

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Draft of Lake Lavon Water Quality Assessment Program

Source/Author/Consultant - Alan Plummer Associates, Inc.

Publication Year - 1989

Organization - North Texas Municipal Water District

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Northeast Tarrant County Regional Water Supply Planning Report

Source/Author/Consultant - Alan Plummer Associates, Inc.

Publication Year - 1995

Organization - Fort Worth Water Department

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - A Natural Resource Survey for Proposed Reservoir Sites and Selected Stream Segments in Texas

Source/Author/Consultant - Bauer, J., R. Frye, and B. Spain OR Resource Protection Division - Texas

Publication Year - 1991

Organization - Texas Parks and Wildlife Department, Texas Water Development Board

Type of Study - Planning

Location of Study - State of Texas

Reservoirs Included - Toledo Bend

Topics Covered - Area to be Inundated, Land use of Inundated Area, Mitigation Requirements

Subject of Study - An assessment of potential impacts to natural resources that could result from new reservoir development.

Water Supply Alternative - Lists Big Sandy as a new water supply (reservoir) in the Sabine River Basin; No reference to Toledo Bend

Objectives - To survey river basins and perform an investigative assessment of proposed reservoir sites from the 1990 Texas Water Plan. To synthesize existing TPWD data and to provide better information to assist in managing current water resources and planning for future water development projects.

Recommendations/Conclusions - Toledo Bend Reservoir stream segment is designated Code E – Protected Species (fish species). Stream segment SB-S2 North Toledo Bend Wildlife Management Area has acquisition/mitigation requirements due to a wetland acquisition development project.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - n/a

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – n/a

Number & Name of Entities to Develop Water Supply Alternative - n/a

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - In reference lists for both 2001 and 2006 Region C Water Plans

Condition of Viability of Water Supply - n/a

Water Quality Source - n/a

Permitting Requirements - n/a

Identified Environmental Impacts - Endangered/ Threatened species exist in Toledo Bend Reservoir

Operational Considerations - n/a

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Report on Water Service Policy Considerations

Source/Author/Consultant - Black and Veatch

Publication Year - 1987

Organization - Tarrant County Water Control and Improvement District Number One

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Yield Study Toledo Bend Reservoir

Source/Author/Consultant - Brown & Root, Inc.

Publication Year - 1991

Organization - Sabine River Authority of Texas and Sabine River Authority of Louisiana

Type of Study - Technical

Location of Study - Toledo Bend

Reservoirs Included - Toledo Bend

Topics Covered - Water Balance Analysis: Calculations, Water Yield

Subject of Study - Update (new modeling) of firm yield calculations for Toledo Bend.

Water Supply Alternative - Toledo Bend

Objectives - Define and refine firm yield calculations (previous firm yield study conducted in 1959). Used operating rules to simulate Toledo Bend operation, assuming that reservoir used exclusively for water conservation—study neglected water used for hydroelectric power production. Existing reservoirs and fully utilized water rights through the end of 1989 were included.

Recommendations/Conclusions - Firm yield is 2,086,600 ac-ft/yr; critical drought of simulation period (January 1, 1940 to December 31, 2989) occurred from May 1862 to March 1969, with lowest lake level in December 1967.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 2, 086,000 ac-ft/yr total from Toledo Bend (1/2 for Texas). Study neglected water used for electric power generation and states that “this use does not affect the quantity available for water supply purposes.

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – n/a

Number & Name of Entities to Develop Water Supply Alternative - n/a

Cross Reference - n/a

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - n/a

Condition of Viability of Water Supply - n/a

Water Quality Source - n/a

Permitting Requirements - n/a

Identified Environmental Impacts - n/a

Operational Considerations - n/a

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Availability Modeling for the Sabine River Basin

Source/Author/Consultant - Brown and Root Services, R.J. Brandes Company, and Crespo Consulting Services

Publication Year - 2001

Organization - Texas Natural Resource Conservation Commission (now TCEQ)

Type of Study - Technical

Location of Study - Sabine River Basin

Reservoirs Included - Toledo Bend

Topics Covered - Water balance Analysis: Calculations, Water Availability Model, Water Rights, Water Reuse

Subject of Study - Scenario modeling to simulate effects of extended dry periods on available water, water rights cancellation, and municipal/industrial reuse for the Sabine River Basin.

Water Supply Alternative - n/a

Objectives - Determine the:

- Projected amount of water available for all water rights during extended dry periods
- Projected amount of water that would be available if cancellation procedures were instigated under the provisions of Subchapter E, Chapter 11, of the Texas Water Code.
- Potential impact of reusing municipal and industrial effluent on existing water rights, instream uses, and freshwater inflows to bays and estuaries.

Recommendations/Conclusions - (See page v and Table ES-4.) The conclusions of this water availability study are as follows:

- The Sabine River Basin, located in southeastern Texas, drains an area of approximately 9,756 square miles. There are a total of 183 Texas water rights simulated with authorized annual diversions totaling 1,886,424 ac-ft/yr.
- Shortages occur frequently for a number of water rights; but the vast majority of these rights are located in the upper reaches of tributaries where streamflows are limited.
- Comparisons of the three reuse scenarios show that varying levels of wastewater reuse does impact water supply. The reliability of a water right generally decreases as the level of reuse increases. Reuse of wastewater decreases the amount of storage in a reservoir; but the magnitude of the decrease is much more pronounced for reservoirs in the upper basin.
- There are 57 water rights with authorized diversions totaling 5,450 ac-ft/yr, approximately 0.3 percent of the total authorized diversions in the basin, which were simulated as being cancelled. Thus hypothetical cancellation of water rights has a negligible effect on the reliability of water supply for most rights in the basin. Limiting diversions in the maximum use scenarios reduces the diversion amount by approximately 1,240,800 ac-ft/yr and shows that water use in the basin is approximately 20 percent of the total authorized amount.
- The amount of unappropriated flows varies based on the location of the control point. In general, wastewater reuse has a greater effect on unappropriated flows for those locations in the upstream portions of the basin.
- The amount of regulated flows varies based on the location of the control point. In general, wastewater reuse has a greater effect on regulated flows for those locations in the upstream portions of the basin.

- Over a 59-year period of record, the average naturalized flow discharging into Sabine Lake from the Sabine River is approximately 6,857,000 ac-ft/yr, with a minimum annual inflow of 2,492,000 ac-ft/yr.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Toledo Bend-Texas = 750,000 ac-ft/yr (study examined availability of existing water rights/increase in availability if some rights cancelled. 750,000 ac-ft/yr is total water rights allocation for Texas from Toledo Bend).

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative - n/a

Number & Name of Entities to Develop Water Supply Alternative - n/a

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Springs of Texas, Volume I
Source/Author/Consultant - Brune, Gunnar
Publication Year - 1981
Organization - Branch-Smith, Inc.
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Texas Water Development Board Report 189 Major and Historical Springs of Texas

Source/Author/Consultant - Brune, Gunnar

Publication Year - 1975

Organization - Texas Water Development Board

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - The State of Texas Clean Rivers Program, Targeted Monitoring in the Cypress Basin: Nutrient Study In Lake O' the Pines, Final Report.

Source/Author/Consultant - Caddo Lake Institute

Publication Year - 2000

Organization - TCEQ

Type of Study - Technical

Location of Study - Cypress Creek Basin

Reservoirs Included - LOP

Topics Covered - Water Quality

Subject of Study - Water Quality

Water Supply Alternative - None

Objectives - Water Quality

Recommendations/Conclusions - None

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - None

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative - none provided

Number & Name of Entities to Develop Water Supply Alternative - NETMWD

Cross Reference - None

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - NTMWD, DWU

Condition of Viability of Water Supply - None

Water Quality Source - Low DO

Permitting Requirements - IBT

Identified Environmental Impacts - N/A

Operational Considerations - Transmission, env. Flows

Economic Impact for Both Region C & D - None

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - DWU Reclaimed Water Study
Source/Author/Consultant - CH2M Hill
Publication Year - 1993
Organization -
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Long-Range Water Demand Forecasts
Source/Author/Consultant - CH2M Hill
Publication Year - 1984
Organization - Dallas Water Utilities Service Area
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Preliminary Engineering Design for a Lake Texoma Surface Water Supply System

Source/Author/Consultant - CH2M Hill

Publication Year - 1986

Organization - Greater Texoma Utility Authority, Dallas

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Draft 2005 Update to the City of Dallas Long Range Water Supply Plan

Source/Author/Consultant - Chiang, Patel and Yerby, Inc

Publication Year - 2005

Organization - Dallas Water Utilities

Type of Study - Long Range Water Supply Plan

Location of Study - Dallas

Reservoirs Included - Lake Texoma

Topics Covered - Lake Texoma Water Supply & Diversion, Oklahoma Water Diversion

Subject of Study - Water Use Plan

Water Supply Alternative - Looks at Two Lake Texoma Alternatives, Pretreatment and Discharge to Ray Roberts Lake (Option A), and Fully Treated Water to Elm Fork Clearwell (Option B). Also looks at Water Supply from Oklahoma via Red River to Lake Lavon or Ray Roberts Lake

Objectives - To Rank the water supply options available to Dallas Water Utilities and make recommendations.

Recommendations/Conclusions - Lake Texoma water supply options for DWU for Pretreatment and Discharge to Ray Roberts Lake(Option A) and Fully Treated water to Elm Fork Clearwell (Option B)were ranked 21 and 15 respectively. The higher costs and permitting issues seem to leave these options off the recommendation list.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Report states that 268 mgd (300,000 acft/yr) of Lake Texoma Water is allocated to municipal water supply in Texas. 187.7 mgd(210,000 acft/yr) is permitted or otherwise allocated to other agencies, leaving 80.3 mgd(90,000 acft/yr) potentially available to

Type of Water Supply Alternative - Report also mentions buying water from the State of Oklahoma, but this would be water in the Red River, not water permitted to Oklahoma from Lake Texoma. Buying Lake Texoma water that is permitted to Oklahoma is not discussed.

Detailed Cost of Water Supply Alternative – Option A had an estimated cost of \$1.48/1000 gal and Option B had a cost of \$1.17/1000 gal.

Number & Name of Entities to Develop Water Supply Alternative - This report focuses on water supply for DWU.

Cross Reference - N/A

Level of Detail of Study - Broad water supply study.

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - Lake Texoma

Permitting Requirements - The report mentions the permit modifications that would need to take place. TCEQ would have to issue new water rights permit as well as a new interbasin transfer permit. USACE would also have to issue a new permit for water conveyance. DWU would have to

Identified Environmental Impacts - "Conveyance pipelines would have to traverse some wetlands in North Texas. These areas will be disturbed during construction."

Operational Considerations - N/A
Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Draft 2005 Update to the City of Dallas Long Range Water Supply Plan

Source/Author/Consultant - Chiang, Patel and Yerby, Inc.

Publication Year - 2005

Organization - Dallas Water Utilities

Type of Study - Planning

Location of Study - Dallas

Reservoirs Included - Lake Wright Patman

Topics Covered - Summary of other studies

Subject of Study - Update water supply needs and available supplies to Dallas Water Utilities through year 2060

Water Supply Alternative - Multiple alternatives, including Toledo Bend, Lake of the Pines, Lake Texoma, Wright Patman, and others

Objectives - Recommendations on future implementation and sequencing of alternatives to meet interim and year 2060 demands.

Recommendations/Conclusions - 1) Purchase water from Texarkana, 2) Purchase and Divert water from Wright Patman Lake - Flood Pool Reallocation, 3) Purchase and Divert water from Wright Patman Lake - System Operation, 4) Purchase and Divert water from Wright Patman Lake - Cooperative Project

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 112,100 acre-feet per year

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – Page 7-26, Table 7.30: 116 MGD, \$562.5 million capital cost, \$1.58 per 1,000 gal, 30-yr cost, \$1.19 per 1,000 gal, 50-yr cost (No mention of TWDB standard)

Number & Name of Entities to Develop Water Supply Alternative - 1-DWU

Cross Reference - N/A

Level of Detail of Study - Planning

Reference for Water Supply Alternative, if included in Region C Water Plan - 2006 Region C Water Plan, Page 4E.7

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - TCEQ - New permit required for water rights, TCEQ - New permit required for interbasin transfer, USACE - New permit required for conveyance and reservoir changes and 404 Permit

Identified Environmental Impacts - Environmental Issues - Inundation, mitigation, Wetlands.

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Draft 2005 Update to the City of Dallas Long Range Water Supply Plan

Source/Author/Consultant - Chiang, Patel and Yerby, Inc.

Publication Year - 2005

Organization - Dallas Water Utilities

Type of Study - Planning

Location of Study - Dallas

Reservoirs Included - Toledo Bend

Topics Covered - Calculations, Summary of Other Work

Subject of Study - Update water supply needs and available supplies through 2060

Water Supply Alternative - 26 alternatives, including Toledo Bend, Lake of the Pines, Lake Texoma, Wright Patman, and others

Objectives - Develop recommendations on future implementation and sequencing of alternatives to meet interim and 2060 demands.

Recommendations/Conclusions - 100 MGD supply from Fastrill or Toledo Bend by 2045, as one of 11 recommended strategies

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Recommended diverting 100 MGD (112,000 ac-ft/yr) from Toledo Bend or Fastrill by 2045 or 2050 to DWU raw water system. Total yield of Toledo Bend reported as 1,500,000 ac-ft/yr. (No documentation of yield calculations provided)

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – no mention of TWDB standard.

Pg 8-2, 2 options for Toledo Bend:

Option A–179 MG, \$1,715.4 million capital cost, \$1.74 per 1,000 gal, 50-yr cost

Option B–89 MGD, \$475.7 million capital cost, \$1.23 per 1,000 gal 50-yr cost

Number & Name of Entities to Develop Water Supply Alternative - 4-DWU and SRA for one option, or cooperative project with NTMWD and TRWD_(Note: the report is inconsistent with naming, descriptions and participants of the two options)

Cross Reference - none

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - 2006 Region C Water Plan

Condition of Viability of Water Supply - existing supply and water right permit

Water Quality Source - none mentioned

Permitting Requirements - Interbasin Transfer, U.S. Army Corps of Engineers 404 Permit for Conveyance

Identified Environmental Impacts - Low. No new area inundated, minimal mitigation area (pg 8-8), potential instream flow impacts, and clearing of wooded areas along pipe routes.

Operational Considerations - Convey to and operated with Lake Fork or Lake Palestine

Economic Impact for Both Region C & D - none mentioned

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - 2000 Update Long Range Water Supply Plan
Source/Author/Consultant - Chiang, Patel, and Yerby, Inc.
Publication Year - 2000
Organization - Dallas Water Utilities
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Supply Planning for Denton; The Past, Present, and Future, presentation given by City of Denton Water Utilities to the Denton City Council

Source/Author/Consultant - City of Denton Water Utilities

Publication Year - 2003

Organization - City of Denton

Type of Study - Technical

Location of Study - Denton

Reservoirs Included - Lake Ray Roberts

Topics Covered - Water, Wastewater and Solid Waste Planning

Subject of Study - Water, Wastewater and Solid Waste Planning

Water Supply Alternative - N/A

Objectives - The objective of the report is to provide planning for water, wastewater and solid waste needs of City of Denton till 2050

Recommendations/Conclusions - With the construction of the City of Denton's share of the Lake Ray Robert's water supply project and the new Lake Ray Roberts Water Treatment Plant (LRRWTP), the city will have adequate water supply and treatment capacity to meet projected growth needs through the next ten years. The new water plant will have a capacity of 20 MGD, with a capability to expand to 50 MGD. The new facility includes a high service pump station and a 54" treated water transmission line that has sufficient capacity to support the 50 MGD plant expansion.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 50 MGD

Type of Water Supply Alternative - Surface Water, Lake Ray Roberts

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - The Economic, Fiscal, and Developmental Impacts of the Proposed Lower Bois d'Arc Reservoir Project

Source/Author/Consultant - Clower, T. L. and B. L. Weinstein

Publication Year - 1986

Organization - North Texas Municipal Water District

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Lake Palestine, Dallas Water Utilities, Utilization and Pipeline Right of Way Study
Source/Author/Consultant - Dannenbaum Engineering Corp. and Gutierrez, Smouse, Wilmut & Associates, Inc.
Publication Year - 1989
Organization -
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Planning Policy Considerations

Source/Author/Consultant - Drumm, Ann

Publication Year - 2002

Organization - Region C Water Planning Group

Type of Study - Opinion Paper

Location of Study - None

Reservoirs Included - None

Topics Covered - Policy

Subject of Study - Water Supply

Water Supply Alternative - None

Objectives - Philosophy of water policy-making

Recommendations/Conclusions - Soft versus hard path, centralized infrastructure, dams, reservoirs versus extensive investment in decentralized infrastructure, decentralized facilities.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - None

Type of Water Supply Alternative - none

Detailed Cost of Water Supply Alternative – none provided

Number & Name of Entities to Develop Water Supply Alternative - None

Cross Reference - none

Level of Detail of Study - None

Reference for Water Supply Alternative, if included in Region C Water Plan - None

Condition of Viability of Water Supply - None

Water Quality Source - None

Permitting Requirements - None

Identified Environmental Impacts - None

Operational Considerations - None

Economic Impact for Both Region C & D - None

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Supply Planning Considerations, provided to the Region C Water Planning Group, October 14, 2002

Source/Author/Consultant - Drumm, Ann

Publication Year - 2002

Organization - Region C Water Planning Group

Type of Study - Technical

Location of Study - N/A

Reservoirs Included - N/A

Topics Covered - Water Planning Policy

Subject of Study - Water Planning Policy

Water Supply Alternative - N/A

Objectives - The report provides a look into "the soft path for Water" for evaluating water projects(Dams)

Recommendations/Conclusions - N/A

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Section Nine: Future Land Use Plan, Comprehensive Plan

Source/Author/Consultant - Dunkin, Sefko & Associates, Inc.

Publication Year - 2000

Organization - City of Crandall, City of Combine, and Crandall Independent School District

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Report of the Engineering Advisory Committee to the Red River Compact Commission
Source/Author/Consultant - Engineering Advisory Committee to the Red River Compact Commission
Publication Year - 1970
Organization - Red River Compact Commission
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Report on Lake O' the Pines Camp Marion, Morris, and Upshur Counties Texas, EPA Region VI

Source/Author/Consultant - EPA

Publication Year - 1977

Organization - NETMWD

Type of Study - Technical

Location of Study - Cypress Creek Basin

Reservoirs Included - LOP

Topics Covered - Water Supply

Subject of Study - Water Supply

Water Supply Alternative - None

Objectives - Water Quality

Recommendations/Conclusions - None

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - None

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative - none provided

Number & Name of Entities to Develop Water Supply Alternative - NETMWD

Cross Reference - None

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - None

Condition of Viability of Water Supply - None

Water Quality Source - Low DO

Permitting Requirements - IBT

Identified Environmental Impacts - N/A

Operational Considerations - Transmission, env. Flows

Economic Impact for Both Region C & D - None

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Reallocation of Storage in Federal Reservoirs for Future Water Supply

Source/Author/Consultant - Espey Consultants, Inc.

Publication Year - 2006

Organization - Texas Water Development Board

Type of Study - Technical

Location of Study - Statewide

Reservoirs Included - All Federal Lakes

Topics Covered - Water Supply

Subject of Study - Reallocation of Storage

Water Supply Alternative - All Federal Lakes

Objectives - Evaluate the potential for reallocation of federal storage in Texas to water Supply

Recommendations/Conclusions - Reallocation of USACE reservoirs can provide an effective use of water by converting storage to additional water supply. Every reservoir has its own defining characteristics in terms of environmental impacts, reservoir storage use, downstream flooding risks and cost associated with reallocation. Entities evaluating reallocation of federal reservoir must work closely with the USACE, state agencies and officials to meet all of the state and federal requirements as outlined in this report. Reallocation of reservoir storage in USACE reservoirs is a very complicated and time consuming process; however, reallocation of existing storage to dependable yield can be extremely beneficial depending on the individual reservoirs and surrounding demand centers.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Lake Wright Patman: Current:- Elevation at top of conservation (228.6) - Dependable Yield = 242,991 ac-ft per year. USACE Maximum Reallocation Authority:- Elevation at top of conservation (230.0) - Dependable Yield = 304,374 ac-ft per year

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Availability Models for the Red and Canadian River Basins

Source/Author/Consultant - Espey Consulting, Inc., PBS&J, Halff Associates, Inc., Crespo Consulting Services, Inc., and CivilTech Engineering, Inc.:

Publication Year - 2002

Organization - Texas Natural Resource Conservation Commission

Type of Study - Water Availability Model

Location of Study - Red and Canadian River Basin

Reservoirs Included - Lake Texoma

Topics Covered - Water availability in the Red River Basin

Subject of Study - Red and Canadian River Basin

Water Supply Alternative - Lake Texoma Water

Objectives - Determine the water availability in the Red and Canadian River Basins in different scenarios

Recommendations/Conclusions - Although there were 24 major reservoirs in the Red River Basin that were included in the firm yield analysis, only Moss Lake, Lake Texoma, and Sanat Rose Lake met their diversion targets during the critical period. Therefore, these three reservoirs have "permitted firm yields" equal to their authorized diversion amounts.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Lake Texoma has an estimated firm yield of 932,950 ac-ft/yr; however, no infrastructure is currently in place to enable significant use of the available water. Recent information from the Tulsa District Office indicates the lake's firm yield is 150 mgd or

Type of Water Supply Alternative - Water from Lake Texoma is an option. Study notes that saline water originating from the Upper and Middle Red River Basins is a problem.

Detailed Cost of Water Supply Alternative - Study does not detail a cost estimate for Lake Texoma water.

Number & Name of Entities to Develop Water Supply Alternative - Study does not identify entities to develop the water source.

Cross Reference - N/A

Level of Detail of Study - Broad water availability study

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - Study mentions that there is no infrastructure in place to enable significant use of the available water.

Water Quality Source - Lake Texoma

Permitting Requirements - Study has an appendix F that describes some water rights issues and how they were modeled with respect to the program.

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Denton County Water and Wastewater Study Regional Master Plan for the Year 2010, prepared for the Denton County Commissioners Court, Dallas

Source/Author/Consultant - Espey, Huston & Associates, Inc., Chiang, Patel and Associates, Inc., and Hutchison, Price, Boyle and Brooks

Publication Year - 1988

Organization - Denton County Commissioners Court, Dallas

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Basin Reservoir Study Summary

Source/Author/Consultant - F&N

Publication Year - 2000

Organization - NTMWD and TRWD

Type of Study - Planning, Evaluation

Location of Study - Sulphur River Basin

Reservoirs Included - Marvin Nichols

Topics Covered - Water Balance Analysis, Calculations

Subject of Study - Identification of possible alternate sources and viability in terms cost, advantages, and concerns

Water Supply Alternative - Yes. George Parkhouse 1 & 2 and Marvin Nichols 1 & 2

Objectives - Analysis of proposed reservoir sites, review yields, refine opinions of costs, examine water quality, and review environmental issues. Analysis of conflicts

Recommendations/Conclusions - 1) Comparing the overall project costs (excluding the conflict costs) with the estimated firm yield of the reservoirs, the MN-1 and MN-1A sites have a lower unit cost per acre-foot per year of firm yield than any of the other sites. 2) Recommended: MN-1 or MN-1A. Detailed cost analysis needed to decide between these two sites. 3) Conflict

cost was calculated as follows: MN-1 = \$35,607,959, MN-1A = \$52,688,415, MN-2A=\$26,262,838, GP-2=\$12,337,719, and GP-3=\$37,657,296.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - No

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – Yes

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply - lower unit cost per acre-foot per year of firm yield than any of the other sites

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Basin: Hydrologic and Hydraulic Models

Source/Author/Consultant - F&N

Publication Year - 2008

Organization - Sulphur River Basin Group

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Marvin Nichols

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Report on Water Supply, Treatment and Transmission Facilities to Meet Estimated 1980 Demands

Source/Author/Consultant - Forrest and Cotton, Inc.

Publication Year - 1964

Organization - North Texas Municipal Water District

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Environmental Assessment for Cities of Howe, Van Alstyne, Anna, and Melissa Surface Water Supply Project

Source/Author/Consultant - Freeman-Millican, Inc

Publication Year - 2003

Organization - Greater Texoma Utility Authority

Type of Study - Technical

Location of Study - City of Howe, Can Alstyne, Anna and Melissa

Reservoirs Included - N/A

Topics Covered - Environmental Assessment of water supply projects

Subject of Study - Environmental Assessment of water supply projects

Water Supply Alternative - N/A

Objectives - The study provides an assessment of the various water supply projects in these four cities.

Recommendations/Conclusions - The report provides detailed analysis, cost summary, affect of various components of projects on the environment. Provides wetland delineation for the pipelines.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - Surface Water

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Surface Water Supply to Howe, Van Alstyne, Anna, and Melissa, feasibility report

Source/Author/Consultant - Freeman-Millican, Inc.

Publication Year - 2004

Organization - Greater Texoma Utility Authority

Type of Study - Technical

Location of Study - City of Howe, Can Alstyne, Anna and Melissa

Reservoirs Included - N/A

Topics Covered - Feasibility Study

Subject of Study - Feasibility Study

Water Supply Alternative - N/A

Objectives - Purpose of this report is to find out whether surface water could be brought into these communities at a reasonable cost

Recommendations/Conclusions - 1) Since ground water will not meet the long term water supply and demands, the communities in southern Grayson County and northern Collin County should develop water supply system. Water transmission line should be constructed between McKinney and Howe. The water line ultimately should be extended to Sherman and be connected to the NTMWD second delivery point.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 2.5MGD

Type of Water Supply Alternative - Surface Water supply transmission construction

Detailed Cost of Water Supply Alternative - \$2.2 Million

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - 2001 Region C Water Plan

Source/Author/Consultant - Frees and Nichols, Inc.

Publication Year - 2001

Organization - Freese and Nichols, Inc., Alan Plummer Associates, Inc., Chiang, Patel & Yerby, Inc., and Cooksey Communications, Inc

Type of Study - Technical

Location of Study - Region C

Reservoirs Included - Lake O' The Pines

Topics Covered - Water Supply

Subject of Study - Region wide

Water Supply Alternative -

Objectives - Regional Water Supply Study

Recommendations/Conclusions - Chapter 5

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative - Surface, Groundwater

Detailed Cost of Water Supply Alternative - none provided

Number & Name of Entities to Develop Water Supply Alternative - Regionwide

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements - IBT, Water Rights

Identified Environmental Impacts - Limited

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Toledo Bend Group Summary Report on Alternatives 9 and 10

Source/Author/Consultant - Freese & Nichols

Publication Year - 2003

Organization - Toledo Bend Group

Type of Study - Planning

Location of Study - Toledo Bend

Reservoirs Included - Toledo Bend

Topics Covered - Calculations, Summary of Other Work

Subject of Study - Summary of alternative for providing Toledo Bend to Metroplex

Water Supply Alternative - Toledo Bend

Objectives - Revise population, water use and demand projections; describe final two alternatives (based on delivery) and summarize cost

Recommendations/Conclusions - Projected higher demand by 550,000 ac-ft/yr by 2050.

Alternative 9: 600,000 ac-ft/yr to metroplex, cost \$3.2 billion, average unit cost (2007-2011) = \$0.567;

Alternative 10: 1,000,000 ac-ft/yr to metroplex, cost \$4.05 billion, average unit cost = \$0.602.

No inflation, no raw water cost.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - not provided

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – Alternative 9: 600,000 ac-ft/yr to metroplex, cost \$3.2 billion, average unit cost (2007-2011) = \$0.567; Alternative 10: 1,000,000 ac-ft/yr to metroplex, cost \$4.05 billion, average unit cost = \$0.602.

No inflation, no raw water cost.

Number & Name of Entities to Develop Water Supply Alternative - 4-SRA, DWU, NTMWD, TRWD

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - Possible reference for 2006 Region C Water Plan and Region I Water Plan

Condition of Viability of Water Supply - Existing reservoir, known yield

Water Quality Source - none provided

Permitting Requirements - none mentioned in report

Identified Environmental Impacts - none mentioned in report

Operational Considerations - Water from Lake Fork delivered by 2007 for DWU; TRWD through Cedar Creek; DWU and NTMWD through Lake Fork

Economic Impact for Both Region C & D - none mentioned

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - 2001 Region C Water Plan

Source/Author/Consultant - Freese & Nichols, APAI, CP&Y, Cooksey Communications, Inc.

Publication Year - 2001

Organization - Region C Water Planning Group

Type of Study - Planning

Location of Study - Region C

Reservoirs Included - Toledo Bend

Topics Covered - Socio-economic Impacts, Water Supply, Environmental Impacts, Cost of Water Supply, Inter-Basin transfers, Water Demand

Subject of Study - First Region C Water Plan - 2001

Water Supply Alternative - Toledo Bend – considered, but didn't make final list for further study.; A list of management strategies is listed in Section 5. See p. 5.18 for existing and potential reservoirs for water supply. See p. 5.20 for final list of reservoirs and Table 5.4 fo

Objectives - To summarize current water uses and demand centers, water providers and current sources and constraints of water supply for Region C. To develop population and water demand projections.

Recommendations/Conclusions - The sources of supply for Region C in 2050 include:

- 1,138,000 acre-feet per year (56%) from in-region reservoirs
- 181,000 acre-feet per year (9%) from groundwater
- 70,000 acre-feet per year (3%) from local supplies
- 82,000 acre-feet per year (4%) from reuse
- 552,000 acre-feet per year (28%) from imports from other regions

The projected supply of water is significantly less than the projected use for 2050. The most significant potential threats to existing water supplies in Region C are surface water quality concerns, groundwater drawdown, and groundwater quality. Constraints on the development of new supplies include the availability of sites and unappropriated water for new water supply reservoirs and the challenges imposed by environmental concerns and permitting. Recommended water management strategies are listed for each major water provider and for each county within Region C (see pages ES15-ES2). Recommended that Region C include interbasin transfers as part of it's management plan.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - n/a

Type of Water Supply Alternative - n/a

Detailed Cost of Water Supply Alternative – n/a

Number & Name of Entities to Develop Water Supply Alternative - n/a

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - n/a

Condition of Viability of Water Supply - n/a

Water Quality Source - n/a

Permitting Requirements - n/a

Identified Environmental Impacts - •Inundation of wetlands and other wildlife habitat, including bottomland hardwoods

•Changes to streamflows and streamflow patterns downstream

•Impacts on inflows to bays and estuaries

•Impacts on threatened and endangered species

Operational Considerations - n/a

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - 2006 Region C Water Plan

Source/Author/Consultant - Freese & Nichols; APAI, CP&Y, Cooksey Communications, Inc.

Publication Year - 2006

Organization - Region C Water Planning Group

Type of Study - Planning

Location of Study - Region C and surrounding areas

Reservoirs Included - Toledo Bend

Topics Covered - Summary of Other Work, Water Conservation, Water Supply, Environmental Impacts, Inter-Basin Transfers, Costs of Water Supply, Water Demand

Subject of Study - Regional Water Supply Planning

Water Supply Alternative - Numerous; includes Toledo Bend

Objectives - Population and water demand projections; analysis of current supplies, evaluation of water management strategies, recommendations, impacts of strategies, water conservation and drought management

Recommendations/Conclusions - Projected shortage for the region in 2060 is 1.9 million ac-ft/yr. Recommended strategies include 400,000 ac-ft/yr from Toledo Bend.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Reported approx. 1,000,000 ac-ft/yr for Texas and same amount for Louisiana. SRA-TX holds 750,000 ac-ft/yr water right and is seeking right to divert additional 293,300 ac-ft/yr. Maximum supply available to Region C is 600,000 ac-ft/yr (Section 4D.1). F

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – TWDB Standard cost estimate

Capital Cost: \$2,428,789,000 (Region C share) \$1.92 billion for recommended strategy

\$1.50 per 1000 gallons (pre-amortization)

\$0.60 per 1000 gallons (post-amortization)

Number & Name of Entities to Develop Water Supply Alternative - 5-DWU, NTMWD, SRA, TRWD, UTRWD

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - n/a

Condition of Viability of Water Supply - high reliability, good consistency, few problems with key water quality parameters

Water Quality Source - not mentioned

Permitting Requirements - inter-basin transfer

Identified Environmental Impacts - Regarded as median - low impact, impacts considered limited since Toledo Bend is an existing source.

Operational Considerations - Delivery of 100,000 ac-ft/yr to Upper Sabine. Medium to low water quality impact expected for transfer of Toledo Bend water to Lake Fork

Economic Impact for Both Region C & D - none mentioned

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Addendum to Region C Water Plan

Source/Author/Consultant - Freese & Nichols; APAI, CP&Y, Cooksey Communications, Inc.

Publication Year - 2001

Organization - Region C Water Planning Group

Type of Study - Planning

Location of Study - Region C

Reservoirs Included - Marvin Nichols, Lake Texoma

Topics Covered - Water Yield, Water Supply

Subject of Study - Addendum to 2001 Region C Water Plan

Water Supply Alternative - None discussed

Objectives - To document and respond to comments from TWDB regarding the 2001 Region C Water Plan. To correct internal inconsistencies and make the plan consistent with TWDB regulations and the results of plans from other regions.

Recommendations/Conclusions - Questions, comments and discrepancies from 2001 report were corrected and included in this addendum along with additional figures, tables and information requested from TWDB.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - n/a

Type of Water Supply Alternative - n/a

Detailed Cost of Water Supply Alternative - n/a

Number & Name of Entities to Develop Water Supply Alternative - n/a

Cross Reference - n/a

Level of Detail of Study - n/a

Reference for Water Supply Alternative, if included in Region C Water Plan - n/a

Condition of Viability of Water Supply - n/a

Water Quality Source - n/a

Permitting Requirements - n/a

Identified Environmental Impacts - n/a

Operational Considerations - n/a

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - 2001 Region C Water Plan

Source/Author/Consultant - Freese and Nichols Inc., Alan Plummer Associates Inc., Chiang Patel and Yerby Inc., Cooksey Communications

Publication Year - 2001

Organization - Texas Water Development Board

Type of Study - Planning

Location of Study - Region C Water Planning Area, Texas

Reservoirs Included - Lake Texoma

Topics Covered - Water Availability, use, and planning

Subject of Study - Planning for Region C Water Needs

Water Supply Alternative - Multiple

Objectives - Provide a regional water plan for 16 Counties in North Central Texas to the year 2060.

Recommendations/Conclusions - The 2006 Region C water plan recommends use of 285,471 acre feet per year of water from Lake Texoma by the year 2060. The plan also discusses the possibility of an additional 220,000 acre feet per year from Lake Texoma which would require authorization by the U.S. Congress from hydropower storage to water supply. The 2006 plan also assumes that any past or future Lake Texoma water supply allocations for Oklahoma is unavailable for use in Texas.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Lake Texoma has a Firm Yield of 1,088,500 acre feet per year (conservation storage) for hydropower and water supply.

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – Costs are provided for recommended alternatives

Number & Name of Entities to Develop Water Supply Alternative - DWU, NTMWD, TRWD, UTRWD

Cross Reference - USACE 2005 Draft Environmental Assessment

Level of Detail of Study - Planning

Reference for Water Supply Alternative, if included in Region C Water Plan - Yes

Condition of Viability of Water Supply - N/A

Water Quality Source - Lake Texoma requires blending or desalination.

Permitting Requirements - Reallocation of hydropower to water supply would require authorization by the U.S. Congress

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - 2006 Region C Water Plan

Source/Author/Consultant - Freese and Nichols Inc., Alan Plummer Associates Inc., Chiang Patel and Yerby Inc., Cooksey Communications

Publication Year - 2006

Organization - Texas Water Development Board

Type of Study - Planning

Location of Study - Region C Water Planning Area, Texas

Reservoirs Included - Lake Texoma

Topics Covered - Water Availability, use, and planning

Subject of Study - Planning for Region C Water Needs

Water Supply Alternative - Multiple

Objectives - Provide a regional water plan for 16 Counties in North Central Texas to the year 2060.

Recommendations/Conclusions - The 2001 Region C water plan is referenced by the 2006 Region C water plan when discussing available water from Lake Texoma. The 2001 plan provides some more details on the planned use of TCEQ water diversion permits from Texoma.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - 2006 Region C Water Plan

Level of Detail of Study - Planning

Reference for Water Supply Alternative, if included in Region C Water Plan - Yes

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - A Survey Report and Environmental Statement on the Study of Lake Texoma, Red River, Oklahoma, and Texas, Tulsa

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 1981

Organization - U.S. Army Corps of Engineers

Type of Study - Technical

Location of Study - Denison Dam - Lake Texoma

Reservoirs Included - Lake Texoma

Topics Covered - Environmental Impact Assessment, Survey, Water Availability, Hydroelectricity, Sediment Control

Subject of Study - Environmental Impact Assessment, Survey, Water Availability, Hydroelectricity, Sediment Control

Water Supply Alternative - N/A

Objectives - The purpose of the study is to determine whether it would be advisable to modify the existing project, giving consideration to future water resource needs of the area with respect to irrigation, municipal and industrial water supply, pump-back hydroelectric power, sediment control, and other purposes of flood control, power improving navigation, regulation of flow on the Red River, and water supply for which Denison project is being operated and maintained.

Recommendations/Conclusions - The study determined a need for: retention of present flood control capabilities, addition of hydropower capability, identification of storage with dependable yield to satisfy preset water supply contracts and Congressional authorizations, provision for storage for irrigation, addition of recreation facilities, preservation of existing fish and wildlife habitat, and recovery of endangered cultural resources. Convert 83,994 Acre-Feet of power storage to yield 64.6 mgd for municipal and industrial water supply. Authorize the Chief of Engineers discretionary authority to reallocate up to 50,000 acre-feet of remaining power storage to water supply.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 64.9 MGD

Type of Water Supply Alternative - Surface Water

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Basic Perspective on Water Resource Potential of the Cypress Creek Basin

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 1977

Organization - Northeast Texas Municipal Water District

Type of Study - Technical

Location of Study - Cypress Creek Basin

Reservoirs Included - Lake O' The Pines, Bob Sandlin, Lake Cypress Springs, Monticello, Walsh, Ellison, Johnson

Topics Covered - Water Supply

Subject of Study - Cypress Basin

Water Supply Alternative - Proposed Marshall Reservoir on Little Cypress Creek & Black Cypress Reservoir on Black Cypress Creek

Objectives - To review the long-range water resource potential of the Texas portion of the Cypress Creek basin, evaluating (a) the dependable yield made available by existing reservoirs and (b) the probable additional yield obtainable from optimum development of the basin.

Recommendations/Conclusions - Existing water conservation development on Big Cypress Creek and tributary streams represents approximately one third of the long-range potential of the Cypress Basin. Of the three principal sub-watersheds, only Big Cypress Creek above Lake O' The Pines has so far been used as a source of surface water supply to any significant extent. Both the Little Cypress Creek watershed and the Black Cypress Creek watershed are at present without conservation storage reservoirs, and most of their runoff flows out of Texas unused. The combined dependable yield of the existing water supply facilities on Big Cypress Creek is estimated to total 245,300 acre-feet per year, of which the major portion – 163,400 acre-feet per year – is derived from Lake O' The Pines. The proposed Marshall Reservoir project on Little Cypress Creek is capable of providing approximately 284,100 acre-feet per year of additional supply, and the Black Cypress Reservoir on Black Cypress Creek will contribute a future increment of approximately 192,000 acre-feet per year. These two watersheds are among the few remaining areas in Texas with major amounts of undeveloped water supply resources. It is virtually certain that they will be developed within the next ten to twenty years, as the water requirements of the state continue to increase.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 245,300 acre-feet per year

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – none provided

Number & Name of Entities to Develop Water Supply Alternative - 1. Marshall Reservoir project on Little Cypress Creek 2. Black Cypress Reservoir on Black Cypress Creek, Neither were ever developed

Cross Reference - Red River Compact Commission Report of the Engineering Advisory Committee to the Red River compact Commission June 1970; Texas Water Development Board Continuing Water Resources Planning and Development for Texas Volume 2, May 1977; Texas Water Developmen

Level of Detail of Study - Red River Compact Commission Report of the Engineering Advisory Committee to the Red River compact Commission June 1970; Texas Water Development Board Continuing Water Resources Planning and Development for Texas Volume 2, May 1977; Texas Water Developmen

Reference for Water Supply Alternative, if included in Region C Water Plan - Does not make specific recommendations, states that water is currently (1977) available and its likely that the water will become less available as the water requirements in the State of Texas increase

Condition of Viability of Water Supply - not addressed

Water Quality Source - not addressed - only discussed volume available

Permitting Requirements - not addressed

Identified Environmental Impacts - not addressed

Operational Considerations - not addressed

Economic Impact for Both Region C & D - not addressed

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Lake O' The Pines/Cypress Basin Water Supply Study

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 2003

Organization - Northeast Texas Municipal Water District

Type of Study - Technical

Location of Study - Cypress Creek Basin

Reservoirs Included - Lake O' The Pines

Topics Covered - Water Transition, Water Supply

Subject of Study - Cypress Basin

Water Supply Alternative - Cypress Basin

Objectives - Evaluate the quantity of water available to the NTMWS from the Cypress Basin and to determine the size, location, and the cost of facilities that would be required to transit Cypress Basin raw water to the NTMWD system. Also to determine the impact of raw water delivery on the timing of NTMWD distribution system improvements and water treatment plant expansions and/or new water treatment plant construction.

Recommendations/Conclusions - The total estimated project costs for the most expensive option and least expensive option shown in Table 8-1 are within 2.4% of each other. Therefore the cost differences between the routes are not significant, and the route with the most potential benefits to the NTMWD should be chosen. It is recommended that the NTMWD pursue the LOTP North Route B and construct a new North WTP by 2010. The demands for the North System Customers are growing faster than those for the South System customers because much of the South System projected demand is based on potential growth that is only now beginning. Also, a 210-MGD North WTP could be fully utilized in the North System in 2020, whereas a South WTP with a maximum capacity of only 130 MGD would require that a North WTP also be constructed or that the Wylie WTP be expanded beyond 910 MGD. LOTP raw water delivery to the north could be delivered directly to the North WTP or diverted into Lake Lavon. A new North WTP could utilize Lake Lavon for terminal storage and peaking if it were connected to Lake Lavon via a new pump station (these costs are not included in this report)

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Quantity that may be available is 87,900 acre-feet per year based on; 20,000 from Lake Bob Sandlin, 61,900 from Lake O'The Pines, and 6,000 from Lake Cypress Springs

Type of Water Supply Alternative - Surface water piped in as raw water from Cypress Creek Basin - specifically Lake O'The Pines

Detailed Cost of Water Supply Alternative - 2003 Dollars - Estimates range from \$664,950,000 to \$680,832,000 for different alignments from Lake O'The Pines for line work only, does not include treatment.

Number & Name of Entities to Develop Water Supply Alternative - Cypress Creek Basin - Lake Bob Sandlin, Lake Cypress Springs, and Lake O'The Pines

Cross Reference - KSA Engineering Inc, Water Availability Modeling Assessment Report in the Cypress Basin March 2002; TCEQ Water Availability Model; Freese and Nichols Inc,

Cypress Creek Reservoir Studies Lake O'The Pines Technical Data 1971; Freese and Nichols Inc, Basic

Level of Detail of Study - Engineering, includes cost estimates.

Reference for Water Supply Alternative, if included in Region C Water Plan - Recommends piping in raw water from Cypress Basin to Region C.

Condition of Viability of Water Supply - Conditions would be to limit future water rights in Lake Bob Sandlin, Lake Cypress Springs and Lake O'The Pines to only Region C.

Water Quality Source - not addressed

Permitting Requirements - Would need to acquire rights of way to construct water transmission lines.

Identified Environmental Impacts - not addressed

Operational Considerations - not addressed - basic operational considerations of an extended water supply line are the life expectancy of the line itself and the functionality of the pump station and booster stations if necessary.

Economic Impact for Both Region C & D - only the capital cost of constructing a raw water supply line was addressed

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Memorandum Report on Operating Policy for Pumping from Lake Texoma

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 1991

Organization - North Texas Municipal Water District

Type of Study - Technical

Location of Study - Lake Texoma

Reservoirs Included - Lake Texoma

Topics Covered - Pumping Capacity

Subject of Study - Pumping Capacity

Water Supply Alternative - N/A

Objectives - The report provides a recommendation for the operating policy on the Pump Station at lake Texoma in correspondence with future demand, electric rate schedule.

Recommendations/Conclusions - Study provides 3 alternatives for the operation policies. The summary of cost is provided in Table 5.4.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - Surface Water Pumping

Detailed Cost of Water Supply Alternative - \$620,000

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Preliminary Study of Sources of Additional Water Supply

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 1996

Organization - North Texas Municipal Water District

Type of Study - Technical

Location of Study - North Texas Municipal Water District

Reservoirs Included - New Bonham, George ParkHouse North and South, George Parkhouse Combined, Marvin Nichols North

Topics Covered - Water Supply, Wildlife Resources

Subject of Study - Water Supply

Water Supply Alternative - New Bonham, George Parkhouse N and S and combined, Marvin Nichols North

Objectives - Investigate 5 potential sources of additional water supply for the District. Comparison of basic hydrologic conditions, existing water rights, requirements for release of inflows.

Recommendations/Conclusions - New Bonham has lowest price per MGD with transmission, Marvin Nichols least desirable (lowest reservoir cost) but distance is issue.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Yield with Env. Releases: New Bonham 109.7 MGD, George Parkhouse N 115.7 MGD, George Parkhouse South 106.2, George Parkhouse Combined 224.8 MGD and Marvin Nichols 552.03 MGD

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative - Table ES-2

Number & Name of Entities to Develop Water Supply Alternative - NTMWD

Cross Reference -

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - Tarrant Regional Alternate Strategy, NTMWD Alternate Strategy, UTRWD recommended,

Condition of Viability of Water Supply - Not addressed

Water Quality Source - not addressed

Permitting Requirements - IBT

Identified Environmental Impacts - Marvin Nichols least desirable, George Parkhouse most desirable

Operational Considerations - Environmental Inflow Releases considered

Economic Impact for Both Region C & D - Not addressed

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Preliminary Study of Sources of Additional Water Supply

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 1996

Organization - North Texas Municipal Water District

Type of Study - Technical

Location of Study - North Texas Municipal Water District

Reservoirs Included - New Bonham Reservoir, George Parkhouse North , George Parkhouse South, Marvin Nichols

Topics Covered - Additional Water Supply for North Texas, Yield, Environmental Impact

Subject of Study - Additional Water Supply for North Texas, Yield, Environmental Impact

Water Supply Alternative - N/A

Objectives - To find alternative supply of water for rising water demand (137 mgd) by year 2020.

Recommendations/Conclusions - The report provides conclusions based on hydrologic conditions, existing water rights and requirements for the release of inflows like those proposed by state agencies in their draft Environmental Water needs Criteria. Considering yield, environmental impact and cost New Bonham and George Parkhouse North are most promising options. Marvin Nichols North is a possible alternative if partners in project development can be found, but it would be more costly and more difficult to develop than the smaller projects.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 137 MGD

Type of Water Supply Alternative - Surface Water

Detailed Cost of Water Supply Alternative – \$250 M - \$1280 M. The report has five alternative (Above is the range)

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Projected Demands and Recommendations for Development of Additional Raw Water Supplies

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 2004

Organization - North Texas Municipal Water District

Type of Study - Technical

Location of Study - North Texas Municipal Water District

Reservoirs Included - Lake Texoma

Topics Covered - Future Demand, Conservation, Reuse, Water Supply Alternatives

Subject of Study - Future Demand, Conservation, Reuse, Water Supply Alternatives

Water Supply Alternative - Lake Texoma

Objectives - To provide an action plan for supply of water for North Texas by projecting future water demand

Recommendations/Conclusions - Table 3.1 provide immediate, short term and long term alternatives for water supply in North Texas, . The report recommends many immediate alternative including interim purchase of 20,000 AF of water from GTUA. Long term alternative also includes reallocation of water from Lake Texoma. Detailed recommendation in chapter 4 of the report.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 115,000 Acre-feet

Type of Water Supply Alternative - Surface Water

Detailed Cost of Water Supply Alternative – No reference to Cost

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Report in Support of Amending Permit 5003

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 2005

Organization - North Texas Municipal Water District

Type of Study - Technical

Location of Study - Lake Texoma

Reservoirs Included - Lake Texoma

Topics Covered - Permit application

Subject of Study - Permit application

Water Supply Alternative - N/A

Objectives - To apply for permit of allocation of 100,000 acre-feet of water from Lake Texoma.

Recommendations/Conclusions - 1. Using the modeling approach similar to the employed by the Corps in an on-going study of the impact of the new water supply diversions on the reservoir, the yield of the proposed NTMWD water right for 100,000 acre-feet if storage in Lake Texoma is 113,00 acre-feet per year. 2. The new diversion by the NTMWD is a change in use of the yield of Lake Texoma. Currently this yield is used for hydropower generation. Hydropower releases will be reduced accordingly, therefore impacts on reservoir are minimal. 3. The new NTMWD diversion is expected to have no impact on the other Texas water rights. 4. Based on hydropower generation criteria provided by the Corps, any new diversion from Lake Texoma is expected to impact quantity of water released for hydropower generation. However significant releases will continue to occur, and impact on downstream uses is expected to be minimal

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 100,000 Acre-feet of water from Lake Texoma

Type of Water Supply Alternative - Surface Water

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Study of Additional Surface Water Supply, Phase II, Engineering Report on Ringgold Reservoir

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 1981

Organization - City of Wichita Falls, Texas and Texas Electric Service Company, Fort Worth

Type of Study - Technical

Location of Study - Wichita Falls

Reservoirs Included - Ringgold Reservoir

Topics Covered - Ringgold reservoir as water source for Wichita Falls

Subject of Study - Ringgold reservoir as water source for Wichita Falls

Water Supply Alternative - N/A

Objectives - The purpose of the report was to provide detailed analysis of the reservoir and preliminary construction estimate.

Recommendations/Conclusions - The Ringgold Reservoir is the best and closest prospect for additional surface water supply for Wichita Falls are. It has 271,600 acre-feet of storage volume and surface area of 14,980 acres. Page 7.1 for detailed summary.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 271,600 Acre-feet

Type of Water Supply Alternative - Surface Water

Detailed Cost of Water Supply Alternative - \$14.4 Million

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Study of Potential Sources of Additional Surface Water Supply in the Red River Basin and the Cypress Creek Basin

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 1979

Organization - North Texas Municipal Water District

Type of Study - Technical

Location of Study - Red River Basin & Cypress Creek Basin

Reservoirs Included - Lake Texoma, Lake O' The Pines

Topics Covered - Water Diversion

Subject of Study - Water Diversion

Water Supply Alternative - Diversion of Lake Texoma water into Lake Lavon

Objectives - To carry out an investigation of potential alternative sources of water supply in the Red River Basin and the Cypress Creek Basin The study was consider (a) Lake Texoma, (b) possible sources on Texas tributaries of the Red River below Denison Dam and © potential supply from Lake O' The Pines and or a presently undeveloped reservoir site in the Cypress Basin

Recommendations/Conclusions - See Table 1.1, Page No. 1.5, The table provides a quantity of water which can used by NTWMD (52,000 acre-feet) for \$15 million.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 52,000 Acre Feet

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – See Table 1.1 - Page No. 1.5, Table 3.2 - Page No. 3.7, Table 3.3 - Page No. 3.10, Table 3.4 - Page No. 3.11, Table No. 4.2 - Page No. 4.6, Table 4.3 - Page No. 4.8

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - Planning

Reference for Water Supply Alternative, if included in Region C Water Plan - Blending Texoma with Lake Lavon is included in the strategies for the 2006 Region C Water Plan

Condition of Viability of Water Supply - Viable

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Summary of Water Supply Reports

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 1985

Organization - North Texas Municipal Water District

Type of Study - Technical

Location of Study - North Texas Municipal Water District

Reservoirs Included - Lake O' The Pines

Topics Covered - Water Supply

Subject of Study -

Water Supply Alternative - Lake Texoma Purchase, Chapman (Cooper Reservoir), New Bonham Reservoir

Objectives - To prepare a summary of previous water supply reports and of the current status of water supply planning for the District. This report includes forecast of the District's need for water, summary discussions of three 1979 studies of sources of additional water supply and a discussion of the current availability and status of the source investigated in 1979

Recommendations/Conclusions - See Table 5.1 - Page No. 5.2. The current plan of development calls for the acquisition of water supply from Lake Texoma, Cooper Reservoir and New Bonham Reservoir. Lake Texoma will provide water to meet the District's pressing near-term needs and a permanent supply of 69 MGD at Lake Lavon. Cooper Reservoir is far advanced in planning and design and will provide 48 MGD to the District by the early 1990's. Like Cooper Reservoir, New Bonham Reservoir is near Lake Levon and will provide a relatively inexpensive permanent increment to supply. The District is proceeding with this program as rapidly as possible by: - Acquisition of water rights in Lake Texoma and construction of a pump station and pipeline to convey water to Lake Lavon. - Development of the proposed Cooper Reservoir and construction of a pump station and pipeline to convey water to Lake Lavon. - Development of the proposed New Bonham Reservoir and construction of a pump station and pipeline to convey water to Lake Lavon. This development program will provide the District's customer cities with an ample water supply well into the next century.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Lake Tawakoni, 41,000 acre ft, Lake Fork 159,000 ac ft, Murvaul Lake 15,000 ac ft, Toledo Bend 86,300 ac ft, Estes 86,300 ac ft, Big Sandy 61,700 ac ft. Red River 104,000 ac ft, New Bonham 63,200 ac ft, Cypress Creek Basin 104,000 ac ft. Pat Mayse and Bi

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative - Tables 3.2 and 3.3, Red River least expensive, Murvaul Lake most expensive

Number & Name of Entities to Develop Water Supply Alternative - NTMWD, NETMWD

Cross Reference -

Level of Detail of Study - Technical

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply - Water available in 1979

Water Quality Source - Not addressed

Permitting Requirements - IBT and Water Right
Identified Environmental Impacts - Not addressed
Operational Considerations - Operational Conditions
Economic Impact for Both Region C & D - Not Addressed

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Summary of Water Supply Reports

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 1985

Organization - North Texas Municipal Water District

Type of Study - Planning

Location of Study - North Texas Municipal Water District

Reservoirs Included - Toledo Bend

Topics Covered - Summary of Other Work, Water Supply, Water Yield, Cost of Water Supply, Inter-Basin Transfer, Water Demand

Subject of Study - A summary of water supply needs and discussion of current water availability prepared for NTMWD.

Water Supply Alternative - Toledo Bend; Lake O' Pines; Lake Texoma; and various other existing and proposed reservoirs in the Cypress, Red and Sabine River Basins.

Objectives - To prepare a summary of previous water supply reports and of the current status of water supply planning for the District.

Recommendations/Conclusions - 13 sources of water supply were considered in this report for NTMWD. The current plan of development calls for the acquisition of water supply from Lake Texoma, Cooper Reservoir and New Bonham Reservoir. Toledo Bend was not included in this plan of development at that time because it was significantly more expensive than other sources.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Actual firm yields not mentioned; however, dependable increment to supply listed for Toledo Bend Reservoir is as follows: 86,300 ac-ft/yr and 77.0 MGD. Dependable supply numbers listed for other alternatives as well. See Table 3.3 on page 3.9.

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative - For sources of supply considered within the Sabine River Basin, the overall capital costs of the programs range from \$154,631,000 to \$289,774,000, with the cost of delivered water ranging from 40¢ per 1,000 gallons to 53¢ per 1,000 gallons once the progra

Number & Name of Entities to Develop Water Supply Alternative - 1-NTMWD

Cross Reference - The report references the 1979 URS/Forrest Cotton Report entitled "Report on Potential Water Supply from the Sabine River Basin."

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - This report is found in the reference lists for both the 2001 and 2006 Region C Water Plans.

Condition of Viability of Water Supply - Cost; pipeline maintenance; permitting.

Water Quality Source - Not mentioned for Toledo Bend.

Permitting Requirements - Not mentioned for Toledo Bend.

Identified Environmental Impacts - Not mentioned for Toledo Bend.

Operational Considerations - Combinations of water supply from various reservoirs in the Sabine Basin may be a solution.

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Summary of Water Supply Reports

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 1985

Organization - North Texas Municipal Water District

Type of Study - Technical

Location of Study - North and North East Texas

Reservoirs Included - Lake Texoma

Topics Covered - Water Supply

Subject of Study - Water Supply

Water Supply Alternative - N/A

Objectives - To prepare a summary of previous water supply reports and of the current status of water supply planning for the District. This report includes forecast of the District's need for water, summary discussions of three 1979 studies of sources of additional water supply and a discussion of the current availability and status of the source investigated in 1979

Recommendations/Conclusions - See Table 5.1 - Page No. 5.2. The current plan of development calls for the acquisition of water supply from Lake Texoma, Cooper Reservoir and New Bonham Reservoir. Lake Texoma will provide water to meet the District's pressing near-term needs and a permanent supply of 69 MGD at Lake Lavon. Cooper Reservoir is far advanced in planning and design and will provide 48 MGD to the District by the early 1990's. Like Cooper Reservoir, New Bonham Reservoir is near Lake Levon and will provide a relatively inexpensive permanent increment to supply. The District is proceeding with this program as rapidly as possible by: - Acquisition of water rights in Lake Texoma and construction of a pump station and pipeline to convey water to Lake Lavon. - Development of the proposed Cooper Reservoir and construction of a pump station and pipeline to convey water to Lake Lavon. - Development of the proposed New Bonham Reservoir and construction of a pump station and pipeline to convey water to Lake Lavon. This development program will provide the District's customer cities with an ample water supply well into the next century.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - See Conclusion Column

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Upper Sabine Basin Regional Water Supply Plan

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 1988

Organization - Sabine River Authority

Type of Study - Technical

Location of Study - Sabin River Basin

Reservoirs Included - Waters Bluff Reservoir, Belzora Landing Reservoir, Lake Fork Reservoir

Topics Covered - Water Supply

Subject of Study - Upper Sabine Basin

Water Supply Alternative - Waters Bluff, Belzora Landing, Estes, Carthage, State Line Res.

Objectives - To Prepare a regional water supply plan for the Upper Sabine Basin. Develop estimates of water requirements in the upper Sabine Basin through the year 2030, conduct a preliminary evaluation of conservation measures potentially adoptable, evaluate the yield of the proposed Waters Bluff Reservoir on the Sabine Reservoir, evaluate the benefits of operating Lake Tawakoni, Lake Fork Reservoir and Waters Bluff Reservoir as a coordinated system, evaluate the yield of the proposed Belzora Landing Reservoir on the Sabine River, evaluate the benefits of operating Lake Tawakoni, Lake Fork Reservoir and Blezora Landing Reservoir as a coordinated system, evaluate the possibility of regional water treatment plants to serve the upper Sabine Basin

Recommendations/Conclusions - Summary of Findings: A. In 1985 the estimated population of the upper Sabine was 340,238. The estimated total population of the 15 counties wholly or partially in the upper Sabine Basin was 857,877. B. By 2030, the population of the upper Sabine Basin is projected to be 645,058 or about 1.9 times the 1985 population. This represents an annual population growth rate of 1.4 percent. The total population of the 15 county region is projected to be 2,023,257 or 2.4 times the 1985 population. This represents a regional annual growth rate of 1.9 percent. C. Water use in the upper Sabine Basin is expected to increase from 174,533 acre-feet in 1985 to 472,008 acre-feet in 2030, with major increases in manufacturing, municipal, steam electric and mining use. D. Water use in the 15 county region around the upper Sabine Basin is expected to increase from 299,337 acre-feet in 1985 to 899,633 acre-feet in 2030, with major increases in municipal, manufacturing, steam electric and mining use. E. The largest increases to in-basin water use are projected to occur in Harrison county (manufacturing), Panola County (steam electric generation and mining) and Gregg County (manufacturing and municipal). The largest increases to water use in the region are in those counties and in Collin County (municipal) and Van Zandt County (steam electric generation) F. By 2030 an additional 208,962 acre-feet per year will be needed for in-basin use and in the upper Sabine Basin. G. Waters Bluff Reservoir and its proposed first stage, Blezora Landing Reservoir, would be logical sources of supply to meet the water requirements of the Upper Sabine. H. Waters Bluff Dam would be located in the Sabine River at river mile 400, at the Smith-Gregg County line. With the top conservation storage at elevation 303.0, Waters Bluff Reservoir would have a capacity of 525,163 acre-feet and a stand-alone yield of 324,000 acre-feet per year. I. If Waters Bluff Reservoir were operated as part of a coordinated system with the existing Lake Tawakoni and Lake Fork Reservoir, the incremental yield provided by Waters Bluff could be increased by 48,990 acre-feet per year, to 372,990 acre-feet per year. J. Coordinated use of Waters Bluff Reservoir and uncontrolled runoff between the reservoir and Longview could further increase the

project's yield. If 900 acre-feet of regulating storage were available at Longview, the incremental yield provided by Waters Bluff could be increased in that way by an additional 29,500 acre-feet per year to 402,490 acre-feet per year. K. Belzora Landing Dam and Reservoir has been proposed as a first stage in the development of the Waters Bluff Project. The dam would be located on the Sabine River at river mile 428, two miles south of Hawkins. The top of conservation storage would be the same as for Waters Bluff Reservoir, at elevation 303.0. Belzora Landing Reservoir would have a capacity of 114,996 acre-feet and a stand-alone yield of 106,400 acre-feet per year. L. If Belzora Landing Reservoir were operated as part of a coordinated system with the existing Lake Tawakoni and Lake Fork Reservoir, the incremental yield provided by Belzora Landing could be increased by 75,520 acre-feet per year, to 181,920 acre-feet per year. M. Coordinated use of Belzora Landing Reservoir and uncontrolled runoff between the reservoir and Longview could further increase the projects yield. If 1,000 acre-feet of regulating storage were available at Longview, the incremental yield provided by Belzora Landing could be increased by an additional 33,800 acre-feet per year to 215,720 acre-feet per year. N. In order to make use of system operation with existing reservoirs or with uncontrolled runoff, the Sabine River Authority would have to obtain an appropriate water right from the Texas Water Commission. O. The most promising area for development of a regional water treatment system in the upper Sabine Basin is Hunt County, where four cities and four water supply cooperation are interested in a regional system.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Need additional supply of 208,962 acre-feet per year by 2030

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – not addressed

Number & Name of Entities to Develop Water Supply Alternative - Upper Sabine Basin, Waters Bluff Reservoir, Lake Tawakoni, Lake Fork Reservoir, Belzora Landing Reservoir

Cross Reference - Texas Department of Water Resources, Texas Water Development Board, projections of water use and populations, 1982 ; Texas Water Development Board, Draft of Revised County Population Estimates, 1986 ; Espey, Huston and Assoc and Tudor Engineering, Updat

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - Coordinate use of operating Lake Tawakoni, Lake Fork Reservoir and Waters Bluff Reservoir, and in addition Belzora Landing Reservoir on the Sabine River, will maximize yield of the upper Sabine Basin.

Condition of Viability of Water Supply - not addressed

Water Quality Source - not addressed

Permitting Requirements - Water Rights, IBT

Identified Environmental Impacts - not addressed

Operational Considerations - Sophisticated series of operation considerations if Lake Tawakoni, Lake Fork Reservoir, and Waters Bluff Reservoir are to be used in series.

Economic Impact for Both Region C & D - not addressed

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Upper Sabine Basin Regional Water Supply Plan

Source/Author/Consultant - Freese and Nichols, Inc

Publication Year - 1988

Organization - Sabine River Authority of Texas

Type of Study - Technical

Location of Study - Sabin River Basin

Reservoirs Included - Toledo Bend

Topics Covered - Water Yield, Water Conservation, Water Supply, Water Demand

Subject of Study - Regional Water Supply Plan for Upper Sabine Basin

Water Supply Alternative - Construction of additional reservoirs; operation of multiple reservoirs as a system; “imports from other basins” (actually in lower Sabine Basin).

Objectives - Regional Water Supply study including:

- Develop estimates of water requirements in upper Sabine Basin through 2030.
- Conduct preliminary evaluation of conservation measures that SRA might adopt.
- Evaluate yield of proposed Waters Bluff Reservoir.
- Evaluate benefits of operating Lake Tawakoni, Lake Fork, and Waters Bluff Reservoir as a coordinated system.
- Evaluate yield of proposed Belzora Landing Reservoir.
- Evaluate benefits of operating Lake Tawakoni, Lake Fork, and Belzora Landing Reservoir as a coordinated system.
- Evaluate the possibility of regional water treatment plants to serve the upper Sabine Basin.

Recommendations/Conclusions - n/a

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A (Toledo Bend not included)

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative - n/a

Number & Name of Entities to Develop Water Supply Alternative - n/a

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A
(predates 2001)

Condition of Viability of Water Supply - Acquisition of additional water rights

Water Quality Source - n/a

Permitting Requirements - Acquisition of additional water rights

Identified Environmental Impacts - n/a

Operational Considerations - Multiple reservoirs may be operated as a coordinated system

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Draft Lake O' The Pines/Cypress Basin Water Supply Study, prepared for NTMWD

Source/Author/Consultant - Freese and Nichols, Inc.

Publication Year - 2003

Organization - North Texas Municipal Water District

Type of Study - Technical

Location of Study - Cypress Creek Basin

Reservoirs Included - Bob Sandlin, Lake O Pines, Lake Cypress Springs

Topics Covered - Water Supply

Subject of Study - Cypress Basin

Water Supply Alternative - Bob Sandlin, Lake O Pines, Lake Cypress Springs

Objectives - Purpose of Study was to determine the amount of water available from the Cypress Creek Basin to NTMWD.

Recommendations/Conclusions - Freese and Nichols recommended the purchase of water from NETMWD for raw water from the Lake O Pines with water routed from Lake Bob Sandlin and Lake Cypress Springs and the construction of raw water treatment facilities with transmission line routing options.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 87,900 ac ft/yr available

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative - Yes, Tables 6-3-6-8

Number & Name of Entities to Develop Water Supply Alternative - NETMWD and NTMWD

Cross Reference - Cypress WAM,

Level of Detail of Study - Engineering with cost estimates

Reference for Water Supply Alternative, if included in Region C Water Plan - Lake O Pines not included in Region C Water Plan

Condition of Viability of Water Supply - as of 2003, ~90,000 acre ft available

Water Quality Source - Increase in nutrients

Permitting Requirements - IBT

Identified Environmental Impacts - None

Operational Considerations - Raw Water Treatment Plant

Economic Impact for Both Region C & D - not addressed

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Engineering Report on New Bonham Reservoir

Source/Author/Consultant - Freese and Nichols, Inc.

Publication Year - 1984

Organization - North Texas Municipal Water District and the Red River Authority

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Impact of Potential Toledo Bend Operational Changes Memo Report

Source/Author/Consultant - Freese and Nichols, Inc.

Publication Year - 1998

Organization - Trans-Texas Water Program (Southeast Area); Sabine River Authority of Texas, Lower Neches Valley Authority; San Jacinto River Authority, City of Houston; Brazos River Authority; TWDB

Type of Study - Technical

Location of Study - Toledo Bend

Reservoirs Included - Toledo Bend

Topics Covered - System Operation Assessment, Instream Flows

Subject of Study - Increasing permitted diversions of water from Toledo Bend from 750,000 ac-ft/yr to 1,043,300 ac-ft/yr and diversion of 672,000 ac-ft/yr out of Sabine Basin.

Water Supply Alternative - Use of additional impounded water (increase in allocation).

Objectives - Analyze impact of (Texas) water right increase by 293,300 ac-ft/yr and interbasin transfer of 672,000 ac-ft to areas west of Sabine and Neches River Basins, including affect on Lake Sabine.

Recommendations/Conclusions - (No recommendations provided.) Conclusions were as follows:

- Change from existing operating conditions would result in no noticeable decrease in lake level about 1/3 of the time.
- Change in operation would decrease spills at Toledo Dam by 11.6%, mostly in winter.
- For the existing condition Toledo Bend Reservoir decreases volume of water flowing into Sabine Lake (by 12.2%) and causes shortfall of environmental flows (~12.2%): operational change (i.e. increase in water allocation) would affect these conditions including decreased flow to Sabine Lake (~20.7%)/greater shortfall of environmental flow (~16.7%).
- Environmental flow shortfall could be partially mitigated using “formerly surplus flows from outside the Sabine Basin.”
- Toledo Bend Reservoir tends to increase summer inflows to Sabine Lake (on the order of 60%) and lower Sabine River, however the cumulative annual inflow is still less than without reservoir. This results in greater freshwater inflow to and salinity of Sabine Lake (estuary).
- Existing and modified operations of Toledo Bend tend to increase Sabine Lake salinity in winter and decrease salinity in summer. The report concludes that “changes would be moderate, and actual impacts on salinities would be relatively small.”
- Loss of “desired freshwater to Sabine Lake” is affected significantly by diversion of 672,000 ac-ft/yr out of the Sabine Basin.
- Operational changes studied should not have significant impact on fishing/recreation on Toledo Bend or lower Sabine River.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Total from Toledo Bend = 2,086,600 ac-ft/yr
Texas portion (1/2 total) = 1,043,300 ac-ft/yr

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – n/a

Number & Name of Entities to Develop Water Supply Alternative - n/a

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - n/a

Condition of Viability of Water Supply - interbasin transfer of flows (“formerly surplus flows from outside the Sabine Basin”) for instream flow needs

Water Quality Source - n/a

Permitting Requirements - TCEQ water rights permit for 293,300 ac-ft/yr

Identified Environmental Impacts - salinity of Sabine Lake (estuary)

Operational Considerations - Noticeable decrease in Toledo Bend Lake level ~2/3 of time.

Potential impact to hydroelectric operations not evaluated.

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Model Water Conservation Plan

Source/Author/Consultant - Freese and Nichols, Inc.

Publication Year - 2004

Organization - North Texas Municipal Water District Member Cities and Customers, Fort Worth

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Potable Water Supply System Study
Source/Author/Consultant - Freese and Nichols, Inc.
Publication Year - 2001
Organization - Wise County Power Company, LLC
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Projected Demands and Recommendations for Development of Additional Raw Water Supplies

Source/Author/Consultant - Freese and Nichols, Inc.

Publication Year - 2004

Organization - North Texas Municipal Water District

Type of Study - Technical

Location of Study - North Texas Municipal Water District

Reservoirs Included - Lake O' the Pines

Topics Covered - Water Supply

Subject of Study - Water Supply

Water Supply Alternative - Conservation, Reuse, Purchase Lake Texoma, Lake O' the Pines, Toledo Bend, Wright Patman Reallocation, Marvin Nichols, Lower Bois D' Arc, Oklahoma

Objectives - Investigate short, medium and long term alternatives for water supply.

Recommendations/Conclusions - Wastewater Reuse permits, interim use of Lake Fork, Toledo Bend Water, Lake O' the Pines, Greater Texoma Utility Authority, Wright Patman

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Table 3.1

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative - none provided

Number & Name of Entities to Develop Water Supply Alternative - NTMWD, NETMWD, GTUA, DWU

Cross Reference -

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply - Viable alternatives

Water Quality Source - Not Addressed

Permitting Requirements - IBT and Water Rights

Identified Environmental Impacts - none

Operational Considerations - Operational considerations

Economic Impact for Both Region C & D - Not addressed

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Projected Demands and Recommendations for Development of Additional Raw Water Supplies

Source/Author/Consultant - Freese and Nichols, Inc.

Publication Year - 2004

Organization - North Texas Municipal Water District

Type of Study - Technical

Location of Study - NTMWD and surrounding areas

Reservoirs Included - Toledo Bend

Topics Covered - Calculations, Summary of Other Work

Subject of Study - Short term and long term alternatives evaluation.

Water Supply Alternative - Lake Texoma, Cypress Basin, Toledo Bend, Wright Patman, Lower Bois d'Arc Creek Reservoir, others

Objectives - Develop analysis of raw water supply system, project water demands and evaluate alternative approaches to the development of additional supplies.

Recommendations/Conclusions - Develop additional supply of 115,000 ac-ft/yr by 2010 and 550,000 by 2060; Toledo Bend mid-term alternative (5 to 10 years) of 200,000 ac-ft/yr, best combined with Lake Fork alternative.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Not provided, alternatives listed as 100,000 to 167,000 ac-ft/yr delivery for NTWMD only, recommend 200,000 ac-ft/yr

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – unknown if TWDB standard; detailed cost figure not provided. \$2.1-2.9 billion to be shared with others.

Number & Name of Entities to Develop Water Supply Alternative - 4-NTMWD, DWU, SRA, TRWD

Cross Reference - none

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - Possible 2006 Region C Reference (Toledo Bend)

Condition of Viability of Water Supply - Good, existing supply

Water Quality Source - none mentioned

Permitting Requirements - Inter-Basin Transfer

Identified Environmental Impacts - none mentioned

Operational Considerations - Transfer of water to existing reservoirs, Cedar Creek, Lake Palestine and Lake Fork; cooperation with DWU and/or TRWD

Economic Impact for Both Region C & D - none mentioned

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Report on Cooling Water Sources and Power Plant Sites

Source/Author/Consultant - Freese and Nichols, Inc.

Publication Year - 1973

Organization - Texas Utilities Services Inc.

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Report on Long-Range Water Supply
Source/Author/Consultant - Freese and Nichols, Inc.
Publication Year - 1982
Organization - City of Denton
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - System Operation Assessment of Lake Wright Patman and Lake Jim Chapman, Volume I, Main Report

Source/Author/Consultant - Freese and Nichols, Inc.

Publication Year - 2003

Organization - U.S. Army Corps of Engineers

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Lake Wright Patman

Topics Covered - System Operation Assessment, Water Yield

Subject of Study - An investigation of the additional yield that could be developed in the Sulphur River Basin.

Water Supply Alternative - Lakes Wright Patman & Jim Chapman

Objectives - This Study has three major goals: 1) To determine the potential gain in supply from implementing alternative operation policies in Lake Wright Patman. 2) To determine the potential increase in yield if Lakes Wright Patman and Jim Chapman are operated together as a system. 3) To identify potential opportunities and constraints regarding bottomland hardwood and wetland resources in the Sulphur River Basin resulting from changes in operation. Specifically, the White Oak Creek Wildlife Management Area (WMA) was evaluated with respect to operational changes.

Recommendations/Conclusions - Reallocation of flood storage in Lake Wright Patman appears to be the most promising water supply alternative considered in this study

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 1) Combined Yield of Lake Jim Chapman (Storage at 440.0 feet NVGD) and Lake Wright Patman (Water Supply below elevation 220.0 feet is available) = 282, 805 acre-feet per year. 2) The largest gains in yield are from reallocation of Lake Wright Patman flood

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - R.J. Brandes Company, Draft Water Availability Model for the Sulphur River Basin, prepared for the Texas Natural Resources Conservation Commission, January 1999, US Army Corps of Engineers, Fort Worth District, Cooper Lake, Sulphur River, Texas, Master Pl

Level of Detail of Study - Planning

Reference for Water Supply Alternative, if included in Region C Water Plan - 2006 Region C Water Plan - Section 4D.4

Condition of Viability of Water Supply -

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - Comments received from the U.S. Fish and Wildlife Service and the Texas Department of Parks and Wildlife outlined potential issues and concerns regarding the implementation of changes to Lake Wright Patman operation and implementation of system operation,

Operational Considerations - U.S. Army Corps of Engineers
Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water and Wastewater Master Plan

Source/Author/Consultant - Freese and Nichols, Inc.

Publication Year - 1997

Organization - East Cedar Creek Fresh Water Supply District

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Wise County Power Plant Project – Raw Water Supply Study

Source/Author/Consultant - Freese and Nichols, Inc.

Publication Year - 1999

Organization - Wise County Power Company, LLC

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - North Texas Municipal Water District Water Conservation and Drought Contingency Plan

Source/Author/Consultant - Freese and Nichols, Inc.

Publication Year - 0

Organization - North Texas Municipal Water District

Type of Study - Planning

Location of Study - Dallas, Fort Worth

Reservoirs Included - Lake Texoma

Topics Covered - Water Conservation

Subject of Study - Conservation and drought planning for North Texas Municipal Water District

Water Supply Alternative - None discussed

Objectives - To reduce water consumption; to reduce the loss and waste of water; to improve efficiency in use of water; to document the level of recycling and reuse in water supply; and to extend the life of current water supplies by reducing the rate of growth in demand.

Recommendations/Conclusions - The study discusses requirements for water conservation and drought planning pursuant to TCEQ rules. Responsibilities of the Executive Director of NTMWD, how to implement the plan, specifics for public outreach and education, and various provisions and procedures are discussed. Note: Per capita water use listed in table on p. C-5 [209 gpcd for year 2000]; Historical data listed in Figures C-3 through C-24.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - n/a

Type of Water Supply Alternative - n/a

Detailed Cost of Water Supply Alternative - n/a

Number & Name of Entities to Develop Water Supply Alternative - n/a

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - n/a

Condition of Viability of Water Supply - n/a

Water Quality Source - n/a

Permitting Requirements - n/a

Identified Environmental Impacts - n/a

Operational Considerations - n/a

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Texas Water Allocation Assessment Report Vol. 1 and Vol. 2

Source/Author/Consultant - Freese and Nichols, Inc.

Publication Year - 2002

Organization - U.S. Army Corps of Engineers - Fort Worth District

Type of Study - Technical

Location of Study - State of Texas

Reservoirs Included - Marvin Nichols, Lake Wright Patman, Lake Texoma, Lake O' The Pines, Toledo Bend

Topics Covered - Water Yield, Water Supply, Inter-Basin Transfers, Water Demand

Subject of Study - An assessment of water issues in Texas and opportunities for federal assistance.

Water Supply Alternative - Toledo Bend – Interbasin Transfer and pipeline to Prairie Creek Reservoir; Prairie Creek Reservoir

Objectives - To identify opportunities for Corps assistance in water supply through specific projects based on findings of the regional water plans and stakeholder interviews.

Recommendations/Conclusions - Based on analysis of regional water plans, development of sufficient water supply to meet projected demands will require local, state and possibly federal assistance.

In summary, the areas where the Corps can assist most effectively in water supply in Texas are:

- Full utilization and optimization of existing Corps projects to increase water supply,
- Projects that are designed to enhance or protect water supply from the Rio Grande,
- Groundwater recharge enhancement projects, specifically the Edwards Aquifer,
- Water supply enhancement through wastewater reuse and constructed wetlands, and
- Rural assistance.

For Toledo Bend – a recommendation was made to develop a reservoir on Prairie Creek and to construct a pipeline from Toledo Bend to supplement the yield of the reservoir.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Not mentioned in report for Toledo Bend; Prairie Creek Reservoir to supply firm yield of 115,000 ac-ft/yr (some of which will come from Toledo Bend); See Table I-2 on page A-70 for firm yield of existing reservoirs in Region I.

Type of Water Supply Alternative - surface and ground water

Detailed Cost of Water Supply Alternative – Not mentioned

Number & Name of Entities to Develop Water Supply Alternative - 2-Army Corps of Engineers for feasibility study for interbasin transfer; SRA for pipeline to Prairie Creek

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - On reference list for 2006 Region C Water Plan

Condition of Viability of Water Supply - Cost high; availability good.

Water Quality Source - n/a

Permitting Requirements - Not mentioned in report

Identified Environmental Impacts - None identified in report.

Operational Considerations - Effects of water diversion on hydropower generation for Toledo Bend Reservoir

Economic Impact for Both Region C & D - none mentioned

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Regional Water Supply Plan, Vols. 1-2

Source/Author/Consultant - Freese and Nichols, Inc. and Alan Plummer Associates, Inc

Publication Year - 1990

Organization - Tarrant County Water Control and Improvement District Number One and the Texas Water Development Board

Type of Study - Technical

Location of Study - Tarrant County

Reservoirs Included - N/A

Topics Covered - Water Supply Development Plan

Subject of Study - Water Supply Development Plan

Water Supply Alternative - N/A

Objectives - The report provides a plan to serve water to Tarrant County in next 50 years.

Recommendations/Conclusions - Chapter 11 of report provides an extensive summary of the detailed analysis of the all the alternate sources of water in the regions. The county will need 213,000 AF/Y of new supply by year2050. It would be possible to divert up to 50,000 AF/Y from Lake Texoma into Eagle Mountain Lake. This would result in increase in concentration of TDS, chlorides and sulphates in Eagle Mountain Lake.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 50000 Ac-ft/year

Type of Water Supply Alternative - Surface water

Detailed Cost of Water Supply Alternative - \$ 693,148,000 Million

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Regional Water Supply Study Water Reuse Tour

Source/Author/Consultant - Freese and Nichols, Inc. and Alan Plummer Associates, Inc.

Publication Year - 1989

Organization - Tarrant County Water Control and Improvement District Number One

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Infrastructure Financing Survey Report, Region C

Source/Author/Consultant - Freese and Nichols, Inc., Alan Plummer Associates, Inc., Chiang, Patel, and Yerby, Inc.

Publication Year - 2002

Organization - Region C Water Planning Group

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Amendment to the 2001 Region C Water Plan

Source/Author/Consultant - Freese and Nichols, Inc., Alan Plummer Associates, Inc., Chiang, Patel, and Yerby, Inc., and Cooksey Communications, Inc

Publication Year - 2005

Organization - Region C Water Planning Group

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Amendments to the 2001 Region C Water Plan

Source/Author/Consultant - Freese and Nichols, Inc., Alan Plummer Associates, Inc., Chiang, Patel, and Yerby, Inc., and Cooksey Communications, Inc

Publication Year - 2003

Organization - Region C Water Planning Group

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Environmental Effects of the Texoma Diversion Project

Source/Author/Consultant - Freese and Nichols, Inc., and Alan Plummer and Associates, Inc

Publication Year - 1979

Organization - North Texas Municipal Water District and the Greater Texoma Utility Authority

Type of Study - Technical

Location of Study - Lake Texoma

Reservoirs Included - Lake Texoma

Topics Covered - Impact Assessment

Subject of Study - Impact Assessment

Water Supply Alternative - N/A

Objectives - To find best possible alternative to get water to North Texas and evaluate environmental effects of the resulting project

Recommendations/Conclusions - The environmental effects from diversion of water from Lake Texoma have been considered insignificant and will have very little effect on water levels, fisheries or recreation activities at Lake Texoma. The environmental effect of pipeline construction are limited to short term construction effects.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 69 MGD

Type of Water Supply Alternative - Surface Water

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Memorandum Report - Projected Water Needs and Supply of the Upper Neches and Sabine River Basins

Source/Author/Consultant - Freese and Nichols, Inc., and Brown and Root, Inc for the Trans-Texas Water Program: Southeast Area

Publication Year - 1998

Organization - Sabine River Authority of Texas; Lower Neches Valley Authority; San Jacinto River Authority; City of Houston and Brazos River Authority

Type of Study - Technical

Location of Study - Upper Sabine and Upper Neches River Basins

Reservoirs Included - Lake O' the Pines

Topics Covered - Water Supply, Water Demand

Subject of Study - regional water use and water supply study

Water Supply Alternative - none

Objectives - Examination of the projected water requirements of the upper Neches and Sabine Basins through the year 2050, to determine whether those areas are likely to need any of the supply available from the Southeast Area.

Recommendations/Conclusions - Based on the report's projection, it would be only prudent to recognize that (a) the upper Sabine Basin could need to draw water from within the Southeast Area between now and 2050 and (b) the total need for such water from the Southeast Area could be in the range of 100,000 to 200,000 acre-feet per year.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - n/a

Type of Water Supply Alternative - n/a

Detailed Cost of Water Supply Alternative - n/a

Number & Name of Entities to Develop Water Supply Alternative - n/a

Cross Reference - n/a

Level of Detail of Study - n/a

Reference for Water Supply Alternative, if included in Region C Water Plan - n/a

Condition of Viability of Water Supply - n/a

Water Quality Source - n/a

Permitting Requirements - n/a

Identified Environmental Impacts - none mentioned

Operational Considerations - n/a

Economic Impact for Both Region C & D - none mentioned

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Lake Texoma Septic Tank Study, Interim Report: Existing and Potential Septic Tank Problem Areas

Source/Author/Consultant - Freese and Nichols, Inc., and Red River Authority

Publication Year - 1981

Organization - Texas Department of Water Resources

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Lake Texoma Septic Tank Study, Interim Report: Identification and Impact Assessment of Wastewater Treatment Alternatives

Source/Author/Consultant - Freese and Nichols, Inc., and Red River Authority

Publication Year - 1982

Organization - Texas Department of Water Resources

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Lake Texoma Septic Tank Study, Interim Report: Inventory of Existing Conditions

Source/Author/Consultant - Freese and Nichols, Inc., and Red River Authority

Publication Year - 1981

Organization - Texas Department of Water Resources

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Comprehensive Sabine Watershed Management Plan

Source/Author/Consultant - Freese and Nichols, Inc., Brown and Root, Inc., LBG-Guyton Associates

Publication Year - 1999

Organization - Sabine River Authority of Texas in conjunction with the Texas Water Development Board

Type of Study - Technical

Location of Study - Sabine River Basin

Reservoirs Included - Toledo Bend, Lake of the Pines

Topics Covered - Summary of Other Work, Water Conservation, Water Supply, Water Transmission, Environmental Impacts, Inter-Basin Transfers, Costs of Water Supply, Water Demand

Subject of Study - A comprehensive study determining existing and future water availability for the Sabine River Basin.

Water Supply Alternative - Prairie Creek Reservoir to support upper basin (may entail transfer of water from Toledo Bend), diversions from the Sabine River, a transmission pipeline from Toledo Bend, transfer of water from Lower Basin to Upper Basin, Interstate transfers from Louisiana

Objectives - To update the 1985 Update of the Master Plan for the Sabine River. To take an overall look at Basin development including such issues as water need, water supply, the environment, conservation, economic development, and natural resources

Recommendations/Conclusions - Concludes that no new water supply options need to be developed in the lower basin (this includes Toledo Bend), but 93,000 ac-ft/yr is needed for the Upper Basin by 2050. Recommends: 1) building pipeline from Toledo Bend to Upper Basin (possibly to Prairie Creek Reservoir) to supplement supply in Upper Basin; 2) beginning permitting for Prairie Creek early; 3) continuing negotiations with City of Dallas (pg. ES-3); and 4) conducting volumetric surveys to verify sedimentation rates.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - A summary of each reservoir/lake's firm yield can be found in Table 3:2 on page 3-3 (Toledo Bend = 1,043,300 ac-ft/yr for Texas). Sabine WAM was not complete at time of this report. Supply/demand analyses does not include demands for environmental flows

Type of Water Supply Alternative - Surface and Groundwater (GW-mostly for local supply)

Detailed Cost of Water Supply Alternative - Cost of building pipeline from TB to Prairie Creek has substantial cost savings because pipeline has already been built along this route (halfway to Prairie Creek) to serve an industrial customer. See Table 7.5 (pg. 7-20) and Appendix F for a detailed cost

Number & Name of Entities to Develop Water Supply Alternative - 1-Sabine River Authority to develop Prairie Creek Reservoir and/or pipeline from Lower to Upper Basin

Cross Reference - none

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - Referenced in 2006 Region C Water Plan

Condition of Viability of Water Supply - new groundwater supplies are very limited and should be used for local supply only; existing water supply may depend on sedimentation rates; Tenaska-power; Prairie Creek is one of the most economical alternatives with few environmental concerns.

Water Quality Source - n/a

Permitting Requirements - General permitting requirements listed in report, but nothing directly pertaining to Prairie Creek Reservoir or Toledo Bend

Identified Environmental Impacts - None listed for Toledo Bend. Projected water needs for Basin do not include environmental flows

Operational Considerations - Water level fluctuations – may not support recreational activities. Water quality standards meet designated use criteria.

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Comprehensive Water and Sewer Plan

Source/Author/Consultant - Freese, Nichols and Endress, Inc., and Rady and Associates, Inc

Publication Year - 1969

Organization - Wise County Planning Commission

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Texas Statewide Water Planning

Source/Author/Consultant - Gooch, T. C., S. W. Griffin, and W. F. Mullican, III

Publication Year - 2004

Organization - The Regional Water Planning Concept, Environmental and Water Resources Congress of the American Society of Civil Engineers

Type of Study - Technical

Location of Study - Texas

Reservoirs Included - N/A

Topics Covered - Regional Water Supply Development Plan

Subject of Study - Regional Water Supply Development Plan

Water Supply Alternative - N/A

Objectives - To develop a new statewide water plan for Texas.

Recommendations/Conclusions - The report provided a methodology for preparing new Water plan for all 16 regions of Texas based on future populations, water supplies.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Cost Evaluation of Two Options to Deliver Lake Texoma Water to City of Dallas

Source/Author/Consultant - HDR Engineering, Inc

Publication Year - 2005

Organization - Dallas Water Utilities

Type of Study - Technical

Location of Study - Lake Texoma

Reservoirs Included - Lake Texoma

Topics Covered - Cost Evaluation

Subject of Study - Cost Evaluation

Water Supply Alternative - N/A

Objectives - The purpose of the study is to evaluate costs of two alternatives a) To pump water from Lake Texoma to Lake Ray Roberts, b) Treating and transporting Lake Texoma water directly to Elm Fork WTP Clear Wells

Recommendations/Conclusions - Cost Comparison is shown in Table 6.1

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 80 MGD

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – \$45,000,000

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Fastrill Reservoir - Preliminary Technical Information for 2006 Region C Regional Water Plan

Source/Author/Consultant - HDR Engineering, Inc.

Publication Year - 2005

Organization - Region C Water Planning Group

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Supply Study: Providing Groundwater from the Texas Panhandle to Communities Throughout the State of Texas

Source/Author/Consultant - HDR Engineering, Inc.

Publication Year - 2000

Organization - Mesa Water, Inc.

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Yield Studies for Lost Creek Dam and Reservoir Supportive to Water Rights Permit Application

Source/Author/Consultant - HDR Infrastructure, Inc.

Publication Year - 1986

Organization - City of Jacksboro, Dallas

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Final Determination of All Claims of Water Rights in the Lower Red River Segment of the Red River Basin

Source/Author/Consultant - Hopkins, P., Biggart, B.M., and Roming, R

Publication Year - 1985

Organization - Texas Water Commission

Type of Study - Technical

Location of Study - Lower Red River Segment

Reservoirs Included - N/A

Topics Covered - Claim of Water Rights

Subject of Study - Claim of Water Rights

Water Supply Alternative - N/A

Objectives - The report settle the claims on water rights in Lower Red River Basin

Recommendations/Conclusions - Lower Red River Segment consist of Red River and its tributaries within the state of Texas from its confluence with Little Wichita river downstream of Texas- Arkansas state boundary. This report does not deal with Lake Texoma directly.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - Surface Water

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Volume 67, Number 3. (entire publication devoted to water issues) Available URL

Source/Author/Consultant -

http://www.texasbar.com/Template.cfm?Section=Texas_Bar_Journal1&Template=/ContentManagement/ContentDisplay.cfm&ContentID=6293

Publication Year - 2004

Organization - Texas Bar Journal, published by State bar of Texas

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Ecologically Significant River and Stream Segments

Source/Author/Consultant

http://www.tpwd.state.tx.us/landwater/water/environconcerns/water_quality/sigsegs/

Publication Year - 2003

Organization - Texas Parks and Wildlife Department

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - GIS Data, [Online], Available UR

Source/Author/Consultant - <http://www.twdb.state.tx.us/mapping/gisdata.asp>

Publication Year - 2005

Organization - Texas Water Development Board

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Upper Sabine Basin Water Supply Study

Source/Author/Consultant - KBR, Inc.

Publication Year - 2003

Organization - Sabine River Authority

Type of Study - Technical

Location of Study - Sabine River Basin

Reservoirs Included - Toledo Bend

Topics Covered - Calculations, Summary of Other Work

Subject of Study - Water supply plan for Upper Sabine Basin

Water Supply Alternative - Prairie Creek Reservoir, Toledo Bend Local Groundwater, Lake Cherokee, Lake Fork, Lake Tawakoni

Objectives - Update and expand investigations of various methods and costs for supplying future water needs in the Upper Sabine Basin

Recommendations/Conclusions - Upper Basin demand to exceed yield in 10 to 24 years. A system yield permit for Lake Fork, Lake Tawakoni and Toledo Bend would add 4 MGD supply. A pipeline from Toledo Bend is the only alternative that can meet demand scenarios for the Upper Basin.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Yield method not described. Recommend permitting of 4 MGD new system yield for Lake Fork, Lake Tawakoni, and Toledo Bend.

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – unknown if TWDB standard. \$0.70-\$1.23 per 1,000 gallons delivered, not including cost of raw water from Toledo Bend

Number & Name of Entities to Develop Water Supply Alternative - 2-SRA, DWU

Cross Reference - none

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - no

Condition of Viability of Water Supply - existing supply

Water Quality Source - none mentioned

Permitting Requirements - limited permitting requirements

Identified Environmental Impacts - limited environmental impacts

Operational Considerations - system operation between reservoirs (3) and pumping system

Economic Impact for Both Region C & D - none mentioned

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Preliminary Engineering Report for Little Cypress Reservoir

Source/Author/Consultant - Kindle Stone & Associates, Inc.

Publication Year - 1986

Organization - Little Cypress Utility District

Type of Study - Technical

Location of Study - Little Cypress Reservoir

Reservoirs Included -

Topics Covered - Water Conservation

Subject of Study -

Water Supply Alternative - Little Cypress Reservoir

Objectives - The purpose of this study and report is to develop preliminary engineering and cost data for a proposed regional water supply reservoir located in the Cypress Basin on Little Cypress Creek in Harrison County. The report provides required information to support: 1) an application to the Texas Water Commission for a permit authorizing diversion and use of state waters and 2) an application to the Texas Water Development Board for financial assistance in design and construct of the project. The proposed reservoir will provide water supply for future growth of Harrison and Gregg Counties and surrounding areas.

Recommendations/Conclusions - Conclusion 1. A water supply reservoir with initial yield of 129,000 acre-feet per year can be developed in the Little Cypress Creek watershed. Such yield can accommodate more than 50 years projected growth within the Little Cypress utility District. 2. The Little Cypress Reservoir as proposed herein would have a surface area of 13,760 acres at normal pool elevation 230.0 feet msl and would require a 5700 feet long earth embankment. 3. The estimated capital cost of Little Cypress Reservoir is \$105,500,000. Estimated annual cost of the total project is \$10,570,000 which results in a cost of 25.1 cents per thousand gallons of yield for water in the reservoir. Recommendations 1. A permit should be submitted to the Texas Water Commission for the purpose of acquiring water rights and approval of the preliminary project design. 2. A permit application should be submitted to the U.S. Army Corps of Engineers to obtain their approval of the project. 3. Upon acquisition of the Texas Water Commission permit, a funding application should be submitted to the Texas Water Development Board requesting 50% State funding of the capital cost of the project.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Table 11, Page 25

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – Table 17, Page 45

Number & Name of Entities to Develop Water Supply Alternative - Little Cypress Reservoir on Little Cypress Creek

Cross Reference -

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Richland-Chambers Reservoir: Impact Study

Source/Author/Consultant - Kindle, Stone & Associates, Inc.

Publication Year - 1985

Organization - Tarrant County Water Control and Improvement District Number One

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Little Cypress Utility District, Report on Impact of Little Cypress Reservoir on Caddo Lake Inflow Quantity and Resultant Lake Level

Source/Author/Consultant - KSA

Publication Year - 1987

Organization - NETMWD

Type of Study - Technical

Location of Study - Cypress Creek Basin

Reservoirs Included - Caddo, Little Cypress

Topics Covered - Water Supply

Subject of Study - Water Supply

Water Supply Alternative - None

Objectives - Regional Water Supply Study

Recommendations/Conclusions - Little effect on Caddo

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 144,900

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – Per ac. Ft

Number & Name of Entities to Develop Water Supply Alternative - NETMWD

Cross Reference - None

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - None

Condition of Viability of Water Supply - Viable

Water Quality Source - Good

Permitting Requirements - IBT

Identified Environmental Impacts - Caddo env. Flow

Operational Considerations - Transmission, env. Flows

Economic Impact for Both Region C & D - None

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water-Quality Assessment of the Trinity River Basin, Texas -- Data Collection 1992-1995

Source/Author/Consultant - Land, L.F

Publication Year - 1995

Organization - USGS

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water-Quality Assessment of the Trinity River Basin, Texas: Nutrients and Pesticides in the Watersheds of Richland and Chambers Creeks

Source/Author/Consultant - Land, L.F

Publication Year - 1997

Organization - USGS

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water-Quality Assessment of the Trinity River Basin, Texas: Nutrients in Streams Draining an Agricultural and an Urban Area, USGS Fact Sheet 96-322

Source/Author/Consultant - Land, L.F

Publication Year - 1996

Organization - USGS

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - National Water Quality Assessment Program – The Trinity River Basin

Source/Author/Consultant - Land, L.F.

Publication Year - 1991

Organization - USGS

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Report 349: Updated Evaluation of Water Resources in Part of North-Central Texas

Source/Author/Consultant - Langley, Lon

Publication Year - 1999

Organization - Texas Water Development Board

Type of Study - Technical

Location of Study - North Central Texas

Reservoirs Included - N/A

Topics Covered - Groundwater resources

Subject of Study - Groundwater resources

Water Supply Alternative - N/A

Objectives - This report is in response to Senate Bill 1, passed in 1997 by the 75th Texas Legislature. This Act calls for the identification of areas in the state experiencing or expected to experience critical groundwater problems within the next 25-year period.

Recommendations/Conclusions - A reduction in withdrawals since 1990 has slowed water level declines in some parts of the study. Water levels in Antlers and Twin Mountain Formations of the Trinity Aquifer remained stable since 1989 with exception of Wise, Tarrant and Johnson Counties. Water level decline of about 100-ft have occurred in southwestern Wise County. Overall, groundwater quality has not degraded appreciable since last reporting period in 1990.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Quality of Cedar Creek Reservoir in Northeast Texas, 1977-1984

Source/Author/Consultant - Leibbrand, N.F.

Publication Year - 1987

Organization - USGS

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - An Analysis of Bottomland Hardwood Areas at Three Proposed Reservoir Sites in Northeast Texas

Source/Author/Consultant - Liu, C., A.L. Baird, C. Scofield, and A.K. Ludeke

Publication Year - 1997

Organization - Texas Parks and Wildlife Department

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sierra Club Comments

Source/Author/Consultant - Lone Star Chapter, Sierra Club, Ken Kramer, Director

Publication Year - 2006

Organization - Lone Star Chapter, Sierra Club

Type of Study -

Location of Study -

Reservoirs Included - Marvin Nichols

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Comments of Erin Rogers, Lone Star Sierra Club to Region C Water Planning Group

Source/Author/Consultant - Lone Star Chapter, Sierra Club, Rogers Erin

Publication Year - 2002

Organization - Region C Water Planning Group

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Digital atlas of Lake Texoma

Source/Author/Consultant - Masoner, Jason R.Burden, David S.Sewell, Guy W.Geological Survey (U.S.),United States. Environmental Protection Agency., National Risk Management Research Laboratory (U.S.),

Publication Year - 2003

Organization - Geological Survey (U.S.)

Type of Study - Technical

Location of Study -

Reservoirs Included - Lake Texoma

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Reconnaissance for trace metals in bed sediment, Wright Patman Lake, near Texarkana, Texas

Source/Author/Consultant - McKee, Paul W. Texarkana Water Utilities., Geological Survey (U.S.),

Publication Year - 2001

Organization - Geological Survey (U.S.)

Type of Study - Technical

Location of Study - Lake Wright Patman

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Contamination

Subject of Study - Lake Wright Patman Water quality analysis

Water Supply Alternative - N/A

Objectives - A reconnaissance of Wright Patman Lake to collect bed-sediment samples for analysis of trace metals.

Recommendations/Conclusions - Concentrations of arsenic, barium, chromium, lead, and nickel at the nine sampling sites relative to distance from station 07344200 near the dam are shown in figure 4; concentrations of core samples shown represent the entire length of core. Concentrations of arsenic, chromium, lead, and nickel from the sediment samples generally increase with increasing distance down the Elliot Creek arm of the lake. The apparent increase in concentration of those trace elements down the Elliot Creek arm of the lake probably is caused by a trend toward fine-grained material (silt and clay). High correlations (about 0.90) between metals concentrations and percent fine-grained material in lake bottom sediment is common (P.C. Van Metre, U.S. Geological Survey, written commun., 2000).

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Statewide Freshwater Fisheries Monitoring and Management Program, 2004 Survey Report, Lake Wright Patman

Source/Author/Consultant - Michael W. Brice, Assistant District Management Supervisor
Inland Fisheries Division District 3-A, Marshall, Texas

Publication Year - 2005

Organization - Texas Parks and Wildlife Department

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Lake Wright Patman

Topics Covered - Survey Report

Subject of Study - Lake Wright Patman survey using electrofishing, gill netting, trap netting, a littoral zone habitat survey, an aquatic vegetation survey, and an angler access survey.

Water Supply Alternative - N/A

Objectives - Lake Wright Patman survey, as required by federal aid in sport fish restoration act
Texas federal aid project F-30-R-30

Recommendations/Conclusions - Please See Executive Summary (Page 2-3)

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water, Is it the Oil of the 21st Century,

Source/Author/Consultant - Mullican, W.F., III.

Publication Year - 2003

Organization - Subcommittee on Water Resources and Environment Committee on Transportation and Infrastructure – United States House of Representatives Washington, D.C.

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative –

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Mr. Bill King, Director of Texarkana Water Utilities, jointly operated by the Cities of Texarkana, Arkansas and Texas, phone conversation about Wright Patman Lake water rights

Source/Author/Consultant - N/A

Publication Year - 0

Organization - Texarkana Water Utilities

Type of Study - N/A

Location of Study - Lake Wright Patman

Reservoirs Included - Lake Wright Patman

Topics Covered - Telephone Conversation

Subject of Study - Texarkana Water Utilities Operations from Lake Wright Patman.

Water Supply Alternative - N/A

Objectives - N/A

Recommendations/Conclusions - N/A

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Mr. Paul Rodman, USACE, Fort Worth, Wright Patman Lake Operations

Source/Author/Consultant - N/A

Publication Year - 0

Organization - U.S. Army Corps of Engineers, Fort Worth District,

Type of Study - N/A

Location of Study - Lake Wright Patman

Reservoirs Included - Lake Wright Patman

Topics Covered - Telephone Conversation

Subject of Study - Operations of Lake Wright Patman.

Water Supply Alternative - N/A

Objectives - N/A

Recommendations/Conclusions - N/A

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - TCEQ, Water Rights Database and Related Files

Source/Author/Consultant - N/A

Publication Year - 0

Organization - Texas Commission on Environmental Quality

Type of Study - N/A

Location of Study - Lake Wright Patman

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Rights

Subject of Study - Water Rights Database and Related Files

Water Supply Alternative - N/A

Objectives - TCEQ Website - Water Rights Database and Related Files

Recommendations/Conclusions - N/A

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - US Army Corps of Engineering
Source/Author/Consultant - N/A
Publication Year - 0
Organization - U.S. Army Corps of Engineers, Fort Worth District,
Type of Study - N/A
Location of Study - Lake Wright Patman
Reservoirs Included - Lake Wright Patman
Topics Covered - Operations
Subject of Study - Operation of Lake Wright Patman
Water Supply Alternative - N/A
Objectives - USACE website - Lake Wright Patman Information
Recommendations/Conclusions - N/A

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Wright Patman is a multi-purpose flood control lake with a conservation pool storage capacity of 145,300 acre-feet and flood control pool storage capacity of 2,509,000 acre-feet.
Type of Water Supply Alternative - Surface
Detailed Cost of Water Supply Alternative - N/A
Number & Name of Entities to Develop Water Supply Alternative - N/A
Cross Reference - N/A
Level of Detail of Study - N/A
Reference for Water Supply Alternative, if included in Region C Water Plan - N/A
Condition of Viability of Water Supply - N/A
Water Quality Source - N/A
Permitting Requirements - N/A
Identified Environmental Impacts - N/A
Operational Considerations - N/A
Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Cypress Creek Basin Highlights 2007

Source/Author/Consultant - NETMWD

Publication Year - 2007

Organization - NETMWD

Type of Study - Technical

Location of Study - Cypress Creek Basin

Reservoirs Included - Cypress Basin

Topics Covered - Water Supply

Subject of Study - Water Supply

Water Supply Alternative - None

Objectives - Water Supply

Recommendations/Conclusions - None

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - None

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – none provided

Number & Name of Entities to Develop Water Supply Alternative - NETMWD

Cross Reference - None

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - NTMWD,
DWU

Condition of Viability of Water Supply - None

Water Quality Source - Low DO

Permitting Requirements - IBT

Identified Environmental Impacts - N/A

Operational Considerations - Transmission, env. Flows

Economic Impact for Both Region C & D - None

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Figure 1-2, Cypress Creek Basin Watersheds

Source/Author/Consultant - NETMWD

Publication Year - 2008

Organization - NETMWD

Type of Study - Technical

Location of Study - Cypress Creek Basin

Reservoirs Included - LOP, Lake Cypress Springs

Topics Covered - Water Supply

Subject of Study - Water Supply

Water Supply Alternative - None

Objectives - Water Supply

Recommendations/Conclusions - None

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - None

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – none provided

Number & Name of Entities to Develop Water Supply Alternative - NETMWD

Cross Reference - None

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - NTMWD,
DWU

Condition of Viability of Water Supply - None

Water Quality Source - not addressed

Permitting Requirements - IBT

Identified Environmental Impacts - N/A

Operational Considerations - Transmission, env. Flows

Economic Impact for Both Region C & D - None

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Saving Water, Rivers, and Money: An Analysis of the Potential for Municipal Water Conservation in Texas

Source/Author/Consultant - Norman D. Johns, PhD

Publication Year - 2002

Organization - National Wildlife Federation

Type of Study - Technical

Location of Study -

Reservoirs Included - Marvin Nichols

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Ecologically Significant River and Stream Segments of Region D, Regional Water Planning Area

Source/Author/Consultant - Norris, Chad W. and Gordon W. Linam

Publication Year - 2000

Organization - Texas Parks and Wildlife

Type of Study - Technical

Location of Study - Region D

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative - N/A

Objectives - The purpose of this report is to identify those river and stream segments that meet the outlined criteria and to prepare a report documenting those streams that are deemed to be of significant ecological value.

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Region D Water Plan

Source/Author/Consultant - North East Texas Regional Water Planning Group

Publication Year - 2006

Organization - North East Texas Regional Water Planning Group

Type of Study - Planning

Location of Study - Region D

Reservoirs Included - Toledo Bend; Marvin Nichols

Topics Covered - Water Conservation, Water Availability Model, Water Rights, Cost of Water Supply, Water Demand

Subject of Study - Regional water supply planning

Water Supply Alternative - Toledo Bend, Marvin Nichols, Prairie Creek

Objectives - Determine needs, evaluate alternatives, develop water management strategies

Recommendations/Conclusions - Toledo Bend pipeline project by SRA will be required to meet shortages for some user groups. (recommended alternative). Also, a supply option for Region C. Prairie Creek reservoir also recommended. Total Region D shortages projected to be 110,710 ac-ft/yr by 2060 with 64 entities experiencing shortages. 30,797 ac-ft/yr needed from Toledo Bend by 2060.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - n/a; Recommended transfers from Toledo Bend; 100,000 ac-ft/yr for SRA; 200,000 for NTMWD; 200,0000 fro TRWD

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – TWDB Std. (Appendix A, Ch 4)

Total Cost for transferring water from Toledo Bend to Upper Sabine Basin, \$771,906,000; Total Cost by User; SRA \$154,381,200; NTMWD \$308,762,400; TRWD \$308,762,400 Additional costs for transfer to Lake Fork and Lake Tawakon

Number & Name of Entities to Develop Water Supply Alternative - 1-SRA

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - none

Condition of Viability of Water Supply - good

Water Quality Source - Source: SRA. See table 5.5 for key water quality parameters.

Permitting Requirements - none mentioned

Identified Environmental Impacts - Concern for DO in Lake Fork or Tawakoni, need study.

Operational Considerations - Water quality impacts of the addition of Toledo Bend water to Lake Fork and/or Lake Tawakoni needs to be studied associated.

Economic Impact for Both Region C & D - Appendix A, Ch. 5

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Reservoir Summary Sheet for Texoma Lake

Source/Author/Consultant - OWRB

Publication Year - 2009

Organization - Oklahoma Water Resources Board

Type of Study - Data

Location of Study - Oklahoma

Reservoirs Included - Lake Texoma

Topics Covered - Water Diversion Permits

Subject of Study - Water Diversion Permits

Water Supply Alternative - Lake Texoma

Objectives - Provide the permit numbers, owners, and volumes for Oklahoma water diversion from Lake Texoma

Recommendations/Conclusions - Total Oklahoma Permits from Lake Texoma are 4,795 acre-feet per year

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 168,000 for Oklahoma (from 150,000 acre-feet of storage)

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - OWRB

Cross Reference - TWDB Volumetric Survey 2003

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Basin Summary Report 2004, Executive Summary

Source/Author/Consultant - Paul Price Associates, Inc.

Publication Year - 2004

Organization - Texas Commission on Environmental Quality

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Quality

Subject of Study - Sulphur River Basin Water Quality Assessments

Water Supply Alternative - N/A

Objectives - The long-term objectives of the CRP include assessing water quality in the Sulphur River Basin and assisting in identifying management programs to maintain and enhance the water quality

Recommendations/Conclusions - Please See Executive Summary

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Targeted Monitoring in the Cypress Basin, Nutrient Study in Lake O' Pines, Final Report

Source/Author/Consultant - Paul Price Associates, Inc.

Publication Year - 2000

Organization - NETMWD

Type of Study - Technical

Location of Study - Cypress Basin

Reservoirs Included - Lake O' The Pines

Topics Covered - Water Quality

Subject of Study - Lake O' Pines

Water Supply Alternative - None

Objectives - Nutrient Study of Lake O' Pines

Recommendations/Conclusions - NETMWD, High Eutrophication with low DO, City of Longview Intake

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - None

Type of Water Supply Alternative - None

Detailed Cost of Water Supply Alternative – none provided

Number & Name of Entities to Develop Water Supply Alternative - NETMWD

Cross Reference - None

Level of Detail of Study - Chemical

Reference for Water Supply Alternative, if included in Region C Water Plan - None

Condition of Viability of Water Supply - not addressed

Water Quality Source - Elevated nutrients, low DO

Permitting Requirements - IBT

Identified Environmental Impacts - None

Operational Considerations - Mixing/Blending

Economic Impact for Both Region C & D - not addressed

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Final Report – Water Availability Modeling for the Sulphur River Basin

Source/Author/Consultant - R.J. Brandes Company

Publication Year - 1999

Organization - Texas Natural Resource Conservation Commission

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included -

Topics Covered - Water Availability Model

Subject of Study - Water availability analysis for the Sulphur River Basin

Water Supply Alternative -

Objectives - Pursuant to Senate Bill 1 passed by the 75th Texas Legislature, the Texas Natural Resource Conservation Commission (TNRCC) must develop or acquire new reservoir/river basin simulation models in order to determine available water in accordance with the Texas Water Code.

Recommendations/Conclusions - The revised Texas A&M WRAP model, now known as WRAP-SIM, has been applied to the Sulphur River Basin in Texas to determine water availability. All 54 water rights in the basin have been modeled for a 57-year period of naturalized streamflows under eight different scenarios (referred to as 'Runs'). The runs consist of three basic sets of conditions: (1) fully authorized diversion amounts and varied return flow amounts (Reuse Runs), (2) varied diversion amounts and varied return flow assumptions (cancellation Runs), and (3) approximate current diversion and return flow conditions with year-2000 area-capacity relationships for reservoirs (Current Conditions Run). Special conditions reflecting environmental flow requirements have been included in all model runs where applicable. Only four water rights in the basin have permitted special conditions associated with environmental flow needs. (for detail conclusion see page 6-1)

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Availability Modeling for the Sulphur River Basin

Source/Author/Consultant - R.J. Brandes Company

Publication Year - 1999

Organization - Texas Water Development Board

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Conservation Plan and Emergency Water Demand Management Plan

Source/Author/Consultant - Regional Treated Water System

Publication Year - 2002

Organization - Upper Trinity Regional Water District

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Power Generation Water Use in Texas for the Years 2000 Through 2060 Final Report

Source/Author/Consultant - Representatives of Investor-Owned Utility Companies of Texas

Publication Year - 2003

Organization - Texas Water Development Board

Type of Study - Technical

Location of Study - Texas

Reservoirs Included - N/A

Topics Covered - Water use in Power Generation

Subject of Study - Water use in Power Generation

Water Supply Alternative - N/A

Objectives - The objective of the project is to develop improved methodologies for projecting water demands by steam electric generation water use sector for 50 year planning horizon. This paper describes various water utilizing process in energy generation.

Recommendations/Conclusions - Figure 6-1 shows the future water demand projection for steam electric generation. No Details on Lake Texoma.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - An Economic Analysis of the Mesa Water Supply Alternative for Texas Planning Regions B and C

Source/Author/Consultant - Resource Economics, Inc

Publication Year - 2001

Organization - Mesa Water, Inc.

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Evaluation of Selected Natural Resources in Part of the North-Central Texas Area

Source/Author/Consultant - Resource Protection Division Team

Publication Year - 1999

Organization - Texas Parks and Wildlife Department

Type of Study - Technical

Location of Study - North Central Texas

Reservoirs Included - N/A

Topics Covered - Groundwater resources

Subject of Study - Groundwater resources

Water Supply Alternative - N/A

Objectives - The purpose of PGMA program is to identify and evaluate areas of Texas(all or parts of 19 Counties) that are experiencing, or are expected to experience, critical groundwater problems and consider appropriate management options.

Recommendations/Conclusions - Few Species are directly dependent on the groundwater resources of the study area, the springs that emanate from the groundwater reserves contribute to the surface water hydrology. Long term decrease in flow can exacerbate water quality problems and impact species dependent on it. there is a trend to less dependence on groundwater from Trinity Aquifer and more dependence on surface water. The construction of reservoirs like Joe Pool Lake, Richland Chamber Reservoir, Cooper Reservoir and Ray Roberts Lake has some negative impact upon some important natural resources. Forested wetlands and other habitats are inundated.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Red River Compact with Supplemental Comments of Legal Advisory Committee

Source/Author/Consultant - RRCC

Publication Year - 1979

Organization - Red River Compact Commission

Type of Study - Technical

Location of Study - Arkansas, Louisiana, Oklahoma, Texas

Reservoirs Included - N/A

Topics Covered - Water Distribution among states

Subject of Study - Water Distribution among states

Water Supply Alternative - N/A

Objectives - To promote interstate comity and remove the causes of controversy between each of the affected states governing the use, control and distribution of the interstate water of the Red River and its tributaries. To provide a means of active program for conservation of water, protection of lives and property from floods, improvement of water quality, development of navigation and regulation of flow in Red River Basin.

Recommendations/Conclusions - The flow of the mainstem of the Red River is divided equally between Oklahoma and Texas. Both Oklahoma and Texas have form right to 200,000 acre-feet per year from lake Texoma and further quantities to be divided on equal basis. (this comment is on page 11 of pdf)

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 200,000 Acre-Feet

Type of Water Supply Alternative - Surface Water

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Draft Sabine River Basin 2008 Summary Report

Source/Author/Consultant - Sabine River Authority of Texas

Publication Year - 2008

Organization - Sabine River Authority of Texas, Texas Clean Rivers Program and TCEQ

Type of Study - Technical

Location of Study - Sabine River Basin

Reservoirs Included - Toledo Bend

Topics Covered - Water Quality

Subject of Study - Water quality summary for the Sabine River Basin pursuant to the Clean Rivers Act.

Water Supply Alternative - none discussed

Objectives - Identify significant issues affecting water quality in the Sabine River Basin and provide sufficient information for the TCEQ, river authorities, and other governmental entities to take appropriate corrective action to maintain and improve water quality.

Recommendations/Conclusions - The majority of the Sabine Basin supports the designated uses. Although there are localized areas of concern, the assessment of water quality indicates a healthy environment. The most serious problems in the Sabine Basin are being addressed through the Orange County TMDL project. The remaining areas of water quality concerns appear to be the result of natural conditions, inappropriate screening levels, or inadequate assessment procedures. In several segments where trends were noted, values were well below stream standards criteria and fully supported the designated uses.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - n/a

Type of Water Supply Alternative - n/a

Detailed Cost of Water Supply Alternative - n/a

Number & Name of Entities to Develop Water Supply Alternative - n/a

Cross Reference - n/a

Level of Detail of Study - n/a

Reference for Water Supply Alternative, if included in Region C Water Plan - n/a

Condition of Viability of Water Supply - Summary of water quality in Toledo Bend: Toledo Bend Reservoir was included on the 303(d) list for mercury in fish tissue. The Texas Department of State Health Services (DSHS) fish consumption advisory is still in effect for largemouth bass and freshwater

Water Quality Source - Data sources used in report: In addition to water quality data collected by SRA-TX, data sets for the inventories have been received from a number of sources including municipalities, government agencies (local, state, and federal), and universities.

Permitting Requirements - n/a

Identified Environmental Impacts - n/a

Operational Considerations - n/a

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Conservation and Drought Contingency Plan, revised December 1999, March 2002 and March 2005

Source/Author/Consultant - Sabine River Authority of Texas

Publication Year - 2006

Organization - Sabine River Authority

Type of Study - Planning

Location of Study - Sabine River Basin

Reservoirs Included - Toledo Bend

Topics Covered - Water Yield, Water Conservation, Water Supply

Subject of Study - Conservation and drought planning for Sabine River Authority.

Water Supply Alternative - Additional diversion from Toledo Bend Reservoir.

Objectives - To develop practices, techniques and technologies that will reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses. To implement a plan to educate suppliers and the public on drought and water conservation.

Recommendations/Conclusions - The study discusses requirements for water conservation and drought planning pursuant to TCEQ rules, conservation practices and strategies, policies and public outreach and education.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - The reservoir yield is 2,086,600 ac-ft/yr shared equally between Louisiana and Texas. SRA-Texas has a diversion right of 750,000 ac-ft/yr and has applied for an amendment to its water right permit for an additional 293,000 ac-ft/yr from the Texas portion

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative - not discussed

Number & Name of Entities to Develop Water Supply Alternative - 2 - TCEQ to permit it; SRA-TX to manage it.

Cross Reference - Upper Sabine Basin Water Supply Study, March 2003, p. 7 referenced on p. 21 of this report.

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - Additional 293,300 ac-ft/yr of water requested by SRA-Texas mentioned in 2006 Region C Water Plan on page 4D.2

Condition of Viability of Water Supply - Not discussed.

Water Quality Source - not mentioned

Permitting Requirements - Not discussed in detail.

Identified Environmental Impacts - not mentioned

Operational Considerations - n/a

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - 2003 Basin Summary Report: Sabine River Basin, Texas

Source/Author/Consultant - Sabine River Authority of Texas in cooperation with the Texas Commission on Environmental Quality under the authorization of the Texas Clean Rivers Act

Publication Year - 2004

Organization - Sabine River Authority

Type of Study - Technical

Location of Study - Sabin River Basin

Reservoirs Included - Toledo Bend

Topics Covered - Water Quality, Environmental Impacts

Subject of Study - Water quality summary for the Sabine River Basin pursuant to the Clean Rivers Act.

Water Supply Alternative - None discussed

Objectives - To evaluate water quality throughout the basin and analyze trends in water quality data. Spatial analyses were performed to correlate the water quality conditions with environmental factors.

Recommendations/Conclusions - Overall water quality in Sabine basin is good with the exception of Orange County. The need for additional water quality monitoring sites will be evaluated and recommendations made to Sabine Basin Steering Committee. Toledo Bend Reservoir is designated for water supply use and has adequate water quality with a low concern for potential impacts. Both the TCEQ 303(d) List (2004) and the SRA assessment of overall water quality listed a fish consumption advisory. Recommendations were to conduct a TMDL for mercury (TCEQ) and conduct periodic fish tissue sampling (SRA). Notes: p. 5 of Intro states Toledo Bend Reservoir impoundment capacity.

p. VIII summarized significant findings for Toledo Bend Reservoir.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - n/a

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative - n/a

Number & Name of Entities to Develop Water Supply Alternative - none

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - Referenced in 2006 Region C Water Plan

Condition of Viability of Water Supply - Known levels of and overall good/ adequate water quality

Water Quality Source - Sabine River Authority; TCEQ

Permitting Requirements - n/a

Identified Environmental Impacts - n/a

Operational Considerations - n/a

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Telephone Conversations with Sabine River Authority, Louisiana

Source/Author/Consultant - Sabine River Authority, Louisiana

Publication Year - 2009

Organization - Sabine River Authority, Louisiana

Type of Study - Technical

Location of Study - Toledo Bend and Sabine River Basin

Reservoirs Included - Toledo Bend

Topics Covered - Yield, Available Supply, Water Quality

Subject of Study - n/a

Water Supply Alternative - Toledo Bend

Objectives - n/a

Recommendations/Conclusions - n/a

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Total yield (TX & LA) 2,086,800 ac-ft/yr from 1991 yield study, 1,908,000 ac-ft/yr from TCB 2005 yield study with no hydropower (report provided); half of yield to Louisiana. Committed (actual and options) 65,529 ac-ft/year

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative - not available

Number & Name of Entities to Develop Water Supply Alternative - SRA-TX, SRA-LA, NTMWD, DWU, TRWD

Cross Reference - none

Level of Detail of Study - n/a

Reference for Water Supply Alternative, if included in Region C Water Plan - n/a

Condition of Viability of Water Supply - Good, more yield than expected demand. Use of Louisiana water may be limited by lack of Comprehensive State (La) Water Plan

Water Quality Source - not discussed

Permitting Requirements - FERC (hydropower)

Identified Environmental Impacts - environmental flows

Operational Considerations - not discussed

Economic Impact for Both Region C & D - not discussed

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Telephone Conversations with Sabine River Authority, Texas

Source/Author/Consultant - Sabine River Authority, Texas

Publication Year - 2009

Organization - Sabine River Authority, Texas

Type of Study - Technical

Location of Study - Toledo Bend and Sabine River Basin

Reservoirs Included - Toledo Bend

Topics Covered - Yield, Available Supply, Water Quality

Subject of Study - n/a

Water Supply Alternative - Toledo Bend

Objectives - n/a

Recommendations/Conclusions - 200,000 ac-ft/yr for NTMWD, 200,000 ac-ft/yr for DWU, 200,000 ac-ft/yr for TRWD, 100,000 ac-ft/yr for Upper Sabine Basin

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Yield just over 1,000,000 ac-ft/yr for Texas based on 1991 Yield Study (equal number for Louisiana). 750,000 ac-ft/yr permitted, of which 20,000 already committed. Permit request for remaining 293,300 submitted and administratively complete to TCEQ, als

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – not provided, see other studies; no firm alignment

Number & Name of Entities to Develop Water Supply Alternative - SRA-TX, NTMWD, DWU, TRWD

Cross Reference - none

Level of Detail of Study - n/a

Reference for Water Supply Alternative, if included in Region C Water Plan - Toledo Bend Group Summary Report on Alternatives 9 and 10, and 1991 Yield Study likely references for Region C Plan

Condition of Viability of Water Supply - Good, more yield than expected demand

Water Quality Source - Draft Clean Rivers Act report provided

Permitting Requirements - Inter-basin Transfer and FERC (hydropower)

Identified Environmental Impacts - water quality not likely problem; Toledo Bend quality good, low TDS

Operational Considerations - not discussed

Economic Impact for Both Region C & D - not discussed

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - 2007 Sabine River Compact Administration 53rd Annual Report

Source/Author/Consultant - Sabine River Compact Administration

Publication Year - 2007

Organization - Sabine River Authority of Texas; Sabine River Authority of Louisiana

Type of Study - Technical

Location of Study - Sabine River Basin

Reservoirs Included - Toledo Bend

Topics Covered - Water Quality, Water Supply, Water Demand

Subject of Study - Status Report

Water Supply Alternative - Toledo Bend and Sabine River

Objectives - Provide overall status to meet compact requirement

Recommendations/Conclusions - n/a

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - not mentioned

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – none provided

Number & Name of Entities to Develop Water Supply Alternative - n/a

Cross Reference - none

Level of Detail of Study - Status Report

Reference for Water Supply Alternative, if included in Region C Water Plan - none

Condition of Viability of Water Supply - Diversions from Toledo Bend 2007: Louisiana – 28,961 ac-ft, Texas 4,267 ac-ft

Water Quality Source - 50 monitoring stations in Sabine River Basin, maintained by LDEQ, TCEQ, SRA-TX, USGS

Permitting Requirements - none mentioned

Identified Environmental Impacts - none mentioned

Operational Considerations - n/a

Economic Impact for Both Region C & D - none mentioned

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - East Texas Region Plan

Source/Author/Consultant - Schaumburg & Polk, Inc

Publication Year - 2001

Organization - East Texas Regional Water Planning Group

Type of Study - Planning

Location of Study - East Texas, Region I

Reservoirs Included - Toledo Bend

Topics Covered - Water Supply, Environmental Impacts, Cost of Water Supply, Water Demand

Subject of Study - Regional water supply planning

Water Supply Alternative - Toledo Bend, Lake Easter, Fastrill and others

Objectives - Develop water demand projections, analysis of current supplies, development of management strategies.

Recommendations/Conclusions - No inter-basin transfer or transfer to upper basin is discussed.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Reported unpermitted yield of 250,000 ac-ft/yr in Toledo Bend, SRA holds water rights of 750,000 ac-ft/yr

Type of Water Supply Alternative - surface and ground water

Detailed Cost of Water Supply Alternative - n/a

Number & Name of Entities to Develop Water Supply Alternative - n/a

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - none

Condition of Viability of Water Supply - Toledo Bend constructed for multiple purposes

Water Quality Source - none referenced

Permitting Requirements - n/a

Identified Environmental Impacts - Consideration of environmental flows to Sabine Neches estuary, and limited information concerning the flows.

Operational Considerations - Recommends consideration of hydropower in determining water supplies.

Economic Impact for Both Region C & D - none mentioned

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - East Texas Region Special Study No. 1: Inter-Regional Coordination on the Toledo Bend Project

Source/Author/Consultant - Schaumburg & Polk; Freese & Nichols; APAI

Publication Year - 2009

Organization - East Texas Regional Water Planning Group

Type of Study - Technical

Location of Study - Region I & Region C

Reservoirs Included - Toledo Bend

Topics Covered - Instream Flow, Water Quality, Impact Analysis, Water Supply, Water Transmission, Environmental Impacts, Cost of Water Supply

Subject of Study - Analysis of viability of transporting 500,000-700,000 ac-ft/yr of water from Toledo Bend to other lakes in Texas.

Water Supply Alternative - Toledo Bend

Objectives - (1) Coordinate with major participants and confirm supply amounts and delivery locations, (2) review and update schematic transmission routes, (3) identify potential impacts to receiving reservoirs, (4) review naturalized flows to Sabine Lake and compare to TPWD's recommended freshwater inflows, (5) update capital costs and develop life cycle costs for the refined project.

Recommendations/Conclusions - (See pp. 4-19/4-20). Conduct additional study and modeling to better understand relationship between freshwater inflows and various water management strategies / Toledo Bend Pipeline Project is viable to provide water supplies to North Texas Area; cost feasibility is contingent on pipeline route, increasing capital costs, and uncertain energy costs; more detailed analysis will be needed when project moves to development phase. East Texas Region should continue to monitor demand for water and coordinate with adjoining regions.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Maximum potential supply investigated = 700,000 ac-ft/yr. (200,000 ac-ft/yr each for NTMWD, TRWD, DWU and 100,000 ac-ft/yr for SRA) 500,000 without DWU

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative - "For the 700,000 acre-feet per year scenario, the total net present cost is \$19.8 billion, with an average life cycle unit cost of \$410 per acre-foot of water (adjusted to 2007 dollars). For the 500,000 acre-feet per year scenario, the total net present c

Number & Name of Entities to Develop Water Supply Alternative - 4-NTMWD, DWU, SRA, TRWD

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - n/s

Condition of Viability of Water Supply - Refined understanding of affect on instream flows (flow to Sabine Lake estuary); future ROW, capital, and energy costs.

Water Quality Source - n/a

Permitting Requirements - n/a

Identified Environmental Impacts - Possible impacts to receiving reservoirs include altered biodiversity (fish, macroinvertebrates, aquatic plants), water quality, and entrainment of live fishes at intake. Possible impacts to Sabine Lake estuaries and marshes due to reduced freshwater infl

Operational Considerations - n/a

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Report on Supplemental Water Supply from Pat Mayse Reservoir and Proposed Big Pine Reservoir

Source/Author/Consultant - Shimek, Jacobs and Finklea

Publication Year - 1979

Organization - North Texas Municipal Water District

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Basin Summary Report 2000

Source/Author/Consultant - Sulphur River Basin Authority

Publication Year - 2000

Organization - Sulphur River Basin Authority

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Quality

Subject of Study - Sulphur River Basin Water Quality Assessments

Water Supply Alternative - N/A

Objectives - The long-term objectives of the CRP include assessing water quality in the Sulphur River Basin and assisting in identifying management programs to maintain and enhance the water quality

Recommendations/Conclusions - Recommendations for future activities in the Sulphur River Basin include the following: · Develop recommended actions for water quality issues identified on the Preliminary Basin Action Plan. · Establish priorities and conduct monitoring to address concerns identified in the Significant Findings, and investigate further water quality conditions in Cooper Lake, the Sulphur River above Cooper Lake, and White Oak Creek. The Wright Patman Lake watershed has been selected as a priority monitoring area for FY 2000. · Implement monitoring programs to provide better assessments of the extent to which uses are being supported in water bodies where data are currently limited or non-existent. · Investigate funding sources to support expanded monitoring activities in the basin. · Enhance coordination of monitoring programs in the Sulphur River Basin, and determine the interest of local entities in participating in the CRP monitoring program. · Continue to provide opportunities for public involvement. · Contribute to the development of balanced, scientifically-based management programs for waters not supporting designated uses by providing technical data and opportunities for public involvement in the process to develop the programs.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur Springs News Telegram - Study group will look at water supply options in NE Texas

Source/Author/Consultant - Sulphur Springs News Telegram

Publication Year - 2007

Organization -

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Liquid Assets: The State of Texas' Water Resources
Source/Author/Consultant - Texas Comptroller of Public Accounts
Publication Year - 2009
Organization -
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - TCB 2005 Toledo Bend Reservoir Water Availability Study

Source/Author/Consultant - TCB/AECOM

Publication Year - 2005

Organization - Toledo Bend Project Joint Operations; Sabine River Authority of Texas; and Sabine River Authority of Louisiana

Type of Study - Technical

Location of Study - Toledo Bend

Reservoirs Included - Toledo Bend

Topics Covered - Water Yield

Subject of Study - Study of yield using WAM modeling

Water Supply Alternative - Toledo Bend and Sabine River

Objectives - Determine yield using WAM (WRAP Model) under two operational (hydropower and environmental) conditions

Recommendations/Conclusions - Reduce yield 9 to 13%

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - TCEQ WAM methodology, Run 3

2005 Operational Condition A – yield 1,822,000 ac-ft/yr – no modification to hydropower operations, no instream flow requirements, no bay and estuary flow requirements.

2005 Operational Condition B – yield 1,908,000 ac-ft/yr –

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – none provided

Number & Name of Entities to Develop Water Supply Alternative - SRA-TX and SRA-LA

Cross Reference - none

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - none

Condition of Viability of Water Supply - good

Water Quality Source - none reported

Permitting Requirements - FERC re-licensing a factor for releases

Identified Environmental Impacts - instream flows, bay and estuary flows

Operational Considerations - hydropower, downstream water rights, instream flow releases

Economic Impact for Both Region C & D - none mentioned

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Implementation Plan of One Total Maximum Daily Load for DO in Lake O' The Pines

Source/Author/Consultant - TCEQ

Publication Year - 2008

Organization - TCEQ

Type of Study - Technical

Location of Study - Lake O' the Pines

Reservoirs Included - Lake O' the Pines

Topics Covered - Water Quality

Subject of Study - Lake O' Pines

Water Supply Alternative - none

Objectives - TMDL Study for DO

Recommendations/Conclusions - Segment 0403 listed on Stated 303(d) list as impaired due to low DO. Implementation Plan to achieve pollutant reductions necessary to restore DO levels in the water body

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - None

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative - none provided

Number & Name of Entities to Develop Water Supply Alternative - NETMWD

Cross Reference -

Level of Detail of Study - Chemical

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply - Low DO

Water Quality Source - Low DO

Permitting Requirements - IBT

Identified Environmental Impacts - none

Operational Considerations - None

Economic Impact for Both Region C & D - Not addressed

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Availability for NEW PERPETUAL RIGHTS, Cypress Creek Basin.

Source/Author/Consultant - TCEQ

Publication Year - 2008

Organization - TCEQ

Type of Study - Technical

Location of Study - Cypress Creek Basin

Reservoirs Included - Cypress Basin

Topics Covered - Water Supply

Subject of Study - Water Supply

Water Supply Alternative - None

Objectives - Water Supply

Recommendations/Conclusions - None

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - None

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – none provided

Number & Name of Entities to Develop Water Supply Alternative - NETMWD

Cross Reference - None

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - NTMWD,
DWU

Condition of Viability of Water Supply - None

Water Quality Source - not addressed

Permitting Requirements - IBT

Identified Environmental Impacts - IBT

Operational Considerations - Transmission, env. Flows

Economic Impact for Both Region C & D - None

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Rights Permits and Supply Contracts - Active Permits, Austin, various dates

Source/Author/Consultant - TCEQ

Publication Year - 2009

Organization - Texas Commission on Environmental Quality

Type of Study - Water Rights Database

Location of Study - Austin

Reservoirs Included - Lake Texoma

Topics Covered - Texoma Water Rights

Subject of Study - N/A

Water Supply Alternative - N/A

Objectives - N/A

Recommendations/Conclusions - The following Water Rights were found to be associated with Lake Texoma. Diversion Amounts: WR1321 Tanglewood Resort Management - 200 acft, WR4898 Red River Authority - 2000 acft, WR4899 Red River Authority - 250 acft, WR4900 Valley NG Power LLC - 16400 acft, WR4901 City of Denison - 29680 acft, WR5003 North Texas MWD 197000 ac ft.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - The total water diversion in the permits allows for 270,560 acft.

Type of Water Supply Alternative - Surface Water from Lake Texoma

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - This is a database updated by TCEQ.

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - The database lists current permits granted by TCEQ.

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Rights Permits and Supply Contracts - Data Dictionary, Austin, various dates

Source/Author/Consultant - TCEQ

Publication Year - 2009

Organization - Texas Commission on Environmental Quality

Type of Study - N/A

Location of Study - Austin

Reservoirs Included - N/A

Topics Covered - N/A

Subject of Study - N/A

Water Supply Alternative - N/A

Objectives - N/A

Recommendations/Conclusions - This Document is a guide to using the TCEQ water rights database online. It describes codes and headings from the database.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Rights Permits and Supply Contracts - Inactive Permits, Austin, various dates

Source/Author/Consultant - TCEQ

Publication Year - 2009

Organization - TCEQ

Type of Study - N/A

Location of Study - Austin

Reservoirs Included - N/A

Topics Covered - Texoma Inactive Water Rights

Subject of Study - N/A

Water Supply Alternative - N/A

Objectives - N/A

Recommendations/Conclusions - There was only 1 inactive water right associated with Lake Texoma in this database. It was held by Dallas County Youth Village for 1 acft, it expired in 1991.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Rights Permits and Supply Contracts - Metadata, Austin, various dates

Source/Author/Consultant - TCEQ

Publication Year - 2006

Organization - TCEQ

Type of Study - N/A

Location of Study - Austin

Reservoirs Included - N/A

Topics Covered - N/A

Subject of Study - N/A

Water Supply Alternative - N/A

Objectives - N/A

Recommendations/Conclusions - This document describes where the data for the water rights database was obtained and how it is maintained. It also has contact info to get the metadata for the database.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Texas Instream Flow Studies: Technical Overview

Source/Author/Consultant - TCEQ, TPWD and TWDB

Publication Year - 2008

Organization -

Type of Study - Technical

Location of Study - State of Texas

Reservoirs Included - Toledo Bend

Topics Covered - Socioeconomic impacts, Environmental Impacts

Subject of Study - This study is an approach to the process of performing an instream flow assessment. This document serves as a general overview of the requirements of such a study pursuant to Senate Bill 2.

Water Supply Alternative - None

Objectives - To perform scientific and engineering studies to determine flow conditions necessary for supporting a sound ecological environment in the river basins of Texas. This document identifies a general process for developing and conducting those studies and scientific studies to be used to make those determinations.

Recommendations/Conclusions - This document is intended to describe the general framework of the process. It does not provide an exhaustive list of the conditions that might be encountered during instream flow studies in Texas. It does, however, describe the organizational process the Agencies will follow to assess available data, set goals, conduct studies, integrate results, develop and implement recommendations, monitor river conditions, and adapt recommendations as necessary. It also describes the general technical capabilities that the Agencies can provide in support of instream flow studies.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - n/a

Type of Water Supply Alternative - n/a

Detailed Cost of Water Supply Alternative - n/a

Number & Name of Entities to Develop Water Supply Alternative - n/a

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - none

Condition of Viability of Water Supply - n/a

Water Quality Source - n/a

Permitting Requirements - n/a

Identified Environmental Impacts - n/a

Operational Considerations - n/a

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Texarkana Gazette - Telford Opposes reservoir project

Source/Author/Consultant - Texarkana Gazette

Publication Year - 2005

Organization -

Type of Study -

Location of Study -

Reservoirs Included - Marvin Nichols

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Efficient Water Use for Texas: Policies, Tools, and Management Strategies

Source/Author/Consultant - Texas Agricultural Experiment Station

Publication Year - 2002

Organization - Texas Agricultural Experiment Station

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Summary of River Basin Assessments

Source/Author/Consultant - Texas Clean Rivers Program

Publication Year - 1996

Organization - Texas Clean Rivers Program

Type of Study - Overview

Location of Study - Cypress Basin

Reservoirs Included - Caddo, Big Cypress Creek, Lake O' The Pines, Lake Bob Sandlin, Lake Cypress Springs

Topics Covered - Water Quality

Subject of Study - Cypress Basin

Water Supply Alternative - none

Objectives - Stream Segments and Assessments

Recommendations/Conclusions - Lake Cypress Springs low DO, Lake Bob Sandlin low DO, Lake O' The Pines low DO, Little Cypress Springs nutrients and low DO, Black Cypress Low DO

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - None

Type of Water Supply Alternative - None

Detailed Cost of Water Supply Alternative - None

Number & Name of Entities to Develop Water Supply Alternative - None

Cross Reference - None

Level of Detail of Study - None

Reference for Water Supply Alternative, if included in Region C Water Plan - None

Condition of Viability of Water Supply - Low DO

Water Quality Source - Low DO

Permitting Requirements - None

Identified Environmental Impacts - None

Operational Considerations - None

Economic Impact for Both Region C & D - None

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Basin Highlights Reports 2001

Source/Author/Consultant - Texas Commission on Environmental Quality

Publication Year - 2001

Organization - Sulphur River Basin Authority

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Quality

Subject of Study - Sulphur River Basin Water Quality Assessments

Water Supply Alternative - N/A

Objectives - Texas Clean River Program (CRP) - Water Quality Assessments for Sulphur River Basin

Recommendations/Conclusions - See Pages 5

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Basin Highlights Reports 2002

Source/Author/Consultant - Texas Commission on Environmental Quality

Publication Year - 2002

Organization - Sulphur River Basin Authority

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Quality

Subject of Study - Sulphur River Basin Water Quality Assessments

Water Supply Alternative - N/A

Objectives - Texas Clean River Program (CRP) - Water Quality Assessments for Sulphur River Basin

Recommendations/Conclusions - See Page 3

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Basin Highlights Reports 2003

Source/Author/Consultant - Texas Commission on Environmental Quality

Publication Year - 2003

Organization - Sulphur River Basin Authority

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Quality

Subject of Study - Sulphur River Basin Water Quality Assessments

Water Supply Alternative - N/A

Objectives - Texas Clean River Program (CRP) - Water Quality Assessments for Sulphur River Basin

Recommendations/Conclusions - See Pages 7 & 10

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Basin Highlights Reports 2005

Source/Author/Consultant - Texas Commission on Environmental Quality

Publication Year - 2005

Organization - Sulphur River Basin Authority

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Quality

Subject of Study - Sulphur River Basin Water Quality Assessments

Water Supply Alternative - N/A

Objectives - Texas Clean River Program (CRP) - Water Quality Assessments for Sulphur River Basin

Recommendations/Conclusions - See Page 10-12

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Basin Highlights Reports 2006

Source/Author/Consultant - Texas Commission on Environmental Quality

Publication Year - 2006

Organization - Sulphur River Basin Authority

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Quality

Subject of Study - Sulphur River Basin Water Quality Assessments

Water Supply Alternative - N/A

Objectives - Texas Clean River Program (CRP) - Water Quality Assessments for Sulphur River Basin

Recommendations/Conclusions - Please See Report

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Basin Highlights Reports 2007

Source/Author/Consultant - Texas Commission on Environmental Quality

Publication Year - 2007

Organization - Sulphur River Basin Authority

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Quality

Subject of Study - Sulphur River Basin Water Quality Assessments

Water Supply Alternative - N/A

Objectives - Texas Clean River Program (CRP) - Water Quality Assessments for Sulphur River Basin

Recommendations/Conclusions - See Page 17-18

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Basin Surface Water Quality Monitoring Plan Quality Assurance Project Plan, 2005

Source/Author/Consultant - Texas Commission on Environmental Quality

Publication Year - 2005

Organization - Sulphur River Basin Authority

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Quality

Subject of Study - Sulphur River Basin Water Quality Assessments

Water Supply Alternative - N/A

Objectives - Texas Clean River Act (Senate Bill 818) - Water Quality Assessments for Sulphur River Basin

Recommendations/Conclusions - Wright Patman Lake, WPL (Segment 0302 and 303) - WPL was listed on the 303(d) List (December 1999) for dissolved oxygen concentrations that are sometimes lower than the standard established to ensure optimum conditions for aquatic life. These conditions existed near the dam and in the upper regions near Hwy 8. The 303(d) List (August 31, 2000) notes that several areas of the lake fail to meet the dissolved oxygen criterion at times. These areas are the upper reservoir, near the dam, and the upper-middle portion of the lake. The overall priority for this impairment was established as "medium". The pH values are high during certain time periods in the northwestern-most tip, the Elliott Creek arm located northwest of the dam, and the middle-upper portion of the lake. These values were occasionally higher than the criterion established to safeguard general water quality uses. WPL was listed on the 303(d) List (October, 2002) for the "general use" criterion based on high pH in the arm west of the dam and in the northeast corner of the lake and for "aquatic life use" based on the depressed oxygen criterion. The overall impairment is listed as "low". The causes of the impairments are listed as both point and non-point sources. Portions of WPL are on the 2002 Texas 303(d) List (Oct 1, 2002) for low dissolved oxygen and high pH and additional data is to be collected before a TMDL is scheduled. The Draft 2004 Texas Water Quality Inventory details the standards that WPL did not meet in 2004. Areas of the lake are listed as partially supporting and not supporting "general use" due to high pH. Other portions of WPL are listed as partially supporting or not supporting "aquatic life use" due to depressed dissolved oxygen. WPL has been placed in Category 5c that requires additional data be collected before a TMDL is scheduled. See Figure 2 for the location of the three sites on WPL.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Basin Surface Water Quality Monitoring Plan Quality Assurance Project Plan, 2007

Source/Author/Consultant - Texas Commission on Environmental Quality

Publication Year - 2007

Organization - Sulphur River Basin Authority

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Quality

Subject of Study - Sulphur River Basin Water Quality Assessments

Water Supply Alternative - N/A

Objectives - Texas Clean River Act (Senate Bill 818) - Water Quality Assessments for Sulphur River Basin

Recommendations/Conclusions - Wright Patman Lake, WPL (Segment 0302 and 303) - WPL was listed on the 303(d) List (December 1999) for dissolved oxygen concentrations that are sometimes lower than the standard established to ensure optimum conditions for aquatic life. These conditions existed near the dam and in the upper regions near Hwy 8. The 303(d) List (August 31, 2000) notes that several areas of the lake fail to meet the dissolved oxygen criterion at times. These areas are the upper reservoir, near the dam, and the upper-middle portion of the lake. The overall priority for this impairment was established as "medium". The pH values are high during certain time periods in the northwestern-most tip, the Elliott Creek arm located northwest of the dam, and the middle-upper portion of the lake. These values were occasionally higher than the criterion established to safeguard general water quality uses. WPL was listed on the 303(d) List (October, 2002) for the "general use" criterion based on high pH in the arm west of the dam and in the northeast corner of the lake and for "aquatic life use" based on the depressed oxygen criterion. The overall impairment is listed as "low". The causes of the impairments are listed as both point and non-point sources. Portions of WPL are on the 2002 Texas 303(d) List (Oct 1, 2002) for low dissolved oxygen and high pH and additional data is to be collected before a TMDL is scheduled. The Draft 2004 Texas Water Quality Inventory details the standards that WPL did not meet in 2004. Areas of the lake are listed as partially supporting and not supporting "general use" due to high pH. Other portions of WPL are listed as partially supporting or not supporting "aquatic life use" due to depressed dissolved oxygen. WPL has been placed in Category 5c that requires additional data be collected before a TMDL is scheduled. See Figure 2 for the location of the three sites on WPL.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Toledo Bend BMP informer : updating forest landowners on forestry and water quality issues

Source/Author/Consultant - Texas Forest Service. Best Management Practices Project.

Publication Year - 2003

Organization - Texas Forest Service

Type of Study - Technical

Location of Study -

Reservoirs Included - Toledo Bend

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - The State of Texas Water Quality Inventory, four volumes
Source/Author/Consultant - Texas Natural Resource Conservation Commission
Publication Year - 1996
Organization - Texas Natural Resource Conservation Commission
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Wright Patman Reservoir Elevation Assessment
Source/Author/Consultant - Texas Parks and Wildlife
Publication Year - 2008
Organization - Texas Parks and Wildlife
Type of Study - N/A
Location of Study - Lake Wright Patman
Reservoirs Included - Lake Wright Patman
Topics Covered - Conservation Pool
Subject of Study - Memorandum
Water Supply Alternative - N/A
Objectives - Reservoir Elevation Assessment
Recommendations/Conclusions - N/A

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A
Type of Water Supply Alternative - Surface
Detailed Cost of Water Supply Alternative - N/A
Number & Name of Entities to Develop Water Supply Alternative - N/A
Cross Reference - N/A
Level of Detail of Study - N/A
Reference for Water Supply Alternative, if included in Region C Water Plan - N/A
Condition of Viability of Water Supply - N/A
Water Quality Source - N/A
Permitting Requirements - N/A
Identified Environmental Impacts - N/A
Operational Considerations - N/A
Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Draft Texas Instream Flow Studies: Technical Overview

Source/Author/Consultant - Texas Parks and Wildlife Department, Texas Commission on Environmental Quality, and the Texas Water Development Board

Publication Year - 2003

Organization -

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Analysis of Instream Flows for the Sulphur River: Hydrology, Hydraulics & Fish Habitat Utilization

Source/Author/Consultant - Texas Water Development Board

Publication Year - 2004

Organization - U.S. Army Corps of Engineers

Type of Study - Technical

Location of Study - Sulphur River Basin

Reservoirs Included - Lake Wright Patman, Marvin Nichols I, Marvin Nichols II, George Parkhouse I, George Parkhouse II

Topics Covered - Instream Flows

Subject of Study - Sulphur River Basin water development projects impact analysis

Water Supply Alternative -

Objectives - This report addresses potential impacts of water development projects to the hydrology, aquatic habitat and flood plain in the Sulphur River basin.

Recommendations/Conclusions - See Page 189-197

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Volumetric Survey of Wright Patman Lake

Source/Author/Consultant - Texas Water Development Board

Publication Year - 1997

Organization - U.S. Army Corps of Engineers in cooperation with City of Texarkana

Type of Study - Technical

Location of Study - Lake Wright Patman

Reservoirs Included - Lake Wright Patman

Topics Covered - Volumetric Survey

Subject of Study - Hydrographic Survey of Lake Wright Patman

Water Supply Alternative - N/A

Objectives - Determine the capacity of the lake at the conservation pool elevation, to perform the survey while the lake was in the flood pool, to mathematically estimate any remaining volume to the top of the flood pool

Recommendations/Conclusions - Wright Patman Lake was formed in 1956. Initial storage calculations estimated the volume at the conservation pool elevation of 222.00 feet to be 145,300 acre-feet with a surface area of 20,200 acres. At elevation 230.0 feet, the volume was estimated to be 437,250 acre-feet with a surface area of 38,600 acres. Results indicate that the lake's capacity at the conservation pool elevation of 220.0 feet was 110,900 acre-feet and the area was 18,994 acres. At elevation 230.0 feet, the volume was determined to be 392,740 acre-feet with an area of 34,882 acres. At the top of the flood pool, elevation 259.5 feet, the volume was determined to be 2,507,800 acre-feet with an area of 110,440 acres. The estimated reduction in storage capacity at elevation 220.0 feet since 1956 was 34,400 acre-ft or 1,147 acre-ft per year. The average annual deposition rate of sediment in the conservation pool of the reservoir can be estimated at 0.34 acre-ft per square mile of drainage area. At elevation 230.0 feet, the reduction in storage calculated 44,510 acre-feet or 1,483.7 acre-feet per year. The average annual deposition rate of sediment at this elevation can be estimated 0.436 acre-feet per square mile of drainage area. At elevation 259.5, the reduction in storage calculated was 112,600 acre-feet, or 3,753.3 acre-feet per year. The average annual deposition rate of sediment at this elevation can be estimated at 1.104 acre-feet per square mile of drainage area. It is difficult to compare the original design information and the TWDB survey performed because little is known about the original design information, the amount of data collected, and the method used to process the collected data. The estimated sedimentation rate in the flood pool computed from the original design information does not seem realistic. However, the TWDB considers the 1997 survey to be significant improvement over previous survey procedures and recommends that the same methodology be used in five to ten years or after major flood events to monitor changes to the lake's storage capacity. It is recommended that the survey be scheduled when the lake is between elevations 230.0 and 235.0 feet to facilitate access throughout the lake and to minimize underwater hazards. Performing the survey when the lake is significantly higher into the flood pool does not seem very feasible or worth the added expense. The terrain above elevation 235.0 feet is heavily vegetated, and not conducive to an on-the-water survey.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative – N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Special Report, Report to the 79th Legislature

Source/Author/Consultant - Texas Water Development Board and Water Conservation Implementation Task Force

Publication Year - 2004

Organization - Texas Water Development Board

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Regional Water and Wastewater Facilities Planning for the Richland-Chambers Reservoir Area

Source/Author/Consultant - Texas Water Development Board, the Navarro County Commissioner's Court, and the Trinity River Authority

Publication Year - 1988

Organization - Texas Water Development Board

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Report on Wright Patman (Texarkana) Reservoir Bowie and Cass Counties Texas EPA Region VI Working Paper No. 669

Source/Author/Consultant - Texas Water Quality Board and The Texas National Guard

Publication Year - 1977

Organization - Texas Water Quality Board and The Texas National Guard

Type of Study - Technical

Location of Study - Lake Wright Patman

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Quality

Subject of Study -

Water Supply Alternative - N/A

Objectives - The survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations and impacts on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional and state management source pollution abatement in lake watersheds.

Recommendations/Conclusions - Please See Conclusion (Page 1-4)

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Texas Water Quality, A Summary of River Basin Assessments

Source/Author/Consultant - TNRCC

Publication Year - 1996

Organization - Texas Natural Resource Conservation Commission

Type of Study - Technical

Location of Study - Statewide

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Quality

Subject of Study - Water quality assessment of each river basin in Texas

Water Supply Alternative - N/A

Objectives - To address the two of the most important questions 1. Is it safe to swim in the body of water? & 2. Can you eat the fish?

Recommendations/Conclusions - Water quality concerns identified for Lake Wright Patman include a concern for nutrients, and a possible concern for pH. Concerns are expressed about excessive sediment loads, which are believed to be carrying the nutrients into lake. These excess nutrients increase plant production, thereby increasing pH levels. The Sulphur River Basin Authority recommends a study be conducted to determine whether nutrients are associated with sediment loading to the lake.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Texas Water Quality, A Summary of River Basin Assessments

Source/Author/Consultant - TNRCC

Publication Year - 1996

Organization - Texas Natural Resource Conservation Commission

Type of Study - Technical

Location of Study - Statewide

Reservoirs Included - Lake Texoma

Topics Covered - Water Quality

Subject of Study - Water Quality

Water Supply Alternative - N/A

Objectives - The Clean River Program uses Watershed Management approach to identify and evaluate water quality issues, and to establish priorities for corrective action.

Recommendations/Conclusions - The report provides a water quality assessment on the water bodies in Texas and provide recommendation which water bodies where the fish is not suitable to eat and are not safe of recreation.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - Report Deal with Water Quality not quantity

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - A Natural Resource Survey for Proposed Reservoir Sites and Selected Stream Segments in Texas

Source/Author/Consultant - TPWD

Publication Year - 1991

Organization - Texas Parks and Wildlife Department

Type of Study - Technical

Location of Study - Texas

Reservoirs Included - Lake Texoma

Topics Covered - River Basins and reservoir site assessment

Subject of Study - River Basins and reservoir site assessment

Water Supply Alternative - N/A

Objectives - The purpose of the project is to survey river basins and perform an investigative assessment of proposed reservoir sites found in the 1990 Texas Water Plan and to synthesize existing TPWD data and information that is important and should be addressed in the future planning for water development projects.

Recommendations/Conclusions - The study has individual evaluations for each of the 23 reservoir sites. Lake Texoma not in the study.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Ecologically Significant River and Stream Segments of Region C Regional Water Planning Area

Source/Author/Consultant - TPWD

Publication Year - 2000

Organization - Texas Parks and Wildlife Department

Type of Study - Technical

Location of Study - Region C

Reservoirs Included - N/A

Topics Covered - Rivers, Surface Water

Subject of Study - Rivers, Surface Water

Water Supply Alternative - N/A

Objectives - The purpose of this report is to identify those river and stream segments that meet the outlined criteria and to prepare a report documenting those streams that are deemed to be significant ecological value.

Recommendations/Conclusions - Three hundred and twenty four streams were identified within the boundaries of the Region C Regional Planning Area. Three streams were found to meet biological function criteria, two streams met the hydrologic function and seven streams met the riprap conservation area criteria, while six met the high water quality/exceptional aquatic life/high aesthetic value criteria. Only 10 streams out of 324 have been included in the report.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Freshwater Inflow Recommendation for the Sabine Lake Estuary of Texas and Louisiana
Source/Author/Consultant - TPWD (Coastal Fisheries Division), TWDB (Surface Water Availability Division)
Publication Year - 2005
Organization - TPWD, TWDB
Type of Study - Technical
Location of Study - Sabine River Basin
Reservoirs Included - Toledo Bend
Topics Covered - Instream flows, Environmental Impacts, Water Supply
Subject of Study - Modeling results of the fresh water inflow analysis for the Sabine lake system
Water Supply Alternative - n/a
Objectives - To determine the relationship between freshwater inflow, salinity and fisheries for Sabine Lake. To evaluate the inflow and salinity necessary for biologically suitable and appropriate conditions for Sabine Lake.
Recommendations/Conclusions - Model results indicated that a range of freshwater inflows between 7.1 and 11.6 million acre-feet historically sustained the estuarine environment. Model results estimated that an annual inflow of 9.6 million acre-feet would support optimal fish abundance. Present analysis compared effects of annual flows between 7.1 and 9.6 million acre-feet for 3 segments of the river (upper, mid and lower) with the higher inflow better maintaining appropriate salinities with specified boundaries and better supporting wetlands. Figure 3 on p. 66 demonstrates pre- and post- Toledo Bend flows and is discussed on pgs. 64-65.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - n/a
Type of Water Supply Alternative - n/a
Detailed Cost of Water Supply Alternative - n/a
Number & Name of Entities to Develop Water Supply Alternative - n/a
Cross Reference - n/a
Level of Detail of Study - n/a
Reference for Water Supply Alternative, if included in Region C Water Plan - n/a
Condition of Viability of Water Supply - n/a
Water Quality Source - n/a
Permitting Requirements - n/a
Identified Environmental Impacts - Impacts to wetlands; reduction in fish species; variations in salinity levels
Operational Considerations - n/a
Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Long-Range Water Supply Plan, 1990-2050, two volumes

Source/Author/Consultant - Turner, Collie, and Braden, Inc

Publication Year - 1989

Organization - City of Dallas, Dallas Water Utilities

Type of Study - Technical

Location of Study - Dallas Metroplex

Reservoirs Included - N/A

Topics Covered - Long term water treatment and reuse needs study

Subject of Study - Long term water treatment and reuse needs study

Water Supply Alternative - N/A

Objectives - To ensure adequate water resources for Dallas metropolitan area through the year 2050.

Recommendations/Conclusions - The study recommends revising Dallas' current area by deleting Cooke and Grayson Counties to eliminate duplication of efforts with Greater Texoma Utility Authority. The study provides a new Planning area Boundary for Dallas Water Utilities

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Handbook of Texas Online - LAKE HALBERT.

Source/Author/Consultant - TWC

Publication Year - 1964

Organization - NETMWD

Type of Study - Technical

Location of Study - Cypress Creek Basin

Reservoirs Included - Lake Halbert

Topics Covered - Water Supply

Subject of Study - Water Supply

Water Supply Alternative - None

Objectives - Water Supply

Recommendations/Conclusions - None

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - ~3500

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – none provided

Number & Name of Entities to Develop Water Supply Alternative - NTMWD, Corsicana

Cross Reference - Table 3.1

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - Region C
Table 3.1

Condition of Viability of Water Supply - None

Water Quality Source - Good

Permitting Requirements - IBT

Identified Environmental Impacts - None

Operational Considerations - Transmission, env. Flows

Economic Impact for Both Region C & D - None

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - 2006 Region I Water Plan

Source/Author/Consultant - TWDB

Publication Year - 2006

Organization - TWDB

Type of Study - Planning

Location of Study - Region I

Reservoirs Included - Toledo Bend

Topics Covered - Water Yield, Water Availability Model, Water Supply, Water Rights, Cost of Water Supply, Water Demand

Subject of Study - Regional Water Supply Planning

Water Supply Alternative - Toledo Bend, and others

Objectives - Develop water demand projections, analysis of current supplies, development of management strategies

Recommendations/Conclusions - Recommends transport of 500,000 ac-ft/yr from Toledo Bend to the Upper Basin and Region C. NTMWD – 200,000 ac-ft/yr; TRWD – 200,000 ac-ft/yr. Recommended alternate strategy is for an additional 200,000 ac-ft/yr for DWU. DWU has contractual right of 114,337 ac-ft/yr from Lake Palestine in the Neches Basin in Region I. SRA contracts with Dallas area for 300,000 ac-ft/yr from reservoirs in the Upper Basin.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - TCEQ WAM Run 3; 974,500 ac-ft/yr for Year 2000, 947,000 ac-ft/yr for Year 2060 (not including hydropower) Water Right Permit 4658 - 750,000 ac-ft/yr; unpermitted yield of nearly 225,000 ac-ft/yr

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – Costs provided in Region C report

Number & Name of Entities to Develop Water Supply Alternative - 3-SRA, NTMWD, TRWD (and possibly DWU)

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - none

Condition of Viability of Water Supply - good

Water Quality Source - TCEQ (see Appendix B)

Permitting Requirements - Sabine Compact (Interstate Compact between States of Texas and Louisiana and authorized by Congress for joint operation of Toledo Bend)

Identified Environmental Impacts - Potential impact to stream flows due to proposed reduction in hydropower releases, with possible increase in TDS associated with lower flows. Also, possible impact on DO. (See Section 5.2)

Operational Considerations - Sedimentation is projected to reduce the reservoir capacity (see Table A-2). Plan includes reduction in hydropower use.

Economic Impact for Both Region C & D - none mentioned

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Region D, North East Texas Regional Water Plan

Source/Author/Consultant - TWDB

Publication Year - 2006

Organization - TWDB

Type of Study - Technical

Location of Study - North East Texas

Reservoirs Included - Lake Wright Patman, Lake O' The Pines, Sandlin, Mayse, Tawakoni, Lake For, Lake Cherokee, Ellison Cr. Reservoir, Lake Cypress Springs

Topics Covered - Water Supply

Subject of Study - Water Supply

Water Supply Alternative - Groundwater, renew surface water contracts and infrastructure

Objectives - Regional Water Supply Study

Recommendations/Conclusions - Optimize Groundwater, renew surface water contracts, expand infrastructure

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 1 Million acre feet

Type of Water Supply Alternative - Surface and groundwater

Detailed Cost of Water Supply Alternative – Estimates

Number & Name of Entities to Develop Water Supply Alternative - NETMWD, Longview

Cross Reference - N/A

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply - Viable

Water Quality Source - iron and manganese issues

Permitting Requirements - None

Identified Environmental Impacts - None

Operational Considerations - Operational Considerations

Economic Impact for Both Region C & D - Not addressed

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Reservoir Volumetric Survey Data for Lake Texoma

Source/Author/Consultant - TWDB

Publication Year - 2003

Organization - Texas Water Development Board

Type of Study - Technical

Location of Study - Lake Texoma

Reservoirs Included - Denison Dam

Topics Covered - Survey

Subject of Study - Survey

Water Supply Alternative - N/A

Objectives - The purpose of the survey was to determine the current volume of the lake at the conservation pool elevation as part of a reallocation pool study conducted by the US Army Corp of Engineers. This survey will establish a basis for comparison to future surveys from which the location and rates of sediment deposition in the conservation pool over time can be determined

Recommendations/Conclusions - Table 2 page 6 provides reservoir volume data based on the TWDB survey in 2002. Conservation storage (hydropower and water supply) = 2,516,232 acre-feet. Page 2 and 3 provide water diversion permit information for Texas and Oklahoma.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Conservation storage (hydropower and water supply) = 2,516,232 acre-feet.

Type of Water Supply Alternative - Surface Water

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water for Texas 2007

Source/Author/Consultant - TWDB

Publication Year - 2007

Organization - TWDB

Type of Study - Planning

Location of Study - State of Texas

Reservoirs Included - Marvin Nichols, Lake Wright Patman, Lake Texoma, Lake O' The Pines, Toledo Bend

Topics Covered - Water Quality, Water Supply, Water Rights, Inter-basin Transfers, Water Demand

Subject of Study - Statewide water plan for 2007

Water Supply Alternative - plan highlights coordination with Region C on use of surface water from Toledo Bend.

Objectives - To plan for enough water in the future to sustain both cities and rural communities, businesses and industries, and the environment.

Recommendations/Conclusions - TWDB has implemented legislative recommendations based on planning group recommendations for the following issues:

- financing of recommended water management strategies
- reservoir site designation and acquisition
- interbasin transfers of water
- environmental water needs
- water conservation
- expedited amendment process for regional water plans
- indirect reuse

Policy recommendations for Region I include:

- Encourage the legislature to allow exemptions to the interbasin transfer junior rights provision for contract water, if sufficient surface water remains in the basin of origin to meet 125 percent of the total 50-year projected demands in that basin, including use of surface water from Toledo Bend Reservoir for Region C.
- Use the alternate water management strategy process to maintain flexibility in planning
- Continue funding regional water planning with local entities providing administrative costs
- Encourage all counties in the Region I planning area to join or create a groundwater conservation district

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - No firm yield numbers. Table 1.2 on p. 64 states a 20,048 ac-ft/yr water supply for Region I (2010-2060) coming from Toledo Bend.

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative – Toledo Bend Reservoir strategy would provide up to 200,000 acre-feet to the North Texas Municipal Water District and Tarrant Regional Water District—Implementation by: 2050; Capital Cost \$1.1 billion. Pg 30 of Region C Summary

Number & Name of Entities to Develop Water Supply Alternative - not mentioned

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - n/a

Condition of Viability of Water Supply - not discussed

Water Quality Source - n/a

Permitting Requirements - interbasin transfers

Identified Environmental Impacts - not mentioned

Operational Considerations - n/a

Economic Impact for Both Region C & D - n/a

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Intensive surface water monitoring survey for segment no. 0302, Lake Wright Patman

Source/Author/Consultant - Tidwell, Steve R. Texas Water Quality Board.

Publication Year - 1975

Organization - Texas Water Quality Board

Type of Study - Technical

Location of Study -

Reservoirs Included - Lake Wright Patman

Topics Covered - Water Quality

Subject of Study - Intensive surface water monitoring survey for Lake Wright Patman

Water Supply Alternative - N/A

Objectives - 1) to determine quantitative cause and effect relationships of water quality; 2) to obtain data for updating water quality management plans, setting effluent limits, and where appropriate, verifying the classifications of segments; 3) to set priorities for establishing or improving pollution controls; and 4) to determine any additional water quality management actions required.

Recommendations/Conclusions - Please See Summary (Page 2-4)

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Intensive Surface Water Monitoring Survey for Segment 0403

Source/Author/Consultant - David Petrick

Publication Year - 1975

Organization - NETMWD and Texas Water Quality Board

Type of Study - Technical

Location of Study - Cypress Creek Basin

Reservoirs Included - LOP

Topics Covered - Water Supply

Subject of Study - Water Supply

Water Supply Alternative - None

Objectives - Water Quality

Recommendations/Conclusions - None

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - None

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – none provided

Number & Name of Entities to Develop Water Supply Alternative - NETMWD

Cross Reference - None

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - None

Condition of Viability of Water Supply - None

Water Quality Source - Low DO

Permitting Requirements - IBT

Identified Environmental Impacts - N/A

Operational Considerations - Transmission, env. Flows

Economic Impact for Both Region C & D - None

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Periodic inspection report No. 5, Wright Patman Lake, Sulphur River, Texas

Source/Author/Consultant - United States. Army. Corps of Engineers

Publication Year - 1986

Organization - United States. Army. Corps of Engineers

Type of Study - Technical

Location of Study - Lake Wright Patman

Reservoirs Included - Lake Wright Patman

Topics Covered - Structural Inspection

Subject of Study - Periodic inspections and continuing evaluation of completed civil works structures of Lake Wright Patman

Water Supply Alternative - N/A

Objectives - The purpose of the inspection was to evaluate the structural integrity and operational adequacy of the embankment and appurtenant structures.

Recommendations/Conclusions - The embankment, spillway, and outlet works, as indicated inspection observations, are structurally sound and in good condition. No evidence of major distress was observed which would effect the overall safety of project.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Draft of Little Elm Project: Water Conservation and Drought Management Plan, Lewisville

Source/Author/Consultant - Upper Trinity Regional Water District

Publication Year - 1990

Organization - Upper Trinity Regional Water District

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Potential Water Supply from Sabine River Basin

Source/Author/Consultant - URS/Forrest and Cotton, Inc.

Publication Year - 1979

Organization - North Texas Municipal Water District

Type of Study - Technical

Location of Study - Sabin River Basin

Reservoirs Included - Lake Fork, Toledo Bend, Lake Tawakoni

Topics Covered - Water Supply

Subject of Study - Water Supply

Water Supply Alternative - Lake Tawakoni, Lake Fork, Toledo Bend, Big Sandy, Estes

Objectives - The purpose of this report is to information on the availability and the cost of raw water supply from the Sabine River Basin.

Recommendations/Conclusions - Short term alternative supply is water from Lake Tawakoni, Lake fork and Toledo Bend for long-term use

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 206 MGD

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – ES Table

Number & Name of Entities to Develop Water Supply Alternative - NTMWD

Cross Reference -

Level of Detail of Study - Engineering

Reference for Water Supply Alternative, if included in Region C Water Plan - DWU, TRWD, NTMWD

Condition of Viability of Water Supply - Amount of Supply Provided

Water Quality Source - Not addressed

Permitting Requirements - Water Right and IBT

Identified Environmental Impacts - Not addressed

Operational Considerations - Operational Considerations

Economic Impact for Both Region C & D - Not addressed

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Report on Long-Range Water Supply Study to Meet Anticipated Requirements to the Year 2050, (including appendix and supplement)

Source/Author/Consultant - URS/Forrest and Cotton, Inc.

Publication Year - 1975

Organization - City of Dallas

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Report on Potential Water Supply from Sabine River Basin

Source/Author/Consultant - URS/Forrest and Cotton, Inc.

Publication Year - 1979

Organization - North Texas Municipal Water District

Type of Study - Technical

Location of Study - Sabin River Basin

Reservoirs Included - Toledo Bend

Topics Covered - Water Supply, Water Transmission, Cost of Water Supply, Water Demand

Subject of Study - Report on potential available water from existing and proposed reservoirs.

Water Supply Alternative - Lake Fork Lake; Toledo Bend; Big Sandy Lake; and Carl. L. Estes Lake

Objectives - To summarize investigations on alternative water supplies for North Texas Municipal Water District. To present information on the availability and the cost of raw water supply from the Sabine River Basin.

Recommendations/Conclusions - The report concludes that Toledo Bend would be a short-term supply of water but at a much greater cost than other short-term supplies such as Lake Tawakoni. Water from Toledo Bend is also available for long-term use with adequate supply for all projected needs of the District. Discusses the diversion of 77.0 MGD from Toledo Bend Reservoir to Lake Lavon.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - Firm yields not discussed.

Type of Water Supply Alternative - surface

Detailed Cost of Water Supply Alternative - Pumping costs from Toledo Bend to Lavon Lake is estimated at \$15 million + per year; additional costs listed on page 6 of report (for various combinations of water supply and their costs). A supply of 31.2 mgd from Toledo Bend to Mill Creek and Longview

Number & Name of Entities to Develop Water Supply Alternative - 1-NTMWD

Cross Reference - n/a

Level of Detail of Study - planning

Reference for Water Supply Alternative, if included in Region C Water Plan - none

Condition of Viability of Water Supply - Cost; water availability; permitting

Water Quality Source - none mentioned

Permitting Requirements - none mentioned

Identified Environmental Impacts - none mentioned

Operational Considerations - Cost of maintaining hundreds of miles of pipeline.

Economic Impact for Both Region C & D - none mentioned

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Summary of Semi-Final Report on Long-Range Water Supply Study to Meet Anticipated Requirements to the Year 2050

Source/Author/Consultant - URS/Forrest and Cotton, Inc.

Publication Year - 1973

Organization - City of Dallas

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Final Environmental Assessment, Lake Texoma, Storage Reallocation Study, Lake Texoma, Oklahoma and Texas

Source/Author/Consultant - USACE

Publication Year - 2006

Organization - U.S. Army Corp of Engineers

Type of Study - Technical

Location of Study - Lake Texoma

Reservoirs Included - Lake Texoma

Topics Covered - Water Availability Model, Storage Rights and Availability

Subject of Study - Water Availability Model, Storage Rights and Availability

Water Supply Alternative - Reallocation from hydropower to water supply

Objectives - Determine the e impacts of allocating 300,000 acre-feet of hydropower storage to water supply for a total water supply allocation of 450,000 acre-feet.

Recommendations/Conclusions - Reallocation of the 300,000 acre-feet was recommended by USACE. This report contains a water availability model which provides a yield to storage ratio of 1.1031. This report also includes a storage reallocation study which provides current and planned storage contracts in Lake Texoma.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - 986,730 acre-feet of conservation storage provides 1,088,482 acre-feet per year of potential yield.

Type of Water Supply Alternative - Surface Water from Lake Texoma

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - TWDB Volumetric Survey 2003

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - Yes

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Review Plan for Final Environmental Assessment, Lake Texoma, Storage Reallocation Study, Lake Texoma, Oklahoma and Texas

Source/Author/Consultant - USACE

Publication Year - 2008

Organization - U.S. Army Corp of Engineers

Type of Study - Letter of Approval of Review Plan

Location of Study - Lake Texoma

Reservoirs Included - Lake Texoma

Topics Covered - Water Availability Model, Storage Rights and Availability

Subject of Study - Approval of Review Plan

Water Supply Alternative - Reallocation from hydropower to water supply

Objectives - Acting Commander's approval of the review plan for the USACE Environmental Assessment of Lake Texoma

Recommendations/Conclusions - Acting Commander's approval of the review plan for the USACE Environmental Assessment of Lake Texoma

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - N/A

Detailed Cost of Water Supply Alternative - N/A

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - N/A

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - N/A

Identified Environmental Impacts - N/A

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Region D 2001 Water Plan

Source/Author/Consultant - Butcher, Willis, & Ratliff Corporation, et al

Publication Year - 2001

Organization -

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - The Economic Impact of the Proposed Marvin Nichols I Reservoir to the Northeast Texas Forest Industry

Source/Author/Consultant - Xu, Weihuan

Publication Year - 2002

Organization - Texas A&M University System

Type of Study -

Location of Study -

Reservoirs Included - Marvin Nichols

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions - Publication 162

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Marvin Nichols Reservoir: Refocusing the Debate

Source/Author/Consultant - NWF, the Lone Star Chapter of the Sierra Club, TCONR, FUSE, SOS, and Ward Timber Company

Publication Year - 0

Organization -

Type of Study -

Location of Study -

Reservoirs Included - Marvin Nichols

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - The Potential and Promise of Municipal Water Efficiency Savings in Texas

Source/Author/Consultant - Jones, Norman, National Wildlife Foundation

Publication Year - 2006

Organization - Texas Water Law Institute

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - An Assessment of Direct Impacts of Wildlife Habitat from Future Water Development Projects

Source/Author/Consultant - Texas Parks and Wildlife Department and U.S. Fish and Wildlife Services

Publication Year - 1990

Organization -

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - The Economic, Fiscal, and Developmental Impacts of the Proposed Marvin Nichols Reservoir Project

Source/Author/Consultant - Weinstein, Bernard and Clower, Terry, University of North Texas

Publication Year - 0

Organization - Sulphur River Basin Authority

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Basin Summary Report 2004 - Final Report

Source/Author/Consultant - Paul Price Associates, Inc.

Publication Year - 2004

Organization - Sulphur River Basin Authority

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Volumetric Survey of Wright Patman Lake

Source/Author/Consultant - Texas Water Development Board

Publication Year - 0

Organization - U.S. Army Corps. of Engineers in cooperation with City of Texarkana

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - U.S. Army Corps of Engineers - Lake Information.

Source/Author/Consultant - USACE - Fort Worth District - <http://www.swf-wc.usace.army.mil/wrightpatman/Information/index.asp>

Publication Year - 0

Organization - Reservoir Control Office - Fort Worth, Texas

Type of Study -

Location of Study -

Reservoirs Included - Lake Wright Patman

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - The Economic, Fiscal and Developmental Impacts of the Proposed Marvin Nichols Reservoir Project

Source/Author/Consultant - Clower, T. L. and L. B. Weinstein

Publication Year - 0

Organization - Sulphur River Basin Authority

Type of Study -

Location of Study -

Reservoirs Included - Marvin Nichols Reservoir

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Technical memorandum reviewing and critiquing the draft economic impact analysis of the proposed Marvin Nichols Reservoir conducted by Weinstein, L.B. and Clower, T.L. (March 2003) and a review of the economic impact analysis conducted Weihsuan, Xu of the

Source/Author/Consultant - Ray Perryman

Publication Year - 0

Organization - John Rutledge, Freese & Nichols, Inc.

Type of Study -

Location of Study -

Reservoirs Included - Marvin Nichols Reservoir

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Socioeconomic Analysis of Selected Interbasin Transfers in Texas

Source/Author/Consultant - Jack Stowe with R.W. Beck & Associates

Publication Year - 0

Organization - TWDB

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Socioeconomic Impact of Unmet Water Needs

Source/Author/Consultant - Stuart Norvell and K. Kluge

Publication Year - 0

Organization - TWDB

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered - 16 regional water planning regions

Subject of Study - Individual Reports for 16 Regional Water Planning Regions. Prepared by the TWDB Office of Water Resource Planning in support of the Northeast Water Planning Group and the 2006 Texas State Water Plan

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Economic Impact of Alternative Policy Responses to Prolonged Severe Drought in the Rio Grande Basin

Source/Author/Consultant - J.F. Booker, A.M. Michelsen and F.A. Ward

Publication Year - 0

Organization - Water Resources Research
Vol 41, W02026, doi:10.1029/2004WR003486

Type of Study -

Location of Study - Rio Grande Basin

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Economic Impact of Lake Ralph Hall

Source/Author/Consultant - Jack Stowe with R.W. Beck & Associates

Publication Year - 0

Organization - Chiang, Patel & Yerby, Inc.

Type of Study -

Location of Study - Lake Ralph Hall

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Texas Water and Wildlife. An Assessment of Direct Impacts to Wildlife Habitat from Future Water Development Projects

Source/Author/Consultant - R.G. Frye and D.A. Curtis, Wildlife Division - Texas Parks and Wildlife Department, and Ecological Services Division, U.S. Fish and Wildlife Service

Publication Year - 0

Organization -

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Cypress Valley Watershed Texas. Reconnaissance Report

Source/Author/Consultant - USACE - Fort Worth District

Publication Year - 0

Organization - Requested by Congressman Jim Chapman (Congressional District Number 1) with support from City of Jefferson, Texas and others

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Water Supply for City of Daingerfield
Source/Author/Consultant - Waytt C. Hedrick
Publication Year - 0
Organization - NETMWD
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - IMPLAN Professional User Guide, Analysis Guide, and Data Guide (2nd Edition)

Source/Author/Consultant - Minnesota IMPLAN Group, Inc.

Publication Year - 0

Organization -

Type of Study -

Location of Study -

Reservoirs Included -

Topics Covered -

Subject of Study -

Water Supply Alternative -

Objectives -

Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -

Type of Water Supply Alternative -

Detailed Cost of Water Supply Alternative -

Number & Name of Entities to Develop Water Supply Alternative -

Cross Reference -

Level of Detail of Study -

Reference for Water Supply Alternative, if included in Region C Water Plan -

Condition of Viability of Water Supply -

Water Quality Source -

Permitting Requirements -

Identified Environmental Impacts -

Operational Considerations -

Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - The Number Factory
Source/Author/Consultant - Sara Aase
Publication Year - 0
Organization - Twin Cities Business Magazine
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Client Listing:
<http://implan.com/index.php?optin=com%20content&task=view&id=64&Itemid=28>
Source/Author/Consultant - MIG, Inc.
Publication Year - 0
Organization -
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Personal conversation Walt Sears
Source/Author/Consultant - Mr. Walt Sears
Publication Year - 39995
Organization -
Type of Study -
Location of Study -
Reservoirs Included -
Topics Covered -
Subject of Study -
Water Supply Alternative -
Objectives -
Recommendations/Conclusions -

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative -
Detailed Cost of Water Supply Alternative -
Number & Name of Entities to Develop Water Supply Alternative -
Cross Reference -
Level of Detail of Study -
Reference for Water Supply Alternative, if included in Region C Water Plan -
Condition of Viability of Water Supply -
Water Quality Source -
Permitting Requirements -
Identified Environmental Impacts -
Operational Considerations -
Economic Impact for Both Region C & D -

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - US Army Corps of Engineering
Source/Author/Consultant - USACE
Publication Year - 0
Organization - U.S. Army Corps of Engineers, Fort Worth District,
Type of Study - N/A
Location of Study - Lake of the Pines
Reservoirs Included - Lake of the Pines
Topics Covered - Operations
Subject of Study - Operation of Lake of the Pines
Water Supply Alternative - N/A
Objectives - USACE website - Lake of the Pines Information
Recommendations/Conclusions - N/A

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) -
Type of Water Supply Alternative - Surface
Detailed Cost of Water Supply Alternative - N/A
Number & Name of Entities to Develop Water Supply Alternative - N/A
Cross Reference - N/A
Level of Detail of Study - N/A
Reference for Water Supply Alternative, if included in Region C Water Plan - N/A
Condition of Viability of Water Supply - N/A
Water Quality Source - N/A
Permitting Requirements - N/A
Identified Environmental Impacts - N/A
Operational Considerations - N/A
Economic Impact for Both Region C & D - N/A

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Sulphur River Management Strategy, Office Memo

Source/Author/Consultant - John Jones, TPWD

Publication Year - 2002

Organization - TPWD

Type of Study - Planning Evaluation

Location of Study - White Oak Creek Management Area

Reservoirs Included - Jim Chapman (Cooper) and Wright Patman

Topics Covered - Operations

Subject of Study - Increase reservoir volume

Water Supply Alternative - DWU, Alternate Strategy for NTMWD, City of Irving, TRWD, UTRWD

Objectives - Assess and discussion of raising conservation pool for additional water supply

Recommendations/Conclusions - Maximum storage level of 228.64 feet msl with minimal effect on White Oak Wildlife Management Area.

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - none

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative - None

Number & Name of Entities to Develop Water Supply Alternative - DWU, TRWD, NTMWD, UTRWD, City of Irving

Cross Reference - N/A

Level of Detail of Study - Planning

Reference for Water Supply Alternative, if included in Region C Water Plan - DWU, TRWD, NTMWD, UTRWD

Condition of Viability of Water Supply - Permitting Required, existing reservoir, Congressional approval

Water Quality Source - None

Permitting Requirements - Congressional, IBT

Identified Environmental Impacts - Effects are minimal to White Oak Creek Wildlife Management Area at 228.64 feet msl

Operational Considerations - Pumping schedule will address potential issues

Economic Impact for Both Region C & D - None

Data Collection Format SB3 Section 4.04 (e)(1) Water Supply Alternatives

Title - Reservoir Site Protection Study

Source/Author/Consultant - Brandes, R.J., HDR and Freese and Nichols

Publication Year - 2007

Organization - TWDB

Type of Study - Planning

Location of Study - Statewide

Reservoirs Included - Numerous

Topics Covered - Reservoir Site Selection

Subject of Study - Unique Site Selection for potential reservoirs

Water Supply Alternative - N/A

Objectives - Identify those sites for protection for potential future development of reservoirs

Recommendations/Conclusions - Recommended 16 sites for additional study

For Studies Relating to Specific Water Supply Alternatives

Water Supply Volume (firm yield) - N/A

Type of Water Supply Alternative - Surface

Detailed Cost of Water Supply Alternative – Cost for land purchase included

Number & Name of Entities to Develop Water Supply Alternative - N/A

Cross Reference - N/A

Level of Detail of Study - Planning, Costs

Reference for Water Supply Alternative, if included in Region C Water Plan - N/A

Condition of Viability of Water Supply - N/A

Water Quality Source - N/A

Permitting Requirements - Various

Identified Environmental Impacts - Address of environmental, water quality, hardwood mitigation

Operational Considerations - N/A

Economic Impact for Both Region C & D - N/A