

# Agricultural Water Conservation **Best Management Practices**

OVERVIEW



Texas Water Development Board  
Conservation Division

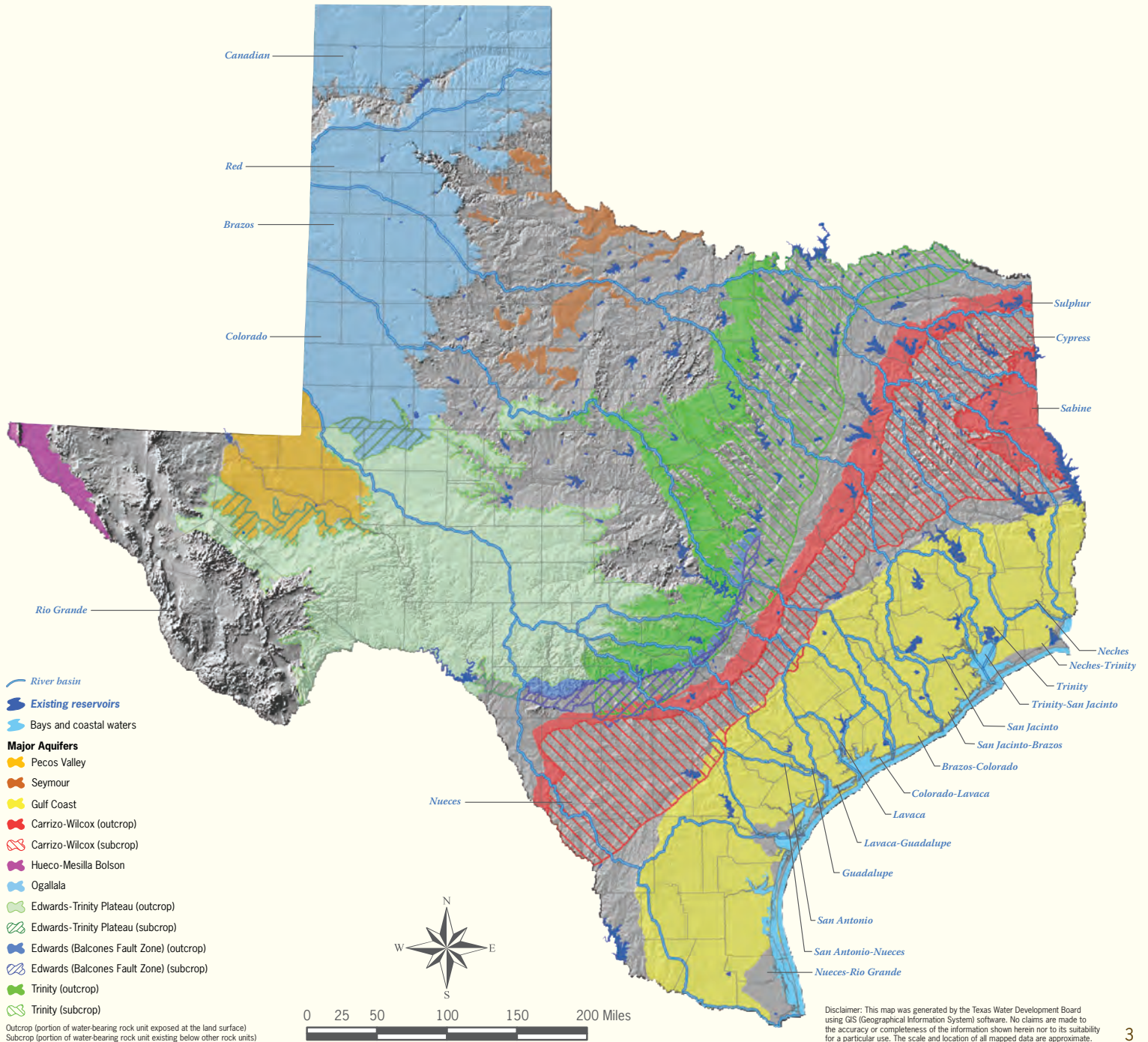
# Agriculture

has always been one of the mainstays of the Texas economy. It is, in fact, the second largest industry in the state, generating about \$85 billion a year. Along with agriculture's dedicated producers and Texas' diverse climate, one of the state's most valuable resources fuels this impressive productivity: water. Irrigated agriculture is Texas' single greatest water consumer and will continue to be so for the foreseeable future. It currently uses about 9 million acre-feet annually on over 6 million acres. Most of that water, 73 percent, is groundwater.

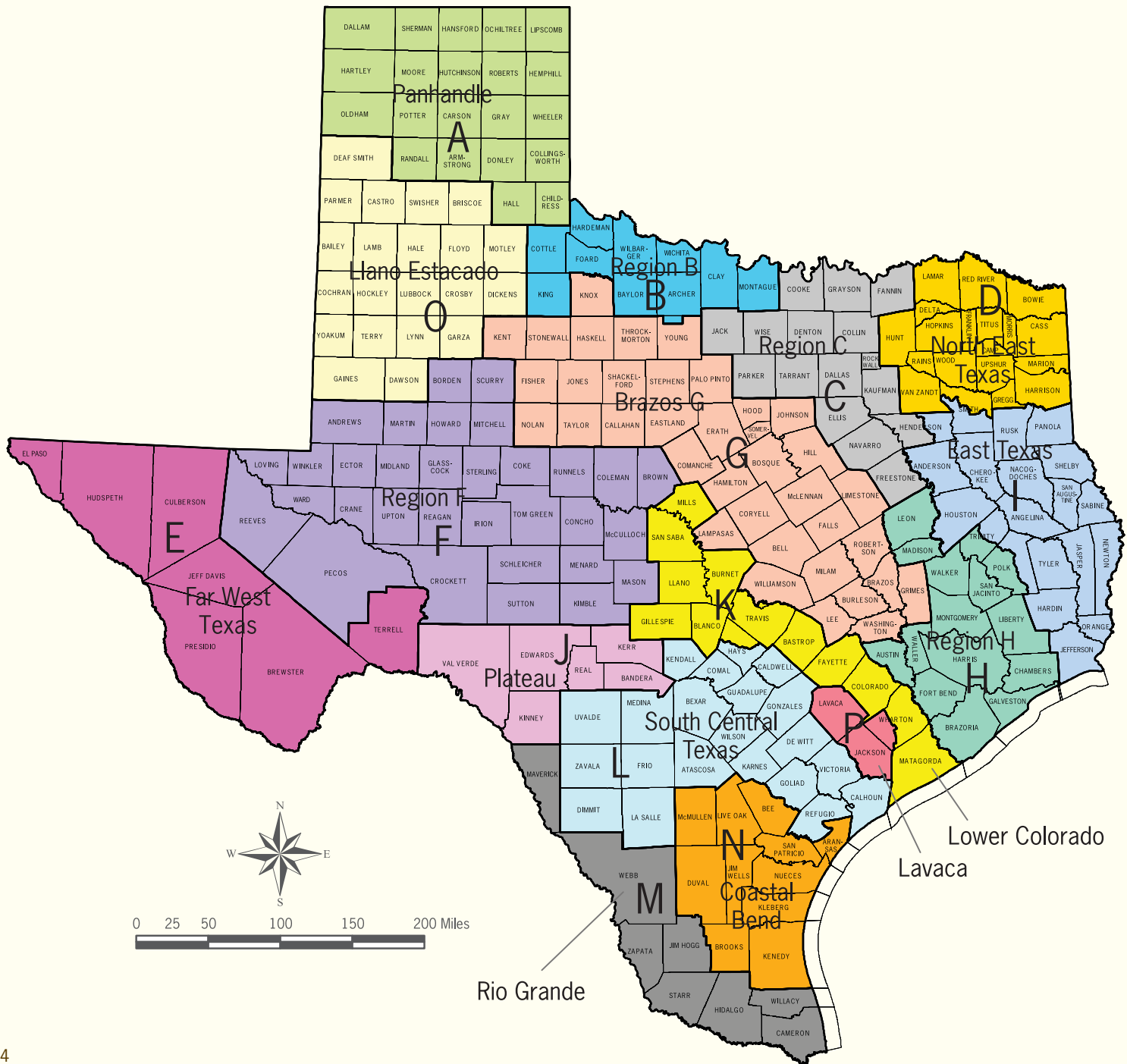
Because Texas is one of the fastest growing states in the nation, one of the challenges it faces is how to provide a dependable water supply to support this growing population and economy. By 2060, the population of Texas is projected to more than double, increasing from 23 million to about 46 million. The demand for water in that same period, however, is expected to increase more modestly, from the current 17 million to 21.7 million acre-feet per year. One of the reasons water demand is not increasing at the same rate as the population is the expanding role of water conservation. For the 2007 State Water Plan, the regional water planning groups recommended conservation strategies to help slow the pace of increasing water demand in their regions. By 2060, agricultural water conservation strategies are projected to result in a savings of 1.4 million acre-feet of water annually, a significant portion of the state's water supply.

# Major Texas Water Resources

(including existing reservoirs, river and coastal basins, and major aquifers)



# Regional Water Planning Areas

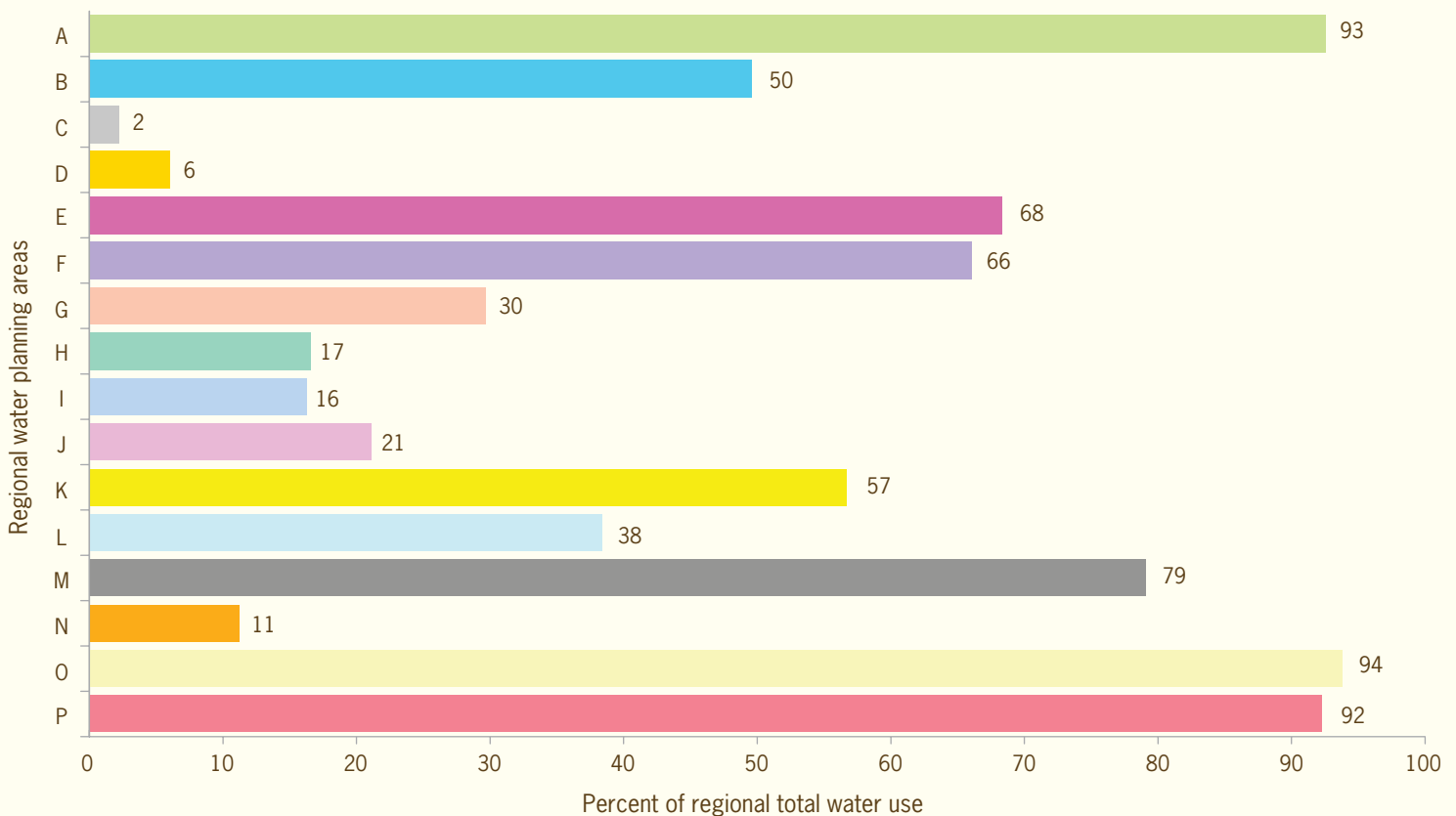


## WHAT CONSERVATION MEASURES ARE RECOMMENDED FOR AGRICULTURE?

The regional water planning groups and the Texas Water Development Board (TWDB) recognize that reducing irrigation water use is challenging for many reasons. Texas' irrigated agriculture is, for the most part, already reasonably efficient. As early as the 1970s, low-pressure center pivot irrigation in the Panhandle region was improving water use efficiency over that of the existing irrigation systems. Irrigators in some regions have also had to contend with declining aquifer levels, over-allocated surface water supplies, and aging conveyance systems. Compounding these challenges are the state's recurrent droughts.

Because most regions depend heavily on irrigation, they have a vested interest in adopting appropriate water management strategies. Regional water planning groups have advocated numerous best management practices for agricultural water conservation. Most planning groups have indicated that these practices are best undertaken by individual irrigators or irrigation/conservation districts, with technical and financial assistance from existing programs. The Water Conservation Implementation Task Force that developed the best management practices recommended voluntary implementation in accordance with regional water planning goals.

Irrigation Water Use in the Regional Planning Areas, 2005



# Agricultural Best Management Practices Selected by the Regional Water Planning Groups

Irrigation water use management	Regional water planning groups															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Irrigation scheduling																
Measurement of irrigation water use																
Crop residue management and conservation tillage																
Irrigation audit																

Land management systems	Regional water planning groups															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Furrow dikes																
Land leveling																
Contour farming																
Conversion of supplemental irrigated farm land to dry land																
Brush management																

On-farm water delivery systems	Regional water planning groups															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Lining of on-farm irrigation ditches																
Replacement of on-farm irrigation ditches and pipelines																
Low-pressure center pivot sprinkler irrigation systems																
Drip/micro-irrigation systems																
Gated and flexible pipe for field water distribution systems																
Surge flow for field water distribution systems																
Linear move sprinkler irrigation systems																

Water district delivery systems	Regional water planning groups															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Lining of district delivery systems																
Replacement of irrigation district canals and lateral canals with pipelines																

Miscellaneous systems	Regional water planning groups															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Tailwater recovery and reuse system																
Nursery production systems																



## WHAT ASSISTANCE DO GOVERNMENTAL ENTITIES PROVIDE?

In today's global agriculture, Texas irrigators must use innovative means to remain competitive while protecting the natural resources on which they depend. One of the most important first steps an irrigator can take is to become informed about what programs and assistance exist.

Governmental entities play a pivotal role in developing and implementing agricultural water conservation strategies. By facilitating irrigation management workshops, research, and field demonstrations, several agencies assist in transferring appropriate technologies to irrigators. Other agencies leverage financial and technical assistance to individual producers and groundwater conservation and/or irrigation districts for implementing agricultural water conservation best management practices. Still other agencies provide valuable educational materials.

The **Texas State Soil and Water Conservation Board** administers the Soil Water Conservation District Assistance, Water Quality Management Plan, and Brush Control programs that seek to address agricultural water conservation. Information on these programs is available online at their Web site: [www.tsswcb.state.tx.us](http://www.tsswcb.state.tx.us)



The **U.S. Department of Agriculture—Natural Resources Conservation Service** provides technical and financial support for water conservation activities in Texas through these programs: Conservation Innovation Grants, Conservation Security Program, Environmental Quality Incentives Program, Farm and Ranch Lands Protection Program, Grassland Reserve Program, Wetlands Reserve Program, and Wildlife Habitat Incentives Program. Information on these programs can be accessed at this Web site: [www.tx.nrcs.usda.gov](http://www.tx.nrcs.usda.gov)

**Texas A&M University and Texas Tech University** provide education and research on agricultural water conservation programs. The Texas AgriLife Extension Service, AgriLife Research, and Texas Water Resources Institute work together to develop, coordinate, and deliver these research and extension programs throughout the state. More information on the programs of these higher educational institutions can be accessed at the following links:

[www.depts.ttu.edu/casnr/water](http://www.depts.ttu.edu/casnr/water)

<http://agriliferesearch.tamu.edu>

<http://twri.tamu.edu>



## WHAT DOES THE TEXAS WATER DEVELOPMENT BOARD DO?

TWDB's mission is to provide leadership, planning, financial assistance, information, and education for the conservation and responsible development of water for Texas. Currently, TWDB administers agricultural loan and grant programs to provide local political subdivisions and other state agencies with financial assistance for developing and implementing agricultural water conservation programs.

TWDB has initiated several major projects to help irrigators adopt agricultural best management practices. The Agricultural Water Conservation Demonstration Initiatives are producer-led projects for the Texas Southern High Plains ([www.depts.ttu.edu/tawc](http://www.depts.ttu.edu/tawc)) and the Lower Rio Grande Valley ([www.hidcc1.org/node/6](http://www.hidcc1.org/node/6)). As part of its educational outreach, TWDB also funds the Precision Irrigation Network, other irrigation water conservation demonstrations, and the statewide Irrigation Training Project for

agricultural producers. In addition, TWDB provides financial assistance to groundwater conservation and irrigation districts to encourage the voluntary use of water-measuring meters by interested irrigators. Through these programs, a substantial number of field demonstration sites have been established throughout the state.

The growing number of conservation initiatives in Texas underscores the importance of planning for the future while providing dependable, affordable water supplies in the present. George Washington once remarked that he knew of “no pursuit in which more and important services [could] be rendered to any country than by improving its agriculture.” Over two centuries later, Texas is learning how to improve its agriculture by conserving its water.

## ADDITIONAL RESOURCES

For more information on the conservation best management practices recommended by the Water Conservation Advisory Council, visit the TWDB Web site:  
<http://savetexaswater.org>

A copy of report 362 can be downloaded from:  
<http://www.twdb.texas.gov/conservation/municipal/plans/doc/WCIT-FBMPGuide.pdf>

For more information about any of the nine historical State Water Plans dating back to 1961, visit:  
[www.twdb.texas.gov/waterplanning/swp](http://www.twdb.texas.gov/waterplanning/swp)

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The maps of Texas' water resources and regional water planning groups are available from the TWDB Web site:  
[www.twdb.texas.gov/mapping/index.asp](http://www.twdb.texas.gov/mapping/index.asp)

For more information please contact the TWDB Agricultural Water Conservation Team at 512-463-7955 or visit our Web site:  
[www.twdb.texas.gov/conservation/agriculture](http://www.twdb.texas.gov/conservation/agriculture)

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