

Exhibit C
Scope of Work
REGION C

Administrative and Public Participation Activities

Total Cost \$141,160 (\$141,160 TWDB)

TASK 1) Meetings

- A. Newspaper notifications.
- B. Meeting memos, agendas, and other mailings.
- C. Consultant meetings.

TASK 2) Media and Public Relations

- A. Website maintenance and updates.
- B. Newsletter production, publishing, and mailing.
- C. Press releases.
- D. Media training for new RCWPG members and development of key messages by RCWPG members to be distributed to the public and the media.

Work Products

Meeting-related documents, website updates, up to four newsletters, and up to five press releases.

Study 1: Further Implementation of Water Conservation and Reuse Strategies

Total Cost \$298,800 (\$298,800 TWDB)

This study will examine the initial performance of water conservation and reuse strategies that have been implemented within Region C. Region C will gather information on these projects and assess their performance, enhance coordination between Water User Groups, and encourage a consistent approach to water conservation across the Region. In addition, this study will update the recommendations for implementation of water conservation and reuse strategies.

TASK 1) Survey water providers in Region C

- A. Identify which of the Water Conservation Implementation Task Force water conservation Best Management Practices (BMPs) have been implemented within the Region C area.
- B. Determine water provider opinions on the effectiveness of the BMPs implemented.
- C. Determine public reaction to the BMPs implemented.
- D. Determine future water conservation plans of water providers.
- E. Gather information on the cost of the BMPs implemented.
- F. Gather information on reuse projects implemented and reuse supplies used.

TASK 2) Information and Data Gathering

- A. Identify changes in conditions that may have an affect on *2006 Region C Water Plan* recommended water conservation, including water reuse, strategies. Changed

- conditions may include water conservation plans adopted by local entities, water right permits issued, planning being performed at local levels, etc.
- B. Gather water use information relative to quantities used before and after implementation of the BMPs.
 - C. Contact a sub-group of water providers in the area to gather cost information associated with the implementation of the BMPs.
 - D. Gather and review the public education/information approaches implemented by various entities and develop concepts to enhance the coordination/cooperation of entities to provide a common region-wide message (i.e., use water effectively and efficiently.).
 - E. Gather and review the procedures being used to address water loss, leakage, and leak detection by up to ten entities within three categories of water suppliers (i.e., small quantity, median quantity, large quantity.) Identify procedures that may be beneficial on a regional basis and define proposed strategies for their implementation.

TASK 3) Assessment of Performance

- A. Analyze the water data with consideration to types of measure (i.e., indoor, outdoor, etc.), seasons, climate conditions, etc.
- B. Analyze reuse water data for Region C with consideration of purpose of use, replacement of treated water, seasonal use, annual use, etc.
- C. Compare the performance of the implemented BMPs with the proposed performance indicated in the Water Conservation Implementation Task Force Committee report and the 2006 Region C Water Plan.
- D. Compare the cost of the implemented BMPs with the proposed costs indicated in the Water Conservation Implementation Task Force Committee report and the costs used for the 2006 Region C Water Plan.
- E. Develop perspectives (i.e., impact on gpcd, etc.) regarding the probability of achieving the Region C water conservation including water reuse goals.
- F. Gather detailed information (i.e., ordinances adopted, implementation process, enforcement process, etc.) relative to the implementation of BMPs from a sub-group of water providers in the area and prepare descriptions of up to three case studies.
- G. Review the criteria being used by different entities to implement certain strategies (i.e., lawn watering days, etc.) and identify opportunities to coordinate the criteria to provide consistency across the region.
- H. Review up to five local planning projects for direct reuse (non-potable use) and assess the impact of the performance of these projects on the Region C Water Supply Plan.
- I. Review up to five local planning projects for augmentation of potable water supply with reuse and assess their impact on the Region C Water Plan.

TASK 4) Update Implementation Plan

- A. Based on the information developed by this project, update the recommended Region C Water Plan water conservation strategies, including water reuse.
- B. Develop recommendations relevant to the implementation of the updated recommended strategies.
- C. Attend up to two meetings with Region H consultants regarding the Region H planning effort on environmental flow considerations, which may be related to the implementation of water conservation, including water reuse, strategies within Region C.
- D. Review assessments and planning that are being performed to identify potential regional development patterns that could impact densities in the future. A major effort to address this issue is currently underway with leadership being provided by the North Central Texas Council of Governments in a program known as Vision North Texas. Assess the opportunities for application of water conservation, including water reuse, which may result from the identified regional development patterns. Define potential impacts of implementing identified opportunities on future Region C Planning as the development pattern concepts are adopted.
- E. Based on the level of water use and the level of reuse in the Region C water plan, establish projected levels of return flows from Region C by decade.
- F. Coordinate with Region H consultants to review the TWDB instream flow model developed in the last round of planning. Run the instream flow model for 2060 and up to two other decades selected in concert with the Region C model to present instream flows after planned reuse projects. Provide the results to the Region H consultants for use in environmental flows analyses.
- G. Prepare a report describing the studies and results of this task and present it to the Region C Water Planning Group.

Work Products

Prepare a draft and final report to include the following sections: executive summary, purpose of study including how the study supports regional water planning, methodology, results, and recommendations, if applicable. The draft report will be submitted to the planning group and the TWDB for review and comment. All comments will be addressed in the final report.

Electronic versions of the text (in Microsoft Word format) and graphics (in encapsulated PostScript format) will be used in the final report. All GIS layers used in the study will be submitted to political subdivisions and TWDB.

Previously developed water supply studies that result in changes to water management strategies will be provided electronically (typically scanned PDF files) to the TWDB as part of the contract deliverable, to the extent that the original funding entities will allow. In instances where an entity will not allow an entire report to be submitted to the TWDB, specifically-referenced excerpts will be submitted as agreed to by the original funding entity.

The report will be submitted per TWDB requirements and results from this study will be included in the 2011 Region C Regional Water Plan. The development, analysis, and reporting of results will follow methodologies and guidance according to Exhibit B when applicable and agency rules.

Study 2: Interregional Study of Toledo Bend Reservoir

Total Cost \$40,500 (\$40,500 TWDB)

Region I will lead this study with input from Region C. Regions C, D, and I will analyze the water supply available in Toledo Bend Reservoir for delivery to the northern area of Texas. This study is a cooperative effort looking at interregional coordination, potential pipeline routes, importation of species, potential impacts to bays and estuaries and instream flows, and updated cost estimates.

TASK 1) Coordination with Region I

A. Demand Coordination

- i. Meet with major participants to refine demands.
- ii. Coordinate with major participants on the potential for supplying raw water to smaller entities along the proposed pipeline route.

B. Routing Studies

- i. Review and coordinate with Region C providers and Region I.

C. Impacts on Receiving Reservoirs

- i. Review and provide input to Region I.

D. Bays and Estuaries

- i. Review and provide input to Region I.

E. Cost Estimates

- i. Using the same unit prices as used in the 2006 regional water plans, update the capital cost estimate for the updated Toledo Bend project.
- ii. Develop a 100-year life cycle cost using current electric costs and electric costs at 1.5 and 2 times the current rates. This is to evaluate the sensitivity of the project cost to the uncertain energy market.
- iii. Coordinate with other regions and major participants for inclusion of cost estimates in other regional water plans.

Work Products

Written meeting report/technical memorandum for each coordination meeting or issue. Written meeting reports and/or technical memoranda will substitute for a full study report. The full study report will be developed and submitted by Region I.

Study 3: Further Implementation of Direct Reuse and Indirect Reuse

Total Cost \$139,900 (\$97,400 TWDB; \$42,500 City of Athens)

This study includes the City of Fort Worth direct reuse project, which will serve a developing area located in the southwest area of the City, and the Athens Municipal Water Authority/City of Athens indirect reuse project, which will augment their water supply. To further implementation of these recommended reuse water projects, certain

information will be developed to establish the appropriate barriers for protecting the safety and health of water users, to confirm the financial feasibility of the projects, and to further develop design and operational considerations.

TASK 1) Athens Pilot Project

- A. Define the potential uses of the reuse water including augmenting the City of Athens water supply and meeting water needs for purposes that are currently being met by natural water and/or treated potable water.
- B. Develop the hydrology (water balance) for Lake Athens for historical time period (i.e., 1941-1996) utilizing information available in the Neches River WAM.
- C. Analyze the recent five years of data for the North and South wastewater discharges to determine the annual and minimum quantities of treated wastewater and the water quality characteristics.
- D. Analyze available Lake Athens water quality data with primary consideration given to nutrient levels, chlorophyll a, TDS, chlorides, and sulfates.
- E. Establish the criteria (i.e., detention time, percent blend of reuse water to natural water, wastewater treatment level) to be used in determining the amount of reuse water that can be discharged into Lake Athens.
- F. Perform a planning level analysis of the detention time in Lake Athens that would be associated with two discharge quantities being discharged into Lake Athens at up to three discharge locations.
- G. Perform a site assessment to identify up to two potential sites for constructed wetlands.
- H. Perform a pipeline routing evaluation conveying treated wastewater from the treatment plants into a Lake Athens tributary and/or directly to Lake Athens that would introduce the wastewater at the three locations identified in Task 6, above.
- I. Develop a conceptual design of a constructed wetland to provide polishing treatment of wastewater prior to discharging into Lake Athens.
- J. Develop a conceptual design of renovation to the existing wastewater treatment plants that would add advanced levels of treatment (i.e., nutrient removal processes, membrane/reverse osmosis processes, etc.)
- K. Develop a conceptual design of a reuse water conveyance system to deliver water to be used for non-potable purposes, if such a use is identified.
- L. Identify the regulatory requirements relative to implementing the water reuse project.
- M. Develop opinions of probable capital and operation and maintenance costs associated with each of the water reuse options.
- N. Select the cost-effective option, which may be a combination of options, for implementation.
- O. Develop an implementation plan for the selected option that identifies required actions, costs, and schedule.
- P. Achieve coordination between Athens Municipal Water Authority and City of Athens to develop a consensus about the recommended options and the implementation plan
- Q. Develop a guidance document that can be used by the City of Athens and other regional entities to implement indirect Water Reuse projects. The document would identify technical and regulatory issues to be addressed in the design, construction, and startup of indirect Water Reuse projects.

TASK 2) Fort Worth Pilot Project

- A. Review and define components of up to three planned Water Reuse projects, including the source of untreated wastewater, wastewater treatment, and the distribution system for the Reuse Water.
- B. Review the water use demands that will be met by the Water Reuse projects. Identify the sources of water that would be used to meet these demands if not met by Reuse Water.
- C. Identify benefits associated with the use of the reuse water including considerations such as reduced water treatment plant capacity, reductions in potable water delivery systems, reduction in raw water costs, etc.
- D. Gather and analyze data required to determine the cost avoidance/deferment associated with each of the benefits identified for the selected Water Reuse projects.
- E. Refine the level of details of proposed facilities to provide an improved description of the required facilities (i.e., treatment plant processes and facilities, preliminary pipeline routes, etc.)
- F. Update the planning level costs to provide an improved opinion of probable costs based on the refinement of the proposed facilities.
- G. Perform a feasibility assessment of the Water Reuse projects based on costs, cost avoidance/deferment, and other relative considerations (etc., reduction in gpcd, etc.).
- H. Develop guidelines for assessing the costs and cost savings/deferment associated with water reuse projects.
- I. Develop a guidance document that can be used by the City of Fort Worth and other regional entities to implement water reuse projects. The document would identify technical and regulatory issues to be addressed in the design, construction, and startup of direct Water Reuse projects.

Work Products

Prepare a draft and a final report for the Athens study and prepare a draft and a final report for the Fort Worth study. Both reports will include the following sections: executive summary, purpose of study including how the study supports regional water planning, methodology, results, and recommendations, if applicable. The draft report will be submitted to the planning groups and the TWDB for review and comment. Electronic versions of the text (in Microsoft Word format) and graphics (in encapsulated PostScript format) will be used in the final report. All GIS layers used in the study will be submitted to political subdivisions and TWDB. Previously developed water supply studies that result in changes to water management strategies will be provided electronically (typically scanned PDF files) to the TWDB as part of the contract deliverable, to the extent that the original funding entities will allow. In instances where an entity will not allow an entire report to be submitted to the TWDB, specifically-referenced excerpts will be submitted as agreed to by the original funding entity.

The reports will be submitted per TWDB requirements and results from this study will be included in the 2011 Region C Regional Water Plan. The development, analysis, and

reporting of results will follow methodologies and guidance according to Exhibit B when applicable and agency rules.

Study 4: Regional System Implementation Plans

Total Cost \$435,600 (\$300,000 TWDB; \$135,600 TRWD)

This study will develop implementation plans for regional water supply systems in rapidly urbanizing and rural areas in Region C. Groundwater will be insufficient to meet growing demands and both increasing demands and limited groundwater supplies make an immediate shift from groundwater to surface water supply necessary. This study will coordinate the approaches and develop specific implementation strategies for regional systems. The scope of work for this study is contingent on Region C securing matching funds.

TASK 1) Water Supply Study for Ellis County, Southwest Dallas County, Southeast Tarrant County, and Johnson County

The area in Ellis County, southwest Dallas County, southeast Tarrant County, and Johnson County is currently undergoing rapid growth and the creation of a regional water supply system may be desirable. Region C work items will be related to Dallas, Ellis, and Tarrant County participants, and work efforts will be coordinated with Brazos G for Johnson County water users. Region C and Brazos G representatives will attend meetings and workshops as appropriate.

Initial Meetings and Data Gathering

- A. Meet with some study area water suppliers (up to 17 meetings), including Alvarado, Arlington, Buena Vista-Bethel Special Utility District, Cedar Hill, Duncanville, Ennis, Grand Prairie, Johnson County Special Utility District, Kennedale, Mansfield, Midlothian, Mountain Peak Special Utility District, Red Oak, Rockett Special Utility District, Sardis-Lone Elm Water Supply Corporation, Venus, and Waxahachie
 - i. Discuss strategies for water supply in the *2006 Region C Water Plan and the 2006 Brazos G Regional Water Plan*.
 - ii. Discuss recent projections of population and water use and specific development plans for each supplier.
 - iii. Discuss water supply challenges and areas for which it is difficult to provide supplies.
 - iv. Discuss interest in supplying water for other area water suppliers on a wholesale basis.
 - v. Discuss current plans to provide water supplies for growth.
 - vi. Discuss other possible sources of supply for the area.
 - vii. Obtain reports and studies on water supply plans.
- B. Meet in one group meeting with major regional wholesale providers that might participate in the development of water supplies for the area, including Dallas Water Utilities (DWU), Fort Worth, Trinity River Authority (TRA), Brazos River Authority (BRA) and Tarrant Regional Water District (TRWD). Discuss trends in the study area, currently available supplies, plans for additional supplies, potential role in developing water supplies for the area, and issues and concerns of the provider.

- C. Obtain and review recent studies for water supply in the area, including:
 - i. Johnson County SUD Trinity River Basin Water Supply Study
 - ii. Arlington study on wholesale water supply
 - iii. *Regional Water Supply and Wastewater Service Study for Johnson and Parker Counties*
 - iv. Reports and studies provided by area water suppliers.
- D. Send a written survey to other water suppliers in the study area, including Bardwell, Bethany Water Supply Corporation, Bethesda Water Supply Corporation, Brandon-Irene WSC, Burlison, Cleburne, Community Water Company, Ferris, Files Valley Water Supply Corporation, Glenn Heights, Godley, Grandview, Italy, Johnson County Freshwater Supply District Number One, Joshua, Keene, Maypearl, Milford, Oak Leaf, Ovilla, Palmer, Parker WSC, Pecan Hill, Rice Water Supply Corporation, Rio Vista, and Wilmer. Use the survey to obtain input on the following:
 - i. The supplier's agreement with strategies for water supply in the *2006 Region C Water Plan* and the *2006 Brazos G Water Plan*.
 - ii. Any available projections of population and water use.
 - iii. The supplier's interest in supplying water for other area water suppliers on a wholesale basis.
 - iv. The supplier's current plans to provide water supplies for growth.
 - v. Other possible sources of supply for the area of which the supplier is aware.
 - vi. Reports and studies on water supply.
 - vii. Other input for the study.
 - viii. Follow up by telephone (up to two phone calls) with water suppliers that do not return the survey.

Population and Demand Projections

- E. Review population and demand projections through 2030 in the study area considering:
 - i. *2006 Region C Water Plan* projections
 - ii. Projections provided by individual water providers in the study area
 - iii. North Central Texas COG traffic survey zone projections
 - iv. Recent estimates of population by the Census, North Central Texas COG, and the state demographer
 - v. Other information, including school enrollments, known development plans, etc.

Assimilate information provided by Brazos G regarding Johnson County participants. Prepare a technical memorandum showing a range of possible projections for the study area, divided by county, river basin, and water supplier. Provide the projections to Region G consultants, water suppliers in the study area, DWU, Fort Worth, Mansfield, Arlington, TRA, TRWD, and BRA for review and comment. Revise as appropriate and finalize.

Supply Plan Development – Initial Discussions

- F. Hold one joint meeting with Region G consultants, DWU, Fort Worth, Mansfield, Arlington, TRA, BRA and TRWD. Discuss the range of projected population and water needs, currently available supplies, plans for additional supplies, potential approaches to developing water supplies for the area, and issues and concerns of the providers. Discuss areas each of the major regional providers would be willing to serve and how they might approach serving these areas.

- G. Meet with TRWD to discuss operational and contracting issues, including:
 - i. The need for terminal storage in Ellis and/or Johnson Counties
 - ii. Interruptible supply along the pipelines (up to 60 days for maintenance)
 - iii. Location of future taps
 - iv. The need to fully utilize local supplies
 - v. Take or pay contract concerns
 - vi. Potential for direct reuse
 - vii. Priority of demands to meet current commitments
 - viii. Possible approaches to cost for future commitments
 - ix. Other

Supply Plan Development – Eastern and Central Ellis County

- H. Analyze alternative approaches to provide water to eastern and central Ellis County, including estimates of capital and operating costs. Develop a recommended approach, including phasing. Review the recommended approach with water suppliers involved and incorporate their comments.
- I. Develop a specific implementation plan for strategies to serve eastern and central Ellis County.
- J. Present the recommended approach and implementation plan to water user groups in eastern and central Ellis County in a group forum (one meeting). Seek comments from the water user groups involved and revise the approach and implementation plan as appropriate.

Supply Plan Development – Western Ellis County/Southwest Dallas County/ Southeast Tarrant County/Johnson County

- K. Coordinate with Brazos G consultants, DWU, Fort Worth, TRA, BRA, and TRWD to develop up to 6 conceptual alternatives to supply water to the study area, in addition to the water supplies outlined in the 2006 Regional Water Plans. Ideas that could be a part of these water supply alternatives include:
 - i. Regional water treatment plant drawing water from 1) Joe Pool Lake, 2) Brazos River Authority, or 3) Tarrant Regional Water District raw water lines.
 - ii. Supplementing supplies in Joe Pool Lake by the addition of treated wastewater from TRA's Central Wastewater Treatment Plant.
 - iii. Development of a regional water treatment plant.
 - iv. Development of a regional supply through wholesale water sales from Arlington.
- L. Hold one workshop with area water suppliers and other entities to present the conceptual plans. Based on input from the workshop, select four plans for detailed analysis.

- M. Analyze the four selected alternative approaches to developing a water supply for the study area, including reconnaissance-level estimates of capital and operating costs. Develop a recommended system, including phasing and specific implementation plans. Compare the regional system to the individual approaches being considered by area water suppliers. Develop information on TRWD operational and contract issues discussed in Task 7.
- N. Develop information on approaches to implement the proposed regional system, addressing sources of water, responsibility for treatment/distribution, system development, etc.
- O. Hold one workshop with area water suppliers and other entities to present the results of the analysis and the recommended plan. Incorporate comments as appropriate.

Coordination and Reports

- P. Present updates to the Region C and Brazos G planning groups during the development of the project. Solicit input from the RWPGs.
- Q. Produce a draft report summarizing recommendations for water management strategies for the study area. Seek comments from study participants and revise the report as needed.
- R. Submit the draft report to the RCWPG, Brazos G RWPG, and TWDB for review and comment. Revise the report as appropriate and finalize.

TASK 2) Parker-Wise Counties

The City of Weatherford and Walnut Creek Special Utility District (SUD) are wholesale water providers that supply treated water to several the water user groups in Parker County. The Trinity aquifer is also a primary water supply source for the county. Walnut Creek SUD also supplies a considerable amount of water in Wise County.

- A. Meet with up to 16 water user groups in Parker and Wise Counties, with up to 6 trips.
 - i. Discuss their projections of population and demand compared to projections in the 2006 Region C Water Plan.
 - ii. Discuss their planned water management strategies.
 - iii. Seek other input on water issues and strategies for Parker and Wise Counties.
 - iv. Discuss possible roles for Weatherford and Walnut Creek SUD as regional providers
- B. Analyze alternative approaches to developing a Parker-Wise County Water Supply System, including estimates of capital and operating costs. Develop a recommended system, including phasing. Include analysis of the alternative of developing a raw pump station and treatment plant for Walnut Creek SUD on Eagle Mountain Lake.
- C. Develop a specific implementation plan for the Parker-Wise County Water Supply System.
- D. Produce a draft report summarizing recommendations for water management strategies.
- E. Present the draft report to water user groups in Parker County in a group forum. Obtain comments from the water user groups involved and revise the report as appropriate.

- F. Submit the draft report to the RCWPG and TWDB for review and comment. Revise the report as appropriate and finalize.

TASK 3) Other County Meetings

Region C will maintain communication with Cooke, Grayson, Fannin, Freestone, North Kaufman, and Navarro Counties and stay up-to-date with their changing situations.

- A. Meet with up to 25 water user groups in Cooke and Grayson Counties, with up to 4 trips.
- i. Discuss their projections of population and demand compared to projections in the 2006 Region C Water Plan.
 - ii. Discuss their planned water management strategies.
 - iii. Seek other input on water issues and management strategies.
- B. Meet with up to 11 water user groups in Fannin County, with a maximum of 2 trips.
- i. Discuss their projections of population and demand compared to projections in the 2006 Region C Water Plan.
 - ii. Discuss other input on water issues and management strategies.
 - iii. Seek other input on water issues and management strategies.
- C. Meet with up to 4 water user groups in Freestone County, with a maximum of 2 trips.
- i. Discuss their projections of population and demand compared to projections in the 2006 Region C Water Plan.
 - ii. Discuss their planned water management strategies.
 - iii. Seek other input on water issues and management strategies.
- D. Meet water user groups in Navarro County with up to 2 trips to the area.
- i. Discuss their projections of population and demand compared to projections in the 2006 Region C Water Plan.
 - ii. Discuss their planned water management strategies.
 - iii. Seek other input on water issues and management strategies.
- E. Meet with up to 8 water user groups in North Kaufman County, with a maximum of 2 trips.
- i. Discuss their projections of population and demand compared to projections in the 2006 Region C Water Plan.
 - ii. Discuss their planned water management strategies.
 - iii. Seek other input on water issues and management strategies.

Work Products

Prepare a draft and a final report for the Task 1 study and prepare a draft and a final report for the Task 2 study. Both reports will include the following sections: executive summary, purpose of study including how the study supports regional water planning, methodology, results, and recommendations, if applicable. The draft report will be submitted to the planning groups and the TWDB for review and comment. For Task 3, a memorandum report summarizing each of the meetings held in each of the five regional areas will substitute for a full study report.

Electronic versions of the text (in Microsoft Word format) and graphics (in encapsulated PostScript format) will be used in the final report. All GIS layers used in the study will be submitted to political subdivisions and TWDB.

Previously developed water supply studies that result in changes to water management strategies will be provided electronically (typically scanned PDF files) to the TWDB as part of the contract deliverable, to the extent that the original funding entities will allow. In instances where an entity will not allow an entire report to be submitted to the TWDB, specifically-referenced excerpts will be submitted as agreed to by the original funding entity.

The reports will be submitted per TWDB requirements and results from this study will be included in the 2011 Region C Regional Water Plan. The development, analysis, and reporting of results will follow methodologies and guidance according to Exhibit B when applicable and agency rules.