

5.27 Palo Pinto County Water Supply Plan

Table 5.27-1 lists each water user group in Palo Pinto County and their corresponding surplus or shortage in years 2040 and 2070. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections.

Table 5.27-1. Palo Pinto County Surplus/(Shortage)

Water User Group	Surplus/Shortage		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Gordon	(160)	(175)	Projected shortage - see plan below.
Lake Palo Pinto Area WSC	33	11	Projected surplus
City of Mineral Wells	(594)	(1,200)	Projected shortage - see plan below.
North Rural WSC	55	44	Projected surplus
Palo Pinto WSC	56	47	Projected surplus
Parker County SUD			See Region C
Possum Kingdom WSC	(206)	(290)	Projected shortage - see plan below.
Santo SUD	35	(14)	Projected shortage - see plan below.
Sportsmans World MUD	(47)	(61)	Projected shortage - see plan below.
Stephens Regional SUD			See Stephens County
City of Strawn	(46)	(59)	Projected shortage - see plan below.
Sturdivant Progress WSC	57	33	Projected surplus
County-Other	(187)	(177)	Projected shortage - see plan below.
Manufacturing	1,197	1,197	Projected surplus
Steam-Electric	11,601	11,601	Projected surplus
Mining	(622)	(232)	Projected shortage – see plan below.
Irrigation	(2,326)	(2,326)	Projected shortage - see plan below.
Livestock	0	0	No projected surplus or shortage

5.27.1 City of Gordon

Description of Supply

The City of Gordon is split between Erath and Palo Pinto Counties; however, the majority of the City's demand is located in Palo Pinto County. Gordon receives supply from Lake CB Long, but the reservoir has a zero firm yield based on water availability analyses prescribed under water planning guidelines. Water shortages are projected between 2020 and 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 the City of Gordon. Conservation is recommended to reduce usage to a goal of 140 gpcd.

a. Conservation

- Cost Source: Volume II
- Date to be Implemented: by 2030
- Annual Cost: \$25,286 in 2070
- Unit Cost: \$560/acft

b. Purchase Water from Strawn

- Cost Source: Volume II
- Date to be Implemented: by 2030
- Annual Cost: \$318,549
- Unit Cost: \$2,167/acft (\$6.65 per 1,000 gallons)

Table 5.27-2. Recommended Plan Costs by Decade for City of Gordon

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(147)	(155)	(160)	(166)	(171)	(175)
Conservation						
Supply From Plan Element (acft/yr)	0	12	24	36	42	43
Annual Cost (\$/yr)	\$0	\$6,771	\$13,689	\$21,479	\$24,802	\$25,286
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	(147)	(143)	(136)	(130)	(129)	(132)
Purchase Water from Strawn (additional Trinity Aquifer supplies)						
Supply From Plan Element (acft/yr)	147	147	148	148	148	148
Annual Cost (\$/yr)	\$318,600	\$318,500	\$320,700	\$320,700	\$320,700	\$320,700
Unit Cost (\$/acft)	\$2,167	\$2,167	\$2,167	\$2,167	\$2,167	\$2,167

5.27.2 Lake Palo Pinto Area WSC

Lake Palo Pinto Area WSC obtains its water supply from Palo Pinto County MWD. The WSC has a projected surplus throughout the planning period, and no changes to water supply are recommended. Conservation was considered; however, the current per capita use rate is below the target rate of 140 gpcd.

5.27.3 City of Mineral Wells

Description of Supply

The City of Mineral Wells is split between Parker County in Region C and Palo Pinto County (Brazos G), however the majority of demand lies within Palo Pinto County. The City obtains water supply from Lake Mineral Wells and from Palo Pinto County MWD 1. Mineral Wells provides water to Palo Pinto WSC, Santo SUD, Sturdivant Progress WSC, North Rural WSC, Palo Pinto County-Other and Manufacturing entities, and to various users in Region C. Due to a prorated reduction in treated surface water supply from Palo Pinto County MWD 1, water shortages are projected for the City of Mineral Wells from 2020 through 2070. Balances shown are for the entire City, including areas in Parker County and Region C. Water conservation as a recommended water management strategy is shown for both the Brazos G and Region C portions.

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 the City of Mineral Wells. Conservation is recommended to reduce usage to a goal of 140 gpcd. Needs remain unmet in 2020. These needs will only occur during a drought equivalent or worse than the drought of record. While not a strategy recommended by the Brazos G RWPG, the impacts of the unmet needs can be mitigated through demand management in the event of a serious drought prior to the recommended strategies coming online.

- a. Conservation
 - Cost Source: Volume II
 - Date to be Implemented: 2030
 - Annual Cost: \$18,836
 - Unit Cost: \$560/acft
- b. Turkey Peak Reservoir – Lake Palo Pinto Enlargement
 - Cost Source: Volume II
 - Date to be Implemented: by 2030
 - Annual Cost: \$5,935,000
 - Unit Cost: \$733/acft

Table 5.27-3. Recommended Plan Costs by Decade for City of Mineral Wells

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(168)	(403)	(594)	(800)	(1,007)	(1,200)
Conservation						
Supply From Plan Element (acft/yr) (Brazos G)	—	34	—	—	—	—

Table 5.27-3. Recommended Plan Costs by Decade for City of Mineral Wells

Plan Element	2020	2030	2040	2050	2060	2070
Supply From Plan Element (acft/yr) (Region C portion)	17	21	3	4	5	6
Annual Cost (\$/yr) (Brazos G portion only)	—	\$18,836	—	—	—	—
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	<i>(151)</i>	<i>(348)</i>	<i>(591)</i>	<i>(796)</i>	<i>(1,002)</i>	<i>(1,194)</i>
Additional Demands from Recommended Strategies from Others						
Increase Contract Amount to Santo SUD (acft/yr)	—	—	—	—	—	14
Increase Contract Amount to County-Other (acft/yr)	191	190	187	187	184	177
<i>Total Surplus/(Shortage) Including Recommended Strategies (acft/yr)</i>	<i>(342)</i>	<i>(538)</i>	<i>(778)</i>	<i>(983)</i>	<i>(1,186)</i>	<i>(1,385)</i>
Turkey Peak Reservoir – Lake Palo Pinto Enlargement						
Supply From Plan Element (acft/yr)	—	543	778	983	1,186	1,386
Annual Cost (\$/yr)	—	\$398,000	\$570,000	\$598,000	\$721,000	\$136,000
Unit Cost (\$/acft)	—	\$733	\$608	\$608	\$98	\$98

5.27.4 North Rural WSC

North Rural WSC is split between Parker County in Region C and Palo Pinto County (Brazos G), however the majority of demand lies within Palo Pinto County. North Rural WSC obtains its water supply from the City of Mineral Wells. No shortages are projected for the WSC and no changes in water supply are recommended throughout the planning period. Conservation was considered; however, the current per capita use rate is below the targeted rate of 140 gpcd.

5.27.5 Palo Pinto WSC

Palo Pinto obtains its water supply from the City of Mineral Wells. No shortages are projected for the WSC and no changes in water supply are recommended throughout the planning period. Conservation was considered; however, the current per capita use rate is below the targeted rate of 140 gpcd.

5.27.6 Possum Kingdom WSC

Description of Supply

Possum Kingdom WSC is split between Stephens and Palo Pinto County. The WSC receives supply from the Brazos River Authority. Water shortages are projected between 2020 and 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 the Possum Kingdom WSC. Conservation is recommended to reduce usage to a goal of 140 gpcd.

- a. Conservation
 - Cost Source: Volume II
 - Date to be Implemented: by 2030
 - Annual Cost: \$222,404 in 2070
 - Unit Cost: \$560/acft
- b. BRA System Operations
 - Cost Source: Volume II
 - Date to be Implemented: 2020
 - Annual Cost: \$146,984
 - Unit Cost: \$76/acft
- c. Voluntary Redistribution from Palo Pinto Manufacturing
 - Cost Source: Volume II
 - Date to be Implemented: 2020
 - Annual Cost: Cost of purchase only, maximum of \$9,027 in 2020
 - Unit Cost: \$76.50/acft

Table 5.27-4. Recommended Plan Costs by Decade for Possum Kingdom WSC

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(118)	(171)	(206)	(240)	(268)	(290)
Conservation						
Supply From Plan Element (acft/yr)	0	80	161	243	323	397
Annual Cost (\$/yr)	\$0	\$44,691	\$90,098	\$135,915	\$180,692	\$222,404
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	(118)	(91)	(45)	3	55	107
BRA System Operations						
Supply From Plan Element (acft/yr)	1,934	1,934	1,934	1,934	1,934	1,934
Annual Cost (\$/yr)	\$146,984	\$146,984	\$146,984	\$146,984	\$146,984	\$146,984
Unit Cost (\$/acft)	\$76	\$76	\$76	\$76	\$76	\$76

Table 5.27-4. Recommended Plan Costs by Decade for Possum Kingdom WSC

Plan Element	2020	2030	2040	2050	2060	2070
Voluntary Redistribution from Palo Pinto Manufacturing						
Supply From Plan Element (acft/yr)	118	91	45	—	—	—
Annual Cost (\$/yr)	\$9,027	\$6,962	\$3,443	—	—	—
Unit Cost (\$/acft)	\$76.50	\$76.50	\$76.50	—	—	—

5.27.7 Santo SUD

Description of Supply

Santo SUD is split between Hood and Palo Pinto counties as well as Parker County in Region C, however the majority of the SUD’s demand lies within Palo Pinto County. Santo SUD obtains treated surface water supply from the City of Mineral Wells. Values shown below reflect the Brazos G portion only of Santo SUD.

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 entity’s water needs. Conservation was considered, however the current per capita use rate is below the targeted rate of 140 gpcd.

- a. Purchase Additional Supply from the City of Mineral Wells
 - Cost Source: Volume II
 - Date to be Implemented: 2070
 - Annual Cost: \$29,232
 - Unit Cost: \$2,088/acft

Table 5.27-5. Recommended Plan Costs by Decade for Santo SUD

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	55	43	35	22	5	(14)
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost (\$/yr)	—	—	—	—	—	—
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	55	43	35	22	5	(14)



Table 5.27-5. Recommended Plan Costs by Decade for Santo SUD

Plan Element	2020	2030	2040	2050	2060	2070
Purchase Additional Supply from the City of Mineral Wells						
Supply From Plan Element (acft/yr)	—	—	—	—	—	14
Annual Cost (\$/yr)	—	—	—	—	—	\$29,232
Unit Cost (\$/acft)	—	—	—	—	—	\$2,088

5.27.8 Sportsmans World MUD

Description of Supply

Sportsman World MUD is supplied by surface water from the main stem of the Brazos River. The MUD has a projected shortage from 2020 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 Sportsman World MUD. Conservation is recommended to reduce usage to a goal of 140 gpcd.

a. Conservation

- Cost Source: Volume II
- Date to be Implemented: 2030
- Annual Cost: maximum of \$32,921 in 2070
- Unit Cost: \$560/acft

b. BRA System Operations

- Cost Source: Volume II
- Date to be Implemented: 2020
- Annual Cost: \$22,000
- Unit Cost: \$76/acft

c. Voluntary Redistribution from Palo Pinto Manufacturing

- Cost Source: Volume II
- Date to be Implemented: 2020
- Annual Cost: Cost of purchase only, maximum of \$2,525 in 2020
- Unit Cost: \$76.50/acft

Table 5.27-6. Recommended Plan Costs by Decade for Sportsmans World MUD

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(33)	(42)	(47)	(53)	(57)	(61)
Conservation						
Supply From Plan Element (acft/yr)	0	13	24	36	48	59
Annual Cost (\$/yr)	\$0	\$7,052	\$13,466	\$20,356	\$26,766	\$32,921
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	(33)	(29)	(23)	(17)	(9)	(2)
BRA System Operations						
Supply From Plan Element (acft/yr)	290	290	290	290	290	290
Annual Cost (\$/yr)	\$22,040	\$22,040	\$22,040	\$22,040	\$22,040	\$22,040
Unit Cost (\$/acft)	\$76	\$76	\$76	\$76	\$76	\$76
Voluntary Redistribution from Palo Pinto Manufacturing						
Supply From Plan Element (acft/yr)	33	29	23	17	9	2
Annual Cost (\$/yr)	\$2,607	\$2,291	\$1,817	\$1,343	\$711	\$158
Unit Cost (\$/acft)	\$76.50	\$76.50	\$76.50	\$76.50	\$76.50	\$76.50

5.27.9 City of Strawn

Description of Supply

The City of Strawn is supplied by surface water from Lake Tucker and Trinity Aquifer and is projected to have shortages through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Strawn.

- a. Conservation
 - Cost Source: Volume II
 - Date to be Implemented: 2030
 - Annual Cost: \$13,319 in 2070
 - Unit Cost: \$560/acft
- b. Groundwater Development – Trinity Aquifer (Erath County)
 - Cost Source: Volume II
 - Date to be Implemented: by 2030



- Project Cost: \$2,447,000
- Unit Cost: \$1,401/acft

Table 5.27-7. Recommended Plan Costs by Decade for City of Strawn

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(35)	(42)	(46)	(50)	(55)	(59)
Conservation						
Supply From Plan Element (acft/yr)	0	11	23	22	23	24
Annual Cost (\$/yr)	\$0	\$6,320	\$12,832	\$12,407	\$12,836	\$13,319
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	(35)	(31)	(23)	(28)	(32)	(35)
Additional Demands from Recommended Plans from Others						
Supply Contract to Gordon (acft/yr)	147	147	141	140	140	140
<i>Total Surplus/(Shortage) Including Recommended Strategies (acft/yr)</i>	(182)	(178)	(164)	(168)	(172)	(175)
Groundwater Development – Trinity Aquifer (Erath County)						
Supply From Plan Element (acft/yr)	182	182	183	183	183	183
Annual Cost (\$/yr)	\$255,000	\$255,000	\$83,000	\$83,000	\$83,000	\$83,000
Unit Cost (\$/acft)	\$1,401	\$1,401	\$456	\$456	\$456	\$456

5.27.10 Sturdivant Progress WSC

Sturdivant Progress WSC purchases treated water from the City of Mineral Wells. The WSC’s contract is projected to provide sufficient supply through the planning period. Conservation was considered; however, the current per capita use rate is below the targeted rate of 140 gpcd. No changes in water supply are recommended.

5.27.11 County-Other

Description of Supply

Entities in Palo Pinto County-Other obtain treated surface water from the City of Mineral Wells. There is a projected shortage for County-Other from 2020 through 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following plan is recommended for Palo-Pinto County-Other entities. Conservation was also considered; however, the current per capita use rate is below the targeted rate of 140 gpcd.

a. Purchase Additional Water from the City of Mineral Wells

- Cost Source: Volume II
- Date to be Implemented: by 2030
- Annual Cost: Maximum of \$398,808 in 2020
- Unit Cost: \$2,088/acft

Table 5.27-8. Recommended Plan Costs by Decade for Palo Pinto – County-Other

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(191)	(190)	(187)	(187)	(184)	(177)
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost (\$/yr)	—	—	—	—	—	—
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	(191)	(190)	(187)	(187)	(184)	(177)
Purchase Additional Water from the City of Mineral Wells						
Supply From Plan Element (acft/yr)	191	190	187	187	184	177
Annual Cost (\$/yr)	\$398,808	\$396,720	\$390,456	\$390,456	\$384,192	\$369,576
Unit Cost (\$/acft)	\$2,088	\$2,088	\$2,088	\$2,088	\$2,088	\$2,088

5.27.12 Manufacturing

Palo Pinto County Manufacturing obtains its water supply from the City of Mineral Wells and the Brazos River Authority. Palo Pinto County Manufacturing shows a projected surplus. In order to meet the needs of other WUGs within Palo Pinto County, a portion of the Manufacturing supply is recommended to be voluntarily redistributed to Possum Kingdom WSC and Sportsmans World MUD.

Table 5.27-9. Recommended Plan Costs by Decade for Palo Pinto – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	1,199	1,197	1,197	1,197	1,197	1,197
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost (\$/yr)	—	—	—	—	—	—
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	1,199	1,197	1,197	1,197	1,197	1,197

Table 5.27-9. Recommended Plan Costs by Decade for Palo Pinto – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
Additional Demands from Recommended Plans from Others						
Increase Contract Amount to Possum Kingdom WSC (acft/yr)	118	91	45	0	0	0
Increase Contract Amount to Sportsmans World MUD (acft/yr)	33	29	23	17	9	2
<i>Balance Including Recommended Strategies for others (acft/yr)</i>	1,350	1,317	1,265	1,214	1,206	1,199
BRA System Operations Supplies						
Supply From Plan Element (acft/yr)	15	15	15	15	15	15
Annual Cost (\$/yr)	\$1,140	\$1,140	\$1,140	\$1,140	\$1,140	\$1,140

5.27.13 Steam-Electric

Palo Pinto County Steam-Electric obtains its water supply from Palo Pinto County MWD No. 1, the Brazos River Authority, and from Palo Pinto County-Other entities. Steam-Electric is projected to have surplus supplies through the planning period and no change to water supply is recommended.

5.27.14 Mining

Description of Supply

Palo Pinto County Mining obtains its water supply from Trinity Aquifer, Brazos River Authority, and from Palo Pinto County-Other entities. Mining operations have a projected shortage throughout the planning period.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following plan is recommended for Palo-Pinto County-Other entities. Conservation is recommended.

a. Conservation

- Cost Source: Volume II
- Date to be Implemented: by 2030
- Unit Cost: Not determined (ND). Costs to implement industrial conservation technologies will vary based on each location

b. Groundwater Development – Trinity Aquifer (Erath County)

- Cost Source: Volume II
- Date to be Implemented: by 2030
- Project Cost: \$4,885,000
- Unit Cost: \$699/acft

Table 5.27-10. Recommended Plan Costs by Decade for Palo Pinto – Mining

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(653)	(844)	(622)	(477)	(333)	(232)
Conservation						
Supply From Plan Element (acft/yr)	20	42	44	34	24	16
Annual Cost (\$/yr)	ND	ND	ND	ND	ND	ND
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	(633)	(802)	(578)	(443)	(309)	(216)
Groundwater Development – Trinity Aquifer (Erath County)						
Supply From Plan Element (acft/yr)	653	844	622	477	333	232
Annual Cost (\$/yr)	\$456,447	\$589,956	\$181,002	\$138,807	\$96,903	\$67,512
Unit Cost (\$/acft)	\$699	\$699	\$291	\$291	\$291	\$291

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

5.27.15 Irrigation

Description of Supply

Palo Pinto County Irrigation obtains its water supply from run of the river water rights and the BRA. Based on the available supply, Palo Pinto County Irrigation is projected to have a shortage between 2020 and 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 Palo Pinto County-Irrigation. Conservation is recommended.

a. Conservation

- Cost Source: Volume II
- Date to be Implemented: by 2030
- Annual Cost: \$40,825
- Unit Cost: \$1,045/acft



b. Groundwater Development – Trinity Aquifer (Erath County)

- Cost Source: Volume II
- Date to be Implemented: by 2030
- Project Cost: \$49,832,000
- Unit Cost: \$2,230 /acft

Table 5.27-11. Recommended Plan Costs by Decade for Palo Pinto County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(2,326)	(2,326)	(2,326)	(2,326)	(2,326)	(2,326)
Conservation						
Supply From Plan Element (acft/yr)	90	151	211	211	211	211
Annual Cost (\$/yr)	\$94,437	\$157,396	\$220,354	\$220,354	\$220,354	\$220,354
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	(2,236)	(2,175)	(2,115)	(2,115)	(2,115)	(2,115)
Groundwater Development – Trinity Aquifer (Erath County)						
Supply From Plan Element (acft/yr)	2,236	2,175	2,115	2,115	2,115	2,115
Annual Cost (\$/yr)	\$4,986,000	\$4,850,000	\$1,400,000	\$1,400,000	\$1,400,000	\$1,400,000
Unit Cost (\$/acft)	\$2,230	\$2,230	\$662	\$662	\$662	\$662

5.27.16 Livestock

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

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