

Attachment I
Exhibit C
Original Scope of Work
Plateau Region (J)

Study 2 - Feasibility Analysis of Surface Water Rights Acquisition, Conjunctive Use Projects, and Infrastructure Needs

Task 1 - Municipal Supply Analysis

The task will assess the availability and feasibility of securing additional surface water supplies within Kerr County to address potential future municipal shortages.

A. Inventory and Prioritize Existing Water Rights Assessment

In this task contractor shall evaluate existing water rights as to the quantity of water actually divertible if these water rights' diversion points were relocated to possible future diversion points. The water rights evaluated will be those rights included in the TCEQ's Water Availability Model (WAM) Run 3 and 8, from the confluence of the North Fork Guadalupe River and South Fork Guadalupe River downstream to the Canyon Reservoir water right. Water rights within the WAM that lie on tributaries of the Guadalupe River will also be evaluated. The evaluation using Run 8 will provide an assessment of the feasibility and availability of the selected water rights and the option for any temporary contracts. The inventory will include a review and analysis of the Memorandum of Understanding between Kerr County and the Guadalupe Blanco River Authority to see how much water is available from Canyon Lake.

B. Field Work

Under this task, field surveying will be conducted to investigate feasibility of water rights acquisition and possible relocation of potential diversion points. Field work is a reconnaissance of streamflow characteristics and potential channel losses. In addition, the field work will investigate potential groundwater and surface water interaction in the upper Guadalupe Basin as it relates to the selected water rights.

C. Surface and Groundwater Interaction

This task will collect historical surface water flow data available in the Upper Guadalupe River Basin and analyze such data to find any correlation between high (or low) groundwater levels and high (or low) base flow. Perform a channel loss/gain analysis on the main stem of the Guadalupe River considering data from field work (Task 1.B). The next step would calculate projected groundwater levels for the planning period. Finally, any potential adjustments of the naturalized flow of the Guadalupe River Basin WAM will be made to reflect any change on flow pattern due to change of groundwater levels. In addition, the efforts on any WAM refinements will be coordinated with the Edwards Trinity GAM to incorporate any changes and improvements. The Contractor will receive approval from the TWDB Executive Administrator prior to any adjustment to a WAM.

D. Analyses and Evaluation of Water Rights

This task will investigate and report on a financial analysis or placing a dollar value on any identified water rights. This analysis will assist the highest and best use of the water rights.

E. Interim Memorandum Development

The consultant shall prepare an interim memorandum of the findings and recommendations and submit one (1) draft report in hard copy and in digital format to the planning group for review. Upon the planning group's approval and receipt of any review comments, the consultant will finalize the report and send to the planning group and TWDB for submittal. During the course of the project, the contractor will conduct up to two (2) briefing and progress meetings with the planning group.

Task 2 - County-Other and Rural Water Supply Analysis

The purpose of this task is to evaluate options available for county-other and rural water interests to supply water during a repeat of the drought of record in Bandera and Kerr counties. The task will include investigation of UGRA's role as a county-other water supplier and existing projects to provide treated wastewater services.

A. Inventory and Evaluation of Existing Water Rights and Options

In this task contractor shall evaluate existing water rights as to the quantity of water actually divertible if these water rights' diversion points were relocated to possible future diversion points to serve county-other and/or rural interests.

The water rights evaluated will be those rights included in the TCEQ's Water Availability Model (WAM) Run 3 and 8, from the confluence of the North Fork Guadalupe River and South Fork Guadalupe River downstream to, and including the Canyon Reservoir water right. Water rights within the WAM that lie on tributaries of the Guadalupe will also be evaluated. The evaluation using Run 8 will provide an assessment of the feasibility and availability of the selected water rights and the option for any temporary contracts.

In addition, possible diversion points are as follows:

- UGRA and Kerrville existing diversion point as currently authorized by Permits Nos. 3505, 3769, 5394A and 5394B.
- Diversion point in Flat Rock Lake at or near Flat Rock Dam.
- Any other identified water rights in the area.

Contractor will consider the following strategies during the analysis:

- UGRA water rights and subordination agreements
- GBRA and Kerr County negotiations
- Other strategies: rural water rights, reuse of treated wastewater and distribution
- Bandera County use of water from Medina Lake

B. Field Work

Under this task, field surveying will be conducted to investigate feasibility of water rights acquisition and possible relocation of potential diversion points. Field work is

a reconnaissance of streamflow characteristics and potential channel losses. In addition, the field work will investigate potential groundwater and surface water interaction in the upper Guadalupe Basin as it relates to the selected water rights.

C. Aquifer Storage and Recovery (ASR) and Conjunctive Use Potential

This task will provide a preliminary analysis of conjunctive use potential for county-other and rural users and investigate the feasibility of a UGRA ASR system to augment county-other supplies in their service area. The analysis will include potential siting, water availability evaluations, and potential infrastructure needed to operate an ASR for UGRA.

D. Analyses and Evaluation of Water Rights

This task will investigate and report on a financial analysis or placing a dollar value on any identified water rights. This analysis will assist the highest and best use of the water rights.

E. Interim Memorandum Development

The contractor shall prepare a report of the findings and recommendations and submit one (1) draft report in hard copy and in digital format to the planning group for review. Upon the planning group's approval and receipt of any review comments, the contractor will finalize the report and send to the planning group and TWDB for submittal. During the course of the project, the contractor will conduct up to two (2) briefing and progress meetings with the planning group.

Task 3 - Infrastructure Costs Analysis

The task will investigate the feasibility of moving acquired water rights and/or treated wastewater to rural and county-other water uses in Kerr and Bandera counties.

A. Review Previous and On-going Studies

The task will investigate any historical and on-going studies to provide treated wastewater services to water user groups in the Plateau Planning Area.

B. Analysis of Infrastructure and Distribution System Potential

The task will investigate any historical and on-going studies to provide treated wastewater services to water user groups in the Plateau Planning Area.

C. Report Development

The contractor shall prepare a report of the findings and recommendations and submit one (1) draft report in hard copy and in digital format to the planning group for review. Upon the planning group's approval and receipt of any review comments, the contractor will finalize the report and send to the planning group and

Attachment I
Exhibit C
Revised Scope of Work
Plateau Region (J)

Study 2 – Alternative Water Supply Analysis for Kerr and Bandera Counties

Task 1. Water Rights Analysis for Upper Guadalupe Basin

The task will assess the availability and feasibility of securing additional surface water supplies within Kerr County to address potential future municipal shortages for the City of Kerrville and the Upper Guadalupe River Authority (UGRA). This work will survey and collect pertinent data on all surface water rights in the Upper Guadalupe Basin and incorporate the information in a database. This information will include Guadalupe River water rights all the way down to and including the Canyon Reservoir permit.

- A. Collect water rights data from TCEQ on all water rights in the Upper Guadalupe Basin down to and including Canyon Lake.
- B. Assemble all the data from 1.A into a digital database for data management and analysis. The database will be used to identify water rights of high interest for further evaluation and cost assessment.
- C. Evaluate existing water rights as to the quantity of water actually divertible according to the state-approved WAM during a repeat of the drought of record. Water rights included in TCEQ's Water Availability Model (WAM) Run 3, shall encompass the Upper Guadalupe Basin down to and including the Canyon Reservoir.
- D. Prioritize the water rights from most reliable to least reliable based on (in priority order) availability, diversion point flexibility, monetary value, and dates of priority. The planning group and stakeholders will then determine water rights of high interest for further analysis.
- E. Using the database generated in 1.D, assess the monetary value of high priority water rights based on replacement cost.
- F. Prepare a draft report of the findings and recommendations for planning group review. Upon PWPG's approval and receipt of any review comments, a final report will be prepared and delivered under Task 4 below. During the course of the project, the consultant will conduct up to two (2) briefing and progress meetings with the planning group.

Task 2. ASR Conjunctive Use Analysis for County-Other Needs

This task will evaluate the potential development of a UGRA Aquifer Storage and Recovery (ASR) project capable of delivering water to rural (County-Other) users in Kerr and a portion of Bandera counties.

state for submittal. During the course of the project, the contractor will conduct up to two (2) briefing and progress meetings with the planning group.

Task 4 – Supply Availability models

This task will evaluate the existing surface and groundwater availability models and provide any updates or changed conditions to assess water supplies available in the Plateau Planning Area.

A. Input Data Analysis

The input files for the WAM and GAM models will be reviewed based on data collected in Tasks 1 & 2 to evaluate any changes in the availability models and their impact on supply availabilities. The Contractor will receive approval from the TWDB Executive Administrator prior to any adjustment to a WAM or GAM model.

B. Model Evaluation

Any changed conditions based on Task 4.A will be reviewed and analyzed in both the surface and groundwater models for significant changes in availabilities or yields.

C. Interim Memorandum Development

The contractor shall prepare a report of the findings and recommendations and submit one (1) draft report in hard copy and in digital format to the planning group for review. Upon PWPG's approval and receipt of any review comments, the contractor will finalize the report and send to the planning group and state for submittal. During the course of the project, the contractor will conduct up to two (2) briefing and progress meetings with the planning group. The final report will follow the content guidelines in the updated Exhibit B document.

Task 5 – Study Report

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. 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.

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

- A. Results from Task 1 will be used to develop conceptual delivery scenarios for water supplies within Kerr and a portion of Bandera counties. This will include analysis of wastewater return flows and any other water rights opportunities within UGRA's service area.
- B. Identify ASR infrastructure needs including potential siting in the vicinity of Center Point (Kerr County) and parts of Bandera County, water availability evaluations, and potential infrastructure needed to operate an ASR for UGRA.
- C. Develop preliminary infrastructure cost estimates to deliver future supplies from an ASR project.
- D. Prepare a draft report of the findings and recommendations for planning group review. Upon PWPG's approval and receipt of any review comments, a final report will be prepared and delivered under Task 4 below. During the course of the project, the consultant will conduct up to two (2) briefing and progress meetings with the planning group

Task 3. Preliminary Aquifer-Storage-and-Recovery Feasibility Assessment in Bandera County

This task will investigate the feasibility of Aquifer Storage and Recovery (ASR) in the Trinity aquifer in Bandera County and will be coordinated with the Bandera County River Authority and Groundwater District (BCRAGD) and the City of Bandera.

- A. Review existing aquifer characterization data from the TWDB groundwater database and recently acquired new data developed for the BCRAGD and the City of Bandera.
- B. Review historical water level declines in the Lower Trinity aquifer and calculate potential available storage in the aquifer.
- C. Evaluate potential water sources including Medina River water rights and treated municipal wastewater.
- D. A Lower Trinity aquifer model is currently under development by the BCRAGD, and the TWDB is also currently revising the Hill Country Trinity GAM model to include the Lower Trinity. When available, one or both models will be used to test the ASR scenario.
- E. If based on this preliminary assessment ASR appears feasible, develop a preliminary infrastructure cost estimate.
- F. Prepare a draft report of the findings and recommendations for planning group review. Upon PWPG's approval and receipt of any review comments, a final report will be prepared and delivered under Task 4 below. During the course of the project, the consultant will conduct up to two (2) briefing and progress meetings with the planning group.