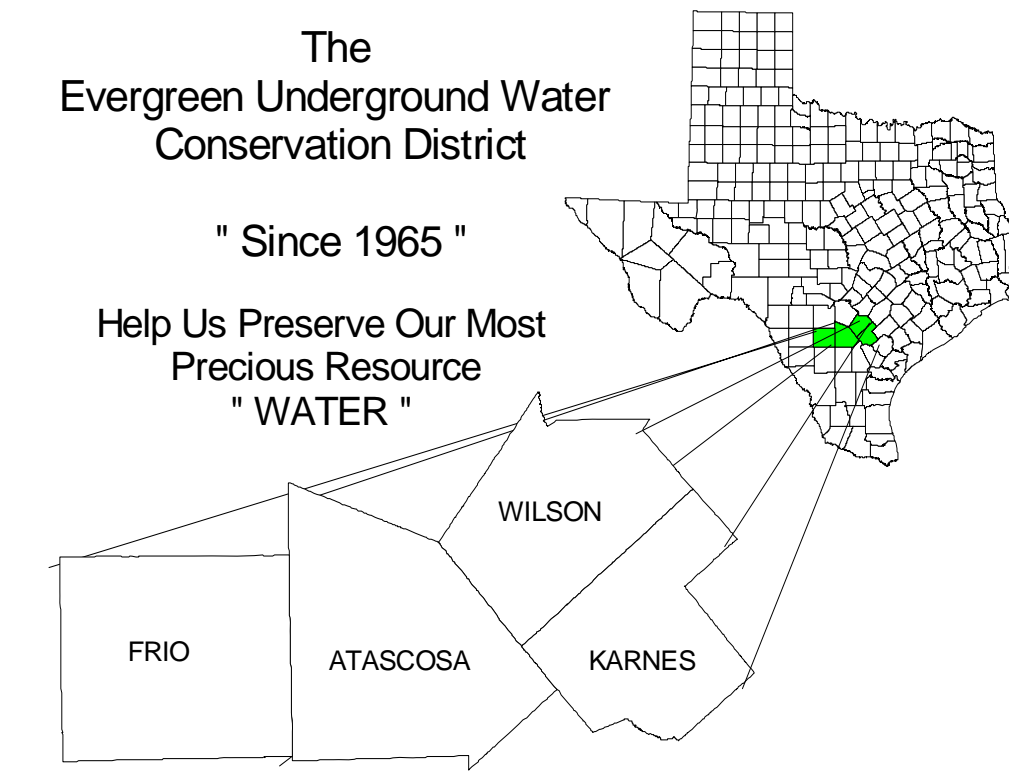


Evergreen Underground Water Conservation District



Groundwater Management Plan

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PURPOSE AND INTENT

It is the purpose and intent of this plan to establish policy in the areas of technical research and studies, water conservation, public information, regulation, permits and enforcement, equity and discretion, and cooperation and coordination. The goal of this plan is to establish a Regulatory Action Plan that will conserve, preserve, protect, and prevent the waste of the groundwater within the District. Due to the present mining of groundwater in the Carrizo aquifer in some areas of the District, the Regulatory Action Plan will also address reducing the mining of groundwater. The regulations and policies in this plan have been established so that the goals, needs and obligations of the District may be accomplished as set forth by the 59th Legislature, Regular Session, 1965, Article 8280-297, and Chapter 36 of the Texas Water Code.

TIME PERIOD OF THIS PLAN

This plan was adopted by resolution of the District Board of Directors after notice and hearing in a public meeting on December 19, 2003. The plan shall be in effect for a time period of 10 years from the date the plan is certified as administratively complete by the Texas Water Development Board.

BACKGROUND

The Evergreen Underground Water Conservation District was created in 1965 in accordance with Section 59, Article 16 of the Constitution of the State of Texas, and in accordance with Acts of the 59th Legislature (1965), page 398, Chapter 197, H.B. 116, as amended by Acts of the 60th Legislature (1967), page 1676, Chapter 647, H.B. 1272, Acts of the 68th Legislature (1983), page 2852, Chapter 484, S.B. 194, and Acts of the 69th Legislature (1985), page 2984, Chapter 438, S.B. 1253, hereforth to be referred to as the act. The organizational meeting of the Board of Directors was held on September 3, 1965. The Board held two elections in 1967 seeking ratification of a tax rate from which operational funds could be generated. The tax referendum did not pass, and the Board operated on support from counties, cities, organizations, and individuals until 1973, when the Board was forced to discontinue their quarterly meetings as they had no funds to conduct their Directors' election as required by law.

On September 3, 1984, members of the Board, alarmed by groundwater level declines, met to discuss reactivation of the District. At this time representatives of Frio County expressed an interest in adding Frio County to the District. On April 6, 1985, an election was held to ratify the incorporation of Frio County, elect representatives to the Board of Directors, and set a tax rate for the District. The election was successful and a tax rate of \$0.005 per \$100 valuation was set. In September of 1997, the Karnes County Commissioners Court petitioned the District with a request to be annexed into the District. On January 17, 1998 the

District held an election in Karnes County to ratify the petition, and the election passed by an eighty-nine percent margin.

The District encompasses all of Atascosa, Frio, Wilson, and Karnes Counties. This includes 2,461,000 acres or 3,845 square miles. The District's economy is heavily dependent upon agriculture and agriculture related business. Rainfall in the District averages from 24 inches per year in Frio County, to 32 inches per year in Wilson County. Rainfall usually peaks in the late spring, with a secondary peak in early fall. Due to this trend and high summer temperatures, irrigation is required for consistent crop production and yield. Approximately 80% of the total groundwater pumpage in the District is used in Agriculture. Since 1985 the District has engaged in extensive data collection on water well locations, well conditions, static water levels, chemical analysis, and pumpage and use. This data has been instrumental in understanding the dynamics of the underground water resources within the District. The District has worked extensively to promote water conservation through education, and technical assistance in all sectors of the District.

POLICY

It is the Policy of the District to continue technical research and studies, promote water conservation, provide public information, maintain and sustain regulation, permits, enforcement, equity and discretion, cooperation and coordination. These policies are designed to support the regulation of groundwater withdrawals to reduce the mining of groundwater resources within the District. The implementation of this plan can only be achieved through a concerted effort by all parties that use groundwater within the District. The District shall maintain an office with regular office hours.

TECHNICAL RESEARCH AND STUDIES

The District conducts technical studies in cooperation with other entities including the Texas Water Development Board (TWDB) and the Texas Commission on Environmental Quality (TCEQ) in order to identify methods to conserve and protect groundwater resources. Results from the studies have aided in the implementation of more efficient irrigation practices, education, and well head protection. Grants from the TWDB have provided funds for the District to purchase lab equipment for water analysis, and well mapping equipment. The District collects data on water levels, groundwater production, and water quality on a monthly and annual basis from wells throughout the District. The District will continue to gather data and improve the data gathering methods to ensure all future District Plans are based on the best information available.

WATER CONSERVATION

Water conservation has become a strong initiative throughout the State of Texas. New buildings are required to use certain water conserving plumbing fixtures as a

result of legislation passed by the Texas Legislature in 1991. It has been recognized that fresh water is a vital commodity that can only last through preservation. The District may require a conservation plan for certain well permits in order to be sure that the groundwater produced is put to a beneficial use, and not wasted. The District continues to work with water utilities, industry and agriculture users to promote the most efficient use of water so that we may preserve one of our most valuable natural resources. The District will continue to explore other conservation methods and options and will adopt new requirements as they become necessary.

PUBLIC INFORMATION

The District will take the necessary steps to ensure the public is informed and will cooperate with the media and all interested parties. The dissemination of information to the public is vital to create awareness, and the public support that is needed to control and reduce the mining of the groundwater.

The District will also continue to pursue water conservation through a public information and educational program. If used properly, voluntary conservation measures can significantly extend the life of the groundwater, thereby preventing the need for mandatory programs by this District or the State. Voluntary programs are entirely a function of providing the necessary education on conservation methods and habits along with the means to implement those methods. The District will continue to provide information to school districts and the general public in an effort to create voluntary conservation.

REGULATION

The primary objective of this Plan is to control groundwater withdrawals to reduce aquifer mining within the District. Groundwater withdrawals can be reduced through conservation of groundwater. In regulating groundwater withdrawals, the District shall take into account several factors, including:

- 1) Economic impact of conservation measures;
- 2) The degree and effect of aquifer mining in the area; and
- 3) Differing hydrological characteristics of the aquifer(s) within the District.

The District will utilize the data and information obtained to evaluate the effectiveness of its regulatory policies and to determine what future action may be needed to achieve the mandate of the act, the District Rules, and the objectives and requirements of this plan.

MANAGEMENT OF GROUNDWATER SUPPLIES

The District will manage the supply of groundwater within the District in order to conserve the resource while seeking to maintain the economic viability of all resource user groups, public and private. In consideration of the economic and

cultural activities occurring within the District, the District will identify and promote best management practices of all groundwater resources within the District. An observation network has been established and maintained in order to monitor changing storage conditions of groundwater supplies within the District. The District will make a regular assessment of water supply and groundwater storage conditions and will report those conditions to the Board and to the public. The District will undertake, as necessary and cooperate with investigations of the groundwater resources within the District and will make the results of investigations available to the public upon adoption by the Board.

The District has adopted rules to regulate groundwater withdrawals by means of spacing and production limits. The District may deny a well construction permit or limit groundwater withdrawals in accordance with the guidelines stated in the rules of the District. In making a determination to deny a permit or limit groundwater withdrawals, the District will consider the public benefit against individual hardship after considering all appropriate testimony.

The relevant factors to be considered in making a determination to deny a permit or limit groundwater withdrawals will include:

- 1) The purposes of the Act;
- 2) The District Rules;
- 3) The objectives and requirements of this Plan;
- 4) The economic impact on the applicant from grant or denial of the permit or terms prescribed by the permit; and
- 5) An equitable distribution of available groundwater.

In pursuit of the District's mission of protecting the resource, the District may require reduction of groundwater withdrawals to amounts, which will not cause harm to the aquifer. To achieve this purpose, the District may, at the Board's discretion, amend or revoke any permits after notice and hearing. The determination to seek the amendment or revocation of a permit by the Board will be based on aquifer conditions observed by the Board. The Board will enforce the terms and conditions of permits and the rules of the District by enjoining the permit holder in a court of competent jurisdiction as provided for in Section 36.102 of the Texas Water Code (TWC).

The District will employ all technical resources at its disposal to evaluate the resources available within the District and to determine the effectiveness of regulatory or conservation measures. A public or private user may appeal to the Board for discretion in enforcement of the provisions of the water supply deficit contingency plan on grounds of adverse economic hardship or unique local conditions. The exercise of said discretion by the Board shall not be construed as limiting the power of the Board.

EQUITY AND DISCRETION

The District recognizes that the burden of reducing the mining of an aquifer should be borne by all users of groundwater. Although a single entity's groundwater withdrawal may not be capable of causing severe problems, the total actions by all users can cause significant mining of groundwater. Therefore, every entity must be regulated.

To achieve the objective, the District must have discretion in permitting groundwater withdrawals. Therefore, temporary exceptions to the general rule for a specific area may be necessary if an economic hardship will be created that is significantly greater for one person than for others in the District, or if required due to hydrological, physical, or geophysical characteristics.

This Plan prescribes a production ratio of groundwater withdrawal based upon the number of acres of land owned by a property owner. Nothing in this Plan, however, should be interpreted to mean that a person is entitled to use groundwater in any amount merely because the Plan prescribes a ratio for production. The number of acres of land that are within the Certificate of Convenience and Need (CCN) of a public or private water utility may be taken into consideration to meet a production ratio, if the well is or will be located within the boundaries of the water utilities CCN, and the utility's number of connections within the CCN justifies the amount of water requested.

COOPERATION AND COORDINATION

The District will continue to work with the public, the regulated community, and state local governments to achieve the District's goals. The District will work with all water suppliers, industrial, and agricultural users to help them to preserve groundwater. The TCEQ is the agency charged with protecting the state's water resources, and the Texas Water Development Board is the agency responsible for water resources planning and promotion of water conservation practices. The District will continue to work with both of these agencies throughout the life of this plan.

ACTIONS, PROCEDURES, PERFORMANCE AND AVOIDANCE FOR PLAN IMPLEMENTATION

The District will implement the provisions of this plan and will utilize the provisions of this plan as a guidepost for determining the direction or priority for all District activities. All operations of the District, all agreements entered into by the District and any additional planning efforts in which the District may participate will be consistent with the provisions of this plan.

The District will adopt rules relating to the permitting of wells and the production of groundwater. The rules adopted by the District shall be pursuant to TWC Chapter 36 and the provisions of this plan. All rules will be adhered to and

enforced. The promulgation and enforcement of the rules will be based on the best technical evidence available.

The District shall treat all citizens with equality. Citizens may apply to the District for discretion in enforcement of the rules on grounds of adverse economic effect or unique local conditions. In granting of discretion to any rule, the Board shall consider the potential for adverse effect on adjacent landowners. The exercise of said discretion by the Board shall not be construed as limiting the power of the Board.

The District will seek the cooperation in the implementation of this plan and the management of groundwater supplies within the District. All activities of the District will be undertaken in cooperation and coordinated with the appropriate state, regional or local water management entity.

PLANNING ESTIMATES AND PROJECTIONS

TOTAL USEABLE AMOUNT OF GROUNDWATER IN THE DISTRICT

The District estimates that the total useable amount of groundwater in the District is 237,694 ac-ft per year. This estimate is based on a water budget developed by the District for the Carrizo-Wilcox aquifer of 201,074 acre-feet per year. The Carrizo-Wilcox aquifer water budget is combined with estimates of annual recharge for the Gulf Coast, Queen City and Sparta aquifers totaling 36,620 acre-feet per year to compile the total amount of useable groundwater in the District. The Carrizo-Wilcox aquifer water budget used the annual recharge estimates and the estimates of water in storage in the Carrizo Sands from the Carrizo-Wilcox aquifer Groundwater Availability Model (GAM), the amount of groundwater used in the District, the water management strategies that will require the development of new groundwater supplies in the District and the amount of groundwater may be acceptably be used from aquifer storage each year. Details of the estimate of the total amount of useable groundwater are presented in Appendix C.

ANNUAL AMOUNT OF NATURAL OR ARTIFICIAL RECHARGE TO GROUNDWATER RESOURCES IN THE DISTRICT

The District estimates that the annual amount of natural or artificial recharge to the groundwater resources of the District is 89,611 acre-feet per year. The recharge values presented in this plan are consistent with the definition of recharge given in the TWDB groundwater management plan rules. The estimates represent recharge by infiltration from the land surface or leakage from another formation and do not include the down-gradient movement of water in the aquifer.

The recharge estimates for the Carrizo-Wilcox aquifer in all counties of the District are based on the TWDB Southern Carrizo-Wilcox aquifer Groundwater

Availability Model (GAM). The GAM run data compiled by TWDB on request of the District indicate that the Carrizo-Wilcox aquifer receives a net gain through leakage from overlying aquifers. The TWDB GAM data also indicate that the Carrizo Sand receives a net gain of approximately 3,400 acre-feet per year in leakage from the underlying Wilcox Formation. This net movement of water was not considered in the estimate of recharge in the District because it represents movement within subdivisions of the same aquifer.

The estimates for the Sparta and Gulf Coast aquifers are based on a GIS calculation of the area of the aquifer outcrop in each county based on the TWDB major and minor aquifer maps and an assumed rate of infiltration of deep recharge of approximately 1.75 percent of annual rainfall.

Aquifer	Atascosa	Frio	Karnes	Wilson	Total
Gulf Coast	0	0	15,200	0	15,200
Sparta	1,150	1,260	0	980	3,390
Queen City	4,380	8,000	0	5,650	18,030
Carrizo-Wilcox	13,864	5,411	0	10,867	30,142
County Total	19,394	14,671	15,200	17,497	66,762

Table 1, Estimates of Annual Groundwater Recharge by Surface Infiltration in acre-feet per year

Aquifer	Atascosa	Frio	Karnes	Wilson	Total
Carrizo-Wilcox	-2,651	12,715	-3,414	16,199	22,849

Table 2, Estimates of Annual Recharge to the Carrizo-Wilcox Aquifer by Leakage from Other Formations in acre-feet per year

Details on the calculation of annual recharge values are presented in Appendix D.

DETAILS ON HOW NATURAL OR ARTIFICIAL RECHARGE IN THE DISTRICT MIGHT BE INCREASED

The natural or artificial recharge in the District might be feasibly increased by airborne seeding of cumuliform clouds with either glaciogenic, or hygroscopic material. Based on data from the North Dakota Atmospheric Resource Board the District estimates that airborne cloud seeding may increase the rainfall in the District by approximately 10-15 percent.

ANNUAL AMOUNT OF GROUNDWATER USED IN THE DISTRICT

The District estimates that the amount of groundwater being used within the District on an annual basis in the Year 2000 was 192,032 ac-ft per year. This estimate is taken from the TWDB Annual Water Use Survey data. The data for the Year 2000 is the most recent year for which survey data has been released.

Ac-ft/Yr	2000	Ac-ft/Yr	1999	Ac-ft/Yr	1998	Ac-ft/Yr	1997	Ac-ft/Yr	1996
	Atascosa		Atascosa		Atascosa		Atascosa		Atascosa
45,330	Cz-Wx	48,889	Cz-Wx	59,633	Cz-Wx	48,157	Cz-Wx	59,111	Cz-Wx
829	QnCt	862	QnCt	1,064	QnCt	764	QnCt	1,075	QnCt
66	Sparta	60	Sparta	60	Sparta	64	Sparta	73	Sparta
	Frio		Frio		Frio		Frio		Frio
120,035	Cz-Wx	83,325	Cz-Wx	87,111	Cz-Wx	61,760	Cz-Wx	95,932	Cz-Wx
83	QnCt	69	QnCt	80	QnCt	80	QnCt	68	QnCt
9	Sparta	6	Sparta	8	Sparta	8	Sparta	7	Sparta
	Karnes		Karnes		Karnes		Karnes		Karnes
398	Cz-Wx	419	Cz-Wx	359	Cz-Wx	348	Cz-Wx	411	Cz-Wx
3,640	Gulf Coast	3,779	Gulf Coast	3,750	Gulf Coast	3,296	Gulf Coast	4,195	Gulf Coast
	Wilson		Wilson		Wilson		Wilson		Wilson
21,642	Cz-Wx	16,640	Cz-Wx	14,385	Cz-Wx	16,595	Cz-Wx	18,666	Cz-Wx
	EUWCD		EUWCD		EUWCD		EUWCD		EUWCD
187,405	Cz-Wx	149,273	Cz-Wx	161,488	Cz-Wx	126,860	Cz-Wx	174,120	Cz-Wx
912	QnCt	931	QnCt	1,144	QnCt	844	QnCt	1,143	QnCt
75	Sparta	66	Sparta	68	Sparta	72	Sparta	80	Sparta
3,640	Gulf Coast	3,779	Gulf Coast	3,750	Gulf Coast	3,296	Gulf Coast	4,195	Gulf Coast
192,032	Total Use	154,049	Total Use	166,450	Total Use	131,072	Total Use	179,538	Total Use

Cz-Wx = Carrizo-Wilcox aquifer, QnCt = Queen City aquifer, Sparta = Sparta aquifer, Gulf Coast = Gulf Coast aquifer

Table 3, Annual Amount of Groundwater Used in the District from TWDB Annual Water Use Survey

The TWDB Annual Water Use Survey data is available for the Years 1980, 1984 – 2000. The TWDB estimates groundwater use in the District for the entire period of record are presented as supporting documentation. (Appendix E)

ESTIMATE OF PROJECTED WATER SUPPLIES IN THE DISTRICT

The estimate of total projected water supplies in the District for the year 2010 is 121,224 ac-ft per year. This estimate represents both ground and surface water supplies. The estimate is taken from the data in Table 5 of the 2001 South Central Texas Regional Water Plan.

County	2000	2010	2020	2030	2040	2050
Atascosa	51,486	51,486	51,486	31,937	31,936	31,936
Frio	32,216	32,215	32,214	16,947	16,946	16,947
Karnes	7,553	7,284	7,083	6,928	6,789	6,665
Wilson	31,758	30,239	28,934	27,796	26,806	25,933
Total	123,013	121,224	119,717	83,608	82,477	81,481

Table 4, County Totals for Estimates of Projected Water Supplies in ac-ft/year

The complete set of projected water supply estimates are presented in Appendix F of this plan.

ESTIMATE OF PROJECTED WATER DEMAND IN THE DISTRICT

The estimate of total projected water demand in the District for the year 2010 is 197,806 ac-ft per year. This estimate represents water demands that may be met by either ground or surface water and is taken from the data in Table 2 of the 2001 South Central Texas Regional Water Plan.

County	2000	2010	2020	2030	2040	2050
Atascosa	74,174	73,056	72,220	71,858	74,436	80,766
Frio	99,940	96,564	93,339	90,354	87,487	84,722
Karnes	6,227	5,797	5,642	5,624	5,619	5,616
Wilson	22,656	22,389	21,674	22,117	22,730	23,459
Total	202,997	197,806	192,875	189,953	190,272	194,563

Table 5, County Totals for Estimates of Projected Water Demand in ac-ft per year

The complete set of projected water demand estimates are presented in Appendix G of the plan document.

COMPARISON OF WATER SUPPLY AND DEMAND PROJECTIONS

A comparison of the estimates of the total projected water supplies and projected water demand in the District indicates a water need of 76,582 ac-ft per year for the year 2010.

	2000	2010	2020	2030	2040	2050
Supplies (ac-ft per year)	123,013	121,224	119,717	83,608	82,477	81,481
Demands (ac-ft per year)	202,997	197,806	192,875	189,953	190,272	194,563
Needs (ac-ft per year)	-79,984	-76,582	-73,158	-106,345	-107,795	-113,082

Table 6, Estimates of Identified Water Needs in ac-ft per year

WATER MANAGEMENT STRATEGIES TO MEET NEEDS OF WATER USER GROUPS

The SCTRWPG has recommended 21 water management strategies that are intended to meet the identified needs of water user groups in the District. A majority of these strategies are conservation based measures intended to serve a larger amount of people with the same or similar amount of water. The amount of water that will be produced by all of the water management strategies included by the SCTRWPG in Table 12 of the Regional Water Plan is 10,309 acre-feet per year in 2010.

County	2000	2010	2020	2030	2040	2050
Atascosa	4,168	4,245	4,217	5,242	7,411	14,407
Frio	5,972	5,992	5,993	5,994	5,985	5,968
Karnes	10	21	17	18	13	7
Wilson	21	51	43	39	240	233
EUWCD Total (ac-ft per year)	10,171	10,309	10,270	11,293	13,649	20,615

Table 7, County and District Totals by Decade of Amounts of Water Generated by SCTRWP Recommended Water Management Strategies

HOW THE DISTRICT HAS ADDRESSED WATER SUPPLY NEEDS IN THE MANAGEMENT PLAN IN A MANNER THAT IS NOT IN CONFLICT WITH THE TWDB APPROVED SOUTH CENTRAL TEXAS REGIONAL WATER PLAN

The water management strategies recommended in the South Central Texas Regional Water Plan are expected to produce a total of 10,309 acre-feet per year in 2010. None of the strategies recommended for the area of the District is related to surface water. The total of projected groundwater supplies estimated by the SCTRWPG to be utilized in 2010 is 108,984 acre-feet per year. The total amount of groundwater required by the South Central Texas Regional Water Plan is 119,293 acre-feet per year in 2010. The South Central Texas Regional Water Plan would not be affected by the District adoption of a value of 237,694 acre-feet per year for the total useable amount of groundwater or an availability of groundwater from the Carrizo-Wilcox aquifer of 201,074 acre-feet per year. These values also compare favorably to the sum of the 2010 total of projected water demand in the District of 197,806 acre-feet per year and the total amount of water required for water management strategies in 2010 of 10,309 acre-feet per year.

County	2000	2010	2020	2030	2040	2050
Atascosa	47,134	47,134	47,134	27,585	27,584	27,584
Frio	30,914	30,913	30,912	15,645	15,644	15,645
Karnes	5,276	5,007	4,806	4,651	4,512	4,388
Wilson	27,449	25,930	24,625	23,487	22,497	21,624
EUWCD GW Supplies (ac-ft/year) =	110,773	108,984	107,477	71,368	70,237	69,241

Table 8, Projected Groundwater Supplies in the District by Decade in acre-feet per year

MANAGEMENT GOALS, OBJECTIVES AND PERFORMANCE STANDARDS

Goal 1.0 – Addressing the Efficient use of Groundwater

Management Objective

1.1 - Each month the District will monitor the volume of water produced from nine irrigation wells and make note of the crops irrigated by the wells to promote water conservation in irrigation practices.

Performance Standard

1.1 - A table of the monthly meter readings from the nine irrigation wells and a discussion of the irrigation application rates for each type of crop irrigated by the nine wells monitored by the District will be included in the Annual Report on District Activities made to the Board of Directors each year.

Management Objective

1.2 - Each month the District will monitor the volume of water produced by 30 Municipal and Rural water suppliers in the District.

Performance Standard

1.2 - A table showing the monthly production volumes reported to the District by the Municipal and Rural water suppliers in the District will be included in the Annual Report on District Activities made to the Board of Directors each year.

Management Objective

1.3 - Each year the District will request production reports from the operators of 200 agricultural irrigation wells in the District.

Performance Standard

1.3a - A copy of the request for production reports sent to the operators of agricultural irrigation wells will be included in the Annual Report on District Activities made to the Board of Directors each year.

1.3b – A table showing the production volumes reported to the District from the agricultural irrigation well operators in the District will be included in the Annual Report on District Activities made to the Board of Directors each year.

Management Objective

1.4 - Each month the District will measure the water levels in 35 water wells and will measure the water level of an additional 126 wells on an annual basis each year.

Performance Standard

1.4 - A table showing the monthly and a table showing the annual water level measurements made by the District will be included in the Annual Report on District Activities made to the Board of Directors each year.

Goal 2.0 Addressing the Control and Prevention of the Waste of Groundwater

Management Objective

2.1 - Each year the District will conduct an on-site investigation of any reports of waste of groundwater within two working days of the time of the receipt of the report to the District.

Performance Standard

2.1 – A discussion of the waste of groundwater observed by the District each year, including the number of reports of the waste of groundwater received by the District and the District response to the report will be included in the Annual Report on District Activities made to the Board of Directors each year.

Goal 3.0 Address the Conjunctive use of Surface and Groundwater

Management Objective

3.1 – Each year the District will use the Southern Carrizo-Wilcox Groundwater Availability Model to predict the potential effects of different groundwater pumping scenarios on both groundwater and surface water.

Performance Standard

3.1 – A discussion of the groundwater pumping scenario simulated in the Southern Carrizo-Wilcox Groundwater Availability Model run made by or for the District and a summary of the simulation results will be included in the Annual Report on District Activities made to the Board of Directors each year.

Goal 4.0 Addressing Natural Resource Issues which Impact the use and Availability of Groundwater, and which are Impacted by the use of Groundwater.

Management Objective

4.1 – Each year the District will sample at least 40 water wells in the District for chemical analysis of water quality.

Performance Standard

4.1a - A table giving the results of the chemical analyses of the water quality samples taken by the District each year will be included in the Annual Report on District Activities made to the Board of Directors.

4.2a – A discussion of whether any instances of groundwater contamination or issues of concern were noted in the water quality sample analyses will be

included in the Annual Report on District Activities made to the Board of Directors.

Goal 5.0 Addressing Conservation

Management Objective

5.1 – Each year, the District will submit an article for publication regarding water conservation to one newspaper of general circulation in the District.

Performance Standard

5.1 - A copy of the article regarding water conservation submitted by the District for publication to a newspaper of general circulation in the District will be included in the Annual Report to the Board of Directors.

Management Objective

5.2 – Each year, the District will include an informative flier on water conservation with at least one mail-out distributed in the normal course of business to groundwater use permit holders in the District.

Performance Standard

5.2 - The Annual Report to the Board of Directors will include a copy of the informative flier regarding water conservation that was distributed to groundwater use permit holders in the District and the number of fliers distributed.

Goal 6.0 Addressing Drought Conditions

Management Objective

6.1 – Each month, the District will download the updated Palmer Drought Severity Index (PDSI) map and check for the periodic updates to the Drought Preparedness Council Situation Report (Situation Report) posted on the Texas Water Information Network website www.txwin.net.

Performance Standard

6.1 - Quarterly, the District will make an assessment of the status of drought in the District and prepare a quarterly briefing to the Board of Directors. The downloaded PDSI maps and Situation Reports will be included with copies of the quarterly briefing in the District Annual Report to the Board of Directors.

Management Goals of 31 TAC 356.5 (a)(1) Determined “Not Applicable”

Controlling and Preventing Subsidence

This management goal is not applicable to the District.

Methodology for Tracking District Progress in Achieving Management Goals

The District Manager will prepare and present an annual report to the Board of Directors on District performance in regards to achieving management goals and

objectives. The presentation of the report will occur during the last monthly Board meeting each fiscal year. The report will include the number of instances in which each of the activities specified in the District's management objectives was engaged in during the fiscal year. Each activity will be referenced to the estimated expenditure of staff time and budget in accomplishment of the activity. The notations of activity frequency, staff time and budget will be referenced to the appropriate performance standard for each management objective describing the activity, so that the effectiveness and efficiency of the District's operations may be evaluated. The Board will maintain the report on file for public inspection at the District's office upon adoption. This methodology will apply to all management goals contained within this plan.

REGULATORY ACTION PLAN

The objective of the District Rules are to translate the legislative mandate of the District and Chapter 36 of the Texas Water Code into policy and specific objectives and requirements that are needed to effectively manage and preserve the groundwater resources within the District. The Rules set forth the requirements necessary to receive a water well drilling and production permit, and the associated responsibilities of conservation and preservation of the resource. The requirements are written as general guidelines, and each permit will be evaluated based upon the best scientific data available. The current demand on the aquifer and trend of the water levels in the area may be determining factors in the evaluation of a permit application.

Groundwater Protection

Groundwater contamination may result from many sources, including current and past oil and gas production, agricultural activities, industrial and manufacturing processes, commercial and business endeavors, domestic activities, and natural sources that may be influenced or may result from human activities.

The District shall take appropriate measures to discontinue activities that are either causing, or are a potential threat to cause groundwater contamination. Due to permeability of aquifer outcrops and recharge zones, there is a greater threat for groundwater contamination from surface pollution in recharge and outcrop regions, and the District will impose more stringent restrictions on those areas.

ADDRESS AND OFFICE HOURS

The Evergreen Underground Water Conservation District Office is located at:
110 Wyoming Blvd.

Pleasanton, TX 78064

Office Hours: Monday - Friday 8:00 a.m.-12:00 p.m. - 1:00 p.m.-5:00 p.m.

Telephone: (830) 569-4186

Fax: (830) 569-4238

E-mail: mmahoney@karnesec.net

FEES

Copies of the District Rules and Management Plan are \$5.00.

Water Well Drilling Permit fee is \$175.00, of which \$75.00 is refundable to the applicant upon receipt of the driller's log and well registration to the District.

Water Well Production Permit fee is \$25.00.

Well Registration fee for exempt wells is \$10.00.

Transportation Permit fee is \$2,000.00

Photocopies of District Documents are \$0.10 each.

Sending or receiving Facsimiles is \$2.00 for first page and \$1.00 there after, including cover sheet.

Document research by a District Employee is \$15.00 /hr.

The cost of postage will be added when applicable.

DEFINITIONS

"Act" means the legislative Act that created the District and governs its operations.

(Act of 1965, 59th Legislature, Ch. 197, H.B. 116, Pg. 398 (amended 1967, 1983, 1985)).

"Area" means a geographical area designated by the Board in which regulatory policy will be applied.

"Beneficial Use" means agricultural, gardening, domestic, stock raising, municipal, mining, manufacturing, industrial, commercial, recreational or pleasure purposes, or any other use that is beneficial and not considered waste.

"Board" means the Board of Directors of the Evergreen Underground Water Conservation District.

“Certificate Of Convenience And Need (CCN)” means the designation of geographical boundaries of the service area of a water utility.

“Groundwater” means water located beneath the earth’s surface but does not include water produced with oil in the production of oil and gas.

“Mining of an Aquifer or Aquifer Mining” means to extract groundwater from an aquifer at an annual rate which exceeds the normal annual recharge to the aquifer.

“Outcrop” means an area where an underground stratum or geologic formation is found at the surface of the ground.

“Person” includes corporation, individual, organization, political subdivision or agency, business trust, estate trust, partnership, association, or any other legal entity.

“Plan” means this District Plan.

“Transportation Facility” means any facility constructed for the purpose of transporting groundwater out of the District.

“Water Utility” means any corporation, company, entity, political subdivision, public or private, that sells water to any person within its service area.

“Well” means any excavation, facility, device, or method that could be used to withdraw groundwater.

“Withdraw” means the act of extracting groundwater by any method.

Appendix A

Evidence of the Administrative Processes
Required For the Certification of the
Groundwater Management Plan as
Administratively Complete

Resolution No. R04004

RESOLUTION ADOPTING MANAGEMENT PLAN OF THE

EVERGREEN UNDERGROUND WATER CONSERVATION DISTRICT

WHEREAS, The Management Plan of the Evergreen Underground Water Conservation District, attached hereto as Attachment A, has been developed for the purpose of conserving, preserving, protecting and recharging the underground water in the District, and this action is taken under the District's statutory authority to prevent waste and protect rights of owners of interest in groundwater;

WHEREAS, The Management Plan meets the requirements of Senate Bill 1;

WHEREAS, Under no circumstances, and in no particular case will this Management Plan, or any part of it, be construed as a limitation or restriction upon the exercise of any discretion, where such exists; nor will it in any event be construed to deprive the Board of an exercise of powers, duties and jurisdiction conferred by law, nor to limit or restrict the amount and character of data or information which may be required for the proper administration of the law.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE EVERGREEN UNDERGROUND WATER CONSERVATION DISTRICT THAT:

- 1) The "Management Plan of the Evergreen Underground Water Conservation District" contained in attachment A is hereby adopted.
- 2) This Management Plan will take effect upon certification by the Texas Water Development Board, and shall be in effect for a period of ten (10) years from said date.

AND IT IS SO ORDERED

PASSED AND ADOPTED ON THIS 27TH DAY OF FEBRUARY 2004.

SIGNED 
Kenneth Stephens
President

ATTEST 
William H. Ruple
Secretary/Treasurer

Appendix B

District Rules

(Insert Here)

Appendix C

Details on the Calculation Of the Estimate of the Total Useable Amount of Groundwater in the District

Groundwater Availability of the Carrizo-Wilcox Aquifer

It is the Districts' mission to conserve the groundwater in storage in the District to maintain the current aquifer conditions without stifling the economic viability and potential growth of the District. The Southern Carrizo-Wilcox aquifer GAM indicates that there is a large amount of groundwater in storage in the District. The Carrizo Sand sub-division of the Carrizo-Wilcox aquifer alone contains 305,000,000 acre-feet of groundwater in storage. For this reason the District has used a water budget method of determining the groundwater availability in the Carrizo-Wilcox aquifer. The methodology for determining the availability of groundwater from the Carrizo-Wilcox aquifer considers the amount of recharge to the aquifer in each county, the net down gradient movement of groundwater, the amount of water needed from storage to sustain current use, anticipated regional water management strategies that require development of additional supplies from the aquifer and an additional degree of unanticipated new growth or expansion of current aquifer use in the District. While an aggregate total availability of groundwater from the Carrizo-Wilcox aquifer is presented. The Carrizo-Wilcox groundwater availability sub-totals for each county will be considered as limiting the amount of useable groundwater from the aquifer within the county on an annual basis.

County	Infiltration Recharge from Precipitation (ac-ft/year)	Inter-aquifer Leakage (Net Recharge or Loss in ac-ft/year)	Net Down-Gradient Movement in the Aquifer (ac-ft/year)	TWDB Reported Use in Year 2000 (ac-ft/year)	Interim Balance (annual amount taken from storage in ac-ft/year)	Region L WMS 2010 needs for Additional Groundwater (ac-ft/year)	Volume of Water Stored in Carrizo Sand (ac-ft)	Carrizo-Wilcox aquifer Availability in EUWCD
Atascosa	13,864	-2,651	9,362	45,330	-24,755	0	126,000,000	47,806
Frio	5,411	12,715	-5,386	120,035	-107,295	0	81,000,000	130,765
Karnes	0	-3,414	803	398	-3,009	0	14,000,000	699
Wilson	10,867	16,199	-7,039	21,642	-1,615	0	84,000,000	21,804

1- The amount of water required to supply water management strategies recommended by the SCTRWPG which require additional development of the aquifer and are not conservation demand reduction strategies

2- The District has allowed for an additional amount of water to be removed from storage on an annual basis that is equal to twenty five percent increase in the amount of water currently used from the aquifer in each county

Table 9, Groundwater Availability from the Carrizo-Wilcox aquifer

Groundwater Availability of the Gulf Coast, Queen City and Sparta Aquifers

The area in the District in which useable quality of groundwater is accessible from the Gulf Coast, Queen City and Sparta aquifers is limited. The current amount of groundwater estimated being used from these aquifers is relatively low as compared to the estimates of groundwater recharge for each aquifer. For the purpose of managing the Gulf coast, Queen City and Sparta aquifer s the amount of groundwater estimated to be recharged on an annual basis shall be considered the amount of groundwater available for use on an annual basis within the District.

Appendix D
Details on the Calculation
Of
Recharge Values
For the
Carrizo-Wilcox, Gulf Coast,
Sparta and Queen City aquifers

Selected Data from the TWDB GAM-run of the Southern Carrizo-Wilcox GAM
Done at the Request of the District

County	Lyr	upper		lower		Wells	Recharge
		Z-flow in	Z-flow out	Z-flow in	Z-flow out		
Atascosa	1	0	0	4,985	-1,777	-208	*5,866
	2	1,777	-4,985	4,639	-1,988	-362	1,809
	3	1,988	-4,639	1,955	-945	-16,129	9,762
	4	945	-1,955	1,263	-79	-11	403
	5	79	-1,263	691	-777	-288	3,570
	6	777	-691	0	0	-111	129
	All	5,566	-13,533	13,533	-5,566	-17,110	21,539
Frio	1	0	0	63	-12,930	-327	*42,633
	2	12,930	-63	741	-13,456	-99	7,607
	3	13,456	-741	2,848	-1,314	-5,161	5,411
	4	1,314	-2,848	2,648	-591	-108	0
	5	591	-2,648	2,063	-75	-89	0
	6	75	-2,063	0	0	-1	0
	All	28,365	-8,362	8,362	-28,365	-5,786	55,651
Karnes	1	0	0	3,313	0	-819	0
	2	0	-3,313	3,414	0	-1	0
	3	0	-3,414	267	-87	-246	0
	4	87	-267	248	0	0	0
	5	0	-248	375	0	0	0
	6	0	-375	0	0	0	0
	All	87	-7,617	7,617	-87	-1,066	0
Wilson	1	0	0	1,918	-13,263	-1,484	*35,486
	2	13,263	-1,918	1,817	-18,016	-835	4,593
	3	18,016	-1,817	954	-231	-18,323	7,575
	4	231	-954	1,023	-5	-337	184
	5	5	-1,023	929	-407	-2,214	3,108
	6	407	-929	0	0	-376	0
	All	31,922	-6,640	6,640	-31,922	-23,570	50,946

Layer 1 = Queen City aquifer
 Layer 2 = Reklaw Formation
 Layer 3 = Carrizo Sand
 Layer 4 = Upper Portion of Wilcox Formation
 Layer 5 = Middle Portion of Wilcox Formation
 Layer 6 = Lower Portion of Wilcox Formation

* TWDB notes that the Queen City was included in the Southern Carrizo-Wilcox GAM as a boundary layer and the recharge estimates should not be considered reliable

The estimate of the Carrizo-Wilcox aquifer recharge by surface infiltration in each county was made by summing the values in the recharge column of the data table for GAM layers 3 through 6. The estimate of the Carrizo-Wilcox aquifer recharge by leakage from overlying formations was made by summing the values in the Z –flow in and Z-flow out for GAM layer 3 in each county.

The Central Gulf Coast GAM was not available at the time of development of this plan and could not be used to determine the recharge to the Gulf Coast aquifer in Karnes County. Texas Board of Water Engineers (TBWE) Bulletin 6007, "The Ground-Water Geology of Karnes County, Texas" does not contain an estimate of recharge to the Gulf Coast aquifer in Karnes County but indicated that the amount of recharge in Karnes County was probably low. A preliminary average rate of recharge for the Gulf Coast aquifer of approximately 1.1 inches per year has been published for the Northern Gulf Coast aquifer GAM by the United States Geologic Survey. This value was presented by USGS during the Stakeholder Advisory Forum meeting for the Northern Gulf Coast aquifer GAM of January 29th, 2003.

A recharge rate of approximately 1.1 inches per year represents approximately 2.75 percent of an annual rainfall of 40 inches. The recharge potential in Karnes County is considered low and the average annual rainfall amount is 28.9 inches. (Anders, 1960) Given these considerations a conservative rate of recharge 1.75 percent of annual rainfall was assumed for the calculation of a recharge amount for the Gulf Coast aquifer in Karnes County. The methodology used to calculate the annual amount of recharge is as follows:

1.75% of 28.9 inches of annual rainfall = 0.50575 inches per year

0.50575 inches per year rounded to 0.5 inches per year

(To avoid implication of undue accuracy)

0.5 inches per year / 12 inches (1 foot) = 0.04166 feet per year

0.04166 feet per year rounded to 0.042 feet per year

((To avoid implication of undue accuracy)

Area of the Gulf Coast aquifer outcrop in Karnes County = 361,800 acres

(GIS calculation from TWDB major aquifer map)

0.042 feet per year x 361,800 acres = 15,195.6 (**15,200**) acre-feet per year

TBWE Bulletin 5710, "Ground-Water Geology of Wilson County, Texas", TWDB Report 32 "Groundwater Resources of Atascosa and Frio Counties" and TWDB Report 210 "Ground-Water Resources of the Carrizo Aquifer in the Winter Garden Area of Texas" were referenced but do not include an estimate of the recharge amount or rates of recharge for the Queen City and Sparta aquifers in the District. The assumptive rate of recharge of 1.75 percent of average annual rainfall used to calculate the Gulf Coast aquifer recharge in Karnes County was applied to the recharge calculations for the Queen City and Sparta aquifers in Atascosa, Frio and Wilson Counties. Average annual rainfall values of 25.4 inches per year for Atascosa and 22.6 inches per year were found in TWDB Report 32. An average annual rainfall value of 26.8 inches per year for Wilson County was found in TBWE Bulletin 5710.

The methodologies used to calculate the amount of recharge to the Queen City and Sparta aquifers in Atascosa, Frio and Wilson Counties is as follows:

Atascosa County

Average annual rainfall = 25.4 inches per year (TWDB Report 32)

25.4 inches per year x 1.75% = 0.4445 inches per year

0.4445 inches per year rounded to 0.44 inches per year

(To avoid implication of undue accuracy)

0.44 inches per year / 12 inches (1 foot) = 0.0366 feet per year

0.0366 feet per year rounded to 0.037 feet per year

((To avoid implication of undue accuracy)

Area of the **Queen City** aquifer outcrop in Atascosa County = 118,289 acres

(GIS calculation from TWDB major aquifer map)

0.037 feet per year x 118,289 acres = 4,376.6 (**4,380**) acre-feet per year

Area of the **Sparta** aquifer outcrop in Atascosa County = 31,027 acres

(GIS calculation from TWDB major aquifer map)

0.037 feet per year x 31,027 acres = 1,147.9 (**1,150**) acre-feet per year

Frio County

Average annual rainfall = 22.6 inches per year (TWDB Report 32)

22.6 inches per year x 1.75% = 0.3955 inches per year

0.3955 inches per year rounded to 0.4 inches per year

(To avoid implication of undue accuracy)

0.4 inches per year / 12 inches (1 foot) = 0.0333 feet per year

0.0333 feet per year rounded to 0.033 feet per year

((To avoid implication of undue accuracy)

Area of the **Queen City** aquifer outcrop in Frio County = 243,228 acres

(GIS calculation from TWDB major aquifer map)

0.033 feet per year x 243,228 acres = 8,026.5 (**8,000**) acre-feet per year

Area of the **Sparta** aquifer outcrop in Frio County = 38,050 acres

(GIS calculation from TWDB major aquifer map)

0.033 feet per year x 38,050 acres = 1,255.65 (**1,260**) acre-feet per year

Wilson County

Average annual rainfall = 26.8 inches per year (TBWE Bulletin 5710)

26.8 inches per year x 1.75% = 0.469 inches per year

0.469 inches per year rounded to 0.47 inches per year

(To avoid implication of undue accuracy)

0.47 inches per year / 12 inches (1 foot) = 0.039166 feet per year

0.039166 feet per year rounded to 0.039 feet per year

((To avoid implication of undue accuracy)

Area of the **Queen City** aquifer outcrop in Wilson County = 144,917 acres

(GIS calculation from TWDB major aquifer map)

0.039 feet per year x 144,917 acres = 5,651.7 (**5,650**) acre-feet per year

Area of the **Sparta** aquifer outcrop in Wilson County = 25,037 acres

(GIS calculation from TWDB major aquifer map)

0.039 feet per year x 25,037 acres = 976.4 (**980**) acre-feet per year

Appendix E
TWDB Annual Water Use Survey
Groundwater Use Estimates
For
Atascosa, Frio, Karnes and Wilson Counties
1980, 1984 – 2000

Atascosa County Estimated Groundwater use in ac-ft per year

Aquifer	Year	Municipal	Mfg	Power	Mining	Irrigation	Livestock	Total
Carrizo-Wilcox	1980	3596	0	0	1171	68496	142	73405
Edwards-BFZ	1980	433	0	0	0	0	0	433
Queen City	1980	113	0	0	0	4382	49	4544
Sparta	1980	26	0	0	0	730	20	776
Carrizo-Wilcox	1984	6262	3	5792	949	34344	149	47499
Edwards-BFZ	1984	693	0	0	0	0	0	693
Queen City	1984	197	0	0	0	695	38	930
Sparta	1984	72	0	0	0	0	4	76
Carrizo-Wilcox	1985	2394	3	3950	1752	30947	157	39203
Edwards-BFZ	1985	510	0	0	0	0	0	510
Queen City	1985	3326	0	0	0	624	40	3990
Sparta	1985	32	0	0	0	0	4	36
Carrizo-Wilcox	1986	4604	3	5550	1002	42738	137	54034
Edwards-BFZ	1986	495	0	0	0	0	0	495
Queen City	1986	26	0	0	0	862	35	923
Sparta	1986	0	0	0	0	0	4	4
Carrizo-Wilcox	1987	4635	0	5626	1373	26254	118	38006
Edwards-BFZ	1987	471	0	0	0	0	0	471
Queen City	1987	27	0	0	0	529	30	586
Sparta	1987	39	0	0	0	0	3	42
Carrizo-Wilcox	1988	5683	0	6352	1313	34749	122	48219
Edwards-BFZ	1988	582	0	0	0	0	0	582
Queen City	1988	28	0	0	0	701	31	760
Sparta	1988	46	0	0	0	0	3	49
Carrizo-Wilcox	1989	5980	0	5532	597	49894	120	62123
Edwards-BFZ	1989	670	0	0	0	0	0	670
Queen City	1989	34	0	0	0	1020	31	1085
Sparta	1989	51	0	0	0	0	3	54
Carrizo-Wilcox	1990	4982	0	6036	664	46275	125	58082
Edwards-BFZ	1990	552	0	0	0	0	0	552
Queen City	1990	157	0	0	0	933	32	1122
Sparta	1990	56	0	0	0	0	3	59
Carrizo-Wilcox	1991	2917	0	6637	1428	48684	128	59794
Edwards-BFZ	1991	497	0	0	0	0	0	497
Queen City	1991	166	0	0	0	982	33	1181
Sparta	1991	57	0	0	0	0	3	60
Carrizo-Wilcox	1992	4232	0	5987	1412	36339	141	48111
Edwards-BFZ	1992	483	0	0	0	0	0	483
Queen City	1992	165	0	0	0	733	36	934

Atascosa County Estimated Groundwater use in ac-ft per year, Continued

Aquifer	Year	Municipal	Mfg	Power	Mining	Irrigation	Livestock	Total
Carrizo-Wilcox	1993	4,625	0	6,474	1,344	42,847	150	55,440
Edwards-BFZ	1993	515	0	0	0	0	0	515
Queen City	1993	160	0	0	0	882	38	1,080
Sparta	1993	57	0	0	0	0	3	60
Carrizo-Wilcox	1994	4,698	0	6,146	1,264	42,518	168	54,794
Edwards-BFZ	1994	494	0	0	0	1,464	0	1,958
Queen City	1994	158	0	0	0	809	43	1,010
Sparta	1994	53	0	0	0	0	3	56
Carrizo-Wilcox	1995	4,785	0	5,980	1,377	45,182	154	57,478
Edwards-BFZ	1995	536	0	0	0	1,372	0	1,908
Queen City	1995	155	0	0	0	860	39	1,054
Sparta	1995	52	0	0	0	0	3	55
Carrizo-Wilcox	1996	5,213	0	5,848	1,377	46,529	144	59,111
Edwards-BFZ	1996	605	0	0	0	1,413	0	2,018
Queen City	1996	153	0	0	0	886	36	1,075
Sparta	1996	70	0	0	0	0	3	73
Carrizo-Wilcox	1997	4,759	0	6,839	1,256	35,172	131	48,157
Edwards-BFZ	1997	493	0	0	0	1,068	0	1,561
Queen City	1997	61	0	0	0	670	33	764
Sparta	1997	61	0	0	0	0	3	64
Carrizo-Wilcox	1998	4,921	0	7,209	1,125	46,254	124	59,633
Edwards-BFZ	1998	555	0	0	0	1,404	0	1,959
Queen City	1998	155	0	0	0	881	28	1,064
Sparta	1998	57	0	0	0	0	3	60
Carrizo-Wilcox	1999	5,025	0	7,209	1,125	35,398	132	48,889
Edwards-BFZ	1999	550	0	0	0	1,075	0	1,625
Queen City	1999	155	0	0	0	674	33	862
Sparta	1999	57	0	0	0	0	3	60
Carrizo-Wilcox	2000	4,855	0	5,814	1,125	33,403	133	45,330
Edwards-BFZ	2000	543	0	0	0	1,014	0	1,557
Queen City	2000	155	0	0	0	636	38	829
Sparta	2000	63	0	0	0	0	3	66

Frio County Estimated Groundwater use in ac-ft per year

Aquifer	Year	Municipal	Mfg	Power	Mining	Irrigation	Livestock	Total
Carrizo-Wilcox	1980	2,878	12	682	341	74,015	177	78,105
Queen City	1980	60	0	0	0	748	34	842
Sparta	1980	8	0	0	0	0	4	12
Carrizo-Wilcox	1984	2,858	12	348	323	88,390	110	92,041
Queen City	1984	41	0	0	0	893	21	955
Sparta	1984	5	0	0	0	0	3	8
Carrizo-Wilcox	1985	2,673	12	289	438	47,975	98	51,485
Queen City	1985	36	0	0	0	485	19	540
Sparta	1985	5	0	0	0	0	2	7
Carrizo-Wilcox	1986	2,636	12	73	7	66,545	88	69,361
Queen City	1986	48	0	0	0	672	17	737
Sparta	1986	6	0	0	0	0	2	8
Carrizo-Wilcox	1987	2,436	0	92	388	65,310	91	68,317
Queen City	1987	48	0	0	0	660	18	726
Sparta	1987	6	0	0	0	0	2	8
Carrizo-Wilcox	1988	2,969	0	794	339	85,207	89	89,398
Queen City	1988	51	0	0	0	861	18	930
Sparta	1988	6	0	0	0	0	2	8
Carrizo-Wilcox	1989	3,280	0	7	313	95,405	88	99,093
Queen City	1989	51	0	0	0	964	17	1,032
Sparta	1989	6	0	0	0	0	2	8
Carrizo-Wilcox	1990	2,992	0	1	313	80,752	89	84,147
Queen City	1990	47	0	0	0	816	18	881
Sparta	1990	6	0	0	0	0	2	8
Carrizo-Wilcox	1991	3,001	0	51	222	88,548	92	91,914
Queen City	1991	52	0	0	0	804	18	874
Sparta	1991	6	0	0	0	0	2	8
Carrizo-Wilcox	1992	2,552	0	50	222	85,424	98	88,346
Queen City	1992	41	0	0	0	776	19	836

Frio County Estimated Groundwater use in ac-ft per year, Continued

Aquifer	Year	Municipal	Mfg	Power	Mining	Irrigation	Livestock	Total
Carrizo-Wilcox	1993	2,991	0	111	215	96,683	108	100,108
Queen City	1993	38	0	0	0	878	21	937
Sparta	1993	4	0	0	0	0	2	6
Carrizo-Wilcox	1994	2,904	0	185	214	106,657	122	110,082
Queen City	1994	42	0	0	0	0	24	66
Sparta	1994	5	0	0	0	0	2	7
Carrizo-Wilcox	1995	2,486	0	192	139	101,885	123	104,825
Queen City	1995	50	0	0	0	0	24	74
Sparta	1995	6	0	0	0	0	2	8
Carrizo-Wilcox	1996	3,004	0	227	139	92,487	75	95,932
Queen City	1996	53	0	0	0	0	15	68
Sparta	1996	6	0	0	0	0	1	7
Carrizo-Wilcox	1997	2,545	0	125	139	58,877	74	61,760
Queen City	1997	65	0	0	0	0	15	80
Sparta	1997	7	0	0	0	0	1	8
Carrizo-Wilcox	1998	2,520	0	134	139	84,215	103	87,111
Queen City	1998	60	0	0	0	0	20	80
Sparta	1998	6	0	0	0	0	2	8
Carrizo-Wilcox	1999	2,904	0	134	139	80,040	108	83,325
Queen City	1999	47	0	0	0	0	22	69
Sparta	1999	5	0	0	0	0	1	6
Carrizo-Wilcox	2000	3,129	0	129	139	116,538	100	120,035
Queen City	2000	64	0	0	0	0	19	83
Sparta	2000	7	0	0	0	0	2	9

Karnes County Estimated Groundwater use in ac-ft per year

Aquifer	Year	Municipal	Mfg	Power	Mining	Irrigation	Livestock	Total
Carrizo-Wilcox	1980	192	0	0	1,102	0	57	1,351
Gulf Coast	1980	2,074	8	0	44	500	105	2,731
Carrizo-Wilcox	1984	228	297	0	233	0	57	815
Gulf Coast	1984	2,728	4	0	43	1,668	105	4,548
Carrizo-Wilcox	1985	194	96	0	255	0	46	591
Gulf Coast	1985	2,375	5	0	23	1,270	87	3,760
Carrizo-Wilcox	1986	213	90	0	257	0	45	605
Gulf Coast	1986	2,222	2	0	8	1,800	82	4,114
Carrizo-Wilcox	1987	211	122	0	266	0	46	645
Gulf Coast	1987	2,319	0	0	72	1,922	85	4,398
Carrizo-Wilcox	1988	209	105	0	334	0	46	694
Gulf Coast	1988	2,017	0	0	79	2,030	87	4,213
Carrizo-Wilcox	1989	225	211	0	149	0	45	630
Gulf Coast	1989	2,431	0	0	38	282	86	2,837
Carrizo-Wilcox	1990	326	176	0	162	0	46	710
Gulf Coast	1990	2,337	0	0	25	1,831	89	4,282
Carrizo-Wilcox	1991	197	213	0	102	0	25	537
Gulf Coast	1991	2,110	0	0	10	1,440	115	3,675
Carrizo-Wilcox	1992	207	107	0	132	0	24	470
Gulf Coast	1992	2,183	0	0	4	1,185	110	3,482
Carrizo-Wilcox	1993	216	85	0	132	0	23	456
Gulf Coast	1993	2,199	0	0	4	966	108	3,277
Carrizo-Wilcox	1994	212	190	0	132	0	21	555
Gulf Coast	1994	2,181	0	0	4	956	101	3,242
Carrizo-Wilcox	1995	231	127	0	133	0	22	513
Gulf Coast	1995	2,375	0	0	4	1,054	102	3,535
Carrizo-Wilcox	1996	237	10	0	133	0	31	411
Gulf Coast	1996	2,561	0	0	4	1,488	142	4,195
Carrizo-Wilcox	1997	198	1	0	128	0	21	348
Gulf Coast	1997	2,556	0	0	4	642	94	3,296
Carrizo-Wilcox	1998	223	0	0	115	0	21	359
Gulf Coast	1998	3,134	0	0	4	518	94	3,750
Carrizo-Wilcox	1999	283	0	0	115	0	21	419
Gulf Coast	1999	3,140	0	0	4	538	97	3,779
Carrizo-Wilcox	2000	262	0	0	115	0	21	398
Gulf Coast	2000	3,183	0	0	4	356	97	3,640

Wilson County Estimated Groundwater use in ac-ft per year

Aquifer	Year	Municipal	Mfg	Power	Mining	Irrigation	Livestock	Total
Carrizo-Wilcox	1980	2,504	175	0	228	6,499	255	9,661
Carrizo-Wilcox	1984	3,276	131	0	237	7,211	170	11,025
Carrizo-Wilcox	1985	2,944	167	0	309	6,174	162	9,756
Carrizo-Wilcox	1986	2,958	140	0	0	6,257	181	9,536
Carrizo-Wilcox	1987	3,389	93	0	277	6,734	167	10,660
Carrizo-Wilcox	1988	3,558	76	0	300	8,245	167	12,346
Carrizo-Wilcox	1989	3,971	43	0	281	9,139	165	13,599
Carrizo-Wilcox	1990	3,775	47	0	281	11,642	180	15,925
Carrizo-Wilcox	1991	3,384	0	0	285	10,818	183	14,670
Carrizo-Wilcox	1992	3,343	0	0	285	13,031	190	16,849
Carrizo-Wilcox	1993	3,601	0	0	277	8,677	218	12,773
Carrizo-Wilcox	1994	3,886	0	0	277	10,274	217	14,654
Carrizo-Wilcox	1995	4,084	0	0	277	9,300	207	13,868
Carrizo-Wilcox	1996	4,529	1	0	277	13,656	203	18,666
Carrizo-Wilcox	1997	4,205	0	0	277	11,919	194	16,595
Carrizo-Wilcox	1998	4,508	0	0	277	9,432	168	14,385
Carrizo-Wilcox	1999	4,748	1	0	277	11,424	190	16,640
Carrizo-Wilcox	2000	4,837	1	0	277	16,346	181	21,642

Carrizo-Wilcox = Carrizo-Wilcox aquifer, Edwards-BFZ = Edwards BFZ aquifer, Gulf Coast = Gulf Coast aquifer, Queen City = Queen City aquifer, Sparta = Sparta aquifer

Appendix F
Estimates of Projected Water Supplies
For
Atascosa, Frio, Karnes and Wilson Counties
By Decade
2000 - 2050

Atascosa County Projected Water Supplies in ac-ft per year

WUG	River Basin	Type	Source	2000	2010	2020	2030	2040	2050
Charlotte	Nueces	GW	Carrizo-Wilcox	1,468	1,468	1,468	1,468	1,468	1,468
Jourdanton	Nueces	GW	Carrizo-Wilcox	2,057	2,057	2,057	2,057	2,057	2,057
Lytle	Nueces	GW	Edwards-BFZ	234	234	234	234	234	234
Pleasanton	Nueces	GW	Carrizo-Wilcox	3,524	3,524	3,524	3,524	3,524	3,524
Poteet	Nueces	GW	Carrizo-Wilcox	2,008	2,008	2,008	2,008	2,008	2,008
Co.-Other	Nueces	GW	Carrizo-Wilcox	2,671	2,671	2,671	1,665	1,665	1,665
Co.-Other	San Antonio	GW	Carrizo-Wilcox	132	132	132	122	122	122
Co.-Other	Nueces	GW	Queen City	343	343	343	584	584	584
Co.-Other	Nueces	GW	Sparta	1,086	1,086	1,086	1,851	1,851	1,851
Irrigation	Nueces	SW	Local Supply	1	1	1	1	1	1
Irrigation	Nueces	GW	Carrizo-Wilcox	3,414	3,398	3,326	0	0	0
Irrigation	Nueces	GW	Edwards-BFZ	2,009	2,009	2,009	2,009	2,009	2,009
Irrigation	Nueces	GW	Queen City	1,599	1,597	1,588	0	0	0
Irrigation	Nueces	GW	Sparta	5,072	5,065	5,036	0	0	0
Irrigation	San Antonio	GW	Edwards-BFZ	300	300	300	300	300	300
Irrigation	San Antonio	GW	Carrizo-Wilcox	202	202	202	0	0	0
Livestock	Nueces	SW	Local Supply	1,742	1,742	1,742	1,742	1,742	1,742
Livestock	San Antonio	SW	Local Supply	66	66	66	66	66	66
Mining	Nueces	GW	Carrizo-Wilcox	1,015	1,031	1,103	0	0	0
Mining	Nueces	GW	Queen City	130	132	141	194	194	194
Mining	Nueces	GW	Sparta	413	420	449	616	615	615
Power	Nueces	GW	Carrizo-Wilcox	14,333	14,333	14,333	430	430	430
Power	Nueces	GW	Queen City	1,838	1,838	1,838	3,132	3,132	3,132
Power	Nueces	GW	Sparta	5,829	5,829	5,829	9,934	9,934	9,934
Projected Water Supplies (ac-ft/year) =				51,486	51,486	51,486	31,937	31,936	31,936

Frio County Projected Water Supplies in ac-ft per year

WUG	River Basin	Type	Source	2000	2010	2020	2030	2040	2050
Dilley	Nueces	GW	Carrizo-Wilcox	2,742	2,742	2,742	2,742	2,742	2,742
Pearsall	Nueces	GW	Carrizo-Wilcox	3,371	3,371	3,371	3,371	3,371	3,371
Co.-Other	Nueces	GW	Carrizo-Wilcox	618	618	618	444	444	444
Co.-Other	Nueces	GW	Queen City	66	66	65	130	130	130
Co.-Other	Nueces	GW	Sparta	114	114	114	225	225	225
Irrigation	Nueces	SW	Local Supply	110	110	110	110	110	110
Irrigation	Nueces	GW	Carrizo-Wilcox	16,806	16,873	16,897	1,908	1,912	1,915
Irrigation	Nueces	GW	Queen City	2,439	2,446	2,449	2,351	2,352	2,353
Irrigation	Nueces	GW	Sparta	4,208	4,220	4,224	4,058	4,061	4,062
Livestock	Nueces	SW	Local Supply	1,192	1,192	1,192	1,192	1,192	1,192
Mining	Nueces	GW	Carrizo-Wilcox	116	49	25	9	4	2
Mining	Nueces	GW	Queen City	13	5	2	3	1	0
Mining	Nueces	GW	Sparta	21	9	5	4	2	1
Power	Nueces	GW	Carrizo-Wilcox	310	310	310	222	222	222
Power	Nueces	GW	Queen City	33	33	33	66	66	66
Power	Nueces	GW	Sparta	57	57	57	112	112	112
Projected Water Supplies (ac-ft/year) =				32,216	32,215	32,214	16,947	16,946	16,947

Karnes County Projected Water Supplies in ac-ft per year

WUG	River Basin	Type	Source	2000	2010	2020	2030	2040	2050
Karnes City	San Antonio	GW	Carrizo-Wilcox	1024	1024	1024	1024	1024	1024
Kenedy	San Antonio	GW	Carrizo-Wilcox	1,216	1,216	1,216	1,216	1,216	1,216
Runge	San Antonio	GW	Gulf Coast	468	468	468	468	468	468
Co.-Other	San Antonio	GW	Carrizo-Wilcox	714	714	714	607	607	607
Co.-Other	Guadalupe	GW	Carrizo-Wilcox	25	25	25	24	24	24
Co.-Other	Nueces	GW	Carrizo-Wilcox	44	44	44	34	34	34
Co.-Other	Guadalupe	GW	Gulf Coast	3	3	3	4	4	4
Co.-Other	Nueces	GW	Gulf Coast	32	32	32	42	42	42
Co.-Other	San Antonio	GW	Gulf Coast	244	244	244	351	351	351
Co.-Other	SA-Nueces	GW	Gulf Coast	55	55	55	55	55	55
Irrigation	San Antonio	SW	Local Supply	938	938	938	938	938	938
Livestock	San Antonio	SW	Local Supply	1,060	1,060	1,060	1,060	1,060	1,060
Irrigation	San Antonio	GW	Carrizo-Wilcox	902	726	567	424	294	176
Livestock	Guadalupe	SW	Local Supply	92	92	92	92	92	92
Livestock	SA-Nueces	SW	Local Supply	70	70	70	70	70	70
Livestock	Nueces	SW	Local Supply	117	117	117	117	117	117
Manufac'g	San Antonio	GW	Gulf Coast	98	98	98	141	141	141
Manufac'g	San Antonio	GW	Carrizo-Wilcox	285	285	285	242	242	242
Mining	Guadalupe	GW	Carrizo-Wilcox	10	7	4	1	0	0
Mining	Guadalupe	GW	Gulf Coast	1	1	0	0	0	0
Mining	San Antonio	GW	Carrizo-Wilcox	110	44	17	9	5	3
Mining	San Antonio	GW	Gulf Coast	37	15	6	6	3	1
Mining	SA-Nueces	GW	Gulf Coast	8	6	4	3	2	0
Projected Water Supplies (ac-ft/year) =				7,553	7,284	7,083	6,928	6,789	6,665

Wilson County Projected Water Supplies in ac-ft per year

WUG	River Basin	Type	Source	2000	2010	2020	2030	2040	2050
Floresville	San Antonio	GW	Carrizo-Wilcox	1,468	1,468	1,468	1,468	1,468	1,468
La Vernia	San Antonio	GW	Carrizo-Wilcox	395	395	395	395	395	395
Poth	San Antonio	GW	Carrizo-Wilcox	2,017	2,017	2,017	2,017	2,017	2,017
Stockdale	San Antonio	GW	Carrizo-Wilcox	1,372	1,372	1,372	1,372	1,372	1,372
Co.-Other	Guadalupe	GW	Carrizo-Wilcox	91	91	91	73	73	73
Co.-Other	San Antonio	GW	Carrizo-Wilcox	6,887	6,887	6,887	5,953	5,953	5,953
Co.-Other	Nueces	GW	Carrizo-Wilcox	134	134	134	106	106	106
Co.-Other	San Antonio	GW	Edwards-BFZ	29	29	29	29	29	29
Co.-Other	San Antonio	GW	Queen City	560	560	560	788	788	788
Co.-Other	Guadalupe	GW	Queen City	19	19	19	24	24	24
Co.-Other	Nueces	GW	Queen City	33	33	33	42	42	42
Co.-Other	Guadalupe	GW	Sparta	40	40	40	53	53	53
Co.-Other	San Antonio	GW	Sparta	1,730	1,730	1,730	2,435	2,435	2,435
Co.-Other	Nueces	GW	Sparta	63	63	63	81	81	81
Irrigation	San Antonio	SW	Local Supply	2,375	2,375	2,375	2,375	2,375	2,375
Irrigation	Guadalupe	GW	Carrizo-Wilcox	61	55	49	34	30	27
Irrigation	San Antonio	GW	Carrizo-Wilcox	6,419	5,675	4,253	3,162	2,848	2,600
Irrigation	Nueces	GW	Carrizo-Wilcox	2,134	1,884	1,664	1,165	1,029	910
Irrigation	Guadalupe	GW	Queen City	13	11	10	11	10	9
Irrigation	San Antonio	GW	Queen City	522	461	831	729	730	696
Irrigation	Nueces	GW	Queen City	521	460	406	463	409	362
Irrigation	Guadalupe	GW	Sparta	27	24	21	25	22	19
Irrigation	San Antonio	GW	Sparta	1,612	1,425	1,603	2,025	1,659	1,343
Irrigation	Nueces	GW	Sparta	1,004	887	783	893	789	697
Livestock	Guadalupe	SW	Local Supply	64	64	64	64	64	64
Livestock	San Antonio	SW	Local Supply	1,687	1,687	1,687	1,687	1,687	1,687
Livestock	Nueces	SW	Local Supply	154	154	154	154	154	154
Manufac'g	Guadalupe	GW	Carrizo-Wilcox	78	78	78	62	62	62
Manufac'g	Guadalupe	GW	Queen City	16	16	16	21	21	21
Manufac'g	Guadalupe	GW	Sparta	34	34	34	45	45	45
Manufac'g	San Antonio	GW	Carrizo-Wilcox	5	5	5	4	4	4
Manufac'g	San Antonio	GW	Queen City	0	0	0	1	1	1
Manufac'g	San Antonio	GW	Sparta	1	1	1	1	1	1
Mining	Guadalupe	GW	Carrizo-Wilcox	7	5	2	1	0	0
Mining	Guadalupe	GW	Queen City	1	1	0	0	0	0
Mining	Guadalupe	GW	Sparta	3	2	2	0	0	0
Mining	San Antonio	GW	Carrizo-Wilcox	137	73	44	25	19	13
Mining	San Antonio	GW	Queen City	11	6	4	3	3	2
Mining	San Antonio	GW	Sparta	34	18	10	10	8	5
Projected Water Supplies (ac-ft/year) =				31,758	30,239	28,934	27,796	26,806	25,933

Co.-Other = County Other, Manufac'g = Manufacturing, Power = Steam Electric Power
 SA-Nueces = San Antonio-Nueces
 GW = groundwater, SW = surface water
 Carrizo-Wilcox = Carrizo-Wilcox aquifer, Edwards-BFZ = Edwards-BFZ aquifer, Gulf Coast = Gulf Coast aquifer
 Queen City = Queen City aquifer, Sparta = Sparta aquifer

Appendix G
Estimates of Projected Water Demands
For
Atascosa, Frio, Karnes and Wilson Counties
By Decade
2000 - 2050

Atascosa County Projected Water Demand in ac-ft per year

WUG	River Basin	Category	2000	2010	2020	2030	2040	2050
Charlotte	Nueces	Municipal	409	436	464	510	547	568
Lytle	Nueces	Municipal	559	600	635	701	754	811
Jourdanton	Nueces	Municipal	815	863	899	988	1,047	1,124
Pleasanton	Nueces	Municipal	2,486	2,649	2,784	3,074	3,273	3,523
Poteet	Nueces	Municipal	1,285	1,325	1,369	1,479	1,549	1,629
Co.-Other	Nueces	Municipal	2,138	2,395	2,825	3,335	3,908	4,100
Co.-Other	San Antonio	Municipal	101	106	111	123	132	132
Irrigation	Nueces	Irrigation	49,652	47,980	46,371	44,822	43,333	41,900
Irrigation	San Antonio	Irrigation	1,363	1,311	1,261	1,214	1,167	1,123
Livestock	Nueces	Livestock	1,742	1,742	1,742	1,742	1,742	1,742
Livestock	San Antonio	Livestock	66	66	66	66	66	66
Mining	Nueces	Mining	1,558	1,583	1,693	1,804	1,918	2,048
Power	Nueces	Power	12,000	12,000	12,000	12,000	15,000	22,000
Total Water Demand (ac-ft/year)			74,174	73,056	72,220	71,858	74,436	80,766

Frio County Projected Water Demand in ac-ft per year

WUG	River Basin	Category	2000	2010	2020	2030	2040	2050
Dilley	Nueces	Municipal	824	855	873	906	939	962
Pearsall	Nueces	Municipal	1,955	2,020	2,057	2,146	2,210	2,263
Co.-Other	Nueces	Municipal	731	740	740	761	784	799
Irrigation	Nueces	Irrigation	94,688	91,294	88,045	84,933	81,955	79,103
Livestock	Nueces	Livestock	1,192	1,192	1,192	1,192	1,192	1,192
Mining	Nueces	Mining	150	63	32	16	7	3
Power	Nueces	Power	400	400	400	400	400	400
Total Water Demand (ac-ft/year)			99,940	96,564	93,339	90,354	87,487	84,722

Karnes County Projected Water Demand in ac-ft per year

WUG	River Basin	Category	2000	2010	2020	2030	2040	2050
Karnes City	San Antonio	Municipal	468	435	442	468	491	515
Kenedy	San Antonio	Municipal	828	779	799	847	885	931
Runge	San Antonio	Municipal	199	184	187	196	203	213
Co.-Other	Guadalupe	Municipal	27	25	25	26	28	28
Co.-Other	Nueces	Municipal	74	68	68	71	75	76
Co.-Other	San Antonio	Municipal	936	860	865	904	945	958
Co.-Other	SA-Nueces	Municipal	54	50	50	52	55	55
Irrigation	San Antonio	Irrigation	1,840	1,664	1,505	1,362	1,232	1,114
Livestock	Guadalupe	Livestock	92	92	92	92	92	92
Livestock	Nueces	Livestock	117	117	117	117	117	117
Livestock	San Antonio	Livestock	1,060	1,060	1,060	1,060	1,060	1,060
Livestock	SA-Nueces	Livestock	70	70	70	70	70	70
Manufac'g	San Antonio	Manufac'g	296	320	331	340	356	383
Mining	Guadalupe	Mining	11	8	4	1	0	0
Mining	San Antonio	Mining	147	59	23	15	8	4
Mining	SA-Nueces	Mining	8	6	4	3	2	0
Total Water Demand (ac-ft/year)			6,227	5,797	5,642	5,624	5,619	5,616

Wilson County Projected Water Demand in ac-ft per year

WUG	River Basin	Category	2000	2010	2020	2030	2040	2050
Floresville	San Antonio	Municipal	1,290	1,340	1,385	1,453	1,531	1,613
La Vernia	San Antonio	Municipal	225	230	234	254	276	286
Poth	San Antonio	Municipal	449	474	494	522	552	600
Stockdale	San Antonio	Municipal	334	353	369	392	412	448
Co.-Other	Guadalupe	Municipal	113	118	123	129	137	150
Co.-Other	Nueces	Municipal	173	181	188	198	209	229
Co.-Other	San Antonio	Municipal	3,392	4,523	5,003	6,413	7,831	9,205
Irrigation	Guadalupe	Irrigation	101	90	80	70	62	55
Irrigation	Nueces	Irrigation	3,659	3,231	2,853	2,521	2,227	1,969
Irrigation	San Antonio	Irrigation	10,761	9,767	8,893	8,122	7,443	6,845
Livestock	Guadalupe	Livestock	64	64	64	64	64	64
Livestock	Nueces	Livestock	154	154	154	154	154	154
Livestock	San Antonio	Livestock	1,687	1,687	1,687	1,687	1,687	1,687
Manufac'g	Guadalupe	Manufac'g	59	69	81	95	110	128
Manufac'g	San Antonio	Manufac'g	2	3	4	4	5	6
Mining	San Antonio	Mining	182	97	58	38	30	20
Mining	Guadalupe	Mining	11	8	4	1	0	0
Total Water Demand (ac-ft/year)			22,656	22,389	21,674	22,117	22,730	23,459

Co.-Other = County Other, Manufac'g = Manufacturing, Power = Steam Electric Power
 SA-Nueces = San Antonio-Nueces

Appendix H
Estimates of Projected Groundwater
Supplies
Managed by Evergreen UWCD
In
Atascosa, Frio, Karnes and Wilson Counties
By Decade
2000 - 2050

(Excludes Surface Water and Edwards-BFZ aquifer
Supplies)

Atascosa County Projected Groundwater Supplies in ac-ft per year

WUG	River Basin	Source	2000	2010	2020	2030	2040	2050
Charlotte	Nueces	Carrizo-Wilcox	1,468	1,468	1,468	1,468	1,468	1,468
Jourdanton	Nueces	Carrizo-Wilcox	2,057	2,057	2,057	2,057	2,057	2,057
Pleasanton	Nueces	Carrizo-Wilcox	3,524	3,524	3,524	3,524	3,524	3,524
Poteet	Nueces	Carrizo-Wilcox	2,008	2,008	2,008	2,008	2,008	2,008
Co.-Other	Nueces	Carrizo-Wilcox	2,671	2,671	2,671	1,665	1,665	1,665
Co.-Other	San Antonio	Carrizo-Wilcox	132	132	132	122	122	122
Co.-Other	Nueces	Queen City	343	343	343	584	584	584
Co.-Other	Nueces	Sparta	1,086	1,086	1,086	1,851	1,851	1,851
Irrigation	Nueces	Carrizo-Wilcox	3,414	3,398	3,326	0	0	0
Irrigation	Nueces	Queen City	1,599	1,597	1,588	0	0	0
Irrigation	Nueces	Sparta	5,072	5,065	5,036	0	0	0
Irrigation	San Antonio	Carrizo-Wilcox	202	202	202	0	0	0
Mining	Nueces	Carrizo-Wilcox	1,015	1,031	1,103	0	0	0
Mining	Nueces	Queen City	130	132	141	194	194	194
Mining	Nueces	Sparta	413	420	449	616	615	615
Power	Nueces	Carrizo-Wilcox	14,333	14,333	14,333	430	430	430
Power	Nueces	Queen City	1,838	1,838	1,838	3,132	3,132	3,132
Power	Nueces	Sparta	5,829	5,829	5,829	9,934	9,934	9,934
Groundwater Supplies (ac-ft/year) =			47,134	47,134	47,134	27,585	27,584	27,584

Frio County Projected Groundwater Supplies in ac-ft per year

WUG	River Basin	Source	2000	2010	2020	2030	2040	2050
Dilley	Nueces	Carrizo-Wilcox	2,742	2,742	2,742	2,742	2,742	2,742
Pearsall	Nueces	Carrizo-Wilcox	3,371	3,371	3,371	3,371	3,371	3,371
Co.-Other	Nueces	Carrizo-Wilcox	618	618	618	444	444	444
Co.-Other	Nueces	Queen City	66	66	65	130	130	130
Co.-Other	Nueces	Sparta	114	114	114	225	225	225
Irrigation	Nueces	Carrizo-Wilcox	16,806	16,873	16,897	1,908	1,912	1,915
Irrigation	Nueces	Queen City	2,439	2,446	2,449	2,351	2,352	2,353
Irrigation	Nueces	Sparta	4,208	4,220	4,224	4,058	4,061	4,062
Mining	Nueces	Carrizo-Wilcox	116	49	25	9	4	2
Mining	Nueces	Queen City	13	5	2	3	1	0
Mining	Nueces	Sparta	21	9	5	4	2	1
Power	Nueces	Carrizo-Wilcox	310	310	310	222	222	222
Power	Nueces	Queen City	33	33	33	66	66	66
Power	Nueces	Sparta	57	57	57	112	112	112
Groundwater Supplies (ac-ft/year) =			30,914	30,913	30,912	15,645	15,644	15,645

Karnes County Projected Groundwater Supplies in ac-ft per year

WUG	River Basin	Source	2000	2010	2020	2030	2040	2050
Karnes City	San Antonio	Carrizo-Wilcox	1024	1024	1024	1024	1024	1024
Kenedy	San Antonio	Carrizo-Wilcox	1,216	1,216	1,216	1,216	1,216	1,216
Runge	San Antonio	Gulf Coast	468	468	468	468	468	468
Co.-Other	San Antonio	Carrizo-Wilcox	714	714	714	607	607	607
Co.-Other	Guadalupe	Carrizo-Wilcox	25	25	25	24	24	24
Co.-Other	Nueces	Carrizo-Wilcox	44	44	44	34	34	34
Co.-Other	Guadalupe	Gulf Coast	3	3	3	4	4	4
Co.-Other	Nueces	Gulf Coast	32	32	32	42	42	42
Co.-Other	San Antonio	Gulf Coast	244	244	244	351	351	351
Co.-Other	SA-Nueces	Gulf Coast	55	55	55	55	55	55
Irrigation	San Antonio	Carrizo-Wilcox	902	726	567	424	294	176
Manufac'g	San Antonio	Gulf Coast	98	98	98	141	141	141
Manufac'g	San Antonio	Carrizo-Wilcox	285	285	285	242	242	242
Mining	Guadalupe	Carrizo-Wilcox	10	7	4	1	0	0
Mining	Guadalupe	Gulf Coast	1	1	0	0	0	0
Mining	San Antonio	Carrizo-Wilcox	110	44	17	9	5	3
Mining	San Antonio	Gulf Coast	37	15	6	6	3	1
Mining	SA-Nueces	Gulf Coast	8	6	4	3	2	0
Groundwater Supplies (ac-ft/year) =			5,276	5,007	4,806	4,651	4,512	4,388

Wilson County Projected Groundwater Supplies in ac-ft per year

WUG	River Basin	Source	2000	2010	2020	2030	2040	2050
Floresville	San Antonio	Carrizo-Wilcox	1,468	1,468	1,468	1,468	1,468	1,468
La Vernia	San Antonio	Carrizo-Wilcox	395	395	395	395	395	395
Poth	San Antonio	Carrizo-Wilcox	2,017	2,017	2,017	2,017	2,017	2,017
Stockdale	San Antonio	Carrizo-Wilcox	1,372	1,372	1,372	1,372	1,372	1,372
Co.-Other	Guadalupe	Carrizo-Wilcox	91	91	91	73	73	73
Co.-Other	San Antonio	Carrizo-Wilcox	6,887	6,887	6,887	5,953	5,953	5,953
Co.-Other	Nueces	Carrizo-Wilcox	134	134	134	106	106	106
Co.-Other	San Antonio	Queen City	560	560	560	788	788	788
Co.-Other	Guadalupe	Queen City	19	19	19	24	24	24
Co.-Other	Nueces	Queen City	33	33	33	42	42	42
Co.-Other	Guadalupe	Sparta	40	40	40	53	53	53
Co.-Other	San Antonio	Sparta	1,730	1,730	1,730	2,435	2,435	2,435
Co.-Other	Nueces	Sparta	63	63	63	81	81	81
Irrigation	Guadalupe	Carrizo-Wilcox	61	55	49	34	30	27
Irrigation	San Antonio	Carrizo-Wilcox	6,419	5,675	4,253	3,162	2,848	2,600
Irrigation	Nueces	Carrizo-Wilcox	2,134	1,884	1,664	1,165	1,029	910
Irrigation	Guadalupe	Queen City	13	11	10	11	10	9
Irrigation	San Antonio	Queen City	522	461	831	729	730	696
Irrigation	Nueces	Queen City	521	460	406	463	409	362
Irrigation	Guadalupe	Sparta	27	24	21	25	22	19
Irrigation	San Antonio	Sparta	1,612	1,425	1,603	2,025	1,659	1,343
Irrigation	Nueces	Sparta	1,004	887	783	893	789	697
Manufac'g	Guadalupe	Carrizo-Wilcox	78	78	78	62	62	62
Manufac'g	Guadalupe	Queen City	16	16	16	21	21	21
Manufac'g	Guadalupe	Sparta	34	34	34	45	45	45
Manufac'g	San Antonio	Carrizo-Wilcox	5	5	5	4	4	4
Manufac'g	San Antonio	Queen City	0	0	0	1	1	1
Manufac'g	San Antonio	Sparta	1	1	1	1	1	1
Mining	Guadalupe	Carrizo-Wilcox	7	5	2	1	0	0
Mining	Guadalupe	Queen City	1	1	0	0	0	0
Mining	Guadalupe	Sparta	3	2	2	0	0	0
Mining	San Antonio	Carrizo-Wilcox	137	73	44	25	19	13
Mining	San Antonio	Queen City	11	6	4	3	3	2
Mining	San Antonio	Sparta	34	18	10	10	8	5
Groundwater Supplies (ac-ft/year) =			27,449	25,930	24,625	23,487	22,497	21,624

Co.-Other = County Other, Manufac'g = Manufacturing, Power = Steam Electric Power

SA-Nueces = San Antonio-Nueces

Carrizo-Wilcox = Carrizo-Wilcox aquifer, Gulf Coast = Gulf Coast aquifer, Queen City = Queen City aquifer

Sparta = Sparta aquifer

Appendix I
Water Management Strategies
Recommended in
South Central Texas Regional Water Plan
(SCTRWP)
For
Atascosa, Frio, Karnes and Wilson Counties
By Decade
2000 - 2050

SCTRWP Water Management Strategies for Atascosa County

WUG	WMS Name	Source (County)	Basin	2000	2010	2020	2030	2040	2050
Charlotte	Demand Reduction-Conservation	Carrizo-Wilcox (Atascosa)	Nueces	2	7	8	6	6	7
Jourdanton	Demand Reduction-Conservation	Carrizo-Wilcox (Atascosa)	Nueces	4	20	11	18	13	14
Lytle	Demand Reduction-Conservation	Edwards BFZ (Medina)	Nueces	5	9	10	8	8	5
Lytle	Edwards Irrigation Transfer	Edwards BFZ (Bexar)	San Antonio	450	450	450	450	644	644
Pleasanton	Demand Reduction-Conservation	Carrizo-Wilcox (Atascosa)	Nueces	11	52	30	50	36	38
Poteet	Demand Reduction-Conservation	Carrizo-Wilcox (Atascosa)	Nueces	4	15	16	18	12	7
Co.-Other	Carrizo Aquifer Local Supply	Carrizo-Wilcox (Atascosa)	San Antonio	0	0	0	5	10	10
Power	Carrizo Aquifer Local Supply	Carrizo-Wilcox (Atascosa)	Nueces	0	0	0	0	1,600	8,600
Mining	Carrizo Aquifer Local Supply	Carrizo-Wilcox (Atascosa)	Nueces	0	0	0	995	1,390	1,390
Irrigation	Demand Reduction-Conservation	Carrizo-Wilcox (Atascosa)	San Antonio	75	75	75	75	75	75
Irrigation	Demand Reduction-Conservation	Carrizo-Wilcox (Atascosa)	Nueces	3,617	3,617	3,617	3,617	3,617	3,617

SCTRWP Water Management Strategies for Frio County

WUG	WMS Name	Source (County)	Basin	2000	2010	2020	2030	2040	2050
Dilley	Demand Reduction-Conservation	Carrizo-Wilcox (Frio)	Nueces	7	15	13	13	14	9
Pearsall	Demand Reduction-Conservation	Carrizo-Wilcox (Frio)	Nueces	18	30	33	34	24	12
Irrigation	Demand Reduction-Conservation	Carrizo-Wilcox (Frio)	Nueces	5,947	5,947	5,947	5,947	5,947	5,947

SCTRWP Water Management Strategies for Karnes County

WUG	WMS Name	Source (County)	Basin	2000	2010	2020	2030	2040	2050
Kenedy	Demand Reduction-Conservation	Carrizo-Wilcox (Karnes)	San Antonio	10	21	17	18	13	7
Irrigation	Demand Reduction-Conservation	Strategy not ID'd (N/A)	n/a	0	0	0	0	0	0

SCTRWP Water Management Strategies for Wilson County

WUG	WMS Name	Source (County)	Basin	2000	2010	2020	2030	2040	2050
Floresville	Demand Reduction-Conservation	Carrizo-Wilcox (Wilson)	San Antonio	13	31	26	18	19	20
Floresville	Carrizo Aquifer Local Supply	Carrizo-Wilcox (Wilson)	San Antonio	0	0	0	0	200	200
La Vernia	Demand Reduction-Conservation	Carrizo-Wilcox (Wilson)	San Antonio	3	5	5	5	4	3
Poth	Demand Reduction-Conservation	Carrizo-Wilcox (Wilson)	San Antonio	2	7	8	9	10	7
Stockdale	Demand Reduction-Conservation	Carrizo-Wilcox (Wilson)	San Antonio	3	8	4	7	7	3

Co.-Other = County Other, Power = Steam Electric Power
 Carrizo-Wilcox = Carrizo-Wilcox aquifer, Edwards BFZ = Edwards-BFZ aquifer