

5.2 Bosque County Water Supply Plan

Table 5.2-1 lists each water user group in Bosque County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

Table 5.2-1. Bosque County Surplus/(Shortage)

Water User Group	Surplus/(Shortage) ¹		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Childress Creek WSC	3	(15)	Projected shortage – see plan below
City of Clifton	270	206	Projected surplus
Cross Country WSC			See McLennan County
City of Meridian	249	241	Projected surplus
City of Valley Mills	14	(2)	Projected shortage – see plan below
City of Walnut Springs	93	89	Projected surplus
County-Other	124	66	Projected surplus
Manufacturing	(2,501)	(3,431)	Projected shortage – see plan below
Steam-Electric	(2,262)	(8,345)	Projected shortage – see plan below
Mining	(1,763)	(1,692)	Projected shortage – see plan below
Irrigation	(468)	(377)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-3 and C-4, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.2.1 Childress Creek WSC

Description of Supply

Childress Creek WSC obtains its water supply from groundwater from the Trinity Aquifer. Based on the available groundwater supply, the WSC is projected to have a shortage beginning in 2050 through year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for Childress Creek WSC. Associated costs are included for each strategy. Conservation was also considered; however, the entity’s current per capita use rate is below the selected target rate of 140 gpcd.

- a. Rehab of Trinity Wells
 - Cost Source: Volume II, Section 12.1
 - Date to be Implemented: before 2050
 - Project Cost:\$15,000
 - Unit Cost: \$6/acft
- b. Bosque County Regional Project
 - Cost Source: Volume II, Section 8.1
 - Date to be Implemented: before 2050
 - Project Cost:\$5,074,000 for Childress Creek WSC portion
 - Unit Cost: \$2,074/acft

Table 5.2-2. Recommended Plan Costs by Decade for Childress Creek WSC

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	39	13	3	(4)	(10)	(15)
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost (\$/yr)	—	—	—	—	—	—
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	39	13	3	(4)	(10)	(15)
Rehab Trinity Wells						
Supply From Plan Element (acft/yr)	—	—	—	161	161	161
Annual Cost (\$/yr)	—	—	—	\$966	\$966	\$966
Unit Cost (\$/acft)	—	—	—	\$6	\$6	\$6
Bosque County Regional Project						
Supply From Plan Element (acft/yr)	203	203	203	203	203	203
Annual Cost (\$/yr)	\$421,000	\$421,000	\$214,000	\$214,000	\$52,000	\$52,000
Unit Cost (\$/acft)	\$2,074	\$2,074	\$1,054	\$1,054	\$256	\$256

5.2.2 City of Clifton

Description of Supply

The City of Clifton obtains its water supply from groundwater from the Trinity Aquifer and from surface water from the North Bosque River. The City of Clifton owns water rights on the North Bosque River and diverts water into a 500 acft off-channel reservoir. The project was planned to provide for additional phases to enlarge the project as demand increases. Currently, Meridian can receive up to 112 acft of treated water from Clifton and retains 10 percent of the storage volume in the off-channel reservoir. Based on the estimated availability of groundwater to the City and the firm yield of the new surface water supply project, the City of Clifton has a surplus in 2070. The ability to expand the



project results in the City being a potential regional provider of water to other Bosque County entities.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for County-Other entities. Associated costs are included for each strategy.

- a. Conservation
 - Cost Source: Volume II, Section 2
 - Date to be Implemented: before 2020
 - Annual Cost: maximum of \$36,531 in 2040; Unit cost of \$474/acft
- b. Bosque County Regional Project – includes expansion of the Clifton OCR and WTP
 - Cost Source: Volume II, Section 8.1
 - Date to be Implemented: before 2050
 - Project Cost: \$5,135,000 for the City’s portion
 - Unit Cost: \$1,076/acft

Table 5.2-3. Recommended Plan Costs by Decade for City of Clifton

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	333	288	270	258	247	206
Conservation						
Supply From Plan Element (acft/yr)	21	74	77	71	71	71
Annual Cost (\$/yr)	\$9,752	\$35,012	\$36,531	\$33,745	\$33,607	\$33,654
<i>Projected Surplus/(Shortage) after Conservation</i>	354	362	347	330	318	277
Bosque County Regional Project						
Supply From Plan Element (acft/yr)	397	397	397	397	397	397
Annual Cost (\$/yr)	\$427,000	\$427,000	\$263,000	\$263,000	\$54,000	\$54,000
Unit Cost (\$/acft)	\$1,076	\$1,076	\$662	\$662	\$136	\$136

5.2.3 City of Meridian

Description of Supply

The City of Meridian obtains its water supply from groundwater from the Trinity Aquifer and has a contract to purchase treated water from the City of Clifton. No shortages are projected for the City of Meridian.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for County-Other entities. Associated costs are included for each strategy. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

- a. Bosque County Regional Project – includes expansion of the Clifton OCR and WTP
 - Cost Source: Volume II, Section 8.1
 - Date to be Implemented: 2020
 - Project Cost:\$3,220,000 for the City's portion
 - Unit Cost: \$1,223/acft
- b. Alternative: Meridian Off-Channel Reservoir
 - Cost Source: Volume II, Section 4.9
 - Date to be Implemented: before 2050
 - Project Cost:\$21,702,000
 - Unit Cost: \$3,961/acft

Table 5.2-4. Recommended Plan Costs by Decade for City of Meridian

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/ (Shortage) (acft/yr)</i>	265	253	249	246	243	241
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost (\$/yr)	—	—	—	—	—	—
<i>Projected Surplus/ (Shortage) after Conservation</i>	265	253	249	246	243	241
Bosque County Regional Project						
Supply From Plan Element (acft/yr)	224	224	224	224	224	224
Annual Cost (\$/yr)	\$274,000	\$274,000	\$143,000	\$143,000	\$40,000	\$40,000
Unit Cost (\$/acft)	\$1,223	\$1,223	\$638	\$638	\$179	\$179
Alternative: Meridian Off-Channel Reservoir						
Supply From Plan Element (acft/yr)	615	615	615	615	615	615
Annual Cost (\$/yr)	\$2,436,000	\$2,436,000	\$1,128,000	\$1,128,000	\$750,000	\$750,000
Unit Cost (\$/acft)	\$3,961	\$3,961	\$1,834	\$1,834	\$1,220	\$1,220

5.2.4 City of Valley Mills

Description of Supply

The City of Valley Mills service area is primarily in Bosque County but also serves a small portion of McLennan County. The City obtains all of its water supply from groundwater from the Trinity Aquifer. Based on the groundwater supply available, the City of Valley Mills is projected to have a shortage in the year 2070. The surplus/shortages shown in Table 5.2-1 represent the cumulative totals for the City of Valley Mills.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for County-Other entities. Associated costs are included for each strategy. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

- a. Conservation
 - Cost Source: Volume II, Section 2
 - Date to be Implemented: before 2020
 - Annual Cost: maximum of \$23,000 in 2040; Unit Cost of \$474/acft
- b. Bosque County Regional Project – includes expansion of the Clifton OCR and WTP
 - Cost Source: Volume II, Section 8.1
 - Date to be Implemented: 2020
 - Project Cost: \$4,730,000 for the City's portion
 - Unit Cost: \$2,126/acft

Table 5.2-5. Recommended Plan Costs by Decade for City of Valley Mills

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	42	23	14	8	2	(2)
Conservation						
Supply From Plan Element (acft/yr)	10	31	48	47	48	48
Annual Cost (\$/yr)	\$4,744	\$14,607	\$22,969	\$22,245	\$22,562	\$22,674
<i>Projected Surplus/(Shortage) after Conservation</i>	52	54	63	55	50	46
Bosque County Regional Project						
Supply From Plan Element (acft/yr)	182	182	182	182	182	182
Annual Cost (\$/yr)	\$387,000	\$387,000	\$194,000	\$194,000	\$43,000	\$43,000
Unit Cost (\$/acft)	\$2,126	\$2,126	\$1,065	\$1,065	\$236	\$236

5.2.5 City of Walnut Springs

Description of Supply

The City of Walnut Springs obtains its water supply from groundwater from the Trinity Aquifer. No shortages are projected for the City of Walnut Springs.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for County-Other entities. Associated costs are included for each strategy. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

- a. Alternative: Bosque County Regional Project – includes expansion of the Clifton OCR and WTP
 - Cost Source: Volume II, Section 8.1
 - Date to be Implemented: 2020
 - Project Cost: \$4,213,000 for the City's portion
 - Unit Cost: \$5,344/acft

Table 5.2-6. Recommended Plan Costs by Decade for City of Walnut Springs

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	98	94	93	92	90	89
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost (\$/yr)	—	—	—	—	—	—
<i>Projected Surplus/(Shortage) after Conservation</i>	98	94	93	92	90	89
Alternative: Bosque County Regional Project						
Supply From Plan Element (acft/yr)	64	64	64	64	64	64
Annual Cost (\$/yr)	\$342,000	\$342,000	\$170,000	\$170,000	\$35,000	\$35,000
Unit Cost (\$/acft)	\$5,344	\$5,344	\$2,656	\$2,656	\$547	\$547

5.2.6 County-Other

Bosque County-Other entities obtain water supply from groundwater from the Trinity Aquifer. No shortages are projected for County Other and no changes in water supply are recommended. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.2.7 Manufacturing

Description of Supply

Water supply for manufacturing in Bosque County is obtained by purchase from a city or water supply corporation, from private wells operated by the manufacturing entity, or by limited surface water supplies.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Bosque County Manufacturing. Associated costs are included for each strategy.

- a. Conservation
 - Cost Source: Volume II, Section 2
 - Date to be Implemented: before 2020
 - Annual Cost: not determined
- b. Purchase from City of Clifton
 - Cost Source: based on cost for Bosque County Regional Project Volume II, Section 8.1
 - Date to be Implemented: before 2020
 - Project Cost: TBD
 - Unit Cost: \$1,076/acft
- c. Purchase from City of Meridian
 - Cost Source: based on cost for Bosque County Regional Project Volume II, Section 8.1
 - Date to be Implemented: before 2020
 - Project Cost: TBD
 - Unit Cost: \$1,223/acft
- d. BRA Systems Operations to Bosque County
 - Cost Source: BRA System Operations Supply (Volume II, Section 7.11)
 - Dependent on BRA being granted System Operations permit from TCEQ
 - Date to be Implemented: 2020
 - Project Cost: Not enough information to cost delivery
 - Unit Cost: \$65.65/acft (BRA wholesale rate only)

Table 5.2-7. Recommended Plan Costs by Decade for Bosque County – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(1,868)	(2,187)	(2,501)	(2,772)	(3,088)	(3,431)
Conservation						
Supply From Plan Element (acft/yr)	82	153	236	255	277	301
Annual Cost (\$/yr)	ND	ND	ND	ND	ND	ND
<i>Projected Surplus/(Shortage) after Conservation</i>	(1,786)	(2,034)	(2,265)	(2,517)	(2,811)	(3,130)
Purchase from City of Clifton						
Supply From Plan Element (acft/yr)	426	426	426	426	426	426
Annual Cost (\$/yr)	\$458,000	\$458,000	\$458,000	\$458,000	\$458,000	\$458,000
Unit Cost (\$/acft)	\$1,076	\$1,076	\$1,076	\$1,076	\$1,076	\$1,076
Purchase from City of Meridian						
Supply From Plan Element (acft/yr)	330	330	330	330	330	330
Annual Cost (\$/yr)	\$404,000	\$404,000	\$404,000	\$404,000	\$404,000	\$404,000
Unit Cost (\$/acft)	\$1,223	\$1,223	\$1,223	\$1,223	\$1,223	\$1,223
BRA System Operations						
Supply From Plan Element (acft/yr)	1,035	1,280	1,510	1,765	2,060	2,375
Annual Cost (\$/yr)	\$67,948	\$84,032	\$99,132	\$115,872	\$135,239	\$155,919
Unit Cost (\$/acft)	\$66	\$66	\$66	\$66	\$66	\$66

ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location

5.2.8 Steam-Electric

Description of Supply

The water supply for Steam-Electric use in Bosque County consists of surface water contracts with the Brazos River Authority. Steam-Electric is projected to have a shortage from the year 2030 through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Bosque County Steam-Electric. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Section 2
- Date to be Implemented: 2030
- Annual Cost: not determined



b. BRA System Operation to Bosque County

- Cost Source: BRA System Operations Supply (Volume II, Section 7.11)
 - Dependent on BRA being granted System Operations permit from TCEQ
- Date to be Implemented: before 2030
- Project Cost: Infrastructure assumed sufficient
- Unit Cost: \$65.65/acft (Current BRA System Rate)

Table 5.2-8. Recommended Plan Costs by Decade for Bosque County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	312	(861)	(2,262)	(3,943)	(5,965)	(8,345)
Conservation						
Supply From Plan Element (acft/yr)	0	362	596	705	837	995
Annual Cost (\$/yr)	ND	ND	ND	ND	ND	ND
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	312	(499)	(1,667)	(3,239)	(5,128)	(7,350)
BRA System Operation						
Supply From Plan Element (acft/yr)	—	500	1,670	3,240	5,130	7,350
Annual Cost (\$/yr)	—	\$32,825	\$109,636	\$212,706	\$336,785	\$482,528
Unit Cost (\$/acft)	—	\$65.65	\$65.65	\$65.65	\$65.65	\$65.65

ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location.

5.2.9 Mining

Description of Supply

Mining operations in Bosque County are supplied by Trinity Groundwater. Demands for Mining are projected to increase significantly resulting in shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Bosque County-Mining. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Section 2
- Date to be Implemented: before 2020
- Annual Cost: not determined

b. Leave needs unmet

- Cost Source: Cost of not meeting needs – see Appendix H
- Date to be Implemented: 2020

Table 5.2-9. Recommended Plan Costs by Decade for Bosque County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(1,843)	(1,942)	(1,763)	(1,743)	(1,704)	(1,692)
Conservation						
Supply From Plan Element (acft/yr)	59	104	132	131	128	127
Annual Cost (\$/yr)	ND	ND	ND	ND	ND	ND
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	(1,784)	(1,839)	(1,631)	(1,612)	(1,576)	(1,565)
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	1,780	1,840	1,635	1,615	1,580	1,565
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

5.2.10 Irrigation

Bosque County Irrigation is projected to have a surplus of water through the year 2070. No changes in water supply are recommended.

Description of Supply

Bosque County Irrigation is supplied by Trinity Groundwater and run of the river water rights. Irrigation is projected to have shortages beginning in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Bosque County-Irrigation. Associated costs are included for each strategy.

- a. Conservation
 - Cost Source: Volume II, Section 2
 - Date to be Implemented: before 2020
 - Unit Cost: \$230/acft
- b. Groundwater Development – Trinity Aquifer
 - Cost Source: Volume 2, Section 12.1
 - Date to be Implemented: before 2020
 - Project Cost: \$11,048,000
 - Unit Cost: \$2,119



Table 5.2-10. Recommended Plan Costs by Decade for Bosque County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(536)	(502)	(468)	(438)	(407)	(377)
Conservation						
Supply From Plan Element (acft/yr)	64	105	144	142	140	138
Annual Cost (\$/yr)	\$14,683	\$24,081	\$33,166	\$32,667	\$32,168	\$31,685
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	(473)	(398)	(324)	(295)	(267)	(239)
Groundwater Development						
Supply From Plan Element (acft/yr)	475	475	475	475	475	475
Annual Cost (\$/yr)	\$1,006,457	\$1,006,457	\$81,457	\$81,457	\$81,457	\$81,457
Unit Cost (\$/acft)	\$2,119	\$2,119	\$171	\$171	\$171	\$171

5.2.11 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

This page intentionally left blank.