ten-year targets and any other new or updated information. A wholesale water supplier shall review and update the next revision of its water conservation plan every five years to coincide with the regional water planning group.

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**Source Note:** The provisions of this §288.5 adopted to be effective May 3, 1993, 18 TexReg 2558; amended to be effective February 21, 1999, 24 TexReg 949; amended to be effective April 27, 2000, 25 TexReg 3544; amended to be effective October 7, 2004, 29 TexReg 9384; amended to be effective December 6, 2012, 37 TexReg 9515

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**APPENDIX B**  
**Resolution Adopting Water Conservation Plan**



## Brazos River Authority

**RESOLUTION OF THE BOARD OF DIRECTORS OF  
THE BRAZOS RIVER AUTHORITY  
APRIL 28, 2014**

**Agenda Item No. 9  
Water Conservation Plan**

**"BE IT RESOLVED** by the Board of Directors of the Brazos River Authority that the Water Conservation Plan, as presented at the April 28, 2014, Board Meeting and prepared in conformance with the requirements of the Texas Commission on Environmental Quality, is hereby adopted; and

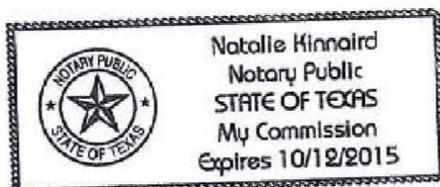
**BE IT FURTHER RESOLVED** by the Board of Directors of the Brazos River Authority that this newly adopted Water Conservation Plan supersedes the Water Conservation Plan dated October 29, 2012, and the Water Conservation Plan for Irrigation Use dated October 26, 2009; and

**BE IT FURTHER RESOLVED** that the General Manager/CEO is directed to submit the adopted Brazos River Authority Water Conservation Plan to the Texas Commission on Environmental Quality."

The aforementioned resolution was approved by the Board of Directors of the Brazos River Authority on April 28, 2014, to certify which witness my hand and seal.

**Dave Scott**  
Presiding Officer

SUBSCRIBED AND SWORN TO BEFORE ME on this the 28<sup>th</sup> day of April, 2014, to certify which witness my hand and official seal.



Natalie Kinnaird  
Notary Public in and for the  
State of Texas

**APPENDIX C**

**Projected Population, Demand,  
and Per Capita Water Use for Major Municipal Customers**

# Water Conservation Plan

Authority Customer	Region	Water User Group	County	Basin	Demand (Acre-Feet per Year)										Population					
					2010	2020	2030	2040	2050	2060	2010	2020	2030	2040	2050	2060				
Acton MUD	G	A CTON MUD	Hood	Brazos	2,425	2,912	3,363	3,851	4,464	5,204	15,036	18,435	21,599	24,913	29,088	33,909				
Aquilla WSC	G	FILES VALLEY WSC	Hill	Brazos	413	417	421	424	433	447	1,997	2,045	2,100	2,154	2,212	2,277				
Aquilla WSC	G	HILLSBORO	Hill	Brazos	1,819	1,862	1,911	1,957	2,030	2,123	8,923	9,284	9,692	10,099	10,534	11,017				
Bell County WCID#1	G	439 WSC	Bell	Brazos	803	909	999	1,057	1,090	1,122	6,765	7,802	8,740	9,345	9,735	10,018				
Bell County WCID#1	G	BELTON	Bell	Brazos	2,824	3,199	3,542	3,723	3,875	3,920	17,633	20,399	22,914	24,617	25,815	26,116				
Bell County WCID#1	G	COPPERAS COVE	Coryell	Brazos	3,621	4,122	4,567	4,864	5,155	5,436	34,762	40,893	46,866	51,092	54,790	57,765				
Bell County WCID#1	G	COPPERAS COVE	Lampasas	Brazos	22	30	34	38	40	41	213	293	351	394	422	440				
Bell County WCID#1	G	FORT HOOD	Bell	Brazos	4,395	4,337	4,279	4,221	4,182	4,182	17,282	17,282	17,282	17,282	17,282	17,282				
Bell County WCID#1	G	FORT HOOD	Coryell	Brazos	4,178	4,123	4,068	4,013	3,976	3,976	16,429	16,429	16,429	16,429	16,429	16,429				
Bell County WCID#1	G	HARKER HEIGHTS	Bell	Brazos	3,904	4,959	5,800	6,507	6,698	6,815	23,869	30,952	36,978	42,090	43,640	44,407				
Bell County WCID#1	G	KILLEEN	Bell	Brazos	19,530	25,462	27,985	30,141	32,207	34,432	113,217	126,985	141,148	154,641	169,132	184,064				
Bluebonnet WSC	G	NOLANVILLE	Bell	Brazos	349	359	365	365	369	374	2,611	2,753	2,882	2,965	3,019	3,058				
Bluebonnet WSC	G	MCGREGOR	McLennan	Brazos	933	923	913	902	894	899	4,760	4,793	4,821	4,850	4,869	4,896				
Bluebonnet WSC	G	MOFFAT WSC	Bell	Brazos	402	430	457	468	477	488	4,434	4,922	5,364	5,649	5,832	5,965				
Brenham	G	BRENHAM	Washington	Brazos	3,078	3,223	3,303	3,320	3,364	3,415	14,313	15,306	15,940	16,285	16,594	16,844				
Central Texas WSC	G	BELL-MILAM FALLS WSC	Bell	Brazos	342	371	398	415	425	435	2,350	2,607	2,840	2,990	3,087	3,157				
Central Texas WSC	G	BELL-MILAM FALLS WSC	Falls	Brazos	178	229	281	327	362	407	1,223	1,609	2,004	2,351	2,627	2,952				
Central Texas WSC	G	BELL-MILAM FALLS WSC	Milam	Brazos	245	288	316	334	341	347	1,683	2,024	2,255	2,408	2,477	2,522				
Central Texas WSC	G	BELL-MILAM FALLS WSC	Williamson	Brazos	53	66	83	101	120	142	362	467	592	727	874	1,032				
Central Texas WSC	G	DOG RIDGE WSC	Bell	Brazos	715	799	876	926	955	982	4,434	5,060	5,626	5,991	6,226	6,397				
Central Texas WSC	G	EAST BELL COUNTY WSC	Bell	Brazos	263	271	276	279	282	286	2,502	2,661	2,805	2,898	2,958	3,001				
Central Texas WSC	G	EAST BELL COUNTY WSC	Falls	Brazos	77	89	101	112	120	132	729	876	1,026	1,158	1,263	1,386				
Central Texas WSC	G	HOLLAND	Bell	Brazos	125	121	117	114	111	111	1,102	1,102	1,102	1,102	1,102	1,102				
Central Texas WSC	G	LOTT	Falls	Brazos	97	94	92	89	88	88	724	724	724	724	724	724				
Central Texas WSC	G	ROGERS	Bell	Brazos	195	191	188	184	181	181	1,117	1,117	1,117	1,117	1,117	1,117				
Central Texas WSC	G	ROSEBUD	Falls	Brazos	171	166	161	156	152	152	1,493	1,493	1,493	1,493	1,493	1,493				
Central Texas WSC	G	WEST BELL COUNTY WSC	Bell	Brazos	660	642	623	605	599	599	5,456	5,456	5,456	5,456	5,456	5,456				
Cleburne	G	CLEBURNE	Johnson	Brazos	6,027	6,680	7,343	8,097	9,046	9,879	30,572	34,467	38,558	43,027	48,353	52,812				
Gatesville	G	FORT GATES WSC	Coryell	Brazos	322	358	392	415	437	457	2,279	2,602	2,916	3,138	3,333	3,490				
Gatesville	G	GATESVILLE	Coryell	Brazos	3,409	4,139	4,850	5,356	5,787	6,163	19,637	24,312	28,866	32,088	34,908	37,177				
Georgetown	G	CHISHOLM TRAIL SUD	Bell	Brazos	103	127	149	166	176	183	649	784	906	985	1,036	1,073				
Georgetown	K	CHISHOLM TRAIL SUD	Burnet	Brazos	28	40	53	66	79	94	178	249	321	390	465	553				
Georgetown	G	CHISHOLM TRAIL SUD	Williamson	Brazos	3,025	4,595	6,473	8,619	10,954	13,335	19,019	28,290	39,312	51,297	64,336	78,320				
Georgetown	G	GEORGETOWN	Williamson	Brazos	10,342	13,956	18,187	22,826	27,979	33,506	49,112	66,987	88,239	111,348	136,489	163,453				
Graham	G	GRAHAM	Young	Brazos	1,528	1,531	1,503	1,456	1,415	1,402	8,800	8,993	9,006	8,903	8,772	8,690				
Granbury	G	GRANBURY	Hood	Brazos	2,795	3,456	4,058	4,708	5,524	6,485	8,073	10,083	11,954	13,914	16,383	19,234				
Gulf Coast Water Authority	H	BACLIFF MUD	Galveston	San Jacinto-Brazos	552	572	569	560	557	562	7,816	8,509	8,919	9,085	9,209	9,289				
Gulf Coast Water Authority	H	BAYOU VISTA	Galveston	San Jacinto-Brazos	429	458	471	475	478	482	1,816	1,964	2,052	2,088	2,114	2,131				
Gulf Coast Water Authority	H	CLEAR LAKE SHORES	Galveston	San Jacinto-Brazos	282	287	289	287	287	289	1,263	1,313	1,343	1,355	1,364	1,370				
Gulf Coast Water Authority	H	GALVESTON	Galveston	San Jacinto-Brazos	16,095	15,903	15,711	15,518	15,390	15,390	57,247	57,247	57,247	57,247	57,247	57,247				
Gulf Coast Water Authority	H	GALVESTON COUNTY WCID #12	Galveston	San Jacinto-Brazos	267	296	312	316	320	324	1,641	1,861	1,992	2,045	2,084	2,110				
Gulf Coast Water Authority	H	HITCHCOCK	Galveston	San Jacinto-Brazos	933	935	930	914	911	915	6,660	6,897	7,037	7,094	7,136	7,163				
Gulf Coast Water Authority	H	KEMAH	Galveston	San Jacinto-Brazos	278	322	348	356	360	366	2,985	3,550	3,885	4,021	4,122	4,188				
Gulf Coast Water Authority	H	LA MARQUE	Galveston	San Jacinto-Brazos	2,161	2,115	2,069	2,023	1,992	1,992	13,682	13,682	13,682	13,682	13,682	13,682				
Gulf Coast Water Authority	H	LEAGUE CITY	Galveston	San Jacinto-Brazos	7,477	8,253	8,674	8,751	8,840	8,947	53,403	60,392	64,532	66,207	67,454	68,265				
Gulf Coast Water Authority	H	LEAGUE CITY	Harris	San Jacinto-Brazos	26	26	26	26	26	27	180	185	190	195	200	205				
Gulf Coast Water Authority	H	MISSOURI CITY	Fort Bend	San Jacinto-Brazos	14,556	18,049	21,563	25,191	27,892	33,912	76,758	96,601	115,617	134,918	148,313	179,508				

# Water Conservation Plan

Authority Customer	Region	Water User Group	County	Basin	Demand (Acre-Feet per Year)						Population					
					2010	2020	2030	2040	2050	2060	2010	2020	2030	2040	2050	2060
Gulf Coast Water Authority	H	PEARLAND	Brazoria	San Jacinto-Brazos	11,965	14,925	17,508	19,949	22,681	25,525	82,803	104,912	125,037	143,622	163,286	183,764
Gulf Coast Water Authority	H	PEARLAND	Harris	San Jacinto-Brazos	445	513	579	646	717	788	3,074	3,606	4,129	4,647	5,161	5,673
Gulf Coast Water Authority	H	SAN LEON MUD	Galveston	San Jacinto-Brazos	632	670	680	676	677	684	6,795	7,481	7,887	8,051	8,173	8,253
Gulf Coast Water Authority	H	SANTA FE	Galveston	San Jacinto-Brazos	988	990	982	956	951	956	10,141	10,653	10,956	11,079	11,170	11,229
Gulf Coast Water Authority	H	STAFFORD	Fort Bend	San Jacinto-Brazos	1,728	2,254	2,869	3,516	4,425	5,463	23,026	30,959	40,659	50,633	63,714	78,661
Gulf Coast Water Authority	H	SUGAR LAND	Fort Bend	Brazos	20,281	24,314	24,937	24,818	24,818	24,818	83,819	101,422	105,000	105,000	105,000	105,000
Gulf Coast Water Authority	H	TEXAS CITY	Galveston	San Jacinto-Brazos	6,476	6,383	6,269	6,138	6,051	6,056	41,891	42,211	42,400	42,477	42,534	42,571
Gulf Coast Water Authority	H	TIKI ISLAND	Galveston	San Jacinto-Brazos	243	282	303	311	316	321	1,270	1,489	1,619	1,672	1,711	1,736
Jarrell-Schwertner WSC	G	JARRELL-SCHWERTNER WSC	Bell	Brazos	308	344	376	395	409	420	1,518	1,717	1,897	2,013	2,088	2,142
Jarrell-Schwertner WSC	G	JARRELL-SCHWERTNER WSC	Williamson	Brazos	479	722	1,006	1,308	1,651	2,019	2,362	3,596	5,068	6,672	8,420	10,297
Johnson County SUD	G	JOHNSON COUNTY SUD	Hill	Brazos	37	41	46	53	59	65	191	211	233	255	279	305
Johnson County SUD	G	JOHNSON COUNTY SUD	Johnson	Brazos	8,036	10,423	13,058	16,201	20,192	24,506	43,983	56,147	68,926	82,885	100,205	121,454
Jonah Water SUD	G	JONAH WATER SUD	Williamson	Brazos	1,676	2,229	2,804	3,415	4,092	4,845	10,685	13,915	17,755	21,930	26,472	31,344
Kempner WSC	G	KEMPNER WSC	Lampasas	Brazos	300	366	411	446	467	482	1,286	1,584	1,800	1,960	2,065	2,131
Kempner WSC	G	KEMPNER WSC	Bell	Brazos	1,142	1,297	1,443	1,535	1,591	1,636	3,388	3,887	4,338	4,629	4,816	4,952
Kempner WSC	K	KEMPNER WSC	Burnet	Brazos	298	381	466	548	636	741	884	1,140	1,402	1,652	1,925	2,242
Kempner WSC	G	KEMPNER WSC	Coryell	Brazos	1,699	2,311	2,913	3,334	3,698	4,000	5,039	6,922	8,756	10,054	11,190	12,104
Kempner WSC	G	KEMPNER WSC	Lampasas	Brazos	1,293	1,547	1,734	1,870	1,956	2,015	3,836	4,633	5,211	5,639	5,920	6,098
Kempner WSC	G	KEMPNER WSC	Lampasas	Brazos	1,842	2,016	2,119	2,174	2,223	2,082	8,222	9,225	9,952	10,491	10,845	10,325
Kempner WSC	G	SALADO WSC	Bell	Brazos	1,195	1,334	1,461	1,544	1,594	1,636	4,743	5,366	5,930	6,294	6,528	6,698
Lake Whitney Water Company	G	LAKE WHITNEY WATER COMPANY	Bosque	Brazos	389	387	382	373	366	367	3,374	3,459	3,519	3,541	3,550	3,561
Lake Whitney Water Company	G	LAKE WHITNEY WATER COMPANY	Brazos	Brazos	623	608	593	578	570	574	5,396	5,426	5,460	5,494	5,530	5,570
Liberty Hill	G	LIBERTY HILL	Hill	Brazos	454	673	940	1,223	1,537	1,874	2,440	3,663	5,117	6,698	8,418	10,263
Lorena	G	LORENA	McLennan	Brazos	369	408	440	475	497	533	1,640	1,849	2,025	2,207	2,323	2,491
Marlin	G	MARLIN	Falls	Brazos	2,660	2,749	2,839	2,913	2,983	3,076	6,862	7,155	7,455	7,718	7,927	8,173
Parker County SUD	G	PARKER WSC	Hill	Brazos	391	419	451	483	517	555	391	419	451	483	517	555
Parker County SUD	G	PARKER WSC	Johnson	Brazos	287	344	402	470	555	664	2,187	2,697	3,233	3,818	4,545	5,436
Pecan Grove MUD	H	PECAN GROVE MUD #1	Fort Bend	Brazos	2,913	2,938	2,961	2,997	3,090	3,214	12,936	13,245	13,622	14,009	14,518	15,099
Richmond	H	RICHMOND	Fort Bend	Brazos	2,252	2,324	2,764	3,189	3,915	4,717	13,493	14,212	17,257	20,334	25,149	30,295
Rosenberg	H	ROSENBERG	Fort Bend	Brazos	5,156	6,405	7,932	9,502	11,637	14,171	37,420	48,048	61,043	74,405	91,929	111,953
Round Rock	G	BRUSHY CREEK MUD	Williamson	Brazos	2,643	3,596	3,869	3,869	3,869	3,869	16,270	22,138	23,823	23,823	23,823	23,823
Round Rock	G	FERN BLUFF MUD	Williamson	Brazos	1,339	2,049	2,882	3,805	4,810	5,888	9,801	15,117	21,437	28,309	35,785	43,803
Round Rock	G	ROUND ROCK	Williamson	Brazos	23,103	31,146	40,704	51,176	62,801	75,268	104,696	143,328	189,257	239,199	293,531	351,804
Stamford	G	STAMFORD	Haskell	Brazos	8	8	8	8	8	8	45	46	46	49	50	52
Stamford	G	STAMFORD	Jones	Brazos	637	640	626	604	582	560	3,667	3,756	3,750	3,693	3,585	3,446
Stephens County Rural WSC	G	STEPHENS COUNTY RURAL WSC	Eastland	Brazos	2	2	2	1	1	1	13	13	13	12	12	12
Stephens County Rural WSC	G	STEPHENS COUNTY RURAL WSC	Palo Pinto	Brazos	2	2	2	1	1	1	13	13	13	13	13	13
Stephens County Rural WSC	G	STEPHENS COUNTY RURAL WSC	Shackelford	Brazos	2	2	2	1	1	1	14	14	14	13	12	10
Stephens County Rural WSC	G	STEPHENS COUNTY RURAL WSC	Stephens	Brazos	318	314	308	296	279	271	2,533	2,573	2,592	2,567	2,469	2,391
Stephens County Rural WSC	G	STEPHENS COUNTY RURAL WSC	Throckmorton	Brazos	10	9	9	8	7	7	79	77	73	68	63	60
Stephens County Rural WSC	G	STEPHENS COUNTY RURAL WSC	Young	Brazos	2	2	2	1	1	1	13	13	13	13	13	13
Taylor	G	TAYLOR	Williamson	Brazos	2,913	3,279	3,705	4,183	4,727	5,342	17,935	20,613	23,797	27,259	31,025	35,065
Temple	G	LITTLE RIVER ACADEMY	Bell	Brazos	275	285	292	294	297	301	1,793	1,896	1,989	2,049	2,088	2,116
Temple	G	MORGANS POINT RESORT	Bell	Brazos	473	520	563	591	607	623	4,219	4,781	5,290	5,617	5,828	5,981
Temple	G	TEMPLE	Bell	Brazos	21,033	23,018	25,170	26,892	28,804	30,613	62,382	71,350	80,830	89,247	97,774	105,519
Temple	G	TROY	Bell	Brazos	185	181	176	171	168	168	1,378	1,378	1,378	1,378	1,378	1,378
Wellborn SUD	G	WELLBORN SUD	Brazos	Brazos	1,069	1,285	1,482	1,637	1,820	1,886	8,448	10,430	12,253	13,660	15,328	15,886
Whitney	G	WHITNEY	Hill	Brazos	365	370	375	380	391	405	2,157	2,227	2,306	2,385	2,470	2,564

# Water Conservation Plan

BRA Customer	Region	Water User Group	Per Capita (gpcd)					
			2010	2020	2030	2040	2050	2060
Acton MUD	G	ACTON MUD	144	141	139	138	137	137
Aquilla WSC	G	FILES VALLEY WSC	185	182	179	176	175	175
Aquilla WSC	G	HILLSBORO	182	179	176	173	172	172
Bell County WCID #1	G	439 WSC	106	104	102	101	100	100
Bell County WCID #1	G	BELTON	143	140	138	135	134	134
Bell County WCID #1	G	COPPERAS COVE	93	90	87	85	84	84
Bell County WCID #1	G	FORT HOOD (CDP)2	227	224	221	218	216	216
Bell County WCID #1	G	HARKER HEIGHTS	146	143	140	138	137	137
Bell County WCID #1	G	KILLEEN	154	179	177	174	170	167
Bell County WCID #1	G	NOLANVILLE	119	116	113	110	109	109
Bluebonnet WSC	G	MCGREGOR	175	172	169	166	164	164
Bluebonnet WSC	G	MOFFAT WSC	81	78	76	74	73	73
Brenham	G	BRENHAM	192	188	185	182	181	181
Central Texas WSC	G	BELL-MILAM-FALLS WSC	130	127	125	124	123	123
Central Texas WSC	G	DOG RIDGE WSC	144	141	139	138	137	137
Central Texas WSC	G	EAST BELL COUNTY WSC	94	91	88	86	85	85
Central Texas WSC	G	HOLLAND	101	98	95	92	90	90
Central Texas WSC	G	LOTT	120	116	113	110	109	109
Central Texas WSC	G	ROGERS	156	153	150	147	145	145
Central Texas WSC	G	ROSEBUD	102	99	96	93	91	91
Central Texas WSC	G	WEST BELL COUNTY WSC	108	105	102	99	98	98
Cleburne	G	CLEBURNE	176	173	170	168	167	167
Gatesville	G	FORT GATES WSC	126	123	120	118	117	117
Gatesville	G	GATESVILLE	155	152	150	149	148	148
Georgetown	G	CHISHOLM TRAIL SUD	142	145	147	150	152	152
Georgetown	G	GEORGETOWN	188	186	184	183	183	183
Graham	G	GRAHAM	155	152	149	146	144	144
Granbury	G	GRANBURY	309	306	303	302	301	301
Gulf Coast Water Authority	H	BACLIFF MUD	63	60	57	55	54	54
Gulf Coast Water Authority	H	BAYOU VISTA	211	208	205	203	202	202
Gulf Coast Water Authority	H	CLEAR LAKE SHORES	199	195	192	189	188	188
Gulf Coast Water Authority	H	GALVESTON	251	248	245	242	240	240
Gulf Coast Water Authority	H	GALVESTON COUNTY WCID #2	145	142	140	138	137	137
Gulf Coast Water Authority	H	HITCHCOCK	125	121	118	115	114	114
Gulf Coast Water Authority	H	KEMAH	83.1	81	80	79	78	78
Gulf Coast Water Authority	H	LA MARQUE	141	138	135	132	130	130
Gulf Coast Water Authority	H	LEAGUE CITY	125	122	120	118	117	117
Gulf Coast Water Authority	H	MISSOURI CITY	169	167	166	167	168	169
Gulf Coast Water Authority	H	PEARLAND	129	127	125	124	124	124

# Water Conservation Plan

BRA Customer	Region	Water User Group	Per Capita (gpcd)					
			2010	2020	2030	2040	2050	2060
Gulf Coast Water Authority	H	SAN LEON MUD	83	80	77	75	73.9	74
Gulf Coast Water Authority	H	SANTA FE	87	83	80	77	76	76
Gulf Coast Water Authority	H	STAFFORD	67	65	63	62	62	62
Gulf Coast Water Authority	H	SUGAR LAND	216	214	212	211	211	211
Gulf Coast Water Authority	H	TEXAS CITY	138	135	132	129	127	127
Gulf Coast Water Authority	H	TIKI ISLAND	171	169	167	166	165	165
Jarrell-Schwertner WSC	G	JARRELL-SCHWERTNER WSC	181	179	177	175	175	175
Johnson County SUD	G	JOHNSON COUNTY SUD	163	166	169	175	180	180
Jonah Water SUD	G	JONAH WATER SUD	140	143	141	139	138	138
Kempner WSC	G	KEMPNER	208	206	204	203	202	202
Kempner WSC	G	KEMPNER WSC	301	298	297	296	295	295
Kempner WSC	G	LAMPASAS	200	195	190	185	183	180
Kempner WSC	G	SALADO	225	222	220	219	218	218
Lake Whitney Water Company	G	LAKE WHITNEY WATER COMPANY	103	100	97	94	92	92
Liberty Hill	G	LIBERTY HILL	166	164	164	163	163	163
Lorena	G	LORENA	201	197	194	192	191	191
Marlin	G	MARLIN	346	343	340	337	336	336
Parker County SUD	G	PARKER WSC	117	114	111	110	109	109
Pecan Grove MUD	H	PECAN GROVE MUD #1	201	198	194	191	190	190
Richmond	H	RICHMOND	149	146	143	140	139	139
Rosenburg	H	ROSENBURG	123	119	116	114	113	113
Round Rock	G	BRUSHY CREEK MUD	145	145	145	145	145	145
Round Rock	G	FERN BLUFF MUD	122	121	120	120	120	120
Round Rock	G	ROUND ROCK	197	194	192	191	191	191
Stamford	G	STAMFORD	155	152	149	146	145	145
Stephens County Rural WSC	G	STEPHENS COUNTY RURAL WSC	113	109	107	102	100	101
Taylor	G	TAYLOR	145	142	139	137	136	136
Temple	G	LITTLE RIVER-ACADEMY	137	134	131	128	127	127
Temple	G	MORGANS POINT RESORT	100	97	95	94	93	93
Temple	G	TEMPLE	301	288	278	269	263	259
Temple	G	TROY	120	117	114	111	109	109
Wellborn SUD	G	WELLBORN SUD	113	110	108	107	106	106
Whitney	G	WHITNEY	151	148	145	142	141	141

## Source:

Data source from the 2011 Brazos G and Region H Regional Water Plans

Brazos G: Table 2.1 Historical and Projected Population by County, Table 2-4. Per Capita Water Use for Water User Groups in the Brazos G Regional Water Planning Area (gpcd), Table 2.5 Historical and Projected Municipal Water Demand by WUG /County in the Brazos G area

Region H: TWDB Website Population Demand Projections for 2000-2060 and Municipal Water Demand Projections for 2010-2060 (acft)

**APPENDIX D**

**Board Resolution Adopting Agricultural Water Pricing Policy**



Brazos River Authority

**RESOLUTION OF THE BOARD OF DIRECTORS OF  
THE BRAZOS RIVER AUTHORITY  
JULY 27-28, 2009**

**Agenda Item 19  
Plan for Pricing Water for Agricultural Use**

**"BE IT RESOLVED** by the Board of Directors of the Brazos River Authority that it recognizes the different economics between customers of Brazos River Authority System Water solely for Agricultural Uses, and other users of System Water; and

**BE IT FURTHER RESOLVED** that there are System Water and Interruptible Water customers whose use of the Brazos River Authority's water is for Agriculture as defined in the State of Texas Water Code, Chapter 11; and

**BE IT FURTHER RESOLVED** that the Agriculture Rate shall be an amount equal to Seventy Percent (70%) of the System Rate for each Fiscal Year and shall be offered to System Water and Interruptible Water customers that meet the definitions contained within this Resolution; and

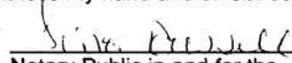
**BE IT FURTHER RESOLVED** that the Agriculture Rate shall be adopted every subsequent Fiscal Year concurrent with the adoption of the Annual Budget and the System Rate for that Fiscal Year."

The aforementioned resolution was approved by the Board of Directors of the Brazos River Authority on **July 27, 2009**, to certify which witness my hand and seal.

  
\_\_\_\_\_  
**Christopher DeCluitt**  
Presiding Officer

SUBSCRIBED AND SWORN TO BEFORE ME on this the 28<sup>th</sup> day of July, 2009, to certify which witness my hand and official seal.



  
\_\_\_\_\_  
Notary Public in and for the  
State of Texas