

**TABLE OF CONTENTS – CHAPTER TWO**

CHAPTER 2.0 : CURRENT AND PROJECTED POPULATION & WATER DEMAND FOR THE RIO GRANDE REGION.....	2-1
2.1 TWDB Guidelines For Revisions To Population And Water Demand Projections....	2-2
2.2 Population Projections .....	2-3
2.2.1 Revisions to Population Projections.....	2-3
2.3 Water Demand Projections .....	2-9
2.3.1 Projections for Municipal Water Demand.....	2-11
2.3.2 Projections for Manufacturing Water Demand.....	2-12
2.3.3 Projections for Irrigation Water Demand.....	2-14
2.3.4 Projections for Steam Electric Water Demand .....	2-19
2.3.5 Projections for Mining Water Demand.....	2-21
2.3.6 Projections for Livestock Water Demand.....	2-22
2.3.7 Needs for Wholesale Water Providers .....	2-23
2.3.8 Other Potential Water Demands.....	2-25
ATTACHMENT 2-1 2010 Regional Projections.....	2-28

**LIST OF FIGURES**

Figure 2.1: RGRWPA Population Projections .....	2-4
Figure 2.2: River Basins in the RGRWPA .....	2-5
Figure 2.3: RGRWPA Total Water Demand Projections.....	2-9
Figure 2.4: Year 2010 Total Water Demand by Type of Use.....	2-10
Figure 2.5: Year 2060 Total Water Demand by Type of Use.....	2-10
Figure 2.6: Projected RGRWPA Municipal Demand.....	2-11
Figure 2.7: Projected RGRWPA Manufacturing Demand .....	2-13
Figure 2.8: Projected RGRWPA Irrigation Water Demand.....	2-15
Figure 2.9: Projected RGRWPA Steam Electric Water Demand .....	2-20
Figure 2.10: Projected RGRWPA Mining Water Demand.....	2-21
Figure 2.11: Projected RGRWPA Livestock Water Demand.....	2-23

**LIST OF TABLES**

Table 2.1: Population and Water Demand Projections Summary for the Rio Grande Regional Water Planning Area .....	2-2
Table 2.2: RGRWPA Population - Projections by County .....	2-5
Table 2.3: Population Projections for Cameron County by River Basin .....	2-6
Table 2.4: Population Projections for Hidalgo County by River Basin .....	2-7
Table 2.5: Population Projections for Jim Hogg County by River Basin.....	2-7
Table 2.6: Population Projections for Maverick County by River Basin .....	2-8
Table 2.7: Population Projections for Starr County by River Basin.....	2-8
Table 2.8: Population Projections for Webb County by River Basin.....	2-8
Table 2.9: Population Projections for Willacy County by River Basin .....	2-8
Table 2.10: Population Projections for Zapata County by River Basin.....	2-9
Table 2.11: Municipal Water Demand Projections by County and River Basin.....	2-12
Table 2.12: Manufacturing Water Demand by County.....	2-14
Table 2.13: Irrigation Water Demand per County and River Basin .....	2-16

Table 2.14: Irrigation Water Demand Projections by Districts in Cameron County ..... 2-17  
Table 2.15: Irrigation Water Demand Projections by Districts in Hidalgo County..... 2-18  
Table 2.16: Irrigation Water Demand Projections by Districts in Willacy County..... 2-19  
Table 2.17: Irrigation Water Demand Projections by Counties..... 2-19  
Table 2.18: Steam Electric Water Demand Projections by County ..... 2-21  
Table 2.19: Mining Water Demand Projections by County ..... 2-22  
Table 2.20: Projected Livestock Water Demand by County ..... 2-23  
Table 2.21: Projected Wholesale Water Provider Demand..... 2-24

## CHAPTER 2.0 : CURRENT AND PROJECTED POPULATION & WATER DEMAND FOR THE RIO GRANDE REGION

The primary goal in preparing the Rio Grande Regional Water Plan is to estimate current and future water demands within the region. In the following chapters, water demand projections are compared with estimates of currently available water supplies to identify the location, extent, and timing of any future water shortages or surpluses. Texas Water Development Board (TWDB) rules (§357.7, Texas Administrative Code) require that the results of the analyses of current and projected population and water demands be reported by city, by county, by river basin, and by categories such as irrigation, mining, manufacturing, municipal, livestock, and steam electric. Exhibit B (1.1.2) provides updated guidelines:

*“The development of new population and water demand projections will be the most relevant feature of the first phase of this next round of planning. TWDB staff will prepare draft population and water demand projections for all the regions and their water user groups.”*

TWDB staff projections were approved by the board for use in regional water plans. These projections are the main reference tools for this chapter dealing specifically with population growth and associated water demands.

Table 2.1 summarizes the Rio Grande Regional Water Planning Area’s projected population and expected water demand through the year 2060, delineated by category of use. All tables and graphs are based on data provided by TWDB.

As specified in Section 357.7 (d)(2), Title 31 of the TAC, entities wishing to revise population or demand projections address their requests through their respective regional water planning group. If a planning group concurs, they submit requests to the Executive Administrator of the TWDB. TWDB staff coordinates reviews of each request with the TCEQ, Texas Parks and Wildlife Department, and the Texas Department of Agriculture. Designated representatives from each agency must approve each revision. The TWDB’s governing board (Board) is responsible for approving and adopting final population and water demand projections.

Requests to the Board should be submitted to the Executive Administrator in the form of memorandums from planning groups describing: 1) what they wish to revise and how revisions compare to Board-adopted 2006 projections for each decade of the planning horizon, and 2) language clearly describing the justification and methodology for developing revised projections. Memorandums should be accompanied by spreadsheets comparing requested revisions to Board-adopted 2006 estimates. Spreadsheets should be forwarded electronically to Connie Townsend.

**Table 2.1: Population and Water Demand Projections Summary for the Rio Grande Regional Water Planning Area (RGRWPA)**

<b>Regional Total Projection</b>	<b>D2010</b>	<b>D2020</b>	<b>D2030</b>	<b>D2040</b>	<b>D2050</b>	<b>D2060</b>
Population	1,628,278	2,030,994	2,470,814	2,936,748	3,433,188	3,935,223
Irrigation (AF/YR)	1,163,634	1,082,232	981,748	981,748	981,748	981,748
Livestock (AF/YR)	5,817	5,817	5,817	5,817	5,817	5,817
Manufacturing (AF/YR)	7,509	8,274	8,966	9,654	10,256	11,059
Mining (AF/YR)	4,186	4,341	4,433	4,523	4,612	4,692
Municipal (AF/YR)	288,323	349,410	416,396	487,858	565,475	646,006
Steam Electric (AF/YR)	13,463	16,864	19,716	23,192	27,430	32,598
Total Water Demand (AF/YR)	1,482,932	1,466,938	1,437,076	1,512,792	1,595,338	1,681,920

The regional water plan projects the Rio Grande Region's population to more than triple over the next 50 years, increasing from approximately 1.62 million people at present to 3.94 million by 2060. This dramatic growth is the principal factor underlying projected increases in municipal, manufacturing, and steam electric water demands. However, in terms of total demand within this region, projected increases in urban water demands are slightly offset by projected *decreases* in irrigation water demand. The result is a projected approximate *increase* of 14 percent in total water demand over the 50-year planning period.

The following sections of this chapter describe the methodology used to develop these projections. This chapter also presents projections of population and water demand for cities, for major providers of municipal and manufacturing water, and for categories of water use including municipal, manufacturing, irrigation, steam electric power generation, mining, and livestock. Projected demands are also provided for each of the two river basins and the one coastal basin partially located within this region.

## **2.1 TWDB GUIDELINES FOR REVISIONS TO POPULATION AND WATER DEMAND PROJECTIONS**

To have a better standard of guidelines for calculating accurate population and water demand projections, a second round of planning was conducted, resulting in development of Exhibit B – a new set of guidelines adopted by the TWDB in accordance with all provisions of 31 Texas Administrative Code (TAC) Chapter 357. Provisions set forth in the TAC or TWDB agency rules take precedence over guidelines set forth in Exhibit B. Exhibit B Section 4.2 explains the process:

*"Population and water demand projections for 2010 through 2060 for the state, counties, cities, and county-other (including utility sub-components) will be reviewed through a process coordinated by the Executive Administrator of the TWDB with the Planning Groups, TNRCC [now TCEQ], TDA, and the TPWD.*

*New population projections, using a standard cohort-component procedure, will be developed using the 2000 Census and other pertinent sources.*

*Projections will be developed first at the county level; then the projections will be allocated to municipal and county-other water user groups."*

TWDB met regularly with representatives of the various parties involved to achieve consensus. The projections were extensively evaluated before reaching final draft stage. Then, after lengthy analysis of population and water demand projections, TWDB approved these projections.

## **2.2 POPULATION PROJECTIONS**

Population and water demand revisions incorporated up-to-date information. This section contains information on the planning group's methodology – a four-step process based on TWDB guidelines.

The first step was to project the living population at the beginning of the year who are expected to survive to the target year. The second step was to determine approximate net migration of this population; net migration rates were multiplied by adjusted population figures in the launch year. The third step was to project the number of births and net impact of mortality and migration on the youngest age group. The fourth step was to combine results from the mortality, migration, and fertility modules. This methodology is further explained in SB1 and Exhibit B. Race and gender were considered in calculating these projections.

Population is the main factor in calculating total municipal water demand, including residential and commercial uses, and these data were then used to calculate each city's base per capita water use. Overall, municipal water demand projections are the product of three variables: current and projected population, per capita water use, and assumptions about the effects of certain water conservation measures. Therefore, future water savings resulting from installation of more water-efficient fixtures (according to the 1991 State Water-Efficient Plumbing Act) were also a consideration.

Population of the eight counties comprising the Rio Grande Regional Water Planning Area is projected to grow at an average rate of nearly 2 percent annually over the 50-year planning period. This suggests an increase from approximately 1.62 million residents in 2010 to over 3.93 million in 2060. Table 2.2 presents these projections, by county, for each decade of the planning period. Cameron and Hidalgo Counties lead with the highest total populations, while Webb County is forecast to experience the greatest proportionate annual increase for the region.

### **2.2.1 Revisions to Population Projections**

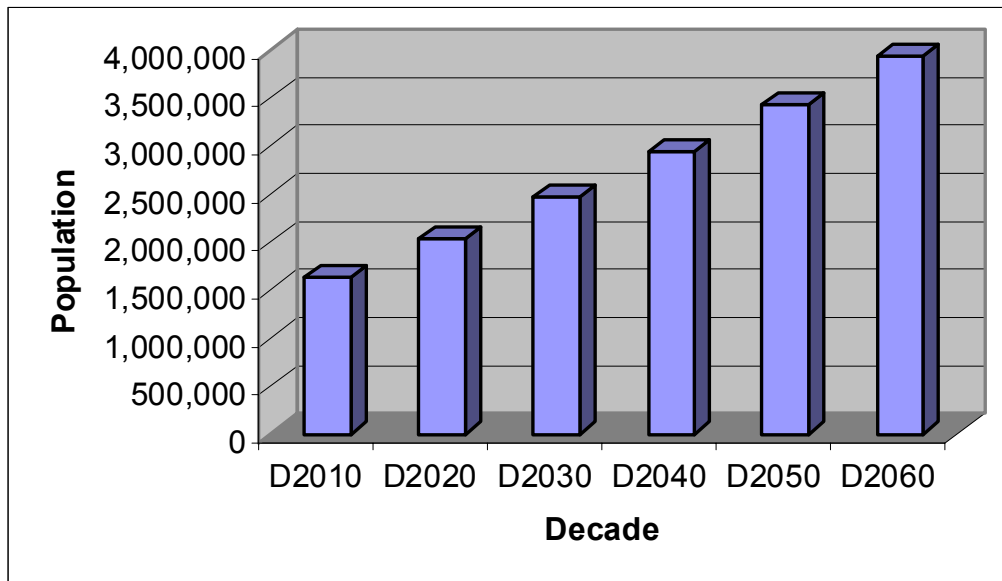
The revisions that Region M made to their originally-requested population projections used the TWDB's recommended regional totals as guidance. The State Data Center (SDC) identified 23 cities within Region M that were growing faster than their anticipated growth rate from the 2006 State Water Plan (SWP).

The TWDB recommended using a 3% population increase above the 2006 SWP through each decade. Therefore, SDC projections could not be used for the 23 cities due to an overall regional increase of 5%. However, the SDC projections could be used if the expected population growth for the 23 cities was offset with a reduction in population in County-other. This option was deemed unacceptable by the Region M Board.

Using a maximum regional population increase of 3% above the 2006 SWP, the population growth for each city identified by the SDC as having grown faster than projected was reduced by 38%. For instance, the SDC indicated that the City of Brownsville's anticipated population in 2010 was 6% greater than identified in the 2006 SWP. In order to meet the maximum increase as identified by the TWDB (3% of the regional total) while at the same time not decreasing the County-other population, the City of Brownsville was projected to have a 3.7% population increase over the 2006 SWP. This same methodology was recreated for each of the 23 cities identified by the SDC.

The five counties that were then affected by the increases were Cameron, Hidalgo, Willacy, Starr, and Maverick.

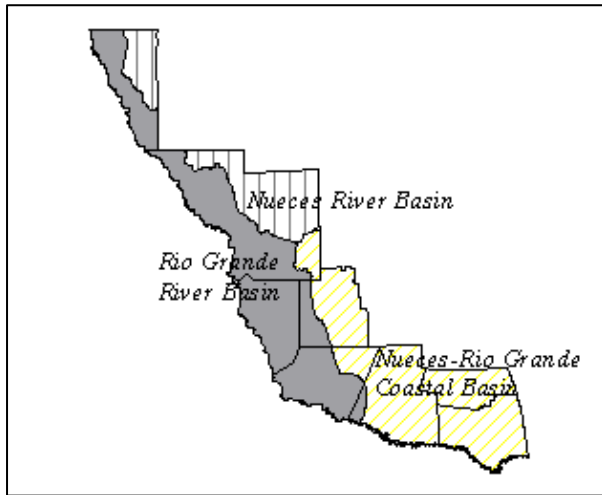
**Figure 2.1: RGRWPA Population Projections (by decade)**



**Table 2.2: RGRWPA Population - Projections by County**

County Name	2010	2020	2030	2040	2050	2060
CAMERON	424,762	510,697	599,672	688,532	777,607	862,511
HIDALGO	775,858	987,920	1,225,227	1,481,812	1,761,811	2,048,909
JIM HOGG	5,593	5,985	6,286	6,538	6,468	6,225
MAVERICK	58,252	67,929	77,165	85,292	92,831	99,091
STARR	69,379	83,583	98,262	113,102	127,802	141,961
WEBB	257,647	333,451	418,332	511,710	613,774	721,586
WILLACY	22,763	25,212	27,455	29,276	30,542	31,205
ZAPATA	14,025	16,217	18,415	20,486	22,354	23,733
<b>Totals</b>	<b>1,628,279</b>	<b>2,030,994</b>	<b>2,470,814</b>	<b>2,936,748</b>	<b>3,433,188</b>	<b>3,935,223</b>

**Figure 2.2: River Basins in the RGRWPA<sup>1</sup>**



<sup>1</sup> As discussed in Chapter 1, the Rio Grande Regional Water Planning Area covers a portion of the Nueces and Rio Grande River Basins, as well as a portion of the Nueces Rio Grande Coastal Basin.

**Table 2.3: Population Projections for Cameron County by River Basin**

POPULATIONS PROJECTIONS								
COUNTY	RIVER BASIN	WATER USER GROUP	2010	2020	2030	2040	2050	2060
CAMERON	NUECES-RIO GRANDE	BROWNSVILLE	179,054	216,587	255,477	294,353	333,360	370,578
CAMERON	NUECES-RIO GRANDE	COMBES	3,089	3,655	4,240	4,823	5,407	5,962
CAMERON	NUECES-RIO GRANDE	COUNTY-OTHER	45,008	51,569	58,351	65,113	71,876	78,307
CAMERON	NUECES-RIO GRANDE	EAST RIO HONDO WSC	19,904	26,420	33,155	39,869	46,585	52,973
CAMERON	NUECES-RIO GRANDE	EL JARDIN	10,798	13,445	16,182	18,910	21,639	24,234
CAMERON	NUECES-RIO GRANDE	HARLINGEN	69,214	79,581	90,333	101,090	111,896	122,218
CAMERON	NUECES-RIO GRANDE	INDIAN LAKE	699	866	1,039	1,211	1,383	1,547
CAMERON	NUECES-RIO GRANDE	LA FERIA	7,954	9,898	11,908	13,912	15,916	17,822
CAMERON	NUECES-RIO GRANDE	LAGUNA MADRE WD	7,725	11,408	15,215	19,010	22,806	26,416
CAMERON	NUECES-RIO GRANDE	LAGUNA VISTA	2,651	3,314	4,008	4,705	5,413	6,094
CAMERON	NUECES-RIO GRANDE	LOS FRESNOS	6,649	8,908	11,243	13,571	15,899	18,114
CAMERON	NUECES-RIO GRANDE	LOS INDIOS	1,418	1,703	1,997	2,290	2,583	2,862
CAMERON	NUECES-RIO GRANDE	MILITARY HIGHWAY WSC	11,278	13,862	16,533	19,196	21,860	24,393
CAMERON	NUECES-RIO GRANDE	OLMITO WSC	7,261	10,203	13,244	16,275	19,307	22,191
CAMERON	NUECES-RIO GRANDE	PALM VALLEY	1,400	1,400	1,400	1,400	1,400	1,400
CAMERON	NUECES-RIO GRANDE	PALM VALLEY ESTATES UD	344	444	547	650	753	851
CAMERON	NUECES-RIO GRANDE	PORT ISABEL	5,282	5,723	6,179	6,633	7,088	7,520
CAMERON	NUECES-RIO GRANDE	PRIMERA	3,973	4,871	5,806	6,748	7,699	8,613
CAMERON	NUECES-RIO GRANDE	RANCHO VIEJO	2,300	2,350	2,400	2,450	2,500	2,550
CAMERON	NUECES-RIO GRANDE	RIO HONDO	2,223	2,419	2,623	2,829	3,037	3,238
CAMERON	NUECES-RIO GRANDE	SAN BENITO	26,922	30,599	34,400	38,189	41,979	45,584
CAMERON	NUECES-RIO GRANDE	SANTA ROSA	3,472	4,148	4,847	5,543	6,240	6,903
CAMERON	NUECES-RIO GRANDE	SOUTH PADRE ISLAND	3,203	4,028	4,881	5,732	6,583	7,392
CAMERON	NUECES-RIO GRANDE	VALLEY MUD #2	1,066	1,066	1,066	1,066	1,066	1,066
<b>CAMERON</b>	<b>NUECES-RIO GRANDE</b>	<b>TOTAL</b>	<b>422,887</b>	<b>508,467</b>	<b>597,074</b>	<b>685,568</b>	<b>774,275</b>	<b>858,828</b>
CAMERON	RIO GRANDE	BROWNSVILLE	1,390	1,681	1,983	2,284	2,587	2,875
CAMERON	RIO GRANDE	COUNTY-OTHER	82	94	106	118	130	142
CAMERON	RIO GRANDE	EL JARDIN	61	76	92	107	122	137
CAMERON	RIO GRANDE	MILITARY HIGHWAY WSC	162	199	237	275	313	349
CAMERON	RIO GRANDE	VALLEY MUD #2	180	180	180	180	180	180
<b>CAMERON</b>	<b>RIO GRANDE</b>	<b>TOTAL</b>	<b>1,875</b>	<b>2,230</b>	<b>2,598</b>	<b>2,964</b>	<b>3,332</b>	<b>3,683</b>
<b>CAMERON</b>		<b>BASIN TOTALS</b>	<b>424,762</b>	<b>510,697</b>	<b>599,672</b>	<b>688,532</b>	<b>777,607</b>	<b>862,511</b>

Table 2.4: Population Projections for Hidalgo County by River Basin

POPULATION PROJECTIONS								
COUNTY	RIVER BASIN	WATER USER GROUP	2010	2020	2030	2040	2050	2060
HIDALGO	NUECES-RIO GRANDE	ALAMO	20,915	28,107	36,163	44,880	54,400	64,166
HIDALGO	NUECES-RIO GRANDE	ALTON	12,342	15,513	19,064	22,907	27,104	31,411
HIDALGO	NUECES-RIO GRANDE	COUNTY-OTHER	75,813	102,960	133,363	166,259	202,193	239,056
HIDALGO	NUECES-RIO GRANDE	DONNA	17,830	20,419	23,311	26,435	29,839	33,325
HIDALGO	NUECES-RIO GRANDE	EDCOUCH	4,076	4,659	5,311	6,013	6,778	7,562
HIDALGO	NUECES-RIO GRANDE	EDINBURG	71,940	92,789	116,092	141,263	168,699	196,813
HIDALGO	NUECES-RIO GRANDE	ELSA	6,267	6,710	7,204	7,736	8,313	8,904
HIDALGO	NUECES-RIO GRANDE	HIDALGO	11,215	15,599	20,507	25,814	31,606	37,546
HIDALGO	NUECES-RIO GRANDE	HIDALGO COUNTY MUD #1	5,280	7,476	9,936	12,598	15,505	18,487
HIDALGO	NUECES-RIO GRANDE	LA JOYA	3,030	3,631	4,302	5,027	5,817	6,625
HIDALGO	NUECES-RIO GRANDE	LA VILLA	1,361	1,374	1,389	1,405	1,422	1,439
HIDALGO	NUECES-RIO GRANDE	MCALLEN	132,249	158,025	186,864	218,039	252,051	286,921
HIDALGO	NUECES-RIO GRANDE	MERCEDES	15,775	17,129	18,636	20,260	22,023	23,827
HIDALGO	NUECES-RIO GRANDE	MILITARY HIGHWAY WSC	10,261	12,048	14,050	16,216	18,582	21,009
HIDALGO	NUECES-RIO GRANDE	MISSION	68,351	88,532	111,086	135,447	161,998	189,204
HIDALGO	NUECES-RIO GRANDE	NORTH ALAMO WSC	114,538	153,770	197,713	245,263	297,197	350,473
HIDALGO	NUECES-RIO GRANDE	PALMHURST	9,144	14,136	19,727	25,777	32,384	39,162
HIDALGO	NUECES-RIO GRANDE	PALMVIEW	6,258	8,771	11,586	14,632	17,959	21,372
HIDALGO	NUECES-RIO GRANDE	PENITAS	1,261	1,316	1,376	1,441	1,511	1,584
HIDALGO	NUECES-RIO GRANDE	PHARR	65,969	82,640	101,269	121,386	143,309	165,772
HIDALGO	NUECES-RIO GRANDE	PROGRESO	6,348	8,097	10,056	12,176	14,491	16,866
HIDALGO	NUECES-RIO GRANDE	SAN JUAN	39,074	54,082	70,892	89,081	108,947	129,327
HIDALGO	NUECES-RIO GRANDE	SHARYLAND WSC	31,885	36,438	41,538	47,057	53,085	59,268
HIDALGO	NUECES-RIO GRANDE	WESLACO	32,862	37,961	43,658	49,811	56,516	63,385
<b>HIDALGO</b>	<b>NUECES-RIO GRANDE</b>	<b>TOTAL</b>	<b>764,044</b>	<b>972,182</b>	<b>1,205,093</b>	<b>1,456,923</b>	<b>1,731,729</b>	<b>2,013,504</b>
HIDALGO	RIO GRANDE	COUNTY-OTHER	4,422	6,104	7,988	10,026	12,252	14,536
HIDALGO	RIO GRANDE	HIDALGO	460	641	843	1,061	1,299	1,543
HIDALGO	RIO GRANDE	LA JOYA	1,282	1,536	1,820	2,127	2,461	2,803
HIDALGO	RIO GRANDE	MCALLEN	18	21	25	29	33	38
HIDALGO	RIO GRANDE	MILITARY HIGHWAY WSC	103	121	141	163	187	211
HIDALGO	RIO GRANDE	SULLIVAN CITY	5,528	7,315	9,317	11,483	13,849	16,276
<b>HIDALGO</b>	<b>RIO GRANDE</b>	<b>TOTAL</b>	<b>11,813</b>	<b>15,738</b>	<b>20,134</b>	<b>24,889</b>	<b>30,081</b>	<b>35,407</b>
<b>HIDALGO</b>		<b>Basin Totals</b>	<b>769,572</b>	<b>979,497</b>	<b>1,214,410</b>	<b>1,468,406</b>	<b>1,745,578</b>	<b>2,029,780</b>

Table 2.5 Population Projections for Jim Hogg County by River Basin

POPULATION PROJECTIONS								
COUNTY	RIVER BASIN	WATER USER GROUP	2010	2020	2030	2040	2050	2060
JIM HOGG	NUECES-RIO GRANDE	COUNTY-OTHER	744	796	837	870	861	829
JIM HOGG	NUECES-RIO GRANDE	HEBBRONVILLE	4764	5098	5354	5569	5509	5302
<b>JIM HOGG</b>	<b>NUECES-RIO GRANDE</b>	<b>TOTAL</b>	<b>5,508</b>	<b>5,894</b>	<b>6,191</b>	<b>6,439</b>	<b>6,370</b>	<b>6,131</b>
JIM HOGG	RIO GRANDE	COUNTY-OTHER	85	91	95	99	98	94
<b>JIM HOGG</b>	<b>RIO GRANDE</b>	<b>TOTAL</b>	<b>85</b>	<b>91</b>	<b>95</b>	<b>99</b>	<b>98</b>	<b>94</b>
<b>JIM HOGG</b>		<b>Basin Totals</b>	<b>5,593</b>	<b>5,985</b>	<b>6,286</b>	<b>6,538</b>	<b>6,468</b>	<b>6,225</b>

**Table 2.6 Population Projections for Maverick County by River Basin**

POPULATION PROJECTIONS								
COUNTY	RIVER BASIN	WATER USER GROUP	2010	2020	2030	2040	2050	2060
MAVERICK	NUECES	COUNTY-OTHER	48	59	69	78	86	92
<b>MAVERICK</b>	<b>NUECES</b>	<b>TOTAL</b>	<b>48</b>	<b>59</b>	<b>69</b>	<b>78</b>	<b>86</b>	<b>92</b>
MAVERICK	RIO GRANDE	COUNTY-OTHER	25,050	30,803	36,243	40,958	45,272	48,772
MAVERICK	RIO GRANDE	EAGLE PASS	26,160	28,212	30,238	32,116	33,937	35,559
MAVERICK	RIO GRANDE	EL INDIO WSC	6,994	8,855	10,615	12,140	13,536	14,668
<b>MAVERICK</b>	<b>RIO GRANDE</b>	<b>TOTAL</b>	<b>58,204</b>	<b>67,870</b>	<b>77,096</b>	<b>85,214</b>	<b>92,745</b>	<b>98,999</b>
<b>MAVERICK</b>	<b>BASIN TOTAL</b>		<b>58,252</b>	<b>67,929</b>	<b>77,165</b>	<b>85,292</b>	<b>92,831</b>	<b>99,091</b>

**Table 2.7 Population Projections for Starr County By River Basin**

POPULATION PROJECTIONS								
COUNTY	RIVER BASIN	WATER USER GROUP	2010	2020	2030	2040	2050	2060
STARR	NUECES-RIO GRANDE	COUNTY-OTHER	1,470	1,846	2,234	2,624	3,009	3,378
<b>STARR</b>	<b>NUECES-RIO GRANDE</b>	<b>TOTAL</b>	<b>1,470</b>	<b>1,846</b>	<b>2,234</b>	<b>2,624</b>	<b>3,009</b>	<b>3,378</b>
STARR	RIO GRANDE	COUNTY-OTHER	36,356	45,658	55,237	64,893	74,409	83,541
STARR	RIO GRANDE	LA GRULLA	1,640	1,746	1,862	1,985	2,116	2,249
STARR	RIO GRANDE	RIO GRANDE CITY	14,982	16,674	18,447	20,259	22,090	23,878
STARR	RIO GRANDE	RIO WSC	2,942	3,868	4,821	5,782	6,729	7,638
STARR	RIO GRANDE	ROMA CITY	11,989	13,791	15,661	17,559	19,449	21,277
<b>STARR</b>	<b>RIO GRANDE</b>	<b>TOTAL</b>	<b>67,909</b>	<b>81,737</b>	<b>96,028</b>	<b>110,478</b>	<b>124,793</b>	<b>138,583</b>
<b>STARR</b>	<b>BASIN TOTAL</b>		<b>69,379</b>	<b>83,583</b>	<b>98,262</b>	<b>113,102</b>	<b>127,802</b>	<b>141,961</b>

**Table 2.8 Population Projections for Webb County by River Basin**

POPULATION PROJECTIONS								
COUNTY	RIVER BASIN	WATER USER GROUP	2010	2020	2030	2040	2050	2060
WEBB	NUECES	COUNTY-OTHER	751	873	1,010	1,159	1,323	1,496
<b>WEBB</b>	<b>NUECES</b>	<b>TOTAL</b>	<b>751</b>	<b>873</b>	<b>1,010</b>	<b>1,159</b>	<b>1,323</b>	<b>1,496</b>
WEBB	NUECES-RIO GRANDE	COUNTY-OTHER	1,123	1,306	1,510	1,735	1,981	2,241
<b>WEBB</b>	<b>NUECES-RIO GRANDE</b>	<b>TOTAL</b>	<b>1,123</b>	<b>1,306</b>	<b>1,510</b>	<b>1,735</b>	<b>1,981</b>	<b>2,241</b>
WEBB	RIO GRANDE	COUNTY-OTHER	5,777	6,716	7,767	8,923	10,187	11,522
WEBB	RIO GRANDE	EL CENIZO	5,929	8,729	11,865	15,315	19,085	23,068
WEBB	RIO GRANDE	LAREDO	234,423	302,377	378,468	462,176	553,670	650,317
WEBB	RIO GRANDE	RIO BRAVO	8,318	11,566	15,203	19,205	23,579	28,199
WEBB	RIO GRANDE	WEBB COUNTY WATER U	1,326	1,884	2,509	3,197	3,949	4,743
<b>WEBB</b>	<b>RIO GRANDE</b>	<b>TOTAL</b>	<b>255,773</b>	<b>331,272</b>	<b>415,812</b>	<b>508,816</b>	<b>610,470</b>	<b>717,849</b>
<b>WEBB</b>	<b>BASIN TOTAL</b>		<b>257,647</b>	<b>333,451</b>	<b>418,332</b>	<b>511,710</b>	<b>613,774</b>	<b>721,586</b>

**Table 2.9 Population Projections for Willacy County by River Basin**

POPULATION PROJECTIONS								
COUNTY	RIVER BASIN	WATER USER GROUP	2010	2020	2030	2040	2050	2060
WILLACY	NUECES-RIO GRANDE	COUNTY-OTHER	385	385	385	385	385	384
WILLACY	NUECES-RIO GRANDE	LYFORD	2,335	2,512	2,684	2,839	2,972	3,076
WILLACY	NUECES-RIO GRANDE	NORTH ALAMO WSC	7,187	8,649	9,981	11,052	11,781	12,141
WILLACY	NUECES-RIO GRANDE	RAYMONDVILLE	10,071	10,402	10,704	10,947	11,112	11,194
WILLACY	NUECES-RIO GRANDE	SAN PERLITA	747	812	871	919	952	968
WILLACY	NUECES-RIO GRANDE	SEBASTIAN MUD	2,038	2,452	2,830	3,134	3,340	3,442
<b>WILLACY</b>	<b>BASIN TOTAL</b>		<b>22,763</b>	<b>25,212</b>	<b>27,455</b>	<b>29,276</b>	<b>30,542</b>	<b>31,205</b>

**Table 2.10 Population Projections for Zapata County by River Basin**

POPULATION PROJECTIONS								
COUNTY	RIVER BASIN	WATER USER GROUP	2010	2020	2030	2040	2050	2060
ZAPATA	NUECES-RIO GRANDE	COUNTY-OTHER	9,169	11,361	13,559	15,630	17,498	18,877
ZAPATA	NUECES-RIO GRANDE	ZAPATA	4,856	4,856	4,856	4,856	4,856	4,856
<b>ZAPATA</b>	<b>Basin Total</b>		<b>14,025</b>	<b>16,217</b>	<b>18,415</b>	<b>20,486</b>	<b>22,354</b>	<b>23,733</b>

### 2.3 WATER DEMAND PROJECTIONS

Total annual water demand for the Rio Grande Regional Water Planning Area is projected to *increase* until 2010, then *decrease* until 2030, and then steadily *increase* until 2060. This trend is attributable to diminishing irrigated acreage and rising urban populations, especially in the Rio Grande Valley, as land use changes from agriculture to urbanization (see Figure 2.3).

Consequently, over time, total water demand for irrigation in the region is projected to fall from the current 82.9 percent to 59.1 percent by 2060. During the same period, municipal water demands are projected to increase from 15.5 percent at present to 37.7 percent in 2060. Figures 2.4 and 2.5 show the relative projected water demand, by type of use, for the years 2000 and 2060.

**Figure 2.3: RGRWPA Total Water Demand Projections**

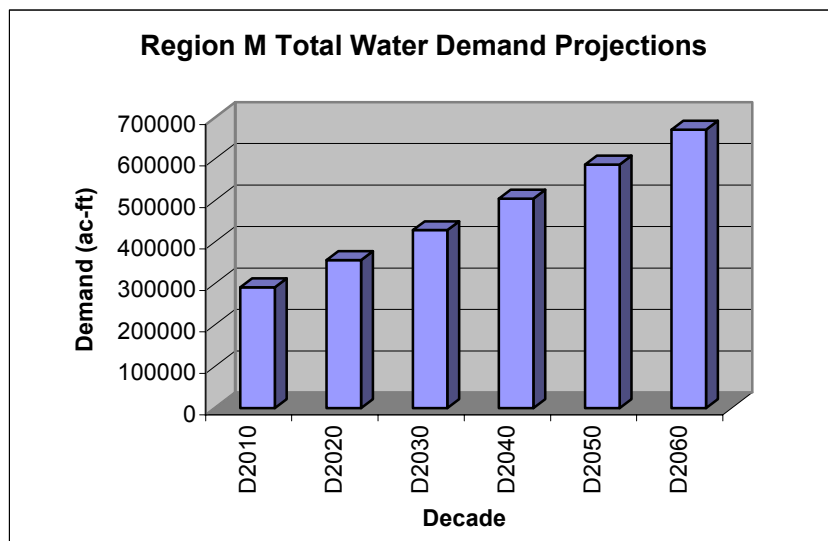


Figure 2.4: Year 2010 Total Water Demand by Type of Use

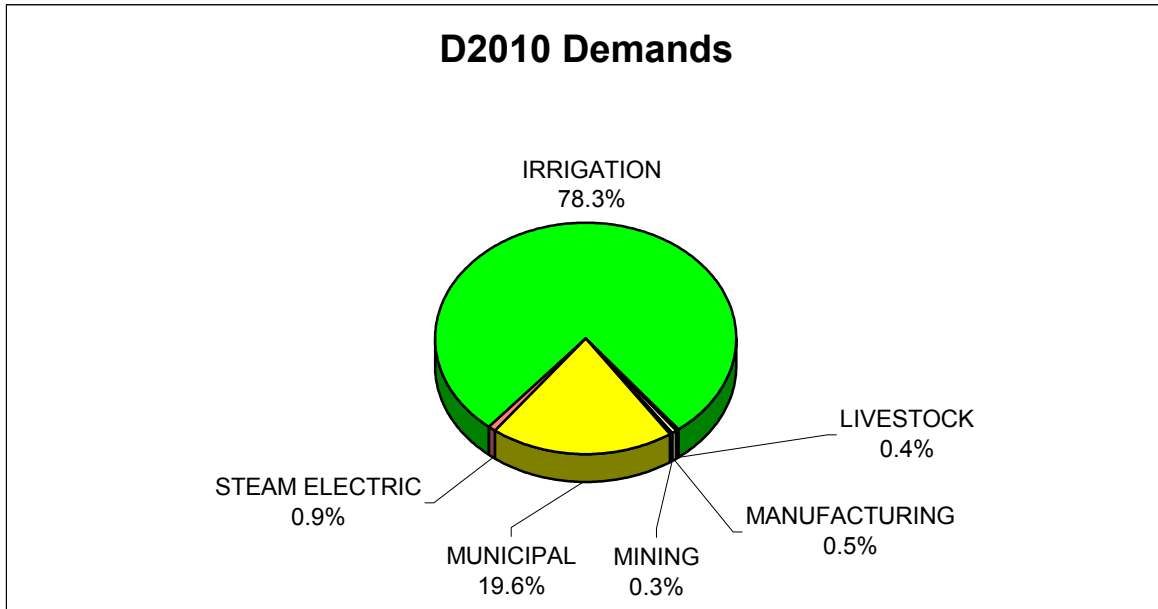
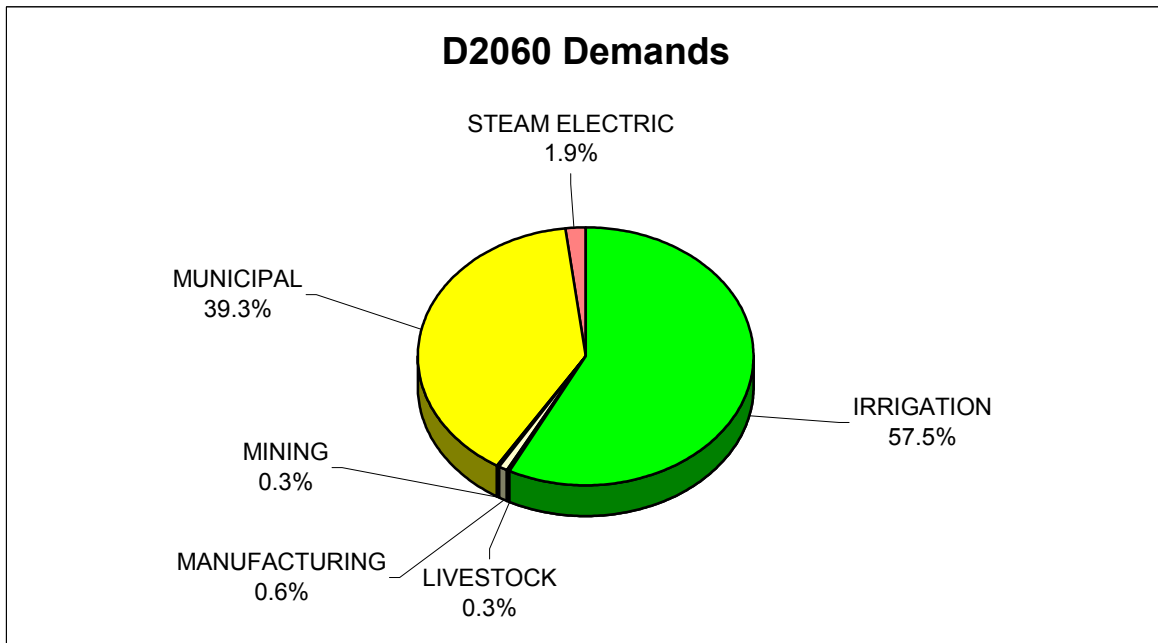


Figure 2.5: Year 2060 Total Water Demand by Type of Use

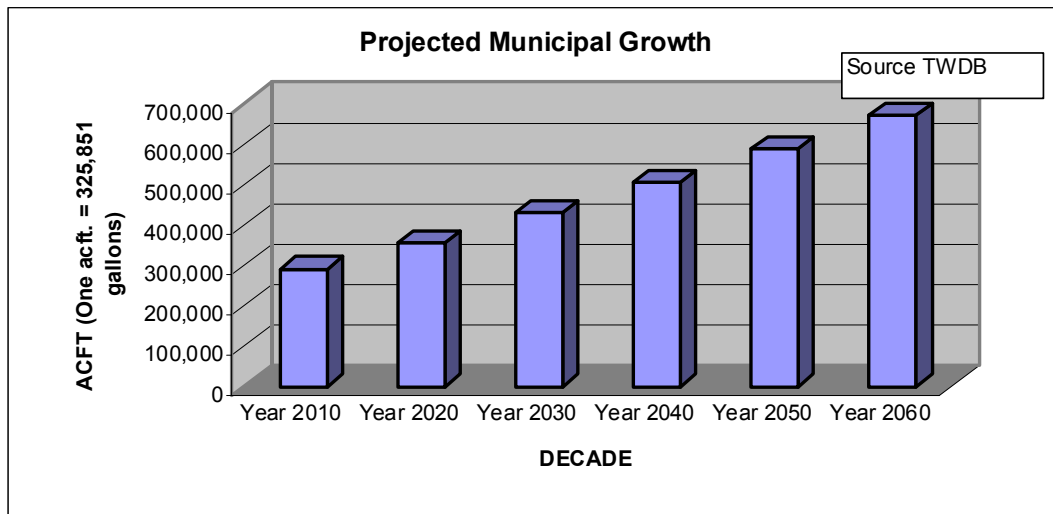


### 2.3.1 Projections for Municipal Water Demand

Municipal water consumption is calculated from data about residential, institutional, and commercial users. Factors affecting future municipal water use are population growth, climatic conditions, and water conservation practices. Because the region’s population is projected to at least triple over the next 50 years, growth in municipal water use is inevitable.

Overall, annual municipal water demand within the region is projected to almost double from 2010 to 2060 (see Figure 2.6). While this represents a major increase over the planning period, growth in water usage is significantly slower than rate of population growth. These projections are attributable to anticipated improvements in municipal water use efficiency and in water savings associated with the adoption of various conservation measures such as those proposed in the 1991 State Water Efficient Plumbing Act.

Figure 2.6: Projected RGRWPA Municipal Demand



## PROJECTIONS

**Table 2.11: Municipal Water Demand Projections by County and River Basin (in acre-feet per year)**

County	River Basin	Year 2010	Year 2020	Year 2030	Year 2040	Year 2050	Year 2060
Cameron	Nueces-Rio Grande	88,172	104,258	120,673	137,443	154,464	171,307
	Rio Grande	518	592	669	747	826	904
<b>Cameron Total</b>		<b>88,690</b>	<b>104,850</b>	<b>121,342</b>	<b>138,190</b>	<b>155,290</b>	<b>172,211</b>
Hidalgo	Nueces-Rio Grande	114,145	140,213	169,712	201,562	237,698	275,393
	Rio Grande	1,265	1,638	2,061	2,508	3,032	3,571
<b>Hidalgo Total</b>		<b>115,410</b>	<b>141,851</b>	<b>171,773</b>	<b>204,070</b>	<b>240,730</b>	<b>278,964</b>
Jim Hogg	Nueces-Rio Grande	868	902	927	942	926	890
	Rio Grande	16	16	17	17	17	16
<b>Jim Hogg Total</b>		<b>884</b>	<b>918</b>	<b>944</b>	<b>959</b>	<b>943</b>	<b>906</b>
Maverick	Nueces	5	6	7	8	9	9
	Rio Grande	9,404	10,553	11,659	12,641	13,592	14,467
<b>Maverick Total</b>		<b>9,409</b>	<b>10,559</b>	<b>11,666</b>	<b>12,649</b>	<b>13,601</b>	<b>14,476</b>
Starr	Nueces-Rio Grande	242	298	355	414	472	530
	Rio Grande	13,245	15,475	17,816	20,196	22,592	25,012
<b>Starr Total</b>		<b>13,487</b>	<b>15,773</b>	<b>18,171</b>	<b>20,610</b>	<b>23,064</b>	<b>25,542</b>
Webb	Nueces	136	155	175	199	225	255
	Nueces-Rio Grande	204	231	262	297	337	382
	Rio Grande	54,515	69,015	85,564	104,007	124,052	145,783
<b>Webb Total</b>		<b>54,855</b>	<b>69,401</b>	<b>86,001</b>	<b>104,503</b>	<b>124,614</b>	<b>146,420</b>
Willacy	Nueces-Rio Grande	3,323	3,527	3,706	3,844	3,966	4,039
<b>Willacy Total</b>		<b>3,323</b>	<b>3,527</b>	<b>3,706</b>	<b>3,844</b>	<b>3,966</b>	<b>4,039</b>
Zapata	Rio Grande	2,265	2,531	2,793	3,033	3,267	3,448
<b>Zapata Total</b>		<b>2,265</b>	<b>2,531</b>	<b>2,793</b>	<b>3,033</b>	<b>3,267</b>	<b>3,448</b>
<b>Nueces Total</b>		<b>141</b>	<b>161</b>	<b>182</b>	<b>207</b>	<b>234</b>	<b>264</b>
<b>Nueces-Rio Grande Total</b>		<b>206,954</b>	<b>249,429</b>	<b>295,635</b>	<b>344,502</b>	<b>397,863</b>	<b>452,541</b>
<b>Rio Grande Total</b>		<b>81,228</b>	<b>99,820</b>	<b>120,579</b>	<b>143,149</b>	<b>167,378</b>	<b>193,201</b>
<b>Total</b>		<b>288,323</b>	<b>349,410</b>	<b>416,396</b>	<b>487,858</b>	<b>565,475</b>	<b>646,006</b>

The region's municipal water demand is projected to triple in the next 50 years, increasing from 288,323 acre-feet per year in 2010 to 646,006 acre-feet per year in 2060. Table 2. presents this projected growth, by county and river basin. As indicated, demand is concentrated in Cameron, Hidalgo, and Webb counties, which together account for nearly 89 percent of municipal water consumption in the region. Cameron County alone accounts for 38 percent, Hidalgo County accounts for 39 percent, and Webb County accounts for 19 percent of the region's municipal water use.

### 2.3.2 Projections for Manufacturing Water Demand

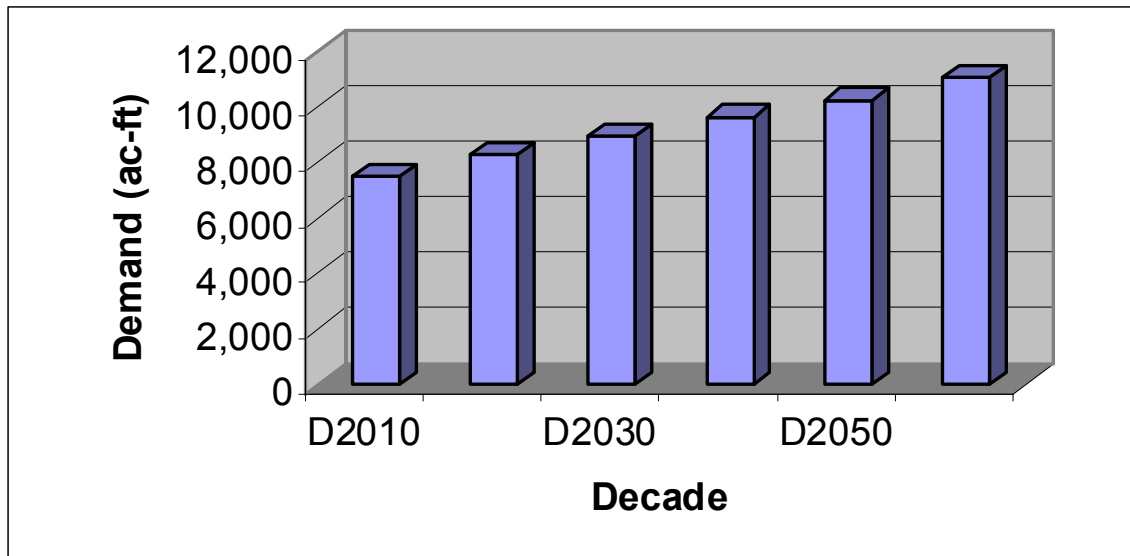
For SB 1 planning purposes, manufacturing water use is defined as the cumulative water demand on county and river basins for all industries within specified industrial classifications (SIC) determined by the TWDB. Projections of manufacturing water use, developed by the TWDB and employed in the 1997 State Water Plan, were used as default projections in this report, except where better information

warranted a revision. Exhibit B (4.2.4) states the following plan of research for calculating estimates of manufacturing water demand:

- *“Complete industry surveys to update water use efficiency estimates developed for the 2002 State Water Plan.*
- *Analyze the impact of technology adoption, and input substitution on the relationship of water used to output.*
- *Develop projections of industry output and associated water use by county.”*

The region’s demand for manufacturing water is projected to increase from approximately 7,509 acre-feet per year in 2010 to 11,059 acre-feet per year by 2060 (see Figure 2.7), primarily due to projected population growth in Cameron and Hidalgo Counties. The TWDB has no data to enable similar projections for Jim Hogg, Starr, and Zapata Counties. Table 2.12 illustrates projected demand for manufacturing water in each of the counties and shows that Cameron and Hidalgo Counties will account for 98 percent of the total manufacturing need.

**Figure 2.7: Projected RGRWPA Manufacturing Demand**



## PROJECTIONS

**Table 2.12: Manufacturing Water Demand by County (in acre-feet per year)**

Manufacturing Water Demands Projections by County (acft/year)

### MANUFACTURING

COUNTY	2010	2020	2030	2040	2050	2060
CAMERON	4,156	4,590	4,983	5,372	5,709	6,165
HIDALGO	3,236	3,559	3,851	4,143	4,403	4,742
JIM HOGG	0	0	0	0	0	0
MAVERICK	64	69	73	77	80	85
STARR	0	0	0	0	0	0
WEBB	28	31	34	37	39	42
WILLACY	25	25	25	25	25	25

### 2.3.3 Projections for Irrigation Water Demand

Irrigation Districts make up nearly 85% of the total regional demand for water. In the previous rounds of regional planning, demand analyses were performed for a multitude of Water User Groups (WUGs) in the region, including the classification of irrigation water users as a county-wide group (i.e. Irrigation-Cameron County). Utilizing this classification system creates a difficult set of circumstances in which to accurately evaluate irrigation water users, including the development of accurate water supply and demand figures, and developing water management strategies for implementation.

In terms of regional water planning, the analysis of individual Irrigation Districts will allow for a better understanding of the Region's water demand. The region will be better able to evaluate specific water management strategies needed to meet future water deficits.

A thorough analysis of irrigation water demand data is critical. In Region M, irrigation demand is primarily based on the available supply from the Amistad/Falcon reservoir system. During droughts, supply is limited and allowable irrigation water is allocated accordingly, resulting in a perceived reduction in demand. Ultimately, the demand on any given Irrigation District would be such that all land in the District that is included as flat-rate acreage would have the option to receive irrigation water. In turn, Irrigation Districts typically own enough irrigation water rights to serve irrigation water users within their boundaries should the water be available in the reservoir.

In order to break down the irrigation demand from the Amistad/Falcon system (1,180,278 ac-ft) into by-county use, water rights associated with the Amistad/Falcon system were compiled and compared. For instance, irrigators in Cameron County hold 31.7 percent of all Region M irrigation water rights. This percentage was multiplied by the base year demand to arrive at the Cameron County base year demand for Amistad/Falcon water (374,585 ac-ft). The same methodology was used for each county in the region. As described earlier,

additional water sources exist to provide irrigation water. They were treated as “supply equals demand” and were simply added to the Amistad/Falcon demands.

The region’s annual demand for irrigation water is projected to decrease from 1,163,633 acre-feet per year in 2010 to 981,749 acre-feet per year in 2060 (see Figure 2.8). This lower demand estimate arises from spreading urbanization which reduces irrigable acreage, primarily in Cameron and Hidalgo Counties.

In the last round of regional planning (2005), irrigation water demand projections were determined by the Rio Grande RWPG with assistance from TCEQ. The numbers used differ from those recommended by the TWDB, which used a base year irrigation demand of 909,590 acre-feet. In researching the subject, the regional planning group realized that the base year value originally used by the TWDB is not accurate for actual irrigation demands. Data regarding annual rainfall, Amistad/Falcon reservoir levels, yearly allocations, and actual irrigation water usage were compiled from 1989 to 2004. The most accurate depiction of irrigation demand would take place in a year with normal rainfall and normal reservoir levels; based on these parameters, 1994 most accurately represented normal conditions. In 1994, rainfall totaled 20 inches, 2.5 inches below the average rainfall from 1989 to 2004. Also, the Amistad/Falcon reservoir system sat at 86.5% of total capacity. Total irrigation usage as reported by TCEQ was 1,180,278 acre-feet. This number is a combination of charged and no-charge water in the middle and lower Rio Grande River.

**Figure 2.8: Projected RGRWPA Irrigation Water Demand**

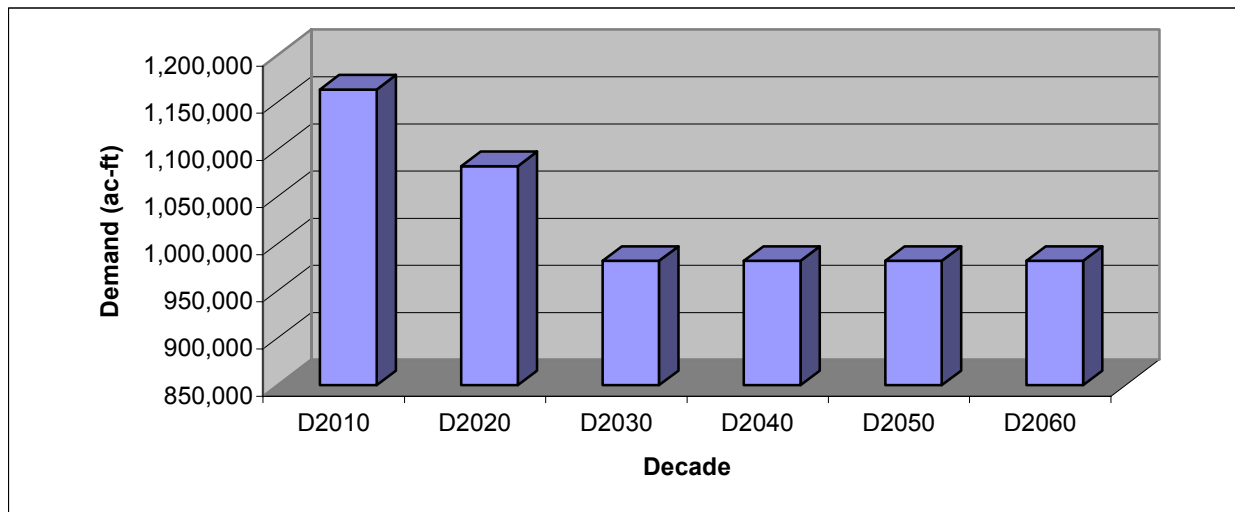


Table 2.13: Irrigation Water Demand per County and River Basin

County	River Basin	2010	2020	2030	2040	2050	2060
Cameron	Nueces-Rio Grande	352,707	333,861	312,137	312,137	312,137	312,137
Cameron	Rio Grande	14,697	13,910	13,007	13,007	13,007	13,007
<b>Cameron</b>	<b>Total</b>	<b>367,404</b>	<b>347,771</b>	<b>325,144</b>	<b>325,144</b>	<b>325,144</b>	<b>325,144</b>
Hidalgo	Nueces-Rio Grande	560,291	505,458	436,074	436,074	436,074	436,074
Hidalgo	Rio Grande	22,739	20,513	17,698	17,698	17,698	17,698
<b>Hidalgo</b>	<b>Total</b>	<b>583,030</b>	<b>525,971</b>	<b>453,772</b>	<b>453,772</b>	<b>453,772</b>	<b>453,772</b>
Jim Hogg	Nueces-Rio Grande	817	817	817	817	817	817
<b>Jim Hogg</b>	<b>Total</b>	<b>817</b>	<b>817</b>	<b>817</b>	<b>817</b>	<b>817</b>	<b>817</b>
Maverick	Nueces	3,897	3,760	3,602	3,602	3,602	3,602
Maverick	Rio Grande	91,143	87,933	84,261	84,261	84,261	84,261
<b>Maverick</b>	<b>Total</b>	<b>95,040</b>	<b>91,693</b>	<b>87,863</b>	<b>87,863</b>	<b>87,863</b>	<b>87,863</b>
Starr	Rio Grande	31,191	30,108	29,070	29,070	29,070	29,070
<b>Starr</b>	<b>Total</b>	<b>31,191</b>	<b>30,108</b>	<b>29,070</b>	<b>29,070</b>	<b>29,070</b>	<b>29,070</b>
Webb	Rio Grande	20,507	19,548	18,654	18,654	18,654	18,654
<b>Webb</b>	<b>Total</b>	<b>20,507</b>	<b>19,548</b>	<b>18,654</b>	<b>18,654</b>	<b>18,654</b>	<b>18,654</b>
Willacy	Nueces-Rio Grande	59,191	60,203	60,623	60,623	60,623	60,623
<b>Willacy</b>	<b>Total</b>	<b>59,191</b>	<b>60,203</b>	<b>60,623</b>	<b>60,623</b>	<b>60,623</b>	<b>60,623</b>
Zapata	Rio Grande	6,454	6,121	5,805	5,805	5,805	5,805
<b>Zapata</b>	<b>Total</b>	<b>6,454</b>	<b>6,121</b>	<b>5,805</b>	<b>5,805</b>	<b>5,805</b>	<b>5,805</b>
<b>REGION M</b>	<b>TOTAL</b>	<b>1,163,634</b>	<b>1,082,232</b>	<b>981,748</b>	<b>981,748</b>	<b>981,748</b>	<b>981,748</b>

**PROJECTIONS****Table 2.14: Irrigation Water Demand Projections by Districts in Cameron County (in acre-feet per year)<sup>2</sup>**

<b>Water Districts</b>	<b>2010</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>
Adams Garden Irrigation District No. 19	18,624	19,281	19,955	19,955	19,955	19,955
Bayview Irrigation District No. 11	15,836	14,006	12,402	12,402	12,402	12,402
Brownsville Irrigation District	40,186	29,798	22,164	22,164	22,164	22,164
Cameron County Irrigation District No. 2	137,738	121,821	107,867	107,867	107,867	107,867
Cameron County Irrigation District No. 6	47,244	41,785	36,998	36,998	36,998	36,998
Cameron County Water Improvement District No. 16	3,419	3,024	2,677	2,677	2,677	2,677
Hidalgo and Cameron County Irrigation District #9	125,925	105,301	86,365	86,365	86,365	86,365
Harlingen Irrigation District-Cameron County No. 1	84,479	80,175	76,127	76,127	76,127	76,127
La Feria Irrigation District-Cameron County No. 3	69,722	63,795	58,419	58,419	58,419	58,419
Santa Maria Irrigation District-Cameron County No. 4	8,763	8,367	7,992	7,992	7,992	7,992
Valley Acres Water District	1,974	1,980	1,986	1,986	1,986	1,986
<b>Cameron Total</b>	<b>553,910</b>	<b>489,333</b>	<b>432,952</b>	<b>432,952</b>	<b>432,952</b>	<b>432,952</b>

<sup>2</sup> Irrigation demands for irrigation districts are reported as in Special Study No. 2: Classify Irrigation Districts as Water User Groups.

**Table 2.15: Irrigation Water Demand Projections by Districts in Hidalgo County (in acre-feet per year)<sup>3</sup>**

<b>Water Districts</b>	<b>2010</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>
Delta Lake Irrigation District	99,699	98,835	97,895	97,895	97,895	97,895
Donna Irrigation District-Cameron County No. 2	77,425	73,274	69,379	69,379	69,379	69,379
Engleman Irrigation District	17,874	16,151	14,442	14,442	14,442	14,442
Hidalgo and Cameron County Irrigation District No. 9	109,555	91,612	75,138	75,138	75,138	75,138
Hidalgo County Irrigation District No. 1	68,611	51,121	36,812	36,812	36,812	36,812
Hidalgo County Water Improvement District No. 3	7,815	5,823	4,193	4,193	4,193	4,193
Hidalgo County Irrigation District No. 13	2,498	1,005	410	410	410	410
Hidalgo County Irrigation District No. 16	26,426	21,856	18,109	18,109	18,109	18,109
Hidalgo County Water Control and Improvement District No. 18	4,731	3,913	3,242	3,242	3,242	3,242
Hidalgo County Irrigation District No. 2	82,550	61,506	44,290	44,290	44,290	44,290
Hidalgo County Water Improvement District No. 5	13,464	12,643	11,796	11,796	11,796	11,796
Hidalgo County Irrigation District No. 6	36,154	29,901	24,775	24,775	24,775	24,775
Hidalgo County Irrigation District No. 19	2,138	841	281	281	281	281
Santa Cruz Irrigation District No. 15	79,967	76,296	72,449	72,449	72,449	72,449
United Irrigation District of Hidalgo County	55,402	45,821	37,966	37,966	37,966	37,966
Valley Acres Water District	13,213	13,253	13,292	13,292	13,292	13,292
<b>Hidalgo Total</b>	<b>697,522</b>	<b>603,851</b>	<b>524,469</b>	<b>524,469</b>	<b>524,469</b>	<b>524,469</b>

<sup>3</sup> Irrigation demands for irrigation districts are reported as in Special Study No. 2: Classify Irrigation Districts as Water User Groups.

**Table 2.16: Irrigation Water Demand Projections by Districts in Willacy County (in acre-feet per year)<sup>4</sup>**

<b>Water Districts</b>	<b>2010</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>
Delta Lake Irrigation District	75,212	74,560	73,851	73,851	73,851	73,851
<b>Willacy Total</b>	<b>75,212</b>	<b>74,560</b>	<b>73,851</b>	<b>73,851</b>	<b>73,851</b>	<b>73,851</b>

Cameron County is projected to comprise 31.2 percent and 33.1 percent of the total demand for irrigation water in 2010 and 2060, respectively. Hidalgo County currently accounts for 50.5 percent of the total irrigation demand, decreasing to 46.2 percent in 2060. Not coincidentally, these two counties have the highest percentage of water rights associated with the Amistad/Falcon system.

It is important to note that irrigation demands are highly variable from year to year. Overall agricultural economic conditions, weather conditions, and water availability are factors directly influencing the demand for irrigation water.

Market prices of agricultural commodities influence the amount of irrigated acreage planted each year and the types of crops planted. Also, above-normal or below-normal precipitation in irrigated areas can either suppress or increase irrigation demand, and because Amistad/Falcon irrigation use is based on water availability, irrigation shortages can have the effect of suppressing water demand.

**Table 2.17: Irrigation Water Demand Projections by Counties (in acre-feet per year)**

<b>COUNTY</b>	<b>2010</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>
CAMERON	367,404	347,771	325,144	325,144	325,144	325,144
HIDALGO	583,030	525,971	453,772	453,772	453,772	453,772
JIM HOGG	817	817	817	817	817	817
MAVERICK	95,040	91,693	87,863	87,863	87,863	87,863
STARR	31,191	30,108	29,070	29,070	29,070	29,070
WEBB	20,507	19,548	18,654	18,654	18,654	18,654
WILLACY	59,191	60,203	60,623	60,623	60,623	60,623
ZAPATA	6,454	6,121	5,805	5,805	5,805	5,805
<b>TOTAL</b>	<b>1,163,634</b>	<b>1,082,232</b>	<b>981,748</b>	<b>981,748</b>	<b>981,748</b>	<b>981,748</b>

### 2.3.4 Projections for Steam Electric Water Demand

The TWDB [Exhibit B (4.2.4)] states a specific plan of research for estimating demand for steam electric water:

*"The plan of research includes:*

- *Description of water-consuming systems currently used in power generation facilities.*
- *Estimation of water consumption rates for each identified water-consuming system.*

<sup>4</sup> Irrigation demands for irrigation districts are reported as in Special Study No. 2: Classify Irrigation Districts as Water User Groups.

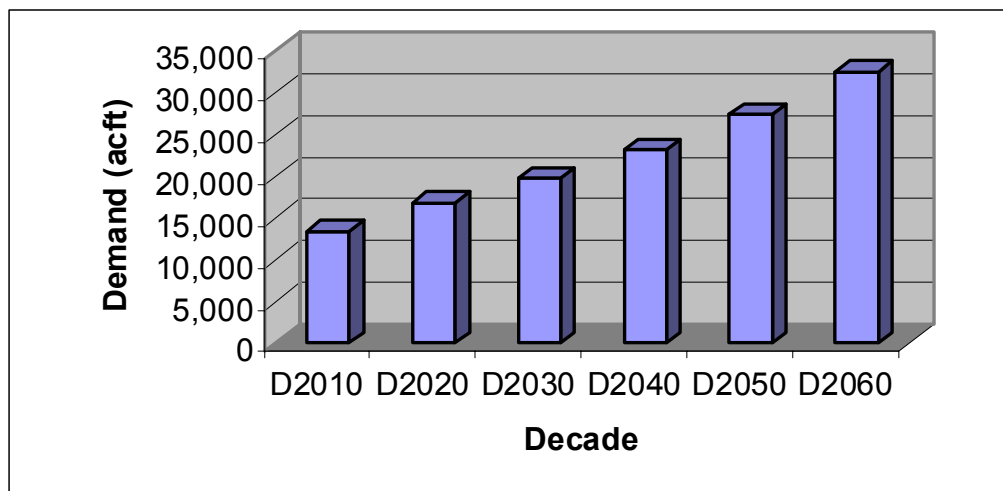
- Correlation of current state population with current electric use by region.
- Projection of electric power consumption requirements by county and for the state, based on population projections.
- Identification of current and potential water sources for demand by power generation.
- Estimation of future water use by power generation.
- Development and application of allocation methodology to derive demand projections by county.”

Annual demand for steam electric water is projected to increase from 13,463 acre-feet per year in 2010 to 32,598 acre-feet per year in 2060 (see Figure 2.9). Most of this increase is expected to occur between 2000 and 2010 as a result of adding new capacity for generating steam electric power in Cameron and Webb counties.

Table 2.18 presents the projected demand for steam electric water, by county, for each of the region’s eight counties. Cameron County makes up 12 percent of the demand. Hidalgo County accounts for 77 percent, and Webb County accounts for 11 percent. TWDB has no data about demand for steam electric water in Jim Hogg, Maverick, Starr, Willacy, and Zapata Counties.

TWDB received a 2008 study from the Bureau of Economic Geology (BEG) related to steam electric water demands for existing steam electric water users. Each planning group had the option to determine if they wished to use water demand figures as supplied by the TWDB or the BEG. However, BEG numbers were based on assumptions that differ than previous TWDB studies resulting in large deviations from the 2007 State Water Plan. The Regional Water Planning Group (Region M) took a stance suggesting using the 2007 State Water Plan numbers because of the worst case scenario evaluation.

**Figure 2.9: Projected RGRWPA Steam Electric Water Demand**



**PROJECTIONS**

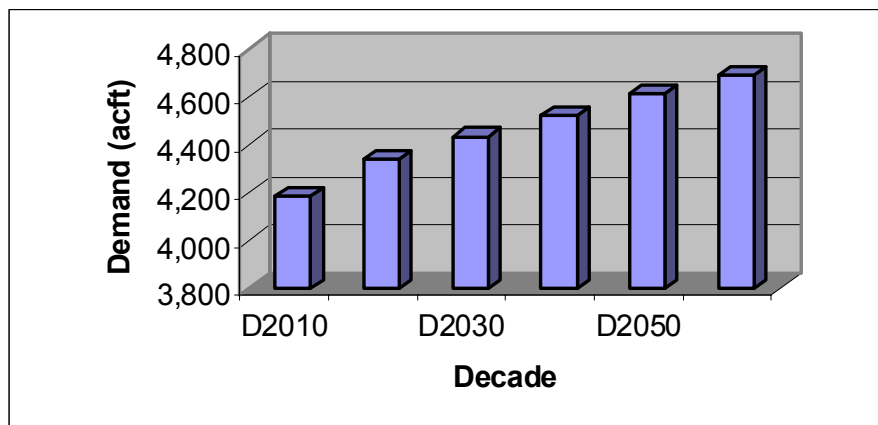
**Table 2.18: Steam Electric Water Demand Projections by County (in acre-feet per year)**

COUNTY	2010	2020	2030	2040	2050	2060
CAMERON	1,616	1,523	1,780	2,094	2,477	2,944
HIDALGO	10,355	14,151	16,545	19,462	23,018	27,354
JIM HOGG	0	0	0	0	0	0
MAVERICK	0	0	0	0	0	0
STARR	0	0	0	0	0	0
WEBB	1,492	1,190	1,391	1,636	1,935	2,300
WILLACY	0	0	0	0	0	0
ZAPATA	0	0	0	0	0	0
<b>TOTAL</b>	<b>13,463</b>	<b>16,864</b>	<b>19,716</b>	<b>23,192</b>	<b>27,430</b>	<b>32,598</b>

**2.3.5 Projections for Mining Water Demand**

The state’s default demand projections for mining water were based on forecasts of future production levels (sorted by mineral category) and their water use rates. These production projections are derived from state and national historic water use rates and are constrained by accessible mineral reserves in the region. Demand for mining water represents less than 1 percent of the region’s total water needs and is expected to remain relatively constant over the 50-year planning period (see Figure 2.10). Use of mining water is greatest in Webb County (32.6 percent), Starr County (31 percent), and Hidalgo County (30.9 percent). In contrast, Willacy County has the lowest *demand* (less than 1 percent). Table 2.19 represents projected demand for mining water, by county, for the region. In the future, the regional water planning group must identify the potential for water use of gas wells.

**Figure 2.10: Projected RGRWPA Mining Water Demand**



## PROJECTIONS

**Table 2.19: Mining Water Demand Projections by County (in acre-feet per year)**

COUNTY	2010	2020	2030	2040	2050	2060
CAMERON	6	6	6	6	6	6
HIDALGO	1,442	1,561	1,633	1,704	1,774	1,836
JIM HOGG	33	36	37	38	39	40
MAVERICK	156	162	166	169	172	175
STARR	1,315	1,355	1,373	1,390	1,407	1,426
WEBB	1,204	1,192	1,189	1,187	1,185	1,180
WILLACY	6	6	6	6	6	6
ZAPATA	24	23	23	23	23	23
<b>TOTAL</b>	<b>4,186</b>	<b>4,341</b>	<b>4,433</b>	<b>4,523</b>	<b>4,612</b>	<b>4,692</b>

### 2.3.6 Projections for Livestock Water Demand

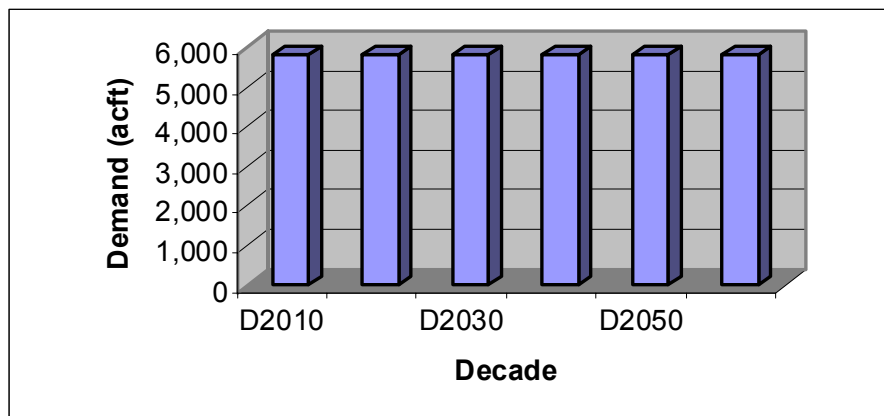
The TWDB's livestock water use projections were developed using Texas Agricultural Statistics Service's estimates of the numbers and types of livestock, and the Texas A&M Agricultural Extension Service's estimates of water usage rates for each type of livestock.

Total livestock water is determined by multiplying consumption for a given livestock type by the number of that type of livestock in each of the eight counties. Exhibit B (Section 4.2.4) states:

*"The 2006 Regional Water Plan will maintain the same rates of change in livestock water demand as included in the 2002 State Water Plan. Base water use for 2000 will be adjusted using the 2000 livestock inventory along with adjustments in water use per unit, based on research by the Texas Agricultural Experiment Station."*

Livestock types are breeding cattle, dairy cattle, feed cattle, hogs, pigs, sheep, goats, hens, broilers, and horses. Surprisingly, demand for livestock water is low compared with other water demands, comprising only 1% of the region's total water usage. By year 2060, the figure is projected to drop to 0.4% of total water demand.

Figure 2.11: Projected RGRWPA Livestock Water Demand



Livestock water demand is relatively uniform over the eight-county area and is projected to remain fairly constant over the 50-year planning period (see Figure 2.11). Table 2.20 presents these projected demands, by county.

## PROJECTIONS

Table 2.20: Projected Livestock Water Demand by County (in acre-feet per year)

COUNTY	2010	2020	2030	2040	2050	2060
CAMERON	1,103	1,103	1,103	1,103	1,103	1,103
HIDALGO	681	681	681	681	681	681
JIM HOGG	518	518	518	518	518	518
MAVERICK	260	260	260	260	260	260
STARR	1,117	1,117	1,117	1,117	1,117	1,117
WEBB	1,513	1,513	1,513	1,513	1,513	1,513
WILLACY	151	151	151	151	151	151
ZAPATA	474	474	474	474	474	474
TOTAL	5,817	5,817	5,817	5,817	5,817	5,817

### 2.3.7 Needs for Wholesale Water Providers

Texas Water Development Board guidelines in Exhibit B state that a wholesale water provider is any person or entity, including river authorities and irrigation districts, that has contracts to sell more than 1,000 acre-ft of water wholesale in any one year during the five years immediately preceding the adoption of the last regional water plan. Table 2.21 below indicates the water providers that meet the TWDB guidelines to designate them as Wholesale Water Providers for this region. Demand projection figures were compiled through the TWDB’s database for the region.

**DEMAND PROJECTIONS****Table 2.21: Projected Wholesale Water Provider Demand (in acre-feet per year)**

<b>Water Demand Projections for Wholesale Water Providers</b>						
<b>WHOLESALE WATER PROVIDERS</b>	<b>DEMAND</b>					
	<b>2010</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>
BROWNSVILLE IRRIGATION & DRAINAGE DISTRICT	6,105	6,071	6,071	6,071	6,071	6,071
CAMERON COUNTY WCID #2	15,198	15,198	15,198	15,198	15,198	15,198
DELTA LAKE MUNICIPAL AUTHORITY	8,200	8,200	8,200	8,200	8,200	8,200
DONNA IRRIGATION DISTRICT HIDALGO COUNTY #1	6,880	6,880	6,880	6,880	6,880	6,880
EAGLE PASS CITY OF	7,707	7,707	7,707	7,707	7,707	7,707
HARLINGEN IRRIGATION DISTRICT	5,104	5,117	5,127	5,135	5,142	5,148
HARLINGEN WATER WORKS SYSTEM	19,238	19,238	19,238	19,238	19,238	19,238
HIDALGO COUNTY IRRIGATION DISTRICT #6	8,291	8,291	8,291	8,291	8,291	8,291
HIDALGO COUNTY WCID #1	1,437	1,437	1,437	1,437	1,437	1,437
HIDALGO COUNTY WCID #16	1,047	1,047	1,047	1,047	1,047	1,047
HIDALGO COUNTY WCID #2	24,667	24,667	24,667	24,667	24,667	24,667
HIDALGO COUNTY WCID #3	13,980	13,980	13,980	13,980	13,980	13,980
HIDALGO-CAMERON WCID #9	11,500	11,500	11,500	11,500	11,500	11,500
LA FERIA WCID #3	4,852	4,852	4,852	4,852	4,852	4,852
LA JOYA WSC	1,554	2,057	2,599	2,996	2,996	2,996
LAGUNA MADRE WD	7,480	7,480	7,480	7,480	7,480	7,480
MCALLEN CITY OF	33,548	33,548	33,548	33,548	33,548	33,548
NORTH ALAMO WSC	22,338	22,338	22,338	22,338	22,338	22,344
MILITARY HIGHWAY WSC	3,620	4,020	4,130	4,254	4,369	4,502
SHARYLAND WSC	12,140	12,139	12,139	12,140	12,139	12,140
SOUTHMOST REGIONAL WATER	11,844	11,844	11,844	11,844	11,844	11,844
UNITED IRRIGATION DISTRICT	24,009	24,009	24,009	24,009	24,009	24,009
VALLEY MUD #2	1,382	1,382	1,382	1,382	1,382	1,382
WEBB COUNTY WATER UTILITY	2,311	2,311	2,311	2,311	2,311	2,312
<b>REGION M TOTAL</b>	<b>254,432</b>	<b>255,313</b>	<b>255,975</b>	<b>256,505</b>	<b>256,626</b>	<b>256,773</b>

### 2.3.8 Other Potential Water Demands

These other potential water demands could affect the regional water supply if developed within the region, but currently no action has been taken.

#### Ethanol Production

Over the next 20 years, the water consumed by energy production is supposed to increase at a faster rate than any other sector. In fact, the amount of water projected to be consumed by energy production is greater than for any other sector other than irrigation.

A Technical Memorandum has been issued that examines estimated water demand for various energy and non energy sectors.

Nation Energy Technology Laboratory's Existing Plants Research Program, which has an energy-water research effort that focuses on water use at power plants, illustrates the dependency of future energy production on adequate water supplies.

The report projects water consumption at the national and regional levels for the following energy production sectors: oil (crude oil exploration and production, liquids from unconventional sources, and refining), coal (mining and slurry transportation), gas (processing, pipeline transport, and gas from tight sands and shale), biofuels (biodiesel and ethanol production), and hydrogen production. It also projects water consumption for irrigation, domestic/public, industrial/commercial, and livestock uses.

While the growth in water consumption by the energy sector dominates the water-demand forecast over the period, by far the single largest projected consumer of water within the energy sector is biofuels production. Water consumption for biofuels production is projected to increase by 19 billion gallons per day (bgd), or by 2.5 times, between 2005 and 2030. Most of this increase is for the production of corn-based ethanol, which is projected to increase by nearly 13 bgd and accounts for roughly 60% of the nation's total projected increase in water consumption over the next 20 years. Water consumption is expected to more than double for industrial and commercial use in the United States by 2030. According to a report from the U.S. Government Accountability Office, experts have been working on using alternative water sources such as brackish water for biofuel production. However implementing this can be costly. Also, newly innovated dry cooling systems and thermo chemical processes have the potential to reduce the amount of water used by biorefineries, but many of these other options remain untested at the commercial scale

Water-demand projections were derived by multiplying sector-specific water-demand coefficients (e.g., gallons of water consumed per barrel of oil

produced with enhanced oil recovery) times sector-specific energy production projections prepared by the U.S. Department of Energy's Energy Information Administration. Projections were made at the national and regional level. Because regions vary depending on energy sectors (e.g., coal supply regions for coal mining, U.S. Census regions for biofuels), a geographical information system was used to prepare overlay maps to allow for visual comparison of regional water-demand trends over the projection period.

The report's analysis of the extent and location of water demand by competing users can help policymakers identify potential constraints for energy supply and production and can identify areas (e.g., biofuels production) that need further research.

Such knowledge can also help decision makers develop policy and technology recommendations to avoid potential supply issues and to ensure that the nation's energy demands are met in a cost-effective manner.

A company called BioFuels Energy Corporation<sup>5</sup> was planning to build Texas' first cellulosic ethanol plants. The company was planning on building a demonstration distillery in Raymondville<sup>6</sup> to evaluate a number of feed stocks used in the production of various fuels, including E85, a low proof ethanol, as well as biodiesel and aviation fuels for airplanes and jets. The low proof ethanol (130 proof) would be produced for use as fuel in a microturbine generator to help power an electric car.

The BioFuels Energy Corporation also planned to build a manufacturing facility where it would construct proprietary distillation parts for cellulosic ethanol production.

Another area of concern is oil wells, which potentially could use a significant amount of water as well.

There is a potential for bioenergy options other than ethanol, especially for Region M. Namely, there is a need to study the economic and water supply feasibility of producing dedicated biomass crops produced as feedstock for energy. This would include the high energy sorghums that have been developed and have the potential for over 12 dry tons per acre as well as energy cane. These dedicated biomass crops could be matched to the sugarcane mill needs and use harvesting and transportation equipment in the off season. The first step is an analysis of the production, harvesting, and storage of the biomass feedstock. As part of production, the water requirements can be estimated for impact on other crops and on irrigation

---

<sup>5</sup> Ethanol Production Plants are not being considered at this time in the region.

<sup>6</sup> Conversations with Joe Barrera of Brownsville Irrigation District and Troy Allen of Delta Lake Irrigation District have confirmed no Ethanol Production Plants are being considered.

districts. There are conversion technologies being tested that take the biomass to a drop-in fuel such as gasoline, diesel or jet fuel, avoiding the ethanol issues. The water plan for Region M with dedicated biomass feedstock crops has serious potential which offers alternatives to the cropping system, potential to be synergistic with the sugarcane industry and would impact water for irrigation.

**Hidalgo County Drainage District No. 1**

Another potential project is being conducted by Hidalgo County Irrigation District which is studying the possibility of developing municipal water within the drainage network of the county. The potential of this project could approximate 10% more water for the total needs of the county.

**ATTACHMENT 2-1**  
**2010 REGIONAL PROJECTIONS**

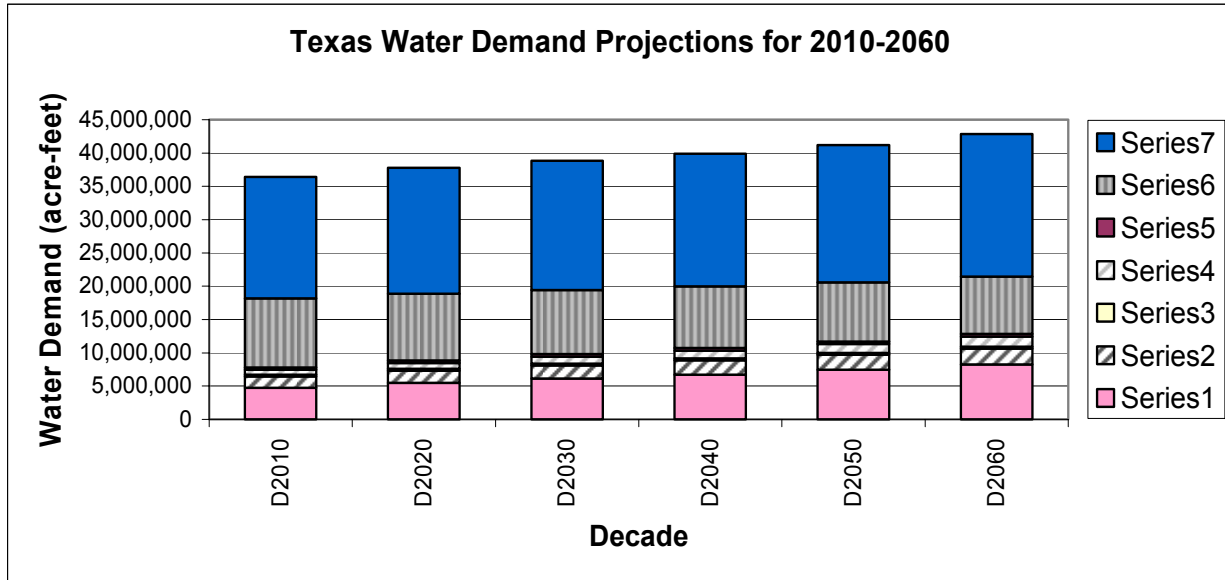
**2010 Regional Water Plan**  
**Population and Water Demand Projections Summary for Region M**

	<b>Regional Total Projection</b>					
	<b>D2010</b>	<b>D2020</b>	<b>D2030</b>	<b>D2040</b>	<b>D2050</b>	<b>D2060</b>
<b>Population</b>	1,628,278	2,030,994	2,470,814	2,936,748	3,433,188	3,935,223
<b>Irrigation (AF/YR)</b>	1,163,634	1,082,232	981,748	981,748	981,748	981,748
<b>Livestock (AF/YR)</b>	5,817	5,817	5,817	5,817	5,817	5,817
<b>Manufacturing (AF/YR)</b>	7,509	8,274	8,966	9,654	10,256	11,059
<b>Mining (AF/YR)</b>	4,186	4,341	4,433	4,523	4,612	4,692
<b>Municipal (AF/YR)</b>	288,323	349,410	416,396	487,858	565,475	646,006
<b>Steam Electric (AF/YR)</b>	13,463	16,864	19,716	23,192	27,430	32,598
<b>Total Water Demand (AF/YR)</b>	1,482,932	1,466,938	1,437,076	1,512,792	1,595,338	1,681,920

	<b>Region M Population Projection by County</b>					
	<b>D2010</b>	<b>D2020</b>	<b>D2030</b>	<b>D2040</b>	<b>D2050</b>	<b>D2060</b>
<b>Cameron</b>	424,762	510,697	599,672	688,532	777,607	862,511
<b>Hidalgo</b>	775,858	987,920	1,225,227	1,481,812	1,761,811	2,048,909
<b>Jim Hogg</b>	5,593	5,985	6,286	6,538	6,468	6,225
<b>Maverick</b>	58,252	67,929	77,165	85,292	92,831	99,091
<b>Starr</b>	69,370	83,583	98,262	113,102	127,802	141,961
<b>Webb</b>	257,647	333,451	418,332	511,710	613,774	721,586
<b>Willacy</b>	22,763	25,212	27,455	29,276	30,542	31,205
<b>Zapata</b>	14,025	16,217	18,415	20,486	22,354	23,733
<b>REGION M TOTAL</b>	<b>1,628,278</b>	<b>2,030,994</b>	<b>2,470,814</b>	<b>2,936,748</b>	<b>3,433,188</b>	<b>3,935,223</b>

**2010 Regional Water Plan  
Summary of Water Demand Projections for the state of Texas (ac-ft)**

	D2010	D2020	D2030	D2040	D2050	D2060
<b>MUNICIPAL</b>	4,761,887	5,473,988	6,109,591	6,727,858	7,438,852	8,245,271
<b>MANUFACTURING</b>	1,727,808	2,153,551	2,465,789	2,621,183	2,755,335	2,882,524
<b>MINING</b>	296,230	313,327	296,472	285,002	284,640	292,294
<b>STEAM ELECTRIC</b>	733,179	1,010,555	1,160,401	1,316,577	1,460,483	1,620,411
<b>LIVESTOCK</b>	322,966	336,634	344,242	352,536	361,701	371,923
<b>IRRIGATION</b>	10,079,215	9,643,908	9,299,464	9,024,866	8,697,560	8,370,554
<b>TEXAS TOTAL</b>	<b>18,196,776</b>	<b>18,880,368</b>	<b>19,421,142</b>	<b>19,948,900</b>	<b>20,585,977</b>	<b>21,426,835</b>



POPULATION PROJECTIONS PER WUG								
COUNTY	RIVER BASIN	WATER USER GROUP	2010	2020	2030	2040	2050	2060
CAMERON	NUECES-RIO GRANDE	BROWNSVILLE	179,054	216,587	255,477	294,353	333,360	370,578
CAMERON	RIO GRANDE	BROWNSVILLE	1,390	1,681	1,983	2,284	2,587	2,875
CAMERON	NUECES-RIO GRANDE	COMBES	3,089	3,655	4,240	4,823	5,407	5,962
CAMERON	NUECES-RIO GRANDE	COUNTY-OTHER	45,008	51,569	58,351	65,113	71,876	78,307
CAMERON	RIO GRANDE	COUNTY-OTHER	82	94	106	118	130	142
CAMERON	NUECES-RIO GRANDE	EAST RIO HONDO WSC	19,904	26,420	33,155	39,869	46,585	52,973
CAMERON	NUECES-RIO GRANDE	EL JARDIN	10,798	13,445	16,182	18,910	21,639	24,234
CAMERON	RIO GRANDE	EL JARDIN	61	76	92	107	122	137
CAMERON	NUECES-RIO GRANDE	HARLINGEN	69,214	79,581	90,333	101,090	111,896	122,218
CAMERON	NUECES-RIO GRANDE	INDIAN LAKE	699	866	1,039	1,211	1,383	1,547
CAMERON	NUECES-RIO GRANDE	LA FERIA	7,954	9,898	11,908	13,912	15,916	17,822
CAMERON	NUECES-RIO GRANDE	LAGUNA MADRE WD	7,725	11,408	15,215	19,010	22,806	26,416
CAMERON	NUECES-RIO GRANDE	LAGUNA VISTA	2,651	3,314	4,008	4,705	5,413	6,094
CAMERON	NUECES-RIO GRANDE	LOS FRESNOS	6,649	8,908	11,243	13,571	15,899	18,114
CAMERON	NUECES-RIO GRANDE	LOS INDIOS	1,418	1,703	1,997	2,290	2,583	2,862
CAMERON	NUECES-RIO GRANDE	MILITARY HIGHWAY WSC	11,278	13,862	16,533	19,196	21,860	24,393
CAMERON	RIO GRANDE	MILITARY HIGHWAY WSC	162	199	237	275	313	349
CAMERON	NUECES-RIO GRANDE	OLMITO WSC	7,261	10,203	13,244	16,275	19,307	22,191
CAMERON	NUECES-RIO GRANDE	PALM VALLEY	1,400	1,400	1,400	1,400	1,400	1,400
CAMERON	NUECES-RIO GRANDE	PALM VALLEY ESTATES UD	344	444	547	650	753	851
CAMERON	NUECES-RIO GRANDE	PORT ISABEL	5,282	5,723	6,179	6,633	7,088	7,520
CAMERON	NUECES-RIO GRANDE	PRIMERA	3,973	4,871	5,806	6,748	7,699	8,613
CAMERON	NUECES-RIO GRANDE	RANCHO VIEJO	2,300	2,350	2,400	2,450	2,500	2,550
CAMERON	NUECES-RIO GRANDE	RIO HONDO	2,223	2,419	2,623	2,829	3,037	3,238
CAMERON	NUECES-RIO GRANDE	SAN BENITO	26,922	30,599	34,400	38,189	41,979	45,584
CAMERON	NUECES-RIO GRANDE	SANTA ROSA	3,472	4,148	4,847	5,543	6,240	6,903
CAMERON	NUECES-RIO GRANDE	SOUTH PADRE ISLAND	3,203	4,028	4,881	5,732	6,583	7,392
CAMERON	NUECES-RIO GRANDE	VALLEY MUD #2	1,066	1,066	1,066	1,066	1,066	1,066
CAMERON	RIO GRANDE	VALLEY MUD #2	180	180	180	180	180	180
<b>CAMERON</b>		<b>TOTAL</b>	<b>424,762</b>	<b>510,697</b>	<b>599,672</b>	<b>688,532</b>	<b>777,607</b>	<b>862,511</b>
HIDALGO	NUECES-RIO GRANDE	ALAMO	20,915	28,107	36,163	44,880	54,400	64,166
HIDALGO	NUECES-RIO GRANDE	ALTON	12,342	15,513	19,064	22,907	27,104	31,411
HIDALGO	NUECES-RIO GRANDE	COUNTY-OTHER	75,813	102,960	133,363	166,259	202,193	239,056
HIDALGO	RIO GRANDE	COUNTY-OTHER	4,422	6,104	7,988	10,026	12,252	14,536
HIDALGO	NUECES-RIO GRANDE	DONNA	17,830	20,419	23,311	26,435	29,839	33,325
HIDALGO	NUECES-RIO GRANDE	EDCOUCH	4,076	4,659	5,311	6,013	6,778	7,562
HIDALGO	NUECES-RIO GRANDE	EDINBURG	71,940	92,789	116,092	141,263	168,699	196,813
HIDALGO	NUECES-RIO GRANDE	ELSA	6,267	6,710	7,204	7,736	8,313	8,904
HIDALGO	NUECES-RIO GRANDE	HIDALGO	11,215	15,599	20,507	25,814	31,606	37,546
HIDALGO	RIO GRANDE	HIDALGO	460	641	843	1,061	1,299	1,543
HIDALGO	NUECES-RIO GRANDE	HIDALGO COUNTY MUD #1	5,280	7,476	9,936	12,598	15,505	18,487
HIDALGO	NUECES-RIO GRANDE	LA JOYA	3,030	3,631	4,302	5,027	5,817	6,625
HIDALGO	RIO GRANDE	LA JOYA	1,282	1,536	1,820	2,127	2,461	2,803
HIDALGO	NUECES-RIO GRANDE	MCALLEN	132,249	158,025	186,864	218,039	252,051	286,921
HIDALGO	RIO GRANDE	MCALLEN	18	21	25	29	33	38
HIDALGO	NUECES-RIO GRANDE	MERCEDES	15,775	17,129	18,636	20,260	22,023	23,827
HIDALGO	NUECES-RIO GRANDE	MILITARY HIGHWAY WSC	10,261	12,048	14,050	16,216	18,582	21,009
HIDALGO	RIO GRANDE	MILITARY HIGHWAY WSC	103	121	141	163	187	211
HIDALGO	NUECES-RIO GRANDE	MISSION	68,351	88,532	111,086	135,447	161,998	189,204
HIDALGO	NUECES-RIO GRANDE	NORTH ALAMO WSC	114,538	153,770	197,713	245,263	297,197	350,473

HIDALGO	NUECES-RIO GRANDE	PALMHURST	9,144	14,136	19,727	25,777	32,384	39,162
HIDALGO	NUECES-RIO GRANDE	PALMVIEW	6,258	8,771	11,586	14,632	17,959	21,372
HIDALGO	NUECES-RIO GRANDE	PENITAS	1,261	1,316	1,376	1,441	1,511	1,584
HIDALGO	NUECES-RIO GRANDE	PHARR	65,969	82,640	101,269	121,386	143,309	165,772
HIDALGO	NUECES-RIO GRANDE	PROGRESO	6,348	8,097	10,056	12,176	14,491	16,866
HIDALGO	NUECES-RIO GRANDE	SAN JUAN	39,074	54,082	70,892	89,081	108,947	129,327
HIDALGO	NUECES-RIO GRANDE	SHARYLAND WSC	31,885	36,438	41,538	47,057	53,085	59,268
HIDALGO	RIO GRANDE	SULLIVAN CITY	5,528	7,315	9,317	11,483	13,849	16,276
HIDALGO	NUECES-RIO GRANDE	WESLACO	32,862	37,961	43,658	49,811	56,516	63,385
<b>HIDALGO</b>		<b>TOTAL</b>	<b>774,496</b>	<b>986,546</b>	<b>1,223,838</b>	<b>1,480,407</b>	<b>1,760,388</b>	<b>2,047,472</b>
JIM HOGG	NUECES-RIO GRANDE	COUNTY-OTHER	744	796	837	870	861	829
JIM HOGG	RIO GRANDE	COUNTY-OTHER	85	91	95	99	98	94
JIM HOGG	NUECES-RIO GRANDE	HEBBRONVILLE	4,764	5,098	5,354	5,569	5,509	5,302
<b>JIM HOGG</b>		<b>TOTAL</b>	<b>5,593</b>	<b>5,985</b>	<b>6,286</b>	<b>6,538</b>	<b>6,468</b>	<b>6,225</b>
MAVERICK	NUECES	COUNTY-OTHER	48	59	69	78	86	92
MAVERICK	RIO GRANDE	COUNTY-OTHER	25,050	30,803	36,243	40,958	45,272	48,772
MAVERICK	RIO GRANDE	EAGLE PASS	26,160	28,212	30,238	32,116	33,937	35,559
MAVERICK	RIO GRANDE	EL INDIO WSC	6,994	8,855	10,615	12,140	13,536	14,668
<b>MAVERICK</b>		<b>TOTAL</b>	<b>58,252</b>	<b>67,929</b>	<b>77,165</b>	<b>85,292</b>	<b>92,831</b>	<b>99,091</b>
STARR	NUECES-RIO GRANDE	COUNTY-OTHER	1,470	1,846	2,234	2,624	3,009	3,378
STARR	RIO GRANDE	COUNTY-OTHER	36,356	45,658	55,237	64,893	74,409	83,541
STARR	RIO GRANDE	LA GRULLA	1,640	1,746	1,862	1,985	2,116	2,249
STARR	RIO GRANDE	RIO GRANDE CITY	14,982	16,674	18,447	20,259	22,090	23,878
STARR	RIO GRANDE	RIO WSC	2,942	3,868	4,821	5,782	6,729	7,638
STARR	RIO GRANDE	ROMA CITY	11,989	13,791	15,661	17,559	19,449	21,277
<b>STARR</b>		<b>TOTAL</b>	<b>69,379</b>	<b>83,583</b>	<b>98,262</b>	<b>113,102</b>	<b>127,802</b>	<b>141,961</b>
WEBB	NUECES	COUNTY-OTHER	751	873	1,010	1,159	1,323	1,496
WEBB	NUECES-RIO GRANDE	COUNTY-OTHER	1,123	1,306	1,510	1,735	1,981	2,241
WEBB	RIO GRANDE	COUNTY-OTHER	5,777	6,716	7,767	8,923	10,187	11,522
WEBB	RIO GRANDE	EL CENIZO	5,929	8,729	11,865	15,315	19,085	23,068
WEBB	RIO GRANDE	LAREDO	234,423	302,377	378,468	462,176	553,670	650,317
WEBB	RIO GRANDE	RIO BRAVO	8,318	11,566	15,203	19,205	23,579	28,199
WEBB	RIO GRANDE	WEBB COUNTY WATER UTILITY	1,326	1,884	2,509	3,197	3,949	4,743
<b>WEBB</b>		<b>TOTAL</b>	<b>257,647</b>	<b>333,451</b>	<b>418,332</b>	<b>511,710</b>	<b>613,774</b>	<b>721,586</b>
WILLACY	NUECES-RIO GRANDE	COUNTY-OTHER	385	385	385	385	385	384
WILLACY	NUECES-RIO GRANDE	LYFORD	2,335	2,512	2,684	2,839	2,972	3,076
WILLACY	NUECES-RIO GRANDE	NORTH ALAMO WSC	7,187	8,649	9,981	11,052	11,781	12,141
WILLACY	NUECES-RIO GRANDE	RAYMONDVILLE	10,071	10,402	10,704	10,947	11,112	11,194
WILLACY	NUECES-RIO GRANDE	SAN PERLITA	747	812	871	919	952	968
WILLACY	NUECES-RIO GRANDE	SEBASTIAN MUD	2,038	2,452	2,830	3,134	3,340	3,442
<b>WILLACY</b>		<b>TOTAL</b>	<b>22,763</b>	<b>25,212</b>	<b>27,455</b>	<b>29,276</b>	<b>30,542</b>	<b>31,205</b>
ZAPATA	NUECES-RIO GRANDE	COUNTY-OTHER	9,169	11,361	13,559	15,630	17,498	18,877
ZAPATA	NUECES-RIO GRANDE	ZAPATA	4,856	4,856	4,856	4,856	4,856	4,856
<b>ZAPATA</b>		<b>TOTAL</b>	<b>14,025</b>	<b>16,217</b>	<b>18,415</b>	<b>20,486</b>	<b>22,354</b>	<b>23,733</b>
<b>REGION M TOTAL</b>			<b>1,626,917</b>	<b>2,029,620</b>	<b>2,469,425</b>	<b>2,935,343</b>	<b>3,431,766</b>	<b>3,933,784</b>

Water Demand Projections for Wholesale Water Providers									
WHOLESALE WATER PROVIDERS	COUNTY	RIVER BASIN	DEMAND						
			2010	2020	2030	2040	2050	2060	
<b>BROWNSVILLE IRRIGATION &amp; DRAINAGE DISTRICT</b>									
BROWNSVILLE	CAMERON	NUECES-RIO GRANDE	4,466	4,432	4,432	4,432	4,432	4,432	4,432
BROWNSVILLE	CAMERON	RIO GRANDE	34	34	34	34	34	34	34
EL JARDIN	CAMERON	NUECES-RIO GRANDE	1,590	1,590	1,590	1,590	1,590	1,590	1,590
EL JARDIN	CAMERON	RIO GRANDE	10	10	10	10	10	10	10
COUNTY-OTHER	CAMERON	RIO GRANDE	5	5	5	5	5	5	5
<b>TOTAL</b>			<b>6,105</b>	<b>6,071</b>	<b>6,071</b>	<b>6,071</b>	<b>6,071</b>	<b>6,071</b>	<b>6,071</b>
<b>CAMERON COUNTY WCID #2</b>									
EAST RIO HONDO WSC	CAMERON	NUECES-RIO GRANDE	2,826	2,826	2,826	2,826	2,826	2,826	2,826
MANUFACTURING	CAMERON	NUECES-RIO GRANDE	2,400	2,400	2,400	2,400	2,400	2,400	2,400
RIO HONDO	CAMERON	NUECES-RIO GRANDE	890	890	890	890	890	890	890
SAN BENITO	CAMERON	NUECES-RIO GRANDE	7,032	7,032	7,032	7,032	7,032	7,032	7,032
COUNTY-OTHER	CAMERON	NUECES-RIO GRANDE	2,050	2,050	2,050	2,050	2,050	2,050	2,050
<b>TOTAL</b>			<b>15,198</b>	<b>15,198</b>	<b>15,198</b>	<b>15,198</b>	<b>15,198</b>	<b>15,198</b>	<b>15,198</b>
<b>DELTA LAKE MUNICIPAL AUTHORITY</b>									
LYFORD	WILLACY	NUECES-RIO GRANDE	980	980	980	980	980	980	980
NORTH ALAMO WSC	HIDALGO	NUECES-RIO GRANDE	300	300	300	300	300	300	300
NORTH ALAMO WSC	WILLACY	NUECES-RIO GRANDE	300	300	300	300	300	300	300
RAYMONDVILLE	WILLACY	NUECES-RIO GRANDE	5,670	5,670	5,670	5,670	5,670	5,670	5,670
COUNTY-OTHER	HIDALGO	NUECES-RIO GRANDE	950	950	950	950	950	950	950
<b>TOTAL</b>			<b>8,200</b>	<b>8,200</b>	<b>8,200</b>	<b>8,200</b>	<b>8,200</b>	<b>8,200</b>	<b>8,200</b>
<b>DONNA IRRIGATION DISTRICT HIDALGO COUNTY #1</b>									
DONNA	HIDALGO	NUECES-RIO GRANDE	4,190	4,190	4,190	4,190	4,190	4,190	4,190
NORTH ALAMO WSC	HIDALGO	NUECES-RIO GRANDE	1,345	1,345	1,345	1,345	1,345	1,345	1,345
NORTH ALAMO WSC	WILLACY	NUECES-RIO GRANDE	1,345	1,345	1,345	1,345	1,345	1,345	1,345
<b>TOTAL</b>			<b>6,880</b>	<b>6,880</b>	<b>6,880</b>	<b>6,880</b>	<b>6,880</b>	<b>6,880</b>	<b>6,880</b>

<b>EAGLE PASS CITY OF</b>									
EAGLE PASS	MAVERICK	RIO GRANDE	6,454	6,140	5,852	5,599	5,372	5,177	
EL INDIO WSC	MAVERICK	RIO GRANDE	1,253	1,567	1,855	2,108	2,335	2,530	
<b>TOTAL</b>				<b>7,707</b>	<b>7,707</b>	<b>7,707</b>	<b>7,707</b>	<b>7,707</b>	
<b>HARLINGEN IRRIGATION DISTRICT</b>									
PALM VALLEY	CAMERON	NUECES-RIO GRANDE	331	331	331	331	331	331	
PALM VALLEY ESTATES UD	CAMERON	NUECES-RIO GRANDE	81	94	104	112	119	125	
COUNTY-OTHER	CAMERON	NUECES-RIO GRANDE	4,692	4,692	4,692	4,692	4,692	4,692	
<b>TOTAL</b>				<b>5,104</b>	<b>5,117</b>	<b>5,127</b>	<b>5,135</b>	<b>5,142</b>	
<b>HARLINGEN WATER WORKS SYSTEM</b>									
HARLINGEN	CAMERON	NUECES-RIO GRANDE	16,620	16,620	16,620	16,620	16,620	16,620	
COMBES	CAMERON	NUECES-RIO GRANDE	430	430	430	430	430	430	
EAST RIO HONDO WSC	CAMERON	NUECES-RIO GRANDE	221	221	221	221	221	221	
MILITARY HIGHWAY WSC	CAMERON	NUECES-RIO GRANDE	484	484	484	484	484	484	
MILITARY HIGHWAY WSC	CAMERON	RIO GRANDE	484	484	484	484	484	484	
MILITARY HIGHWAY WSC	HIDALGO	NUECES-RIO GRANDE	1	1	1	1	1	1	
MILITARY HIGHWAY WSC	HIDALGO	RIO GRANDE	1	1	1	1	1	1	
PALM VALLEY	CAMERON	NUECES-RIO GRANDE	413	413	413	413	413	413	
PRIMERA	CAMERON	NUECES-RIO GRANDE	584	584	584	584	584	584	
<b>TOTAL</b>				<b>19,238</b>	<b>19,238</b>	<b>19,238</b>	<b>19,238</b>	<b>19,238</b>	
<b>HIDALGO COUNTY IRRIGATION DISTRICT #6</b>									
MANUFACTURING	HIDALGO	NUECES-RIO GRANDE	2,475	2,475	2,475	2,475	2,475	2,475	
MANUFACTURING	HIDALGO	NUECES-RIO GRANDE	3,466	3,466	3,466	3,466	3,466	3,466	
COUNTY-OTHER	HIDALGO	NUECES-RIO GRANDE	2,232	2,232	2,232	2,232	2,232	2,232	
COUNTY-OTHER	HIDALGO	RIO GRANDE	118	118	118	118	118	118	
<b>TOTAL</b>				<b>8,291</b>	<b>8,291</b>	<b>8,291</b>	<b>8,291</b>	<b>8,291</b>	
<b>HIDALGO COUNTY WCID #1</b>									
NORTH ALAMO WSC	HIDALGO	NUECES-RIO GRANDE	203	203	203	203	203	203	
NORTH ALAMO WSC	WILLACY	NUECES-RIO GRANDE	203	203	203	203	203	203	
SHARYLAND WSC	HIDALGO	NUECES-RIO GRANDE	406	406	406	406	406	406	
COUNTY-OTHER	HIDALGO	NUECES-RIO GRANDE	625	625	625	625	625	625	
<b>TOTAL</b>				<b>1,437</b>	<b>1,437</b>	<b>1,437</b>	<b>1,437</b>	<b>1,437</b>	

<b>HIDALGO COUNTY WCID #16</b>									
LA JOYA	HIDALGO	NUECES-RIO GRANDE	7	7	7	7	7	7	7
LA JOYA	HIDALGO	RIO GRANDE	6	6	6	6	6	6	6
COUNTY-OTHER	HIDALGO	RIO GRANDE	517	517	517	517	517	517	517
COUNTY-OTHER	HIDALGO	NUECES-RIO GRANDE	517	517	517	517	517	517	517
<b>TOTAL</b>			<b>1,047</b>	<b>1,047</b>	<b>1,047</b>	<b>1,047</b>	<b>1,047</b>	<b>1,047</b>	<b>1,047</b>
<b>HIDALGO COUNTY WCID #2</b>									
ALAMO	HIDALGO	NUECES-RIO GRANDE	1,804	1,804	1,804	1,804	1,804	1,804	1,804
MCALLEN	HIDALGO	NUECES-RIO GRANDE	3,820	3,820	3,820	3,820	3,820	3,820	3,820
MCALLEN	HIDALGO	RIO GRANDE	3,820	3,820	3,820	3,820	3,820	3,820	3,820
PHARR	HIDALGO	NUECES-RIO GRANDE	5,743	5,743	5,743	5,743	5,743	5,743	5,743
SAN JUAN	HIDALGO	NUECES-RIO GRANDE	2,707	2,707	2,707	2,707	2,707	2,707	2,707
COUNTY-OTHER	HIDALGO	RIO GRANDE	1,175	1,175	1,175	1,175	1,175	1,175	1,175
COUNTY-OTHER	HIDALGO	NUECES-RIO GRANDE	1,175	1,175	1,175	1,175	1,175	1,175	1,175
NORTH ALAMO WSC	HIDALGO	NUECES-RIO GRANDE	329	329	329	329	329	329	329
NORTH ALAMO WSC	WILLACY	NUECES-RIO GRANDE	328	328	328	328	328	328	328
COUNTY-OTHER	CAMERON	NUECES-RIO GRANDE	3,766	3,766	3,766	3,766	3,766	3,766	3,766
<b>TOTAL</b>			<b>24,667</b>	<b>24,667</b>	<b>24,667</b>	<b>24,667</b>	<b>24,667</b>	<b>24,667</b>	<b>24,667</b>
<b>HIDALGO COUNTY WCID #3</b>									
MCALLEN	HIDALGO	NUECES-RIO GRANDE	6,990	6,990	6,990	6,990	6,990	6,990	6,990
MCALLEN	HIDALGO	RIO GRANDE	6,990	6,990	6,990	6,990	6,990	6,990	6,990
<b>TOTAL</b>			<b>13,980</b>	<b>13,980</b>	<b>13,980</b>	<b>13,980</b>	<b>13,980</b>	<b>13,980</b>	<b>13,980</b>
<b>HIDALGO-CAMERON WCID #9</b>									
EDCOUCH	HIDALGO	NUECES-RIO GRANDE	1,340	1,340	1,340	1,340	1,340	1,340	1,340
ELSA	HIDALGO	NUECES-RIO GRANDE	1,840	1,840	1,840	1,840	1,840	1,840	1,840
LA VILLA	HIDALGO	NUECES-RIO GRANDE	500	500	500	500	500	500	500
MERCEDES	HIDALGO	NUECES-RIO GRANDE	2,580	2,580	2,580	2,580	2,580	2,580	2,580
WESLACO	HIDALGO	NUECES-RIO GRANDE	5,240	5,240	5,240	5,240	5,240	5,240	5,240
<b>TOTAL</b>			<b>11,500</b>	<b>11,500</b>	<b>11,500</b>	<b>11,500</b>	<b>11,500</b>	<b>11,500</b>	<b>11,500</b>

<b>LA FERIA WCID #3</b>									
	LA FERIA	CAMERON	NUECES-RIO GRANDE	1,800	1,800	1,800	1,800	1,800	1,800
	SANTA ROSA	CAMERON	NUECES-RIO GRANDE	900	900	900	900	900	900
	SEBASTIAN MUD	WILLACY	NUECES-RIO GRANDE	300	300	300	300	300	300
	LA FERIA	CAMERON	NUECES-RIO GRANDE	1,852	1,852	1,852	1,852	1,852	1,852
<b>TOTAL</b>				<b>4,852</b>	<b>4,852</b>	<b>4,852</b>	<b>4,852</b>	<b>4,852</b>	<b>4,852</b>
<b>LA JOYA WSC</b>									
	PALMVIEW	HIDALGO	NUECES-RIO GRANDE	869	1,199	1,570	1,967	1,967	1,967
	SULLIVAN CITY	HIDALGO	RIO GRANDE	685	858	1,029	1,029	1,029	1,029
<b>TOTAL</b>				<b>1,554</b>	<b>2,057</b>	<b>2,599</b>	<b>2,996</b>	<b>2,996</b>	<b>2,996</b>
<b>LAGUNA MADRE WD</b>									
	LAGUNA MADRE WD	CAMERON	NUECES-RIO GRANDE	3,948	3,948	3,948	3,948	3,948	3,948
	LAGUNA VISTA	CAMERON	NUECES-RIO GRANDE	1,022	1,022	1,022	1,022	1,022	1,022
	PORT ISABEL	CAMERON	NUECES-RIO GRANDE	756	756	756	756	756	756
	SOUTH PADRE ISLAND	CAMERON	NUECES-RIO GRANDE	1,754	1,754	1,754	1,754	1,754	1,754
<b>TOTAL</b>				<b>7,480</b>	<b>7,480</b>	<b>7,480</b>	<b>7,480</b>	<b>7,480</b>	<b>7,480</b>
<b>MCALLEN CITY OF</b>									
	MCALLEN	HIDALGO	NUECES-RIO GRANDE	32,424	32,424	32,424	32,424	32,424	32,424
	EDINBURG	HIDALGO	NUECES-RIO GRANDE	1,120	1,120	1,120	1,120	1,120	1,120
	MCALLEN	HIDALGO	RIO GRANDE	4	4	4	4	4	4
<b>TOTAL</b>				<b>33,548</b>	<b>33,548</b>	<b>33,548</b>	<b>33,548</b>	<b>33,548</b>	<b>33,548</b>
<b>NORTH ALAMO WSC</b>									
	NORTH ALAMO WSC	HIDALGO	NUECES-RIO GRANDE	20,658	20,785	20,899	21,007	21,117	21,219
	NORTH ALAMO WSC	WILLACY	NUECES-RIO GRANDE	1,296	1,169	1,055	947	837	741
	COUNTY-OTHER	HIDALGO	RIO GRANDE	264	264	264	264	264	264
<b>TOTAL</b>				<b>22,218</b>	<b>22,218</b>	<b>22,218</b>	<b>22,218</b>	<b>22,218</b>	<b>22,224</b>
<b>MILITARY HIGHWAY WSC</b>									
	LOS INDIOS	CAMERON	NUECES-RIO GRANDE	230	271	311	354	396	439
	MILITARY HIGHWAY WSC	CAMERON	NUECES-RIO GRANDE	1,455	1,610	1,597	1,610	1,561	1,518
	MILITARY HIGHWAY WSC	CAMERON	RIO GRANDE	21	25	29	33	31	29
	MILITARY HIGHWAY WSC	HIDALGO	NUECES-RIO GRANDE	1,325	1,382	1,309	1,200	1,128	1,063
	MILITARY HIGHWAY WSC	HIDALGO	RIO GRANDE	13	15	17	20	19	17
	PROGRESO	HIDALGO	NUECES-RIO GRANDE	576	717	867	1,037	1,234	1,436
<b>TOTAL</b>				<b>3,620</b>	<b>4,020</b>	<b>4,130</b>	<b>4,254</b>	<b>4,369</b>	<b>4,502</b>

<b>SHARYLAND WSC</b>									
	ALTON	HIDALGO	NUECES-RIO GRANDE	3,346	4,153	2,615	2,637	2,653	2,666
	EDINBURG	HIDALGO	NUECES-RIO GRANDE	1,120	1,120	1,120	1,120	1,120	1,120
	PALMHURST	HIDALGO	NUECES-RIO GRANDE	1,157	1,789	2,706	2,967	3,170	3,324
	SHARYLAND WSC	HIDALGO	NUECES-RIO GRANDE	6,517	5,077	5,698	5,416	5,196	5,030
<b>TOTAL</b>				<b>12,140</b>	<b>12,139</b>	<b>12,139</b>	<b>12,140</b>	<b>12,139</b>	<b>12,140</b>
<b>SOUTHMOST REGIONAL WATER AUTHORITY</b>									
	BROWNSVILLE	CAMERON	NUECES-RIO GRANDE	3,903	3,903	3,903	3,903	3,903	3,903
	BROWNSVILLE	CAMERON	RIO GRANDE	3,902	3,902	3,902	3,902	3,902	3,902
	INDIAN LAKE	CAMERON	NUECES-RIO GRANDE	16	16	16	16	16	16
	LOS FRESNOS	CAMERON	NUECES-RIO GRANDE	1,915	1,915	1,915	1,915	1,915	1,915
	VALLEY MUD #2	CAMERON	NUECES-RIO GRANDE	1,054	1,054	1,054	1,054	1,054	1,054
	VALLEY MUD #2	CAMERON	RIO GRANDE	1,054	1,054	1,054	1,054	1,054	1,054
<b>TOTAL</b>				<b>11,844</b>	<b>11,844</b>	<b>11,844</b>	<b>11,844</b>	<b>11,844</b>	<b>11,844</b>
<b>UNITED IRRIGATION DISTRICT</b>									
	MCALLEN	HIDALGO	NUECES-RIO GRANDE	5,625	5,625	5,625	5,625	5,625	5,625
	MCALLEN	HIDALGO	RIO GRANDE	5,625	5,625	5,625	5,625	5,625	5,625
	MISSION	HIDALGO	NUECES-RIO GRANDE	7,175	7,175	7,175	7,175	7,175	7,175
	SHARYLAND WSC	HIDALGO	NUECES-RIO GRANDE	5,584	5,584	5,584	5,584	5,584	5,584
<b>TOTAL</b>				<b>24,009</b>	<b>24,009</b>	<b>24,009</b>	<b>24,009</b>	<b>24,009</b>	<b>24,009</b>
<b>VALLEY MUD #2</b>									
	RANCHO VIEJO	CAMERON	NUECES-RIO GRANDE	373	496	627	755	888	1,015
	COMBES	CAMERON	NUECES-RIO GRANDE	1,009	886	755	627	494	367
<b>TOTAL</b>				<b>1,382</b>	<b>1,382</b>	<b>1,382</b>	<b>1,382</b>	<b>1,382</b>	<b>1,382</b>
<b>WEBB COUNTY WATER UTILITY</b>									
	EL CENIZO	WEBB	RIO GRANDE	880	910	927	938	946	952
	RIO BRAVO	WEBB	RIO GRANDE	1,234	1,205	1,188	1,177	1,169	1,164
	WEBB COUNTY WATER UTILITY	WEBB	RIO GRANDE	197	196	196	196	196	196
<b>TOTAL</b>				<b>2,311</b>	<b>2,311</b>	<b>2,311</b>	<b>2,311</b>	<b>2,311</b>	<b>2,312</b>
<b>REGION M TOTAL</b>				<b>254,432</b>	<b>255,313</b>	<b>255,975</b>	<b>256,505</b>	<b>256,626</b>	<b>256,773</b>

2010 Regional Water Plan								
Municipal Water Demand Projections for 2010 - 2060 (in acft)								
Region M								
Region	WUG Name	County Name	D2010	D2020	D2030	D2040	D2050	D2060
M	BROWNSVILLE	CAMERON	45,312	54,105	62,990	72,260	81,481	90,584
M	COMBES	CAMERON	208	229	256	281	309	341
M	COUNTY-OTHER	CAMERON	6,970	7,812	8,709	9,572	10,485	11,424
M	EAST RIO HONDO WSC	CAMERON	2408	3,107	3,862	4,555	5,323	6,052
M	EL JARDIN	CAMERON	1,910	2,332	2,771	3,216	3,656	4,095
M	HARLINGEN	CAMERON	11,795	13,306	14,814	16,364	17,998	19,662
M	INDIAN LAKE	CAMERON	49	57	66	76	85	95
M	LA FERIA	CAMERON	855	1,031	1,214	1,403	1,587	1,777
M	LAGUNA MADRE WD	CAMERON	2,310	3,386	4,516	5,622	6,744	7,812
M	LAGUNA VISTA	CAMERON	329	399	476	554	633	713
M	LOS FRESNOS	CAMERON	767	1,008	1,247	1,490	1,745	1,988
M	LOS INDIOS	CAMERON	230	271	311	354	396	439
M	MILITARY HIGHWAY WSC	CAMERON	1,486	1,780	2,066	2,378	2,683	2,993
M	OLMITO WSC	CAMERON	952	1,314	1,691	2,060	2,444	2,809
M	PALM VALLEY	CAMERON	412	407	400	393	389	387
M	PALM VALLEY ESTATES UD	CAMERON	85	108	132	155	180	203
M	PORT ISABEL	CAMERON	2,645	2,846	3,052	3,254	3,470	3,681
M	PRIMERA	CAMERON	609	732	856	989	1,121	1,255
M	RANCHO VIEJO	CAMERON	320	311	305	297	295	292
M	RIO HONDO	CAMERON	429	459	490	520	556	593
M	SAN BENITO	CAMERON	4,916	5,484	6,050	6,630	7,241	7,863
M	SANTA ROSA	CAMERON	331	376	429	478	531	588
M	SOUTH PADRE ISLAND	CAMERON	2,504	3,136	3,789	4,443	5,095	5,722
M	VALLEY MUD #2	CAMERON	858	854	850	846	843	843
		<b>CAMERON Total</b>	<b>88,690</b>	<b>104,850</b>	<b>121,342</b>	<b>138,190</b>	<b>155,290</b>	<b>172,211</b>
M	ALAMO	HIDALGO	1,703	2,413	3,243	4,172	5,178	6,276
M	ALTON	HIDALGO	1,208	3,401	4,275	5,253	6,312	7,469
M	COUNTY-OTHER	HIDALGO	7,833	9,886	13,072	16,626	20,536	24,981
M	DONNA	HIDALGO	2,101	2,537	2,904	3,316	3,761	4,245
M	EDCOUCH	HIDALGO	460	562	642	731	828	934
M	EDINBURG	HIDALGO	6,460	9,590	12,368	15,475	18,830	22,487
M	ELSA	HIDALGO	1,063	1,200	1,285	1,380	1,482	1,592
M	HIDALGO	HIDALGO	730	1,164	1,620	2,128	2,680	3,281
M	HIDALGO COUNTY MUD #1	HIDALGO	1,116	1,733	2,454	3,261	4,135	5,089

M	LA JOYA	HIDALGO	359	468	562	665	779	899
M	LA VILLA	HIDALGO	240	250	253	255	258	262
M	MCALLEN	HIDALGO	24,436	30,372	36,292	42,916	50,074	57,886
M	MERCEDES	HIDALGO	1,835	2,120	2,302	2,505	2,723	2,961
M	MILITARY HIGHWAY WSC	HIDALGO	1,195	1,405	1,649	1,923	2,220	2,544
M	MISSION	HIDALGO	7,579	11,408	14,776	18,540	22,607	27,037
M	NORTH ALAMO WSC	HIDALGO	8,706	12,317	16,535	21,261	26,374	31,959
M	PALMHURST	HIDALGO	622	1,168	1,805	2,519	3,292	4,135
M	PALMVIEW	HIDALGO	589	897	1,258	1,661	2,098	2,575
M	PENITAS	HIDALGO	149	161	168	176	184	193
M	PHARR	HIDALGO	6,899	9,754	12,220	14,974	17,948	21,190
M	PROGRESO	HIDALGO	456	597	762	946	1,146	1,363
M	SAN JUAN	HIDALGO	2,497	3,720	5,149	6,750	8,482	10,373
M	SHARYLAND WSC	HIDALGO	4,420	5,036	5,755	6,561	7,432	8,384
M	SULLIVAN CITY	HIDALGO	403	557	737	939	1,158	1,396
M	WESLACO	HIDALGO	4,978	6,074	7,016	8,069	9,206	10,445
		<b>HIDALGO Total</b>	<b>88,037</b>	<b>118,790</b>	<b>149,102</b>	<b>183,002</b>	<b>219,723</b>	<b>259,956</b>
M	COUNTY-OTHER	JIM HOGG	147	153	159	164	167	165
M	HEBBRONVILLE (CDP)	JIM HOGG	705	747	799	840	873	864
		<b>JIM HOGG Total</b>	<b>852</b>	<b>900</b>	<b>958</b>	<b>1,004</b>	<b>1,040</b>	<b>1,029</b>
M	COUNTY-OTHER	MAVERICK	2,223	2,727	3,249	3,742	4,183	4,573
M	EAGLE PASS	MAVERICK	4,720	5,509	5,941	6,368	6,763	7,147
M	EL INDIO WSC	MAVERICK	968	1,293	1,637	1,962	2,244	2,502
		<b>MAVERICK Total</b>	<b>7,911</b>	<b>9,529</b>	<b>10,827</b>	<b>12,072</b>	<b>13,190</b>	<b>14,222</b>
M	COUNTY-OTHER	STARR	4,866	6,228	7,663	9,141	10,663	12,141
M	LA GRULLA	STARR	643	871	927	989	1,054	1,124
M	RIO GRANDE CITY	STARR	2,404	3,020	3,362	3,719	4,085	4,454
M	RIO WSC	STARR	351	498	654	815	978	1,138
M	ROMA CITY	STARR	2,413	3,008	3,460	3,930	4,406	4,881
		<b>STARR Total</b>	<b>10,677</b>	<b>13,625</b>	<b>16,066</b>	<b>18,594</b>	<b>21,186</b>	<b>23,738</b>
M	COUNTY-OTHER	WEBB	1,226	1,388	1,575	1,786	2,025	2,296
M	EL CENIZO	WEBB	417	697	1,027	1,396	1,801	2,245
M	LAREDO	WEBB	39,558	52,517	67,741	84,788	103,541	124,038
M	RIO BRAVO	WEBB	759	1,137	1,581	2,078	2,625	3,222
M	WEBB COUNTY WATER UTILITY	WEBB	158	247	350	467	594	734
		<b>WEBB Total</b>	<b>42,118</b>	<b>55,986</b>	<b>72,274</b>	<b>90,515</b>	<b>110,586</b>	<b>132,535</b>

M	COUNTY-OTHER	WILLACY	216	215	213	212	211	210
M	LYFORD	WILLACY	290	343	369	393	417	436
M	NORTH ALAMO WSC	WILLACY	613	773	930	1,073	1,188	1,267
M	RAYMONDVILLE	WILLACY	1,668	1,726	1,783	1,834	1,876	1,904
M	SAN PERLITA	WILLACY	99	109	118	127	134	139
M	SEBASTIAN MUD	WILLACY	212	267	321	371	411	438
		<b>WILLACY Total</b>	<b>3,098</b>	<b>3,433</b>	<b>3,734</b>	<b>4,010</b>	<b>4,237</b>	<b>4,394</b>
M	COUNTY-OTHER	ZAPATA	1,001	1,232	1,514	1,792	2,048	2,293
M	ZAPATA (CDP)	ZAPATA	1,050	1,050	1,050	1,050	1,050	1,050
		<b>ZAPATA Total</b>	<b>2,051</b>	<b>2,282</b>	<b>2,564</b>	<b>2,842</b>	<b>3,098</b>	<b>3,343</b>
		<b>Region M Total</b>	<b>252,043</b>	<b>414,245</b>	<b>498,209</b>	<b>588,419</b>	<b>683,640</b>	<b>783,639</b>

2010 Regional Water Plan							
Manufacturing Water Demand Projections for 2010 - 2060 (in acft <sup>1</sup> )							
Region M							
Region	County Name <sup>2</sup>	D2010	D2020	D2030	D2040	D2050	D2060
M	CAMERON	4,156	4,590	4,983	5,372	5,709	6,165
M	HIDALGO	3,236	3,559	3,851	4,143	4,403	4,742
M	JIM HOGG	0	0	0	0	0	0
M	MAVERICK	64	69	73	77	80	85
M	STARR	0	0	0	0	0	0
M	WEBB	28	31	34	37	39	42
M	WILLACY	25	25	25	25	25	25
M	ZAPATA	0	0	0	0	0	0
	<b>Region M Total</b>	<b>7,509</b>	<b>8,274</b>	<b>8,966</b>	<b>9,654</b>	<b>10,256</b>	<b>11,059</b>

<sup>1</sup>) An acft is an amount of water to cover one acre with one foot of water and equals 325,851 gallons.

<sup>2</sup>) If the "(P)" is present for a county entry, then the county has been split by Regional boundaries and the data listed in the row represent only the county's water demands within the particular region, not the county's total.

<b>2011 Regional Water Plan</b>							
<b>Steam Electric Water Demand Projections for 2010 - 2060 (in acft<sup>1</sup>)</b>							
<b>Region M</b>							
<b>Region</b>	<b>County Name<sup>2)</sup></b>	<b>D2010</b>	<b>D2020</b>	<b>D2030</b>	<b>D2040</b>	<b>D2050</b>	<b>D2060</b>
M	CAMERON	1,616	1,523	1,780	2,094	2,477	2,944
M	HIDALGO	10,355	14,151	16,545	19,462	23,018	27,354
M	JIM HOGG	0	0	0	0	0	0
M	MAVERICK	0	0	0	0	0	0
M	STARR	0	0	0	0	0	0
M	WEBB	1,492	1,190	1,391	1,636	1,935	2,300
M	WILLACY	0	0	0	0	0	0
M	ZAPATA	0	0	0	0	0	0
	<b>Region M Total</b>	<b>13,463</b>	<b>16,864</b>	<b>19,716</b>	<b>23,192</b>	<b>27,430</b>	<b>32,598</b>

<sup>1)</sup> An acft is an amount of water to cover one acre with one foot of water and equals 325,851 gallons.

<sup>2)</sup> If the "(P)" is present for a county entry, then the county has been split by Regional boundaries and the data listed in the row represent only the county's water demands within the particular region, not the county's total.

<b>2010 Regional Water Plan</b>							
<b>Livestock Water Demand Projections for 2010 - 2060 (in acft<sup>1</sup>)</b>							
<b>Region M</b>							
<b>Region</b>	<b>County Name<sup>2)</sup></b>	<b>D2010</b>	<b>D2020</b>	<b>D2030</b>	<b>D2040</b>	<b>D2050</b>	<b>D2060</b>
M	CAMERON	1,103	1,103	1,103	1,103	1,103	1,103
M	HIDALGO	681	681	681	681	681	681
M	JIM HOGG	518	518	518	518	518	518
M	MAVERICK	260	260	260	260	260	260
M	STARR	1,117	1,117	1,117	1,117	1,117	1,117
M	WEBB	1,513	1,513	1,513	1,513	1,513	1,513
M	WILLACY	151	151	151	151	151	151
M	ZAPATA	474	474	474	474	474	474
	<b>Region M Total</b>	<b>5,817</b>	<b>5,817</b>	<b>5,817</b>	<b>5,817</b>	<b>5,817</b>	<b>5,817</b>

<sup>1)</sup> An acft is an amount of water to cover one acre with one foot of water and equals 325,851 gallons.

<sup>2)</sup> If the "(P)" is present for a county entry, then the county has been split by Regional boundaries and the data listed in the row represent only the county's water demands within the particular region, not the county's total.

2010 Regional Water Plan							
Irrigation Water Demand Projections for 2010 - 2060 (in acft <sup>1</sup> )							
Region M							
Region	County Name <sup>2)</sup>	D2010	D2020	D2030	D2040	D2050	D2060
M	CAMERON	367404	347771	325144	325144	325144	325144
M	HIDALGO	583,030	525,971	453,772	453,772	453,772	453,772
M	JIM HOGG	817	817	817	817	817	817
M	MAVERICK	95,040	91,693	87,863	87,863	87,863	87,863
M	STARR	31,191	30,108	29,070	29,070	29,070	29,070
M	WEBB	20,507	19,548	18,654	18,654	18,654	18,654
M	WILLACY	59,191	60,203	60,203	60,203	60,203	60,203
M	ZAPATA	6,454	6,121	5,805	5,805	5,805	5,805
	<b>Region M Total</b>	<b>1,163,634</b>	<b>1,082,232</b>	<b>981,328</b>	<b>981,328</b>	<b>981,328</b>	<b>981,328</b>

<sup>1)</sup> An acft is an amount of water to cover one acre with one foot of water and equals 325,851 gallons.

<sup>2)</sup> If the "(P)" is present for a county entry, then the county has been split by Regional boundaries and the data listed in the row represent only the county's water demands within the particular region, not the county's total.

2010 Regional Water Plan							
Mining Water Demand Projections for 2010 - 2060 (in acft <sup>1</sup> )							
Region M							
Region	County Name <sup>2)</sup>	D2010	D2020	D2030	D2040	D2050	D2060
M	CAMERON	6	6	6	6	6	6
M	HIDALGO	1,442	1,561	1,633	1,704	1,774	1,836
M	JIM HOGG	33	36	37	38	39	40
M	MAVERICK	156	162	166	169	172	175
M	STARR	1,315	1,355	1,373	1,390	1,407	1,426
M	WEBB	1,204	1,192	1,189	1,187	1,185	1,180
M	WILLACY	6	6	6	6	6	6
M	ZAPATA	24	23	23	23	23	23
	<b>Region M Total</b>	<b>4,186</b>	<b>4,341</b>	<b>4,433</b>	<b>4,523</b>	<b>4,612</b>	<b>4,692</b>

<sup>1)</sup> An acft is an amount of water to cover one acre with one foot of water and equals 325,851 gallons.

<sup>2)</sup> If the "(P)" is present for a county entry, then the county has been split by Regional boundaries and the data listed in the row represent only the county's water demands within the particular region, not the county's total.

<b>Texas Water Development Board</b>						
<b>2010 Regional Water Plan</b>						
<b>Regional and State Total Population Projections for 2010 - 2060</b>						
<b>REGION</b>	<b>P2010</b>	<b>P2020</b>	<b>P2030</b>	<b>P2040</b>	<b>P2050</b>	<b>P2060</b>
A - Panhandle	388,104	423,380	453,354	484,954	516,729	541,035
B - Region B	210,642	218,918	223,251	224,165	223,215	221,734
C - Region C	6,649,684	7,944,665	9,140,995	10,365,152	11,608,488	13,004,766
D - North East Texas	771,711	842,470	908,045	977,354	1,072,095	1,210,788
E - Far West Texas	863,190	1,032,970	1,175,743	1,298,436	1,420,877	1,542,824
F - Region F	618,889	656,480	682,132	700,806	714,045	724,094
G - Brazos G	1,811,226	2,121,615	2,413,413	2,705,355	2,994,701	3,277,741
H - Region H	6,020,078	6,995,442	7,986,480	8,998,002	10,132,237	11,346,082
I - East Texas	1,090,382	1,166,057	1,232,138	1,294,976	1,377,760	1,482,448
J - Plateau	135,723	158,645	178,342	190,551	198,594	205,910
K - Lower Colorado	1,412,834	1,714,282	2,008,142	2,295,627	2,580,533	2,831,937
L - South Central Texas	2,460,599	2,892,933	3,292,970	3,644,661	3,984,258	4,297,786
M - Rio Grande	1,628,278	2,030,994	2,470,814	2,936,748	3,433,188	3,935,223
N - Costal Bend	616,406	693,203	757,690	809,913	853,227	884,928
O - Llano - Estacado	489,522	518,601	537,428	548,634	550,126	548,264
P - Lavaca	49,491	51,419	52,138	51,940	51,044	49,663
<b>Texas State Total</b>	<b>25,216,759</b>	<b>29,462,074</b>	<b>33,513,075</b>	<b>37,527,274</b>	<b>41,711,117</b>	<b>46,105,223</b>

References

"U.S. GAO - Energy-Water Nexus: Many Uncertainties Remain about National and Regional Effects of Increased Biofuel Production on Water Resources." *U.S. Government Accountability Office (U.S. GAO)*. Web. 20 Jan. 2010. <<http://www.gao.gov/products/GAO-10-116>>.