

## **Exhibit A Scope of Work**

### **Task 1. Planning Area Description**

1. Review listing of Water User Groups from this round with list from last round and include descriptions of any new WUGs.
2. Discuss current impacts on agriculture in the Region and major trends that influence production and, consequently, water demand.
3. Review TWDB listing of threatened and endangered species and their habitat and incorporate any changes since the listing from the last round.
4. Prepare and submit draft Chapter 1 to the LRWPG members and TWDB for review and approval.
5. Incorporate LRWPG and TWDB comments with associated recommended changes and seek approval for final draft of this chapter.

Deliverables: A completed Chapter 1 describing the LRWPA included in the 2011 RWP as a work product.

### **Task 2. Population and Water Demands**

1. Prepare tables of population and water demands for RWPG approval, including revised agricultural demand projections from 1<sup>st</sup> Biennium efforts.
2. Prepare and submit draft chapter two to the LRWPG members and TWDB for review and approval.
3. Incorporate LRWPG and TWDB comments with associated recommended changes and seek approval for final draft of this chapter.
4. Additional Population and Water Demand Tasks
  - a. Prepare correspondence to each of the WUGs concerning the proposed populations for this planning round. Provide suggestions concerning data to be gathered if the WUGs want to challenge these numbers now or in the next planning cycle after this one.
  - b. Discuss any requests for changes with the requestors and review data they currently have to determine whether it meets TWDB requirements to support a population change.
  - c. Submit recommendations to Executive Committee for approval of changes, if any.
  - d. Submit to TWDB for approval of draft numbers.
  - e. Incorporate all approved changes to database tables as appropriate.
  - f. Make changes as appropriate and provide final numbers to RWPG for approval.
5. New Demands for Wholesale Water Providers
  - a. Correspond with the LNRA to determine whether there are any recent or pending requests for service in their planning horizons.
  - b. Incorporate new requests for water into WWP demands.

Deliverables: A completed Chapter 2 detailing revised population and water demands and results of analysis included in the 2011 RWP as a work product.

### **Task 3a. Water Supply Analysis**

1. Revise water supply allocations to individual WUGs as necessary and update Chapter 3 of the Plan.
2. WWP Requests for Service
  - a. Correspond with the LNRA to determine whether there are any recent or pending requests for service in their planning horizons that may impact available water supplies.
  - b. Incorporate new requests for water into available water supplies.
  - c. Prepare revised tables for the 2011 Plan and for the TWDB database entries.
3. Develop Middle Gulf Coast Aquifer Revisions
  - a. Update groundwater availability in the middle Gulf Coast Aquifer area based on completed GAM model that was not available in time for the last planning round by applying appropriate regional planning criteria to a maximum of two GAM runs.
  - b. Review results of modeling performed for LCRA/SAWS project on groundwater in the area, as well as the review of that work that was performed by the Coastal Bend GCD, provided that Coastal Bend GCD is willing to share the results of that effort with the RWPG.
  - c. Meet with the Coastal Bend GCD, the Texana GCD, and the Lavaca GCD to review the GAM results and discuss other factors which might be included in the process of establishing revised availability numbers.
  - d. Meet with the LRWPG to review the proposed revisions and potential impacts to selected water management strategies.
  - e. Recommend final revisions to LRWPG of groundwater availability projections for each County using the middle Gulf Coast aquifer.

Deliverables: A completed Chapter 3 summarizing water supply projections included in the 2011 RWP as a work product.

### **Task 3b. Inter-Regional Coordination to Develop Long-Term Water Supplies**

It has come to the attention of the Planning Group that water demands in other neighboring Regions and the practicality of currently selected water management strategies have caused a demand for water resources within the Lavaca Regional Water Planning Area (LRWPA) at a time sooner than was originally expected. This task provides for coordination with these regions in an effort to maintain regional consistency.

- a. Meet with representatives and consultants of the Region L and Region N Water Planning Groups to discuss projected needs for water supplies within the LRWG.
- b. Brief the LRWPG on the status of out-of-Region water supply projects and recommend a course of action.
- c. Revise Chapter 3 of the Plan to include revised water supplies resulting from the projected implementation of water strategies by Regions L and N.
- d. Allocate the revised water supplies to LRWPG WUGs as necessary.

Deliverables: The results of these supplemental tasks will be included in Chapter 3 of the 2011 RWP along with a section summarizing the methodology and results.

**Task 4a. Identification, evaluation and selection of water management strategies based on needs.**

1. Submit revised chapter to LRWPG members and TWDB for review and approval.
2. Incorporate LRWPG and TWDB comments with associated recommended changes and seek approval for final draft of this chapter.
3. Additional Water Management Strategy Tasks
  - a) Re-evaluate water management strategies for all WUGs with changed demands or reduced supplies as a result of the Task 2 and 3 revisions.
  - b) Re-confirm water management strategies for all WUGs by sending correspondence to each WUG outlining the proposed strategy for the 2011 Plan for that WUG.
  - c) Coordinate with Lavaca-Navidad River Authority and review any potential changes in environmental flow needs based on the publication of the 2006 Freshwater Inflow Needs Study, and other environmental flow requirements.
  - d) Perform an update of water management strategies capital costs per Exhibit C for all strategies from the 2006 plan that will be carried over to the 2011 regional plan. This update will be performed for the majority of the strategies by updating the existing cost tables to the required construction price index.
  - e) Perform an update of water management strategies Operations and Maintenance (O&M) costs for strategies, as noted above, to be reflective of updated power and labor costs as well as annualized capital costs.
  - f) Revise Chapter 4 of the plan to include any new management strategies and the revised costs.
4. Determine impacts to the cost of Conjunctive Use of Groundwater strategy.

This task aims to refine the costs associated with the strategy now that new data is available through the use of the Middle Gulf Coast GAM. Data from the GAM will allow for better estimation of costs for this strategy as the increased lift required for providing groundwater during lowered aquifer conditions will be available. In addition, the cost of energy for pumping has increased significantly since the last plan was completed so the additional lift plus the additional cost per unit of energy for the lift will both contribute to increased costs for growers. Once these new costs are developed, the strategy will be compared again to other alternative strategies for selection in the 2011 RWP.

- a) Review Middle Gulf Coast Aquifer GAM to determine the impacts of Conjunctive Use of Groundwater strategy and develop costs for groundwater pumpage under extreme conditions.
- b) Compare costs to previous estimates and alternative strategies in order to determine the potential for meeting shortages with Conjunctive Use.
- c) Recommend alternative strategies to Conjunctive Use as necessary based on costs.
- d) Revise text of Chapter 4 and other sections based on changes in strategy selection.

Deliverables: Completed Chapter 4 of the 2011 RWP that includes the results of tasks described above.

## **Task 4b. Evaluate revisions to Palmetto Bend Stage II strategy and determine the impacts of revised operation of Lake Texana.**

Lake Texana provides an important water supply to industrial users within the LRWPG and municipal and industrial users within Regions L and N. Palmetto Bend Stage II represents a vital strategy to meet future shortages in Region N and is an alternative strategy for water supply within the LRWPG. Changes to the plans for expanding the reservoir and the way in which the current water supply is managed will have impacts on the future supplies of Regions P, L, and N.

The first part of this task examines *refinements to the Stage II strategy*. The second portion of this task is an integral part of the scope items described in 5.3, below. The potential transfer of water through Lake Texana has significant impacts on water users within and outside of the LRWPA. The operating rules for Lake Texana allow upstream irrigators to divert water when the reservoir level is 43 feet above mean sea level. The influx of a large volume of water to the reservoir will impact the levels of Lake Texana such that upstream irrigators within the LRWPA will have increased access to interruptible supplies. At the same time, the reliability of the water passed through Lake Texana will be impacted by these upstream diversions, creating an interregional issue. This task aims to *further the implementation of this strategy* as a major WMS for Region N with significant impacts on firm water supplies within the LRWPA.

1. Evaluate Update Palmetto Bend Stage II Strategy
  - a) Adjust Palmetto Bend Stage II strategy to include the reservoir location identified by the legislative unique reservoir site designation.
  - b) Update project yield and cost for Stage II as necessary.
  - c) Account for water supplies required by Regions L and N through inter-regional coordination.
  - d) Adjust Chapter 4 of the Plan accordingly.
  
2. Evaluate Impacts of the City of Corpus Christi's Garwood supply diversion through Lake Texana
  - a) Obtain the latest Full Diversion (Run 3) Water Availability Model (WAM) from TCEQ.
  - b) Coordinate with Region N to determine the need for water from the Garwood source.
  - c) Modify the WAM to model the conveyance of the Garwood water supply from its input at West Mustang Creek to diversion at the Palmetto Bend pump station.
  - d) Use the modified WAM to evaluate the impact of the strategy on Lake Levels in Lake Texana and the reliability of water rights within the Lavaca River Basin.
  - e) Evaluate the impact of the strategy to water supplies and adjust management strategies for LRWPG WUGs, accordingly.
  - f) Incorporate study into Chapter 4 as necessary.

Deliverables: Incorporate results of this task into the main document within Chapter 4 and other chapters where the results produced would be applicable.

## **Task 5. Impacts of selected water management strategies on key parameters of water quality and impacts of moving water from rural and agricultural areas.**

1. Review and update information in plan for all strategies which have remained the same

2. Submit revised chapter to LRWPG members and TWDB for review and approval.
3. Incorporate LRWPG and TWDB comments with associated recommended changes and seek approval for final draft of this chapter.
4. Additional Water Management Strategy Impact Tasks
  - a) Provide recommendations for further work to better define the impact of lowered water tables and higher drafts on the aquifers in the LRWPG and the impact on water quality that such conditions will create.
  - b) Revise wording for Chapter 5 of the plan to include any new management strategies.
5. Potential Changes to Aquifer Quality - Address potential changes to groundwater quality which might result from increased use of groundwater aquifers in the region.
  - a) Review quality information for all of the aquifers and determine which aquifers appear to have formations which include water that has higher dissolved solids concentrations.
  - b) Determine whether the models have enough information to make any general statements concerning water quality issues.
  - c) Prepare qualitative discussion of potential water quality impacts resulting from increased drawdown of aquifers in the region.
6. Potential Movement of the City of Corpus Christi's Garwood Supply – In conjunction with Task 4 item, above.

The way in which Lake Texana would be used to convey water from the Corpus Christi's Garwood right may impact local irrigators who have the opportunity to divert interruptible supplies from the reservoir when lake levels are above a certain threshold. In turn, these operating rules may impact the volume of water that can be successfully diverted through Lake Texana to Corpus Christi. This study aims to identify these impacts to both agricultural and municipal users.

- a) Determine the seasonal, municipal usage pattern of water from the Garwood supply and compare to the schedule of water diversion for irrigation to determine if these uses may coincide and may result in heightened lake levels at times when irrigators will choose to divert.
- b) Use the WAM Run 3 without Garwood flows to determine the median lake levels during the drought of record (DOR) without the Garwood diversion and determine the amount of divertible interruptible supply for rice irrigation.
- c) Execute the modified Run 3 with Garwood flows to determine median lake levels during the DOR with the Garwood diversion and determine the amount of divertible interruptible supply for rice irrigation.
- d) Determine what beneficial impacts the presence of the Garwood diversion will have on the ability of farmers to divert irrigation water on an interruptible basis and the impacts to downstream flows.
- e) Compare WAM results to determine the increase in spill frequency and volume from Lake Texana and determine what impacts this may have on the reliability of the Garwood diversion at the Palmetto Bend pump station.
- f) Include a summary section in Chapter 5 describing the impacts of this strategy on water supplies in the LRWPA.

Deliverables: Task 5 results will be summarized in 2011 RWP Chapter 5. The results of supplemental tasks will be incorporated into the main document within Chapter 5 and other chapters where the results produced would be applicable.

## **Task 6. Water conservation and drought management recommendations.**

1. Survey for each WUG asking about water conservation measures implemented and measures planned, as well as any measured impacts of conservation and drought contingency practices which have already been implemented. Expand correspondence to include the issue of water accountability and inquire as to the performance of these systems and steps taken to increase accountability.
2. Compare information received from the survey versus information contained in the 2006 Plan to determine whether conservation management strategies in the plan have local support or warrant revision.
3. Review available data sources to determine how much land has already been modified for irrigation conservation purposes. Determine potential savings that may result from converting the remaining land to conserve irrigation water.
4. Review drought contingency plans received from each WUG to determine what measures are most commonly used and whether these measures have been recently implemented in response to drought conditions.
5. Determine whether there is any reliable information on the reduction in demands on individual WUG s caused by their implementation of drought contingency measures.
6. Revise wording for Chapter 6 of the plan to include any new management strategies.
7. Submit revised chapter to LRWPG members and TWDB for review and approval.
8. Incorporate LRWPG and TWDB comments with associated recommended changes and seek approval for final draft of this chapter.
9. Follow up letter survey with telephone call to those who do not respond within 30 days. Make at least three telephone calls to each non-responding WUG, or until response is received.
10. Review available TWDB data to determine the level of water savings which have been documented through implementation of drought contingency measures.
11. Document results of follow up calls and review of TWDB data in a technical memorandum to be included in the Appendix to the 2011 Regional Plan.

Deliverables: The information gained from the study of water conservation measures, as described above, will be incorporated into the revised Chapter 6 of the 2011 RWP. The additional supplemental tasks described here will be incorporated into the 2011 RWP Chapter 6 along with the other associated efforts described above.

## **Task 7. Description of how the regional water plan is consistent with long-term protection of the state's water resources and natural resources.**

1. Update the current descriptions of water management strategies with any new strategies developed during this planning round, as well as any alternate strategies which are developed for specific WUGs with shortages which need additional flexibility.
2. Revise wording for Chapter 7 of the plan to include the new management strategies.
3. Submit revised chapter to LRWPG members and TWDB for review and approval.
4. Incorporate LRWPG and TWDB comments with associated recommended changes and seek approval for final draft of this chapter.

Deliverables: The results of the described Task 7 efforts will be incorporated into the 2011 RWP Chapter 7.

## **Task 8. Unique stream segments/reservoir sites/legislative recommendations**

1. Convene LRWPG to review recommendations regarding unique stream segments, unique reservoirs, and legislative recommendations from last round.
2. Provide any updates of descriptions of reservoir projects and any changes in classifications in stream segments.
3. Revise wording for Chapter 8 of the plan to include the new management strategies.
4. Submit revised chapter to LRWPG members and to TWDB for review and approval.
5. Incorporate LRWPG and TWDB comments with associated recommended changes and seek approval for final draft of this chapter.

Deliverables: Updates as a result of these tasks will be incorporated into the 2011 RWP Chapter 8.

## **Task 9. Report to Legislature on Water Infrastructure Funding Recommendations.**

1. Integrate WIF information request into conservation plan letter to individual WUGs.
2. Receive and collate information on infrastructure needs from individual WUGs and develop tables of total funds needed.
3. Revise wording for Chapter 9 of the plan to include the updated WIF funding needs.
4. Submit revised chapter to LRWPG members and TWDB for review and approval.
5. Incorporate LRWPG and TWDB comments with associated recommended changes and seek approval for final draft of this chapter.

Deliverables: Water Infrastructure recommendations made from a survey of the LRWPA will be made in Chapter 9 of the 2011 RWP.

## **Task 10a. Adoption of Plan**

1. *Public Participation for Planning Grant Process* – Provision for public comment on the proposed scope of work, schedule of activities, and required budgets for the three remaining years of the third planning cycle.
  - a) Provide public notification of LRWPG intent to apply for grant funding for the next three years of the third planning cycle.
  - b) Make grant applications available to the general public throughout the LRWPA.
  - c) Make presentations explaining the proposed grant funding for LRWPG in a public meeting.
  - d) Incorporate changes requested by LRWPG as a result of public comments.
2. *Periodic Meetings of the LRWPG*– Technical support and participation of the regular and special called meetings of the LRWPG.
  - a) Participate in approximately 12 regular meetings of the LRWPG
  - b) Participate in developing agendas, arranging speakers, and coordinating activities for the LRWPG.
  - c) Develop presentations and handout materials for the regular and special meetings to provide technical and explanatory data to the LRWPG and its subcommittees.

3. *Required Public Meetings* – Provide technical support and participate in three required public meetings for:
  - i. Receiving input on draft water demand calculations for applicable water user groups in the region.
  - ii. Receiving input on the selected water management strategies.
  - iii. Receiving input on the draft 2011 Regional Water Plan.
  - a) Provide notice for the three public meetings.
  - b) Develop presentations and handout materials for the public meetings to provide to the general public.
  - c) Provide draft responses for RWPG approval to any questions that are asked at the public meetings.
  
4. *Administrative Support*
  - a) Prepare and submit invoices to the LNRA for work performed for the RWPG and provide consultant's status report for each meeting.
  - b) Maintain lists of contacts for regional planning information in the region, coordinated with Karen Gregory at LNRA.
  - c) Attend and prepare presentation and handout materials for public meetings in various locations of the region to solicit input on the draft LRWPG Regional Plan.
  - d) Prepare report section summarizing Task 10 activities.
  - e) Prepare and transmit correspondence once LRWPG approval of draft responses is obtained.

Deliverables: Deliverables from the task will include properly prepared notices of action by the Planning Group, minutes of public meetings and hearings, and a summary of all associated efforts in Chapter 10 of the 2011 RWP.

### **Task 10b. Scope of Work Development**

1. Develop schedule for submittal of draft documents to the Committee, to the RWPG as a whole, and to the TWDB.
2. Meet with RWPG to present timeline for preparation of Scope of Work and to establish Scoping Committee
3. Coordinate with TWDB on allowable tasks and subtasks to reduce uncertainty as much as possible.
4. Develop draft scoping document narrative for submission to the Scoping Committee for approval of overall tasks prior to beginning cost development.
5. Receive feedback from Scoping Committee and prepare draft scope narrative and estimated "ball park" cost estimates for review by Scoping Committee and RWPG
6. Revise narrative scope document based on feedback from Scoping Committee and RWPG and develop cost estimates for subtasks.
7. Submit task and subtask budgets, narrative scope, and completed grant application to Executive Committee for final approval.
8. Make any final modifications to scope document and grant application and prepare for LRWPG Chairman's approval and submittal to TWDB.

Deliverables: Completed application for grant funding serves as the deliverable for this scope item.