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Middle Trinity Groundwater Conservation District

Groundwater Management Plan

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Approved by Texas Water Development Board - July 1, 2004

Re-Adopted – April 2, 2009

Approved by Texas Water Development Board – May 5, 2009

Re-Adopted – March 5, 2012

Approved by Texas Water Development Board – May 14, 2012

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Approved by Texas Water Development Board – [INSERT DATE]

Middle Trinity Groundwater Conservation District

Groundwater Management Plan - 2012

I. District Mission

The mission of the Middle Trinity Groundwater Conservation District is to conserve, preserve and protect the quality and quantity of the groundwater resources for the citizens of Comanche, Erath, Bosque, and Coryell Counties. To accomplish its mission, the District will work to minimize the drawdown of the water table, prevent the waste of groundwater, prevent interference between wells, protect the existing and historic use of groundwater, prevent the degradation of the quality of groundwater, use public education to promote water conservation, give consideration to the service needs of municipal water utilities and the agricultural community, and carry out the powers and duties conferred under Chapter 36 of the Texas Water Code. The District believes that the economy, environment, and quality of life will all be positively impacted by the achievement of its mission.

II. Purpose of Management Plan

The 75th Texas Legislature in 1997 enacted Senate Bill 1 (“SB 1”)¹ to establish a comprehensive statewide water planning process. In particular, SB 1 contained provisions that required groundwater conservation districts to prepare management plans to identify the water supply resources and water demands that will shape the decisions of each district. SB 1 designed the management plans to include management goals for each district to manage and conserve the groundwater resources within their boundaries. In 2001, the Texas Legislature enacted Senate Bill 2 (“SB 2”)² to build on the planning requirements of SB 1 and to further clarify the actions necessary for districts to manage and conserve the groundwater resources of the state of Texas.

The Texas Legislature enacted significant changes to the management of groundwater resources in Texas with the passage of House Bill 1763 (“HB 1763”)³ in 2005 and Senate Bill 660 (“SB 660”) in 2011.⁴ Both HB 1763 and SB 660 made significant revisions to the existing long-term planning process known as the Groundwater Management Area (GMA) process. Based on the language established in Chapter 36 by HB 1763 and SB 660, groundwater conservation districts (“GCDs”) in each GMA were required to meet and determine the Desired Future Conditions (“DFCs”) for the groundwater resources within their boundaries by September 1, 2010 and to propose for re-adoption the desired future conditions for the relevant aquifers every five years.

¹ Act of June 2, 1997, 75th Leg., R.S., ch. 1010, 1997 Tex. Gen. Laws 3610.

² Act of May 27, 2001, 77th Leg., R.S., ch. 966, 2001 Tex. Gen. Laws 1991.

³ Act of May 30, 2005, 79th Leg., R.S. ch. 970, 2005 Tex. Gen. Laws 3247.

⁴ Act of May 29, 2011, 82nd Leg., R.S. ch. 1233, 2011 Tex. Gen. Laws 3287.

In addition, HB 1763 required GCDs, like the District, to provide each GCDs' management plans with the other GCDs in the GMA for review by the other GCDs.

The Middle Trinity Groundwater Conservation District's management plan satisfies the requirements of SB 1, SB 2, HB 1763, SB 660, and the statutory requirements of Chapter 36 of the Texas Water Code, and the administrative requirements of the Texas Water Development Board's ("TWDB") rules.

III. District Information

A. Creation of District and Annexation of Bosque and Coryell Counties

The District was created in 2001 pursuant to the authorization provided by the 77th Texas Legislature in House Bill 3665.⁵ The voters of both Comanche and Erath Counties confirmed the creation of the District on May 4, 2002. Bosque and Coryell Counties were later added to the District through the annexation process provided in Subchapter J, Chapter 36 of the Texas Water Code.⁶ The District received a petition requesting the annexation of Bosque County on June 30, 2008, and the District Board of Directors (Board) voted to add Bosque County to the territory of the District on March 5, 2009. The voters of Bosque County approved annexation into the District on May 9, 2009. The District received a petition requesting the annexation of Coryell County on June 29, 2009, and the Board voted to add Coryell County to the territory of the District on August 6, 2009. The voters of Coryell County approved annexation into the District on November 3, 2009. In compliance with Section 36.1072(e) of the Texas Water Code and 31 TAC § 356.3, this management plan was re-adopted on April 2, 2009 within five years of the original adoption of the management plan and again reviewed and re-adopted on March 5, 2012, within five years of April 2, 2009 – the first re-adoption of the management plan.⁷ This management plan has also been updated within two years of the adoption of DFCs by GMA 8 pursuant to Section 36.3011(5) of the Texas Water Code.⁸

B. Location and Extent

The District is located in the North Central Texas counties of Comanche, Erath, Bosque, and Coryell Counties. The boundaries of the District are coterminous with the boundaries of Comanche, Erath, Bosque, and Coryell Counties. The District is bordered by Palo Pinto County on the north, Hood, Somervell, Johnson, Hill, and McLennan Counties on the east, Mills and Bell Counties on the south and Brown, Hamilton, Lampasas, and Eastland Counties on the west. The District covers an area of approximately 4079 square miles.⁹

⁵ Act of May 25, 2001, 77th Leg. R.S., ch. 1362, 2001 Tex. Gen. Laws 3371.

⁶ TEX. WATER CODE ANN. §§36.321-.331 (West 2008).

⁷ TEX. WATER CODE §36.1072(e); 31 TEX. ADMIN. CODE § 356.3.

⁸ TEX. WATER CODE §36.3011(5).

⁹ Texas Almanac, 2008-2009, The Dallas Morning News.

C. Background

The Board currently consists of 12 (twelve) members. The existing Board is made up of 3 (three) directors from each of the counties in the District.

D. Authority / Regulatory Framework

In the process of creating and re-adopting its management plan, the District has complied with all procedures and met all requirements established by Chapter 36 of the Texas Water Code and Chapter 356 of the TWDB rules contained in Title 31 of the Texas Administrative Code.¹⁰ The District exercises the authority and powers that it was granted by and through the special and general laws that govern it, including Chapter 1362, Acts of the 77th Texas Legislature, Regular Session, 2001; Chapter 893, Acts of the 78th Texas Legislature, Regular Session, 2003; Chapter 521, Acts of the 81st Texas Legislature, Regular Session, 2009; and Chapter 36 of the Texas Water Code.

E. Groundwater Resources of the District

Comanche and Erath Counties are located primarily over the outcrop of the Trinity Aquifer while Bosque and Coryell Counties are located over both the outcrop and the subcrop of the Trinity Aquifer. A Texas Water Development Board diagram of the Trinity Aquifer can be found at Appendix A. The Texas Water Development Board describes the groundwater resources of the Trinity Aquifer as follows:

“The Trinity aquifer consists of early Cretaceous age formations of the Trinity Group where they occur in a band extending through the central part of the state in all or parts of 55 counties, from the Red River in North Texas to the Hill Country of South-Central Texas. Trinity Group deposits also occur in the Panhandle and Edwards Plateau regions where they are included as part of the Edwards-Trinity (High Plains and Plateau) aquifers.

Formations comprising the Trinity Group are (from youngest to oldest) the Paluxy, Glen Rose, and Twin Mountains-Travis Peak. Updip, where the Glen Rose thins or is missing, the Paluxy and Twin Mountains coalesce to form the Antlers Formation. The Antlers consists of up to 900 feet of sand and gravel, with clay beds in the middle section. Water from the Antlers is mainly used for irrigation in the outcrop area of North and Central Texas.

Forming the upper unit of the Trinity Group, the Paluxy Formation consists of up to 400 feet of predominantly fine-to-coarse-grained sand interbedded with clay and shale. The formation pinches out downdip and does not occur south of the Colorado River.

Underlying the Paluxy, the Glen Rose Formation forms a gulfward-thickening wedge of marine carbonates consisting primarily of limestone. South of the Colorado River, the Glen Rose is the upper unit of the Trinity Group and is divisible into an upper and lower

¹⁰ 31 TEX. ADMIN. CODE §§ 356.

member. In the north, the downdip portion of the aquifer becomes highly mineralized and is a source of contamination to wells that are drilled into the underlying Twin Mountains.

The basal unit of the Trinity Group consists of the Twin Mountains and Travis Peak formations, which are laterally separated by a facies change. To the north, the Twin Mountains formation consists mainly of medium- to coarse-grained sands, silty clays, and conglomerates. The Twin Mountains is the most prolific of the Trinity aquifers in North-Central Texas; however, the quality of the water is generally not as good as that from the Paluxy or Antlers Formations. To the south, the Travis Peak Formation contains calcareous sands and silts, conglomerates, and limestones. The formation is subdivided into the following members in descending order: Hensell, Pearsall, Cow Creek, Hammett, Sligo, Hosston, and Sycamore.

Extensive development of the Trinity aquifer has occurred in the Fort Worth-Dallas region where water levels have historically dropped as much as 550 feet. Since the mid-1970s, many public supply wells have been abandoned in favor of a surface-water supply, and water levels have responded with slight rises. Water-level declines of as much as 100 feet are still occurring in Denton and Johnson counties. The Trinity aquifer is most extensively developed from the Hensell and Hosston members in the Waco area, where the water level has declined by as much as 400 feet.”¹¹

IV. Technical District Information Required by [Texas Administrative Code Texas Water Development Board Rules and Chapter 36 of the Texas Water Code](#)

A. Estimate of Modeled Available Groundwater in District Based on Desired Future Conditions– 31 TAC § 356.52(a)(5)(A) / 36.1071(e)(3)(A)

Section 36.001 of the Texas Water Code defines modeled available groundwater (“MAG”) as “the amount of water that the executive administrator determines may be produced on an average annual basis to achieve a desired future condition established under Section 36.108.” HB 1763 adopted by the 79th Legislature in 2005 provided that the DFCs of the aquifer may only be determined through the joint planning process and must be adopted prior to the statutory deadline of September 1, 2010, and every five years thereafter.

The joint planning process set forth in Texas Water Code § 36.108 must be collectively conducted by all groundwater conservation districts within the same GMA. The District is a member of GMA 8. GMA 8 adopted DFCs for the northern segment of the Trinity Aquifer on September 17, 2008. The adopted DFCs were then forwarded to the TWDB for development of the MAG calculations. The District received the MAG calculations from the Texas Water Development Board and the MAGs for the Trinity aquifer were approved by resolution by the GMA 8 members on March 16, 2009. GMA 8 re-adopted DFCs for the Trinity Aquifer on April 27, 2011.

¹¹ Aquifers of Texas, Texas Water Development Board, Report 345, by Ashworth and Hopkins, November 1995.

The DFCs adopted by the District and GMA 8 represent the quantified, measurable conditions of the groundwater resources of the District in 50 years. Section 36.001(30) defines desired future condition as “a quantitative description, adopted in accordance with Section 36.108, of the desired condition of the groundwater resources in a management area at one or more specified future times.” The District’s DFCs are comprehensive tools that indicate how the District intends to monitor and manage its groundwater resources. Overall, the District’s DFCs give the amount of water level declines that the District does not want to exceed over a 50 year planning period.

As additional technical and hydrogeological information is gathered by the District, the District will revise and update its management plan and the information contained therein to include the most up-to-date data available.

**TABLE 1:
DESIRED FUTURE CONDITIONS SUBMITTED TO TEXAS WATER DEVELOPMENT BOARD
MIDDLE TRINITY GROUNDWATER CONSERVATION DISTRICT ¹²**

BOSQUE COUNTY

Aquifer (Trinity subdivisions)	Amount average draw down should not exceed after 50 years (in ft.)
Paluxy	26
Glen Rose	33
Hensell	201
Hosston	220

COMANCHE COUNTY

Aquifer (Trinity subdivisions)	Amount average draw down should not exceed after 50 years (in ft.)
Paluxy	0
Glen Rose	0
Hensell	2
Hosston	11

¹² UPDATE? - GAM Run 10-063mag, Shirley C. Wade, Texas Water Development Board, to be issued.

CORYELL COUNTY

Aquifer (Trinity subdivisions)	Amount average draw down should not exceed after 50 years (in ft.)
Paluxy	15
Glen Rose	15
Hensell	156
Hosston	179

ERATH COUNTY

Aquifer (Trinity subdivisions)	Amount average draw down should not exceed after 50 years (in ft.)
Paluxy	1
Glen Rose	1
Hensell	11
Hosston	27

Based on the DFC estimates submitted to the Texas Water Development Board, the MAG estimates represent the amount of groundwater that is available from the aquifers located within the District’s boundaries in terms of acre-feet per year.

**TABLE 2: MODELED AVAILABLE GROUNDWATER ESTIMATES
MIDDLE TRINITY GROUNDWATER CONSERVATION DISTRICT¹³**

BOSQUE COUNTY

Aquifer (Trinity subdivisions)	Modeled Available Groundwater Totals (in acre-ft. per year)
Paluxy	1,013
Glen Rose	258
Hensell	1,749
Hosston	2,829
Total	5,849

¹³GAM Run 10-063mag, Shirley C. Wade, Texas Water Development Board, to be issued.

COMANCHE COUNTY

Aquifer (Trinity subdivisions)	Modeled Available Groundwater Totals (in acre-ft. per year)
Paluxy	2,292
Glen Rose	0
Hensell	2,995
Hosston	26,948
Total	32,235

CORYELL COUNTY

Aquifer (Trinity subdivisions)	Modeled Available Groundwater Totals (in acre-ft. per year)
Paluxy	254
Glen Rose	784
Hensell	1,765
Hosston	913
Total	3,716

ERATH COUNTY

Aquifer (Trinity subdivisions)	Modeled Available Groundwater Totals (in acre-ft. per year)
Paluxy	13,614
Glen Rose	41
Hensell	6,745
Hosston	12,526
Total	32,926

MODELED AVAILABLE GROUNDWATER TOTALS FOR ALL FOUR COUNTIES

Aquifer (Trinity subdivisions)	Modeled Available Groundwater Totals For All Four Counties (in acre-ft. per year)
Paluxy	17,173
Glen Rose	1,083
Hensell	13,254
Hosston	43,216
Total	74,726

**B. Amount of Groundwater Being Used within the District on an Annual Basis -
31 TAC §356.52(a)(5)(B) / TWC § 36.1071(e)(3)(B)**

See Appendix B

**TABLE 3: HISTORICAL GROUNDWATER USE (acre-feet), 1974, 1980-2004, 2006-2008, TWDB WATER USE
SURVEY**

MIDDLE TRINITY GROUNDWATER CONSERVATION DISTRICT

BOSQUE COUNTY

Year	Aquifer	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	TRINITY	1,436	200	0	342	66	329	2,373
1980	TRINITY	1,807	87	0	300	221	685	3,100
1984	TRINITY	2,024	531	0	180	72	729	3,536
1985	TRINITY	1,975	601	0	229	72	592	3,469
1986	TRINITY	1,936	685	0	233	75	629	3,558
1987	TRINITY	2,075	610	0	93	63	618	3,459
1988	TRINITY	2,159	574	0	140	65	640	3,578
1989	TRINITY	2,062	626	0	43	61	598	3,390
1990	TRINITY	2,213	766	0	159	61	614	3,813
1991	TRINITY	1,989	502	0	159	1,237	625	4,512
1992	TRINITY	2,060	655	0	49	276	580	3,620
1993	TRINITY	2,311	487	0	65	276	587	3,726

1994	TRINITY	2,239	639	0	44	276	702	3,900
1995	TRINITY	2,077	683	0	0	276	677	3,713
1996	TRINITY	2,408	640	0	0	276	918	4,242
1997	TRINITY	2,425	682	0	0	276	584	3,967
1998	TRINITY	2,481	746	0	0	276	568	4,071
1999	TRINITY	2,542	788	0	0	276	560	4,166
2000	TRINITY	2,623	794	0	73	276	524	4,290
2001	TRINITY	2,223	732	0	50	276	533	3,814
2002	TRINITY	1,717	731	0	66	276	522	3,312
2003	TRINITY	2,111	707	0	100	276	503	3,697
2004	TRINITY	3,303	707	0	615	276	499	5,400
2006	TRINITY	2,241	253	0	687	103	319	3,603
2007	TRINITY	2,221	252	0	321	103	317	3,214
2008	TRINITY	2,265	251	0	1,334	103	269	4,222

COMANCHE COUNTY

Year	Aquifer	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	TRINITY	661	1	0	10,715	4	495	11,876
1980	TRINITY	712	22	0	10,000	0	583	11,317
1984	TRINITY	812	24	0	22,583	79	386	23,884
1985	TRINITY	791	22	0	22,500	79	315	23,707
1986	TRINITY	777	18	0	21,875	83	369	23,122
1987	TRINITY	763	4	0	21,250	70	350	22,437
1988	TRINITY	726	3	0	20,000	77	324	21,130
1989	TRINITY	856	3	0	28,827	74	353	30,113
1990	TRINITY	868	3	0	25,313	74	470	26,728
1991	TRINITY	859	3	0	23,250	80	468	24,660
1992	TRINITY	848	9	0	32,060	80	636	33,633
1993	TRINITY	919	5	0	28,162	80	690	29,856
1994	TRINITY	861	5	0	27,329	80	727	29,002
1995	TRINITY	845	4	0	25,667	80	799	27,395
1996	TRINITY	854	1	0	17,575	80	718	19,228
1997	TRINITY	903	3	0	17,099	80	808	18,893
1998	TRINITY	971	2	0	21,276	80	742	23,071
1999	TRINITY	880	2	0	19,237	80	809	21,008
2000	TRINITY	901	2	0	13,515	80	851	15,349

2001	TRINITY	874	4	0	17,265	80	746	18,969
2002	TRINITY	908	4	0	12,254	80	689	13,935
2003	TRINITY	668	1	0	14,104	80	690	15,543
2004	TRINITY	720	530	0	16,455	80	700	18,485
2006	TRINITY	731	3	0	18,931	21	1,053	20,739
2007	TRINITY	738	3	0	18,013	21	855	19,630
2008	TRINITY	773	8	0	17,077	21	962	18,841

CORYELL COUNTY

Year	Aquifer	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	TRINITY	2,064	41	0	21	3	330	2,459
1980	TRINITY	3,104	0	0	0	0	579	3,683
1984	TRINITY	3,169	1	0	13	96	610	3,889
1985	TRINITY	3,202	2	0	20	96	600	3,920
1986	TRINITY	3,189	2	0	20	100	636	3,947
1987	TRINITY	3,279	3	0	20	84	603	3,989
1988	TRINITY	1,828	0	0	12	92	638	2,570
1989	TRINITY	745	0	0	12	86	595	1,438
1990	TRINITY	465	0	0	13	86	588	1,152
1991	TRINITY	333	0	0	11	100	603	1,047
1992	TRINITY	167	0	0	5	100	736	1,008
1993	TRINITY	174	0	0	11	100	783	1,068
1994	TRINITY	122	0	0	13	100	777	1,012
1995	TRINITY	136	0	0	11	100	719	966
1996	TRINITY	139	0	0	39	100	883	1,161
1997	TRINITY	131	0	0	0	100	646	877
1998	TRINITY	180	0	0	0	100	658	938
1999	TRINITY	163	0	0	0	100	691	954
2000	TRINITY	208	0	0	0	100	670	978
2001	TRINITY	134	0	0	0	100	645	879
2002	TRINITY	195	0	0	0	100	657	952
2003	TRINITY	163	0	0	117	100	725	1,105
2004	TRINITY	171	0	0	188	100	683	1,142
2006	TRINITY	1,847	0	0	154	0	291	2,292
2007	TRINITY	1,817	0	0	46	0	232	2,095
2008	TRINITY	1,523	0	0	240	0	183	1,946

ERATH COUNTY

Year	Aquifer	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	TRINITY	2,894	127	0	10,025	6	492	13,544
1980	TRINITY	3,470	17	0	9,000	0	1,216	13,703
1984	TRINITY	3,749	30	0	10,539	0	1,304	15,622
1985	TRINITY	3,457	126	0	7,010	0	1,377	11,970
1986	TRINITY	3,458	81	0	5,022	0	1,530	10,091
1987	TRINITY	3,717	104	0	4,864	0	1,330	10,015
1988	TRINITY	3,909	99	0	5,122	0	1,086	10,216
1989	TRINITY	3,803	106	0	9,174	0	1,201	14,284
1990	TRINITY	3,687	84	0	7,376	0	2,949	14,096
1991	TRINITY	3,622	28	0	4,404	0	2,998	11,052
1992	TRINITY	3,558	67	0	5,939	0	3,700	13,264
1993	TRINITY	3,681	78	0	15,253	0	3,996	23,008
1994	TRINITY	3,613	126	0	11,878	0	4,607	20,224
1995	TRINITY	3,619	177	0	11,578	0	4,914	20,288
1996	TRINITY	3,912	151	0	12,463	0	4,865	21,391
1997	TRINITY	3,724	147	0	7,736	0	4,999	16,606
1998	TRINITY	4,142	71	0	7,437	0	4,529	16,179
1999	TRINITY	4,151	48	0	8,623	0	4,749	17,571
2000	TRINITY	4,219	42	0	10,261	0	4,660	19,182
2001	TRINITY	3,879	45	0	6,739	0	4,470	15,133
2002	TRINITY	4,552	35	0	9,578	0	3,908	18,073
2003	TRINITY	3,714	60	0	6,407	0	3,686	13,867
2004	TRINITY	3,501	48	0	6,395	0	3,604	13,548
2006	TRINITY	4,338	42	0	6,923	402	2,267	13,972
2007	TRINITY	3,952	69	0	4,829	402	1,650	10,902
2008	TRINITY	3,964	69	0	6,177	402	1,981	12,593

Amount of Groundwater Used in Each Category of Use in the Annual Texas Water Development Board (TWDB) Water User Survey Database

Note: The amounts provided in Section B reflect the most recent information available from the Texas Water Development Board. As additional technical and hydrogeological information is

~~gathered by the District, the District will revise and update its management plan and the information contained therein to include the most up-to-date data available.~~

C. Annual Amount of Recharge From Precipitation to the Groundwater Resources within the District – 31 TAC § 356.52(a)(5)(C) / TWC 36.1071(e)(3)(C)

The estimated total amount of annual recharge from precipitation within the District from the Trinity Aquifer is 74,335,291,063 acre-feet. The estimated amount of recharge was derived from information provided in the Texas Water Development Board GAM Run 160-0024. As additional technical and hydrogeological information is gathered by the District, the District will revise and update its management plan and the information contained therein to include the most up-to-date data available.

**TABLE 43: ANNUAL AMOUNT OF RECHARGE FROM PRECIPITATION
MIDDLE TRINITY GROUNDWATER CONSERVATION DISTRICT**

Aquifer or Confining Unit	Estimated Amount of Annual Recharge From Precipitation to the District (in acre-feet per year)
Washita and Fredericksburg series	118,454
Paluxy Aquifer	59,135
Glen Rose Formation	60,145
Hensell Aquifer	33,591
Pearsall/Cow Creek/Hammett/Sligo Formations	0
Hosston Aquifer	19,738
Total	291,063

~~Annual Amount of Recharge from Precipitation in the District from GAM Run 10-04~~

~~**Note:** The amounts provided in Section CB reflect the most recent information available from the Texas Water Development Board. As additional technical and hydrogeological information is gathered by the District, the District will revise and update its management plan and the information contained therein to include the most up-to-date data available.~~

D. Water Supply Needs - 31 TAC 356.5(a)(7) / TWC § 36.1071(e)(4)

See Appendix C

**TABLE 5: WATER SUPPLY NEEDS FROM 2012 STATE WATER PLAN
MIDDLE TRINITY GROUNDWATER CONSERVATION DISTRICT**

The positive values provided in Table 5 represent the water surpluses projected for the District and the negative values represent the actual projected water needs for the District over a fifty year period.

BOSQUE COUNTY

RWPG	WUG	County	River Basin	2010	2020	2030	2040	2050	2060
G	Childress-Creek WSC	Bosque	Brazos	184	145	117	111	110	104
G	Clifton	Bosque	Brazos	267	203	157	152	149	2
G	County-Other	Bosque	Brazos	273	120	23	1	11	10
G	Cross-Country WSC	Bosque	Brazos	48	40	14	-50	-51	-52
G	Irrigation	Bosque	Brazos	8,694	8,731	8,769	8,806	8,841	8,876
G	Lake-Whitney Water-Company	Bosque	Brazos	136	138	143	150	153	149
G	Livestock	Bosque	Brazos	0	0	0	0	0	0
G	Manufacturing	Bosque	Brazos	659	513	379	247	133	0
G	Meridian	Bosque	Brazos	258	245	238	240	240	237
G	Mining	Bosque	Brazos	135	148	156	163	169	173
G	Morgan	Bosque	Brazos	173	161	148	132	114	91
G	Steam-Electric Power	Bosque	Brazos	2,177	312	-735	-2,010	-3,565	-5,461
G	Valley-Mills	Bosque	Brazos	46	16	-2	-5	-8	-12
G	Walnut-Springs	Bosque	Brazos	14	11	10	11	12	11
Total Projected Water Needs (acre-feet per year)=				0	0	-737	-2,065	-3,624	-5,525

COMANCHE COUNTY

RWPG	WUG	County	River Basin	2010	2020	2030	2040	2050	2060
G	Comanche	Comanche	Brazos	0	0	0	0	0	0
G	County-Other	Comanche	Brazos	377	373	390	417	451	477
G	County-Other	Comanche	Colorado	3	3	4	4	5	5
G	De-Leon	Comanche	Brazos	0	0	0	0	0	0
G	Irrigation	Comanche	Brazos	5,285	5,656	6,021	6,384	6,743	7,098
G	Livestock	Comanche	Brazos	0	0	0	0	0	0
G	Livestock	Comanche	Colorado	0	0	0	0	0	0
G	Manufacturing	Comanche	Brazos	14	11	8	6	4	1
G	Mining	Comanche	Brazos	46	49	50	51	52	53
Total Projected Water Needs (acre-feet per year)=				0	0	0	0	0	0

CORYELL COUNTY

RWPG	WUG	County	River Basin	2010	2020	2030	2040	2050	2060
G	Copperas-Cove	Coryell	Brazos	0	0	0	0	0	0
G	County-Other	Coryell	Brazos	1,623	1,255	897	648	422	228
G	Elem-Creek WSC	Coryell	Brazos	27	20	12	7	3	0
G	Fort-Gates WSC	Coryell	Brazos	0	0	0	0	0	0
G	Fort-Hood	Coryell	Brazos	1,678	1,733	1,788	1,843	1,880	1,880
G	Gatesville	Coryell	Brazos	1,439	673	-72	-601	-1,054	-1,450
G	Kempner-WSC	Coryell	Brazos	1,790	1,085	451	0	-456	-812
G	Livestock	Coryell	Brazos	0	0	0	0	0	0
G	Manufacturing	Coryell	Brazos	5	4	3	2	1	0
G	Mining	Coryell	Brazos	17	14	12	10	8	7
Total Projected Water Needs (acre-feet per year)=				0	0	-72	-601	-1,510	-2,262

ERATH COUNTY

RWPG	WUG	County	River Basin	2010	2020	2030	2040	2050	2060
G	County Other	Erath	Brazos	1,357	1,176	1,009	851	338	0
G	Dublin	Erath	Brazos	0	0	0	0	0	0
G	Irrigation	Erath	Brazos	7,395	7,552	7,705	7,858	8,008	8,155
G	Livestock	Erath	Brazos	0	0	0	0	0	0
G	Manufacturing	Erath	Brazos	42	33	25	17	10	1
G	Stephenville	Erath	Brazos	3,493	3,360	3,253	3,152	2,746	2,478
Total Projected Water Needs (acre-feet per year)=				0	0	0	0	0	0

Projected Water Supply Needs in the District from 2012 State Water Planning Database

~~Note: The amounts provided in Section D reflect the most recent information available from the Texas Water Development Board. As additional technical and hydrogeological information is gathered by the District, the District will revise and update its management plan and the information contained therein to include the most up-to-date data available.~~

E. Projected Surface Water Supply within the District – 31 TAC § 356.52(a)(5)(F) / TWC § 36.1071(e)(3)(F)

See Appendix D

**TABLE 6: PROJECTED SURFACE WATER SUPPLIES
MIDDLE TRINITY GROUNDWATER CONSERVATION DISTRICT**

BOSQUE COUNTY

RWPG	Water User Group	County	River Basin	Source Name	2010	2020	2030	2040	2050	2060
G	Clifton	Bosque	Brazos	Brazos River Run-of-River	293	293	293	293	293	293
G	Irrigation	Bosque	Brazos	Brazos River Combined Run-of-River Irrigation	11,198	11,197	11,196	11,194	11,193	11,192
G	Lake Whitney Water Company	Bosque	Brazos	Brazos River Authority Aquilla Lake/Reservoir System	58	58	58	56	52	49

G	Livestock	Bosque	Brazos	Livestock Local Supply	1,048	1,048	1,048	1,048	1,048	1,048
G	Manufacturing	Bosque	Brazos	Brazos River Combined Run-of-River Manufacturing	±	±	±	±	±	±
G	Meridian	Bosque	Brazos	Brazos River Run-of-River	112	112	112	112	112	112
G	Steam Electric Power	Bosque	Brazos	Brazos River Authority Main Stem Lake/Reservoir System	6,500	6,500	6,500	6,500	6,500	6,500
Total Projected Surface Water Supplies (acre feet per year) =					19,210	19,209	19,208	19,204	19,199	19,195

COMANCHE COUNTY

RWPG	Water User Group	County	River Basin	Source-Name	2010	2020	2030	2040	2050	2060
G	Comanche	Comanche	Brazos	Brazos River Authority Little River Lake/Reservoir System	634	632	622	605	587	568
G	County Other	Comanche	Brazos	Brazos River Authority Main Stem Lake/Reservoir System	±	±	±	±	±	±
G	County Other	Comanche	Brazos	Merceer Creek Run-of-River	200	200	200	200	200	200
G	De-Leon	Comanche	Brazos	Brazos River Authority Little River Lake/Reservoir System	280	280	274	265	256	248
G	Irrigation	Comanche	Brazos	Brazos River Combined Run-of-River Irrigation	19,302	19,305	19,307	19,310	19,313	19,315
G	Livestock	Comanche	Brazos	Livestock Local Supply	4,125	4,125	4,125	4,125	4,125	4,125
G	Livestock	Comanche	Colorado	Livestock Local Supply	128	128	128	128	128	128
Total Projected Surface Water Supplies (acre feet per year) =					24,670	24,671	24,657	24,634	24,610	24,585

CORYELL COUNTY

RWPG	Water User Group	County	River Basin	Source Name	2010	2020	2030	2040	2050	2060
G	Copperas Cove	Coryell	Brazos	Brazos River Authority Little River Lake/Reservoir System	3,621	4,122	4,567	4,864	5,155	5,436
G	County-Other	Coryell	Brazos	Brazos River Authority Little River Lake/Reservoir System	968	968	968	968	968	968
G	Elm Creek WSC	Coryell	Brazos	Brazos River Authority Little River Lake/Reservoir System	58	67	74	80	84	89
G	Fort Gates WSC	Coryell	Brazos	Brazos River Authority Little River Lake/Reservoir System	322	358	392	415	437	457
G	Fort Hood	Coryell	Brazos	Brazos River Authority Little River Lake/Reservoir System	5,856	5,856	5,856	5,856	5,856	5,856
G	Gatesville	Coryell		Brazos River Authority Little River Lake/Reservoir System	4,848	4,812	4,778	4,755	4,733	4,713
G	Kempner WSC	Coryell	Brazos	Brazos River Authority Little River Lake/Reservoir System	3,489	3,396	3,364	3,334	3,242	3,188
G	Livestock	Coryell	Brazos	Livestock Local Supply	1,339	1,339	1,339	1,339	1,339	1,339
Total Projected Surface Water Supplies (acre feet per year) =					20,501	20,918	21,338	21,611	21,814	22,046

ERATH COUNTY

RWPG	Water User Group	County	River Basin	Source Name	2010	2020	2030	2040	2050	2060
G	Dublin	Erath	Brazos	Brazos River Authority Little River Lake/ Reservoir System	485	516	544	576	682	753
G	Irrigation	Erath	Brazos	Brazos River Combined Run-of-River Irrigation	5,227	5,228	5,228	5,229	5,230	5,230
G	Livestock	Erath	Brazos	Livestock Local Supply	9,321	9,321	9,321	9,321	9,321	9,321
G	Stephenville	Erath	Brazos	Brazos River Authority Little River Lake/ Reservoir System	1,862	1,862	1,862	1,862	1,862	1,862
Total Projected Surface Water Supplies (acre-feet per year)=					16,895	16,927	16,955	16,988	17,095	17,166

Projected Surface Water Supplies in the District from 2012 State Water Planning Database

Note: The amounts provided in Section E reflect the most recent information available from the Texas Water Development Board. As additional technical and hydrogeological information is gathered by the District, the District will revise and update its management plan and the information contained therein to include the most up-to-date data available.

F. Projected Water Demand within the District – 31 TAC § 356.52(a)(5)(G) / TWC § 36.1071(e)(3)(G)

See Appendix E

**TABLE 7: PROJECTED WATER DEMANDS
MIDDLE TRINITY GROUNDWATER CONSERVATION DISTRICT**

BOSQUE COUNTY

RWPG	Water User Group	County	River Basin	2010	2020	2030	2040	2050	2060
G	Childress-Creek WSC	Bosque	Brazos	333	387	424	438	444	451
G	Clifton	Bosque	Brazos	727	812	873	895	905	916
G	County-Other	Bosque	Brazos	748	932	1,055	1,088	1,088	1,088
G	Cross-County WSC	Bosque	Brazos	38	46	52	55	56	57
G	Irrigation	Bosque	Brazos	2,504	2,466	2,427	2,388	2,352	2,316
G	Lake Whitney Water Company	Bosque	Brazos	401	411	418	420	422	423
G	Livestock	Bosque	Brazos	1,048	1,048	1,048	1,048	1,048	1,048
G	Manufacturing	Bosque	Brazos	1,005	1,151	1,285	1,417	1,531	1,664

G	Meridian	Bosque	Brazos	236	256	270	275	277	280
G	Mining	Bosque	Brazos	210	197	189	182	176	172
G	Morgan	Bosque	Brazos	76	90	105	124	145	170
G	Steam Electric Power	Bosque	Brazos	4,323	6,188	7,235	8,510	10,065	11,961
G	Valley Mills	Bosque	Brazos	269	305	330	340	343	348
G	Walnut Springs	Bosque	Brazos	100	107	111	113	114	115
Total Projected Water Demands (acre-feet per year)=				12,018	14,396	15,822	17,293	18,966	21,009

COMANCHE COUNTY

RWPG	Water User Group	County	River Basin	2010	2020	2030	2040	2050	2060
G	Comanche	Comanche	Brazos	649	669	676	673	659	638
G	County Other	Comanche	Brazos	931	960	969	967	946	916
G	County Other	Comanche	Colorado	17	18	18	18	17	17
G	De Leon	Comanche	Brazos	291	300	303	302	296	287
G	Irrigation	Comanche	Brazos	35,598	35,230	34,867	34,507	34,151	33,798
G	Livestock	Comanche	Brazos	4,125	4,125	4,125	4,125	4,125	4,125
G	Livestock	Comanche	Colorado	128	128	128	128	128	128
G	Manufacturing	Comanche	Brazos	31	34	37	39	41	44
G	Mining	Comanche	Brazos	54	51	50	49	48	47
Total Projected Water Demands (acre-feet per year)=				41,824	41,515	41,173	40,808	40,411	40,000

CORYELL COUNTY

RWPG	Water-User Group	County	River Basin	2010	2020	2030	2040	2050	2060
G	Copperas Cove	Brazos	G	3,816	4,489	5,144	5,608	6,014	6,342
G	County-Other	Brazos	G	2525	2948	3360	3652	3907	4112
G	Elm Creek WSC	Brazos	G	50	68	86	99	110	119
G	Fort Gates WSC	Brazos	G	332	379	425	457	485	508
G	Fort Hood	Brazos	G	4233	4233	4233	4233	4233	4233
G	Gatesville	Brazos	G	3,497	4,330	5,141	5,715	6,217	6,621
G	Kempner WSC	Brazos	G	1,722	2,365	2,991	3,435	3,823	4,135
G	Livestock	Brazos	G	1,339	1,339	1,339	1,339	1,339	1,339
G	Manufacturing	Brazos	G	9	10	11	12	13	14
G	Mining	Brazos	G	108	111	113	115	117	118
Total Projected Water Demands (acre-feet per year)=				17,631	20,272	22,843	24,665	26,258	27,541

ERATH COUNTY

RWPG	Water-User Group	County	River Basin	2010	2020	2030	2040	2050	2060
G	County-Other	Erath	Brazos	1,779	2,035	2,265	2,498	3,113	3,500
G	Dublin	Erath	Brazos	504	558	606	655	784	865
G	Irrigation	Erath	Brazos	10,658	10,502	10,349	10,197	10,048	9,901
G	Livestock	Erath	Brazos	9,321	9,321	9,321	9,321	9,321	9,321
G	Manufacturing	Erath	Brazos	73	82	90	98	105	114
G	Stephenville	Erath	Brazos	2,807	3,003	3,180	3,358	3,829	4,126
Total Projected Water Demands (acre-feet per year)=				25,142	25,501	25,811	26,127	27,200	27,827

Projected Water Demands in the District Through 2060 from 2010, 2012 State Water Planning Database

Note: The amounts provided in Section F reflect the most recent information available from the Texas Water Development Board. As additional technical and hydrogeological information is gathered by the District, the District will revise and update its management plan and the information contained therein to include the most up-to-date data available.

G. Annual Volume of Water that Discharges from the Aquifer to Springs and Surface Water Bodies – 31 TAC § 356.52(a)(5)(D) / TWC § 36.1071(e)(3)(D)

The estimated total annual volume of water that discharges from the Trinity aquifer to springs and any surface water body including lakes, streams, and rivers is 98,44955,758 acre-feet per year. This amount was derived from GAM Run 16-002 provided to the District by TWDB staff.

TABLE 84: ESTIMATED ANNUAL VOLUME OF WATER THAT DISCHARGES FROM THE AQUIFER MIDDLE TRINITY GROUNDWATER CONSERVATION DISTRICT

Aquifer or Confining Unit	Estimated Amount of Annual Volume of Water that Discharges from the Aquifer in the District (in acre-feet per year)
Washita and Fredericksburg series	21,956
Paluxy Aquifer	6,052
Glen Rose Formation	15,679
Hensell Aquifer	8,748
Pearsall/Cow Creek/Hammett/Sligo Formations	0
Hosston Aquifer	3,323
Total	55,758

~~Annual Volume of Discharge from the Aquifer from Texas Water Development Board GAM Run 10-04~~

~~**Note:** The amounts provided in Section G C reflect the most recent information available from the Texas Water Development Board. As additional technical and hydrogeological information is gathered by the District, the District will revise and update its management plan and the information contained therein to include the most up to date data available.~~

H. Estimate of the Annual Volume of Flow into the District, out of the District, and Between Aquifers in the District – 31 TAC § 356.5(a)(5)(E) / TWC § 36.1071(e)(3)(E)

- Per GAM Run 16-002, the estimate of the Annual Volume of Flow in the District from the Trinity Aquifer is 29,682 acre-feet.

- Per GAM Run 16-002, the estimate of the Annual Volume of Flow out of the District from the Trinity Aquifer is 33,741 acre-feet.

- Per GAM Run 16-002, the estimate of the Net Annual Volume of Flow between the Trinity Aquifer is not applicable to the District.*

*NOTE from the TWDB – The Trinity Aquifer is the only hydrogeologic unit in the groundwater flow model within the Middle Trinity Groundwater Conservation District. The model assumes no cross-formational flow at the base of the Trinity Aquifer. Therefore, no cross-formational flow between the Trinity Aquifer and other hydrogeologic units was calculated by the model.

**TABLE 9: ANNUAL VOLUME OF FLOW INTO THE DISTRICT, OUT OF THE DISTRICT WITHIN EACH AQUIFER, AND BETWEEN EACH AQUIFER IN THE DISTRICT (FOR ALL FOUR COUNTIES IN THE DISTRICT)
MIDDLE TRINITY GROUNDWATER CONSERVATION DISTRICT**

FLOW INTO THE DISTRICT

Aquifer or Confining Unit	Estimated Annual Volume of Flow Into the District Within Each Aquifer in the District (in acre-feet per year)
Washita and Fredericksburg series	1,221
Paluxy Aquifer	646
Glen Rose Formation	2,135
Hensell Aquifer	7,767
Pearsall/Cow Creek/Hammett/Sligo Formations	9
Hosston Aquifer	5,975
Total	17,753

FLOW OUT OF THE DISTRICT WITHIN EACH AQUIFER IN THE DISTRICT

Aquifer or Confining Unit	Estimated Volume of Flow Out of the
----------------------------------	--

	District Within Each Aquifer in the District (in acre-feet per year)
Washita and Fredericksburg series	1,686
Paluxy Aquifer	587
Glen Rose Formation	1,813
Hensell Aquifer	9,514
Pearsall/Cow Creek/Hammett/Sligo Formations	11
Hosston Aquifer	6,925
Total	20,536

NET FLOW BETWEEN EACH AQUIFER IN THE DISTRICT

Aquifer or Confining Unit	Estimated Net Annual Volume of Flow Between Each Aquifer in the District (in acre-feet per year)
Washita and Fredericksburg series to Paluxy Aquifer	526
Paluxy Aquifer to Glen Rose Formation	1,328
Glen Rose Formation to Hensell Aquifer	4,782
Hensell Aquifer to Pearsall/Cow Creek/Hammett/Sligo formations	13,611
Pearsall/Cow Creek/Hammett/Sligo formations to Hosston Aquifer	14,124
Total	34,371

Annual Flow Into, Out of, and Between Each Aquifer in the District from Texas Water Development Board GAM Run 10-04

Note: The amounts provided in Section H reflect the most recent information available from the Texas Water Development Board. As additional technical and hydrogeological information is gathered by the District, the District will revise and update its management plan and the information contained therein to include the most up-to-date data available.

I. Projected Water Management Strategies – TWC § 36.1071(e)(4)

See Appendix F

V. Management of Groundwater Supplies – ~~31 TAC § 356.5(a)(6); 31 TAC § 356.5(a)(7)~~ TWC § 36.1071(e)(4)

The Texas Legislature has established that groundwater conservation districts (“GCDs”), such as the Middle Trinity Groundwater Conservation District (“District”), are the state’s preferred method of groundwater management. The Texas Legislature codified its policy decision in Section 36.0015 of the Texas Water Code, which establishes that GCDs will manage groundwater resources through rules developed and implemented in accordance with Chapter 36 of the Texas Water Code (“Chapter 36”). Chapter 36 gives directives to GCDs and the statutory authority to carry out such directives, so that GCDs are given the proper tools to protect and manage the groundwater resources within their boundaries.

The District has used and will continue to use in the future the regulatory tools it has been provided by Chapter 36 and the Texas Legislature to address the many challenges facing the District including the significant threats to the water quality of the groundwater resources of the District. The District places a major priority on prevention of the contamination of its groundwater resources through abandoned and deteriorated water wells. Wells that have been abandoned or not properly maintained provide direct conduits or pathways that allow contamination from the surface to quickly reach the groundwater resources of the District. To address the threats to the water quality of its groundwater resources, the District has taken steps to increase the number of abandoned or deteriorated water wells that are plugged and intends to take additional action to plug wells in the future. The District has created a well plugging grant program with District funds which provides funding on an as-available basis for residents of the District to plug the abandoned and deteriorated wells that are located on their property. In addition, the District requires, through the District's rules that all abandoned, deteriorated, or replaced wells be plugged in compliance with the Water Well Drillers and Pump Installers Rules of the Texas Department of Licensing and Regulation. The District has also places a priority on the capping of water wells which will be used a later date in order to eliminate waste, prevent pollution, and prevent further deterioration of the well casing.

It has also been the practice of the District to use the regulatory tools granted to GCDs by Chapter 36 to preserve and protect the existing and historic users of groundwater in the District. The legislature empowered the District to protect existing users of groundwater, which are those individuals or entities currently invested in and using groundwater or the groundwater resources within the District for a beneficial purpose, and preserve historic use by historic users, which are those individuals or entities who used groundwater beneficially in the past. The District strives to protect and preserve such use to the extent practicable under the goals and objectives of this management plan.

The District has created a permitting process for groundwater use that preserves and protects the existing and historic use of groundwater in the District. Pursuant to legislative authority, such as Section 36.113(e) of the Texas Water Code, the District protects existing use by imposing more restrictive permit conditions on new permit applications and increased use by historic users. In

protecting existing users, the District has established limitations that apply to all subsequent new permit applications and increased use by historic users, regardless of type or location of use, which bear a reasonable relationship to this management plan; and are reasonably necessary to protect existing use. In accordance with Section 36.116(b), Water Code, the District has also preserved historic use when developing and implementing rules which limit groundwater production to the maximum extent practicable consistent with this management plan. Under the District's permitting process, non-exempt groundwater users who have existing or historic use receive Grandfather Permits, while all new groundwater users and those existing and historic users who need an increased amount of groundwater production through new wells or modifications to existing wells obtain Operating Permits.

The Grandfather Permits issued by the District under the District's rules have an important role as part of the District's overall permitting process because those wells that operate under Grandfather Permits issued by the District are authorized to produce water in an amount that the well was capable of producing before May 11, 2004 for Comanche and Erath Counties, which was the date of the original adoption of the District rules, before November 19, 2009, for wells located in Bosque County, and before June 15, 2010 for wells located in Coryell County. The District's rules provide that the District can only reduce the amount of groundwater allocated to Grandfather Permits after groundwater allocated to Operating Permits has been reduced and further reduction is required to achieve the goals and objectives of the District management plan or to make water available for the issuance of new Operating Permits or to account for groundwater use from exempt wells.

The District issues Operating Permits for the water wells in the District that are considered to be non-exempt, including those non-exempt wells that have not received a Grandfather Permit. In accordance with § 36.116 of the Texas Water Code, the rules of the District regulate the production of groundwater under Operating Permits issued by the District through spacing and production limits.

The District also has the authority in its rules to establish management zones by resolution of the District Board if, using the best hydrogeologic and geographic data available, the Board determines that management zones are necessary for the administration of groundwater management and regulation in the District. Any management zones created by the District will serve as areas for which the District will determine water availability if necessary to avoid impairment of and consistency with the achievement of the applicable Desired Future Conditions established for the aquifers located in whole or in part within the boundaries of the District, authorize total production, establish proportional reduction of production amongst classes of permittees, and within which the District may allow the transfer of wells and/or the right to produce groundwater. If the District creates management zones, the District's rules provide that the management zones will be delineated along boundaries that, to the extent practicable, will promote fairness and efficiency in the management of groundwater resources, while considering hydrogeologic conditions, and the ability of the public to identify the boundaries based upon land surface features.

In managing its groundwater supplies, the District has taken into account the water management strategies contained in the 2012 State Water Plan [which can be found in Appendix F](#). The 2012

State Water Plan did not have any water management strategies for Comanche County or Erath County. There are five strategies for Bosque County and five strategies for Coryell County. These strategies include development of surface water supplies, voluntary re-distribution of surface water supplies and water conservation, ~~and both strategies focus on the manufacturing water user groups~~. The combined effect of these strategies results in approximately 1,46758 acre-feet per year water savings by the year 2060.

**TABLE 10: WATER MANAGEMENT STRATEGIES
MIDDLE TRINITY GROUNDWATER CONSERVATION DISTRICT**

BOSQUE COUNTY

RWPG	WUG	Basin	Source	Water Management Strategy	Source County	2010	2020	2030	2040	2050	2060
G	Valley Mills	Brazos	Brazos—River Run-of-River	Bosque County Regional Project	Bosque	0	0	180	180	180	180
G	Steam Electric Power	Brazos	Brazos—River Authority Main—Stem Lake/Reservoir System	BRA—Systems Operation Permit	Reservoir	0	0	5,222	5,222	5,222	5,222
G	Cross Country WSC	Brazos	Waco Lake/Reservoir	Interconnection of—City—of Waco—System with Neighboring Communities	Reservoir	0	0	0	52	52	52
G	Valley Mills	Brazos	Conservation	Municipal Water Conservation	Bosque	10	24	20	14	14	14
G	Steam Electric Power	Brazos	Conservation	Steam—Electric Conservation	Bosque	130	309	506	596	705	837
Total of Projected Water Strategies (acre-foot per year)=						140	333	5,928	6,064	6,173	6,305

CORYELL COUNTY

RWPG	WUG	Basin	Source	Water Management Strategy	Source County	2010	2020	2030	2040	2050	2060
G	County—Other	Brazos	Coryell County Lake/Reservoir	Coryell County Reservoir (BRA System)	Reservoir	0	0	1,865	1,865	1,865	1,865
G	Gatesville	Brazos	Coryell County Lake/Reservoir	Coryell County Reservoir (BRA System)	Reservoir	0	0	1,500	1,500	1,500	1,500
G	Gatesville	Brazos	Conservation	Municipal Water Conservation	Coryell	131	326	323	324	313	333
G	Kempner WSC	Brazos	Conservation	Municipal Water Conservation	Coryell	81	241	265	272	268	283
G	Kempner WSC	Brazos	Brazos—River Authority Little—River Lake/Reservoir System	Voluntary Re-distribution	Reservoir	0	0	0	0	280	980
Total Projected Water strategies (acre-foot per year)=						212	567	3,953	3,961	4,226	4,961

~~Note: The information provided reflects the most recent information available from the Texas Water Development Board. As additional technical and hydrogeological information is gathered by the District, the District will revise and update its management plan and the information contained therein to include the most up-to-date data available.~~

VI. Methodology to Track District Progress in Achieving Management Goals – 31 TAC § 356.52(a)(46)

An annual report (“Annual Report”) is created by the General Manager and staff of the District and provided to the members of the Board of the District. The Annual Report covers the activities of the District including information on the District’s performance in regards to achieving the District’s management goals and objectives. The Annual Report is delivered to the Board within ninety (90) days following the completion of the District’s fiscal year, and began with the fiscal year that started on January 1, 2005. A copy of the Annual Report is kept on file and available for public inspection at the District’s offices upon adoption.

VII. Actions, Procedures, Performance, and Avoidance for District Implementation of Management Plan – 31 TAC § 356.52(a)(2); 31 TAC § 356.52(a)(3); 31 TAC § 356.52(a)(4) / § 36.1071(e)(1) and § 36.1071(e)(2)

The District has acted on the goals and directives established in this management plan. The District has also used the objectives and provisions of the management plan as a guideline in its policy-implementation and decision-making. In both its daily operations and long term planning efforts, the District continuously strives to comply with the initiatives and standards created by the management plan for the District.

After receiving public input, the District adopted rules in accordance with Chapter 36 of the Texas Water Code and all rules must be followed and enforced. The District may amend the District rules as necessary to comply with changes to Chapter 36 of the Texas Water Code and to insure the best management of the groundwater within the District. The continued development and enforcement of the rules of the District has been and will continue to be based on the best scientific and technical evidence available to the District. A copy of the District’s rules can be found at <http://middletrinitygcd.org/storm.cfm?funnelaction=184>.

The District has encouraged and will continue to encourage public cooperation and coordination in the implementation of the management plan for the District, as it is amended. All operations and activities of the District have been and will be performed in a manner that best encourages cooperation with the appropriate state, regional or local water entity. The meetings of the Board of the District are noticed and conducted at all times in accordance with the Texas Open Meetings Law. The District has also made available for public inspection all official documents, reports, records and minutes of the District pursuant with the Texas Public Information Act and will continue to do so in the future.

VIII. Management Goals

A. Providing the Most Efficient Use of Groundwater – 31 TAC § 356.52(a)(1)(A) / TWC § 36.1071(a)(1)

- A. 1. **Objective** – Annually, the District will require all new water wells that are constructed within the boundaries of the District to be registered with the District pursuant to the District rules.
- A. 1. **Performance Standard** – The number of water wells registered by the District for each year will be included in the Annual Report submitted to the Board of Directors of the District.
- A. 2. **Objective** – The District will annually require all water wells subject to the District’s permitting requirements to be permitted pursuant to the District rules.
- A. 2. **Performance Standard** – The number of water wells permitted by the District for each year will be included in the Annual Report submitted to the Board of Directors of the District.
- A. 3. **Objective** – The District will annually regulate the production of groundwater by maintaining a system of permitting which authorizes the use and production of groundwater within the boundaries of the District pursuant to the District rules.
- A. 3. **Performance Standard** – The District will annually accept and process applications for the permitted use of groundwater in the District in accordance with the permitting system established by the District rules. The number and type of applications made for the permitted use of groundwater in the District, and the number and type of permits issued by the District, will be included in the Annual Report given to the Board of Directors.
- A.4. **Objective** – The District will annually attempt to increase the public awareness regarding the purpose, objectives, and mission of the District.
- A.4. **Performance Standard** – The District will provide at least two of the following on annual basis: informational presentations to public service organizations or community groups; informational radio spots; or manned kiosks at public expositions.

B. Controlling and Preventing Waste of Groundwater – 31 TAC § 356.52(a)(1)(B) / TWC § 36.1071(a)(2)

- B. 1. Objective** – At least once each year, the District will evaluate the District rules to identify whether any amendments are needed to reduce the amount of waste of groundwater within the boundaries of the District.
- B. 1. Performance Standard** – The District will include a discussion of the annual evaluation of the District rules and the determination of whether any amendments to the rules are needed to prevent the waste of groundwater in the Annual Report of the District provided to the Board of Directors.
- B. 2. Objective** – The District will annually provide information to the public on eliminating and reducing wasteful practices in the use of groundwater by publishing information on groundwater waste reduction on the District’s website at least once a year.
- B. 2. Performance Standard** – A copy of the information on groundwater waste reduction will be provided on the District’s website and the information on the published on the website will be included in the District’s Annual Report to be provided to the District’s Board of Directors.
- B.3. Objective** – The District will require the plugging of at least one (1) deteriorated or abandoned well identified by the District in accordance with the Texas Department of Licensing and Regulation, Water Well Drillers and Pump Installers Rules (16 Texas Administrative Code, Chapter 76).
- B.3. Performance Standard** – At least once each year, the District will produce a report that describes the activities of the District in plugging a deteriorated or abandoned water well identified by the District and the report will be included in the Annual Report given to the Board of Directors of the District. If the District is not able to identify a deteriorated or abandoned well within its boundaries in a particular year, the District will include a discussion in the Annual Report that no deteriorated or abandoned well was identified in the District for the applicable year.
- B.4. Objective** – The District will provide at least one request each year to the Texas Railroad Commission which asks whether any new salt water or waste disposal injection wells have been permitted by the Texas Railroad Commission to operate within the District within the most recent fiscal year.

- B.4. **Performance Standard** – A copy of each request provided to the Texas Railroad Commission each year requesting information regarding the location of any new salt water or waste disposal wells permitted to operate within the District will be included in the Annual Report submitted to the Board of Directors of the District.
- B.5. **Objective** – The District will transmit at least one request each year to the Texas Railroad Commission which asks that the Commission provide a copy of the results of integrity tests performed on salt water or waste disposal injection wells permitted by the Texas Railroad Commission to operate within the District.
- B.5. **Performance Standard** – A copy of each letter sent to the Texas Railroad Commission each year requesting the results of the integrity testing performed on salt water or waste disposal injection wells permitted by the Texas Railroad Commission to operate within the District will be included in the Annual Report submitted to the Board of Directors of the District.

C. Conjunctive Surface Water Management Issues – 31 TAC § 356.52(a)(1)(D) / TWC § 36.1071(a)(4)

- C. 1. **Objective** – Each year, the District will participate in the regional planning process by attending at least 25 percent of the Region G (Brazos G) – Regional Water Planning Group meetings to encourage the development of surface water supplies to meet the needs of water user groups in the District.
- C. 1. **Performance Standard** – The attendance of a District representative at the Region G Regional Water Planning Group meeting(s) will be noted in the Annual Report presented to the District Board of Directors and will provide the total number of meetings conducted by the Region G Regional Water Planning Group for that year and will indicate how many of the meetings were attended by the District.

D. Natural Resource Issues – 31 TAC § 356.52(a)(1)(E) / TWC § 36.1071(a)(5)

- D. 1. **Objective** – The District will monitor water quality on an annual basis within the District by obtaining water quality samples from at least one well in each of the counties in the District.
- D. 1. **Performance Standard** – The District’s Annual Report will include a summary of the number of water quality samples obtained and the results of the water quality tests for each well sampled.

E. Drought Conditions – 31 TAC § 356.5(a)(1)(F) / TWC § 36.1071(a)(6)

- E. 1. Objective** – The District will monitor drought conditions in the Trinity Aquifer each year through the process established in the District’s Drought Contingency Plan adopted by the District Board of Directors.
- E. 1. Performance Standard** – The District’s Annual Report will include a summary of the District’s monitoring of drought conditions in the Trinity Aquifer and any implementation measures taken in accordance with the District’s Drought Contingency Plan. The District will make an assessment of the status of drought and will prepare a quarterly briefing to the Board of Directors that includes a discussion of whether the District has declared any drought stages set forth in its Drought Contingency Plan for the previous quarter.
- E. 2. Objective** – The District will download the updated Palmer Drought Severity Index (PDSI) maps and review soil moisture index readings for the area within the District’s boundaries on a quarterly basis.
- E. 2. Performance Standard** – The District will review the PDSI maps and soil moisture index readings and will prepare a quarterly briefing to the Board of Directors that includes a discussion of the PDSI maps and soil moisture index readings. The downloaded PDSI maps and soil moisture index readings will be included with copies of the quarterly briefing in the District’s Annual Report.

F. Conservation, Recharge Enhancement, Rainwater Harvesting, and Brush Control – 31 TAC § 356.5(a)(1)(G) / TWC § 36.1071(a)(7)

- F. 1. Objective** – The District will submit at least one article regarding water conservation for publication each year to at least one newspaper of general circulation in the District.
- F. 1. Performance Standard** – A copy of the article submitted by the District for publication to a newspaper of general circulation in the District regarding water conservation will be included in the Annual Report given to the Board of Directors.
- F. 2. Objective** – The District will present a pre-existing educational program for use in public or private schools in the District at least once each year to educate students on the importance of water conservation.
- F. 2. Performance Standard** – A description of the educational program presentation(s) by the District for use in the public and private schools in the District will be included in the Annual Report to the Board of Directors each year.

- F. 3. **Objective** – On an annual basis, the District will distribute an informational flier on water conservation during at least two public events that occur within the District’s boundaries..
- F. 3. **Performance Standard** – The District’s Annual Report will include a copy of the most recent informational flier on water conservation and will also include information on the public events where the flier was distributed.
- F. 4. **Objective** – The District will provide information relating to recharge enhancement on the District web site at least once each year.
- F. 4. **Performance Standard** – The District’s Annual Report will include a copy of the information provided on the District web site related to recharge enhancement.
- F. 5. **Objective** – The District will provide information on rainwater harvesting each year by offering new information about rainwater harvesting on the District web site at least once each year.
- F. 5. **Performance Standard** – The District’s Annual Report will provide a copy of the information on rainwater harvesting which has been posted on the District web site in the previous year.
- F. 6. **Objective** – The District will evaluate the State Brush Control Plan as it is revised from time to time at least once each year to determine whether projects within the District will increase the groundwater resources of the District.
- F. 6. **Performance Standard** – Upon review of a newly revised State Brush Control Plan, the District’s Annual Report will include a copy of the most recent brush control information pertaining to the District.

G. Addressing the Desired Future Conditions – 31 TAC § 356.5(a)(1)(H) / TWC § 36.1071(a)(8)

- G. 1. **Objective** – The District will review and calculate its permit and well registration totals 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.
- G. 1. **Performance Standard** – The District’s Annual Report will include a discussion of the District’s permit and well registration totals 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.

- G. 2. Objective** – The District will annually sample the water levels in at least five monitoring wells in each of the counties 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.
- G. 2. 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.

IX. Management Goals Not Applicable to District

- A. Controlling and Preventing Subsidence – 31 TAC § 356.5(a)(1)(C) / TWC § 36.1071(a)(3)** – The District has not been advised as to any issues with subsidence that exist within the boundaries of the District. Therefore, this management goal is not applicable.
- B. Addressing Precipitation Enhancement – 31 TAC § 356.5(a)(1)(G) / TWC § 36.1071(a)(7)** – Precipitation enhancement is not a cost effective or appropriate program for the District at this time since there are no precipitation enhancement programs in nearby counties or groundwater conservation districts that the District could participate with and allocate expenses for precipitation enhancement projects. Therefore, this management goal is not applicable.

X. Action Required for Plan Approval – 31 TAC § 356.536

- A. Certified Copy of District’s Resolution Re-Adopting Management Plan – 31 TAC § 356.536(a)(32)**

A certified copy of the District’s resolution re-adopting the plan is located in Appendix **GB**– District Resolution.

B. Evidence of Management Plan Adoption After Notice and Hearing – 31 TAC § 356.526(a)(3) / TWC § 36.1071(a)

Evidence, such as public notices, that the management plan was re-adopted following applicable public meetings and hearings is located in Appendix ~~H~~ **E** Notice of Meetings.

C. Coordination with Surface Water Management Entities – 31 TAC § 356.6(a)(4) / TWC § 36.1071(a)

Evidence, such as correspondence with regional water planning groups and/or other surface water authorities or management entities, which demonstrates that the District coordinated with surface water management entities in regards to re-adopting the District's management plan is located in Appendix ~~D~~ **I**.

References

1. 2012 State Water Planning Database. Contact Wendy Barron (wendy.barron@twdb.texas.gov or 512-936-0886).
2. *Aquifers of Texas*, Texas Water Development Board, Report 345, by Ashworth and Hopkins, November 1995.
3. Texas Almanac 2008-2009, The Dallas Morning News.
4. GAM Run ~~160-0024~~, ~~Eric Aschenbach~~, TWDB, April 15, 2010.
5. GAM Run ~~10-06308-84~~mag, Shirley C. Wade, TWDB, ~~February 8, 2009~~.

APPENDIX A

Trinity Aquifer Diagram

APPENDIX B

**Amount of Groundwater Being Used within the District on
an Annual Basis**

APPENDIX C

Water Supply Needs

APPENDIX D

Projected Surface Water Supply within the District

APPENDIX E

Projected Water Demand within the District

APPENDIX F

Projected Water Management Strategies

APPENDIX G

District Resolution of Adoption of Management Plan

APPENDIX H

Notice of Meetings

APPENDIX I

Evidence of Coordination with Surface Water Management Entities