



Chapter 1

Highlights of the 2007 State Water Plan





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The regional water plans include a wealth of information. Some of the conclusions from this information include:

Population in Texas is expected to more than double between the years 2000 and 2060, growing from about 21 million to about 46 million.

The demand for water in Texas is expected to increase by 27 percent, from almost 17 million acre-feet of water in 2000 to 21.6 million acre-feet in 2060.

Existing water supplies—the amount of water that can be produced with current permits, current contracts, and existing infrastructure during drought—are projected to decrease about 18 percent, from about 17.9 million acre-feet in 2010 to about 14.6 million acre-feet in 2060. This decrease is primarily due to the accumulation of sediments in reservoirs and the depletion of aquifers.

Texas is going to need an additional 8.8 million acre-feet of water by 2060 if new water supplies are not developed.

The planning groups identified about 4,500 water management strategies and projects to generate an additional 9.0 million acre-feet per year of water supplies for Texas.

The planning groups also estimated that the capital costs to design, construct, or implement the 4,500 water management strategies and projects would cost about \$30.7 billion.

If Texas does not implement the state water plan, water shortages during drought could cost businesses and workers in the state about \$9.1 billion per year by 2010 and \$98.4 billion per year by 2060.

If Texas does not implement the state water plan, about 85 percent of the state's projected population will not have enough water by 2060 in drought conditions.

The state water plan shall provide for the orderly development, management, and conservation of water resources and preparation for and response to drought conditions, in order that sufficient water will be available at a reasonable cost to ensure public health, safety, and welfare; further economic development; and protect the agricultural and natural resources of the entire state. Texas Water Code, §16.051

Water is the lifeblood of Texas. It sustains our cities and rural communities, our farms and ranches, our businesses and industries, and our natural environment. Water is what will support the economic growth of the state. However, Texas' water resources can be unpredictable, especially in droughts, and there is always a threat of prolonged drought. For example, the statewide drought of record that lasted almost eight years and ended 50 years ago in 1957 resulted in 244 of Texas' 254 counties being declared disaster areas. In addition to diminished water supplies during droughts, Texas must also contend with a rapidly growing population whose water demands could easily outstrip its water supplies.

In response to the drought of the 1950s and in recognition of the need to plan for the future, the legislature created the Texas Water Development Board (TWDB) to develop water supplies and prepare plans to meet the state's future water needs. In 1997, the legislature established a new water planning process, based on a "bottom-up," consensus-driven approach. Coordinating this water planning process are 16 planning groups, one for each regional water planning area (see Figure 2.1 in the next chapter). The planning groups, each made up of about 20 members, represent a variety of interests, including agriculture, industry, environment, public, municipalities, business, water districts, river authorities, water utilities, counties, and power generation. Each planning group evaluates population projections, water demand projections, and existing water supplies during drought. Based on this information, the planning group identifies who will not have enough water, recommends strategies and projects that could be implemented to conserve or obtain more water,

and estimates the costs and environmental impacts of these strategies and projects. Once the planning group adopts the regional water plan, the plan is sent to TWDB for approval, who then compiles information from the approved regional water plans and other sources to develop the state water plan.

This document, *Water for Texas—2007*, summarizes the dedicated efforts of about 450 planning group members, numerous technical experts, the public, and several state agencies (TWDB, Texas Parks and Wildlife Department, Texas Department of Agriculture, and the Texas Commission on Environmental Quality) between 2002 and 2007. This process has resulted in greater public participation, public education, and public awareness, underscoring the benefits of directly involving local and regional decision makers and the public in water planning.

This document also represents the second state water plan developed through the regional water planning process. This new plan has allowed the planning groups to include better information about the state's water resources and new advances, such as desalination, in meeting future water needs.

In addition, the planning groups noted several issues that the legislature should consider ad-

ressing to help implement the state water plan and ensure Texas has water for the future. Based on the planning groups' recommendations, TWDB developed policy recommendations on the following issues:

- financing water management strategies
- reservoir site designation and acquisition
- interbasin transfers of surface water
- environmental water needs
- water conservation
- expedited amendment process
- indirect reuse

The 2007 State Water Plan includes the details, information, and analyses to support these recommendations. (See Volume I for further information on the policy recommendations.)

Benjamin Franklin once said, "When the well's dry, we know the worth of water." Texans already understand the importance of water. The 2007 State Water Plan is our plan to ensure that Texas has water for the future. Working together, Texans can achieve the plan's goal: dependable, safe, and affordable water for the future during times of drought.





1.1 The Water Planning Process

Following passage of Senate Bill 1 by the 75th Legislature in 1997, TWDB initiated the regional water planning process by developing and publishing draft rules for regional and state water planning, along with related amendments to TWDB regional water planning grant rules. After consulting extensively with other state agencies, stakeholders, and the public, TWDB adopted final rules in February 1998. These rules described the required elements in the regional and state water plans, the composition of planning groups, and guidelines for financial assistance from the TWDB.

Senate Bill 1 directed TWDB to designate regional water planning areas, taking into consideration such factors as river basin and aquifer delineations, water utility development patterns, socio-economic characteristics, existing regional water

planning areas, political subdivision boundaries, public comment, and other factors that TWDB deemed relevant. Regional water planning area boundaries were adjusted to include entire municipalities. Counties located on a boundary were contacted to determine preferences. Some counties opted to be part of two adjacent regional water planning areas. In other cases, regional planning area boundaries were adjusted to encompass entire counties. TWDB also considered the delineation of climatic zones in forming the planning regions. This process eventually resulted in 16 regional water planning areas. TWDB is required to review and update the planning area boundaries at least once every five years. In 2001, TWDB reviewed the planning area boundaries and did not change them. The planning area boundaries in the 2007 State Water Plan are the same as in the 2002 State Water Plan.



The original designation of the planning areas simply used the nomenclature of Regions A through P. The planning groups were then given the option of adopting a new name based on the groups' preferences or simply maintaining the original letter designation. Some chose to adopt a new name; others did not (Table 1.1).

Each regional water planning area has its own planning group, who represents the interests of its planning area and is responsible for developing a regional water plan. As required by Senate Bill 1, TWDB selected the initial members of the planning groups. These members, known as initial coordinating bodies, were selected from 11 interests identified in Senate Bill 1 and other relevant interests in the regional water planning areas. Senate Bill 1 required that interests including but not limited to public, counties, municipalities, industries, agriculture, environment, small businesses, electric-generating utilities, river authorities, water districts, and water utilities be represented. The initial coordinating bodies then added other members as appropriate, as they transitioned into planning groups. To replace members who leave the planning groups, the groups vote to approve new members.

Each planning group approved bylaws to govern its methods of conducting business and designated a political subdivision, such as a river authority, groundwater conservation district, or council of governments, to administer the planning process



and manage any contracts related to developing regional water plans.

The ongoing work of the regional water planning process consists of seven tasks:

- describing the regional water planning area
- quantifying current and projected population and water demand
- evaluating and quantifying current water supplies
- identifying surpluses and needs
- evaluating water management strategies and preparing plans to meet the needs
- recommending regulatory, administrative, and legislative changes
- adopting the plan, including the required level of public participation

Table 1.1. List of planning groups

Planning Area	Planning group name
Region A	Panhandle
Region B	Region B
Region C	Region C
Region D	North East Texas
Region E	Far West Texas
Region F	Region F
Region G	Brazos G
Region H	Region H
Region I	East Texas
Region J	Plateau
Region K	Lower Colorado
Region L	South Central Texas
Region M	Rio Grande
Region N	Coastal Bend
Region O	Llano Estacado
Region P	Lavaca



The planning groups first describe their planning areas. These descriptions include information on the major water providers, current water use, sources of groundwater and surface water, the area's agricultural and natural resources, the regional economy, summaries of local water plans, and other information deemed relevant by the planning groups.

The next task is to review population growth and water demand projections. The planning groups review projections provided by TWDB and propose revisions resulting from changed conditions or new information. In this round of planning, all 16 planning groups requested revisions to population and water demand projections for some of the water users in their regions. TWDB, after consulting with the Texas Department of Agriculture, Texas Commission on Environmental Quality, and Texas Parks and Wildlife Department, formally approved requests for revisions that met the criteria established for this process.

The planning groups then determine the water supplies that would be physically and legally available from existing sources during a repeat of the drought of record. Planning for a drought of record is required by Senate Bill 1 and is important for helping water users prepare for future droughts. To estimate the existing water supplies, the planning groups use surface water and groundwater availability models. If these models are not available, the planning groups use other available information.

The planning groups then compare existing water supplies with current and projected water demands to identify when and where additional water supplies are needed for each identified water user group and wholesale water provider.

Senate Bill 1 required planning groups to address the needs of all water users. If existing supplies do not meet future demand, the planning groups recommend specific water management strategies to meet water supply needs. Examples of recommended water management strategies include advanced conservation of existing water supplies, new reservoir and groundwater development, conveyance facilities to move available or newly developed water supplies to areas of need, water reuse, water rights subordination agreements, and others. The legislature also required that each planning group assess the financing needed to implement the water management strategies and projects in their water plans.



To do this, the planning groups (1) survey local governments, regional authorities, and other political subdivisions on how they propose to pay for water infrastructure projects in the plan and (2) identify the appropriate role of the state in financing these projects. The planning groups, with assistance from TWDB, also assess the social and economic impact of not meeting needs. If it is not feasible to meet a need, the planning groups note and explain the conditions that led to their inability to plan for fully meeting the need.

The planning groups include regulatory, administrative, and/or legislative recommendations as part of their plans. They also include recommendations for designating unique reservoir sites and stream segments of unique ecological value, consider water conservation strategies, and evaluate the impacts to the state's water, agricultural and natural resources. In the 2007 State Water Plan, planning groups recommend significantly greater amounts of water conservation and reuse in addition to estimating impacts of water management strategies on the state's water, agricultural, and natural resources.



The planning groups conduct all functions at open meetings in an open and participatory manner. They hold special public meetings when they develop their scopes of work and hold hearings before adopting their regional water plans. This public involvement helps direct the planning and determine the water management strategies to recommend. Consensus building within the planning groups is crucial to ensure sufficient support for adopting the plan. Planning group members adopt plans by vote at open meetings in accordance with each group's respective bylaws.

Planning groups also send nonvoting representation to planning groups in adjacent areas. In addition,

some joint meetings between the planning groups serve both to coordinate water management strategies and to help circumvent later conflicts over the use of shared resources. Planning groups along Texas borders also coordinate with neighboring states and the Republic of Mexico.

The regional water planning process has continued to evolve since its inauguration in 1997 by planning for a more discrete level of water providers, considering water conservation strategies to meet all needs identified in the regional water plans, and evaluating the impacts to agriculture and natural resources.



1.2 Organization of the Plan

The 2007 State Water Plan is organized into three volumes. Volume I includes an executive summary and an analysis of TWDB's policy recommenda-

tions to the legislature. Volume II, this volume, includes the statewide overview and summary of the regional water plans:

- ✚ **Chapter 2** (*Regional Summaries*) provides graphics, tables, and text summarizing results for each planning area.
- ✚ **Chapter 3** (*Fifty Years of Water Planning in Texas*) presents the general history of state water planning in Texas, including how water management strategies and the planning process have evolved over the past 50 years, and discusses the implementation status of water management strategies recommended in the 2002 State Water Plan.
- ✚ **Chapter 4** (*Population and Water Demand Projections*) summarizes the methodology and results for population and water demand projections, including discussions of how different economic sectors use water.
- ✚ **Chapter 5** (*Climate of Texas*) discusses the climate of Texas, including general rainfall patterns and information on the frequency and magnitude of drought in the state.
- ✚ **Chapter 6** (*Surface Water Resources*) presents detailed information on the state's surface water resources and includes estimates of available and existing surface water.
- ✚ **Chapter 7** (*Groundwater Resources*) presents detailed information on the state's groundwater resources and includes estimates of available and existing groundwater.
- ✚ **Chapter 8** (*Water Reuse*) discusses water reuse in Texas, including projections of existing water supplies generated by this practice.
- ✚ **Chapter 9** (*Water Supply Needs*) summarizes water supply needs for different water users in the state during drought conditions and the potential socioeconomic impacts of not addressing water supply needs.
- ✚ **Chapter 10** (*Water Management Strategies*) discusses water management strategies recommended by planning groups and the volume and costs associated with these strategies.
- ✚ **Chapter 11** (*Plan Implementation Funding*) summarizes implementation costs of the 2007 State Water Plan, including statewide and regional cost estimates for water supply, water distribution and transmission infrastructure, wastewater treatment, and flood control.
- ✚ **Chapter 12** (*Challenges and Uncertainties in Water Supply Planning*) analyzes the challenges and uncertainties, such as changing conditions, natural or human disasters, and policy and legislative impacts, that affect regional and state water planning.
- ✚ **Chapter 13** (*Planning Group Policy Recommendations*) presents the range of policy issues and recommendations identified by planning groups.

Volume III is a digital version of the 16 regional water plans and a database of the regional water planning information for each water user group in Texas. It is on the TWDB Web site. The regional water plans are available at: <http://www.twdb.state.tx.us/rwpg/main-docs/2006RWPindex.asp>

and the TWDB's Regional Water Planning Database 2007 can be accessed at <http://www.twdb.state.tx.us/data/db07/DefaultSelect.asp>.

