APPENDIX W

COMPARISON OF RESERVOIR ALTERNATIVES FOR REGION C

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Need For Additional Supply In Region C And Timing Of Needs

Table W-1 and Figure W-1 show the total supply and the total projected demand for Region C. The total supply includes all sources of water available to Region C as developed in Texas Water Development Board Table 4 (Appendix I). However, some sources of supply may not be used in Region C between now and 2050. Examples include the following:

- Groundwater supplies from the Carrizo-Wilcox aquifer in Navarro and Freestone Counties. (These supplies are in excess of local needs and are far from other demand centers. The supplies which may not be used in Region C amount to about 100,000 acre-feet per year.)
- Reservoirs that are committed to local uses and are not projected to be fully utilized by 2050. Examples include Lake Texoma supplies in Grayson County, Corsicana's supplies from Richland-Chambers Lake, and several other reservoirs. (We will assume that 150,000 acre-feet per year is in this category.)
- Irrigation local supplies that exceed local demands. (We will assume that 10,000 acre-feet per year is in this category.)
- Mining local supplies that exceed local demands. (We will assume that 5,000 acre-feet per year is in this category.)
- Permitted imports that are not projected to be fully utilized by 2050. Examples include Terrell's water from Lake Tawakoni and Athens' water from Lake Athens. (We will assume that 10,000 acre-feet per year is in this category.)

Table W-2 and Figure W-2 show the comparison of total supply and total projected demand in Region C if you account for these supplies that may not be fully utilized by 2050. The table shows an overall shortage for the region of 175,000 acre-feet per year as of 2020, increasing to 836,000 acre-feet per year by 2050. Because it is impossible to allocate water supplies perfectly in the region and because it is not prudent to have no reserve for future growth, Region C will need to develop more than 836,000 acre-feet per year in new supplies by 2050.

Table W-1
Overall Comparison of Supply and Demand in Region C

Source	Water Supply Available in Acre-Feet Per Year						
	1996 Use	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Reservoirs in Region C	823,776	1,179,455	1,174,409	1,158,994	1,153,142	1,146,807	1,137,917
Groundwater	85,480	186,710	186,399	186,548	180,210	180,448	180,670
Local Irrigation	Not Avail.	33,300	31,632	31,632	31,632	31,632	31,632
Other Local Supply	18,826	19,534	19,534	19,534	19,534	19,534	19,536
Livestock Local Supply	18,061	18,843	18,843	18,843	18,843	18,843	18,843
Reuse	40,862	94,541	90,241	85,341	80,841	81,341	81,570
Imports	135,151	566,470	564,477	562,466	560,407	558,289	552,468
REGION C TOTAL SUPPLY	1,122,156	2,098,853	2,085,535	2,063,358	2,044,609	2,036,894	2,022,636
REGION C DEMAND		1,376,368	1,695,668	1,944,897	2,149,826	2,368,195	2,536,902
Surplus (Shortage)		722,485	389,867	118,461	**(105,217)**	**(331,301)**	**(514,266)**

Figure W-1
Comparison of Total Connected and Unconnected Supply with Demand for Region C

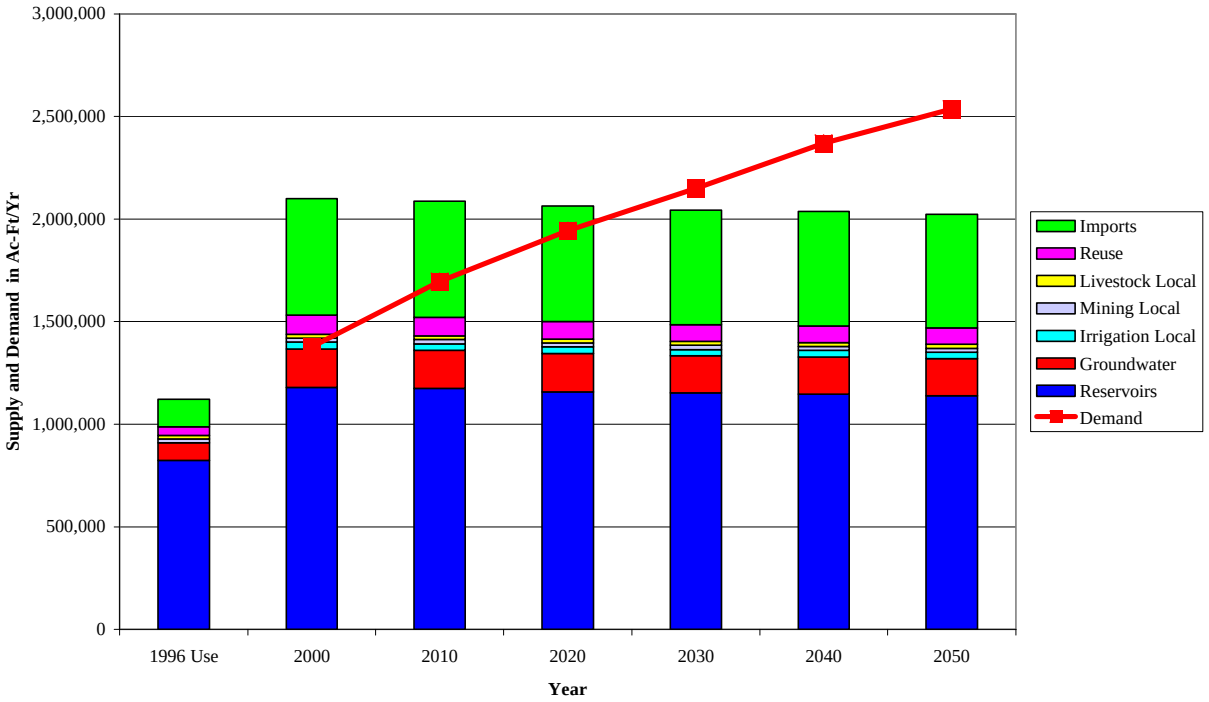
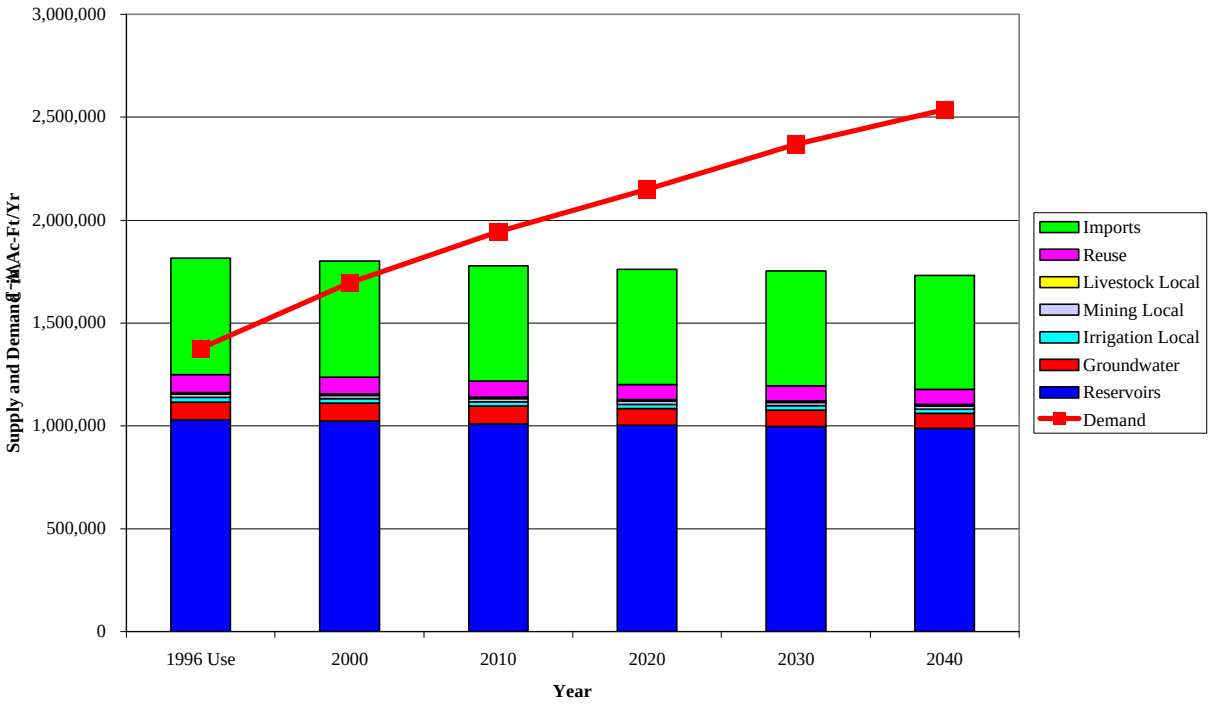


Table W-2
Overall Comparison of Supply and Demand in Region C Adjusting for Supplies Which May Not Be Used

Source	Adjusted Water Supply Available in Acre-Feet per Year					
	2000	2010	2020	2030	2040	2050
Reservoirs in Region C	1,029,455	1,024,409	1,008,994	1,003,142	996,807	987,917
Groundwater	86,710	86,399	86,548	80,210	80,448	72,592
Local Irrigation	23,300	21,632	21,632	21,632	21,632	21,632
Other Local Supply	14,534	14,534	14,534	14,534	14,534	14,536
Livestock Local Supply	8,843	8,843	8,843	8,843	8,843	8,843
Reuse	85,557	81,257	76,357	71,857	72,357	72,586
Imports	566,470	564,477	562,466	560,407	558,289	552,468
REGION C TOTAL SUPPLY	1,814,869	1,801,551	1,779,374	1,760,625	1,752,910	1,730,574
REGION C DEMAND	1,376,368	1,695,668	1,944,897	2,149,826	2,368,195	2,536,902
Surplus (Shortage)	438,501	105,883	(165,523)	(389,201)	(615,285)	(806,328)

Figure W-2
Comparison of Supply with Demand for Region C After Adjusting for Unused Supplies



Note that the needs shown in Table W-2 are based on the assumption that all other existing sources of supply available to the region are connected. Sources of additional supplies that may be available to meet the shortfall in Region C include the following:

- Reuse of treated wastewater
- Enhanced water conservation programs
- Increased use of water from Lake Texoma
- Connection with water supplies in Oklahoma
- Development of new reservoirs.

Based on the work done to date, new reservoirs will provide somewhat over 600,000 acre-feet per year in supplies for Region C.

Basic Data On Reservoirs

As discussed in Section 5 of the report, the Region C Water Planning Group selected 9 reservoirs for detailed analysis:

- Lower Bois d'Arc (New Bonham) on Bois d'Arc Creek in the Red Basin
- Upper Bois d'Arc Creek on Bois d'Arc Creek in the Red Basin
- Tehuacana on Tehuacana Creek in the Trinity Basin
- Muenster on Brushy Elm Creek in the Trinity Basin
- Ralph Hall on the North Sulphur River in the Sulphur Basin
- George Parkhouse II (North) on the North Sulphur River in the Sulphur Basin
- George Parkhouse I (South) on the South Sulphur River in the Sulphur Basin
- Marvin Nichols I (North) on the Sulphur River in the Sulphur Basin
- Marvin Nichols II (South) on White Oak Creek in the Sulphur Basin

Table W-3 includes available basic information on these nine reservoir sites. Figure W-3 shows the location of the proposed reservoirs. The Ralph Hall, Muenster, and Upper Bois d'Arc Creek sites have not been studied as extensively as the other proposed reservoirs, and more information needs to be developed about them. However, these

Table W-3
Potential New Reservoirs for Region C Water Supply

Name	Region	County	Basin	Stream	Yield in Acre-Feet/Year			Estimated Capital Cost		
					Holding All Inflow	With Releases*	Source	Previous Estimate	Base Year	1999 Cost
Tehuacana	C	Freestone	Trinity	Tehuacana Creek	68,300		A, D	$113,121,000	1989	$148,189,000
Muenster	C	Cooke	Trinity	Brushy Elm Creek	500		B			
Lower Bois d'Arc Creek	C	Fannin	Red	Bois d'Arc Creek	124,700	123,000	C	$95,961,000	1995	$106,517,000
Upper Bois d'Arc Creek	C	Fannin	Red	Bois d'Arc Creek						
Ralph Hall	C	Fannin	Sulphur	North Sulphur River						
George Parkhouse I (South)	D	Delta/ Hopkins	Sulphur	North Sulphur River	122,900	119,100	A, C, D	$167,598,000	1995	$186,034,000
George Parkhouse II (North)	D	Delta/ Lamar	Sulphur	South Sulphur River	141,200	129,700	A, C, D	$112,095,000	1995	$126,667,000
Marvin Nichols I (North)	D	Red River/ Morris/ Titus	Sulphur	Sulphur River	641,700	619,100	A, C, D	$384,521,000	1995	$426,818,000
Marvin Nichols II (South)	D	Morris/ Titus	Sulphur	White Oak Creek	294,800		A	$191,081,000	1989	$250,316,000

Table W-3, Continued

Name	Year 1999 Cost per Ac-Ft/Yr	Approximate Delivery (Miles)	Environmental Impacts					Interbasin Transfer Required	Region C Entities Interested
			Acres Flooded	Wetland Impacts	Bottomland Hardwoods	Endangered Species	Other Issues		
Tehuacana	$2,170	90	14,900	Moderate	Moderate	Low	Lignite	No	TRWD
Muenster		5		Low	Low	Low		No	Muenster
Lower Bois d'Arc Creek	$854	80	16,400	Moderate	Moderate	Low	National Grassland	Yes	NTMWD
Upper Bois d'Arc Creek		10		Low	Low	Low		No	Fannin Co.
Ralph Hall		15		Low	Low	Low		Yes	Fannin Co.
George Parkhouse I (South)	$1,514	100	29,700	Moderate	Moderate	Low	Mitigation land	Yes	Several
George Parkhouse II (North)	$897	100	12,300	Moderate	Low	Low	Prime farmland	Yes	Several
Marvin Nichols I (North)	$665	130	62,100	High	High	Low	Lignite	Yes	Several
Marvin Nichols II (South)	$849	130	35,900	High	Moderate to high	Low	Mitigation Land Oil wells	Yes	Several

Sources:
A. Freese and Nichols, Inc., and Alan Plummer Associates, Inc.: *Regional Water Supply Plan*, prepared for the Tarrant County WCID #1 in conjunction with the Texas Water Development Board, Fort Worth, 1990.
B. Texas Water Development Board Yield Estimates.
C. Freese and Nichols, Inc.: *Preliminary Study of Sources of Additional Water Supply*, prepared for North Texas MWD, Fort Worth, 1996.
D. Texas Parks and Wildlife Department: *An Assessment of Direct Impacts to Wildlife Habitat from Future Water Development Projects*, Austin, 1990.

Notes: * Releases are to allow full diversions for downstream water rights and to satisfy TWDB consensus criteria for instream flows.

reservoirs are relatively small projects that would provide a local water supply. They would not provide enough water to significantly affect regional water needs.

Capital Costs Of Transmission Systems

Water transmission systems will be a major part of the cost of any new water supply system. For the new reservoirs being considered for Region C, water transmission systems will consist of pump stations and pipelines. Table W-4 shows initial cost estimates for transmission systems from Lower Bois d'Arc Creek, Tehuacana, George Parkhouse I and II and Marvin Nichols I and II to Region C users. (For some projects, these initial estimates have been replaced by more detailed analyses in the final cost estimates.) Delivery from Lower Bois d'Arc Creek is assumed to be to Lake Lavon, which would make the water available to the North Texas Municipal Water District. Delivery from Tehuacana is assumed to be to Rolling Hills Water Treatment Plant, which would make the water available to Tarrant Regional Water District. Delivery from the four Sulphur Basin projects is assumed to be to the intersection of State Highways 205 and 78 in Collin County. This location is between Lake Lavon and Lake Ray Hubbard and gives an indication of the cost to deliver water to either North Texas Municipal Water District or Dallas Water Utilities.

Some of the water from new reservoirs in the Sulphur Basin would have to be delivered farther west, to Tarrant and Denton Counties, in order to meet all the needs of Region C. However, these costs will be comparable for all of the Sulphur Basin alternatives, and the costs in Table W-4 give a reasonable basis for comparison of alternatives. Costs for delivery to the west will be developed as the planning process proceeds and the locations and amounts for delivery are finalized. Treatment costs will be comparable for all of the reservoir alternatives and will also be developed later in the planning process.

Evaluation Of Reservoirs

Table W-5 is a summary comparison of the potential reservoir projects for Region C, using the evaluation criteria for Region C water supply alternatives. The individual projects are discussed below:

Table W-4
Initial Transmission System Cost Estimates

Potential Reservoir Site	Delivery to Region C		Delivery Point	Pipeline Length (Feet)	Pipeline Size (Inches)	Cost per Foot	Pipeline Cost
	Annual (Ac-Ft/Yr)	Peak (MGD)					
Marvin Nichols I (North)	495,300	663	Intersection of HWY 205 & HWY 78	520,833	2 - 108"	$479 each pipeline	$648,645,000
Marvin Nichols II (South)	224,100	300	Intersection of HWY 205 & HWY 78	515,625	1 - 108"	$479	$321,080,000
George Parkhouse I (South)	95,300	128	Intersection of HWY 205 & HWY 78	276,042	1 - 84"	$300	$107,656,000
George Parkhouse II (North)	103,800	139	Intersection of HWY 205 & HWY 78	359,375	1 - 84"	$300	$140,156,000
Lower Bois d'Arc Creek	123,000	132	Leonard	135,000	1 - 84"	$300	$52,650,000
Tehuacana	64,900	87	Rolling Hills WTP	410,000	1 - 60"	$184	$98,072,000

Potential Reservoir Site	Easements (Acres)	Easement Cost	Pump Stations	Pump Station Cost	Contingencies, Etc. (30% for Pipelines, 35% for Other)	Total Cost
Marvin Nichols I (North)	1,913	$9,565,000	2	$35,560,000	$210,387,000	$904,157,000
Marvin Nichols II (South)	1,657	$8,285,000	2	$26,670,000	$108,558,000	$464,593,000
George Parkhouse I (South)	887	$4,435,000	1	$10,000,000	$37,349,000	$159,440,000
George Parkhouse II (North)	1,155	$5,775,000	1	$10,000,000	$47,568,000	$203,499,000
Lower Bois d'Arc Creek	434	$2,170,000	1	$10,000,000	$20,055,000	$84,875,000
Tehuacana	376	$1,880,000	3	$18,000,000	$36,380,000	$154,332,000

Note: Delivery costs for Sulphur River Basin projects will need to be increased to include delivery to customers further west (Tarrant and Denton Counties). Costs for delivery further west will be estimated when more detailed information on amount and location of deliveries is available. Costs shown are adequate for comparison of alternatives.

Table W-5
Summary of Comparison on Potential Reservoirs

Name	Yield (ac-ft/yr)		Estimated Capital Cost - 1999 $				Region C
	Total with Releases	Assumed for Region C	Reservoir	Region C Share	Transmission System	Region C Total	Capital Cost per Ac-Ft/Yr
Tehuacana	64,900*	64,900	$148,189,000	$148,189,000	$154,332,000	$302,521,000	$4,661
Muenster	500**	500					
Lower Bois d'Arc Creek	123,000	123,000	$106,517,000	$106,517,000	$84,875,000	$191,392,000	$1,556
Ralph Hall	Unknown	Unknown					
Upper Bois d'Arc Creek	Unknown	Unknown					
George Parkhouse I (South)	119,100	95,300	$186,034,000	$148,827,000	$159,440,000	$308,267,000	$3,235
George Parkhouse II (North)	129,700	103,800	$126,667,000	$101,334,000	$203,499,000	$304,833,000	$2,937
Marvin Nichols I (North)	619,100	495,300	$426,818,000	$341,454,000	$904,157,000	$1,245,611,000	$2,515
Marvin Nichols II (South)	280,100*	224,100	$250,316,000	$200,253,000	$464,593,000	$664,846,000	$2,967

Table W-5, Continued

Name	Environmental Impacts						Consistency with Region C Supplier Plans	Consistency with Plans of Other Regions
	Acres Flooded	Wetland Impacts	Habitat Impacts	Instream Flows	Cultural Resources	Other		
Tehuacana	14,900	Moderate	Moderate	Low	High?	Lignite Oil and Gas	Good (TRWD)	N/A
Muenster	Unknown	Low	Low	Low	Low		Good (Muenster)	N/A
Lower Bois d'Arc Creek	16,400	Moderate	Moderate	Low	High?	National Grassland	Fair (NTMWD)	N/A
Ralph Hall	Unknown	Low	Low	Moderate	High?	National Grassland	Fair	Poor to Fair
Upper Bois d'Arc Creek	Unknown	Low	Low	Moderate	High?	Conflicts with Lower Bois d'Arc	Fair	Good
George Parkhouse I (South)	29,700	Moderate	Moderate	Moderate	High?	Mitigation land	Fair	Good
George Parkhouse II (North)	12,300	Moderate	Low	Moderate	High?	Prime farmland	Fair	Good
Marvin Nichols I (North)	62,100	High	High	Moderate	High?	Lignite Oil and Gas	Good	Good
Marvin Nichols II (South)	35,900	High	Moderate to High	Moderate	High?	Oil and Gas Mitigation Land	Fair	Fair

Notes: a. *The yield with releases for Tehuacana and Marvin Nichols South is assumed to be 5% less than the yield holding all inflow.
b. **The yield with releases for Muenster is assumed to be the permitted yield.
c. For the reservoirs in Region D, 80% of the total supply is assumed to be available for Region C. 80% of the cost is also assigned to Region C.

Tehuacana Reservoir. Tehuacana Reservoir would be located in Freestone County on Tehuacana Creek, immediately south of Richland-Chambers Reservoir. This project is part of the long-range plans of the Tarrant Regional Water District, and it fits well with TRWD's system. Because of its small size, Tehuacana has a relatively high unit cost for raw water in the reservoir. The cost of delivered water is also relatively high, but Tehuacana is the only project for which the transmission cost is for water delivered to the west side of the Metroplex. Delivery costs would probably be reduced if the transmission system were developed in conjunction with other water supply alternatives for Tarrant Regional Water District. The most significant environmental impacts of the reservoir would be the inundation of habitat, including wetlands and bottomland hardwoods. There are lignite resources and oil and gas wells in the area that would be inundated by Tehuacana Reservoir.

Muenster Lake. Muenster Lake is a small project proposed by the City of Muenster for Brushy Elm Creek in Cooke County. It already has a Texas Natural Resource Conservation Commission water right permit. Due to its small size, it would have little environmental impact. Its yield would help to reduce the current overuse of groundwater in Cooke County.

Lower Bois d'Arc Creek Lake (New Bonham). Lower Bois d'Arc Creek Lake would be located on Bois d'Arc Creek in Fannin County, immediately upstream from the Caddo National Grassland. The lake would provide relatively inexpensive raw water in the reservoir, and the cost of delivered water is also low. The most significant environmental impacts of Lower Bois d'Arc Creek Lake would be the inundation of habitat, including wetlands and bottomland hardwoods. The lake would inundate the Bois d'Arc Creek bottomland hardwoods area, which is designated as a Priority 4 area in the 1984 U.S. Fish and Wildlife Service *Bottomland Hardwood Protection Plan.* (A Priority 4 area is a "moderate quality bottomlands with minor waterfowl benefits.") The lake would have no direct impacts on the Caddo National Grasslands, but changes in flow patterns on Bois d'Arc Creek could have an indirect impact. Meeting the release requirements from the Texas Water Development Board consensus criteria for releases would minimize this impact.

Upper Bois d'ArcCrreek Lake. Upper Bois d'Arc Creek Lake would be located on Bois d'Arc Creek in Fannin County, upstream from the city of Bonham. The lake would have a small yield and would be best suited to meeting local demands in Fannin County. The reservoir would also provide some flood protection benefits. The Upper Bois d'Arc Creek project would reduce the need of the Lower Bois d'Arc Creek project.

Ralph Hall. Ralph Hall Reservoir would be located on the North Sulphur River in Fannin County. Because of its limited drainage area, it would have a relatively small yield, probably 30,000 acre-feet per year or less. The low yield would make the unit cost of water transmission to distant users relatively high and make the reservoir best suited to meet local demands. There is potential for conflict between the lake and the part of the Caddo National Grasslands in southern Fannin County. The Ralph Hall project is also

being considered as a way to address erosion problems along the North Fork of the Sulphur River.

George Parkhouse I (South). This project is located on the South Sulphur River in Delta and Hopkins Counties. It has a relatively high unit cost for water in the reservoir, but it is close to the Metroplex, which results in a low water transmission system cost. The lake would inundate some of the mitigation land associated with the Cooper Lake project, as well as wetland and bottomland hardwood areas. It has a relatively large surface area for the yield developed, which would increase the environmental impacts.

George Parkhouse II (North). This project is located on the North Sulphur River in Delta and Lamar Counties. It has a moderate unit cost for water in the reservoir, and it is close to the Metroplex, which results in a low water transmission system cost. The lake would have a relatively small surface area for the yield developed, which would minimize the environmental impacts. The George Parkhouse II pool does include a substantial amount of prime farmland.

Marvin Nichols I (North). The Marvin Nichols I Reservoir is located on the Sulphur River in Red River, Morris, and Titus Counties. It is a very large project, with a large yield and a low unit cost of water in the reservoir. It is located at some distance from the Metroplex, which results in a substantial cost for the water transmission system. The most significant environmental impact of the Marvin Nichols I project would be the inundation of habitat, including wetlands and bottomland hardwoods. The lake would inundate a portion of the Sulphur River Bottom West/Cuckoo Pond bottomland hardwoods area, which is designated as a Priority 1 area in the 1984 U.S. Fish and Wildlife Service *Bottomland Hardwood Protection Plan.* (A Priority 1 area is an "excellent quality bottomlands of high value to the key waterfowl species.") There are also lignite deposits and some oil and gas wells in the pool area of the lake.

Marvin Nichols II (South). The Marvin Nichols II Reservoir is located on White Oak Creek in Morris and Titus Counties. It is a large project, with a large yield and a medium unit cost of water in the reservoir. As with Marvin Nichols I, the distance from the Metroplex results in a substantial cost for the water transmission system. The significant environmental impacts of the Marvin Nichols II project would include the inundation of parts of the White Oak Creek Wildlife Management Area and the inundation of habitat, including wetlands and bottomland hardwoods. The lake would inundate a portion of the White Oak Creek bottomland hardwoods area, which is designated as a Priority 1 area in the 1984 U.S. Fish and Wildlife Service *Bottomland Hardwood Protection Plan.* (A Priority 1 area is an "excellent quality bottomlands of high value to the key waterfowl species.") There are also a significant number of oil and gas wells and some lignite deposits in the pool area of the lake.

Recommendations

Reservoir Development in the Sulphur Basin

There are two approaches to reservoir development in the Sulphur Basin that would provide the needed water supplies for Region C:

Table W-6
Comparison of Marvin Nichols I and Other Sulphur Basin Projects

	Benefits/Impacts				
	George Parkhouse I	**George Parkhouse II**	**Marvin Nichols II**	**Total**	**Marvin Nichols I**
Yield	119,100	129,700	280,100	528,900	619,100
Region C Yield	95,300	103,800	224,100	423,200	495,300
Region D Yield	23,800	25,900	56,000	105,700	123,800
Total Capital Cost	$308,267,000	$304,833,000	$664,846,000	$1,277,946,000	$1,245,611,000
Acres Flooded	29,700	12,300	35,900	77,900	62,100

- Develop Marvin Nichols I Reservoir in the next 50 years.
- Develop the George Parkhouse I and II and Marvin Nichols II reservoirs in the next 50 years.

Table W-6 is a comparison of the cost and impacts of these two approaches:

- The total capital cost of developing the George Parkhouse I and II and Marvin Nichols II reservoirs is slightly higher than the cost of the Marvin Nichols I reservoir ($1,277,946,000 to $1,245,611,000). Because of differences in yield, the unit cost of water from the three reservoirs would be substantially higher than the unit cost of water from Marvin Nichols I.
- Marvin Nichols I would make more water available to Region C than the other three projects (495,300 acre-feet per year to 423,200 acre-feet per year).
- Marvin Nichols I would make more water available to Region D than the other three projects (123,800 acre-feet per year versus 105,700 acre-feet per year).
- Development of the three reservoirs would inundate substantially more land than development of Marvin Nichols I (77,900 acres versus 62,100 acres).
- The three reservoirs would conflict with two existing wildlife mitigation areas and with numerous oil and gas wells in the Marvin Nichols II pool. (Based on available information, Marvin Nichols I has significantly less conflicts with oil and gas wells than Marvin Nichols II.)

Decision 1. Marvin Nichols I (North) Reservoir on the Sulphur River is recommended as a management strategy for water supply for Region C and Region D by 2030.

The two George Parkhouse Reservoirs would be substantially less desirable once the Marvin Nichols I Reservoir is developed. (This is true because they would reduce the

yield of the Marvin Nichols I project downstream.) On the other hand, the desirability of the Marvin Nichols II project would not be affected by the development of Marvin Nichols I, and Marvin Nichols II might be developed after 2050 to supplement Marvin Nichols I and provide additional water supplies for Region D and Region C.

Decision 2. If the Marvin Nichols I Reservoir site cannot be developed, the George Parkhouse I and II Reservoirs and the Marvin Nichols II Reservoir would be developed as an alternative. If Marvin Nichols I cannot be developed and the other three reservoirs are needed, the George Parkhouse II Reservoir should be developed first due to low cost and lesser environmental concerns, followed by George Parkhouse I and Marvin Nichols II.

Decision 3. Ralph Hall Reservoir is included as an alternative water management strategy for possible development after 2030 in the Region C water plan.

Reservoir Development Elsewhere in Region C

Decision 4. The Muenster Reservoir is included as a water supply project in the Region C plan.

Decision 5. The Lower Bois d'Arc Creek Lake is included as a water management strategy for North Texas Municipal Water District, to be developed by 2020. The North Texas MWD has more immediate water supply needs than other major water providers in Region C. Since Lower Bois d'Arc is smaller and has less environmental impact that Marvin Nichols I, it can be developed more quickly to meet NTMWD's needs.

Decision 6. Tehuacana Reservoir and Upper Bois d'Arc Creek Lake are included as possible alternative sources of supply for Region C to be developed after 2030 but before 2050.

Designation of Unique Reservoir Sites

Decision 7. Region C will pursue the designation of the Marvin Nichols I site as a unique site for reservoir development.

Decision 8. Region C will pursue the designation of the Muenster, Lower Bois d'Arc Creek, and Tehuacana sites as unique sites for reservoir development.