



Summary of Rio Grande (M) Region

Stretching from the subtropical Gulf shores of Cameron County in the south and along the Rio Grande to the rolling, native range land of Maverick County in the northwest, the Rio Grande Regional Water Planning Area includes eight counties (Figure M.1). Its major cities include Brownsville, McAllen, Laredo, Harlingen, and Eagle Pass. Over 60 percent of the region lies within the Rio Grande Basin, with the Rio Grande being the region’s primary source of water. The largest economic sectors in the region are agriculture, trade, services, manufacturing, and hydrocarbon production. The Rio Grande, its tributaries, and an international reservoir system will remain the region’s primary source of water for the foreseeable future. The members of the Rio Grande Planning Group are listed on the last page of this summary.

Population and Water Demands

In 2010, 6 percent of the state’s total population is projected to reside in the Rio Grande Region, and between 2010 and 2060 its population is projected to increase 142 percent to 3,826,001 (Figure M.2). Its water demands, however, will increase less dramatically. By 2060, the total water demands for the region are projected to increase almost 13 percent, from 1,474,242 acre-feet to 1,661,657 acre-feet (Figure M.3). Agricultural irrigation water demand makes up the largest share of these demands in all decades but is projected to decrease 16 percent over the planning period due to urbanization, from 1,163,634 acre-feet to 981,748 acre-feet (Table M.1). Municipal water demand, however, is projected to more than double

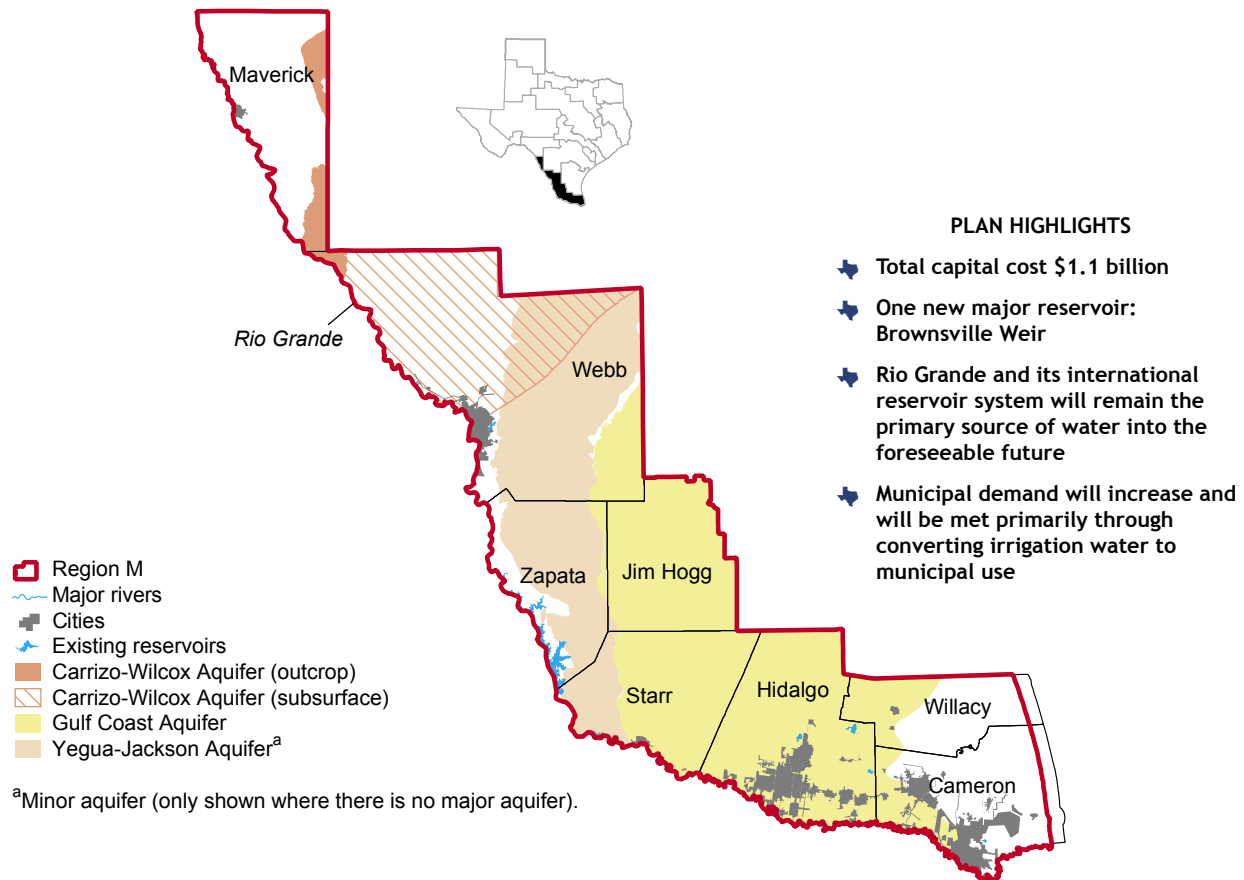


Figure M.1. Rio Grande Region.

(124 percent), increasing from 250,834 acre-feet to 560,780 acre-feet per year by 2060.

Existing Water Supplies

Surface water contributes over 92 percent of the region’s water supply. The principal surface water source is the Rio Grande, its tributaries, and two major international reservoirs, one of which occurs upstream outside of the planning area. The United States’ share of the firm yield of these reservoirs is over 1 million acre-feet; however, sedimentation will reduce that yield by 3 percent (about 32,000 acre-feet) over the planning period. About 87 percent of the surface water rights in the international reservoirs go to the lower two counties in the planning area, Cameron and Hidalgo. There are two major aquifers in the region: the Carrizo-Wilcox and Gulf Coast. Although much of the region’s groundwater is brackish, desalination may make it a reasonable supply alternative in the future. By 2060, the total surface water and groundwater supply is projected to decline 3 percent, from 1,107,563 acre-feet to approximately 1,074,942 acre-feet (Table M.2).

Needs

Although water surpluses occur for some water user groups over the planning period, the Rio Grande Planning Area faces significant water supply needs. Its surface water supplies from the Rio Grande depend on an operating system that guarantees

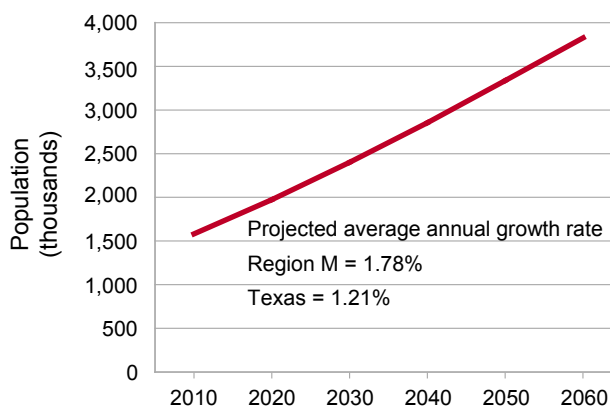


Figure M.2. Projected population for 2010-2060.

municipal and industrial users’ supplies over other categories (particularly agriculture). Thus, the total water supply volume is not accessible to all water users throughout the region. Consequently, in the event of drought, significant water needs may occur across the region (Figure M.4, Table M.3). In 2010, water needs are projected to total 436,796 acre feet, with irrigation accounting for 411,810 acre-feet (94 percent) of those needs. By 2060, the region is projected to have needs of 604,518 acre-feet. Irrigation water needs will decline to 262,663 acre-feet, constituting 43 percent of the total volume of needs. Municipal needs, however, are projected to increase to 282,954 acre-feet, or 47 percent of total needs.

Table M.1. Projected water demands for 2010-2060

Category	2010 (acre-feet)	2060 (acre-feet)	Percent change in demand 2010-2060	Percent of overall demand in 2010	Percent change in relative share of overall demand, 2010-2060
Municipal	250,834	560,780	+124	+17	+17
County-other	28,799	64,963	+126	+2	+2
Manufacturing	7,509	11,059	+47	+1	0
Mining	4,186	4,692	+12	0	0
Irrigation	1,163,634	981,748	-16	+79	-20
Steam-electric	13,463	32,598	+142	+1	+1
Livestock	5,817	5,817	0	0	0
Region	1,474,242	1,661,657	+13		

Figure M.3. Projected total water demand and existing water supplies for 2010-2060.

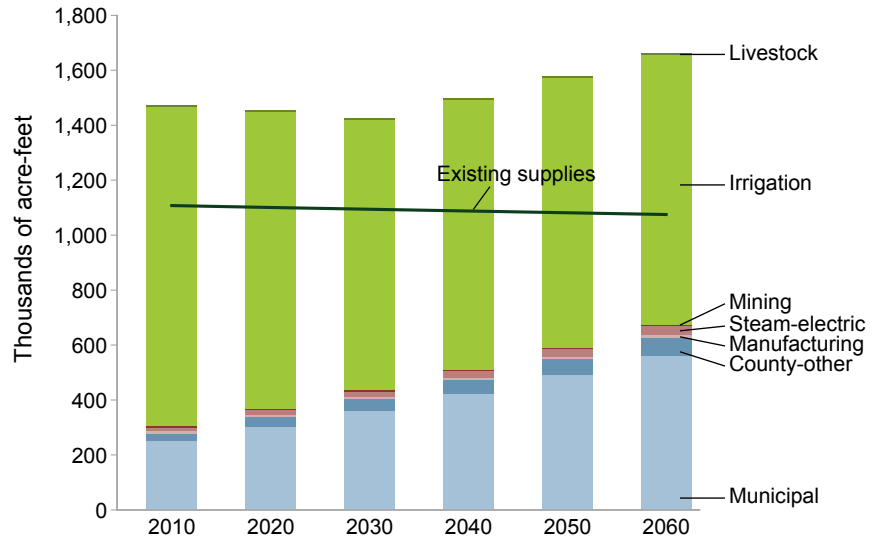
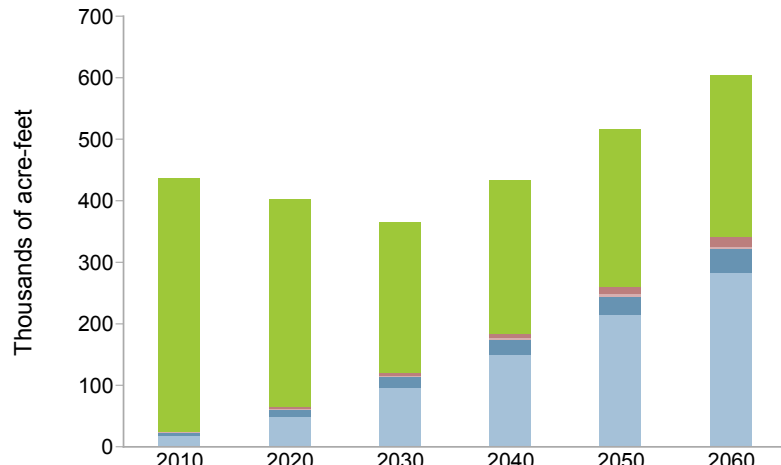


Figure M.4. Projected water needs for 2010-2060.



	2010	2020	2030	2040	2050	2060
Irrigation	411,810	337,534	243,696	250,184	256,674	262,663
Steam-electric	0	1,980	4,374	7,291	11,214	16,382
Manufacturing	1,921	2,355	2,748	3,137	3,729	4,524
County-other	5,590	10,503	16,898	23,646	30,844	37,995
Municipal	17,475	49,430	96,184	149,830	213,882	282,954

Figure M.5. Recommended water management strategy water supply volumes for 2010-2060.

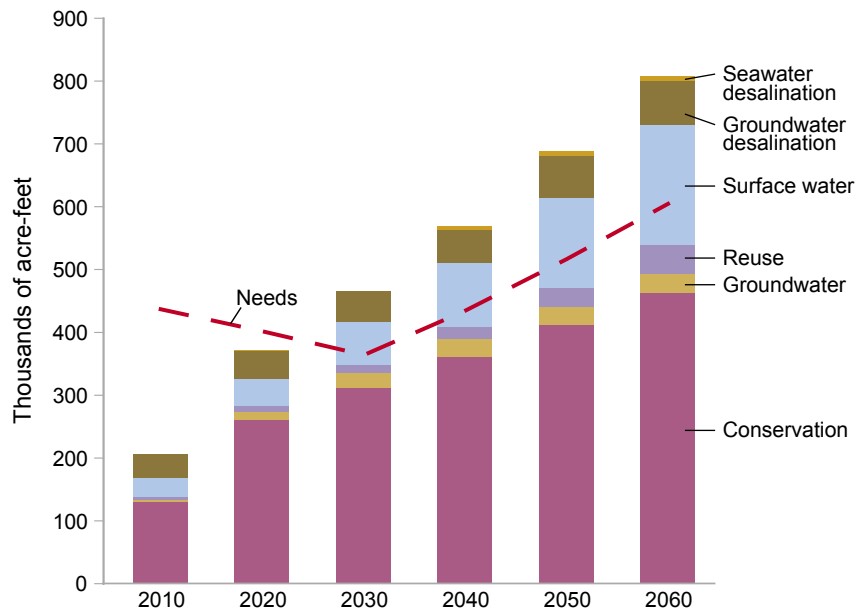


Table M.2. Existing water supplies for 2010 and 2060

Water supply source	2010 (acre-feet)	2060 (acre-feet)
Surface water		
International Amistad-Falcon Reservoir system	1,010,922	978,870
Other surface water	3,982	3,982
Surface water subtotal	1,014,904	982,852
Groundwater		
Gulf Coast Aquifer	60,646	60,042
Other aquifer	13,737	13,767
Other groundwater	5,349	5,354
Groundwater subtotal	79,732	79,163
Reuse		
Direct reuse	10,687	10,687
Other reuse	2,240	2,240
Reuse subtotal	12,927	12,927
Region total	1,107,563	1,074,942

Note: Water supply sources are listed individually if 10,000 acre-feet per year or greater in 2010. Only includes supplies that are physically and legally available to users during a drought of record.

Recommended Water Management Strategies and Cost

The Rio Grande Planning Group recommended a variety of water management strategies that would provide water to meet most future needs, including all the needs associated with municipalities. In all, the strategies would provide over 807,587 acre-feet of additional water supply by the year 2060 (Figure M.5) at a **total capital cost of \$1,086,122,427** (Appendix 2.1). Because economically feasible strategies were not identified to meet some irrigation water supply needs, **29,852 acre-feet of irrigation water supply needs are unmet in 2060.**

Conservation Recommendations

The Rio Grande Planning Group recommends regionwide implementation of municipal water conservation programs. The combined water savings is estimated to yield a savings of 24,412 acre-feet per year by 2060.

Ongoing Issues

The Rio Grande Planning Group expressed concerns about the reliability of Mexico’s inflows into the international reservoir system and the amount of water needed to “push” water rights downstream to their points of diversion and usage. The region’s supply depends on tributary inflows from Mexico, who has a recent history of accumulating water debts to the United States in violation of its treaty obligations.

Select Policy Recommendations

- Develop new technical and financial resources to combat aquatic weed infestations occurring in the Rio Grande
- Fund brackish groundwater desalination projects
- Develop water management strategies at irrigation district levels

Table M.3. Water needs (acre-feet per year) by county and type of use in years 2010 and 2060

County	Total		Municipal		County-other		Manufacturing		Steam-electric		Mining		Irrigation		Livestock	
	2010	2060	2010	2060	2010	2060	2010	2060	2010	2060	2010	2060	2010	2060	2010	2060
Cameron	146,840	179,406	9,622	71,598	—	—	1,896	3,905	—	544	—	—	135,322	103,359	—	—
Hidalgo	199,954	232,143	2,131	111,137	—	19,989	—	594	—	15,183	—	—	197,823	85,240	—	—
Jim Hogg	67	72	—	—	67	72	—	—	—	—	—	—	—	—	—	—
Maverick	36,549	35,170	—	641	67	2,442	—	—	—	—	—	—	36,482	32,087	—	—
Starr	13,898	23,437	387	3,729	4,688	12,276	—	—	—	—	—	—	8,823	7,432	—	—
Webb	12,363	102,857	5,335	95,335	197	1,403	—	—	—	655	—	—	6,831	5,464	—	—
Willacy	24,060	27,591	—	514	—	—	25	25	—	—	—	—	24,035	27,052	—	—
Zapata	3,065	3,842	—	—	571	1,813	—	—	—	—	—	—	2,494	2,029	—	—
Region	436,796	604,518	17,475	282,954	5,590	37,995	1,921	4,524	—	16,382	—	—	411,810	262,663	—	—

SELECT MAJOR WATER MANAGEMENT STRATEGIES

(Dollar amounts are rounded.)

See Appendix 2.1 for all recommended strategies and actual costs.)

- ✦ *Acquisition of Rio Grande water by contract, purchase, or urbanization would provide a total of 169,460 acre-feet per year and benefit most municipalities—Implementation by: 2010; Capital Cost: \$231 million.*
- ✦ *Brownsville Weir Reservoir Project would yield 20,643 acre-feet per year—Implementation by: 2010; Capital Cost: \$67 million.*
- ✦ *Agricultural conveyance system improvements would supply over 218,783 acre-feet per year of surface water for irrigation and would help transport Rio Grande water to its customer cities—Implementation by: 2010; Capital Cost: \$131 million.*

Rio Grande Planning Group Members and Interests Represented

Voting members during adoption of 2006 Regional Water Plan:

Glenn Jarvis (Chair), other; Jose Aranda, counties; Charles W. Browning, water utilities; John Bruciak, municipalities; Mary Lou Campbell, public; Karen Chapman, environmental; Jim Darling, river authorities; Robert E. Fulbright, agriculture; Kathleen Garrett, electric generating utilities; Roberto Gonzalez, municipalities; Sonny Hinojosa, water districts; Sonia Kaniger, water districts; James Matz, other; Donald K. McGhee, small business; Adrian Montemayor, municipalities; Ray Prewett, agriculture; Xavier Villarreal, small business; Gary Whittington, industries; John Wood, counties

Former voting members during 2001-2006 planning cycle:

Guadalupe Garza, public; Oscar Garza, counties; Jaime Gomez, electric generating utilities; Maria Eugenia Guerra, small business; Gordon Hill, water districts; Lee Kirkpatrick, other; Mercurio Martinez, counties; Jack Nelson, agriculture; Mario Garcia Rios, small business; Fernando Roman, municipalities