

Request for Amendment to the Region G Water Plan to Add Development of the Somervell County Water Supply Project

1. Background

The *2006 Brazos G Regional Water Plan* included the Wheeler Branch Off-Channel Reservoir as a water management strategy to address water supply needs in Somervell County. The Somervell County Water District has now constructed the reservoir and the associated raw water supply facilities. To make a potable water supply available for use in Glen Rose and Somervell County, the District now wishes to develop a water treatment plant and a transmission system to deliver water to wholesale and retail customers.

Luminant Power owns and operates the Comanche Peak Steam Electric Generating Station in Somervell County. Luminant would like to purchase water from the Somervell County Water District to provide potable water for the plant and high quality process water.

The Texas Water Development Board has determined that the treatment plant and transmission system needed to implement the Somervell County Water Project are not consistent with the *2006 Brazos G Regional Water Plan*. On March 24, 2008, Kevin Taylor, general manager of the Somervell County Water District, wrote to Scott Mack, Chair of the Brazos G Water Planning Group, requesting an amendment to the *2006 Brazos G Regional Water Plan* to add the development of the Somervell County Water Supply Project.

2. Amendment Request

The Somervell County Water District asks that the *2006 Brazos G Regional Water Plan* be amended to add the Somervell County Water Project, which includes:

- Development of a water treatment plant and high service pump station and later expansion.
- Development of transmission facilities to deliver water to wholesale and retail customers.
- Use of the water to meet municipal, manufacturing, steam electric generation, mining, irrigation, and livestock needs in Somervell County.

The District believes that this amendment meets the Texas Water Development Board criteria for a minor amendment to the *2006 Brazos G Regional Water Plan*, as laid out in Texas Administrative Code Rule 357.16:

- It does not result in over allocation of an existing or planned source of water. The amendment does not change the allocation of any source of supply.
- It does not relate to a new reservoir. The amendment only relates to the development of treatment and transmission facilities.
- It does not have a significant impact on instream flows, environmental flows, or freshwater flows to bays and estuaries.
- It does not have a significant impact on water planning or previously adopted management strategies.
- It does not delete or change any legal requirements of the plan.

If the Brazos G Regional Planning Group or the Texas Water Development Board determines that the requested amendment cannot be processed as a minor amendment, the District requests that it be processed as a major amendment.

3. Description of Strategy

Somervell County currently obtains all of its water supply from the Trinity Aquifer. As indicated in the U.S. Corps of Engineers “Department of the Army Evaluation and Decision Document” for the Section 404 permit obtained for Wheeler Branch Reservoir [Corps of Engineers, 2005]:

“The Trinity aquifer is heavily used and is currently being over-drafted in Somervell County.... Measurements by the Texas Water Development Board (TWDB) show that water levels of the Glen Rose municipal well No. 2 have declined by over 130 feet since 1974. The current need for municipal water in Somervell County is approximately 1,000 acre-feet per year and is projected to increase to approximately 2,500 acre-feet per year by 2050. According to Senate Bill One evaluations, the current available municipal supply in the county is 773 acre-feet per year. To meet future demands, the county would need to develop approximately 2,000 acre-feet of additional supply by 2050. This amount would enable the District to meet all anticipated needs of Glen Rose through 2050 and about 70 percent of the expected requirements for the remainder of the county.”

The development of the proposed treatment and transmission facilities is necessary to allow use of this surface water supply and relieve overuse of groundwater in this growing county.

Figure 1.1 is a map showing Phases 1 through 4 of the proposed Somervell County Water Supply Project. This part of the project is planned for development in the near future (completion shortly after 2010). Figure 1.2 shows the entire proposed project, including Phases 5 through 13, which are planned for future development. Figures 1.1 and 1.2 are at the end of this memorandum.

Phases 1 through 4 include development of a 1.5 mgd water treatment plant below the Wheeler Branch Dam, along with a transmission system to deliver the treated water to wholesale customers and some retail customers. Phases 5 through 13 include expansion of the plant to 5 mgd and development of the remaining transmission facilities needed to serve the entire county.

4. Available Supply

The Somervell County Water District has a water right for 2,000 acre-feet per year from the Wheeler Branch Reservoir. The District has a subordination agreement with the Brazos River Authority that makes the 2,000 acre-feet per year available on a reliable basis. The proposed Somervell County Water Project which is the subject of this amendment will make 2,000 acre-feet per year available as potable water (840 acre-feet per year from Phases 1 through 4 and 1,160 acre-feet per year from Phases 5 through 13).

5. Environmental

Environmental impacts could include:

- Possible minor impacts on riparian corridors, depending on location of pipelines.
- Other possible minor impacts from pipeline development.

The impacts of pipeline development will be minimized to the extent possible by following existing roadway corridors and by avoiding environmentally sensitive areas where feasible. A summary of environmental issues is presented in Table 1.

Table 1
Environmental Issues:
Somervell County Water Supply Project

Water Management Option	Somervell County Water Supply Project
Implementation Measures	Construction of a 5.0 mgd water treatment plant, pump stations, ground and elevated storage tanks, and pipelines (156.2 miles)
Environmental Water Needs/Instream Flows	Negligible impact.
Bays and Estuaries	Negligible impact.
Fish and Wildlife Habitat	Possible minor impacts on riparian corridors, depending on specific location of pipelines.
Cultural Resources	Possible low impact.
Threatened and Endangered Species	Possible low impact.

6. **Engineering and Costing**

Figures 1 and 2 show the facilities required to develop the Somervell County Water Project. Water from Wheeler Branch Reservoir will be treated at the water treatment plant below the dam and distributed to the county by a system of pump stations, ground and elevated storage tanks, and pipelines. Phases 1 through 4 will include a 1.5 mgd water treatment plant and high service pump station, 1 booster pump station, 2 ground storage tanks, 1 elevated tank, and 30.5 miles of pipeline ranging from 6 inches to 18 inches in diameter. Phases 5 through 13 will include expanding the water treatment plant and high service pump station to 5.0 mgd, 5 booster pump stations, 4 ground storage tanks, 4 elevated tanks, and 125.7 miles of pipeline ranging from 6 inches to 12 inches in diameter.

Table 2 summarizes the capital costs for Phases 1 through 4, which total \$17,099,300 using the 2002 costs assumed in the 2006 *Brazos G Regional Water Plan*.

Table 2
Cost Estimate Summary for
Somervell County Water Supply Project Phases 1 through 4
(Second Quarter 2002 Prices and 2008 Prices)

Item	Estimated Cost for Facilities (2002 \$)	Estimated Cost for Facilities (2008 \$)
Capital Costs		
6" WL and Appurtenances	\$ 315,100	\$ 376,200
8" WL and Appurtenances	\$ 851,200	\$ 1,016,400
10" WL and Appurtenances	\$ 488,300	\$ 583,000
12" WL and Appurtenances	\$ 4,145,600	\$ 4,950,000
16" WL and Appurtenances	\$ 2,726,900	\$ 3,256,000
18" WL and Appurtenances	\$ 323,400	\$ 386,100
Boring and Casing	\$ 544,400	\$ 650,000
Installation through Rock	\$ 581,400	\$ 694,200
Pavement Repair	\$ 234,500	\$ 280,000
New 1.5 MGD Water Treatment Plant	\$ 4,187,500	\$ 5,000,000
1.5 MGD HSPS	\$ 418,800	\$ 500,000
Ground Storage Tanks	\$ 837,500	\$ 1,000,000
Elevated Storage Tanks	\$ 1,046,900	\$ 1,250,000
Booster Pump Station	\$ 397,800	\$ 475,000
Total Capital Costs	\$ 17,099,300	\$ 20,416,900
Contingencies	\$ 3,419,800	\$ 4,083,380
Engineering, Permitting, Survey, and Geotech	\$ 3,077,800	\$ 3,675,042
Land Costs	\$ 284,800	\$ 340,000
Power Supply Costs	\$ 128,100	\$ 152,919
Interest During Construction (1 year)	\$ 1,025,900	\$ 1,225,014
Total Project Costs	\$ 25,035,700	\$ 29,893,300
Annual Costs		
Debt Service (6 percent for 30 years)	\$ 1,820,000	\$ 2,173,000
Operation and Maintenance	\$ 375,200	\$ 448,000
Energy Costs (319,800 kWh @ \$0.06/kWh)	\$ 19,200	\$ 25,584
Total Annual Costs	\$ 2,214,400	\$ 2,646,600
Available Project Yield (ac-ft/yr)	840	840
Annual Cost of Water (\$ per ac-ft)	\$ 2,636	\$ 3,151
Annual Cost of Water (\$ per 1,000 gallons)	\$ 8.09	\$ 9.67

Notes:

1. 2008 Costs were reduced to 2002 Costs using 3% Inflation per year over 6 years.
2. 2008 Power Costs are based on \$0.08/kWh. 2002 power costs are \$0.06/kWh.

Professional services, land costs, power supply costs, contingencies, and interest during construction will add \$7,936,400, for a total project cost of \$25,035,700. (At 2008 prices, the estimated cost is \$29,893,300.) With 6 percent interest and 30-year bonds, the annual debt service is \$1,820,000. Operation and maintenance costs for pumping, transmission, and treatment add \$394,400 per year, for a total annual cost of \$2,214,400 (at 2002 prices) for delivery of 840 acre-feet. The cost of treated water delivered is \$2,636 per acre-foot, or \$8.09 per thousand gallons. This relatively high cost is associated with the development of a new surface water supply system for a relatively small volume of water.

Most of the cost of Phases 1 through 4 is associated with the development of the water treatment plant and high service pump station and the delivery of water to wholesale customers (Glen Rose and the Comanche Peak Steam Electric Station). The costs break out as follows:

- Water treatment plant and high service pump station - \$6,746,800
- Delivery to wholesale customers – \$15,799,200
- Retail distribution system - \$2,489,700
- Total - \$25,035,700

Table 3 summarizes the capital costs for Phases 5 through 13, which total \$42,263,200 using the 2002 costs assumed in the *2006 Brazos G Regional Water Plan*. Professional services, land costs, power supply costs, contingencies, and interest during construction will add \$19,785,800, for a total project cost of \$62,049,000. (At 2008 prices, the estimated cost is \$74,088,100.) With 6 percent interest and 30-year bonds, the annual debt service is \$4,511,000. Operation and maintenance costs for pumping, transmission and treatment add \$921,900 per year, for a total annual cost of \$5,432,900 (at 2002 prices) for delivery of 1,160 acre-feet. The cost of treated water delivered is \$4,684 per acre-foot, or \$14.38 per thousand gallons. This cost is associated with the development of a retail distribution system in a rural environment, where a lot of pipeline is needed per customer. Almost all of the costs of Phases 5 through 13 are associated with the retail distribution system, since Glen Rose and the Comanche Peak Steam Electric Station are the only significant wholesale customers in the county. Of course, it is possible that other wholesale customers will develop before the system is actually built.

Table 3
Cost Estimate Summary for
Somervell County Water Supply Project Phases 5 through 13
(Second Quarter 2002 Prices and 2008 Prices)

Item	Estimated Cost for Facilities (2002 \$)	Estimated Cost for Facilities (2008 \$)
Capital Costs		
6" WL and Appurtenances	\$ 2,846,700	\$ 3,399,000
8" WL and Appurtenances	\$ 15,418,000	\$ 18,409,600
10" WL and Appurtenances	\$ 2,197,200	\$ 2,623,500
12" WL and Appurtenances	\$ 4,843,800	\$ 5,783,600
Boring and Casing	\$ 1,474,000	\$ 1,760,000
Installation through Rock	\$ 1,554,600	\$ 1,856,200
Pavement Repair	\$ 935,100	\$ 1,116,500
Water Treatment Plant Expansion to 5 MGD	\$ 5,862,500	\$ 7,000,000
HSPS Expansion to 5 MGD	\$ 963,100	\$ 1,150,000
Flow Control Valves	\$ 213,600	\$ 255,000
Ground Storage Tanks	\$ 1,549,400	\$ 1,850,000
Elevated Storage Tanks	\$ 3,643,100	\$ 4,350,000
Booster Pump Station	\$ 762,100	\$ 910,000
Total Capital Costs	\$ 42,263,200	\$ 50,463,400
Contingencies	\$ 8,452,600	\$ 10,092,680
Engineering, Permitting, Survey, and Geotech	\$ 7,607,400	\$ 9,083,412
Land Costs	\$ 1,013,400	\$ 1,210,000
Power Supply Costs	\$ 176,600	\$ 210,850
Interest During Construction (1 year)	\$ 2,535,800	\$ 3,027,804
Total Project Costs	\$ 62,049,000	\$ 74,088,100
Annual Costs		
Debt Service (6 percent for 30 years)	\$ 4,511,000	\$ 5,386,000
Operation and Maintenance	\$ 870,700	\$ 1,111,000
Energy Costs (852,700 kWh @ \$0.06/kWh)	\$ 51,200	\$ 68,216
Total Annual Costs	\$ 5,432,900	\$ 6,565,200
Available Project Yield (ac-ft/yr)	1,160	1,160
Annual Cost of Water (\$ per ac-ft)	\$ 4,684	\$ 5,660
Annual Cost of Water (\$ per 1,000 gallons)	\$ 14.38	\$ 17.37

Notes:

1. 2008 Costs were reduced to 2002 Costs using 3% Inflation per year over 6 years.
2. 2008 Power Costs are based on \$0.08/kWh. 2002 costs are based on \$0.06/kWh.

7. Implementation Issues

The Somervell County Water District will need to reach agreements with the City of Glen Rose and Comanche Peak Steam Electric Station as wholesale customers to implement this water management strategy. Other implementation issues will include financing and Section 404 permitting. As shown in Table 4, this water management strategy has been compared to the plan development criteria.

8. Potential Regulatory Requirements

Implementation of this water management strategy will require the following permits for pipeline construction:

- U.S. Army Corps of Engineers Section 404 permit for pipeline stream crossings and discharges of fill into wetlands and waters of the U.S. during construction.
- NPDES Stormwater Pollution Prevention Plans.
- Possibly TP&WD Sand, Shell, Gravel, and Marl permits for construction in state-owned stream beds.

**Table 4
Comparison of Somervell County Water Supply Project
to Plan Development Criteria**

<i>Impact category</i>	<i>Comment(s)</i>
A. Water Supply 1. Quantity 2. Reliability 3. Cost	1. Sufficient for local needs. 2. High. 3. Relatively high, but reasonable for a county-wide system.
B. Environmental Factors 1. Environmental Water Needs 2. Habitat 3. Cultural Resources 4. Bays and Estuaries 5. Threatened and Endangered Species 6. Wetlands	1. Low impact. 2. Low impact. 3. Low impact. 4. Low impact. 5. Low impact. 6. Low impact.
C. Impact on Other State Water Resources D. Threats to Agriculture and Natural Resources E. Equitable Comparison of Strategies Deemed Feasible F. Requirements for Interbasin Transfers G. Third Party Social and Economic Impacts from Voluntary Redistribution	No apparent negative impacts on state water resources. No effect on navigation. None. Done. Not applicable. None.