NON-SYSTEM MUNICIPAL WATER USE ESTIMATES

Methodology

Kevin Kluge, Water Use Surveys & Estimates Team Lead
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Methodology of Non-System Municipal Populations & Water Use Estimates in Development
The current methodology under development by the Water Use Surveys & Estimates team to estimate the Texas population not served by a public water system by county is based upon a combination of: 1) census block utility service area boundaries and 2) the number of single-family connections reported in the annual Water Use Survey.

As of 03/23/2010, the following methodology is under development to be use in the 2008 water use estimates. The 2006 and 2007 water use estimates currently posted on the website do not include estimates based on this methodology, but it is anticipated that those years may be re-posted with this methodology.

1) Census Blocks and Water Utility Boundaries
   In fall 2009, the TCEQ completed statewide GIS layers of CCNs and Districts. Using these 2 layers, the TXDOT city boundary layer and the 2000 Census blocks for Texas, WUSE staff estimated the population in census blocks not in a water system. (For polygon water utility boundaries, census blocks whose center was within one of the polygons was selected; census block not selected were considered non-system populations. For water utilities with a Facility (line) CCN, a 200 foot buffer was created around the line and all census block that intercepted this buffer were selected; one half of the population of these selected blocks were considered non-system population.)

2) Reported Number of Single-Family (SF) Residential Connections
   The second method of calculation non-system populations by county involves the number of SF connections as reported by water systems for each system subtracted from an estimate of the number of people single-family residential units. Single-family connections and population is used because it was felt that the non-system population is primarily low-density residences with private wells. More dense subdivisions and substantial commercial or institutional developments (including camps) would require a water and wastewater system and then be classified as a Public Water System.

   Beginning in the 2005 survey year, systems were asked for the number of single-family connections and previous to that, systems were asked for the percent of their connections that were SF connections. For each active system, the most recent SF connection data was used to calculate the number of SF connections, and the resulting SF population (using the 2000 average people per household figure) served by a system in each county. Subtracting the county system SF population from an annual estimate of total SF population in the county produced the non-system SF population.

As a default, the non-system population estimate derived from census blocks. When that number was identified as incorrect or the estimate was greater than the County-Other population present in the 2007 State Water Plan, then the non-system population as estimated

by SF connections was used. When both estimates exceeded the County-Other figure, the County-Other figure was used as the non-system population estimate; allowing for consistency between these estimates and the current water plans.

Rather than using a gallons-per-capita-daily (GPCD) of 110 to calculate the non-system water use, the new methodology uses the state average single-family GPCD for Water Supply Corporations (WSCs) and Investor-Owned Utilities (IOUs). These two types of water utilities are typically located in rural areas and would most typically represent the GPCD of rural single-family residences. The 2007 statewide average GPCD for non-system populations was 87 gallons and for 2006, was 105 gallons.

Rural water use that this methodology does not account for:

- vacation homes
- hunting camps
- small scale commercial establishments in rural areas
- small Public Water Systems that have been inadvertently left out of the annual Water Use Survey

Historical Methodology

Historically Non-System Municipal population based upon reported numbers of connections from the surveyed entities and the county population. He then used a GPCD of 110 to calculate the estimated water use for this non-system population.

With the change in WUSE team leadership in 2007, it was determined that connection data in the WUS database did not allow the for the consistent estimation of Non-System population. For the 2006 and 2007 county water use estimates, a composite method of connection-calculations and the 2000 County-Other (2006 RWPs) was used with a GPCD of 110.

TWDB Exempt Use Estimates															
		Brazos River Alluvium							Carrizo-Wilcox						
Groundwater Conservation District	Source	2010	2020	2030	2040	2050	2060		2010	2020	2030	2040	2050	2060	
Brazos Valley GCD	T	23	25	26	27	27	27		475	510	531	546	547	545	
Fayette County GCD	T	0	0	0	0	0	0		2	1	1	1	0	0	
Lost Pines GCD	T	0	0	0	0	0	0		563	684	827	991	1199	1462	
Mid-East Texas GCD	T	0	0	0	0	0	0		997	1063	1099	1107	1106	1110	
Post Oak Savannah GCD	T	0	0	0	0	0	0		788	629	514	431	372	335	
		Gulf Coast							Other						
Groundwater Conservation District	Source	2010	2020	2030	2040	2050	2060		2010	2020	2030	2040	2050	2060	
Brazos Valley GCD	T	6	5	4	4	3	3		101	96	90	85	78	75	
Fayette County GCD	T	5	3	2	1	1	1		37	25	16	11	7	5	
Lost Pines GCD	T	0	0	0	0	0	0		148	180	221	265	323	398	
Mid-East Texas GCD	T	0	0	0	0	0	0		107	114	118	121	124	126	
Post Oak Savannah GCD	T	0	0	0	0	0	0		210	250	287	319	352	388	
		Queen City							Sparta						
Groundwater Conservation District	Source	2010	2020	2030	2040	2050	2060		2010	2020	2030	2040	2050	2060	
Brazos Valley GCD	T	145	148	148	148	144	142		191	178	164	154	139	134	
Fayette County GCD	T	2	1	1	1	0	0		20	13	9	6	3	3	
Lost Pines GCD	T	169	192	221	254	296	348		228	238	253	271	295	324	
Mid-East Texas GCD	T	271	295	307	309	310	312		151	162	170	178	182	188	
Post Oak Savannah GCD	T	529	621	706	784	860	947		343	409	468	521	574	633	
		Yegua-Jackson													
Groundwater Conservation District	Source	2010	2020	2030	2040	2050	2060								
Brazos Valley GCD	T	355	311	270	238	200	187								
Fayette County GCD	T	131	86	58	39	25	17								
Lost Pines GCD	T	82	81	82	81	83	85								
Mid-East Texas GCD	T	78	83	88	92	96	99								
Post Oak Savannah GCD	T	526	626	716	798	879	969								
T = Estimated exempt use calculated by TWDB															

TWDB Methodology

Using Regional Planning County-Other population data, an average annual growth rate per decade was calculated.
The County-Other growth rate was used to calculate Non-System Municipal (residential) and Livestock water use projections by decade.
Non-System Municipal water use estimates were obtained from Kluge (see embedded word document below for Kluge methodology)
and Livestock estimates were obtained from TWDB Water Use Survey data.
Mining estimates were left out based on a recommendation from Kluge.
Data for counties that are part of more than one Region were combined.
Projections were compiled based on 2006 and 2007 data.
Projections of Non-System Municipal and Livestock water use were combined to calculate an exempt use total.
Since 2006 and 2007 Non-System Municipal water use estimates used different GPCD vales, and livestock estimates varied, an average was calculated from the 2006 and 2007 projected totals.

GMA 12 County	Year	2010 (acre-feet)	2020 (acre-feet)	2030 (acre-feet)	2040 (acre-feet)	2050 (acre-feet)	2060 (acre-feet)
BASTROP	2006 Exempt Total	467	704	983	1,300	1,700	2,202
	2007 Exempt Total	322	486	678	896	1,173	1,519
	Average	**395**	**595**	**831**	**1,098**	**1,437**	**1,861**
BRAZOS	2006 Exempt Total	673	588	510	450	379	355
	2007 Exempt Total	609	532	462	407	343	321
	Average	**641**	**560**	**486**	**429**	**361**	**338**
BURLESON	2006 Exempt Total	2,192	2,664	3,125	3,552	4,005	4,521
	2007 Exempt Total	1,186	1,356	1,480	1,575	1,644	1,706
	Average	**1,689**	**2,010**	**2,302**	**2,564**	**2,824**	**3,113**
FALLS	2006 Exempt Total	530	430	327	237	165	80
	2007 Exempt Total	438	355	270	196	136	66
	Average	**484**	**392**	**299**	**216**	**151**	**73**
FAYETTE	2006 Exempt Total	591	392	260	174	116	77
	2007 Exempt Total	555	368	245	163	109	73
	Average	**573**	**380**	**253**	**168**	**112**	**75**
FREESTONE	2006 Exempt Total	644	673	689	693	693	693
	2007 Exempt Total	582	608	622	626	626	626
	Average	**613**	**641**	**655**	**659**	**659**	**659**
LEE	2006 Exempt Total	771	760	751	744	738	733
	2007 Exempt Total	814	802	793	786	779	774
	Average	**793**	**781**	**772**	**765**	**758**	**753**
LEON	2006 Exempt Total	737	804	844	846	843	848
	2007 Exempt Total	638	696	730	732	729	733
	Average	**688**	**750**	**787**	**789**	**786**	**791**
LIMESTONE	2006 Exempt Total	519	497	473	448	421	393
	2007 Exempt Total	422	403	384	363	342	319
	Average	**471**	**450**	**428**	**405**	**382**	**356**
MADISON	2006 Exempt Total	322	345	364	381	396	410
	2007 Exempt Total	282	303	319	334	348	360
	Average	**302**	**324**	**341**	**358**	**372**	**385**
MILAM	2006 Exempt Total	894	664	492	365	270	200
	2007 Exempt Total	796	591	438	325	240	178
	Average	**845**	**627**	**465**	**345**	**255**	**189**
NAVARRO	2006 Exempt Total	297	297	297	297	297	297
	2007 Exempt Total	274	274	274	274	274	274
	Average	**286**	**286**	**286**	**286**	**286**	**286**
ROBERTSON	2006 Exempt Total	755	812	848	872	875	873
	2007 Exempt Total	610	656	685	705	707	705
	Average	**682**	**734**	**766**	**788**	**791**	**789**
WILLIAMSON	2006 Exempt Total	1,106	1,193	1,411	2,274	3,407	4,185
	2007 Exempt Total	755	815	963	1,553	2,325	2,857
	Average	**930**	**1,004**	**1,187**	**1,913**	**2,866**	**3,521**

TWDB County Other Growth Rate						
COUNTY NAME	GR 2010	GR 2020	GR 2030	GR 2040	GR 2050	GR 2060
BASTROP	5.3%	4.2%	3.4%	2.8%	2.7%	2.6%
BRAZOS	-1.1%	-1.3%	-1.4%	-1.2%	-1.7%	-0.6%
BURLESON	1.4%	1.4%	0.9%	0.6%	0.4%	0.4%
FALLS	-1.4%	-2.1%	-2.7%	-3.2%	-3.6%	-6.9%
FAYETTE	-4.0%	-4.0%	-4.0%	-4.0%	-4.0%	-3.9%
FREESTONE	0.4%	0.4%	0.2%	0.1%	0.0%	0.0%
LEE	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%
LEON	1.0%	0.9%	0.5%	0.0%	0.0%	0.1%
LIMESTONE	-0.4%	-0.4%	-0.5%	-0.5%	-0.6%	-0.7%
MADISON	0.8%	0.7%	0.5%	0.5%	0.4%	0.3%
MILAM	-2.9%	-2.9%	-3.0%	-2.9%	-3.0%	-3.0%
NAVARRO	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
ROBERTSON	0.6%	0.7%	0.4%	0.3%	0.0%	0.0%
WILLIAMSON	-5.1%	0.8%	1.7%	4.9%	4.1%	2.1%