SCOPE OF INITIAL ENGINEERING STUDIES
West Fort Bend Water Authority

1. DEVELOP POPULATION & WATER DEMAND PROJECTIONS

Estimated Fee: $135,000

A. Summarize existing study information.

1) Review existing studies and other information and compile population and water use data.

1. Fort Bend Subsidence District (FBSD)
2. Fort Bend County
3. Cities located within the boundaries of the West Fort Bend Water Authority (WFBWA)
4. Municipal Utility Districts (MUDs)
5. Texas Water Development Board (TWDB)
6. Region H Planning Group
7. North Fort Bend Water Authority (NFBWA)
8. Others (if applicable)

B. Develop population projections.

1) Evaluate increasing population trends due to impact of the COVID-19 public health emergency on demand of housing in the WFBWA area.

2) Investigate potential sources of population projections and projection methodologies including:

1. Fort Bend Subsidence District (FBSD)
2. Fort Bend County Appraisal District
3. UH Center for Public Policy
4. Municipal Information Services (MIS)
5. Houston-Galveston Area Council (HGAC)
6. American METRO/STUDY Corporation
7. Texas Demographic Center
8. Texas Water Development Board (TWDB)
9. Others (if applicable)

3) Evaluate sources of information to determine:

1. Whether the data and forecast are for the entire county, incorporated areas (towns & cities), groups of census tracts (analysis zones), individual census tracts, or smaller areas.
2. The length of the forecast.

3. Whether the forecast includes subsets of population for example, single-family and multi-family populations, and/or a forecast of employment in addition to population.

4) Update population projections to include data from 2020 US Census and carry them through the year 2070.

C. Analyze water use information.

1) Evaluate change in water demand trends from the COVID-19 public health emergency due to transition of many businesses to full-time and part-time remote work.

2) Review water use data for MUDs and municipalities within Fort Bend County to determine water use rates.

3) Calculate the percentage of development currently occurring.

D. Define future use projections.

1) Determine areas of projected development to establish where and when the future demands will occur based on available information.

2) Update future demands based on previously developed water use rates and revised population projections.

3) Estimate anticipated maximum water demands, including potential for future impacts of COVID-19 public health emergency or other future pandemics.

E. Provide a report summarizing the results of the study.

1) Submit the *DRAFT* Population & Water Demand Projections Study to WFBWA.

2) Present results at a meeting of the WFBWA's Board. Address comments from WFBWA, revise into a final plan report, and submit the *FINAL* Population & Water Demand Projections Study to the WFBWA.

3) Submit to the WFBWA:

1. Electronic files of the final report including exhibits, tables, appendices, and references. In addition, provide any other pertinent project files needed for project preparation or future coordination. All electronic files need to be in a file format acceptable to WFBWA.

2. Ten (10) hard copies of the final report.

2. IDENTIFY & ANALYZE CURRENTLY AVAILABLE WATER SUPPLIES

Estimated Fee: $150,000

A. Identify available water supplies.

1) Groundwater:

1. Meet with and review data developed for Fort Bend Subsidence District as part of the ongoing Joint Regulatory Plan Review.
2. Review assumptions made by Region H study.
3. Meet with and review data developed by TWDB.

2) Surface Water:

1. Identify existing surface water contracts and/or uses within Fort Bend County from Region H data and discussions with NFBWA, BRA, GCWA, area municipalities, and TCEQ.
2. Determine current surface water supplies available to WFBWA.
3. Determine potential future surface water supplies available to WFBWA.

3) Reclaimed Water:

1. Identify existing reclaimed water facilities in the WFBWA.
2. Determine potential reclaimed water feasibility for undeveloped area.

4) Other Water Supply Sources:

1. Review data developed for Fort Bend Subsidence District to determine if other viable water supplies exist.

B. Determine amount of available water for sale.

1) The amount of available water and the amount of water for sale will potentially be different. Those entities that have water may be willing to sell only a portion of their available water.

1. Contact the following entities to determine the amount of water available for purchase:

a. Brazosport Water Authority
b. Brazos River Authority (Allens Creek and Other Sources)
c. GCWA
d. City of Houston (Allens Creek and Other Sources)
e. Central Harris County Regional Water Authority
f. Missouri City
g. North Fort Bend Water Authority
h. Richmond
i. Rosenberg
j. Sugar Land

k. West Harris County Regional Water Authority

l. Other sources to be identified

2. Verify and locate existing take points.

3. Determine total amount of water available based on sale feedback.

2) Summarize discussions for WFBWA.

C. Determine market rate for water.

1) Obtain information on water contracts in the Brazos River Basin and adjacent river basins, including the Colorado, San Jacinto and Trinity River Basins.

2) Contact the parties involved in these sales to confirm the terms of the sales.

3) Review all sales and develop a comparison of costs.

4) Develop an opinion of existing market rate based on the comparison results.

D. Determine future study needs.

1) Compare updated current and future water demands for WFBWA with currently available supplies.

2) Determine water requirement increases from increasing population and shifting water demand trends caused by the COVID-19 public health emergency.

3) Determine likely range of water usage needs as a result of the COVID-19 public health emergency or potential future pandemic and impacts of potential climate changes.

4) Determine the time frame for the need of additional surface water supplies considering projected demands and available groundwater supplies.

5) Identify future areas of detailed study to meet the WFBWA long term water supply needs, such as:

1. Use of gray water for intensive water needs such as water amenities and/or golf course irrigation

2. Legislative initiatives to provide authority for such reuse

3. Participation in development of new surface water sources

4. Development of desalination as a water supply alternative

5. Analysis of economics of reuse

6. Evaluation of the impact of brackish groundwater usage on subsidence

7. Evaluation of the role of aquifer storage and recovery

8. Other alternatives (if applicable)

E. Prepare written plan report summarizing the results of the study.

1) Submit the *DRAFT* Currently Available Water Supplies Study to WFBWA.

2) Present results at a meeting of the WFBWA's Board. Address comments from WFBWA, revise into a final plan report, and submit the *FINAL* Currently Available Water Supplies Study to the WFBWA.

3) Submit to the WFBWA:

1. Electronic files of the final report including exhibits, tables, appendices, and references. In addition, provide any other pertinent project files needed for project

preparation or future coordination. All electronic files need to be in a file format acceptable to WFBWA.

2. Ten (10) hard copies of the final report.

3. ALTERNATIVE ANALYSIS OF IDENTIFIED WATER SUPPLIES

Estimated Fee: $165,000

The purpose of this study is to use the population and water demand projections and the available water supplies to develop treatment and/or transmission system alternatives for meeting the future needs of the Authority.

A. Based on population and water demand projections develop a phased plan to meet future water demand.
   1) Evaluate likely required groundwater reduction mandates.
   2) Determine appropriate phasing timeframes to meet anticipated population growth.

B. Based on currently available water supplies identify water supply points and locations.
   1) Evaluate existing water systems.
   2) Determine take point locations for existing water systems.

C. Develop alternative treatment and transmission scenarios to meet future demand.
   1) Determine treatment facilities required based on identified currently available water supplies.
   2) Determine water transmission facilities required to transmit water from supply points to existing water systems.
   3) Determine water transmission facilities required to transmit water from supply points to future development.
   4) Evaluate treatment and transmission scenarios for ability to respond to changes in water demand trends caused by the COVID-19 public health emergency or other future pandemic and effects of climate change.

D. Evaluate alternative treatment and transmission scenarios.
   1) Develop estimates of probable construction costs for alternatives.
   2) Develop operation & maintenance costs.
   3) Evaluate alternatives for flexibility to adapt to changing development patterns.
   4) Evaluate alternative for response to non-economic factors.

E. Complete routing assessment for transmission facilities.
   1) Identify pipeline corridors, utility corridors, channels, and roadways.
   2) Determine routing alternatives for transmission facilities.

F. Determine recommended alternative(s) for water supply to meet future demands.
   1) Assess each treatment alternative based on costs, operation and maintenance, flexibility, and response to non-economic factors using a decision matrix.
   2) Assess each transmission alternative based on costs, operation and maintenance, flexibility, and response to non-economic factors using a decision matrix.
   3) Determine best alternatives.

G. Develop water transmission system model.

H. Develop future facility plan and estimated costs.

I. Prepare written plan report summarizing the results of the study.

1) Submit the *DRAFT* Alternative Analysis Study to WFBWA.

2) Present results at a meeting of the WFBWA's Board. Address comments from WFBWA, revise into a final plan report, and submit the *FINAL* Alternative Analysis Study to the WFBWA.

3) Submit to the WFBWA:

1. Electronic files of the final report including exhibits, tables, appendices, and references. In addition, provide any other pertinent project files needed for project preparation or future coordination. All electronic files need to be in a file format acceptable to WFBWA.

2. Ten (10) hard copies of the final report.