

**Engineering Committee Report  
Republican River Compact Administration**

August 13, 2008, Lincoln Nebraska

**ASSIGNMENTS**

At the August 15, 2007 Annual Meeting of the Republican River Compact Administration, the Commissioners assigned the Engineering Committee the following tasks:

1. Finalize work on a user's manual for the Republican River Compact *Accounting Procedures and Reporting Requirements* (RRCA Accounting Procedures, dated July 27, 2005) and provide a recommendation to the Administration for adoption at next year's annual meeting.
2. Exchange by April 15, 2008 the information listed in Section V of the RRCA Accounting Procedures, and other data required by that document, and use these data to complete the preliminary accounting of the virgin water supply, the computed water supply, and the beneficial consumptive uses in the Basin for the calendar year 2007. By July 15, 2008 exchange any updates to these data to complete the final accounting of the virgin water supply, the computed water supply, and the beneficial consumptive uses in the Basin for the calendar year 2007.
3. Continue efforts to resolve concerns related to varying methods of estimating ground and surface water irrigation recharge and return flows within the Republican River Basin and related issues.
4. Retain Principia Mathematica to perform on-going maintenance of the ground water and periodic updates requested by members of the Engineering Committee for calendar year 2007. The billable costs shall be limited to actual costs incurred, not to exceed \$12,000.00 in total and will be apportioned in equal 1/3 amounts to the States of Colorado, Kansas, and Nebraska respectively.

**WORK ACTIVITIES RELATED TO THESE ASSIGNMENTS AND OTHER ISSUES**

The Engineering Committee and technical representatives from the States of Colorado, Kansas, and Nebraska participated in numerous collaborative work activities, phone conferences, and the following face-to-face meetings:

- September 20, 2007, in Denver, Colorado,
- January 30, 2008, in Denver, Colorado,
- March 11 and 12, 2008, in Kansas City, Missouri,
- April 11, 2008, in Kansas City, Missouri,
- May 1 and 2, 2008, in Denver, Colorado, and
- May 15, 2008, in Lincoln, Nebraska.

The following assignments and work activities were completed:

1. **Complete the user's manual for accounting procedures and provide a resolution for its adoption.** The assignment was not completed; the assignment should be continued next year.
2. **Complete the accounting for 2007 using the preliminary information provided by April 15, 2008 and the final exchange by July 15, 2008.**
  - a. Each state exchanged its model data sets by April 15 or shortly thereafter. A preliminary run of the RRCA groundwater model was developed by Willem Schreuder and posted on the RRCA web site he maintains for the Administration.
  - b. The states exchanged final model data sets and supporting data by August 7, 2008 and Principia Mathematica completed a final run after all the states' final data were delivered to him.
  - c. Data sets were collected by the Committee for stream flow, climate information, diversion records, and reservoir evaporation records of the three states in cooperation with the U.S. Geological Survey, U.S. Bureau of Reclamation, and U.S. Army Corps of Engineers for 2007.
  - d. The Engineering Committee has not agreed to a final accounting for 2007. On August 1, 2008 Kansas Commissioner wrote a letter to Nebraska outlining questions related to Nebraska's data submittal and requesting additional data for its review. As a result of Kansas' questions related to the Nebraska data submittal and insufficient time to review that data, the committee was unable to finalize the information exchange. The accounting of the virgin water supply, the computed water supply, and the beneficial consumptive uses in the Republican Basin was not completed at this time due to disputes regarding the following matters:
    - i. Non-federal reservoir evaporation below Harlan County Lake. Nebraska believes that Section VI.A. of the Final Settlement Stipulation prescribes that only non-federal reservoir evaporation above Harlan County Lake should be included in the annual accounting. Kansas disagrees and believes non-federal reservoir evaporation should be included for the entire basin. At last year's annual meeting the matter was referred to the Engineering Committee to resolve the issue. The matter is still unresolved.
    - ii. Division of Evaporative Loss from Harlan County Lake when only one state utilizes reservoir storage for irrigation. Kansas believes that the FSS and currently approved accounting procedures did not anticipate this condition and therefore do not provide clear and fair guidance on the split in this case. Nebraska believes that the current accounting methods take into account the situation where only one state utilizes reservoir storage for irrigation. Last year the Administration asked the Engineering Committee to seek a resolution to the matter prior to October 15, 2007. The matter is still unresolved.

- iii. Nebraska believes that Computed Beneficial Consumptive Use (CBCU) and the Imported Water Supply credit are not correctly calculated using the current RRCA Accounting Procedures. The matter was discussed during several meetings, and Nebraska proposed an alternative method of calculating these values in a paper titled *Analysis of Current Methods Used to Calculate Groundwater Impacts for the Republican River Compact*, dated August 6, 2008. The matter is still unresolved.
  - iv. Nebraska believes that consumptive use and virgin water supply on the Main Stem and Arikaree Sub-basin are being incorrectly calculated due to the incorrect accounting of return flows from the Haigler Canal. Investigations conducted by Nebraska suggest that a portion of the return flows from the Haigler Canal Diversion in Colorado return to the Arikaree River, and not solely to the Main Stem Republican River as indicated in the formulas. The results from this investigation were made available to the other states in March 2008. The matter is still unresolved.
  - v. Nebraska believes that the cells used as accounting points for outputs from the groundwater model should match the location of the respective Sub-basins as defined in the RRCA Accounting Procedures. The committee was able to reach agreement regarding one location (at Guide Rock, as described below) but was not able to reach agreement for the following locations:
    1. Driftwood Creek – Colorado and Kansas disagree with Nebraska
    2. Frenchman Creek – Colorado and Kansas disagree with Nebraska
    3. North Fork Republican River – Kansas agrees with Nebraska that the accounting cell location should be moved to the Colorado – Nebraska state line, in accordance with the definition of the Main Stem Republican River
    4. South Fork Republican River – Colorado and Kansas disagree with Nebraska
3. **Continue to work to resolve different recharge and return flow methods.** The Engineering Committee was unable to work on this assignment.
  4. **Retain Principia Mathematica to perform maintenance of the groundwater model.** Each state separately contracted with Principia Mathematica for the groundwater model services.
  5. **Colorado augmentation plan proposal.** The State of Colorado presented a plan to use existing ground water consumptive use to increase stream flow in the North Fork sub-basin. The matter is still unresolved.

## **COMMITTEE RECOMMENDATION**

The Committee was able to reach agreement on the following issues:

1. The committee agrees with the proposal for distributing estimated return flows from Riverside Canal. The proposal is included as Attachment A.
2. The committee has agreed to relocate the groundwater model accounting cell in the vicinity of Guide Rock to match the surface water stream gage location at the Guide Rock diversion. Details are included as Attachment B.

## **RECOMMENDED ASSIGNMENTS FOR THE COMING YEAR**

The Engineering Committee recommends the Republican River Compact Administration assign the following tasks:

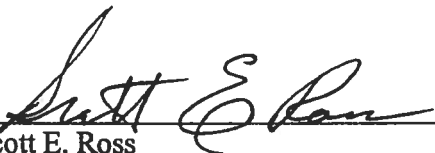
1. Finalize work on a user's manual for the RRCA Accounting Procedures and provide a recommendation to the Administration for adoption at next year's annual meeting.
2. By September 15, 2008 Nebraska will provide data responding to Kansas' August 1, 2008 letter to Nebraska. In addition, Colorado will provide a final meter report by September 15, 2008. Comments and additional questions will be due by October 1, 2008. The information is to be reviewed by October 31, 2008.
3. Exchange by April 15, 2009 the information listed in Section V of the RRCA Accounting Procedures and Reporting Requirements, and other data required by that document. By July 15, 2009 the states will exchange any updates to these data.
4. Continue efforts to resolve concerns related to varying methods of estimating ground and surface water irrigation recharge and return flows within the Republican River Basin and related issues. Nebraska will continue to improve methods of estimating return flows from using spillback gages on surface water irrigation canals.
5. Continue to review Colorado's augmentation proposal.
6. Retain Principia Mathematica to perform on-going maintenance of the ground water model and periodic updates requested by the Engineering Committee for calendar year 2008. The billable costs shall be limited to actual costs incurred, not to exceed \$15,000 in total and will be apportioned in equal 1/3 amounts to the States of Colorado, Kansas, and Nebraska respectively.


The Engineering Committee Report and the exchanged data will be posted on the web at [www.republicanrivercompact.org](http://www.republicanrivercompact.org).

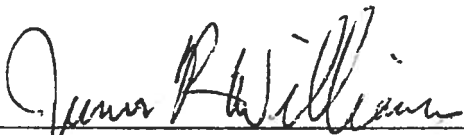
## **ATTACHMENTS**

- A. Riverside Canal proposal
- B. Proposal to move the groundwater model accounting cell at Guide Rock

**SIGNED BY**

  
\_\_\_\_\_  
Scott E. Ross  
Engineer Committee Member for Kansas

  
\_\_\_\_\_  
Megan A. Sullivan  
Engineer Committee Member for Colorado

  
\_\_\_\_\_  
James R. Williams  
Engineer Committee Member for Nebraska

6000