

5A.18 Water Trades in the Brazos River Basin

5A.18.1 Description of Option

Water demands in the Brazos River Basin are principally met from the BRA system of reservoirs, which include Possum Kingdom Reservoir, Lake Granbury, Lake Whitney, Lake Aquilla, Lake Proctor, Lake Belton, Stillhouse Hollow Reservoir, Lake Georgetown, Lake Granger, Lake Limestone, and Lake Somerville. Together, these reservoirs can supply 662,000 acft/yr. Lake Aquilla, Lake Proctor, Lake Belton, Stillhouse Hollow Reservoir, Lake Georgetown, Lake Granger, and Lake Limestone are described as local use reservoirs. The firm yield of these reservoirs has essentially been committed to water demands that can be met only from these reservoirs. Possum Kingdom Reservoir, Lake Granbury, Lake Whitney, and Lake Somerville are operated for local use and to meet downstream system demands that generally exist outside of the Brazos G Region in Region H along the Gulf Coast. The total supply from the BRA system has been largely committed through contracts between BRA and a variety of entities throughout the Brazos River Basin. Approximately 137,000 acft/yr of contractual commitments are located outside of the Brazos G Region in Region H.

The concept of a water trade in the Brazos River Basins would be in the form of raw water supply. Water supply projects could be developed in Region G for the purposes of meeting existing commitments in Region H, allowing for raw water to be diverted upstream in any of the four BRA system use reservoirs. One potential scenario of a water trade could include a plan to meet water demands in Johnson County. This scenario would involve development of a project to meet downstream system needs, allowing for raw water currently allocated for this need in Possum Kingdom Reservoir to be released and diverted from Lake Granbury for use in Johnson County. This concept could be used to meet other demands in the Brazos G Region where use from one of the BRA system use reservoirs is practical and economical.

5A.18.2 Available Yield

The available yield for a potential water trade in the Brazos River Basin is dependent on the water demand. There are a number of potential alternatives for development of additional supply that could be used to meet downstream system demands and traded for water supply in upstream reservoirs. Table 5A.18-1 provides a summary of potential alternatives that could be

**Table 5A.18-1.
Potential Alternatives for Water Trades in the Brazos River Basin**

<i>Project Alternative</i>	<i>Potential Firm Yield (acft/yr)</i>
Lake Whitney Reallocation (Section 5A.5)	54,500
Paluxy Reservoir (Section 5A.14)	16,300
Lake Bosque (Section 5A.14)	17,900
Millican Reservoir (Section 5A.14)	235,200
Little River Reservoir – 181,000 acft (Section 5A.14)	61,950
Little River Reservoir – 930,000 acft (Section 5A.14)	169,800
Little River Off-Channel Reservoir (Section 5A.15)	50,200
Peach Creek Reservoir (Section 5A.15)	12,550
Brazos Alluvium Conjunctive Use (Section 5A.19)	3,220

used to meet downstream system demands. The yield of these potential projects ranges from as small as 3,220 acft/yr for conjunctive use of the Brazos Alluvium to as large as 235,200 for Millican Reservoir. The alternative developed would largely depend on the quantity of water needed from the upstream reservoir and the cost of development.

5A.18.3 Environmental Issues

Environmental issues for implementation of a water trade are directly related to the project alternative being developed. The environmental issues for each of the alternatives presented in Table 5A.18-1 were discussed in previous sections of this report referenced in Table 5A.18-1.

5A.18.4 Engineering and Costing

The total project cost for implementation of a water trade will depend on the project developed to meet downstream system needs. Table 5A.18-2 presents a summary of the total project cost and unit cost of water for each of the potential alternatives that could be developed for implementation of a water trade.

**Table 5A.18-2.
Project Cost Summary for
Potential Alternatives for Water Trades in the Brazos River Basin**

Project Alternative	Potential Firm Yield (acft/yr)	Total Project Cost¹	Unit Cost of Raw Water (\$/acft)²
Lake Whitney Reallocation (Section 5A.5)	54,500	\$12,973,000	\$57
Paluxy Reservoir (Section 5A.14)	16,300	\$136,926,000	\$673
Lake Bosque (Section 5A.14)	17,900	\$67,063,000	\$271
Millican Reservoir (Section 5A.14)	235,200	\$864,409,000	\$221
Little River Reservoir – 181,000 acft (Section 5A.14)	61,950	\$168,026,000	\$195
Little River Reservoir – 930,000 acft (Section 5A.14)	169,800	\$301,926,000	\$126
Little River Off-Channel Reservoir (Section 5A.15)	50,200	\$76,255,000	\$125
Peach Creek Reservoir (Section 5A.15)	12,550	\$31,374,000	\$199
Brazos Alluvium Conjunctive Use (Section 5A.19)	3,220	\$9,843,000	\$305
¹ Includes cost of raw water facilities only.			
² Includes cost of raw water only.			

5A.18.5 Implementation Issues

This water supply option has been compared to the plan development criteria, as shown in Table 5A.18-3, and the option meets each criterion.

In order for a water trade to be implemented, several issues will need to be further evaluated as to the feasibility of the alternative. Each of the potential alternatives presented in Table 5A.18-1 has its own set of issues for implementation of the project. In addition to these issues, the entity desiring the water trade will be required to coordinate with the BRA for operation of the new project in combination with its system of reservoirs to ensure all needs are met.

**Table 5A.18-3.
Comparison of Water Trades Option to Plan Development Criteria**

Impact Category	Comment(s)
A. Water Supply: 1. Quantity 2. Reliability 3. Cost	1. Potentially significant quantities to meet regional or other region's needs 2. High reliability 3. Low to moderate
B. Environmental factors 1. Environmental Water Needs 2. Habitat 3. Cultural Resources 4. Bays and Estuaries	1. Impact depends on specific project to be implemented 2. Impact depends on specific project to be implemented 3. Impact depends on specific project to be implemented 4. Negligible or low impact
C. Impact on Other State Water Resources	• Possible beneficial impact on State water resources through optimal utilization of existing facilities; no effect on navigation
D. Threats to Agriculture and Natural Resources	• Beneficial impact by use of existing facilities to delay or avoid need for new projects
E. Equitable Comparison of Strategies Deemed Feasible	• Option is considered to meet municipal and industrial shortages
F. Requirements for Interbasin Transfers	• Not applicable
G. Third Party Social and Economic Impacts from Voluntary Redistribution	• None