ROLLING PLAINS GROUNDWATER CONSERVATION DISTRICT

MANAGEMENT PLAN

ADOPTED – JUNE 22, 2000
REVISED – July 19, 2001
REVISED- August 18, 2005
REVISED- August 19, 2010

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DISTRICT MISSION

The Rolling Plains Groundwater Conservation District will strive to develop, promote, and implement water conservation, augmentation, and management strategies to protect water resources for the benefit of the citizens, economy, and environment of the district.

STATEMENT OF GUIDING PRINCIPLES

The district recognizes that the groundwater resources of the region are of vital importance. The preservation of this most valuable resource can be managed in a prudent and cost effective manner through education and cooperation. The greatest threat to prevent the district from achieving the stated mission is inappropriate management, based on a lack of understanding of local conditions. A basic understanding of the aquifers and their hydrogeologic properties, as well as a quantification of resources, is the foundation from which to build prudent planning measures. This management document is intended as a tool to focus the thoughts and actions of those given the responsibility for the execution of district activities throughout the ten-year period that is the focus of this plan, i.e. (2010-2020). After five years, the plan will be reviewed, but may be revised at any time in order to maintain consistency or to address any new or revised data, Groundwater Availability Models, Desired Future Conditions, State or Regional Water Plans, or District management strategies.

General Description

The District was created by the citizens of Haskell and Knox Counties through election, January 27, 1999. Baylor County was added to the District after an annexation petition and subsequent referendum on August 12, 2000. Senate Bill 611 of the Seventy-seventh Legislature was signed by the Governor on May 5, 2001. This changed the name of the District and provided for the Board of Directors to be increased to twelve members to include members from Baylor County. The current officers are Ed Murphy-President, Joe Tidwell-Vice-President, and Glenn Ray Howell, Secretary-Treasurer. The other members are Jerry Bob Daniel, Jimmy Burson, Don Brothers, Jim Bridwell, Chris Orsak, David Albus, Bryan Kuehler, Gary Max Coltharp, and Kenny Shipman. Senate Bill 1925 in the Seventy-eighth Legislature further defined the District's properties. The District General Manager is Mike McGuire, who represents Groundwater Conservation Districts as a voting member of RWPG Brazos G and RWPG B. Rolling Plains Groundwater Conservation District (RPGCD) has the same areal extent as that of Baylor, Haskell and Knox Counties, Texas. The Counties have an economy dominated by the agricultural community. The agricultural income is derived primarily from cotton, peanuts, wheat, and beef cattle production. Production of petroleum also contributes to the income of the counties.

Location and Extent

Baylor, Haskell and Knox Counties, having an areal extent of 2667 square miles, are located in northwest central Texas. The counties are bounded on the east by Archer and Throckmorton Counties, on the north by Foard and Wilbarger Counties, on the west by King and Stonewall Counties, and on the south by Jones and Shackelford Counties. Seymour, which is centrally located in the county, is the county seat of Baylor County. Haskell, which is centrally located in the county, is the county seat of Haskell County. Benjamin, which is centrally located in the county, is the county seat of Knox County.

Topography and Drainage

Topographically, the District consists of rolling plains heavily dissected by Brazos and Wichita River drainage. The altitude of the land surface ranges from 1053 to 1681 feet above mean sea level.

Baylor County lies within the drainage system of the Brazos and Wichita River basins. The Brazos River enters the county from the west and traverses through the middle of the county and exits through the southeast corner. The Wichita River enters the county from the west and traverses across the upper half of the county and exits through the northeast corner.

Knox County lies within the drainage system of the Brazos and Wichita River basins. The Brazos River enters the county in the southwest and traverses through the middle of the county and exits through the east side. The Wichita River enters the county from the west and traverses through the middle of the county and exits through the northeast corner.

Haskell County lies within the drainage system of the Brazos River. The Brazos River parallels the western boundary of the county and shows up again in the southeastern corner of the county.

Groundwater Resources of Baylor, Haskell and Knox Counties

The Seymour aquifer is the only source of moderate to large supplies of fresh groundwater in Baylor, Haskell and Knox Counties. No alternative fresh supplies exist from deeper formations. The aquifer underlies 321,220 acres and furnishes water to over 3,000 irrigation wells. Municipal, domestic, and stock supplies are also dependent on the Seymour.

The geologic and hydrologic character of the Seymour is quite variable. Typically, wells are 40 to 60 feet deep and are completed in the lower part of the formation, which normally consists of sand and gravel. Well yields average 270 gallons per minute and are as high as 1,300 gallons per minute. Specific capacities of wells average over 50 gallons per minute per foot of drawdown. Saturated thickness is typically between 20 and 40 feet. Transmissivities range from 20,000 to over 300,000 gallons per day per foot and average 100,000 gallons per day per foot. Ground-water movement rates, unaffected by pumping, average between 800 and 1,200 feet per year.

Nearly all recharge to the Seymour is by direct infiltration of precipitation on the land surface. Analysis of pumpage, water levels, and precipitation over the past 20 years indicates that nearly 55,000 acre-feet per year is available for pumping by wells. Annual pumpage in recent years has ranged from about 30,000 acre-feet to about 70,000 acre-feet, averaging 45,600 acre-feet.

Water quality in the Seymour is variable. The dissolved solids content of natural water from individual wells ranges from about 300 milligrams per liter to 3,000 milligrams per liter. Most values are between 400 and 1,000 milligrams per liter. The best quality water is found in and adjacent to the more important recharge areas. Generally, water quality is satisfactory for irrigation purposes. Most water quality meets state standards for public supplies, except for nitrate content that commonly exceeds the limit of 45 milligrams per liter. Nitrate contents of Seymour water are typically from 30 to 90 milligrams per liter. Available chemical analyses and nitrogen isotope analyses indicate most of the nitrate in the Seymour results from leaching of natural soil nitrate due to cultivation.

The Seymour aquifer is susceptible to pollution from both surface and near surface sources. Over 3,200 past and present, actual and potential, pollution sources exist on the Seymour. Most are only potential sources; actual count is believed to number a few hundred. Existing pollution is due mainly to past pollution sources and activities, and not to current practices. Most existing pollution has been due to oil field brines and septic tank discharge.

It is estimated that about 2 percent of the water in the Seymour aquifer is affected by pollution. About 75 percent of the existing pollution is estimated to be due to the past disposal of oil field brine into unlined surface pits. An estimated 20 percent has been caused by leaky injection wells and unplugged abandoned holes. About 4 percent of existing pollution results from septic tanks, while miscellaneous sources are responsible for 1 percent. Little effect on water quality results from return flow of irrigation water, evapotranspiration, or agricultural application of fertilizer and pesticides.

The portions of the aquifer affected currently by pollution are relatively localized. The portions of the aquifer affected by pollution will increase in the future due to the natural movement of ground water and to the spreading effects caused by pumping wells. However, portions of the aquifier affected by significant pollution will not become extremely large in the future. Significant future pollution problems will be confined mostly to individual properties as opposed to large areas of the aquifer.

Correcting existing pollution can take years, or even decades, and can be very costly. Thus, prevention rather than correction is most important in dealing with ground-water pollution. For past pollution sources, it is possible only to control the resulting pollution plumes either by removal or avoidance measures. Pollution removal measures involve pumping by wells to remove the pollutants from the aquifer. Typically, this is impractical because of the large volumes of water that must be pumped, the relatively long period of time required, and problems regarding disposal of pumped water. Avoidance methods include relocating wells affected by pollution or selective pumping and blending to obtain a quality of water that can be used. These can be effective methods if the pollution is not severe or if the property involved is large, and sufficient quantities of unpolluted water can be obtained.

Currently the District is using the Texas Water Development Board's Groundwater Availability Model (GAM) for the Seymour and Blaine Aquifers. The GAM model uses available datasets to generate digital descriptions of the aquifers. The datasets describe saturated thickness and yield, which the product describes as water in storage. When combined with recharge and production values, these estimates can be used by the District to derive goals for future estimates of available groundwater and necessary production limits. The following two tables are taken from GAM Run 10-021 and summarize the information required for the management plan. The GAM Run in its entirety is attached to the end of the management plan.

Table 1: Summarized information required for the Rolling Plains Groundwater Conservation District's groundwater management plan for the Seymour Aquifer. All values are reported in acre-feet per year. All numbers are rounded to the nearest 1 acre-foot. Reported flow estimates include both fresh and brackish waters present in the aquifers.

Management Plan requirement	Aquifer or confining unit	Results[1]
Estimated annual amount of recharge from precipitation to the district	Seymour Aquifer	105,272
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Seymour Aquifer	16,266
Estimated annual volume of flow into the district within each aquifer in the district	Seymour Aquifer	98
Estimated annual volume of flow out of the district within each aquifer in the district	Seymour Aquifer	1,769
Estimated net annual volume of flow between each aquifer in the district	Net flows leaving Seymour Aquifer and entering underlying Permian Units	7,259

Note 1: A mass balance error of one percent or less is normally considered acceptable for water budgets extracted from numerical flow models (Anderson and Woessner, 1992); however, the water budgets for some stress periods of the groundwater availability model for the Seymour and Blaine aquifers exceeded one percent. After investigating the cause and several alternative approaches to defining the water budget it was determined that, after averaging all 240 stress periods together, the results are reasonable and appropriate for the purposes of the district's management plan.

Estimate of Managed Available Groundwater

On July 22, 2010, the desired future conditions (DFCs) for the Seymour, Dockum, Blaine and Ogallala Aquifers located within Groundwater Management Area (GMA) 6 were adopted. Two of these aquifers, the Seymour and Blaine are located within the Rolling Plains GCD. The Blaine Aquifer in Knox County was determined to be not relevant for the purpose of a desired future condition in GMA 6. Since MAG estimates have not yet been calculated for GMA 6 the requirement to present MAG data in the groundwater management plan is not applicable at this time. Once MAG estimates become available the District will amend the management plan.

Given the small area of coverage and the limited yield of the Blaine Aquifer in Knox County, GMA 6 has determined that this sliver of the Blaine Aquifer is not relevant in regards to the desired future condition in GMA 6. Rolling Plains GCD concurs with this assessment and includes the following table from GAM run 10-021 for information.

Table 2: Summarized information required for the Rolling Plains Groundwater Conservation District's groundwater management plan for the Blaine Aquifer. All values are reported in acre-feet per year. All numbers are rounded to the nearest 1 acre-foot. Reported flow estimates include both fresh and brackish waters present in the aquifers.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Blaine Aquifer	642
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Blaine Aquifer	0
Estimated annual volume of flow into the district within each aquifer in the district	Blaine Aquifer	1,467
Estimated annual volume of flow out of the district within each aquifer in the district	Blaine Aquifer	261
Estimated net annual volume of flow between each aquifer in the district	Net flows leaving Blaine into the Permain Unit	4,119

Surface Water Resources of Baylor, Haskell and Knox Counties

Baylor County has two major reservoirs located on the Wichita River. Lake Kemp and Lake Diversion are owned and operated by the city of Wichita Falls, located outside the District in Wichita County. Baylor County also has a reservoir located on the Brazos River. Millers Creek Reservoir is owned and operated by the North Central Texas Municipal Water Authority, whose member cities are Haskell, Goree, Munday and Knox City.

Haskell County's only surface impoundment used to supply water, other than for livestock consumption, is Lake Stamford. The owner and operator of Stamford Lake is the City of Stamford, located outside the District in Jones County.

Knox County contains no significant surface water resources.

2007 State Water Plan
Projected Surface Water Supplies
Rolling Plains GCD

Baylor County

RWPG	Water User Group	County	River Basin	Source Name	2010	2020	2030	2040	2050	2060
B	Irrigation	Baylor	Brazos	Brazos River Combined Run-of-River Irrigation	17	17	17	17	17	17
B	Livestock	Baylor	Brazos	Livestock Local Supply	333	333	333	333	333	333
B	Livestock	Baylor	Red	Livestock Local Supply	566	566	566	566	566	566
Total Projected Surface Water Supplies (acre-feet per year) =					**916**	**916**	**916**	**916**	**916**	**916**

Source: Volume 3, 2007 State Water Planning Database 1/8/2010
(http://www.twdb.state.tx.us/DATA/db07/defaultReadOnly.asp)

Haskell County

RWPG	Water User Group	County	River Basin	Source Name	2010	2020	2030	2040	2050	2060
G	County Other	Haskell	Brazos	Millers Creek Lake/ Reservoir	27	23	16	10	6	0
G	County Other	Haskell	Brazos	Stamford Lake/ Reservoir	165	165	165	165	165	165
G	Haskell	Haskell	Brazos	Millers Creek Lake/ Reservoir	225	180	135	90	45	0
G	Irrigation	Haskell	Brazos	Brazos River Combined Run-of-River Irrigation	827	827	827	827	827	827
G	Livestock	Haskell	Brazos	Livestock Local Supply	492	492	492	492	492	492
G	Rule	Haskell	Brazos	Millers Creek Lake/ Reservoir	13	11	8	5	3	0
G	Stamford	Haskell	Brazos	Fort Phantom Hill Lake/ Reservoir	32	31	30	29	28	27
G	Steam Electric Power	Haskell	Brazos	Stamford Lake/ Reservoir	2,200	2,200	2,200	2,200	2,200	2,200
Total Projected Surface Water Supplies (acre-feet per year) =					**3,981**	**3,929**	**3,873**	**3,818**	**3,766**	**3,711**

Source: Volume 3, 2007 State Water Planning Database (http://www.twdb.state.tx.us/DATA/db07/defaultReadOnly.asp) 1/8/2010

Knox County

RWPG	Water User Group	County	River Basin	Source Name	2010	2020	2030	2040	2050	2060
G	County Other	Knox	Brazos	Brazos River Run-of-River	34	34	34	34	34	34
G	County Other	Knox	Brazos	Millers Creek Lake/ Reservoir	32	25	19	13	6	0
G	Irrigation	Knox	Brazos	Brazos River Combined Run-of-River Irrigation	2,948	2,944	2,941	2,937	2,934	2,930
G	Knox City	Knox	Brazos	Millers Creek Lake/ Reservoir	119	95	72	48	24	0
G	Livestock	Knox	Brazos	Livestock Local Supply	510	510	510	510	510	510
G	Livestock	Knox	Red	Livestock Local Supply	530	530	530	530	530	530
G	Munday	Knox	Brazos	Millers Creek Lake/ Reservoir	125	100	75	50	25	0
Total Projected Surface Water Supplies (acre-feet per year) =					**4,298**	**4,238**	**4,181**	**4,122**	**4,063**	**4,004**

Source: Volume 3, 2007 State Water Planning Database 1/8/2010
(http://www.twdb.state.tx.us/DATA/db07/defaultReadOnly.asp)

Projected Water Supplies of Baylor, Haskell and Knox Counties

The District has determined that groundwater demands of the county will exceed an amount that results in the recoverable volume of water in storage in the Seymour aquifer to be less than today's value on January 1, 2060. Based upon the values derived from the availabilities estimation process, the total usable amount of groundwater from the Seymour aquifer of Baylor, Haskell and Knox Counties is 55,078 acre-feet. Although, data has yet to be determined to judiciously describe the Seymour aquifer, the goal to maintain 100 percent of current recoverable volume in storage to the year 2050 is applicable. This coupled with the quantity of surface water available annually to the District that comes from Millers Creek Reservoir in Baylor County, which is set at this time to a firm yield of 0 acre-feet is the projected total water supply for the District. The total annual estimated amount of projected available water supply for the District is 55,078 acre-feet. This number is constantly being reevaluated based on silt accumulation projections for Millers Creek Reservoir. These concerns have led to RWPG Brazos G to include Augmentation of Millers Creek Reservoir in the 2007 Water Plan with a projected yield of 4870 acre-feet.

2007 State Water Plan
Projected Water Needs
Rolling Plains GCD

Positive values reflect a water surplus; negative values reflect a water need.

Baylor County

RWPG	WUG	County	River Basin	2010	2020	2030	2040	2050	2060
B	County Other	Baylor	Brazos	139	148	174	176	179	180
B	County Other	Baylor	Red	4	8	17	18	19	19
B	Irrigation	Baylor	Brazos	1,367	1,381	1,395	1,409	1,423	1,423
B	Irrigation	Baylor	Red	177	182	188	194	199	199
B	Livestock	Baylor	Brazos	35	35	35	35	35	35
B	Livestock	Baylor	Red	21	21	21	21	21	21
B	Mining	Baylor	Brazos	26	37	42	47	47	47
B	Seymour	Baylor	Brazos	136	199	243	287	315	360
Total Projected Water Needs (acre-feet per year) =				**1,905**	**2,011**	**2,115**	**2,187**	**2,238**	**2,284**

Source:Volume 3, 2007 State Water Planning Database 1/8/2010

(http://www.twdb.state.tx.us/DATA/db07/defaultReadOnly.asp)

Haskell County

RWPG	WUG	County	River Basin	2010	2020	2030	2040	2050	2060
G	County Other	Haskell	Brazos	25	37	50	57	67	77
G	Haskell	Haskell	Brazos	-334	-358	-383	-413	-442	-472
G	Irrigation	Haskell	Brazos	-28,805	-27,349	-25,936	-24,564	-23,236	-21,950
G	Livestock	Haskell	Brazos	0	0	0	0	0	0
G	Mining	Haskell	Brazos	-56	-53	-52	-51	-49	-47
G	Rule	Haskell	Brazos	-3	0	4	7	10	13
G	Stamford	Haskell	Brazos	24	23	22	21	20	19
G	Steam Electric Power	Haskell	Brazos	1,778	1,864	1,807	1,738	1,653	1,550
Total Projected Water Needs (acre-feet per year) =				**-29,198**	**-27,760**	**-26,371**	**-25,028**	**-23,727**	**-22,469**

Source:Volume 3, 2007 State Water Planning Database 1/8/2010
(http://www.twdb.state.tx.us/DATA/db07/defaultReadOnly.asp)

Knox County

RWPG	WUG	County	River Basin	2010	2020	2030	2040	2050	2060
G	County Other	Knox	Brazos	-10	-16	-16	-15	-16	-15
G	County Other	Knox	Red	-11	-11	-10	-9	-8	-7
G	Irrigation	Knox	Brazos	-15,343	-14,318	-13,316	-12,340	-11,387	-10,460
G	Knox City	Knox	Brazos	-106	-134	-153	-174	-195	-216
G	Livestock	Knox	Brazos	0	0	0	0	0	0
G	Livestock	Knox	Red	0	0	0	0	0	0
G	Mining	Knox	Brazos	-3	-3	-3	-3	-3	-3
G	Mining	Knox	Red	0	0	0	0	0	0
G	Munday	Knox	Brazos	-142	-165	-185	-205	-226	-250
	Total Projected Water Needs (acre-feet per year) =			**-15,615**	**-14,647**	**-13,683**	**-12,746**	**-11,835**	**-10,951**

Source:Volume 3, 2007 State Water Planning Database

1/8/2010

(http://www.twdb.state.tx.us/DATA/db07/defaultReadOnly.asp)

Total Water Use

The following table represents the annual total water usage for Baylor, Haskell and Knox Counties.

Historical Water Use Estimate Summary

TWDB - Water Use Survey

Rolling Plains GCD

Unit: Acre Feet (ACFT)

GW = groundwater; SW = surface water

Baylor County

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	GW	980	15	0	5,364	19	148	6,526
	SW	0	0	0	297	0	553	850
	Total	**980**	**15**	**0**	**5,661**	**19**	**701**	**7,376**
1980	GW	933	5	0	5,998	0	64	7,000
	SW	0	0	0	131	0	533	664
	Total	**933**	**5**	**0**	**6,129**	**0**	**597**	**7,664**
1984	GW	1,091	5	0	1,650	0	60	2,806
	SW	0	0	0	20	0	548	568
	Total	**1,091**	**5**	**0**	**1,670**	**0**	**608**	**3,374**
1985	GW	1,006	5	0	1,532	48	78	2,669
	SW	0	0	0	15	0	715	730
	Total	**1,006**	**5**	**0**	**1,547**	**48**	**793**	**3,399**
1986	GW	983	5	0	2,129	45	82	3,244
	SW	0	0	0	22	0	745	767
	Total	**983**	**5**	**0**	**2,151**	**45**	**827**	**4,011**
1987	GW	1,024	0	0	2,203	42	91	3,360
	SW	0	0	0	22	0	821	843
	Total	**1,024**	**0**	**0**	**2,225**	**42**	**912**	**4,203**
1988	GW	924	0	0	1,543	47	94	2,608
	SW	0	0	0	16	0	853	869
	Total	**924**	**0**	**0**	**1,559**	**47**	**947**	**3,477**
1989	GW	882	0	0	1,837	40	94	2,853
	SW	0	0	0	20	0	856	876
	Total	**882**	**0**	**0**	**1,857**	**40**	**950**	**3,729**
1990	GW	847	0	0	1,630	40	93	2,610
	SW	0	0	0	16	0	843	859
	Total	**847**	**0**	**0**	**1,646**	**40**	**936**	**3,469**

1991	GW	897	0	0	887	40	96	1,920
	SW	0	0	0	9	0	861	870
	Total	**897**	**0**	**0**	**896**	**40**	**957**	**2,790**
1992	GW	957	0	0	1,533	40	96	2,626
	SW	0	0	0	0	0	857	857
	Total	**957**	**0**	**0**	**1,533**	**40**	**953**	**3,483**
1993	GW	930	0	0	1,284	39	110	2,363
	SW	0	0	0	0	0	994	994
	Total	**930**	**0**	**0**	**1,284**	**39**	**1,104**	**3,357**
1994	GW	991	0	0	461	39	99	1,590
	SW	0	0	0	0	0	888	888
	Total	**991**	**0**	**0**	**461**	**39**	**987**	**2,478**
1995	GW	920	0	0	472	39	110	1,541
	SW	0	0	0	0	0	994	994
	Total	**920**	**0**	**0**	**472**	**39**	**1,104**	**2,535**
1996	GW	910	0	0	729	39	56	1,734
	SW	0	0	0	0	0	510	510
	Total	**910**	**0**	**0**	**729**	**39**	**566**	**2,244**
1997	GW	810	0	0	402	39	46	1,297
	SW	0	0	0	0	0	419	419
	Total	**810**	**0**	**0**	**402**	**39**	**465**	**1,716**
1998	GW	796	0	0	1,071	39	109	2,015
	SW	0	0	0	0	0	973	973
	Total	**796**	**0**	**0**	**1,071**	**39**	**1,082**	**2,988**
1999	GW	835	0	0	1,421	39	98	2,393
	SW	0	0	0	0	0	885	885
	Total	**835**	**0**	**0**	**1,421**	**39**	**983**	**3,278**
2000	GW	770	0	0	732	39	99	1,640
	SW	0	0	0	4	0	899	903
	Total	**770**	**0**	**0**	**736**	**39**	**998**	**2,543**
2001	GW	618	0	0	598	39	50	1,305
	SW	0	0	0	6	0	890	896
	Total	**618**	**0**	**0**	**604**	**39**	**940**	**2,201**
2002	GW	551	0	0	1,014	39	51	1,655
	SW	0	0	0	10	0	913	923
	Total	**551**	**0**	**0**	**1,024**	**39**	**964**	**2,578**
2003	GW	768	0	0	1,217	39	60	2,084
	SW	0	0	0	1,078	0	1,081	2,159
	Total	**768**	**0**	**0**	**2,295**	**39**	**1,141**	**4,243**
2004	GW	629	0	0	1,071	39	58	1,797
	SW	0	0	0	1,040	0	1,034	2,074
	Total	**629**	**0**	**0**	**2,111**	**39**	**1,092**	**3,871**

NOTE: All Pumpage reported in acre-feet 1/8/2010

Source: TWDB Water Use Survey Database (http://www.twdb.state.tx.us/wushistorical/DesktopDefault.aspx?PageID=1)

Haskell County

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	GW	1,138	40	0	41,646	361	157	43,342
	SW	35	0	1,136	68	0	501	1,740
	Total	**1,173**	**40**	**1,136**	**41,714**	**361**	**658**	**45,082**
1980	GW	388	25	0	39,700	128	60	40,301
	SW	721	0	1,117	528	0	473	2,839
	Total	**1,109**	**25**	**1,117**	**40,228**	**128**	**533**	**43,140**
1984	GW	283	25	0	21,026	115	42	21,491
	SW	829	0	942	0	0	382	2,153
	Total	**1,112**	**25**	**942**	**21,026**	**115**	**424**	**23,644**
1985	GW	244	25	0	10,915	150	37	11,371
	SW	737	0	660	0	0	337	1,734
	Total	**981**	**25**	**660**	**10,915**	**150**	**374**	**13,105**
1986	GW	202	25	0	13,917	142	84	14,370
	SW	737	0	1,052	0	0	339	2,128
	Total	**939**	**25**	**1,052**	**13,917**	**142**	**423**	**16,498**
1987	GW	162	0	0	13,180	133	32	13,507
	SW	704	0	644	0	0	291	1,639
	Total	**866**	**0**	**644**	**13,180**	**133**	**323**	**15,146**
1988	GW	157	0	0	15,679	151	70	16,057
	SW	695	0	647	0	0	280	1,622
	Total	**852**	**0**	**647**	**15,679**	**151**	**350**	**17,679**
1989	GW	221	0	0	26,040	141	69	26,471
	SW	655	0	673	0	0	276	1,604
	Total	**876**	**0**	**673**	**26,040**	**141**	**345**	**28,075**
1990	GW	226	0	0	22,320	141	68	22,755
	SW	599	0	546	0	0	272	1,417
	Total	**825**	**0**	**546**	**22,320**	**141**	**340**	**24,172**
1991	GW	193	0	0	23,329	101	69	23,692
	SW	633	0	371	0	0	278	1,282
	Total	**826**	**0**	**371**	**23,329**	**101**	**347**	**24,974**
1992	GW	159	0	0	22,851	101	158	23,269
	SW	667	0	295	0	0	631	1,593
	Total	**826**	**0**	**295**	**22,851**	**101**	**789**	**24,862**
1993	GW	175	0	0	8,676	101	168	9,120
	SW	653	0	383	0	0	672	1,708
	Total	**828**	**0**	**383**	**8,676**	**101**	**840**	**10,828**
1994	GW	132	0	0	34,313	101	103	34,649
	SW	741	0	443	0	0	411	1,595
	Total	**873**	**0**	**443**	**34,313**	**101**	**514**	**36,244**

1995	GW	176	0	0	32,190	101	110	32,577
	SW	712	0	700	0	0	438	1,850
	Total	**888**	**0**	**700**	**32,190**	**101**	**548**	**34,427**
1996	GW	205	0	0	32,154	101	167	32,627
	SW	778	0	542	0	0	667	1,987
	Total	**983**	**0**	**542**	**32,154**	**101**	**834**	**34,614**
1997	GW	174	0	0	26,297	101	170	26,742
	SW	757	0	454	0	0	680	1,891
	Total	**931**	**0**	**454**	**26,297**	**101**	**850**	**28,633**
1998	GW	168	0	0	36,598	101	108	36,975
	SW	764	0	506	0	0	434	1,704
	Total	**932**	**0**	**506**	**36,598**	**101**	**542**	**38,679**
1999	GW	160	0	0	39,944	101	115	40,320
	SW	822	0	506	0	0	461	1,789
	Total	**982**	**0**	**506**	**39,944**	**101**	**576**	**42,109**
2000	GW	162	0	0	50,820	101	98	51,181
	SW	770	0	507	0	0	393	1,670
	Total	**932**	**0**	**507**	**50,820**	**101**	**491**	**52,851**
2001	GW	161	0	0	30,160	101	96	30,518
	SW	703	0	397	0	0	385	1,485
	Total	**864**	**0**	**397**	**30,160**	**101**	**481**	**32,003**
2002	GW	162	0	0	36,492	101	108	36,863
	SW	706	0	397	0	0	431	1,534
	Total	**868**	**0**	**397**	**36,492**	**101**	**539**	**38,397**
2003	GW	173	0	0	35,154	101	139	35,567
	SW	755	0	400	79	0	555	1,789
	Total	**928**	**0**	**400**	**35,233**	**101**	**694**	**37,356**
2004	GW	149	0	0	36,278	101	145	36,673
	SW	649	0	400	71	0	582	1,702
	Total	**798**	**0**	**400**	**36,349**	**101**	**727**	**38,375**

NOTE: All Pumpage reported in acre-feet 1/8/2010

Source: TWDB Water Use Survey Database (http://www.twdb.state.tx.us/wushistorical/DesktopDefault.aspx?PageID=1)

Knox County

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	GW	850	129	0	44,705	115	133	45,932
	SW	0	0	0	293	0	507	800
	Total	**850**	**129**	**0**	**44,998**	**115**	**640**	**46,732**
1980	GW	199	0	0	49,998	0	40	50,237
	SW	706	0	0	0	0	366	1,072
	Total	**905**	**0**	**0**	**49,998**	**0**	**406**	**51,309**

1984	GW	286	0	0	35,142	12	56	35,496
	SW	719	0	0	0	12	517	1,248
	Total	**1,005**	**0**	**0**	**35,142**	**24**	**573**	**36,744**
1985	GW	210	0	0	30,695	12	56	30,973
	SW	732	0	0	0	12	507	1,251
	Total	**942**	**0**	**0**	**30,695**	**24**	**563**	**32,224**
1986	GW	204	0	0	19,850	13	69	20,136
	SW	687	0	0	0	13	629	1,329
	Total	**891**	**0**	**0**	**19,850**	**26**	**698**	**21,465**
1987	GW	170	0	0	15,982	11	60	16,223
	SW	643	0	0	0	11	555	1,209
	Total	**813**	**0**	**0**	**15,982**	**22**	**615**	**17,432**
1988	GW	148	0	0	16,299	12	64	16,523
	SW	697	0	0	0	11	580	1,288
	Total	**845**	**0**	**0**	**16,299**	**23**	**644**	**17,811**
1989	GW	139	0	0	35,361	0	62	35,562
	SW	688	0	0	0	11	573	1,272
	Total	**827**	**0**	**0**	**35,361**	**11**	**635**	**36,834**
1990	GW	120	0	0	32,323	0	62	32,505
	SW	693	0	0	0	11	565	1,269
	Total	**813**	**0**	**0**	**32,323**	**11**	**627**	**33,774**
1991	GW	122	0	0	27,790	14	64	27,990
	SW	729	0	0	0	11	578	1,318
	Total	**851**	**0**	**0**	**27,790**	**25**	**642**	**29,308**
1992	GW	197	0	0	22,326	14	43	22,580
	SW	569	0	0	0	11	385	965
	Total	**766**	**0**	**0**	**22,326**	**25**	**428**	**23,545**
1993	GW	192	0	0	21,109	14	47	21,362
	SW	637	0	0	0	11	420	1,068
	Total	**829**	**0**	**0**	**21,109**	**25**	**467**	**22,430**
1994	GW	184	0	0	28,347	14	97	28,642
	SW	639	0	0	0	11	880	1,530
	Total	**823**	**0**	**0**	**28,347**	**25**	**977**	**30,172**
1995	GW	181	0	0	31,365	15	96	31,657
	SW	642	0	0	0	11	864	1,517
	Total	**823**	**0**	**0**	**31,365**	**26**	**960**	**33,174**
1996	GW	199	0	0	28,662	15	44	28,920
	SW	617	0	0	0	11	398	1,026
	Total	**816**	**0**	**0**	**28,662**	**26**	**442**	**29,946**
1997	GW	177	0	0	16,795	15	48	17,035
	SW	584	0	0	0	11	429	1,024
	Total	**761**	**0**	**0**	**16,795**	**26**	**477**	**18,059**
1998	GW	197	0	0	22,542	15	121	22,875
	SW	647	0	0	0	11	1,088	1,746
	Total	**844**	**0**	**0**	**22,542**	**26**	**1,209**	**24,621**

1999	GW	211	0	0	33,987	15	119	34,332
	SW	511	0	0	0	11	1,068	1,590
	Total	**722**	**0**	**0**	**33,987**	**26**	**1,187**	**35,922**
2000	GW	151	0	0	43,001	15	104	43,271
	SW	585	0	0	123	11	936	1,655
	Total	**736**	**0**	**0**	**43,124**	**26**	**1,040**	**44,926**
2001	GW	172	0	0	28,017	15	53	28,257
	SW	577	0	0	0	26	994	1,597
	Total	**749**	**0**	**0**	**28,017**	**41**	**1,047**	**29,854**
2002	GW	148	0	0	30,358	15	53	30,574
	SW	557	0	0	0	26	998	1,581
	Total	**705**	**0**	**0**	**30,358**	**41**	**1,051**	**32,155**
2003	GW	146	0	0	40,112	15	59	40,332
	SW	541	0	0	0	26	1,103	1,670
	Total	**687**	**0**	**0**	**40,112**	**41**	**1,162**	**42,002**
2004	GW	204	0	0	40,120	15	55	40,394
	SW	553	0	0	0	26	1,039	1,618
	Total	**757**	**0**	**0**	**40,120**	**41**	**1,094**	**42,012**

NOTE: All Pumpage reported in acre-feet 1/8/2010
Source: TWDB Water Use Survey Database (http://www.twdb.state.tx.us/wushistorical/DesktopDefault.aspx?PageID=1)

Groundwater Use in Baylor, Haskell and Knox Counties

The following table represents the annual groundwater usage for Baylor, Haskell and Knox Counties.

Historical Groundwater Pumpage Summary

TWDB - Water Use Survey

Rolling Plains GCD

Unit: Acre Feet (ACFT)

Baylor County

Year	Aquifer	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1980	SEYMOUR	938	0	0	5,998	0	64	7,000
1984	SEYMOUR	1,138	5	0	1,650	0	60	2,853
1985	SEYMOUR	1,058	5	0	1,532	48	78	2,721
1986	SEYMOUR	1,041	5	0	2,129	45	82	3,302

1987	SEYMOUR	1,069	0	0	2,203	42	91	3,405
1988	SEYMOUR	206	0	0	1,543	47	94	1,890
1989	SEYMOUR	928	0	0	1,837	40	94	2,899
1990	SEYMOUR	892	0	0	1,630	40	93	2,655
1991	SEYMOUR	947	0	0	887	40	96	1,970
1992	SEYMOUR	1,006	0	0	1,533	40	96	2,675
1993	SEYMOUR	978	0	0	1,284	39	110	2,411
1994	SEYMOUR	1,047	0	0	461	39	99	1,646
1995	SEYMOUR	972	0	0	472	39	110	1,593
1996	SEYMOUR	971	0	0	729	39	56	1,795
1997	SEYMOUR	865	0	0	402	39	46	1,352
1998	SEYMOUR	849	0	0	1,071	39	109	2,068
1999	SEYMOUR	892	0	0	1,432	39	98	2,461
2000	SEYMOUR	823	0	0	732	39	99	1,693
2001	SEYMOUR	653	0	0	598	39	94	1,384
2002	SEYMOUR	624	0	0	1,014	39	96	1,773
2003	SEYMOUR	657	0	0	1,217	39	242	2,155

NOTE: All Pumpage reported in acre-feet 1/8/2010
Source: TWDB Water Use Survey Database (http://www.twdb.state.tx.us/wushistorical/DesktopDefault.aspx?PageID=2)

Haskell County

Year	Aquifer	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1980	OTHER	34	0	0	794	13	22	863
	SEYMOUR	659	0	0	38,906	115	38	39,718
	Total	**693**	**0**	**0**	**39,700**	**128**	**60**	**40,581**
1984	OTHER	9	0	0	420	1	15	445
	SEYMOUR	516	25	0	20,606	114	27	21,288
	Total	**525**	**25**	**0**	**21,026**	**115**	**42**	**21,733**
1985	OTHER	9	0	0	218	1	13	241
	SEYMOUR	438	25	0	10,697	149	24	11,333
	Total	**447**	**25**	**0**	**10,915**	**150**	**37**	**11,574**
1986	OTHER	8	0	0	278	1	122	409
	SEYMOUR	395	25	0	13,639	141	217	14,417
	Total	**403**	**25**	**0**	**13,917**	**142**	**339**	**14,826**

1987	OTHER	7	0	0	264	1	12	284
	SEYMOUR	338	0	0	12,916	132	20	13,406
	Total	**345**	**0**	**0**	**13,180**	**133**	**32**	**13,690**
1988	OTHER	7	0	0	314	1	101	423
	SEYMOUR	347	0	0	15,365	150	179	16,041
	Total	**354**	**0**	**0**	**15,679**	**151**	**280**	**16,464**
1989	OTHER	9	0	0	521	1	25	556
	SEYMOUR	430	0	0	25,519	140	44	26,133
	Total	**439**	**0**	**0**	**26,040**	**141**	**69**	**26,689**
1990	OTHER	15	0	0	447	1	25	488
	SEYMOUR	389	0	0	21,873	140	43	22,445
	Total	**404**	**0**	**0**	**22,320**	**141**	**68**	**22,933**
1991	OTHER	8	0	0	467	1	25	501
	SEYMOUR	370	0	0	22,862	100	44	23,376
	Total	**378**	**0**	**0**	**23,329**	**101**	**69**	**23,877**
1992	OTHER	7	0	0	457	1	57	522
	SEYMOUR	329	0	0	22,394	100	101	22,924
	Total	**336**	**0**	**0**	**22,851**	**101**	**158**	**23,446**
1993	OTHER	0	0	0	174	1	61	236
	SEYMOUR	355	0	0	8,502	100	107	9,064
	Total	**355**	**0**	**0**	**8,676**	**101**	**168**	**9,300**
1994	OTHER	0	0	0	0	1	37	38
	SEYMOUR	339	0	0	34,313	100	66	34,818
	Total	**339**	**0**	**0**	**34,313**	**101**	**103**	**34,856**
1995	OTHER	0	0	0	0	1	40	41
	SEYMOUR	359	0	0	32,190	100	70	32,719
	Total	**359**	**0**	**0**	**32,190**	**101**	**110**	**32,760**
1996	OTHER	0	0	0	0	1	61	62
	SEYMOUR	419	0	0	32,154	100	106	32,779
	Total	**419**	**0**	**0**	**32,154**	**101**	**167**	**32,841**
1997	OTHER	0	0	0	0	1	62	63
	SEYMOUR	352	0	0	26,297	100	108	26,857
	Total	**352**	**0**	**0**	**26,297**	**101**	**170**	**26,920**
1998	OTHER	0	0	0	0	1	39	40
	SEYMOUR	340	0	0	36,598	100	69	37,107
	Total	**340**	**0**	**0**	**36,598**	**101**	**108**	**37,147**
1999	OTHER	0	0	0	0	1	42	43
	SEYMOUR	324	0	0	39,944	100	73	40,441
	Total	**324**	**0**	**0**	**39,944**	**101**	**115**	**40,484**
2000	OTHER	0	0	0	0	1	36	37
	SEYMOUR	328	0	0	50,820	100	62	51,310
	Total	**328**	**0**	**0**	**50,820**	**101**	**98**	**51,347**
2001	OTHER	0	0	0	0	1	35	36
	SEYMOUR	255	0	0	30,160	100	61	30,576
	Total	**255**	**0**	**0**	**30,160**	**101**	**96**	**30,612**

2002	OTHER	0	0	0	0	1	39	40
	SEYMOUR	267	0	0	36,492	100	69	36,928
	Total	**267**	**0**	**0**	**36,492**	**101**	**108**	**36,968**
2003	OTHER	0	0	0	0	1	82	83
	SEYMOUR	283	0	0	35,154	100	144	35,681
	Total	**283**	**0**	**0**	**35,154**	**101**	**226**	**35,764**

NOTE: All Pumpage reported in acre-feet 1/8/2010

Source: TWDB Water Use Survey Database (http://www.twdb.state.tx.us/wushistorical/DesktopDefault.aspx?PageID=2)

Knox County

Year	Aquifer	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1980	OTHER	5	0	0	0	0	10	15
	SEYMOUR	194	0	0	49,998	0	30	50,222
	Total	**199**	**0**	**0**	**49,998**	**0**	**40**	**50,237**
1984	OTHER	4	0	0	0	6	14	24
	SEYMOUR	282	0	0	35,142	6	42	35,472
	Total	**286**	**0**	**0**	**35,142**	**12**	**56**	**35,496**
1985	OTHER	2	0	0	0	6	14	22
	SEYMOUR	204	0	0	30,695	6	42	30,947
	Total	**206**	**0**	**0**	**30,695**	**12**	**56**	**30,969**
1986	OTHER	2	0	0	0	7	18	27
	SEYMOUR	202	0	0	19,850	7	51	20,110
	Total	**204**	**0**	**0**	**19,850**	**14**	**69**	**20,137**
1987	OTHER	2	0	0	0	6	15	23
	SEYMOUR	167	0	0	15,982	6	45	16,200
	Total	**169**	**0**	**0**	**15,982**	**12**	**60**	**16,223**
1988	OTHER	2	0	0	0	6	16	24
	SEYMOUR	146	0	0	16,299	6	48	16,499
	Total	**148**	**0**	**0**	**16,299**	**12**	**64**	**16,523**
1989	OTHER	2	0	0	0	0	16	18
	SEYMOUR	136	0	0	35,361	0	46	35,543
	Total	**138**	**0**	**0**	**35,361**	**0**	**62**	**35,561**
1990	OTHER	25	0	0	0	0	16	41
	SEYMOUR	95	0	0	32,323	0	46	32,464
	Total	**120**	**0**	**0**	**32,323**	**0**	**62**	**32,505**
1991	OTHER	24	0	0	0	0	16	40
	SEYMOUR	98	0	0	27,790	14	48	27,950
	Total	**122**	**0**	**0**	**27,790**	**14**	**64**	**27,990**

1992	OTHER	25	0	0	0	0	10	35
	SEYMOUR	172	0	0	22,326	14	33	22,545
	Total	**197**	**0**	**0**	**22,326**	**14**	**43**	**22,580**
1993	OTHER	22	0	0	0	0	10	32
	SEYMOUR	170	0	0	21,109	14	37	21,330
	Total	**192**	**0**	**0**	**21,109**	**14**	**47**	**21,362**
1994	OTHER	16	0	0	0	0	20	36
	SEYMOUR	167	0	0	28,347	14	77	28,605
	Total	**183**	**0**	**0**	**28,347**	**14**	**97**	**28,641**
1995	OTHER	16	0	0	0	0	20	36
	SEYMOUR	163	0	0	31,365	15	76	31,619
	Total	**179**	**0**	**0**	**31,365**	**15**	**96**	**31,655**
1996	OTHER	17	0	0	0	0	9	26
	SEYMOUR	179	0	0	28,662	15	35	28,891
	Total	**196**	**0**	**0**	**28,662**	**15**	**44**	**28,917**
1997	OTHER	18	0	0	0	0	9	27
	SEYMOUR	157	0	0	16,795	15	39	17,006
	Total	**175**	**0**	**0**	**16,795**	**15**	**48**	**17,033**
1998	OTHER	20	0	0	0	0	23	43
	SEYMOUR	175	0	0	22,542	15	98	22,830
	Total	**195**	**0**	**0**	**22,542**	**15**	**121**	**22,873**
1999	OTHER	21	0	0	0	0	22	43
	SEYMOUR	187	0	0	33,987	15	97	34,286
	Total	**208**	**0**	**0**	**33,987**	**15**	**119**	**34,329**
2000	OTHER	15	0	0	0	0	20	35
	SEYMOUR	134	0	0	43,001	15	82	43,232
	Total	**149**	**0**	**0**	**43,001**	**15**	**102**	**43,267**
2001	OTHER	16	0	0	0	0	20	36
	SEYMOUR	110	0	0	28,017	15	86	28,228
	Total	**126**	**0**	**0**	**28,017**	**15**	**106**	**28,264**
2002	OTHER	16	0	0	0	0	20	36
	SEYMOUR	93	0	0	30,358	15	86	30,552
	Total	**109**	**0**	**0**	**30,358**	**15**	**106**	**30,588**
2003	OTHER	18	0	0	0	0	47	65
	SEYMOUR	89	0	0	40,112	15	205	40,421
	Total	**107**	**0**	**0**	**40,112**	**15**	**252**	**40,486**

NOTE: All Pumpage reported in acre-feet 1/8/2010
Source: TWDB Water Use Survey Database (http://www.twdb.state.tx.us/wushistorical/DesktopDefault.aspx?PageID=2)

Projected Demands for Water in Baylor, Haskell and Knox Counties

The TWDB published projected groundwater needs in their planning document Water for Texas-2007. This management planning document is based upon the estimates contained in that document and will be used until alternatives are generated. The TWDB has projected that the total water demands for Baylor, Haskell and Knox Counties will be 97,586 acre-feet per year in 2010. This estimate is based on projections of the following breakdown and population statistics. The city of Seymour will have a demand of 611 acre-feet per year by the year 2010. Its projected population in 2010 is 2,692. The city of Haskell will have a demand of 559 acre-feet per year by the year 2010. Its projected population in 2010 is 3,024. The projected demands and population for the city of Munday are 267 acre-feet per year and 1,520 respectively for 2010. The projected demands and population for Knox City are 225 acre-feet per year and 1,198 respectively for 2010. A projected irrigation demand for Baylor, Haskell and Knox Counties is estimated to be 92,059 acre-feet per year. Projected mining demands are 140 acre-feet per year, and domestic livestock demands are 2485 acre-feet per year for 2010.

The following table represents the projected water demands for Baylor, Haskell and Knox Counties.

2007 State Water Plan
Projected Water Demands
Rolling Plains GCD

Baylor County

RWPG	Water User Group	County	River Basin	2010	2020	2030	2040	2050	2060
B	County Other	Baylor	Brazos	201	192	166	164	161	160
B	County Other	Baylor	Red	76	72	63	62	61	61
B	Irrigation	Baylor	Brazos	487	473	459	445	431	431
B	Irrigation	Baylor	Red	198	193	187	181	176	176
B	Livestock	Baylor	Brazos	353	353	353	353	353	353
B	Livestock	Baylor	Red	600	600	600	600	600	600
B	Mining	Baylor	Brazos	21	10	5	0	0	0
B	Seymour	Baylor	Brazos	611	548	504	460	432	387
Total Projected Water Demands (acre-feet per year) =				**2,547**	**2,441**	**2,337**	**2,265**	**2,214**	**2,168**

Source: Volume 3, 2007 State Water Planning Database (http://www.twdb.state.tx.us/DATA/db07/defaultReadOnly.asp)

1/8/2010

Haskell County

RWPG	Water User Group	County	River Basin	2010	2020	2030	2040	2050	2060
G	County Other	Haskell	Brazos	235	221	203	192	180	166
G	Haskell	Haskell	Brazos	559	538	518	503	487	472
G	Irrigation	Haskell	Brazos	49,309	47,844	46,422	45,040	43,702	42,405
G	Livestock	Haskell	Brazos	492	492	492	492	492	492
G	Mining	Haskell	Brazos	93	91	90	89	88	87
G	Rule	Haskell	Brazos	81	77	72	69	66	62
G	Stamford	Haskell	Brazos	8	8	8	8	8	8
G	Steam Electric Power	Haskell	Brazos	422	336	393	462	547	650
Total Projected Water Demands (acre-feet per year) =				**51,199**	**49,607**	**48,198**	**46,855**	**45,570**	**44,342**

Source: Volume 3, 2007 State Water Planning Database (http://www.twdb.state.tx.us/DATA/db07/defaultReadOnly.asp)

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Knox County

RWPG	Water User Group	County	River Basin	2010	2020	2030	2040	2050	2060
G	County Other	Knox	Brazos	190	192	188	184	181	178
G	County Other	Knox	Red	27	27	27	26	26	25
G	Irrigation	Knox	Brazos	42,065	41,033	40,025	39,041	38,082	37,147
G	Knox City	Knox	Brazos	225	229	225	222	219	216
G	Livestock	Knox	Brazos	510	510	510	510	510	510
G	Livestock	Knox	Red	530	530	530	530	530	530
G	Mining	Knox	Brazos	9	9	9	9	9	9
G	Mining	Knox	Red	17	17	17	17	17	17
G	Munday	Knox	Brazos	267	265	260	255	251	250
Total Projected Water Demands (acre-feet per year) =				**43,840**	**42,812**	**41,791**	**40,794**	**39,825**	**38,882**

Source: Volume 3, 2007 State Water Planning Database (http://www.twdb.state.tx.us/DATA/db07/defaultReadOnly.asp)

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Potential Demand, Supply Issues and Solutions

Based on all calculations and projections it is obvious that issues will arise when demands exceed supplies. The District will use all regulatory statutes available to encourage the cities of Baylor, Haskell and Knox Counties to develop conservation plans and additional surface water supplies. The District anticipates that these cities may also have problems meeting needs during periods of drought. Through cooperation with the cities and water providers, the District with its representation on the RWPGs Brazos G and B has been able to facilitate inclusion into the State Water Plan of two projects to provide for the future water supplies to meet the needs of the residents of Baylor, Haskell and Knox Counties. These projects are the Millers Creek Augmentation and the Emergency Interconnect to Millers Creek Reservoir. These projects are listed in the following table of Projected Water Management Strategies.

2007 State Water Plan
Projected Water Management Strategies
Rolling Plains GCD

Baylor County

RWPG	WUG	WUG County	River Basin	Water Management Strategy	Source Name	Source County	2010	2020	2030	2040	2050	2060
B	County Other	Baylor	Brazos	Emergency Interconnect Millers Creek Reservoir	Millers Creek Lake/ Reservoir	Reservoir	125	125	125	125	125	125
B	Seymour	Baylor	Brazos	Emergency Interconnect Millers Creek Reservoir	Millers Creek Lake/ Reservoir	Reservoir	125	125	125	125	125	125
Total Projected Water Management Strategies (acre-feet per year) =							**250**	**250**	**250**	**250**	**250**	**250**

Source: Volume 3, 2007 State Water Planning Database 1/8/2010
(http://www.twdb.state.tx.us/DATA/db07/defaultReadOnly.asp)

Haskell County

RWPG	WUG	WUG County	River Basin	Water Management Strategy	Source Name	Source County	2010	2020	2030	2040	2050	2060
G	Mining	Haskell	Brazos	Additional Seymour Aquifer Development	Seymour Aquifer	Haskell	53	48	46	45	43	41
G	Irrigation	Haskell	Brazos	Brush Control and Range Management	Brush Control	Haskell	0	0	0	0	0	0
G	Irrigation	Haskell	Brazos	Irrigation Water Conservation	Conservation	Haskell	1,479	2,392	3,250	3,153	3,059	2,968
G	Haskell	Haskell	Brazos	Millers Creek Augmentation	Millers Creek Lake/ Reservoir	Reservoir	500	500	500	500	500	500
G	Rule	Haskell	Brazos	Millers Creek Augmentation	Millers Creek Lake/ Reservoir	Reservoir	50	50	50	50	50	50
G	Mining	Haskell	Brazos	Mining Water Conservation	Conservation	Haskell	3	5	6	6	6	6
G	Haskell	Haskell	Brazos	Municipal Water Conservation	Conservation	Haskell	23	47	36	26	19	18
G	Irrigation	Haskell	Brazos	Weather Modification	Weather Modification	Haskell	0	0	0	0	0	0
Total Projected Water Management Strategies (acre-feet per year) =							**2,108**	**3,042**	**3,888**	**3,780**	**3,677**	**3,583**

Source: Volume 3, 2007 State Water Planning Database 1/8/2010

Knox County

RWPG	WUG	WUG County	River Basin	Water Management Strategy	Source Name	Source County	2010	2020	2030	2040	2050	2060
G	Mining	Knox	Brazos	Additional Seymour Aquifer Development	Seymour Aquifer	Haskell	2	2	1	1	1	1
G	Irrigation	Knox	Brazos	Brush Control and Range Management	Brush Control	Knox	0	0	0	0	0	0
G	Irrigation	Knox	Brazos	Irrigation Water Conservation	Conservation	Knox	1,262	2,052	2,802	2,733	2,666	2,600
G	County Other	Knox	Brazos	Millers Creek Augmentation	Millers Creek Lake/ Reservoir	Reservoir	35	35	35	35	35	35
G	County Other	Knox	Red	Millers Creek Augmentation	Millers Creek Lake/ Reservoir	Reservoir	15	15	15	15	15	15
G	Knox City	Knox	Brazos	Millers Creek Augmentation	Millers Creek Lake/ Reservoir	Reservoir	250	250	250	250	250	250
G	Munday	Knox	Brazos	Millers Creek Augmentation	Millers Creek Lake/ Reservoir	Reservoir	250	250	250	250	250	250
G	Mining	Knox	Brazos	Mining Water Conservation	Conservation	Knox	1	1	2	2	2	2
G	Knox City	Knox	Brazos	Municipal Water Conservation	Conservation	Knox	9	21	17	13	11	11
G	Munday	Knox	Brazos	Municipal Water Conservation	Conservation	Knox	10	25	20	15	11	10
G	Irrigation	Knox	Brazos	Weather Modification	Weather Modification	Knox	0	0	0	0	0	0
Total Projected Water Management Strategies (acre-feet per year) =							**1,834**	**2,651**	**3,392**	**3,314**	**3,241**	**3,174**

Source: Volume 3, 2007 State Water Planning Database
(http://www.twdb.state.tx.us/DATA/db07/defaultReadOnly.asp) 1/8/2010

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 continue to identify and engage in such activities and practices, which if implemented, would result in preservation and protection of the groundwater. The observation network will continue to be reviewed and maintained in order to monitor changing conditions of groundwater within the District. The District will undertake investigations of the groundwater resources within the District and will make the results of investigations available to the public.

The District will adopt, as necessary, rules to regulate groundwater withdrawals by means of spacing and/or production limits. The relevant factors to be considered in making the determination to grant a permit or limit groundwater withdrawal, will include:

1. The purpose of the District and its rules;
2. The equitable conservation and preservation of the resource; and
3. The economic hardship resulting from granting or denying a permit or the terms prescribed by the rules.

In pursuit of the District's mission of preserving and protecting the resource, the District 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 TWC Chapter 36.102, if necessary.

Drought Contingency Plan

Drought is a normal, recurrent feature of climate, although many erroneously consider it a rare and random event. Drought is also a temporary aberration, and differs from aridity, which is restricted to low rainfall regions and is a permanent feature of climate ("What is Drought?", National Drought Mitigation Center). The Rolling Plains Groundwater Conservation District is in an arid region that also experiences drought. However, even in the midst of a drought, rainfall at crucial times of the growing season may significantly reduce irrigation water demand.

Drought response conservation measures typically used in other regions of Texas (i.e. rationing) cannot and are not used in this region due to extreme economic impact potential. In the District, groundwater conservation is stressed at all times. The Board recognizes that irrigated agriculture provides the economic stability to the communities within the District. Therefore, through the notice and hearing provisions required in the development and adoption of this management plan, the Board adopts the official position that, in times of precipitation shortage, irrigated agricultural producers will not be limited to any less usage of groundwater than is provided by District rules.

In order to treat all other groundwater user groups fairly and equally, the District will encourage more stringent conservation measures, where practical, but likewise, will not limit groundwater use in any way not already provided for by District rules.

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, as necessary, rules relating to the implementation of this plan. 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 characteristics. In granting of discretion to any rule, the Board shall consider the potential for adverse effect on adjacent owners and aquifer conditions. The exercise of said discretion by the Board shall not be construed as limiting the power of the Board.

The methodology that the District will use to trace its progress on an annual basis in achieving all of its management goals will be as follows:
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 (during the first quarterly Board of Directors meeting each fiscal year, beginning October 1, 2010). The report will include the number of instances each activity was engaged in during the year.

The annual report will be maintained on file at the District office.

GOALS, MANAGEMENT OBJECTIVES and PERFORMANCE STANDARDS

Goal 1.0 **Provide for Most Efficient Use of Groundwater Within the District.**

1.1. Management Objective

Each year, on four (4) or more occasions, the District will disseminate educational information relating to conservation practices for the efficient use of water resources. These will include but are not limited to publications from the Texas Water Development Board, Texas Natural Resource Conservation Commission, Texas Agricultural Extension Service, and other resources.

1.1a Performance Standard

Number, annually, on four (4) or more occasions, the District disseminated educational information relating to conservation practices for the efficient use of water resources.

1.2. Management Objective

Each year the District will monitor five (5) or more selected wells within the District for possible contamination problems, which would jeopardize the integrity of the groundwater by collecting samples for analysis**.**

1.2a Performance Standard

Number of samples collected and analyzed each year on five (5) or more wells.

1.2b Performance Standard

Number of contamination problems each year.

Goal 2.0 **Control and Prevent Waste of Groundwater Within the District.**

2.1. Management Objective

Each year, on two (2) or more occasions, the District will disseminate educational/informational materials directed toward preventing the waste of groundwater**.**

2.1a Performance Standard

Number, annually, of two (2) or more occasions the District disseminated educational/informational materials directed toward preventing waste of water each year.

Goal 3.0 **Implement Strategies that provide the District's residents information on the status of drought conditions**

3.1. Management Objective

Each year the District will cooperate with the Natural Resource Conservation Service, the Texas Agricultural Extension Service, and the West Texas Mesonet in providing weather data on a daily basis for residents of the District. This data will be disseminated by a Texas Agricultural Extension Service web site **http://texaset.tamu.edu**, the West Texas Mesonet website **http://www.mesonet.ttu.edu**, and the Agricultural Drought Task Force website **http:/agrilife.tamu.edu/drought**. The web sites will provide assistance in calculation of the evapotranspiration rate (ET) of crops and lawns, to provide for efficient watering of these plants and awareness of drought conditions.

3.1a Performance Standard

Number, annually, of one (1) or more weather stations that the District maintains to provide data collection to these cooperating agencies.

3.2. Management Objective

Each year, the District will cooperate with the Texas Water Development Board in monitoring wells that may be used to implement drought planning and providing for this information to be available on the Internet.

3.2a Performance Standard

Number, annually, of one (1) or more on-line wells the District assists in the collection and dissemination of well levels.

3.2b Performance Standard

Prepare a report reflecting the results of the water level monitor to the Board at the first quarterly meeting each fiscal year, beginning October 2010, for a yearly comparison.

Goal 4.0 **Provide for Conservation of Groundwater Within the District.**

4.1. Management Objective

Each year, on four (4) or more occasions, the District will disseminate educational information relating to conservation of water resources. These will include but are not limited to publications from the Texas Water Development Board, Texas Natural Resource Conservation Commission, Texas Agricultural Extension Service, and other resources.

4.1a Performance Standard

Number, annually, on four (4) or more occasions, the District disseminated educational information relating to conservation of water resources.

4.2. Management Objective

Each year the District will monitor water levels in five (5) or more selected wells within the District.

4.2a Performance Standard

Number of water levels taken each year on five (5) or more selected wells.

4.2b Performance Standard

Prepare a report reflecting the results of the annual water level program to the Board at the first quarterly meeting each fiscal year, beginning October 2010, for a yearly comparison of water level averages.

Goal 5.0 **Address in a Quantitative Manner the Desired Future Condition (DFC) of the Groundwater Resources Within the District.**

5.1. Management Objective

Annually, The District will review its permit and well registration in light of the Desired Future Conditions of the groundwater resources within the boundaries of the District to assess whether the District is on target to meet the Desired Future Conditions estimates submitted to the TWDB.

5.1a Performance Standard

The District's Annual Report will include a discussion of the District's permit and well registration and will evaluate the District's progress in achieving the Desired Future Conditions of the groundwater resources within the boundaries of the District and whether the District is on track to maintain the Desired Future Conditions estimates over the 50 year planning period.

5.2. Management Objective

Each year the District will monitor water levels in five (5) or more selected wells within the District.

5.2a Performance Standard

The District will annually sample the water levels in at least five monitoring wells within the District and will determine the five-year water level averages based on the samples taken. The District will compare the five-year water level averages to the corresponding five-year increment of its Desired Future Conditions in order to track its progress in achieving the Desired Future Conditions.

5.2b Performance Standard

The District's Annual Report will include the water level samples taken each year for the purpose of measuring water levels to assess the District's progress towards achieving its Desired Future Conditions. Once the District has obtained water level samples for five consecutive years and is able to calculate water level averages over five-year periods thereafter, the District will include a discussion of its comparison of water level averages to the corresponding five-year increment of its Desired Future Conditions in order to track its progress in achieving its Desired Future Conditions.

<u>Goal 6.0</u> Provide for Conjunctive Surface Water Issues

6.1. Management Objective

Each year, on three (3) or more occasions, the District manager will attend meetings of Region B, Region O or Brazos G RWPG to remain current with surface water issues.

6.1a Performance Standard

Number, annually, on three (3) or more occasions, the District manager attends RWPG meetings.

SB-1 MANAGEMENT GOALS DETERMINED NOT-APPLICABLE

1.0 Control and Prevention of Subsidence.

The rigid geologic framework of the region precludes significant subsidence from occurring. *Therefore, the management goal for controlling subsidence within the District is not applicable to the operations of the District*.

2.0 Cooperative Resolution of Natural Resource Management Issues.

The District has no documented occurrences of endangered or threatened species dependent upon groundwater resources. *Therefore, the management goal for addressing natural resource issues which impact the use and availability of groundwater and which are impacted by the use of groundwater in the District is not applicable to the operations of the District.*

3.0 Recharge Enhancement.

The District has determined that this goal is not presently appropriate or cost-effective. *Therefore, the management goal of Recharge Enhancement within the District is not applicable to the operations of the District*.

4.0 Rainwater Harvesting.

The District has determined that this goal is not presently appropriate or cost-effective. *Therefore, the management goal of Rainwater Harvesting within the District is not applicable to the operations of the District*.

5.0 Precipitation Enhancement.

The District has determined that this goal is not presently appropriate or cost-effective. *Therefore, the management goal of Precipitation Enhancement within the District is not applicable to the operations of the District*.

6.0 Brush Control.

The District has determined that this goal is not presently appropriate or cost-effective. *Therefore, the management goal of Brush Control within the District is not applicable to the operations of the District*.

* Summary definitions.
Optimal- Shall be derived from the minimum number of observations determined by spatial, temporal, and District resource constraints to adequately describe the aquifer system and responses to external influences.

Waste - as defined by Chapter 36 of Texas Water Code means any one or more of the following:

1. Withdrawal of groundwater from a groundwater reservoir at a rate and in an amount that causes or threatens to cause intrusion into the reservoir of water unsuitable for agricultural, gardening, domestic, or stock-raising purposes;

2. The flowing or producing of wells from a groundwater reservoir if the water produced is not used for a beneficial purpose;

3. Escape of groundwater from a groundwater reservoir to any other reservoir or geologic strata that does not contain groundwater;

4. Pollution or harmful alteration of groundwater in a groundwater reservoir by salt water or by other deleterious matter admitted from another stratum or from the surface of the ground;

5. Willfully or negligently causing, suffering, or allowing groundwater to escape into any river, creek, natural watercourse, depression, lake, reservoir, drain, sewer, street, highway, road, or road ditch, or onto any land other than that of the owner of the well unless such discharge is authorized by permit, rule, or order issued by the Commission under Chapter 26 of the Texas Water Code;

6. Groundwater pumped for irrigation that escapes as irrigation tailwater onto land other than that of the owner of the well unless permission has been granted by the occupant of the land receiving the discharge; or

7. For water produced from an artesian well, waste has the meaning assigned by Section 11.205 of the Texas Water Code.

Abandoned Well - shall mean a well or borehole the condition of which is causing, or is likely to cause, pollution of groundwater in the District and includes a well which is or is not in use or which contains no pumping equipment (open or uncovered well). A well or borehole which is not in compliance with applicable law, including the Rules and Regulations of the District, the Texas Water Well Driller's Act, Texas Natural Resource Conservation Commission, or any other state or federal agency or political subdivision having jurisdiction, if presumed to be an abandoned or deteriorated well.

District- the Rolling Plains Groundwater Conservation District.

Board- the Board of Directors of the Rolling Plains Groundwater Conservation District.