

## **Section 6**

### **Water Conservation and Drought Management Recommendations**

The 2011 Plan includes water conservation and drought management recommendations pursuant to 31 Texas Administrative Code 357.7(a)11 and Texas Water Code 11.085. Conservation is the first water management strategy considered for water user groups with shortages.

Typically, water user groups address their goals and plans to conserve water in their Water Conservation Plan and identify factors used to initiate a drought response and actions to be taken as part of the response in a Drought Contingency Plan. The TCEQ provides guidance for Water Conservation and Drought Contingency Plans in 30 Texas Administrative Code Chapter 288, which requires entities applying for new water rights or an amendment to an existing water right to prepare and implement a water conservation/drought contingency plan to be submitted with their application. Furthermore, 30 TAC Chapter 288, requires “specific, quantified 5- and 10-year targets for water savings to be included in all water conservation plans to be submitted to the TCEQ no later than May 1, 2005.”

The specific water conservation target savings for all entities in the Brazos G Area have not been compiled into a central database and are not shown here. Targets identified in specific conservation plans for water user groups in the Brazos G Area should be compiled and presented in future water planning efforts. The City of Abilene’s Water Conservation and Drought Contingency Plan (WC&DCP) is included in Appendix J, along with the City of Waco’s WC&DCP in Appendix K as example plans for two water user groups in the Brazos G Area.

#### **6.1 Water Conservation**

The Brazos G RWPG has considered water conservation and drought management measures for each water user group with a need (projected water shortage) in accordance with Regional Water Planning Guidelines. The Brazos G RWPG recommends water conservation for municipal and non-municipal entities.

##### **6.1.1 Municipal Water Conservation**

The four largest municipal water users in the Brazos G Area (Waco, Abilene, College Station, and Round Rock) constitute approximately 25% of the regional municipal water

demand. Abilene, College Station, and Round Rock have projected shortages during the planning period and have projected water usage ranging from 164 gallons per capita per day (gpcd) to 221 gpcd in 2010.

The Brazos G RWPG encourages all municipal entities in the region to conserve water, regardless of per capita consumption. The current Texas Water Development Board (TWDB) municipal water demand projections account for expected water savings due to implementation of the 1991 State Water-Efficient Plumbing Act. In September 2004, the Brazos G RWPG recommended additional water conservation of 21 gpcd by Year 2020 for water entities with a projected need (shortage) that also exceed 140 gallons per capita per day. Specific conservation measures are not recommended for each user group, as each entity should choose those conservation strategies that best fit their individual situation using Best Management Practices (BMPs) described by the Water Conservation Implementation Task Force.<sup>1</sup> A discussion of municipal conservation water savings, program costs, and unit costs for the Brazos G Area are included in Section 4B.2.1. Conservation is recommended as a water management strategy for 35 WUGs in the Brazos G Area, representing a total of 18,952 acft/yr of potential savings.

### **6.1.2 Non-municipal Water Conservation**

In February 2005, the Brazos G RWPG recommended that counties with projected needs (shortages) for irrigation or industrial users (manufacturing, steam electric, or mining) reduce their water demands by 3 percent by 2010, 5 percent by 2020, and 7 percent from 2030 to 2060 by using Best Management Practices identified by the Water Conservation Implementation Task Force.

Irrigation needs are projected for six counties in the Brazos G Area: Eastland, Haskell, Knox, Nolan, Shackelford and Throckmorton. In 2060, the total expected water savings for these six counties is 7,041 acft/yr. There are multiple irrigation BMPs that irrigators can select from to attain this water savings, including furrow diking, low elevation spray applications (LESA), and low energy precision application (LEPA). The costs of these BMPs range from \$96 to \$449 per acft of water saved with a savings potential of 12,359 to 22,691 acft with 100 percent participation. A more detailed description of these irrigation BMPs, costs, and water savings for the Brazos G Area are included in Section 4B.2.2.

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<sup>1</sup> Texas Water Development Board, Water Conservation Best Management Practices Guide, November 2004.

Irrigation BMPs have been identified by the Water Conservation Implementation Task Force. However, data to quantify savings and costs is not available. Brazos G recognizes that conservation savings and costs to implement irrigation BMPs are locale and crop- specific and assumes that irrigation users will implement those strategies that are practical, cost effective, and provide good water savings potential. Drip/Micro-Irrigation Systems have potential for effective water-use reductions in Haskell and Knox Counties as irrigated acres are migrated from furrow irrigation to drip irrigation. Implementation is dependent on crop-mix, cost reductions as new technology is implemented, and disease control for Cotton Root Rot.

Manufacturing needs are projected for five counties in the Brazos G Area: Johnson, Lampasas, Limestone, Nolan, and Williamson. McLennan County is projected to have a zero surplus in 2060, and conservation is also recommended. The total water savings for these six counties after 7 percent water demand reduction in 2060 is 594 acft/yr.

Steam-Electric needs are projected for nine counties in the Brazos G Area: Bell, Bosque, Grimes, Johnson, Limestone, Milam, Nolan, Robertson and Somervell. The shortages for three of the counties (Bell, Nolan and Somervell) are due to anticipated new generating capacity and no conservation savings are expected. The total water savings for the remaining six counties after 7 percent water demand reduction in 2060 is 11,083 acft/yr.

Mining needs are projected for four counties in the Brazos G Area: Milam, Nolan, Stephens and Williamson. Mining needs in Williamson County are attributed to quarry dewatering, and no conservation is recommended for Williamson County Mining. The total water savings for the remaining three counties after 7 percent water demand reduction in 2060 is 973 acft/yr.

There are multiple industrial BMPs identified by the Water Conservation Implementation Task Force, however data to quantify savings and costs is unavailable. The Brazos G RWPG recognizes that conservation savings and costs to implement industrial BMPs are facility specific and assumes that industrial users will implement those strategies that are practical, cost effective, and provide good water savings potential. A more detailed description of suggested industrial BMPs for the Brazos G Area is included in Section 4B.2.3.

## **6.2 Drought Management**

All water supply entities and some major water right holders are required by Senate Bill 1 regulations to submit for approval to the Texas Commission for Environmental Quality (TCEQ)

a Drought Contingency and Water Conservation Plan. These plans must detail the entities' plans to reduce water demand at times when the demand threatens the total capacity of the water supply delivery system or overall supplies are low (like during a drought). In accordance with 31 Texas Administrative Code 357.7(a)1, the 2011 Plan identifies: 1) factors to consider in determining whether to initiate a drought response; and 2) actions to be taken as part of the response by including model drought contingency plans for City of Abilene (Appendix J) and City of Waco (Appendix K). The Brazos River Authority continues to receive water conservation and drought management plans from regional water user groups.

The cities of Abilene and Waco are comparable in size, but have different hydrologic conditions. The City of Waco depends upon essentially one water supply (Lake Waco), whereas the City of Abilene has multiple water sources. Lake Waco is a fairly drought resistant water supply, whereas the City of Abilene is experiencing a drought worse in severity than the drought of record. These two entities were selected to represent a range of different conservation and drought contingency approaches that may be applicable to other water user groups in the Brazos G Area.