

### 5B.23 Limestone County Water Supply Plan

Table 5B.23-1 lists each water user group in Limestone County and their corresponding surplus or shortage in years 2030 and 2050. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections. Water supply plans are also presented for some entities that need pumping/conveyance facilities to utilize their existing water resources, or to become a regional provider.

**Table 5B.23-1.  
Limestone County Surplus/(Shortage)**

Water User Group	Surplus/(Shortage) <sup>1</sup>		Comment
	2030 (acft/yr)	2050 (acft/yr)	
City of Coolidge	82	88	Projected surplus
City of Groesbeck	(756)	(874)	Projected shortage – see plan below
City of Kosse	659	663	Projected surplus
City of Mexia	227	107	Projected surplus
City of Thornton	166	166	Projected surplus
County-Other <sup>2</sup>	16,614	14,989	Projected surplus
Manufacturing	(777)	(1,059)	Projected shortage – see plan below
Steam-Electric	7,458	7,458	Projected surplus
Mining	6,868	6,630	Projected surplus
Irrigation	13	13	Projected surplus
Livestock	99	99	Projected surplus
<sup>1</sup> From Tables 4-45 and 4-46, Section 4 – Comparison of Water Demands with Water Supplies to Determine Needs. <sup>2</sup> Although a county-wide surplus is projected in the County-other category, Bistone WSD has indicated the need for projects to meet local shortages.			

#### 5B.23.1 City of Coolidge

The City of Coolidge obtains its water supply from Navarro Mills Reservoir through service from Post Oak Special Utility District. The City is also interconnected with the Bistone WSD. The City of Coolidge has contracted for sufficient water supply to meet its needs through the year 2050.

### 5B.23.2 City of Groesbeck

#### 5B.23.2.1 Description of Supply

The City of Groesbeck obtains its water supply from the Navasota River. The City owns senior water rights (priority date of 1921) on the Navasota River and has limited storage available from Springfield Lake. The firm supply of the City's system was computed to be 152 acft/yr which is significantly less than their projected year 2030 water demand of 908 acft/yr. The City has had water supply problems in the past and has implemented water rationing in recent summer periods.

#### 5B.23.2.2 Options Considered

Table 5B.23-2 lists the water management strategies that were considered for meeting the City of Groesbeck's shortage, and references the report section discussing the strategy, total project cost, and unit costs.

**Table 5B.23-2.  
Water Management Strategies Considered for the City of Groesbeck**

Option	Yield (acft/yr)	Approximate Cost <sup>1</sup>	
		Total	Unit (\$/acft)
Additional Water Conservation – City of Groesbeck	50	\$29,000/yr	574
Groesbeck Off-Channel Reservoir (Section 5A.15)	1,500	\$4,173,000 <sup>2</sup>	241 <sup>2</sup>
Carrizo-Wilcox Aquifer Development – City of Groesbeck	874	\$7,088,000 <sup>3</sup>	731 <sup>3</sup>
No Action	-	\$35,074,000*	\$46,394*

<sup>1</sup> Unless otherwise noted, costs are Total Project Cost and Unit Cost (\$/acft per year) for treated water delivered to the water supply entity or entities. Unit cost is for full utilization of project capacity.

<sup>2</sup> Source of Cost Estimate: Section 5A.15-5.

<sup>3</sup> Cost estimated based on development of a new well field east of the City of Groesbeck with treatment and transmission to the City's system.

\* Economic impact of not meeting shortage (i.e., "no action" alternative) in 2030 as estimated by TWDB.

#### 5B.23.2.3 Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended to meet the projected 2030 and 2050 shortage of the City of Groesbeck:

- Groesbeck Off-Channel Reservoir

- Construction of an off-channel reservoir near the Groesbeck WTP by the year 2010 to provide additional storage and yield during times of drought.

#### 5B.23.2.4 Costs

Costs of the Recommended Plan for the City of Groesbeck.

- a. Item 1:
- Cost Source: Section 5.15, Table 5.15-5
  - Date to be Implemented: 2010
  - Total Project Cost: \$4,173,000

**Table 5B.23-3.  
Recommended Plan Costs by Decade for the City of Groesbeck**

<i>Plan Element</i>	<i>2000</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>
<b>Off-Channel Reservoir</b>						
Projected Shortage (acft/yr)	(174)	(177)	(196)	(218)	(246)	(281)
Quantity Available (acft/yr)	0	1,500	1,500	1,500	1,500	1,500
Annual Cost (\$/yr)	0	\$362,000	\$362,000	\$362,000	\$59,000	\$59,000
Unit Cost (\$/acft)	0	\$241	\$241	\$241	\$39	\$39

#### 5B.23.3 City of Kosse

The City of Kosse obtains its water supply from groundwater by purchase from the Tri-County WSC. The City of Kosse has contracted for sufficient water supply to meet its needs through the year 2050.

#### 5B.23.4 City of Mexia

The City of Mexia obtains its water supply from groundwater and surface water from the Bistone Water Supply District. The groundwater supply from the Simsboro Aquifer serves as the primary supply for the City and surface water from Lake Mexia serves as a secondary supply. The City of Mexia has contracted for sufficient water supply to meet its needs through the year 2050.

#### 5B.23.5 City of Thornton

The City of Thornton obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer. The city owns and operates two wells that are projected to supply the needs of the City

of Thornton through the year 2050. No shortages are projected for the City of Thornton and no changes in water supply are recommended.

### **5B.23.6 County-Other**

County-Other is projected to have a surplus of water through the year 2050 and no changes in water supply are recommended. The Bistone WSD has indicated that near-term projects will be needed to meet expected local demands on the Bistone WSD system.

#### **5B.23.6.1 Description of Supply (Bistone WSD)**

Water supply for Bistone WSD is obtained from groundwater from the Carrizo-Wilcox Aquifer (Personville Well Field) and from surface water from Lake Mexia. Bistone WSD supplies the City of Mexia and several county-other entities including the Mexia State School, White Rock WSC No. 1, and the City of Tehuacana. Bistone WSD also supplies several entities through the City of Mexia's system including 84 West WSC, Old Fort Parker State Park, Point Enterprise WSC, Shiloh WSC, White Rock WSC-Forest Glade, City of Wortham, and White Rock WSC No. 3. The supply available from Lake Mexia is declining due to sedimentation and the district has indicated that they plan to expand the groundwater production capacity from the Carrizo-Wilcox Aquifer.

#### **5B.23.6.2 Water Supply Plan**

In anticipation of possible future shortages, the Bistone WSD is planning to drill three additional wells in the Carrizo-Wilcox Aquifer. In addition to the three additional wells, the existing treatment plant will require expansion.

#### **5B.23.6.3 Costs**

Costs of the Recommended Plan for the Bistone WSD.

a. Item 1:

- Cost Source: Estimated cost for installation of three new wells in the Carrizo-Wilcox Aquifer and expansion of the existing water treatment plant by 0.5 MGD.
- Date to be Implemented: 2010
- Total Project Cost: \$1,428,000

**Table 5B.23-4.  
Recommended Plan Costs by Decade for the Bistone WSD**

<i>Plan Element</i>	<i>2000</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>
<b>Additional Development of Carrizo-Wilcox Aquifer</b>						
Quantity Available (acft/yr)	0	725	725	725	725	725
Annual Cost (\$/yr)	0	\$199,000	\$199,000	\$199,000	\$95,000	\$95,000
Unit Cost (\$/acft)	0	\$274	\$274	\$274	\$131	\$131

### **5B.23.7 Manufacturing**

Water supply for Manufacturing in Limestone County is obtained by purchase from a city or rural water supply entity or from private wells operated by the Manufacturing entity. Each of the cities, except for the City of Groesbeck, and the County-Other entities have surplus supplies available through the year 2050. New manufacturing facilities would be expected to locate where existing water supplies are available, such as near a city or within the service area of an existing water supply corporation. Water supply for Manufacturing is projected to be obtained from existing supplies of the cities and County-Other entities in Limestone County.

### **5B.23.8 Steam-Electric**

Steam-Electric water demand in Limestone County is associated with the Reliant Energy Power Plant located at Lake Limestone. Reliant Energy has contracted with the Brazos River Authority for water supply from Lake Limestone in sufficient quantity to exceed its needs through the year 2050. No shortage is projected for Steam-Electric and no changes in water supply are recommended.

### **5B.23.9 Mining**

Mining is projected to have a surplus of water through the year 2050 and no changes in water supply are recommended.

### **5B.23.10 Irrigation**

Irrigation is projected to have a surplus of water through the year 2050 and no changes in water supply are recommended. Additional supply may be available for Irrigation use through implementation of the Big Creek Watershed Project.

**5B.23.11 Livestock**

Livestock is projected to have a surplus of water through the year 2050 and no changes in water supply are recommended. Additional supply may be available for Livestock use through implementation of the Big Creek Watershed Project.