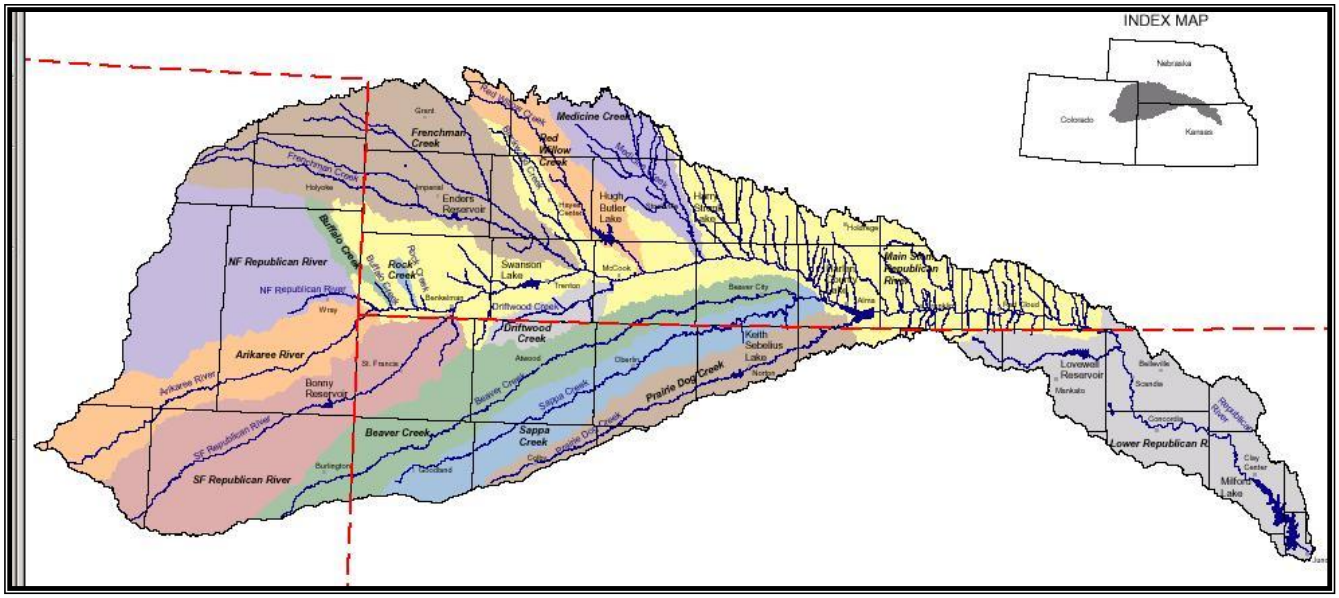
REPUBLICAN RIVER COMPACT ADMINISTRATION

52nd ANNUAL REPORT

FOR THE YEAR 2012



COLBY, KANSAS

SEPTEMBER 12, 2013

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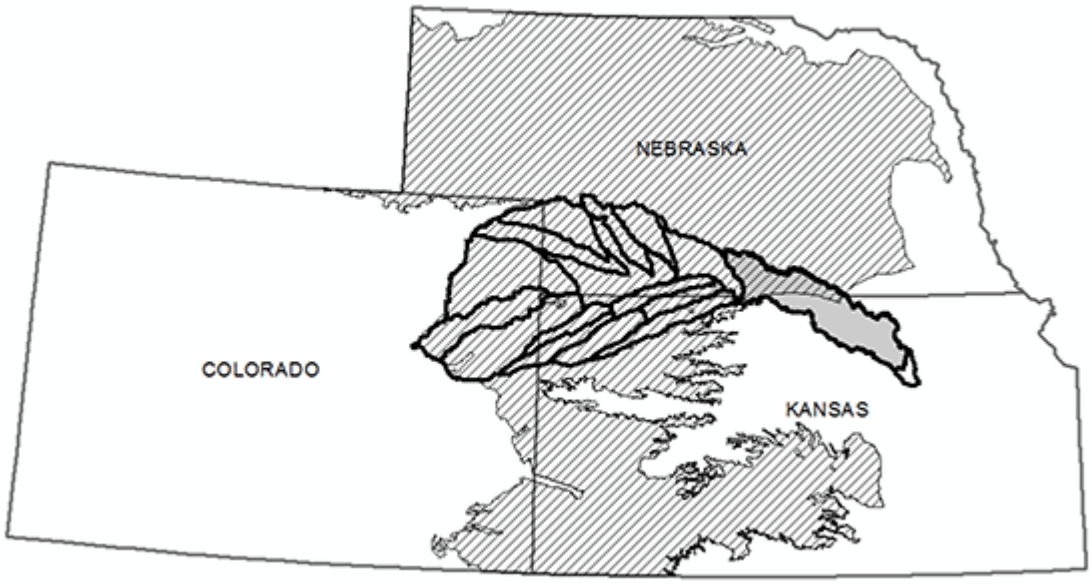
REPUBLICAN RIVER COMPACT ADMINISTRATION

Special Meeting December 11, 2012

Discussion of Nebraska Augmentation Projects and Plans for Water Administration



SUMMARY AND MINUTES OF THE
SPECIAL MEETING OF THE REPUBLICAN
RIVER COMPACT ADMINISTRATION

DECEMBER 11, 2012

VIA TELEPHONE CONFERENCE CALL

Summary & Minutes

A transcript of this meeting was prepared by a court reporter (Exhibit A). The transcript was reviewed by each of the States and upon final approval by the Compact Administration the transcript will serve as the official minutes of this Special Meeting of the Compact Administration. Below is a summary of the meeting.

Agenda Item 1: Introductions

The Special Meeting of the Republican River Compact Administration (RRCA) was called to order by Kansas Commissioner and Chairperson David Barfield at 10:00 A.M., December 11, 2012, via telephone conference call. Commissioner Barfield asked all attendees from the various listening locations to identify themselves. A complete list of those attendees is attached as Exhibit B. Attendees included:

Name	Representing
David W. Barfield	Kansas Commissioner, Chairperson
Chris Beightel	Kansas Division of Water Resources
Burke Griggs	Kansas Division of Water Resources
Chris Grunewald	Kansas Attorney General's Office
Brian P. Dunnigan	Nebraska Commissioner
Jim Schneider	Nebraska Department of Natural Resources
Justin Lavene	Nebraska Attorney General's Office
Dick Wolfe	Colorado Commissioner
Mike Sullivan	Colorado Division of Water Resources
Ivan Franco	Colorado Division of Water Resources
Scott Steinbrecher	Colorado Attorney General's Office

Agenda Item 2: Modification and Approval of Agenda

Commissioner Barfield suggested one addition to the agenda regarding 2013 water administration in Nebraska. Commissioner Barfield proposed to add Agenda Item 5, Nebraska's Plan for Water Administration, to the agenda. Commissioner Dunnigan moved to adopt the amended agenda. Commissioner Wolfe seconded and the motion was approved unanimously. A copy of the amended agenda is attached as Exhibit C.

Agenda Item 3a & b: Status of Previous Annual and Special Meeting Reports and Transcripts

No action was ready to be taken in regards to the annual reports for the 2007, 2008, 2009, 2010 and 2011 meetings of the RRCA. It was determined that additional review of the entire set of reports would be beneficial. It was agreed by the commissioners to assign the Engineering Committee the task of conducting a final review and that any action regarding the reports and transcripts should be postponed until a future meeting of the RRCA.

Agenda Item 3c: Precipitation Data Methodology

The commissioners discussed the pending approval of a proposal for precipitation data methodology using PRISM, as proposed earlier in the year at the 2012 RRCA annual meeting in Junction City, Kansas. It was moved and adopted by the commissioners to assign the Engineering Committee the task of completing the proposal on the methodology for final consideration at a future special meeting of the administration.

Agenda Item 3d: RRCA Rules and Regulations

Commissioner Barfield reviewed the proposed changes to the January 12, 2005 RRCA Rules and Regulations. In paragraph 14, the updated version of the Rules and Regulations will be dated August 12, 2012, along with specification of current RRCA Groundwater Model version as "version 12-S-2 dated August 6th, 2010." A short discussion ensued about changes to Rule 9 regarding when the administration holds the annual meeting. It was decided by the commissioners to change Rule 9 to read, "The RRCA shall hold a regular annual meeting prior to September 1st each year." Commissioner Barfield called for a vote on the motion and it was unanimously approved by the commissioners to make the aforementioned changes to Rule 9. A markup of the changes and Final clean version of the amended Rules and Regulations are attached as Exhibits D and E, respectively.

Agenda Item 4: Nebraska Augmentation Projects

Commissioner Dunnigan introduced Deputy Director Jim Schneider who discussed Agenda Item 4 regarding Nebraska's augmentation projects. Nebraska provided the other states with several documents for discussion including; an Outline for Augmentation Plan (Exhibit F), and a document discussing imported water supply for a project being developed that would enhance imports of Platte River water (Exhibit G). Schneider told the commissioners that the Augmentation Plan Outline builds off a framework provided by Kansas and Schneider proceeded to guide the meeting participants though the major components of the Plan.

Outline for Augmentation Plans

Jim Schneider presented Nebraska's list of minimal requirements for an augmentation plan to be approved by RRCA which included: no new net depletions annually or long term, the RRCA Groundwater Model will determine the existent and extent of new net depletions, the RRCA Accounting Procedures will be revised to reflect methodology for calculating the augmentation credit, the RRCA Groundwater Model will also be used to calculate CBCU and IWS credits; and finally, the RRCA must approve any augmentation plan before a state may receive credit for the project.

Schneider then presented Nebraska's views on the materials that would be provided by a state when they brought an augmentation plan to the RRCA. For example, the baseline conditions of the project area, operational aspects of the project, groundwater modeling analysis of the project, and finally the Accounting Procedures modifications for crediting purposes.

Commissioner Barfield thanked Jim Schneider for his presentation and called for discussion among the states. After Commissioner Dunnigan reiterated that Nebraska used the Kansas framework to build the outline that was just discussed, Commissioner Barfield noted that there were a number of Kansas suggestions that were not included in Nebraska's re-worked plan. Commissioner Barfield stated that Kansas will review the proposed Augmentation Plan framework and offer comments by early 2013. Commissioner Wolfe confirmed that Colorado would be able to meet that deadline as well and also asked Schneider for clarification on the scope of the requested comments on Nebraska's proposed framework.

Specific Augmentation Project presented by Nebraska

Jim Schneider provided details for a specific project being developed by the natural resource districts that follows the general Augmentation Plan framework, as presented earlier in the meeting. Schneider reviewed the map of the project area (Exhibit H). The project is located within an area that lies outside the RRCA well moratorium. Nebraska views the project as operating in a similar manner to an augmentation project, except that it falls under different provisions due to its location and use of Platte River water.

Schneider asked for questions from the phone audience, and Commissioner Wolfe responded by asking for clarification of Figure 1, which is the area excluded from the moratorium. Schneider confirmed that the map key was incorrect. Commissioner Barfield asked for confirmation of where the augmentation wells will be located and which wells will be retired for the project. Commissioner Barfield also asked if Nebraska viewed the project as something other than augmentation and Schneider confirmed by explaining that Nebraska sees the project as enhancing the imports of the imported water supply in that area. Schneider went on to explain that Nebraska is asking the other states whether there is a fundamental disagreement on this point and would like to proceed with the project development barring any objections.

Commissioner Wolfe sought clarification on the number of acres to be retired within the project. Jim Schneider confirmed that 15,800 acres will be permanently retired from irrigation. In response to a query from Commissioner Barfield, Schneider relayed that the project's developmental timetable is approximately six to eight months. Schneider also confirmed that Nebraska is requesting a response on this specific project from Kansas and Colorado on the same timetable as the Augmentation Plan framework discussion.

Commissioners Barfield and Wolfe asked Nebraska staff for clarification of the provisions being used in the FSS that allow the augmentation project. Commissioner Wolfe also asked for a draft of proposed

changes to the Accounting Procedures that would accompany the project to assist the states in their review. Jim Schneider responded that the FSS Subsection III.C.1.a and III.B.1.b are pertinent since the project is not located in the area subject to the moratorium. Also, the definition of imported water supply is pertinent to describing the project. Schneider also clarified that any Accounting Procedure changes would be offered by Nebraska when the project is officially submitted to RRCA for approval.

Commissioner Wolfe also asked for clarification from Nebraska on how the proposal fits into the construct of moratorium on "new wells." Jim Schneider directed everyone's attention to the proposal's information on previously-irrigated acres that will be retired, but also noted that the development of new wells is not linked to the acreage retirement. Schneider further attempted to clarify the project by stating that Nebraska sees no distinction between a pipeline pulling water directly out of the Platte River or wells pumping water from the aquifer that originated in the Platte Basin. Schneider hoped that forthcoming changes to the Accounting Procedures and Groundwater Model will help the states understand how the project will enhance the imported water supply for Nebraska. Nebraska envisions the augmentation wells being included in the RRCA model but treated differently than irrigation wells. At this point Nebraska is seeking an agreement between the states on the fundamental concepts of the proposed plan. Schneider stated that many millions of dollars have and will be spent on a project with the sole purpose of assuring that Nebraska stays within its Compact Allocation and Kansas receives its full allocation.

Commissioner Barfield asked about Nebraska's intentions to provide the states with further information and Jim Schneider reiterated that Nebraska is seeking approval of the proposal's concepts based on the general information provided and not going into specifics at this time. If a consensus cannot be reached then pursuing the Dispute Resolution Process would be an option Nebraska is willing to explore. Commissioner Barfield stated that more information about topics discussed today would greatly help both Kansas and Colorado understand a project, which is very different from anything RRCA has considered in the past. Commissioner Wolfe stated that his expectation is that project details would come in stages and more details would be helpful after the states respond to this initial feedback request. Schneider committed to providing the states with a new map of the project to clear up the confusion noted earlier.

Commissioner Wolfe suggested that the states provide feedback by the end of the year (2012) and ensure that each state is copied on any correspondence to Nebraska. Commissioner Dunnigan committed to providing Nebraska's response to the states comments within two weeks of receiving those comments.

Agenda Item 5 *(added)*: Nebraska's Plan for 2013 Water Administration

Commissioner Barfield proceeded to the next agenda item regarding Nebraska's plans for 2013 water administration. Commissioner Barfield indicated that his understanding was that the Bureau had projected a water short year for 2013 and Nebraska's preliminary projections indicate a Compact Call Year under their Integrated Management Plan. Kansas is concerned about the operation of Harlan

County Reservoir and obtaining its share of the basin's water supply, so the agenda item here is in response to that situation.

Jim Schneider responded to the inquiry by referencing his expert report dated March 15th, 2012 titled "Nebraska Response of Expert Report Concerning Nebraska's Future Compliance"; and specifically to Appendix C to the report titled "Republican River Basin Integrated Management Plan." Furthermore, Nebraska did meet with the Bureau to discuss the closure of actual flow and storage permits and that there is potential flexibility to re-regulate water in Harlan County Lake to other reservoirs if the Bureau approached Nebraska with a specific plan to do so. Aaron Thompson, representing the U.S. Bureau of Reclamation, stated that the Bureau is currently working with their district, the irrigation districts, and the Army Corps of Engineers to find 20,000 acre-feet in the basin in order to avoid the closing notices. Commissioner Barfield requested that Kansas be kept informed of all discussions because a closing notice on Harlan County would definitely affect Kansas operations.

Jim Schneider reminded the meeting participants that the preliminary forecast is issued on November 15th and then finalized January 1st based on a finalized forecast and other data. Commissioner Barfield indicated that it would be helpful to Kansas to understand Nebraska's forecasting procedures and would find any spreadsheets or model runs to be helpful in understanding Nebraska's processes and decisions in creating the forecast. Schneider responded that the report he mentioned earlier contains data sources and methodologies, but Nebraska did not utilize a model run or Accounting Procedures. Schneider indicated he would make available those calculations and spreadsheets.

Commissioner Dunnigan made it clear to the audience that Nebraska is not in negotiations with the Bureau regarding the Water-Short Year plans, but rather was discussing the flexibility that Nebraska could provide to the Bureau. Commissioner Dunnigan referenced a letter that DNR sent to Kansas dated December 6th regarding these issues. Jim Schneider confirmed that DNR is preparing to issue closing notices to all natural flow and storage permits on January 1st, but could be prevented if a plan is presented before that time. Commissioner Barfield expressed Kansas' desire to avoid the closing notice for Harlan County Lake with respect to Kansas' share of the water supply.

Commissioner Barfield proceeded to address the situation of low flows from the Republican River reservoirs and what impact the closing notices will have on the flows. Jim Schneider confirmed that the closing notices will be in place all year unless conditions change in the basin.

Agenda Item 6: Adjournment

Commissioner Barfield asked for any other discussion on any other RRCA topics. Commissioner Dunnigan thanked Colorado and Kansas for scheduling the special meeting to discuss Nebraska's issues and then moved to adjourn the special meeting. Commissioner Wolfe seconded and the motion passed unanimously. The meeting was adjourned.

The December 11, 2012 Special Meeting report is hereby approved by unanimous vote of the RRCA on this 27th day of August, 2015.

As indicated by their signature and date below, the RRCA Commissioners agree that the report was approved by RRCA on the date indicated above.

David Barfield DATE SIGNED: 8/26/2015

David Barfield, Chair & Kansas Commissioner

Gordon W. Fassett DATE SIGNED: 8/26/2015

Gordon W. Fassett, Nebraska Commissioner

Dick Wolfe DATE SIGNED: 8-26-2015

Dick Wolfe, Colorado Commissioner

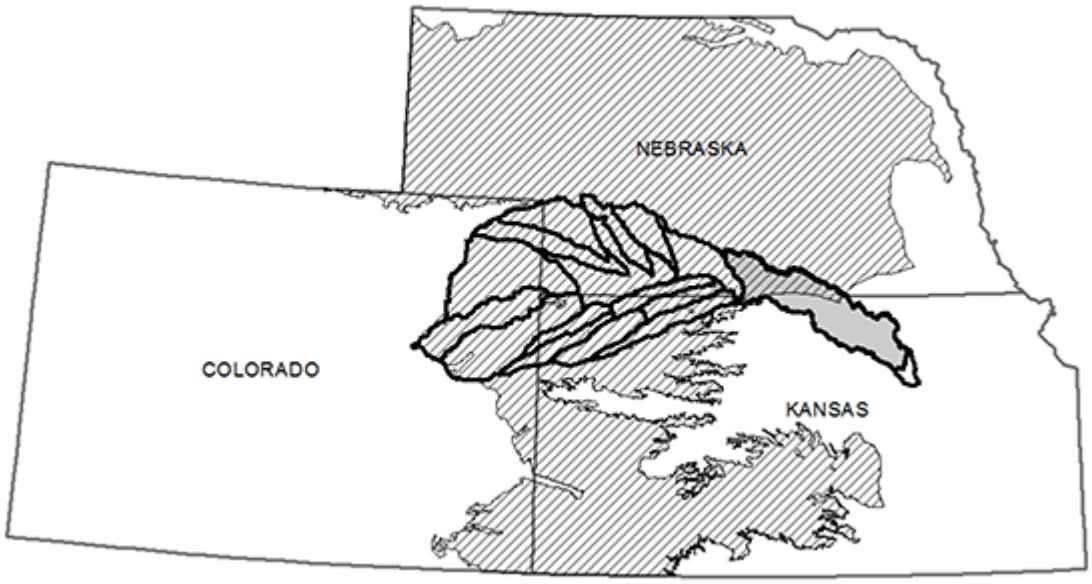
Exhibits

Exhibit A:	Transcript of the December 11, 2012 Special Meeting
Exhibit B:	Attendance of the December 11, 2012 Special Meeting
Exhibit C:	Amended Agenda for the December 11, 2012 Special Meeting
Exhibit D:	RRCA Rules and Regulations DRAFT showing proposed changes
Exhibit E:	RRCA Rules and Regulations final version, approved December 11, 2012
Exhibit F:	Nebraska Augmentation Plans – Outline for Augmentation
Exhibit G:	Nebraska Augmentation Plans – Inclusion of Imports of Platte River Water
Exhibit H:	Nebraska Augmentation Plans – Figure 1 Lincoln County Farms Map

REPUBLICAN RIVER COMPACT ADMINISTRATION

Special Meeting March 8, 2013

Discussion and RRCA Action on Nebraska's Rock Creek Augmentation Proposal



SUMMARY AND MINUTES OF THE
SPECIAL MEETING OF THE REPUBLICAN
RIVER COMPACT ADMINISTRATION

MARCH 8, 2013

VIA TELEPHONE CONFERENCE CALL

Summary & Minutes

A transcript of this meeting was prepared by a court reporter. The transcript was reviewed by each of the States and upon final approval by the Compact Administration the transcript (Exhibit A) will serve as the official minutes of this Special Meeting of the Compact Administration. Below is a summary of the meeting.

Agenda Item 1: Introductions

The Special Meeting of the Republican River Compact Administration (RRCA) was called to order by Kansas Commissioner and Chairperson David Barfield at 9:00 A.M., March 8, 2013, via telephone conference call. Commissioner Barfield asked all attendees from the various listening locations to identify themselves. A complete list of those attendees is attached as Exhibit B.

Attendees included:

Name	Representing
David W. Barfield	Kansas Commissioner, Chairperson
Chris Beightel	Kansas Division of Water Resources
Chris Grunewald	Kansas Attorney General's Office
Brian P. Dunnigan	Nebraska Commissioner
Jim Schneider	Nebraska Department of Natural Resources
Justin Lavene	Nebraska Attorney General's Office
Dick Wolfe	Colorado Commissioner
Mike Sullivan	Colorado Division of Water Resources
Scott Steinbrecher	Colorado Attorney General's Office

Agenda Item 2: Modification and Approval of Agenda

Commissioner Barfield asked for modifications to the agenda. No modifications to the agenda were suggested. Commissioner Dunnigan moved to adopt the agenda. Commissioner Wolfe seconded and the motion was unanimously approved by the commissioners. A copy of the agenda is attached as Exhibit C.

Agenda Item 3: Consideration of Nebraska's Rock Creek Augmentation Proposal

Commissioner Barfield turned the floor over to Commissioner Dunnigan to introduce the discussion and potential action on the Rock Creek Augmentation Proposal. On February 8, 2013 Dunnigan submitted

the Rock Creek Augmentation Proposal and Resolution to the RRCA commissioners via letter for their review (Exhibit D). Nebraska also designated the issue as a fast-track issue and sought resolution within 30 days. On March 5, 2013, Commissioner Dunnigan sent Kansas and Colorado a resolution regarding Nebraska's Rock Creek Augmentation Proposal and read that resolution into the record of this special meeting. Commissioner Dunnigan made a motion to approve the resolution and Commissioner Wolfe seconded.

Kansas Commissioner Barfield noted that he sent a letter on March 8, 2013 (Exhibit E), to Nebraska responding to Nebraska's March 5, 2013 letter, in which Kansas' concerns with the Rock Creek Augmentation Proposal are memorialized and he asked that all documents mentioned be made part of the special meeting record.

Commissioner Wolfe expressed his appreciation for Nebraska's preparation of the proposal and detailed report and also thanked Kansas for hosting the special meeting. Wolfe further mentioned that Colorado has confidence that the proposal that was presented will be satisfactory and meet the requirements under the Final Settlement Stipulation (FSS) and looks forward to interacting with Nebraska regarding any future questions or concern that Colorado may present.

Commissioner Barfield called for any further discussion and upon hearing none he called for a vote. Commissioner Dunnigan and Commissioner Wolfe both voted in favor to adopt the resolution. Commissioner Barfield said that Kansas votes no for the reasons outlined in the referenced letter. The Rock Creek Resolution was not adopted by RRCA.

Agenda Item 4: Update on Federal Discussion on 2013 Operation of Harlan County Lake

Commissioner Barfield then moved onto the next agenda item regarding an update on federal discussions of the 2013 operation of Harlan County Lake. Gary Campbell, Deputy Regional Director for the Bureau of Reclamation, explained that Reclamation is doing everything possible to get surface water to irrigators. The Bureau is pursuing a deviation request with the Corps of Engineers for Harlan County Lake. The Bureau has requested 13,600 acre-feet of water from the sediment pool be made available to Kansas Bostwick Irrigation District that would not otherwise be available. If the deviation request is approved, Reclamation would request that Nebraska lift the closing notices on the federal projects within the basin.

At the time of the special meeting, the Corps of Engineers were completing an analysis of the impacts and asking the Bureau for more information to assist in that analysis. The Bureau provided responses to the Corps in a February 28, 2013 letter. If this request is not approved, approximately 8,000 acre-feet of water stored after December 31, 2013 in upstream reservoirs may need to be released by DNR's order. Campbell noted that if the deviation request is approved, the 2013 irrigation supply of 84,500 acre-feet would be split between the State of Nebraska (39,880 acre-feet) and the State of Kansas (44,700 acre-feet), based on historic delivery efficiencies.

Campbell noted that some of the challenges moving forward include reaching an agreement with Nebraska Bostwick Irrigation District to use the extra storage water in the sediment pool. The District has voiced their disapproval of the deviation request in a letter to the Bureau, but is still reviewing the situation with the District's board and legal counsel. Another challenge that Campbell noted was that Harlan County Lake current storage level is not adequate to provide the assured irrigation supply and additional water for this deviation request. The lake needs to gain an additional 22,000 acre-feet of water to have 13,600 acre-feet available for the deviation request. To date, Harlan County only gained 2,800 acre-feet between January 1 and March 7, 2013. Commissioner Barfield asked for clarification and Mr. Campbell confirmed that even if the Corps agrees to the deviation, there would have to be an additional 22,000 acre-feet inflow in order for water to be available above the 1927.0 feet hard shut off elevation.

Commissioner Barfield turned to Matt Jeppson of the Corps for its comments on the Harlan County Lake situation. Jeppson confirmed that the Bureau's characterization of events is correct and added that the Corps intends to have their preliminary assessment complete by the end of the month. Deputy Director Jim Schneider asked Mr. Jeppson to give detail on the factors that the Corps is evaluating in their analysis. Mr. Jeppson explained that the Corps has authorized project purposes of irrigation, flood control, water quality, and fish and wildlife in Harlan County Lake and they are required to follow water control manuals for those authorized purposes. With a deviation request, the Corps assesses the impact to those authorized purposes associated with the request. Schneider asked if there were any conflicts identified at this time, but Mr. Jeppson noted that they are still in the process of evaluation. Schneider also wondered about the priority of those project purposes and Mr. Jeppson confirmed that there is no specific identified priority. Schneider asked then about how the Republican River Compact fits into those priorities. Mr. Jeppson replied that the Compact is not a direct purpose to the operation of Harlan County Lake. The closest would be irrigation water storage. The Corps is interested in helping the Compact Parties to the extent the Corps has authority.

Commissioner Dunnigan then asked the Corps and Bureau what time frames are related to the deviation request. Christopher Purzer, Water Management Section Chief of the Corps' Kansas City District, responded that they are working towards a response from the Corps by March 29, 2013 and following that will be time for a review period and consideration by the Corps division engineer and staff. Commissioner Dunnigan expressed Nebraska's desire to have a response by April 1, 2013 from both the Bureau and Corps.

Agenda Item 5: Status of RRCA Annual Reports Review

Commissioner Barfield turned the discussion of the agenda item regarding RRCA annual reports over to Jim Schneider. Schneider noted that Nebraska did not anticipate any issues and that from their standpoint Nebraska is ready to take action. Schneider mentioned that a complete package of the reports would be preferred in a different media than online posting for posterity. Chairman Wolfe confirmed that Colorado is satisfied that the annual reports from 2007-2011 are complete and ready for action. It was decided that Kansas staff would provide the other states with a compact disc that

included all annual meeting material. Chairman Barfield deferred approval of the RRCA annual report package to the next RRCA meeting opportunity.

Agenda Item 6: Adjournment

Commissioner Barfield asked for any further comments or discussion, and upon hearing none he moved to adjourn the meeting. Commissioner Dunnigan seconded the motion and the motion passed unanimously. The meeting was adjourned at 9:46 am.

The March 8, 2013 Special Meeting report is hereby approved by unanimous vote of the RRCA on this 27th day of August, 2015.

As indicated by their signature and date below, the RRCA Commissioners agree that the report was approved by RRCA on the date indicated above.

David Barfield DATE SIGNED: 8/26/2015

David Barfield, Chair & Kansas Commissioner

Gordon W. Fassett DATE SIGNED: 8/26/2015

Gordon W. Fassett, Nebraska Commissioner

Dick Wolfe DATE SIGNED: 8-26-2015

Dick Wolfe, Colorado Commissioner

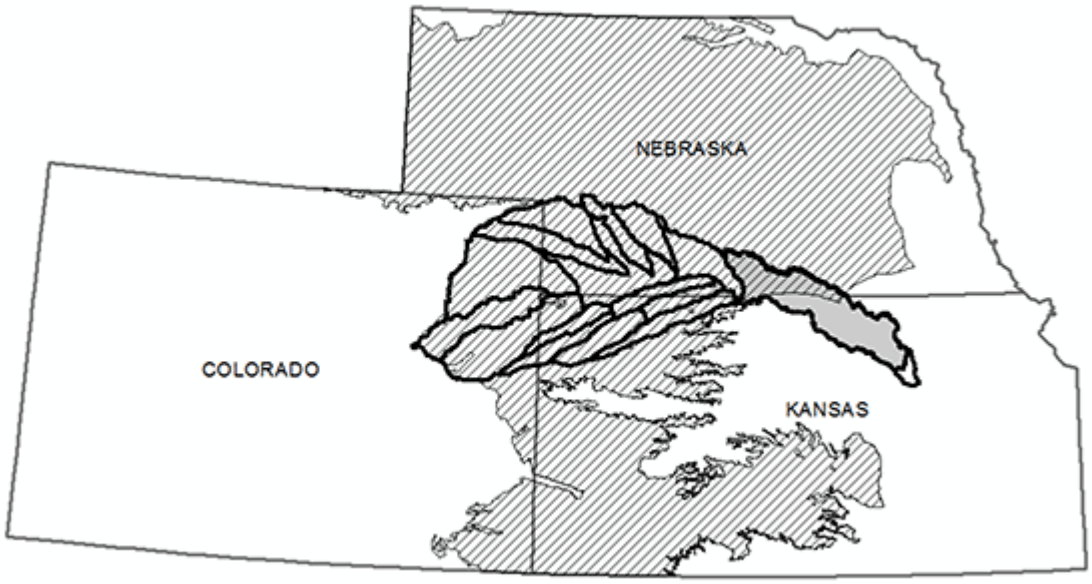
Exhibits

Exhibit A:	Transcript of the March 8, 2013 Special Meeting
Exhibit B:	Attendance of the March 8, 2013 Special Meeting
Exhibit C:	Agenda for the March 8, 2013 Special Meeting
Exhibit D:	Nebraska's March 5, 2013, Letter with Rock Creek Augmentation Proposal and Resolution
Exhibit E:	Kansas letter March 8, 2013, in response to Nebraska's Rock Creek Proposal

REPUBLICAN RIVER COMPACT ADMINISTRATION

Special Meeting May 2, 2013

Discussion and RRCA Action on Colorado's Compact Compliance Pipeline and Bonny Reservoir Accounting Proposal



SUMMARY AND MINUTES OF THE
SPECIAL MEETING OF THE REPUBLICAN
RIVER COMPACT ADMINISTRATION

MAY 2, 2013

VIA TELEPHONE CONFERENCE CALL

Summary & Minutes

A transcript of this meeting was prepared by a court reporter (Exhibit A). The transcript has been reviewed by each of the States and upon final approval by the Compact Administration; the transcript will serve as the official minutes of this Special Meeting of the Compact Administration. Below is a summary of the meeting.

Agenda Item 1: Introductions

The special meeting of the Republican River Compact Administration (RRCA) was called to order by Kansas Commissioner and Chairperson David Barfield at 3:06 P.M., May 2, 2013, via telephone conference call. Commissioner Barfield asked all attendees from the various listening locations to identify themselves. A complete list of those attendees is attached as Exhibit B. Attendees included:

Name	Representing
David W. Barfield	Kansas Commissioner, Chairperson
Chris Beightel	Kansas Division of Water Resources
Chris Grunewald	Kansas Attorney General's Office
Burke Griggs	Kansas Attorney General's Office
Brian P. Dunnigan	Nebraska Commissioner
Jim Schneider	Nebraska Department of Natural Resources
Justin Lavene	Nebraska Attorney General's Office
Dick Wolfe	Colorado Commissioner
Mike Sullivan	Colorado Division of Water Resources
Ivan Franco	Colorado Division of Water Resources
Scott Steinbrecher	Colorado Attorney General's Office

Agenda Item 2: Modification and Approval of Agenda

Commissioner Barfield noted that this May 2nd special meeting of the RRCA was agreed to by the states via calls and email. The states agreed to waive the 30-day meeting notice requirement since formal notice of the meeting was provided on April 25th. Commissioner Barfield asked for modifications to the agenda. Agenda item 5 was modified to "Discussion of the status of updating the RRCA Rules and Regulations". Commissioner Wolfe moved to adopt the amended agenda. Commissioner Dunnigan seconded and the motion was unanimously approved. A copy of the amended agenda is attached as Exhibit C.

Agenda Item 3: Colorado's Compact Compliance Pipeline Proposal

Commissioner Barfield turned to Commissioner Wolfe for discussion of the agenda item regarding Colorado's Compact Compliance Pipeline Proposal (Exhibit D). Commissioner Wolfe informed the telephone audience that two proposals were submitted by Colorado to RRCA on April 5th, 2013. The first proposal was in regards to Colorado's Compact Compliance Pipeline. For the second proposal Colorado asked for discussion and favorable consideration for the Bonny Reservoir issue. Commissioner Wolfe noted that both issues have been designated as fast tract issues and thus requested the special meeting to vote on the proposals.

An informal RRCA work session was held April 22, 2013, and Colorado appreciated both Nebraska and Kansas' willingness to discuss the proposals. Commissioner Wolfe guided the phone audience though a summary of that work session. Nebraska had one question which was address by Colorado consultant Willem Schreüder. Commissioner Wolfe summarized Kansas' inquires in four areas: 1) inquiries regarding the groundwater commission which oversees permitting and rule-making in the designated groundwater basins and a specific question regarding the banking provision mentioned in the proposal; 2) questions related to the groundwater permits' limitations; 3) questions related to the specifics of Colorado's proposed modeling regarding to how the groundwater model is informed of the operation of the Compact compliance wells and how the pipeline water enters the stream system; and 4) questions regarding the sample Excel spreadsheet that could be used to calculate the projected deliveries. Colorado provided answers or additional documents to address the first three items but was not able to supply a spreadsheet due to time constraints.

Commissioner Wolfe asked for questions about Colorado's proposals and upon hearing none he made a motion to approve the resolution dated May 2, 2013 (Exhibit D). Commissioner Dunnigan seconded the motion. Commissioner Dunnigan confirmed that the resolution in question is 6 pages in length and dated May 5, 2013 and Commissioner Wolfe requested that the record reflect an amendment of that date to May 2, 2013. Commissioner Dunnigan also noted for the record that Nebraska believes Colorado's proposal has gone above and beyond the strict requirements of the FSS and that Nebraska supported the original plan as well as the recent modifications.

Commissioner Wolfe called a vote on Colorado's Compact Compliance Pipeline Proposal. Both Colorado and Nebraska commissioners voted in favor of the proposal and the Kansas commissioner voted against.

Commissioner Barfield followed his vote with a statement regarding Kansas' reasons it was unable to vote in favor of Colorado's pipeline proposal. Commissioner Barfield noted that Kansas staff is still reviewing several aspects of the most recent version of the proposal, most notably the modeling results. Commissioner Barfield stated he had spoken to the other commissioners previously about Kansas' desire to continue working towards resolution of the outstanding eight issues that Kansas has identified.

Commissioner Wolfe expressed his appreciation for Nebraska's support of the proposal and made mention that Colorado's proposal has been considered for over five years, with many meetings in the past three years especially. Wolfe asked Kansas to identify the remaining issues and concerns with the proposal.

Commissioner Barfield identified three specific aspects of the proposal that Kansas is concerned about. The first aspect is the modeling that uses a new method to incorporate the augmentation flows into the model, which Kansas has not been able to fully evaluate. The second aspect is the South Fork issue and whether limitations imposed in that resolution are sufficient protection for Kansas water users. Finally, Kansas has provided specific suggestions on the periodic review and wishes to seek agreement on those specifics.

Commissioner Wolfe responded to Kansas' comments by asking if Kansas would make any commitments in terms of completing their review and respond to Colorado with any concerns. Commissioner Barfield anticipated that Issue 3 through 8 would have a response by the next week and issues 1 and 2 related to operation issues and the South Fork may be a week or two after that. It was then suggested that the states' attorneys collaborate to find a way to memorialize that commitment to move forward.

Agenda Item 4: Colorado's Bonny Reservoir Accounting Proposal

Commissioner Barfield then turned to Commissioner Wolfe again for discussion of the agenda item regarding Colorado's Bonny Reservoir Accounting Proposal. Commissioner Wolfe stated that this second proposal from Colorado was also submitted to RRCA on April 5, 2013. He requested that the proposal and resolution be included as attachments to this report (Exhibit E). Commissioner Wolfe noted that the resolution date should be changed to May 2, 2013 as discussed with the earlier proposal.

Commissioner Wolfe then guided the audience through the proposal, which is important to Colorado's overall efforts for compact compliance. Commissioner Wolfe mentioned history leading up to the proposal's creation including Colorado's decision to drain Bonny Reservoir in September 2011. Commissioner Wolfe gave details about the proposal including descriptions of the scenarios called "Dry Bonny, Small Bonny, and Full Bonny". Colorado provided model runs to the other states regarding those scenarios and Commissioner Barfield confirmed receipt of those model runs.

Commissioner Wolfe asked for any questions or comments regarding the Bonny Proposal. Commissioner Barfield echoed earlier comments he made about Kansas need for further review of the proposal in light of the significant implications of draining Bonny Reservoir and its impact to Kansas water users. Commissioner Dunnigan stated that Nebraska views the proposal as a straight forward technical issue that need to be addressed by RRCA. He felt the solution reflects real-world conditions and noted that the proposal has been before RRCA for several years. Commissioner Barfield made the same time commitment to provide Kansas' review to the other states as was mentioned with the pipeline issue.

Commissioner Wolfe asked Kansas to further define their concerns with this particular proposal and if Kansas viewed the proposal to be inconsistent with the Compact or FSS. Commissioner Barfield stated Colorado's proposal leads to significant reductions in Colorado's consumptive use thus reducing the Basin's computed water supply and allocations, with implications to Kansas compliances tests in northwest Kansas, which must be evaluated further. Commissioner Barfield committed to proceed with discussions with Colorado on these matters on a similar timeframe as discussion on the compliance pipeline.

Commissioner Wolfe moved to adopt the resolution for the Bonny Proposal as submitted in the April 5th, 2013 letter. The motion was seconded by Commissioner Dunnigan. Commissioner Wolfe and Commissioner Dunnigan both voted in favor of the resolution and Commissioner Barfield voted against.

Agenda Item 5: RRCA Rules and Regulations

Commissioner Barfield noted that changes to the RRCA Rules and Regulations were effective as of the December 11th special meeting and will send the Rules to the other states for signature at this time.

Agenda Item 6: RRCA Annual Reports

Commissioner Barfield noted that the summaries of the annual meetings and special meetings for 2007 to 2011 were put on CDs and sent to the states in order to memorialize what was to proposed to be approved. There were minor corrections and edits suggested by each state. Commissioner Barfield thought it best to circulate a list of those corrections to make sure everyone is agreeable and suggest approving the final reports at the next meeting. The other commissioners agreed.

Agenda Item 7: Adjournment

Commissioner Barfield asked for a motion to adjourn the meeting and Commissioner Wolfe so moved. Commissioner Dunnigan seconded and the motion was passed unanimously. The meeting was adjourned at 4:05 P.M.

The May 2, 2013 Special Meeting report is hereby approved by unanimous vote of the RRCA on this 27th day of August, 2015.

As indicated by their signature and date below, the RRCA Commissioners agree that the report was approved by RRCA on the date indicated above.

David Barfield DATE SIGNED: 8/26/2015

David Barfield, Chair & Kansas Commissioner

Gordon W. Fassett DATE SIGNED: 8/26/2015

Gordon W. Fassett, Nebraska Commissioner

Dick Wolfe DATE SIGNED: 8-26-2015

Dick Wolfe, Colorado Commissioner

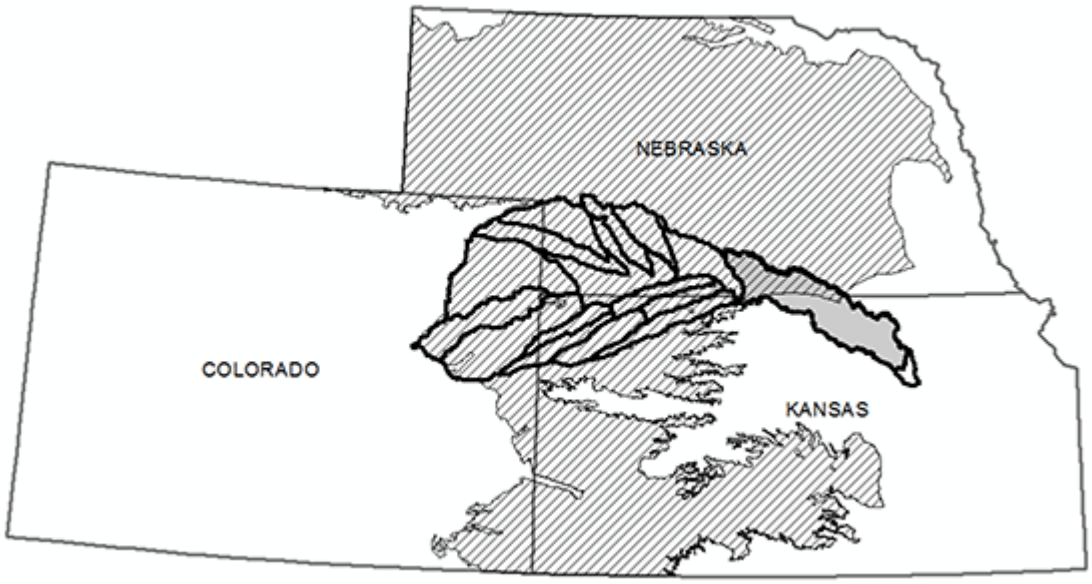
Exhibits

Exhibit A:	Transcript of the May 2, 2013 Special Meeting
Exhibit B:	Attendance of the May 2, 2013 Special Meeting
Exhibit C:	Amended Agenda for the May 2, 2013 Special Meeting
Exhibit D:	Colorado's April 5, 2013, Compact Compliance Pipeline Resolution and Proposal
Exhibit E:	Colorado's April 5, 2013 Bonny Reservoir Accounting Resolution and Proposal

REPUBLICAN RIVER COMPACT ADMINISTRATION

Special Meeting July 9, 2013

Discussion and RRCA Action on the Nebraska Cooperative Republican Plantte (N-CORPE) Augmentation Plan Proposal



SUMMARY AND MINUTES OF THE
SPECIAL MEETING OF THE REPUBLICAN
RIVER COMPACT ADMINISTRATION

JULY 9, 2013

VIA TELEPHONE CONFERENCE CALL

Summary & Minutes

A transcript of this meeting was prepared by a court reporter (Exhibit A). The transcript has been reviewed by each of the States and upon final approval by the Compact Administration, the transcript will serve as the official minutes of this Special Meeting of the Compact Administration. Below is a summary of the meeting.

Agenda Item 1: Introductions

The Special Meeting of the Republican River Compact Administration (RRCA) was called to order by Kansas Commissioner and Chairperson David Barfield at 10:04 A.M., July 9, 2013, via telephone conference call. Commissioner Barfield asked all attendees from the various listening locations to identify themselves. A complete list of those attendees is attached as Exhibit B. Attendees included:

Name	Representing
David W. Barfield	Kansas Commissioner, Chairperson
Chris Beightel	Kansas Department of Agriculture, Division of Water Resources
Chris Grunewald	Kansas Attorney General's Office
Burke Griggs	Kansas Attorney General's Office
Brian P. Dunnigan	Nebraska Commissioner
Jim Schneider	Nebraska Department of Natural Resources
Justin Lavene	Nebraska Attorney General's Office
Dick Wolfe	Colorado Commissioner
Mike Sullivan	Colorado Division of Water Resources
Ivan Franco	Colorado Division of Water Resources
Scott Steinbrecher	Colorado Attorney General's Office

Agenda Item 2: Modification and Approval of Agenda

Commissioner Barfield asked for modifications to the agenda and upon hearing none the agenda was adopted as proposed. A copy of the amended agenda is attached as Exhibit C.

Agenda Item 3: Nebraska Cooperative Republican Platte Enhancement Augmentation Plan Proposal

Commissioner Barfield asked Commissioner Brian Dunnigan to guide the audience through the Nebraska Cooperative Republican Platte Enhancement (N-CORPE) Augmentation Plan proposal and Nebraska's proposed resolution. The proposal is attached to this report as Exhibit D and the accompanying resolution as Exhibit E.

On June 27th, 2013, RRCA held a workshop to discuss the N-CORPE proposal, after which Nebraska submitted a resolution to adopt the plan. Commissioner Dunnigan asked for any clarifications or comments on the resolution. Commissioner Wolfe asked for clarification of the eighth "whereas" statement regarding the flow measurement and model input data, esp. with respect to water delivered to the Platte River versus Medicine Creek. Mr. Jim Schneider responded that this is covered on page 42 of the Accounting Procedures red-line provided by Nebraska. Nebraska will provide a full description of all measuring devices and they will distinguish between deliveries to the Platte River vs. Medicine Creek. All pumping will be included in the model. Commissioner Barfield noted that Kansas had no further questions about the resolution.

Commissioner Dunnigan moved to approve the July 3rd resolution and Commissioner Wolfe seconded the motion. Commissioner Barfield made a statement for the record regarding the proposal. Nebraska's concept of augmentation first came before RRCA at the December 11th, 2012, special meeting, to which Kansas responded to in a letter dated January 14th, 2013. Subsequently, Nebraska provided an augmentation plan related to the Rock Creek Augmentation Project, which was considered by RRCA at the March 8th, 2013, special meeting. That proposal failed to gain Kansas approval and is now subject to non-binding arbitration. With minor exceptions, Kansas' concerns expressed in the correspondence relating to the Rock Creek project apply to the N-CORPE project as well.

Commissioner Barfield noted that Nebraska approached the states about N-CORPE via letter on June 11th, 2013, in which the issue was designated as a fast-track issue and required RRCA action within 30 days. At that same time, the states are involved in five other Republican River disputes that require considerable attention from the state's technical and legal staff.

As Kansas' concerns remain unaddressed in the N-CORPE proposal, Commissioner Barfield stated it is no surprise that Kansas cannot support it. Finally Commissioner Barfield stated that Kansas continues to believe that a plan that benefits both Kansas and Nebraska could be approved and that this is best accomplished through discussion and negotiation.

Kansas' March 8, 2013 letter with enclosures is included in this report as Exhibit F.

Nebraska and Colorado voted for the resolution and Kansas voted against.

Commissioner Dunnigan noted for the record that Nebraska feels these projects are not only important for Nebraska, but for Kansas water-users also.

Agenda Item 4: Future RRCA Meeting Arrangements

There was a discussion by the commissioners to move the RRCA annual meeting workshop date to the afternoon of September 11th and the meeting to the morning of September 12th in Colby, Kansas.

Agenda Item 5: Adjournment

Commissioner Barfield asked for a motion to adjourn the meeting and Commissioner Wolfe so moved. Commissioner Dunnigan seconded the motion and the motion was passed unanimously. The meeting was adjourned at 10:28 am.

The July 9, 2013 Special Meeting report is hereby approved by unanimous vote of the RRCA on this 27th day of August, 2015.

As indicated by their signature and date below, the RRCA Commissioners agree that the report was approved by RRCA on the date indicated above.

David Barfield DATE SIGNED: 8/26/2015

David Barfield, Chair & Kansas Commissioner

Gordon W. Fassett DATE SIGNED: 8/26/2015

Gordon W. Fassett, Nebraska Commissioner

Dick Wolfe DATE SIGNED: 8-26-2015

Dick Wolfe, Colorado Commissioner

Exhibits

Exhibit A:	Transcript of the July 9, 2013 Special Meeting
Exhibit B:	Attendance of the July 9, 2013 Special Meeting
Exhibit C:	Agenda for the July 9, 2013 Special Meeting
Exhibit D:	Nebraska Cooperative Republican Platte Enhancement (N-CORPE) Augmentation Project Proposal
Exhibit E:	Resolution Regarding Nebraska's N-CORPE Augmentation Project
Exhibit F:	Kansas Letter March 8th, 2013 Regarding Rock Creek with Enclosures

REPUBLICAN RIVER COMPACT ADMINISTRATION

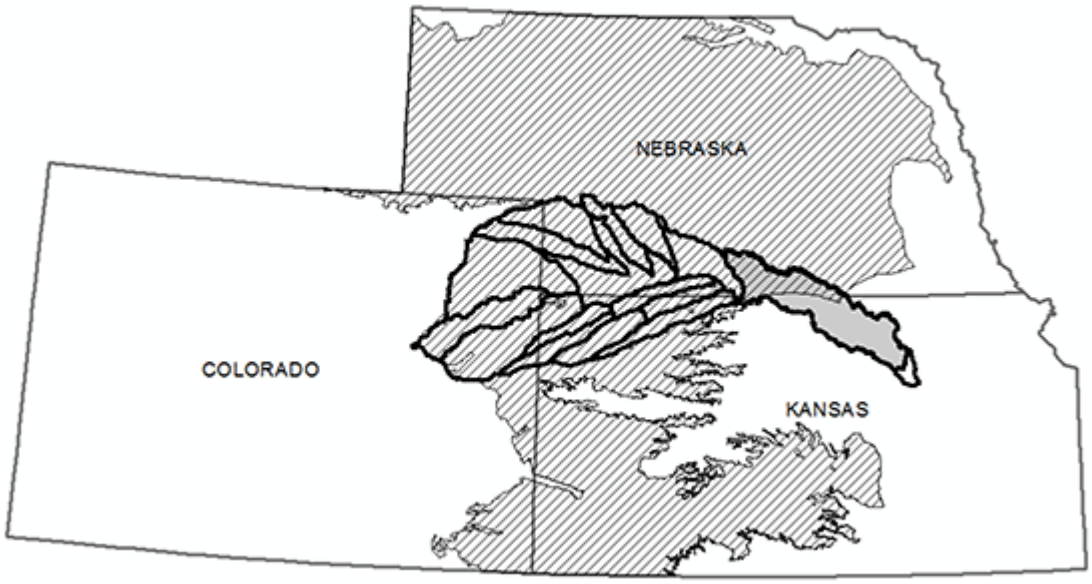
Annual Meeting September 12, 2013

Reports by the Compact Commissioners and Engineering Committee

Reports by state water agencies, federal agencies and local water districts

Resolutions approved by the RRCA

- Resolution for RRCA Annual Report Backlog
- Resolution for Bonny Area-Capacity Table
- Resolution for Harlan County Lake Evaporation Split for 2013
- Resolution honoring Mr. Scott Ross



SUMMARY AND MINUTES OF
THE ANNUAL MEETING OF THE
REPUBLICAN RIVER COMPACT
ADMINISTRATION

SEPTEMBER 12, 2013

Colby, Kansas

Summary & Minutes

A transcript of this meeting was prepared by a court reporter (Exhibit A). The transcript has been reviewed by each of the States and, upon final approval by the Compact Administration, the transcript will serve as the official minutes of this 53rd Annual Meeting of the Compact Administration (RRCA). Below is a summary of the meeting.

Agenda Item1: Introductions

The Annual Meeting of the Republican River Compact Administration was called to order by Kansas Commissioner and Chairperson David Barfield at 8:50am on September 12, 2013 at the Colby Community Building in Colby, Kansas. Each Commissioner introduced their staff and members of the audience introduced themselves. A complete list of attendees is attached as Exhibit B1 and sing-in sheets as Exhibit B2.

Attendees included:

Name	Representing
David W. Barfield	Kansas Commissioner, Chair
Chris Grunewald	Kansas Attorney General's Office
Scott Ross	Kansas Department of Agriculture
Brian P. Dunnigan	Nebraska Commissioner
Justin Lavene	Nebraska Attorney General's Office
Jim Schneider	Nebraska Department of Natural Resources
Dick Wolfe	Colorado Commissioner
Ivan Franco	Colorado Division of Water Resources
Scott Steinbrecher	Colorado Attorney General's Office

Agenda Item 2: Modification and Approval of Agenda

Commissioner Barfield asked for modifications to the agenda. No modifications were offered and Commissioner Wolfe moved to adopt the proposed agenda. Commissioner Dunnigan seconded and the motion was approved unanimously by the commissioners. The agenda is attached as Exhibit C.

Agenda Item 3 and 4: Status and Approval of RRCA Meeting Reports & Transcripts

A draft report and transcript of the 2012 RRCA meeting were provided to each state with the opportunity to suggest revisions. Commissioner Wolfe moved to approve the annual report and transcript for the 2012 annual meeting. Commissioner Dunnigan seconded and the motion was approved unanimously by the commissioners (Exhibit D).

Commissioner Barfield briefly summarized the four special meetings of the Compact Administration held since the RRCA 2012 annual meeting in Junction City, Kansas.

Annual reports and transcripts back to 2007 (for the year 2006) were circulated to the states and reviewed by staff. Presented for approval at this annual meeting is a package for annual meetings 2007, 2008, 2009, 2010 and 2011. Commissioner Dunnigan moved to accept the backlog of annual reports and the motion was seconded by Commissioner Wolfe. The motion was unanimously approved by the commissioners.

After discussion, the commissioners decided to publish the annual reports electronically rather than booklet form for the current backlog and also future reports. The chairperson would make those reports available in digital format to a limited set of individuals and then a PDF version of the report(s) will be maintained on various websites.

Agenda Item 5a: Report of the RRCA Chairman/Kansas Commissioners Report

Kansas Commissioner Barfield reported that drought conditions and significant heat prevalent in Kansas during 2011 continued into 2012 and became a statewide condition rather than confined to southwest Kansas. The Division of Water Resources administered 450 water right files for minimal desirable stream flow (MDS) across the state, including 190 files in the Republican River Basin. Drought conditions have since eased over significant portions of eastern Kansas, although much of western Kansas remains dry.

The most significant 2013 Kansas legislation with respect to water was House Bill 2363. This bill amended the Kansas Water Appropriation Act to set up a mechanism for a new kind of permit, called a Limited Transfer Permit. The bill allows for temporary leasing of a portion of a water right up to four million gallons in one year for fracking or other purposes. The second portion of the bill included amendments to the Stream Obstruction Act that regulates construction of dams and other stream obstructions. This bill changed jurisdictional definitions, expanded exemptions for permitting of stream obstructions, as well as allowed more projects under streamline permitting process called General Permits.

Commissioner Barfield reported that he gave final approval earlier in 2013 for the first Local Enhanced Area (LEMA) that included portions of Sheridan County in the Republican River Basin. The LEMA implements an allocation of 55 inches over five years in order to reduce water use in the LEMA area by 20 percent. As an incentive for water savings, the USDA RMA

implemented a pilot project for limited irrigation crop insurance within the LEMA. LEMAs have been hailed as a useful tool to give locals the opportunity to determine their water management goal and outcome.

Commissioner Barfield noted that Kansas Division of Water Resources (DWR) has a vigorous compliance enforcement program to ensure water right holders are following the terms and conditions of their permits. Over the past year Kansas DWR were encouraged to strengthen this program in order to discourage overpumping, meter tampering, and other offenses. Effective this January, a penalty matrix was revised to increase water penalties.

Commissioner Barfield reported that Kansas is in compliance with the Republican River Compact and has devoted significant legal and technical resources for the ongoing U.S. Supreme Court litigation. On July 31, 2012, Nebraska submitted its first Alternative Water Short Year Administration Plan. Kansas reviewed the proposal and found it did not conform to Appendix M's requirements and offered solutions to the plan's deficiencies. Nebraska triggered arbitration on March 21, 2013 for the Alternative Water Short Year Plan and Kansas has met every arbitration deadline and committed sufficient resources to understanding Nebraska's plan.

Commissioner Barfield reported that Nebraska submitted the Rock Creek Augmentation Project proposal to the RRCA on February 8, 2012 and requested a special meeting and vote on the proposal. Kansas found the augmentation proposal deficient and voted not to approve the plan. Nebraska triggered arbitration on March 21, 2013 for the Rock Creek Augmentation Plan and Kansas has met every arbitration deadline and committed sufficient resources to understanding the plan.

Commissioner Barfield noted that Colorado submitted a revised Compact Compliance Pipeline Proposal and a new Bonny Reservoir Proposal on April 5, 2013. Then Colorado requested a meeting of the RRCA to consider the matters and while Nebraska ruled in favor of the proposals, Kansas found the proposals to be deficient. On May 2nd Colorado initiated two separate non-binding arbitrations for the Compliance Pipeline and Bonny Reservoir proposals. Technical discussions and negotiations with Colorado continue at this time.

Commissioner Barfield detailed Kansas actions in regards to 2013 operations at Harlan County Reservoir. Kansas sought to understand Nebraska's planned operations and offered a proposal and then a counter-proposal in order to reduce the negative impact of Nebraska's compliance plan on Kansas water users. Ultimately, Nebraska reached an agreement directly with the Kansas Bostwick Irrigation District to mitigate some of those effects.

Commissioner Barfield reported that Nebraska submitted its Cooperative Republican Platte Enhancement Augmentation (N-CORPE) Proposal on June 10th followed by a workshop to

review the proposal. The RRCA held a special meeting on July 9th where the N-CORPE proposal gained positive votes from Nebraska and Colorado, but did not gain Kansas' support due to the same objections as the Rock Creek Augmentation Project. Arbitration has been triggered by Nebraska for the N-CORPE proposal.

Commissioner Barfield concluded his report by announcing the retirement of Wayne Bossert, longtime manager of Groundwater Management District #4 in northwest Kansas. Commissioner Barfield also mentioned the retirement of Division of Water Resources –Stockton Field Office water commissioner Scott Ross after 27 years of service.

Agenda Item 5b: Report of the Commissioner from Colorado

Commissioner Wolfe noted that achieving Compact compliance is of utmost importance to Colorado and thanked Colorado Division of Water Resources staff, the Republican River Water Conservancy District (RRWCD) and Colorado water users for their efforts toward achieving compliance. The RRWCD has completed the Compact compliance pipeline and is awaiting decision by the Compact Administration to allow the pipeline to be operated for augmentation purposes. Commissioner Wolfe reported that the RRWCD expended nearly $100 million to date in efforts to achieve Compact compliance in the Republican River Basin. Besides the pipeline project, the district also has taken lands out of production though buyouts and the CREP program. The RRWCD dedicated staff time to lobbying efforts to get actions approved under the farm bill for the CREP program.

Commissioner Wolfe reported that Colorado continues negotiations with Kansas to seek approval of the two proposals that are also undergoing arbitration at this time. Commissioner Wolfe stated that Colorado intends to achieve Compact compliance as soon as possible and the two proposals that are before the Compact Administration are critical to achieving compliance.

Agenda Item 5c: Report of the Commissioner from Nebraska

Commissioner Dunnigan reported that the State of Nebraska is in compliance with the Republican River Compact. According to current accounting procedures, Nebraska has had a positive balance since 2007, which has led to compliance with the five-year average. As reported last year, drought conditions placed stress on the basin water supply as 2012 was the warmest and driest year in the 118 years of record-keeping in the state of Nebraska. Commissioner Dunnigan reported that Nebraska's compliance efforts have been substantial.

Commissioner Dunnigan noted that Nebraska implemented the third generation integrated management plans, which contain forecasting provisions and controls to ensure compliance and the process has proven to be a significant advancement from what was available during the previous drought. The Republican River Basin Natural Resource Districts (NRDs) continued to

demonstrate an ongoing commitment for compliance through their investment in programs and projects to reduce and/or offset depletions throughout the basin.

Commissioner Dunnigan expressed his frustration with the process of gaining approval for Nebraska's augmentation projects and stated that Nebraska seeks a clear and transparent process to resolve issues rather than relying on the dispute resolution process, which is currently the only means to seek resolution on such issues.

Commissioner Dunnigan concluded his report by reiterating Nebraska's intent to comply with the Republican River Compact. Nebraska will continue to evaluate the needs of the Republican River Basin and make changes as necessary to remain in compliance and continue collaboration with all stakeholders in the basin, including Colorado and Kansas, the NRDs, surface water districts, individual water users, and the U.S. Bureau of Reclamation (USBR).

Commissioner Dunnigan introduced Tom O'Connor from the Nebraska Department of Natural Resources to report on the water administration activities in Nebraska for calendar year 2012. Activities included issuance of closing notices for failure to submit water use reports, regulating notices and closing notices to water users as well as opening and closing notices to various storage permit holders. O'Conner noted that in early December 2013 water use reports were mailed to all nonfederal irrigation permit holders in the Republican River Basin.

Commissioner Dunnigan then invited Dr. Jasper Fanning to provide an update on the augmentation projects in the Republican Basin. Fanning stated that the Upper Republican NRD's Rock Creek augmentation project was operating this year with annual capacity of about 20,000 acre-feet. The Upper Republican district spent about $25 million dollars to construct the project and when finished will have cost water users of the district about $42.5 million dollars.

Fanning also noted that the Upper Republican NRD worked in conjunction with the Middle and Lower Republican NRDs as well as the Twin Platte NRD to construct the N-CORPE project. This project has a capacity three times that of the Rock Creek augmentation project and N-CORPE can deliver 60,000 acre-feet per year in the Medicine Creek watershed. The shared costs to the Republican River Basin NRDs will be about $86 million dollars of the total cost of $150 million dollars. The N-CORPE board issued and awarded contracts for construction of the well field and the pipeline to Medicine Creek for about $22 million dollars. About 16,000 acres of irrigated land were taken out of production and the pipeline should be completed in December of this year.

Agenda Item 6a: Report by the U. S. Bureau of Reclamation

Aaron Thompson, area manager for the U.S. Bureau of Reclamation (USBR), provided a copy of the Bureau's annual report to the commissioners (Exhibit E) and proceeded to highlight the USBR operations in 2012 within the Republican River Basin. The Red Willow Dam repairs are essentially complete. Harlan County Reservoir ended 2011 in flood pool and releases were made during the first five months in 2012. Based on September 2012 reservoir storage, water-short year administration will be in effect for 2013.

Thompson reported that the states of Colorado, Nebraska, and Kansas along with the U.S. Department of Interior Bureau of Reclamation are working together for the Republican River Basin Study. The study is part of the U.S. Department of Interior WaterSMART Basin Study Program. Thompson thanked each of the commissioners for the collaborative nature in which this study has moved forward in the first of the two years. Commissioner Wolfe expressed his appreciation to the Bureau staff for working with Colorado in the past year in regards to Bonny Reservoir.

Agenda Item 6b: Report by the U.S. Army Corps of Engineers

No report given.

Agenda Item 6c: Report by the U.S. Geological Survey

John Miller, representing the U.S. Geological Survey (USGS), reported on USGS activities in the Republican River Basin for 2012. Miller provided the Compact Administration with a printed summary chart of the 2012 water year mean discharges as compared to the period of record (Exhibit F). Miller guided the audience though a PowerPoint presentation with details for each gage site along the Republican River (Exhibit G). Most notably, Rock Creek gage near Parks was the lowest recorded discharge in 72 years of record.

Agenda Item 7: Engineering Committee Report

The Engineering Committee and technical representatives from each of the three States worked on a number of tasks since the 2012 RRCA annual meeting. Scott Ross, Engineering Committee advisor for Kansas, provided an update of each assignment from the 2012 (for the 2011 water year) committee report, which was signed by all three engineering advisors at the 2013 meeting and attached as Exhibit H for posterity. That report includes a 22-page exhibit regarding the procedure for estimating missing precipitation data for the RRCA Groundwater Model.

Ross proceeded to review Engineering Committee activities of the year, which included:

- Exchange by April 15, 2013 the information listed in Section V of the RRCA Accounting Procedures and Reporting Requirements, and other data required by that document. By July 15, 2013 the states will exchange any updates to these data.

Willlem Schreüder of Principia Mathematica ran a preliminary version of the RRCA groundwater model including all 3 states preliminary data and posted it April 16, 2013 on the website www.republicanrivercompact.org. Kansas posted final data on August 30; Nebraska's April 15 posting is their final data; and as of August 30, Colorado posted CIR data, which does not include metered pumping data. Principia Mathematica posted a final run September 10th, 2013. This final model run utilized the No-Bonny scenario proposed by Colorado, which is currently the subject of arbitration.

The Committee collected stream flow data, 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 2012.

- Evaluate ways to standardize methods of estimating ground and surface water irrigation recharge and return flows within the Republican River Basin and related issues.

  The status of this assignment is that Kansas provided literature regarding irrigation efficiency to Colorado and Nebraska for their review at the 2011 annual meeting. Aside from that initial review and comments by Colorado and Nebraska, no additional progress has been made on this assignment. Kansas has indicated its intent to propose a study to resolve the problems of differing groundwater irrigation recharge methods. No additional progress was made in 2013. The assignment should be continued for next year.

- Review the contract for Principia Mathematica to perform on-going maintenance of the ground water model and periodic updates requested by the Engineering Committee for calendar year 2013.

  The Engineering Committee recommends an assignment of continued discussion of specific modeling and data tasks to be assigned to Principia Mathematica, to be accomplished by December 15th, 2013.

- Continue efforts to finalize accounting for 2006-2012.

  The issues preventing the states from agreeing on the accounting are pending in the current Supreme Court case and pending arbitration.

- Continue discussion of issues preventing agreement on final accounting for 2006-2012.

  The issues preventing the states from agreeing on the accounting are pending in the current Supreme Court case and pending arbitration.

- Develop a recommendation on whether or not to account for inflows to the stream segment between Guide Rock diversion dam and the relocated stream flow gage.

  Nebraska has installed an additional gage at the location. The committee recommends removing the task from the committee list due to the presence of an additional gage below Guide Rock diversion dam.

- Discuss any accounting changes that may be needed for surface water diversions for the purpose of recharging groundwater.

  Nebraska anticipates studies will be conducted during a wet year. The committee recommends this task remain on the Engineering Committee list for future investigation as data becomes available.

- Discuss developing an application and approval process for future augmentation plans.

  The augmentation plan process is subject of current arbitration. No progress was made on this task in 2013.

- Finalize the procedure described in Exhibit A of the 2012 Engineering Committee report to apply to 2011 and subsequent years with missing precipitation data.

  Exhibit A is attached to Engineering Committee report in 2012.

- Finalize work on a user's manual for the RRCA Accounting Procedures and provide a recommendation to the Administration for adoption.

  The committee recommends that each state identify the procedures used to account and process data. This documentation will be shared among the states and updated as the need arises.

- Continue development of a five-year accounting spreadsheet/database for adoption.

  Each state currently uses its own version of a five-year accounting spreadsheet. At this time the committee does not see the need for a single five-year accounting spreadsheet and recommends this task be removed until a future issue arises with the spreadsheets.

- Discuss the application of the revised Bonny Reservoir area-capacity tables to past accounting data.

  Kansas agrees to adopt the revised Bonny Reservoir area-capacity tables and apply it to 2007 accounting and forward. That change will be effective when the accounting for 2007 and afterwards is approved. The retroactive application of the 2011 survey to this particular RRCA accounting will have no effect on official Bureau records.

  This retroactive application is recommended in this special case due to the recent technical surveys made by the USBR for Bonny Reservoir and the existence of unapproved RRCA accounting.

Scott Ross concluded the Engineering Committee report by listing the tasks that should be reviewed by the Engineering Committee in the coming year:

- The Engineering Committee will meet quarterly to review the tasks assigned to the committee.

- Exchange by April 15, 2014 the information listed in Section V of the RRCA Accounting Procedures and Reporting Requirements, and other data required by that document, including all necessary documentation. By July 15, 2014 the states will exchange any updates to these data.

- The Engineering Committee recommends an assignment of continued discussion of specific modeling and data tasks to be assigned to Principia Mathematica, to be accomplished by December 15th, 2013.

  The committee recommends calling a special meeting of the RRCA shortly after December 15th to finalize this issue.

- 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.
- Continue efforts to finalize accounting for 2006-2012.
- Continue discussion of issues preventing agreement on final accounting for 2006-2012.
- Discuss any accounting changes that may be needed for surface water diversions for the purpose of recharging groundwater, as data becomes available from Nebraska projects.
- Discuss developing an application and approval process for future augmentation plans.
- The Engineering Committee will explore options for sharing evaporation charges for Harlan County Lake when accounts exist separate from the project water supplies of Bostwick Irrigation District and explore potential means to adjust the compact accounting of Harlan County Lake for the mutual benefit of the States.
- The committee will engage in discussions to establish a budget to accomplish tasks needed by the Administration and States for Compact goals.

Commissioner Wolfe proceeded to read a resolution into the record regarding retroactive application of the Bonny Reservoir area capacity table (Exhibit I). Commissioner Wolfe moved to adopt the resolution and Commissioner Barfield seconded. Commissioner Barfield commented that the last area capacity table was produced in 1950 and the current table thus better reflects current conditions. Commissioner Barfield called the vote and the motion was unanimously approved by the commissioners.

Commissioner Wolfe addressed the Engineering Committee item 3 referring to the modeling and data tasks assigned to Principia Mathematica. Commissioner Wolfe called for a special meeting of the Compact Administration on or around December 15th, 2013 to take action on the pending issue and thus give Willem Schreuder adequate direction for providing Compact accounting services. Commissioner Dunnigan indicated Nebraska's support for continuing the contract with Principia Mathematica. The commissioners agreed to direct the Engineering Committee to meet on a regular basis to work towards resolution of the Principia Mathematica contract issue.

Agenda Item 8: Old Business – Unapproved Accounting

Commissioner Barfield noted that the issue of unapproved RRCA accounting is a carry-over from previous agendas and that the Engineering Committee has already provided the status with respect to the pending litigation and arbitrations.

Agenda Item 9.a.i.1: New Business - Article IX of the Compact

Commissioner Dunnigan reported that he had sent a letter to Commissioner Barfield on May 24th, 2013, stating that Nebraska believes Kansas had failed to comply with Article IX of the Compact regarding administering the public water supplies and proper administration of the Compact. Commissioner Dunnigan reiterated that Nebraska is frustrated with the process of getting the state's augmentation proposals approved.

Commissioner Barfield noted that he responded to Commissioner Dunnigan's letter dated May 24th and indicated that Kansas disagrees with Nebraska's assertions that Kansas' objections and concerns with the augmentation proposals are not founded on provisions of the FSS and also that the FSS provides clear procedures for dealing with such matters.

Commissioner Wolfe identified with Nebraska's concerns about too much time and money being spent dealing with litigation and arbitration of many issues. Commissioner Wolfe noted that Colorado has been working almost six years on obtaining approval for their Compact Compliance Pipeline. Commissioner Barfield responded by reiterating that Kansas has dedicated the resources necessary to reviewing the proposals indicated.

Agenda Item 9 A.i.2: New Business - Harlan County Lake

Dr. Jim Schneider reported on a discussion during the previous day's RRCA work session regarding evaporation from Harlan County Lake for Compact water that was involved in Nebraska's Compact compliance efforts. A resolution was developed that commits Kansas to assuming responsibility for the evaporation of that Compact water and utilizes the same process of evaluating the ratio of the diversions between the two districts for splitting the remainder of the evaporation from Harlan County Lake.

Dr. Schneider read the resolution into the record (Exhibit J). Commissioner Wolfe made a motion to accept the resolution and Commissioner Dunnigan seconded. Commissioner Wolfe noted that Colorado is not part of the allocation of evaporation and that "The States" refers only to Nebraska and Kansas. The motion was then unanimously approved by the commissioners.

Agenda Item 9.a.i.3: New Business – Monitoring of Non-Federal Reservoirs

Commissioner Barfield gave details on recent Kansas legislation involving non-federal reservoirs. He confirmed that although the legislation expanded exemptions for dams in Kansas, those dams must still be permitted for water use and monitored.

Agenda Item 9.b: New Business – Action on Engineering Committee Report

Commissioner Wolfe moved to approve the Engineering Committee report, as discussed earlier in the meeting, and Commissioner Dunnigan seconded the motion. The motion was unanimously approved by the commissioners and the report is attached as Exhibit K.

Agenda Item 9.c: New Business – Resolution honoring Scott Ross

Commissioner Barfield read into the record the resolution honoring Scott Ross and his service to the Kansas Division of Water Resources (Exhibit L). Commissioner Barfield moved to adopt the resolution and Commissioner Wolfe seconded. Commissioners Wolfe and Dunnigan both extended their best wishes for Scott's retirement. The motion was unanimously approved by the commissioners.

Agenda Item 10: Remarks from the Public

Commissioner Barfield called for remarks from the public and two audience members responded.

David Robbins, representing the Republican River Water Conservation District, expressed his concern that Kansas is considering to discontinue funding its 1/3 of the Principia Mathematica contract. Robbins stated that he believes moving away from a common set of data and operation of the model will be detrimental.

Dennis Coryell expressed his belief that there is a disconnect between what is happening at RRCA meetings and "on the ground". He would like the states to work out their differences with the Colorado pipeline proposal.

Agenda Item 11: Future Meeting Arrangements

There was a discussion by the commissioners to hold the next annual meeting on or around August 27th and 28th in Lincoln. It was agreed that a final date would be decided at a later time.

Agenda Item 12: Adjournment

Commissioner Wolfe moved to adjourn the annual meeting. Commissioner Dunnigan seconded and the motion passed unanimously. The meeting was adjourned at 11:11 am.

The September 12, 2013 Annual Meeting report is hereby approved by unanimous vote of the RRCA on this 27th day of August, 2015.

As indicated by their signature and date below, the RRCA Commissioners agree that the report was approved by RRCA on the date indicated above.

David Barfield DATE SIGNED: 8/26/2015

David Barfield, Chair & Kansas Commissioner

Gordon W. Fassett DATE SIGNED: 8/26/2015

Gordon W. Fassett, Nebraska Commissioner

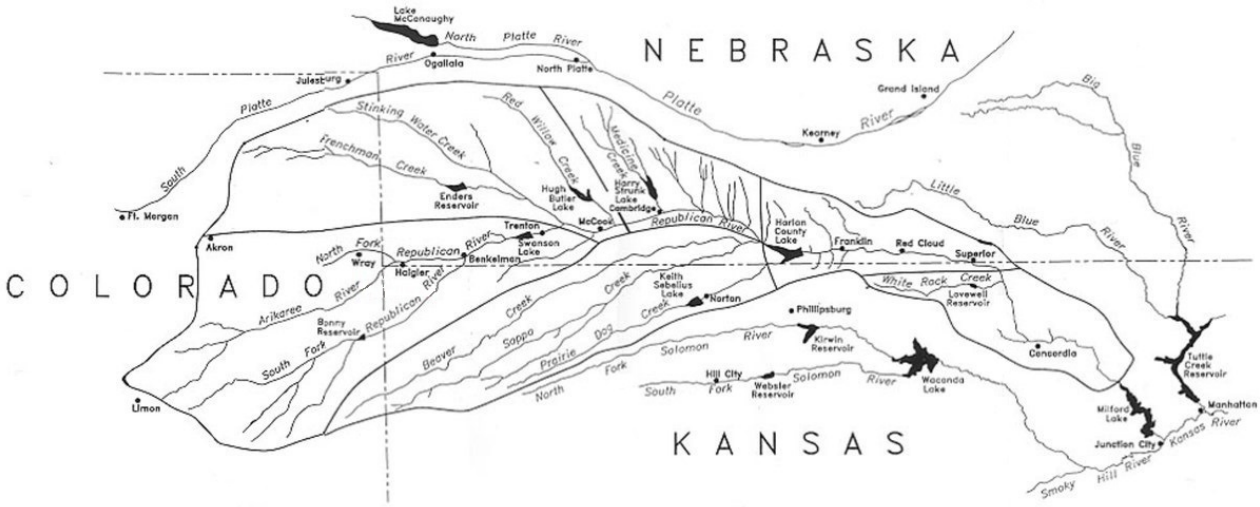
Dick Wolfe DATE SIGNED: 8-26-2015

Dick Wolfe, Colorado Commissioner

Exhibits

Exhibit A:	Transcript of the September 12, 2013 Annual Meeting
Exhibit B1:	Attendance of the September 12, 2013 Annual Meeting
Exhibit B2:	Sign-In Attendance Sheets of the September 12, 2013 Annual Meeting
Exhibit C:	Agenda for the September 12, 2013 Annual Meeting
Exhibit D:	Resolution to Approve RRCA Annual Reports From 2007-2011
Exhibit E:	Bureau of Reclamation Report to RRCA for 2012 Operations
Exhibit F:	United States Geologic Survey Report to RRCA for 2012 Operations
Exhibit G:	United States Geologic Survey Summary of USGS Stations
Exhibit H:	Engineering Committee 2012 Report with Signatures
Exhibit I:	Resolution regarding Bonny Reservoir Area Capacity Tables
Exhibit J:	Resolution regarding Harlan County Reservoir Evaporation Split
Exhibit K:	Engineering Committee 2013 Report (for 2012) with Signatures
Exhibit L:	Resolution honoring Scott Ross

Attachments



Special Meeting of the RRCA, December 11, 2012

Exhibit A - Transcript

Exhibit B - Attendance List

Exhibit C - Amended Agenda

Exhibit D – RRCA Rules & Regulations, Mark-Up Document

Exhibit E – RRCA Rules & Regulations, final

Exhibit F – Outline for Augmentation Plan to RRCA from Nebraska

Exhibit G – Inclusion of Imports of Platte River Basin Water Supplies into the RRCA

Accounting

Exhibit H – Figure 1, Map – Area of Project

SPECIAL MEETING OF THE

REPUBLICAN RIVER COMPACT ADMINISTRATION

TUESDAY, DECEMBER 11, 2012

VIA TELEPHONE CONFERENCE CALL

10:00 A.M. CENTRAL STANDARD TIME

The above-entitled meeting was taken via telephone conference call with the commissioners in their respective offices before Paula A. Keller, RPR, CRR, Registered Professional Reporter for the State of Kansas, P. O. Box 846, St. Francis, Kansas 67756.

REPUBLICAN RIVER COMPACT ADMINISTRATION

In Kansas:

Mr. David Barfield, P.E., **Chairperson**
Kansas Department of Water Resources
109 SW 9th Street, 2nd Floor
Topeka, Kansas 66612-1283

Also listening in Topeka:

Mr. Burke W. Griggs, Esquire, DWR
Chris Beightel, KS DWR
Kim Christiansen, KDA
Susan Stover, KWO
Sam Perkins, DWR
Matt Unruh, DWR
Mr. Chris Grunewald, Esquire, State of Kansas
Office of Attorney General

KBID listening location:

Kenneth Nelson, KBID
Monty Dahl, Bostwick board member
Gary Housholder

Stockton listening location:

Scott Ross, KS DWR
Chelsea Erickson, KS DWR

Colby listening location:

Wayne Bossert, NWKS GMD 4
Monty Biggs, NWKS GMD 4
Walt Biggs, independent

Other Kansas call-ins:

Brian Loving, USGS, Warrant, KS

In Colorado:

Mr. Richard Wolfe, P.E., **Commissioner**
Centennial Building
1313 Sherman Street, Room 419
Denver, Colorado 80203

Also listening in Denver:

Mr. Scott Steinbrecher, Esquire, CO AG Office
Mr. Michael Sullivan
Ivan Franco
Willem Schreüder

Other Colorado call-ins:

Pete Ampe, Republican River Water Conservancy District
Dave L. Keeler, CO water commissioner for Republican River Basin

In Nebraska:

Mr. Brian P. Dunnigan, P.E., **Commissioner**
Nebraska Department of Natural Resources
301 Centennial Mall South, 4th Floor
Lincoln, Nebraska

Also listening in Lincoln:

Jim Schneider, P.E., NDNR
Jesse Bradley, NDNR
Art Hovey, Lincoln Journal Star newspaper
Justin Lavene, AGO
Blake Johnson, AGO
Don Blankenau, private
Tom Wilmoth, Blankenau-Wilmoth LLP
Mark Groff, TFG
David Kracman, TFG
Tom Riley, TFG

McCook listening location:

Craig Scott, USBR
Steve Cappel, MRNRD
Brad Edgerton, FCID
Aaron Thompson, Reclamation
John Palic, MRNRD
Bill Hoyt, MRNRD
Don Felker, FV and H&RW
Bill Peck, USBR

Red Cloud listening location:

Mike Delka
Tracy Smith
Walter Knehans

Curtis listening location:

Daniel L. Smith, MRNRD
Robert Merrigan, MRNRD

Holdrege listening location:

John Thorburn, Tri-Bason NRD

Other Nebraska call-ins:

John Miller, North Platte USGS

I N D E X

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Discussion on PRISM	16
Discussion on Rule Revision	18
Discussion on Nebraska Augmentation Project	24
Discussion on Nebraska 2013 Water Administration Plan	67

CERTIFICATE OF REGISTERED PROFESSIONAL REPORTER. 87

COMMISSIONER BARFIELD: Welcome to this special meeting of the Republican River Compact Administration. My name is David Barfield and I am chairman of the Compact Administration this year. This meeting is being held pursuant to, you know, agreement of the commissioners to hold a special meeting. Commissioner Dunnigan sort of initiated the meeting through a request of his on November 15th, and subsequent to that we've agreed on this date and a draft agenda for the meeting which I believe has been circulated and that we'll discuss here in a minute.

Again, this meeting is being held telephonically, so we would ask that as we as individuals make comments or presentation, that each time they identify themselves for the record and for everybody's benefit. And again, if you're not speaking, we would ask that you put your phone on mute so that we don't have any interference in that way.

My understanding is there are sign-up sheets at each location or we've provided a means to record who's there, and so we would appreciate it if you would have everybody at your various locations sign in and that you

would forward those sign-in sheets to -- just make a scan of it and send it to myself or one of my staff.

Okay. I think that's the preliminaries here. Again, the court reporter's name is Paula Keller and she will do her best to keep a record of this meeting.

So what I would like to do is the first agenda item is introductions, so I guess I'd like to go around and just poll who is at the various locations. So here in Topeka is myself; also attending are Chris Beightel, Kim Christiansen, Susan Stover of the Kansas water office, Burke Griggs and Sam Perkins of my staff, and Matt Unruh also of the Kansas water office. So that's who's present in Topeka.

Let me go around the Kansas listening posts and then I'll ask for the federal participants and then we can -- I'll turn it over to you, Dick and Brian, to maybe walk us through your -- who's attending in your states at the various listening locations.

So Stockton?

MR. SCOTT ROSS: Scott Ross and Chelsea Erickson are here.

COMMISSIONER BARFIELD: Okay. Who is listening at the KBID listening station?

UNIDENTIFIED SPEAKER: Ken Nelson and Monty Dahl, and Gary Housholder will be here shortly.

COMMISSIONER BARFIELD: Yeah, KBID is the Kansas Bostwick Irrigation District. And then Colby, who is present at Colby?

MR. WAYNE BOSSERT: Wayne Bossert.

COMMISSIONER BARFIELD: All right. I think that's everyone from Kansas, is that correct? We don't have any other listening locations? (Pause)

Okay, all righty. There's a federal listening station or listening station in McCook that I think has some bureau officials, so can we go to McCook and find out who's listening there?

MR. AARON THOMPSON: Yeah. Good morning, David. Aaron Thompson, Area Manager for the Bureau of Reclamation, the Nebraska-Kansas office, with other federal participants. Today I have Craig Scott and Bill Peck. Non-federal participants today listed on the chart are Steve Cappel, Brad Edgerton, John

Palic, Bill Hoyt, Don Felker.

COMMISSIONER BARFIELD: Okay. Thank you. Are there any other federal representatives on?

MR. BRIAN LOVING: Yeah, this is Brian Loving with the U.S. Geological Survey in Warrant, Kansas.

COMMISSIONER BARFIELD: Okay. We have a Warrant listening station, huh? Okay.

MR. JOHN MILLER: John Miller with the U.S. Geological Survey in the North Platte field office.

COMMISSIONER BARFIELD: Okay. Anybody else? (Pause)

Okay. I guess if I can turn to Commissioner Dunnigan and maybe have you let us know who's there in Lincoln, and if you could, walk us through the -- maybe the remainder of the Nebraska listening stations.

COMMISSIONER DUNNIGAN: Thank you, Chairman Barfield. And I want to thank Chairman Barfield and Commissioner Wolfe for accommodating our request for this meeting; appreciate it.

We'll start out with the Lincoln

listening station in Lincoln. With me are Jesse Bradley, Jim Schneider, Art Hovey from the Lincoln Journal Star, Justin Lavene, Blake Johnson, Don Blankenau, Tom Wilmoth, Mark Groff, David Kracman and Tom Riley.

At this time I'd like the Bostwick Irrigation District to identify those in attendance in Red Cloud, please.

UNIDENTIFIED SPEAKER: We have Mike Delka, Tracy Smith and Walt Knehans.

COMMISSIONER DUNNIGAN: Thank you. At the Curtis listening station?

UNIDENTIFIED SPEAKER: Dan Smith and Bob Merrigan.

COMMISSIONER DUNNIGAN: Thank you. At the Upper Republican Natural Resources District in Imperial?

MR. NATE JENKINS: Nate Jenkins.

COMISSIONER DUNNIGAN: Thank you. At the Tri-Basin Natural Resources District in Holdrege?

MR. JOHN THORBURN: John Thorburn here in Holdrege.

COMMISSIONER DUNNIGAN: I didn't hear anybody sign in at the Lower Republican Natural

Resources District in Alma, is that correct? (Pause) I don't think we have anybody on in Alma.

That should be the attendance for the Nebraska listening stations. Thank you.

COMMISSIONER BARFIELD: All right. Thank you very much. Commissioner Wolfe, I wonder if you can walk us through who's present in Colorado.

COMMISSIONER WOLFE: Yeah, good morning. This is Dick Wolfe, commissioner for Colorado. We're here in Denver, and here in the room with me is Scott Steinbrecher who is with the attorney general's office, and Mike Sullivan, Deputy State Engineer; Ivan Franco, who is the engineer advisor for Colorado on the Republican; and Willem Schreüder, who's the president of Principia Mathematica.

And we did not set up any specific listening stations, but we did provide the number for a call-in for other Colorado users, so I guess I'll just have to open it up to see if there are others on the line who are from Colorado who have called in.

MR. DAVE KEELER: Dave Keeler.

COMMISSIONER WOLFE: Dave Keeler's our water commissioner in the Republican River Basin.

MR. PETER AMPE: And this is Peter Ampe for the Republican River Water Conservation District.

COMMISSIONER WOLFE: I believe that's all from Colorado at this point.

COMMISSIONER BARFIELD: Okay. Thank you very much. Just -- anybody else on the phone that hasn't identified themselves?

MR. WAYNE BOSSERT: David, we had two arrive here in Colby, Monty Biggs and Walt Biggs.

COMMISSIONER BARFIELD: Okay. All right. Well, thank you very much. I think that concludes the introductions.

So the next item on the agenda is modification and adoption of the agenda. I -- just one addition to the agenda that I would like to note. As a result of some dialogue that I became aware of between the State of Nebraska and the Bureau regarding plans for water administration in Nebraska 2013, I had a discussion with Commissioner Dunnigan yesterday,

I believe, and asked that we add an agenda item to have some of that discussion here in terms of sort of a plan for water administration in the coming year and related matters. So I would suggest we add that as agenda item number five then, Nebraska Plan for Water Administration 2013; and if that's acceptable, I guess I would need somebody to move adoption of the agenda as modified.

COMMISSIONER DUNNIGAN: This is Commissioner Dunnigan. So moved.

COMMISSIONER WOLFE: This is Commissioner Wolfe. Second.

COMMISSIONER BARFIELD: Okay. So that's a move and a second to adopt the draft agenda as modified. All in favor say aye.

COMMISSIONER DUNNIGAN: Aye.

COMMISSIONER WOLFE: Aye.

COMMISSIONER BARFIELD: Any opposed? (Pause) Okay.

Okay. So we have our agenda for the meeting which we'll walk through here then.

So the next item on the agenda is related to the status of action on items deferred at the annual meeting, and there's a

list of four of them that we'll work through in turn and discuss their status and determine if at this point we are ready to act upon them.

The first item is -- we had a number of annual reports that had been drafted and circulated. My understanding of the matter is that the annual reports 2007, 2008, 2009, 2010 and 2011 are all pending; and my understanding is that Kansas has reviewed those and that we are ready to approve those subject to the 2011 engineering committee report being signed by all members. So that's my understanding of what is potentially in front of us for action and sort of Kansas' position on that group of annual reports.

I guess I would ask Colorado and Nebraska for what the status of their review of those reports are and their willingness to act on those at this meeting.

COMMISSIONER WOLFE: This is Commissioner Wolfe, and I was just talking to our engineer advisor and apparently, I guess, we have not seen a final set of those reports for his review, though at this stage I guess we haven't -- although we don't anticipate there's

any issue there, we just have not officially made the last final review of those as you indicated, Chairman. So I'm not sure that Colorado is in a position to take action on this today.

COMMISSIONER BARFIELD: Okay.

MR. JIM SCHNEIDER: Mr. Chairman, this is Jim Schneider with Nebraska. From our standpoint, I think we just need to probably have the engineering committee get together and be clear on exactly what the package of the general report contains and get them all in one place and have them in front of us. I don't anticipate any issues either, but that's what I would recommend, that we do go forward to make sure we get those new enclaves and, you know, in some format where we all are clear on what exactly it is that we would be approving.

COMMISSIONER BARFIELD: Very good. Thank you. So let's -- for the hearing, where he stated that, let's do that. Let's assign the engineering committee to post the relevant report for each year that is at a specific location where everybody can be quite clear on the exact content on each of those reports and

can give their final review so that we can act on this at our next meeting. Does that sound acceptable?

COMMISSIONER DUNNIGAN: It does.

COMMISSIONER BARFIELD: Okay.

COMMISSIONER WOLFE: This is Colorado. That goes for us as well, and I think Agenda Item 3-b is going to be in that same category based on discussion with our engineer advisor. I think that would go along with what he described for 3-a, unless Nebraska says otherwise. I think that's our understanding of 3-b.

COMMISSIONER BARFIELD: Okay. Certainly if we're all not ready to act on this, I think that's the appropriate course of action here. So again, for both 3-a and 3-b then we'll pass these to task the committee to put the final relevant documents somewhere where everybody can review those and give their final okay to those. My understanding again is that Kansas has reviewed the transcripts and is ready to approve them, but certainly want to make sure everybody has had that final opportunity to do so.

COMMISSIONER WOLFE: This is

Commissioner Wolfe. Chairman Barfield, could we -- I would anticipate the first quarter of 2013 that Colorado probably will be requesting another special meeting on the pipeline proposal and we could also take up maybe this action item at that time, at a date that the advisors could complete that review and prior to any meeting in the early part of 2013. I think that would be helpful.

COMMISSIONER BARFIELD: Very good.

COMMISSIONER WOLFE: I would suggest -- this is Commissioner Wolfe again -- maybe by March 1st that we have that complete for Agenda Item 3-a and 3-b.

COMMISSIONER BARFIELD: Okay. Very good. I'm not sure if we need a motion for that or if that's just a plan for moving forward.

COMMISSIONER WOLFE: I would say unless there's no opposition to that, that that's acceptable to Colorado.

COMMISSIONER DUNNIGAN: This is Brian Dunnigan. That's acceptable to Nebraska.

COMMISSIONER BARFIELD: Okay. All right, and it's acceptable to Kansas. So I'll take that as a motion made and accepted and the

engineering committee now has that assignment pursuant to our agreement here.

I would note that Chris Grunewald with the Kansas Attorney General's Office has joined us here in Topeka.

Okay. So then we're ready for Agenda Item 3-c, which is adoption of the precipitation data methodology using PRISM as proposed at the annual meeting. I believe that there was going to be an addendum added to that methodology to speak to the -- the procedure used for the 2011 data, is that the status of the matter?

COMMISSIONER WOLFE: This is Commissioner Wolfe. That was our understanding in Colorado.

COMMISSIONER BARFIELD: And well, on that, I don't think we've seen that addendum yet, is that correct?

MR. WILLEM SCHREÜDER: This is Wil Schreüder. Yes, we are in the process of putting that together, but we have not got -- we have not -- (inaudible)

COURT REPORTER: I'm sorry, could you repeat that?

MR. WILLEM SCHREÜDER: We're working on

it, but we have not yet considered the options, we're working on it.

COMMISSIONER BARFIELD: Okay. Thank you, Willem. So again, on this item we will look forward to receiving that and potentially being able to act on that at our next meeting, next special meeting.

COMMISSIONER WOLFE: This is Commissioner Wolfe. I'm just suggesting maybe based on discussions with Willem Schreüder that once that group does their review, should this be something that's submitted to the engineer advisor so that it could be compiled into the appropriate format for presentation to the commissioners maybe again by the March 1st date? It seems like there probably should be a subsequent review by the engineer advisors also on this.

COMMISSIONER BARFIELD: Yeah, that's correct, certainly I would agree with that course of action. Willem should distribute it to the engineering committee and allow the other states to review and agree with the method before it's put in to us.

So again, I think in the spirit of our

action on 3-a and 3-b, we will assign the completion of agreement on the methodology to the engineering committee and then bringing that proposal to us at the next special meeting. I guess I'd take that as a motion.

COMMISSIONER DUNNIGAN: So move. This is Commissioner Dunnigan.

COMMISSIONER BARFIELD: All right. I second. All in favor say aye.

COMMISSIONER DUNNIGAN: Aye.

COMMISSIONER WOLFE: Aye.

COMMISSIONER BARFIELD: Aye. All right. Motion carried. I think we're ready for Item 3-d, is that correct?

COMMISSIONER WOLFE: Let me get this one done, so --

COMMISSIONER BARFIELD: Okay. At the annual meeting we had in front of us proposed amendments to the rules and regulations of the Compact Administration and those were considered at that time, but again, there was requests to have a final opportunity to review that before acting, and the changes that were -- that are being considered is in paragraph 14 to strike the date of -- for the Republican River

accounting procedures and reporting requirements of January 12, 2005 and replace it with "dated August 12th, 2010;" and then for the Republican River Compact Administration groundwater model, to strike the notation "version 12-S dated January 12, 2005" and replace it with "version 12-S-2 dated August 6th, 2010." So that is, I believe with the notice we've had, an action we can take today if the Administration so desires.

We had also had discussion at the annual meeting whether we should change Rule Nine. Rule Nine says, "The RRCA shall hold a regular annual meeting prior to August 1st each year." And for many years now we have -- and then there's also a provision for having a meeting at a later date in that same paragraph upon unanimous written consent of the members.

For a number of years now, I think nine or ten, we have essentially had a later meeting than August 1. It's, I think, been August every year until this year when it was deferred until October due to trial in Portland, Maine, but we had tasked the engineering committee to consider whether to change that date or not.

So I guess the question before us is

whether to -- whether we're ready to make the changes in Rule 14 that were envisioned and whether we want to discuss and agree on the date change in Rule Nine at this meeting or defer that to later. We can amend rules at this meeting if we wish to with respect to Rule Nine. There's ability in the rules to amend regulations without -- without notice upon agreement of us, and certainly I think there's been clear notice of our potential action on changing the date, so -- but I can do it either way. (Pause)

Do we want to go ahead and seek agreement on a new date in Rule Nine and just do all this at one time?

COMMISSIONER WOLFE: This is Commissioner Wolfe. I'd propose that we, Rule Nine, change the date from August 1st to August 31st and we find the other proposals that you had laid out, Chairman Barfield, under Paragraph 13 or Rule 14 on those dates, those are acceptable to Colorado.

COMMISSIONER BARFIELD: Okay. Is that a motion?

COMMISSIONER WOLFE: I'll make that a

motion. Commissioner Wolfe.

COMMISSIONER BARFIELD: Okay.

COMMISSIONER DUNNIGAN: Second. This is Commissioner Dunnigan.

COMMISSIONER BARFIELD: Okay. Discussion? I think August 31st is a good change. Basically we've been meeting, as I said, every year except this in the August time frame, so it sort of puts our current practice within the rules. And again, we can still take action to waive it till later if there's some reason to do so if necessary.

COMMISSIONER WOLFE: This is Commissioner Wolfe. If I understand correctly the way that rule still reads, that we have the ability by consent of the three states, as we've done in the past by exchanging letters, if for example we want to extend beyond August 31st, that that provision still allows us to do that. (Pause)

COMMISSIONER BARFIELD: Okay. Other discussion? Mr. Dunnigan, do you have any comments on this?

COMMISSIONER DUNNIGAN: No initial comments, thank you.

COMMISSIONER BARFIELD: I wonder if I can just take it as implicit in your motion that in making the motion -- in Rule 13 it says we can make amendments to these rules at any meeting of the RRCA. Okay. I guess in making your rule, we're sort of waiving explicit notice of the specific date that you proposed as we're allowed to do under Rule 13, is that correct?

COMMISSIONER WOLFE: This is Commissioner Wolfe. I would agree to that. I think that if we do need that provision back on this, I think that's appropriate to refer to my attorney if he thinks otherwise; but I think based on the annual meeting that we had in October, all of this was discussed even though we may have not landed on the exact date under Rule Nine. I think there was certainly adequate notice that we were attempting to change that to a different date.

COMMISSIONER BARFIELD: Okay. Well, I would agree, and if not, it's in the spirit of the motion on the table here. So again in Rule Nine we will be replacing 1st with 31st then. So that first sentence of Rule Nine would read "The RRCA shall hold a regular annual meeting

prior to August 31st each year" and then it would go on from there as is currently in the rules.

Any further discussions? (Pause) All right then, I will call -- go ahead.

COMMISSIONER WOLFE: Mr. Wolfe. Maybe this is maybe minor. I think the way the rule currently reads it says -- I don't have it right here in front of me -- it says, "prior to August 31st."

COMMISSIONER BARFIELD: Yes.

COMMISSIONER WOLFE: Although August 31st doesn't bother me, I guess if it says, "prior to August 31st," that means we couldn't have it on August 31st, and I'm just wondering if that should be changed to September 1st versus August 31st just for discussion. I'm not necessarily opposed to leaving it August 31st, but it's just a minor detail. I just want agreement with the other commissioners.

COMMISSIONER DUNNIGAN: This is Commissioner Dunnigan. Either way is fine with us.

COMMISSIONER BARFIELD: Yeah, same here with Kansas. So Mr. Wolfe, if you want to amend

your motion, you may do that.

COMMISSIONER WOLFE: I would suggest amending my motion instead of August 31st, to make it September 1st.

COMMISSIONER BARFIELD: Okay.

COMMISSIONER WOLFE: That way it would allow us, need be, to have it be on the 31st.

COMMISSIONER BARFIELD: All right. Commissioner Dunnigan, are you -- does that meet with your approval?

COMMISSIONER DUNNIGAN: Yes, it does. Thank you.

COMMISSIONER BARFIELD: All right. So I'll call the question on the amended motion. All in favor of amending the rules pursuant to our discussion, say aye.

COMMISSIONER WOLFE: Aye.

COMMISSIONER DUNNIGAN: Aye.

COMMISSIONER BARFIELD: Aye. All right. The rules are amended. I'd ask the engineering committee to sort of assemble the final clean version and distribute it to everybody in their states.

Okay, very good. Well, the next agenda item is the Nebraska augmentation projects and

discussion, and I would turn this over to Commissioner Dunnigan to lead us through this agenda item.

COMMISSIONER DUNNIGAN: Thank you, Chairman Barfield. At this time, I'd like to turn to Deputy Director Jim Schneider and he will discuss Agenda Item 4.

MR. JIM SCHNEIDER: Thank you. I'll just note before we get going that we had distributed several documents yesterday to facilitate the discussion to the other states. If you're at one of the listening locations and you haven't received those documents yet, you can find those on our website. They are -- they are on our website under "News Releases, Public Notices, Orders & Updates," it's the third item, "News Release, Nebraska Materials for RRCA Special Meeting," so these materials are available there.

Before -- the first item I'd like to kind of go through and then hopefully have a discussion on it is the Outline for Augmentation Plan to RRCA. But before getting into that, I'd like to make the distinction that we've also provided a -- the additional document that

discusses imported water supply and the project that we have that's being developed that would enhance imports of Platte River water as they're over and above what's currently being computed. So I want to make sure we're clear on the distinction first, and hopefully we can have a discussion of both under this agenda item.

So to begin then, we'll start with the Outline for Augmentation Plan to RRCA, and I'll just kind of go through this section by section and we can have discussion as we go or afterward, but the real purpose and the place that we'd really like to get to is to understand fundamental objections, things that we're not covering with this document so that we can move forward with preparing a final augmentation plan for submittal.

So this is a framework for an augmentation plan, and if we can understand the other states' positions on this, then that will -- that will allow us to develop a final plan that we can bring forward for a vote before the RRCA.

So the first section -- and I'll also note that this document builds off of the

framework that Kansas provided through the engineering committee prior to the August meeting of the RRCA. So we tried to -- we feel that we've addressed everything in that framework document that Kansas provided to the extent that the Compact and the FSS required those to be addressed.

So the first section is "Background on Augmentation in the FSS." This is basically -- as you can see, we've pulled the paragraphs or sections out of the FSS that mention augmentation plans and augmentation credit. They aren't extensive. They start with Subsection III.B.1.k which is part of -- part of the section on the moratorium of -- relating to new groundwater wells and the exception to that moratorium for wells acquired or constructed by a state for the sole purpose of offsetting stream depletions in order to comply with its Compact allocations.

Following that, there are the references to -- within Subsection IV.A that denotes that the states need to determine augmentation credit based on methodology set forth in the RRCA accounting procedures, and the following

statement in IV.A: The augmentation credit shall be calculated in accordance with the RRCA Accounting Procedures and by using the RRCA Groundwater Model. So I didn't read all those verbatim, but those are the locations that augmentation is referenced in the FSS.

The following list is kind of our compilation of what this means in our view with regard to the minimal requirement for an augmentation plan to be approved by the RRCA. I'll go through these.

First of all, "If the project involves the acquisition or construction of augmentation wells in the moratorium area, those wells may not cause a new net depletion either annually or over the long term."

Number two: "The RRCA Groundwater Model will be used to determine the extent of any net depletion and whether such net depletion is 'new'."

Number three: "The RRCA Accounting Procedures will be revised to reflect the appropriate methodology for calculating the augmentation credit."

Number four: "The RRCA groundwater

model will be used to calculate the credit, assuming, of course, that the project involves an activity that influences groundwater CBCU or the IWS Credit;"

And number five, "The RRCA must approve any augmentation plan and related accounting procedures before a state may receive 'augmentation credit' for the project, beyond the effect of simply increasing water supply, which will manifest itself in the current RRCA Accounting Procedures."

The final paragraph of this initial section of this document references the discussion the states had with Special Master McKusick in 2003 regarding the inclusion of the provisions for augmentation plans under the FSS. So we felt that that provided a good -- good guidance in terms of what the states understood at the time the FSS was adopted with regard to how these augmentation plans would be effectuated when they were brought forward. So I'll stop there and ask if there's any questions or discussion on the first section. (Pause)

Hearing none, I'll go ahead and move on to the document.

The rest of this then is kind of going through what we would see as the materials that would be provided by a state when they brought an augmentation plan to the RRCA. So to start with in Section II, the Baseline Conditions of the Project Area including current uses of the project area and groundwater pumping under the baseline operations. (Pause)

The next section, Section III, is Operational Aspects of the Project. So this would include expected operations of the project once implemented, including conceptual description and the groundwater pumping that would be occurring under the project operations. (Pause)

Section IV titled Groundwater Modeling Analysis of the Project, this would be used to assess the net impact of the project operations on stream flows to get at that question of new net depletions, and would include groundwater depletions under baseline conditions, groundwater depletions under project operations, and the net groundwater depletions under project operations in order to assess, as I said, whether or not there was new net depletions

either annually or long term. (Pause)

Finally, Section V is the Accounting Procedures Modifications for Crediting the Project, and so this -- this very simply would be a strike-through or ratifying of the accounting procedures and reporting requirements which was originally Appendix C to the FSS and now as we just discussed has a -- the most recent version is dated from August of 2010.

So this is the -- this is the understanding that we have for bringing an augmentation project forward and the components that we would plan to present upon bringing an augmentation project to the RRCA. And what we really need from the other states is an understanding of whether there's something missing, something that we don't have included here that you think should be included or should be addressed differently; otherwise, this is the type of plan that we would plan to bring forward and we would -- we would need either today or sometime in the very near future some feedback from the states with regard to this. So I'll stop there and open it up for discussion. (Pause)

COMMISSIONER BARFIELD: Okay. Thank you for that. Any discussion or -- of this?

COMMISSIONER DUNNIGAN: Chairman Barfield, this is Commissioner Dunnigan again, and I would just say again for the record that we used the Kansas framework to build this outline and that that was helpful and instructive to us and that that's -- that is included in what was presented.

COMMISSIONER BARFIELD: Well, very good. Obviously you've included some components and it seems like there are others that are not present that you apparently determined were not necessary for the minimum requirements and certainly not prepared today to provide -- since we got this last night, to provide a listing of what might be missing or otherwise need to be changed.

So certainly we understand your intent as providing this outline and your request for some review of that by the states so that you can move forward in preparing this augmentation plan and certainly would commit to provide that sort of response in a reasonable time frame.

MR. JIM SCHNEIDER: This is Jim

Schneider, and I appreciate that, and that's understandable that you haven't had a lot of time to review this. However, time is of the essence in moving this forward and we would -- we would hope to get some commitment today for when you'd be able to provide those comments.

COMMISSIONER BARFIELD: Well, tell me a little bit more of your schedule. I mean, what are you hoping for? Well, what do you need? I guess this is, you know, a pretty serious matter obviously and we certainly want to take the time to consider it carefully.

May I, I guess, maybe ask one question? Again, you've given this outline for the augmentation plan and you've get this other document on the Platte River. Are you envisioning using one in certain cases and another in another case? Can you help me with that?

MR. JIM SCHNEIDER: Certainly, yeah, I hadn't gotten to the other -- the other document, but yeah, this -- what we've discussed so far would be what we envision using for anything that is an augmentation activity which really comes out of Subsection III.B.1.k of the

FSS when a well -- when some, you know, development of a well or acquisition of a well is solely excepted from the moratorium because of this subsection and not some other subsection such as in the case of the other document where wells that fall within certain geographic areas are not subjected to the moratorium in Subsection III.

So when -- I guess stated plainly, when Subsection III.B.1.k is required to have the project be excepted from the moratorium, that's where we would -- we would pursue the approval of the augmentation plan. (Pause)

COMMISSIONER BARFIELD: Okay, and again, the imports from the Platte then, because they're not III.B.1.k, you consider that to be a different matter?

MR. JIM SCHNEIDER: Correct.

COMMISSIONER BARFIELD: Okay. Well, when would you like feedback with respect to the Outline for Augmentation Plan?

MR. JIM SCHNEIDER: We're going to be seeking -- because of the current situation with water supplies, we need to seek a vote of this very early next year. So, you know, if we don't

have -- if we don't have your comments within the next two weeks or so, we're going to be left having to develop this plan in the absence of those comments. So I would say sometime in the next two weeks would allow us to be able to address them in what we bring forward for a vote to the RRCA.

COMMISSIONER WOLFE: This is Commissioner Wolfe, and that certainly Colorado can meet that request to provide comments on this outline in the next couple of weeks. And I guess I just need maybe for some clarification, Jim, as you stated on page one here that there's presently no methodologies in place or set forth in the accounting procedures; and so I guess my question or my understanding is that what you're asking us to comment on is kind of the outline of the framework in which you would build your plan to provide all the other details on, say, the Rock Creek Project if that's the one to bring forward for consideration by the RRCA as a whole?

MR. JIM SCHNEIDER: That's correct.

COMMISSIONER BARFIELD: This is Chairman Barfield. So -- well, certainly I'll commit to

providing comments as soon as we can. We can -- we can certainly probably provide an initial set of comments at least in the next couple weeks to help your effort. I won't say that will be a -- our final full comments. You sort of provided an outline and also some new interpretations in terms of where this is applicable and where it isn't, but -- and maybe there's sort of an interim process by which we can provide some comments and you can maybe provide a more detailed outline of where you're going in light of it. Certainly we'll do our best to provide you some feedback in that time frame.

MR. JIM SCHNEIDER: That would be great. We really just need to get to a place where we can evaluate whether or not we're going to be able to come to a meeting of minds on this or have to pursue the dispute resolution process. So if we can, you know -- if you can -- you can state a high level to start with, then we'll be able to determine if we can set a rate through in coming to an agreement. We are certainly hopeful we can do that, but certainly if, you know -- if there's some fundamental disagreements, then we'll know how we need to

proceed. (Pause)

So if there's no other discussion, I did want to cover the other -- the other document. Would that be acceptable at this time?

COMMISSIONER BARFIELD: Yeah, why don't you do that and go ahead.

MR. JIM SCHNEIDER: Okay. Well, this is much more specific than the Outline for Augmentation Plan which was meant to be general, and it's specific in terms of a project that is currently being developed in Nebraska by the natural resource districts. And there's an acompanying map that was provided that shows the previously-irrigated areas, the area of the project would be developed in, the drainage divide and the area excluded from the moratorium.

So this -- this area, this blue hashed area is the mound area and the -- this area was used to determine which legal descriptions within Nebraska, outside of the specific natural resource districts that were excepted such as the Little Blue Resource District from the moratorium, these are this -- this shows the legal descriptions of the areas that were

excepted from that moratorium.

So this project is clearly within that area that's excepted by the moratorium. It is utilizing -- it's in an area that's highly impacted by the activities along the southern portion of the Platte River that result in the importation of significant water supplies into the Republican River Basin in the aquifer.

So we feel that this project will -- while it may operate in a similar manner to an augmentation project, it's very distinct and different from an augmentation project because it falls under different provisions for excepting it from the moratorium and more specifically it is in an area that is -- contains imported water supplies and would be enhancing the transfer of that imported water supply into the streams of the Republican River Basin.

And there's a several-paragraph description, and I -- talks about basically that this water would be delivered to Medicine Creek where it can flow downstream into the main channel into Harlan County Reservoir, so I think that gives a general description. I would stop

there and ask for a discussion on that.

COMMISSIONER WOLFE: Jim, this is Commissioner Wolfe. Just for clarification, make sure I understand this Figure 1, the area that you refer to as excluded from the moratorium, I'm not clear maybe from the figure what's all included in there. And maybe specifically this area that is south of these series of wells and center pivots there to the north of Medicine Creek that has -- that are transected by the drainage divide on part of it, is that -- the area that's kind of underneath the cross hatch area, the mound area, I'm not quite sure when you're referring to the area excluded from the moratorium. Is that including those wells up there or is it just the wells south of Medicine Creek?

MR. JIM SCHNEIDER: Yeah, I'm realizing why you're confused as I look at this, and I apologize for the confusion. The area excluded from -- so there's the brown line that is meant to indicate kind of the border of the area excluded from the moratorium, and it's everything north or east of that brown line and it's generally the area that coincides with the

blue hatching.

COMMISSIONER WOLFE: Okay. Thank you, that clears up my confusion.

MR. JIM SCHNEIDER: Yeah, the key got the colors backwards, I apologize for that. But for the record to be clear, it's that area north and east of that brown line.

COMMISSIONER WOLFE: So these wells that are south of Medicine Creek that are highlighted or bounded there, are those part of the project area but they're not in this area excluded from the moratorium?

MR. JIM SCHNEIDER: Those would be retired, they were -- they were previously irrigated acres. The project will be developed in the area bounded by the red line.

COMMISSIONER WOLFE: Okay.

MR. JIM SCHNEIDER: That's just simply additional parcels of, you know -- of the whole property that was acquired.

COMMISSIONER WOLFE: Okay. Thank you.

COMMISSIONER BARFIELD: Dave Barfield here. I guess as we're looking at the map, I guess I want to make sure I understand what you're saying. So the area excluded by the

moratorium is the area north of the brown line, correct?

MR. JIM SCHNEIDER: Yeah, north and east.

COMMISSIONER BARFIELD: North and east, so the area to the south and west is not excluded from the moratorium, right?

MR. JIM SCHNEIDER: Right, right.

COMMISSIONER BARFIELD: And then the blue crosshatched area is the -- generally the area of the mound, correct?

MR. JIM SCHNEIDER: Right, and I believe it was described as the area where water levels have risen by at least ten feet as determined by the USGS.

COMMISSIONER BARFIELD: Okay, and then the -- the red area indicates the project area. This is -- this is called the Lincoln County -- does this project have a name?

MR. JIM SCHNEIDER: Well, the project's called NCORPE, but the farm -- the farm was -- it was called Lincoln Farms.

COMMISSIONER BARFIELD: Okay. Okay, and that is the area bounded in red, is that right?

MR. JIM SCHNEIDER: Right, and so I guess more specifically that's where wells would be developed to that pipe, you know, provide water to be transported through a pipe to Medicine Creek. For the project there would be a pipe that extends from that area, one or more that transports the water pumped in that project area, that red area to Medicine Creek.

COMMISSIONER BARFIELD: And the other wells that are indicated and bounded by black lines, what's the meaning of those?

MR. JIM SCHNEIDER: It was part of Lincoln Farms and those are going to be retired as part of this project.

COMMISSIONER BARFIELD: Okay. They'll be retired, but there will be water put in pipes from those areas and used for -- those will not be subject to piping into Medicine Creek, is that correct?

MR. JIM SCHNEIDER: That's correct, yeah, that's correct.

COMMISSIONER BARFIELD: Okay, and then the yellow line is the designation of the divide between the Republican and the Platte, correct?

MR. JIM SCHNEIDER: Yes.

COMMISSIONER BARFIELD: But most of this project is in the Republican, there's a portion of it that's within the Platte drainage, but all of the area within the red is within the mound area, correct?

MR. SCHNEIDER: Correct, I should -- I should -- just to say this: the red area is the area where we currently anticipate this project being developed. It will certainly not be developed in the area south of the brown line, but that red boundary could change to some extent as the project will develop, but it will be wholly encompassed within the area excluded by the moratorium. Does that make sense?

COMMISSIONER BARFIELD: Yes.

MR. JIM SCHNEIDER: Okay.

COMMISSIONER BARFIELD: Well, I understood what you said, let me just put it that way. So -- so again, as I understand the discussion then, you are seeing this as not being an augmentation project, but as something different?

MR. JIM SCHNEIDER: Yeah, we are not seeing this as an augmentation project, we're seeing this as enhancing the imports of the

imported water supply in that area.

COMMISSIONER BARFIELD: Okay, and so your description here that you've included in the document is -- is describing what? What do you want us to do with this document?

MR. JIM SCHNEIDER: Well, I think -- I think where we're at now is we would like to find out from the other states whether there's a fundamental disagreement on that point; and barring none, then we would develop a specific proposal for how we would incorporate this project into the accounting procedures and reporting requirements.

COMMISSIONER WOLFE: Jim, this is Commissioner Wolfe. Just to make sure I understand your document then, just to make sure I understand, when you refer to the project area as formerly crop land irrigating 15,800 acres, could you clarify for me again what all areas located on Figure 1 are included in that 15,800?

MR. JIM SCHNEIDER: It's all of the circles basically that are tan colored with a black dot in the center or near them indicating the well that supplied the water to the pivot.

COMMISSIONER WOLFE: Okay, and --

MR. JIM SCHNEIDER: And having a black boundary around.

COMMISSIONER WOLFE: And including what's in the red?

MR. JIM SCHNEIDER: Yes.

COMMISSIONER WOLFE: So all of those lands would be permanently retired, and then you're proposing that you'd have either use of existing wells that have been retired or new ones constructed in this area bounded by the red line that would then discharge water into Medicine Creek, do I have that correct?

MR. JIM SCHNEIDER: Yes, and that red area is the currently proposed project area. It may change to a small extent, but it will be in that area. It will certainly be in the area north of the brown line on the map and it will likely be very similar or exactly as represented on this map.

COMMISSIONER WOLFE: Thank you. That clarifies it for me.

COMMISSIONER BARFIELD: What's the timetable for developing this project?

MR. JIM SCHNEIDER: I believe it's --

it's approximately six to eight months from now for it to be operational. (Pause)

COMMISSIONER BARFIELD: Okay. So as I understand it, you'd like some feedback, I guess, with respect to your sort of concept you've outlined here for developing this project; let's say different than an augmentation project, but it's, well, pursuant to your description in this, correct?

MR. JIM SCHNEIDER: That's right, and I would say in terms of the importance of the, you know, timing, it would be similar to what we previously discussed on the framework for our augmentation plan, so time is of the essence. We need to move forward rather quickly with this.

COMMISSIONER BARFIELD: I'm not certain of what time frame we can provide a response on this one. It's, you know -- it's something we haven't looked at and obviously a lot of technical and legal issues here. The foundation that's in the FSS, Final Settlement Stipulation, we'll need to examine. So, you know, we'll certainly review this and provide comments when we have -- as soon as we can, but it certainly

raises a number of significant issues to examine.

MR. JIM SCHNEIDER: I'm really not clear on what those would be. We're seeing this as being fairly straightforward.

COMMISSIONER BARFIELD: Well, I guess I really don't understand the basis in the FSS for developing this project. And again, I've just barely read the paragraphs, but, you know, the imported water supply credit of the FSS is very specific in terms of what it's about and how it's computed and all that, and this seems to be, you know, a different sort of project in many ways from what the FSS considers.

MR. JIM SCHNEIDER: Well, I think the FSS considers the fact that this mound of groundwater is forcing or driving increased flow in streams in the Republican River Basin and we're simply looking to enhance that feature of the system. I do recognize there would be necessary changes to the accounting procedures and reporting requirements which we haven't -- haven't addressed yet, but other than that it's -- this does seem fairly straightforward that this is imported water supply that we would

be delivering to the streams of the basin.

COMMISSIONER WOLFE: Jim, this is Commissioner Wolfe. I'm not trying to cut the chairman off, I just maybe would add to some of the questioning that he has. What might help certainly Colorado and I would presume Kansas in this review, a couple of things it seems like have been raised about the provisions within the FSS that allows this; and if there's some part of your -- this one-page document done here in the introductory part, if you could maybe detail that a little bit more on the link there similar like in your other document for augmentation credit we referred to III.B.1.k. And I'm just suggesting this not to be argumentative, but maybe just to get a better understanding so that our attorneys can look at your position on the legal basis on how this is included and allowed.

And then secondly in your second paragraph there, you mentioned that there will be a need to change the accounting procedures. And certainly from this technical standpoint and accounting standpoint, if there's a way to give us any additional details or a draft or a

proposed revision to the accounting procedures that we could evaluate as part of this review, I think, would certainly help us in that, the review of your request.

MR. JIM SCHNEIDER: Certainly. I would point, to begin with, to Subsection III.B.1.a and III.B.1.b, which are the pertinent sections with regard to why this, you know -- this project area is not located in the area subject to the moratorium. Furthermore, I think the definition of imported water supply is pertinent to the reasoning that this would be bringing imported water supply to the streams of the Republican River Basin.

Also, when we do bring this forward for approval, we will have a proposed change to the accounting procedures that we would provide at that time. And again this, you know -- we're working on this in a similar time frame to gain approval for an augmentation plan.

COMMISSIONER WOLFE: And that's helpful. This is Commissioner Wolfe again. And help me understand the context of these provisions relative to your proposal. This is talking about new wells and you're taking a project of

existing wells and retiring them. Help me understand how that fits into this context of this.

And again, I'm not trying to be argumentative here, I'm just trying to get an understanding of this proposal that you presented here and how that fits into this construct of moratorium on, quote, "new wells." Help me relate these two, if you could.

MR. JIM SCHNEIDER: Well certainly, and I -- yeah, you know, the information on the previously-irrigated acres that are being retired, that -- that -- I mean, that's provided for your information that as part of this project that that activity is occurring, but the project will entail development of new wells that are excepted from the moratorium under the subsections that I previously noted.

So I think maybe we're getting confused with the fact that there is going to be a retirement of existing wells, but that's not necessarily -- that's not part of the -- that really isn't related to the reason why the new wells are excepted from the moratorium.

COMMISSIONER WOLFE: What's -- this is

Commissioner Wolfe again. So what's the significance of drying these lands up? And I guess maybe just hypothetically what you described, could you have come forward and continued these operations and just proposed to the RRCA construction of some new wells under these provisions you've identified in this mound area, do just what you're describing without the need for the retirement of these possibly 16,000 acres?

MR. JIM SCHNEIDER: That's correct, that would be our view.

COMMISSIONER WOLFE: Okay. So this was for information purposes, it's not relevant to the basis for approval of this, that somehow the retirement of these lands is somehow the basis for our approval?

MR. JIM SCHNEIDER: Right.

COMMISSIONER WOLFE: Okay. That's helpful for me to understand from a 50,000-foot view how you're approaching this.

MR. JIM SCHNEIDER: Yeah, I'm sorry. Just to interrupt, just to be clear, this really is because of the fact that we have this imported water supply under the mound and it

is -- it is kind of specific to this area of the basin with having that imported water supply that we have in Nebraska, if that helps too.

COMMISSIONER WOLFE: This is Commissioner Wolfe again. That's helpful, just trying to understand the concept here. Is this analogous to just, say, constructing a pipeline from the Platte and bringing that in as an imported water supply to Medicine Creek?

MR. JIM SCHNEIDER: I think that's a very good analogy and, you know, the water levels in this area are significantly higher than pre-development water levels because water has been brought in from the Platte River and recharged the aquifer in this area. So I see no distinction between having a pipeline that was pulling water directly out of the Platte River versus this where we're simply pumping out water that originated in the Platte River, now resides in the aquifer in this area, and we'd be pumping it out to deliver it to the Republican River Basin.

COMMISSIONER WOLFE: This is Commissioner Wolfe again. And to the extent these waters would have otherwise been used and

been accounted for as imported water now that there's going to be some, I guess, comparison or consideration that -- I'm not articulating this very well. I'm just trying to understand to the extent waters are now being pumped and put into Medicine Creek, how is that going to relate to that water that would have otherwise been considered an imported water supply had it not been pumped? It seems like there's got to be some balance there between the two in terms of the total amount of imported water supply that's being brought in, if I made myself clear.

MR. JIM SCHNEIDER: I think I understand and I think that would be -- we would be able to fully address that through the proposed changes to the accounting procedures.

COMMISSIONER WOLFE: Just looking at kind of this as the math balance, I mean, you're trying to effectuate means of directly bringing in the imported water supply by pumping wells into Medicine Creek in lieu of letting it seep into the groundwater being accounted for in that means currently?

MR. JIM SCHNEIDER: Yeah, and that is where there is somewhat of a tie to the fact

that these lands are being retired because to the extent that currently or historically that that water was pumped and applied to these lands that was imported water, that water wasn't then able to cause increases in the stream flow in the Republican River Basin. So the same thing would apply to the, you know -- the effect of new wells and that could be accommodated through the -- through proposed changes to the accounting procedures.

COMMISSIONER WOLFE: This is Commissioner Wolfe again, and one last question, I apologize for the questions here, but what, if anything, would have to be done to the RRCA Groundwater Model to account for this project, if anything? Or what you're proposing, is it all accomplished in the changes in the accounting procedure pursuant to these provisions on the imported water supply that you've referenced?

MR. JIM SCHNEIDER: Well again, I think we would, you know -- the manner that it's accounted for including any -- any necessary changes, if any, to the Groundwater Model or the way the Groundwater Model is used would be

brought forward in those proposed accounting changes.

COMMISSIONER WOLFE: Maybe I --

MR. JIM SCHNEIDER: We're --

COMMISSIONER WOLFE: Go ahead.

MR. JIM SCHNEIDER: Well, I guess -- I guess, I mean, you know, I think that's the next step once we can get some fundamental agreement on the -- that the concepts and the, you know -- our clear belief that this is -- that this project would be enhancing the imported water supply credit that Nebraska currently receives.

COMMISSIONER WOLFE: Commissioner Wolfe here. Maybe my question was more related to -- I'm kind of comparing this in a way to Colorado's proposal where we're drying up acreage and then utilizing wells to then pump that at historical consumptive use water into the river. Maybe my question is more for how these wells that you would utilize to pump into Medicine Creek, how do you envision those would be dealt with in the RRCA Groundwater Model?

MR. JIM SCHNEIDER: Yeah, I understand and I think certainly the wells would be -- the pumping of these wells would be included in the

running of the RRCA model as we go forward and there would -- they would have to be treated a little differently than the irrigation wells which have a, you know -- an efficiency factor applied to them. So those are the changes we'd have to address in the accounting procedures and reporting requirements, but certainly we would envision that pumping would be included in the model going forward.

COMMISSIONER WOLFE: Okay. Thank you, Jim. That's all the questions I have at this time.

MR. JIM SCHNEIDER: Sure. (Pause)

COMMISSIONER BARFIELD: Okay. Well, as I indicated, I guess, we sort of need an opportunity to review this. We're certainly not -- certainly raising, I think, some questions about its basis, probably certainly want the opportunity to look at what you've presented here. I think Commissioner Wolfe has indicated some additional information that could be provided, I think, would be helpful for us as we sort of consider this matter and work forward.

I know the project is an important one

for the State of Nebraska and certainly has important implications to the Compact accounting modeling and compliance and so forth. So we'll certainly do our best to provide again some preliminary comments to you as soon as we can. Obviously the holidays are upon us and I am going to need some input from a variety of sources here to provide some feedback, so --

MR. JIM SCHNEIDER: I appreciate that and would note that the project should also be very important to the State of Kansas. This is a significant undertaking by the State of Nebraska. Many, many millions of dollars have been and will be spent and for the sole purpose of assuring that Nebraska receives its Compact Allocations next year and in the future, so -- that Kansas receives its Compact Allocations next year and in the future, so we -- we feel this is very important and a very good project to insure that Kansas does, is able to receive its Compact Allocations and Nebraska remains within hers.

COMMISSIONER BARFIELD: Again, the information that Dick, Commissioner Wolfe mentioned as being helpful, do you have any idea

of when some of that information could be provided? Because I -- I do think more details would help us to sort of -- in our consideration of this matter.

MR. JIM SCHNEIDER: I guess -- so are you saying that you -- you're not going to be able to understand this general proposal without the specifics? We really are just looking for some -- a meeting of the minds on the -- the general concepts so that we know how we need to proceed and whether or not we'll be able to work through this within the RRCA or need to pursue the dispute resolution provision.

So I guess I'm not seeing why we can't, based on this -- this general information, have some general meeting of the minds on the fact that this is -- this is imported water and it will -- it should increase the imported water supply credit when it's delivered to the streams of the Republican River Basin.

So we really -- we really need to get that response within the next two weeks, similar to the augmentation plan. And then we would have additional information forthcoming at that time or after that, but we would know how we

would need to pursue those next steps. (Pause)

COMMISSIONER BARFIELD: Well again, I -- I do think more information -- and I think Commissioner Wolfe has done a good job of sort of expressing some of the questions that are -- that we have as well regarding this project, and I think it certainly would be helpful for us in considering this.

I do consider this something different than we've ever considered before, and certainly as you've indicated, a very important project for Nebraska. And I guess we can attempt to give you some feedback based upon this -- these four paragraphs here, but I think some of the information that Commissioner Wolfe has requested will go a long ways to help us to provide a more helpful response at this time and try and help us work through this in a way that we can maybe more forward as opposed to just setting up some sort of confrontation before everybody's really examined the issue carefully.

MR. JIM SCHNEIDER: I'd be happy to answer your questions right now.

COMMISSIONER WOLFE: This is Commissioner Wolfe, and maybe one thing I

just -- based on your clarification there, I understand the approach you're trying to take and Colorado being in this process for a number of years now, I think I understand why you're asking the question you've asked. I think I agree and echo what Chairman Barfield said again, I think, for the request for additional detail, but maybe I see this maybe in a couple stages.

I think what you're asking us now is to kind of give you some feedback on the concept to see if this is like even a DOA-type of thing, a go or no-go. I recognize there's a lot of details to come, but maybe in the second stage of this that what I'd ask for is some additional detail maybe contingent upon the initial review of the concept and we need to provide some feedback and say yeah, it looks like it can go or it can't go, maybe we need some additional information to do that.

And I think we, amongst ourselves here, would commit to give you some feedback within two weeks. Now, whether that means yeah, we think it can go forward or no, we might again in that review -- not having timely reviewed this

as presented to us as of yesterday -- we may ask for some additional details, make that -- I guess to answer your initial threshold question.

But, I guess, in the spirit of trying to move this along, I think we're committed to giving you some additional feedback in a couple weeks along with your other outline that you've presented and then at that stage, I think, depending on what we do have in the next couple weeks will dictate how we frame our answer to your overall threshold question.

MR. JIM SCHNEIDER: Thank you, Commissioner Wolfe. I think that summarizes some -- what I was trying to get to very, very well. And we would appreciate -- greatly appreciate that feedback from Colorado and Kansas in the next two weeks.

I mean, this is similar to -- Chairman Barfield, this would be similar to when you rejected our plan for alternative water source, your administration, without any discussion whatsoever. If that's what you want to do with this as well, we'd like to know that right away so we can move forward. (Pause)

COMMISSIONER BARFIELD: Well, I see that

as quite different. There's a very, you know, clear process and requirements, at least in our view for that plan, so here that's not the case. But I do think that I don't have any additional questions for you at the moment, I certainly may as we look at this issue. We will, as we said, envision to give you the feedback that we can based on what you provided. Again, the additional details will provide, I think, more significant feedback.

I think really on both of these, rather than put something in front of us and say yea or nay, we do need to foster a dialogue and sort of enter a process by which we exchange, you know, thoughts and concerns; and again, if based on that feedback you've got questions that suggest that, you know, maybe we'd have an additional discussion, so we can sort of figure out how to move forward on each of these.

So rather than a -- give us your comments and if it's not a green light then we can close the door, let's work through this in an interim fashion so that we each know what each other's talking about and have the opportunity for the kind of exchange we need to

consider these important projects.

COMMISSIONER DUNNIGAN: Chairman Barfield, this is Mr. Dunnigan, and again I'd just like to reiterate along the lines when you were just speaking. That was the reason why it was very important to us that the engineering committee come forward with the framework for augmentation which you provided to us in October and certainly what the augmentation proposal here was based off of. So we are proceeding along those lines to try to have constructive dialogue and try to be clear on what our thinking is and what our intent is.

MR. JIM SCHNEIDER: And please contact me anytime that you do come up with any questions that you have, we'd be happy to -- to provide you the answers to those.

I would just also note before we move on that the confusion that was generated by the misshading in the figure that we sent out, we will -- we will correct the figure and re-transmit it and post it on our website so that we have that cleared up and hopefully that will be helpful as well. (Pause)

COMMISSIONER BARFIELD: All right.

Well, thank you, Jim. I guess, I think, unless somebody has a suggestion otherwise, we've probably moved this issue as far as we can at this moment.

COMMISSIONER WOLFE: Commissioner Wolfe. Just a couple points maybe for clarification; one, suggesting we'd respond in two weeks would put us on Christmas Day. Could I suggest that we get back by the end of the month and in that process -- I'm just throwing this out, I haven't thought it all the way through, but it seems like it would be helpful, whatever feedback we're providing to Nebraska, that if each of the states, Kansas and Colorado, would ensure that the other state is copied on any of the correspondence to Nebraska, I think that would help facilitate a more timely response to their question.

COMMISSIONER BARFIELD: Okay. Thank you. Yes, certainly that seems like a very reasonable proposal, a helpful one.

(inaudible)

COMMISSIONER BARFIELD: Okay.

COMMISSIONER WOLFE: Just on that -- this is Commissioner Wolfe again. Once we

provide those comments, could we anticipate a certain time frame in which Nebraska would respond to those and maybe that would necessitate another, you know -- either some questions that were raised in that response that Nebraska would have to answer and I could see maybe another iteration of this? Could we anticipate just like another two-week or something, I don't know what you think, Commissioner Dunnigan, on turn-around from you and then allow Kansas and Colorado to have an opportunity to respond to your responses to our responses to you?

COMMISSIONER DUNNIGAN: Yes, Commissioner Wolfe, we would respond back within two weeks of the information being submitted to Nebraska and what was in there.

COMMISSIONER BARFIELD: Okay.

COMMISSIONER WOLFE: And then maybe at that stage, through that correspondence, the three states can maybe try to come to a consensus or understanding of where maybe things are at that stage and what extent there's additional dialogue needed or what type of information exchange would be needed at that

point. I think we could defer to that point in maybe January to determine where we go from there.

MR. JIM SCHNEIDER: This is Jim Schneider again. Just so I think we're all on the same page then, we'll expect comments by the end of the month, we'll get back to the other states within -- within two weeks. If you have questions or comments that you would like to submit sooner than the end of the month, we would invite that as well and we can certainly try to turn any responses around as quickly as possible.

COMMISSIONER WOLFE: That would -- that would work with Colorado and I guess with the anticipation that we would be about mid-January at that point and would have to make another determination of where do we proceed based on those responses. And I guess if it's agreed upon amongst the three states that there's a need for additional correspondence on it or a need for a phone discussion, if we think that would be more suitable, certainly Colorado is amenable to that approach just so we have somewhat of an expectation of how this is going

to try to play out, recognizing the time constraints that you're under.

MR. JIM SCHNEIDER: And certainly, yeah, we would -- we would certainly think that potentially an additional meeting such as this to discuss those, we would be very open to that if that -- if that -- if all this information, you know, pointed towards the need, that sounds great.

COMMISSIONER BARFIELD: Okay. Thank you. So I think we've identified the next steps and I think we're indicating we'll -- after taking those, we'll figure out how to proceed in due course then.

Okay. The next item on the agenda is Nebraska's plan for water administration in 2013. Again, as I indicated, you know, my understanding is Nebraska's projecting a water short year or the Bureau is projecting a water short year next year and Nebraska's preliminary projections are saying it's going to be a Compact call year under their Integrated Management Plan.

I've learned there was some dialogue between the State of Nebraska and the Bureau

regarding how water administrations might occur in that context and discussion of potential closing notices on the Bureau projects and potentially even including Harlan County. And so as I indicated, I called Commissioner Dunnigan to have a little bit of an understanding of what -- what is being envisioned and likely actions and effect on Kansas. Obviously we're very concerned with the operation of Harlan County and obtaining our share of the basin's water supply and the benefits of the re-regulation in Kansas.

So anyway, I guess again if I can, Mr. Dunnigan, maybe turn it over to you to provide a little bit of background here in terms of the dialogue and options that are being considered for water administration next year?

COMMISSIONER DUNNIGAN: Thank you, Chairman Barfield. I'll have Deputy Director Jim Schneider talk about Nebraska's plan for water administration 2013 with some context to the projected Compact call and the other provisions in the Integrated Management Plan.

MR. JIM SCHNEIDER: Thank you. I guess what I would refer the group to is the expert

report that was authored by myself dated March 15th, 2012 entitled "Nebraska Response of Expert Report Concerning Nebraska's Future Compliance;" and specifically Appendix C to that report is titled "Republican River Basin Integrated Management Plan" and even more specifically, the groundwater controls and surface water controls that exist or that are described within that appendix. So, you know, that is --

COMMISSIONER WOLFE: Jim, can I just interrupt real quick? This is Commissioner Wolfe.

MR. JIM SCHNEIDER: Sure.

COMMISSIONER WOLFE: I don't know, is the court reporter still on or is that her trying to beep back in?

COURT REPORTER: I'm still on, I just muted my button. Can you still hear me?

COMMISSIONER WOLFE: Yes, I just wanted to make sure because I hear a beeping on the phone and I just didn't know if somebody was trying to get back in.

COURT REPORTER: Yes, I did, and I muted my phone thinking it was maybe on my end, so I

can mute it back again if that helps.

COMMISSIONER WOLFE: As long as you're on, then fine. I'm not sure where that noise is coming from.

COURT REPORTER: I'm here.

COMMISSIONER WOLFE: All right. Thank you.

MR. JIM SCHNEIDER: So that was basically what I had to say. We did meet with the Bureau to specifically discuss the fact that we are projecting a Compact call here that will require the closure of actual flow and storage permits, but as detailed in this report, we wanted to reiterate to them that there is potential flexibility to re-regulate water in Harlan County Lake specifically and potentially even other reservoirs, depending on a plan that they were able to develop. So that's really where we're at.

COMMISSIONER BARFIELD: Well, thank you. I guess we'll proceed with the beeping unless the group wants to try and re-initiate the call. That would be another alternative here. Can we just carry through or would you all like to re-initiate the call?

COMMISSIONER DUNNIGAN: We're fine.

COMMISSIONER WOLFE: Colorado's fine, go ahead.

COMMISSIONER BARFIELD: All right. Let's attempt to continue.

COMMISSIONER WOLFE: Are we going to run out of time?

COMMISSIONER BARFIELD: I don't -- I don't think -- I don't have any idea what it is, so probably we'll finish with the beeping sound.

So to understand your last comment, Jim -- okay. It went away, very good. Yeah, Court Reporter, are you still there?

COURT REPORTER: Yes, I'm still here. Can you hear me?

COMMISSIONER BARFIELD: Yes, we can hear you.

So you are under discussions with the Bureau regarding potential actions that they could take to avoid those closing notices at various locations?

COMMISSIONER DUNNIGAN: Chairman Barfield, our discussion with the Bureau was at the request of the Bureau, and what we wanted to make clear was that Nebraska would maintain

flexibility in -- in what it does so that if -- if the Bureau had a -- had a plan and came forward with that, we would look at that and maintain flexibility.

MR. JIM SCHNEIDER: And this is Jim Schneider, and I think we were clear to them that, you know, the primary requirement that we would need to look at is insuring Compact compliance. So if some alternate operations that they propose could still fit within that primary requirement of maintaining Compact compliance, that would be what we would look at, so we are -- that's really where we're at.

COMMISSIONER DUNNIGAN: And I believe Aaron Thompson is on the phone, too, and Aaron was at that meeting if he wanted to add anything else about that discussion with the Bureau.

(Pause)

MR. AARON THOMPSON: This is Aaron Thompson with the Bureau. I was at that meeting, I don't think I have anything great to add. We are currently working with our district, irrigation district in the basin, we're talking with Army Corps of Engineers.

Just a simplistic version, I think Jim

Schneider relayed to us, you know, if we had the capability to find 20,000 acre-feet which is the projected -- or which will be close to the projected shortfall forecast for Nebraska, that that might be a scenario which we could avert having these closing notices put on. So we're currently working in the basin to see what kind of scenarios we can come up with to -- that will work for everybody involved.

COMMISSIONER DUNNIGAN: Thank you, Aaron.

MR. AARON THOMPSON: Yep.

COMMISSIONER BARFIELD: Well obviously, you know, Kansas is very interested in all of these discussions and I would ask you all to keep us apprised of your discussions with respect to this matter. Obviously we want to enjoy the benefits of our share of the basin water supply, we want to enjoy the benefits of re-reglation of Harlan County, and certainly want to support and be a part of any discussions that might, you know -- might affect the ability for us to make use of that water supply and enjoy the benefit of that re-regulation of the federal projects that exist in the basin.

So I'm not quite sure procedurally how to move forward or suggest we move forward given all of that, but we want to make sure that your, you know -- your attempts to get in compliance are not negatively impacting our ability to use our share of the water supply. So, you know, again I would ask you to keep us apprised, and certainly if there's some way that we can be a helpful part of your discussions, we would want to do that, you know.

We have had some discussions with both the Bureau and the Corps. Obviously a closing notice on Harlan County would definitely affect us and we would wish to do whatever we could, you know, to avoid that, understand.

So under -- so at this point then, obviously your projections are not final until January 1, is that correct?

MR. AARON THOMPSON: Yeah, that's correct.

COMMISSIONER BARFIELD: And then at that point -- and obviously there's nothing in the weather forecast that I see that were to suggest there could be any significant change in the posture of this problem, but again, it's not

final until January 1. So that's when, as I understand it, there will be a final determination as to whether next year is a Compact call year and whether the NRDs then are required to develop their plans to deal with the shortfalls that are in your projections, right?

MR. JIM SCHNEIDER: Yeah. This is Jim Schneider and that's correct, that the preliminary forecast was issued on November 15th. Since then we've been further refining the data as well as, you know -- so there's more than just the weather and the potential for more rain between now and then, but we will have that finalized forecast with, you know -- with the data fully refined and that is -- this actually will be issued prior to January 1. So certainly on January 1st everyone will have it in hand.

COMMISSIONER BARFIELD: I see on your website the presentation that you made that provides the preliminary conclusions, I guess. So there will be another version of that prior to January 1, you said?

MR. JIM SCHNEIDER: Yes, I don't -- I don't -- that was a presentation for a meeting

with the Republican River Water Management District Association. There was also a letter and a kind of a forecast document that we put out every year and so that will be posted on our website. I guess I'm saying I don't know that that will be a presentation per se, but the information will be there.

COMMISSIONER BARFIELD: Correct, yeah. I wasn't really worried about the particular form of it, just the information itself. Obviously Kansas' interest in this matter is with the potential of closing others; Harlan is certainly significant. The spreadsheets and modelings that you used to develop that estimate, is that also provided or is that something that Nebraska could provide so that we could fully understand the basis of that number?

MR. JIM SCHNEIDER: Well, the IMPs in my report fully document the data sources and the methodologies. There isn't -- in terms of next year, there isn't the model run. It uses the previous two-year average of the groundwater CBCU in that regard, so -- and the forecast really itself doesn't use the RRCA Accounting

Procedures per se, it uses a proxy for those with the basin water supply concept that's discussed in my expert report.

COMMISSIONER BARFIELD: Correct. I guess I'm just asking if the numbers you crunched, the spreadsheet that you developed, is that something you could make available to Kansas?

MR. JIM SCHNEIDER: I'm sure we can.

COMMISSIONER BARFIELD: I appreciate it. Now, the negotiations between DNR and the Bureau Surface Water Projects, does that have a deadline? I know the NRDs, they're required by January 31st to develop their plan. Is there a similar deadline or time frame for the sort of discussions between DNR and the Surface Water Projects to determine the water administration for the year?

MR. JIM SCHNEIDER: Are you asking that if this problem isn't solved by January 1, could a solution come forward after that and could that then be put into place?

COMMISSIONER BARFIELD: Well, I think that's an extension of my question. I guess I was asking if there is an end-of-the-year

deadline that is sort of expected in your process for that discussion. Certainly I might have termed it your suggestion, if something could be negotiated after that.

COMMISSIONER DUNNIGAN: This is Commissioner Dunnigan, and we're not in negotiations with the Bureau of Reclamation. We went to Billings and we had discussions with the Bureau on the flexibility that we could provide to them and that was the extent of the discussions. And that was outlined in my letter to you, Chairman, on December 6th, 2012. So to portray these as negotiations, we're not in negotiations with the Bureau.

And then on your other question, I'll let Deputy Director Schneider address that. The time line -- time lines that we're talking about are prescribed in the Integrated Management Plan.

MR. JIM SCHNEIDER: Yeah, this is Jim Schneider. So we're certainly preparing to issue closing notices to all natural flow and storage permits, and those will go out on January 1st. If a plan comes forward beforehand and it can prevent that, then that's where we

would be. If something came forward afterward and it provided a solution that would allow us to lift those, then that would certainly be a potential as well.

COMMISSIONER BARFIELD: All right. Well, thank you for that, that response. And I apologize for mischaracterizing the dialogue between the Bureau and the State of Nebraska, I should have said discussions or whatever.

Okay. Well again, with respect to the closing notice at Harlan County then, unless there is -- what are -- what are ways to avoid the closing notice in Harlan County with respect to Kansas' share of the water supply?

MR. JIM SCHNEIDER: Well -- this is Jim Schneider and, you know, I guess I -- it's difficult to talk about specifics without understanding what, you know -- what the more general is that we'd be looking -- what we'd be looking at, but we are -- when we issue the forecast, we -- and it has a projected shortfall, the NRDs will be developing management actions to offset that shortfall into the river and we will be administering the stream to pull that water through. So, you

know, something that provides that, that allows that water to be available absent the administration of surface water is generally I think what we'd be talking about and what Reclamation would potentially bring forward.

COMMISSIONER BARFIELD: All right. I understand that, you know, KBID, Kansas Bostwick Irrigation District, is projected to have a supply of six to eight inches, is my understanding, for the coming year. Obviously through your actions you're anticipating providing in some manner NRD actions that would provide an enhanced supply of what otherwise would be there.

I think the Bostwick Irrigation District would be in a position to use additional supplies, if available. I was just trying to figure out how we get there so that you can -- and obviously if we'd use it then that would, I think, accomplish your objective to make sure that water gets to Kansas without -- without Nebraska's use of it.

So again, I'm just interested in figuring out how the states or the federal agencies can sort of get to a point where we

can -- where you can get the compliance and we are not harmed in that process, so -- . So I was trying to figure out what it would take to get there and what -- what's necessary and how we can facilitate the discussions necessary to get there.

MR. JIM SCHNEIDER: Well yeah, I think, you know, on page 50 of my expert report it talks about the, you know -- and this is an example, I suppose there may be other ways, but the potential to re-regulate that water, that water that's being passed through Harlan County Lake under the closing notice, if it can be temporarily re-regulated by the Bureau, and that's really the discussion that you need to be having with the Bureau.

And there could be other scenarios. I think Aaron referred to another, you know, example I provided where they identified where that water was and would be available and then we didn't, you know -- and we knew that that water was going to be released to the State of Kansas, either to Kansas Bostwick or otherwise, then we would be able to look at that. And I can't -- it's difficult to say more without

knowing specifics so we would be able to look at that and determine whether or not that basically dealt with the purposes that are -- that this administration of surface water is in place for.

So -- I guess I don't know how else to explain it. (Pause)

COMMISSIONER BARFIELD: Well, at this point, Nebraska's sort of had their communication with the Bureau, sort of laid out some options. You're sort of waiting on either them or us to present a plan to you to evaluate, is that where we're at?

MR. JIM SCHNEIDER: Yes.

COMMISSIONER BARFIELD: Okay. Just give me a moment here. (Pause) Okay. Well, thank you for that. I guess obviously we'll need to coordinate that with the federal agencies and obviously keep you in the dialogue as well.

And Aaron, I take it from your earlier comments the Bureau doesn't have a position right now, you're still working through that, your processes, is that correct?

MR. AARON THOMPSON: That's correct, you know, we're looking for any options that we can -- we can find that would help Commissioner

Dunnigan modify his order to help -- help all users in the basin. So we're out there looking for options or ways to -- to avoid -- to avoid having the closing notices put on all reservoirs.

COMMISSIONER BARFIELD: Okay. Well, we'll continue and we, you know -- again, I've talked to Commissioner Dunnigan yesterday and we have had some discussions with the Bureau and the Corps both and we'll certainly continue those discussions to determine -- I think determine a way to again allow Nebraska to take the actions that's needed while finding ways to insure that Kansas is not injured in that process, so I'm not sure what else we can do on this point. So anybody else have anything to add? (Pause)

COMMISSIONER WOLFE: Nothing from Colorado.

COMMISSIONER DUNNIGAN: Nothing from Nebraska.

COMMISSIONER BARFIELD: I guess I would ask just a couple quick questions. Now obviously, there's a pretty low amount of water that's moving through the system at this

juncture. I think there's maybe 30 or 40 CFS in Medicine -- the Medicine drainage, you know, there's under 10 CFS that's coming into Harlan and very little into Swanson. So have you had any discussion as a practical effect of these closing notices with such low inflows? I mean, I don't even know the minimum releases of these reservoirs, do you know?

MR. JIM SCHNEIDER: This is Jim Schneider. I don't know minimum releases for the reservoirs; and if that's going to be an issue practically speaking of the closing notices, you know, the Compact call will be in place all year and we will administer that call on an ongoing basis. So, you know, as conditions change we'll evaluate those and the administration that we do for that call will continue in some fashion throughout the year.

COMMISSIONER BARFIELD: Okay. One other clarifying question. The December 6th letter, we were -- we're not clear what that letter is. Can you help me understand that, what the -- what that letter is?

COMMISSIONER DUNNIGAN: Yes, Chairman Barfield, that was a letter to you dated

December 6th writing to inform you that we had met with the Bureau of Reclamation to discuss potential impact and measures available to water users.

COMMISSIONER BARFIELD: Okay. I haven't seen that yet, but we'll -- we'll -- we'll find that; and if I can't find it, I'll certainly let you know. Thank you for that.

Okay. Anything else for us today?

COMMISSIONER DUNNIGAN: No, this is Chairman -- Chairman. This is Commissioner Dunnigan. I'd just like to again thank you, Chairman Barfield and Commissioner Wolfe, for accommodating this meeting with your schedules. It is important to Nebraska, so I appreciate that. Thank you.

COMMISSIONER BARFIELD: Okay. All right. With that, I will take a motion to adjourn.

COMMISSIONER DUNNIGAN: So move.

COMMISSIONER WOLFE: Second.

COMMISSIONER BARFIELD: All right. All in favor?

COMMISSIONER WOLFE: Aye.

COMMISSIONER DUNNIGAN: Aye.

COMMISSIONER BARFIELD: Thank you very much.

COMMISSIONER WOLFE: Happy Holidays everyone.

(Whereupon, the conference call meeting was adjourned)

* * * * * * * * *

C E R T I F I C A T E

STATE OF KANSAS
ss:
CHEYENNE COUNTY

I, Paula A. Keller, a Registered Professional Reporter within and for the State of Kansas, certify that the foregoing is a full and correct transcript of all the oral evidence and oral proceedings had in this matter at the aforementioned time and place.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal at St. Francis, Cheyenne County, Kansas, this ____ day of December, 2012.

_____

Paula A. Keller, RPR, CRR
P. O. Box 846
St. Francis, Kansas 67756

Republican River Compact Special Meeting

December 11, 2012 – via Telephonic Conference

Attendance by Location

Name	Representing
Topeka, Kansas – Division of Water Resources Headquarters	
David Barfield	Kansas Commissioner, Chair
Chris Grunewald	Kansas Attorney General's Office
Burke Griggs	Kansas Division of Water Resources
Chris Beightel	Kansas Division of Water Resources
Sam Perkins	Kansas Division of Water Resources
Kim Christiansen	Kansas Department of Agriculture
Matt Unruh	Kansas Water Office
Susan Stover	Kansas Water Office
Stockton, Kansas – Division of Water Resources Field Office	
Scott Ross	Kansas Division of Water Resources
Chelsea Erickson	Kansas Division of Water Resources
Courtland, Kansas – Kansas Bostwick Irrigation District Office	
Kenneth Nelson	Manager, Kansas Bostwick
Monty Dahl	Kansas Bostwick Irrigation District
Gary Householder	Kansas Bostwick Irrigation District
Colby, Kansas – Groundwater Management District #4 Office	
Wayne Bossert	Manager, Groundwater Management District #4
Monty Biggs	Groundwater Management District #4
Walt Biggs	Groundwater Management District #4
Warrant, Kansas – United States Geologic Survey Office	
Brian Loving	United States Geologic Survey
Denver, Colorado – Colorado Division of Water Resources Headquarters	
Dick Wolfe	Colorado Commissioner
Mike Sullivan	Colorado Division of Water Resources
Ivan Franco	Colorado Division of Water Resources
Scott Steinbrecher	Colorado Attorney General's Office
Willem Schreüder	Principia Mathematica
Unspecified Colorado Call-In Locations	
Dave Keeler	Colorado Division of Water Resources
Peter Ampe	Republican River Water Conservation District

Name	Representing	December 11, 2012

Lincoln, Nebraska - Department of Natural Resources Headquarters

Brian P. Dunnigan	Nebraska Commissioner
Justin Lavene	Nebraska Attorney General's Office
Blake Johnson	Nebraska Attorney General's Office
Jim Schneider	Nebraska Department of Natural Resources
Jesse Bradley	Nebraska Department of Natural Resources
Tom Wilmoth	Council for Nebraska
Don Blankenau	Council for Nebraska
Tom Riley	Flatwater Group
David Kracman	Flatwater Group
Mark Groff	Flatwater Group
Art Hovey	Lincoln Journal Star Newspaper

McCook, Nebraska - United States Bureau of Reclamation Office

Craig Scott	Bureau of Reclamation
Aaron Thompson	Bureau of Reclamation
Bill Peck	Bureau of Reclamation
Brad Edgerton	Frenchman-Cambridge Irrigation District
Steve Cappel	Middle Republican Natural Resource District
John Palic	Middle Republican Natural Resource District
Bill Hoyt	Middle Republican Natural Resource District
Don Felker	Frenchman Valley and H&RW

Red Cloud, Nebraska - Nebraska Bostwick Irrigation District Office

Mike Delka	Manager, Nebraska Bostwick Irrigation District
Tracy Smith	Nebraska Bostwick Irrigation District
Walter Knehans	Nebraska Bostwick Irrigation District

Imperial, Nebraska – Upper Republican Natural Resource District Office

Nate Jenkins	Assistant Manager, Upper Republican Natural Resource District

Curtis, Nebraska - Middle Republican Natural Resource District Office

Dan Smith	Manager, Middle Republican Natural Resource District
Robert Merrigan	Middle Republican Natural Resource District

Holdrege, Nebraska - Tri-Basin Natural Resource District Office

John Thorburn	Manager, Tri-Basin Natural Resource District

North Platte, Nebraska - United States Geologic Survey Office

John Miller	United States Geologic Survey

AMENDED AGENDA FOR

SPECIAL MEETING OF THE
REPUBLICAN RIVER COMPACT ADMINISTRATION

December 11, 10 AM, Central Standard Time
Via Telephone

1. Introductions
2. Modification and adoption of the agenda
3. Status of and action on items deferred at the annual meeting
    a. Approval of annual reports
    b. Approval of transcripts
    c. Adoption of precipitation data methodology using PRISM as proposed at the annual meeting
    d. Adoption of revised rules of the RRCA
4. Nebraska augmentation projects and discussion
5. Nebraska's plan for water administration
6. Adjournment

Rules and Regulations

Republican River Compact Administration

Revised December 11, 2012

1. Pursuant to Article IX of the Republican River Compact ("Compact"), the States of Colorado, Nebraska and Kansas have the duty to administer the Compact through the officials in such States who are now or may hereafter be charged with the duty of administering the public water supplies in each of such States. Such officials shall be the members of an administrative body hereby designated as the Republican River Compact Administration ("RRCA"). The purpose of the RRCA shall be to administer the Compact. Such administration shall include but not be limited to the responsibilities as are assigned to it in the Final Settlement Stipulation dated December 15, 2002, approved by the States of Colorado, Nebraska and Kansas and filed in the case of *Kansas v. Nebraska and Colorado*, No. 126, Original, in the Supreme Court of the United States ("Final Settlement Stipulation").
2. As of the effective date of these Rules and Regulations, the officials who are charged with the duty of administering the public water supplies in each of the three States, and who therefore constitute the Members[1] are the individuals who hold the following offices: the State Engineer of the Division of Water Resources of the Colorado Department of Natural Resources; the Director of Natural Resources for the State of Nebraska; and, the Chief Engineer of the Division of Water Resources of the Kansas Department of Agriculture.
3. Each RRCA Member's term shall run concurrent with his or her term of office as the official charged with administering the public water supplies in his or her State.

[1] Reference in the RRCA records to "Commissioner(s)" refers to the Members as described in these Rules and Regulations.

4. Each State official shall be recognized as a Member of the RRCA upon furnishing to the other Members satisfactory evidence that he or she is the official in his or her State charged with the duty of administering the public water supplies in such State.
5. Any Member of the RRCA may appoint an alternate person to serve in his or her place. In the event any Member is unable to perform his or her official duties, the appointing authority of the State represented by that Member may appoint the Member's alternate to serve in his or her place. Any such alternate shall be recognized as that State's representative to the RRCA upon presentation to the Members from the other States of a written appointment letter signed by the absent Member, or, as applicable, by the appointing authority of the State involved. An appointment of an alternate shall be valid only for the period of the appointment.
6. The Chair of the RRCA shall be a Member of the RRCA. Each Chair shall serve a term encompassing two annual meetings. The Chair's term shall begin upon the conclusion of the last meeting chaired by the previous Chair and shall expire and the conclusion of the second annual meeting at which her or she serves as Chair. Unless otherwise agreed by all Members, the rotation of the Chair shall be by State in the following order beginning at the conclusion of the annual meeting in 2003: Colorado; Kansas; and Nebraska.
7. The Chair, or his or her alternate, shall preside at all meetings of the RRCA. The Chair may initiate or second motions and vote on all matters coming before the RRCA. The Chair shall issue notice of all meetings to all members as to the time, place, and agenda of the meeting at least 15 days in advance of any regular meeting, unless otherwise agreed by the Members, and as soon as possible prior to any special meeting. Any issue to be raised for dispute resolution at a regular meeting pursuant to paragraph 15 of these Rules and Regulations shall be distributed to the members at least 30 days in advance of the regular meeting. The agenda shall include all items for which a Member makes a timely request for inclusion on the agenda. The Chair or

other person designated by the RRCA shall also keep a record of the proceedings, including official meeting minutes, of all meetings and of all transactions of the RRCA during his or her term of office. The record of proceedings shall include: minutes; Annual Report; reports required by the Final Settlement Stipulation; committee or subcommittee reports; the data, computations and results required in the Accounting Procedures; and such other matters as deemed appropriate by the RRCA. Meeting minutes will not be official until approved by the RRCA. Unless otherwise agrees to by all Members of the RRCA, the Chair shall be responsible for the preparation of an electronic recording of each meeting, unless any Member requests in advance a transcript of each meeting. The Chair will be responsible for providing a copy of the record of proceedings for that year. The RRCA, through the Chair, will maintain an official repository of records of the proceedings.

8. The RRCA hereby creates a standing Engineering Committee that shall be composed of one representative from each State appointed by the RRCA Member from that State. The RRCA may create other standing, ad hoc or special committees composed of members of the RRCA and/or other persons appointed by the Members. The RRCA may assign to such committees any tasks that it determines to be appropriate.
9. The RRCA shall hold a regular annual meeting prior to ~~August 1st~~ September 1st each year. However, the Chair may waive an annual meeting, or hold the meeting at a later date, upon unanimous written consent of the Members. The annual meeting shall be held at a location in the Chair's State at a time and place acceptable to the other members.
10. The RRCA shall hold a special meeting, other than a meeting to address a "fast track issue" as provided for in the Section VII of the Final Settlement Stipulation, upon written request of any Member and with the concurrence of the other two Members. The Chair of the RRCA shall poll all of the Members prior to setting the meeting date, time, and place of a specially scheduled

meeting. All Members shall make a good faith effort to arrange a mutually agreeable date, time, and place for all meetings.

11. A quorum for a RRCA meeting shall be present only when all of the Members or their duly appointed alternates are in attendance. The RRCA may act only by unanimous vote of all members or duly appointed alternates. Each State shall have one vote. The Chair shall document each action of the RRCA by formal written resolution or such action shall be recorded in the approved minutes. The RRCA shall honor a request by any Member or duly appointed alternate that action on any matter be by formal resolution.
12. The RRCA shall prepare and approve an annual report that includes the official actions taken by the RRCA at the annual meeting and at any special meetings, a summary of the compact accounting for the previous year and such other matters as the RRCA may deem appropriate. The Chair shall furnish copies of the report to the President of the United States, the Governors of the States of Colorado, Nebraska and Kansas, the officials of appropriate State and federal agencies and to any other person, as the RRCA determines appropriate.
13. The RRCA may make amendments, revisions, deletions, or additions to these Rules and Regulations at any meeting of the RRCA. Unless otherwise agreed to by the RRCA, written notice and a copy of any proposed change must be sent to all Members by the Member proposing the change at least 15 days in advance of any meeting at which the RRCA shall consider such changes. Any Member may offer modifications of any such proposed changes at any time prior to the RRCA acting on those proposed changes.
14. Compact accounting and data exchanges among the States shall be done annually in accordance with the Final Settlement Stipulation, including the RRCA Accounting Procedures and Reporting Requirements~~, January 12, 2005~~ dated August 12, 2010, and the Republican River Compact Administration Groundwater Model, ~~Version 12s (V12s), dated January 12, 2005~~ Version 12s2

(V12s2), dated August 6, 2010. Unless otherwise agreed to by the RRCA Members, the annual accounting shall be completed by the Engineering Committee and submitted to the RRCA no later than June 1st of the year following for which the accounting is being done. The RRCA may modify the RRCA Accounting Procedures and the RRCA Groundwater model only by contemporaneously amending these Rules and Regulations to show the date, title or version, as appropriate, of the RRCA Accounting Procedures and/or the RRCA Groundwater model that the RRCA shall use. At the time of any modification, the RRCA shall specify the time and method for implementation of each modification.

15. Any dispute arising among the States shall be resolved in accordance with the procedures set forth in Article VII of the Final Settlement Stipulation.

Adopted by the Republican River Compact Administration this 11th day of December, 2012.

_____

David W. Barfield
Commissioner for Kansas

_____

Dick Wolfe
Commissioner for Colorado

_____

Brian P. Dunnigan
Commissioner for Nebraska

Rules and Regulations

Republican River Compact Administration

Revised December 11, 2012

1. Pursuant to Article IX of the Republican River Compact ("Compact"), the States of Colorado, Nebraska and Kansas have the duty to administer the Compact through the officials in such States who are now or may hereafter be charged with the duty of administering the public water supplies in each of such States. Such officials shall be the members of an administrative body hereby designated as the Republican River Compact Administration ("RRCA"). The purpose of the RRCA shall be to administer the Compact. Such administration shall include but not be limited to the responsibilities as are assigned to it in the Final Settlement Stipulation dated December 15, 2002, approved by the States of Colorado, Nebraska and Kansas and filed in the case of *Kansas v. Nebraska and Colorado*, No. 126, Original, in the Supreme Court of the United States ("Final Settlement Stipulation").
2. As of the effective date of these Rules and Regulations, the officials who are charged with the duty of administering the public water supplies in each of the three States, and who therefore constitute the Members[1] are the individuals who hold the following offices: the State Engineer of the Division of Water Resources of the Colorado Department of Natural Resources; the Director of Natural Resources for the State of Nebraska; and, the Chief Engineer of the Division of Water Resources of the Kansas Department of Agriculture.
3. Each RRCA Member's term shall run concurrent with his or her term of office as the official charged with administering the public water supplies in his or her State.

[1] Reference in the RRCA records to "Commissioner(s)" refers to the Members as described in these Rules and Regulations.

4. Each State official shall be recognized as a Member of the RRCA upon furnishing to the other Members satisfactory evidence that he or she is the official in his or her State charged with the duty of administering the public water supplies in such State.

5. Any Member of the RRCA may appoint an alternate person to serve in his or her place. In the event any Member is unable to perform his or her official duties, the appointing authority of the State represented by that Member may appoint the Member's alternate to serve in his or her place. Any such alternate shall be recognized as that State's representative to the RRCA upon presentation to the Members from the other States of a written appointment letter signed by the absent Member, or, as applicable, by the appointing authority of the State involved. An appointment of an alternate shall be valid only for the period of the appointment.

6. The Chair of the RRCA shall be a Member of the RRCA. Each Chair shall serve a term encompassing two annual meetings. The Chair's term shall begin upon the conclusion of the last meeting chaired by the previous Chair and shall expire at the conclusion of the second annual meeting at which her or she serves as Chair. Unless otherwise agreed by all Members, the rotation of the Chair shall be by State in the following order beginning at the conclusion of the annual meeting in 2003: Colorado; Kansas; and, Nebraska.

7. The Chair, or his or her alternate, shall preside at all meetings of the RRCA. The Chair may initiate or second motions and vote on all matters coming before the RRCA. The Chair shall issue notice of all meetings to all members as to the time, place, and agenda of the meeting at least 15 days in advance of any regular meeting, unless otherwise agreed by the Members, and as soon as possible prior to any special meeting. Any issue to be raised for dispute resolution at a regular meeting pursuant to paragraph 15 of these Rules and Regulations shall be distributed to the members at least 30 days in advance of the regular meeting. The agenda shall include all items for which a Member makes a timely request for inclusion on the agenda. The Chair or

other person designated by the RRCA shall also keep a record of the proceedings, including official meeting minutes, of all meetings and of all transactions of the RRCA during his or her term of office. The record of proceedings shall include: minutes; Annual Report; reports required by the Final Settlement Stipulation; committee and subcommittee reports; the data, computations and results required in the Accounting Procedures; and such other matters as deemed appropriate by the RRCA. Meeting minutes will not be official until approved by the RRCA. Unless otherwise agreed to by all Members of the RRCA, the Chair shall be responsible for the preparation of an electronic recording of each meeting, unless any Member requests in advance a transcript of each meeting. The Chair will be responsible for providing a copy of the record of proceedings for that year. The RRCA, through the Chair, will maintain an official repository of records of the proceedings.

8. The RRCA hereby creates a standing Engineering Committee that shall be composed of one representative from each State appointed by the RRCA Member from that State. The RRCA may create other standing, ad hoc or special committees composed of the members of the RRCA and/or other persons appointed by the Members. The RRCA may assign to such committees any tasks that it determines to be appropriate.
9. The RRCA shall hold a regular annual meeting prior to September 1st each year. However, the Chair may waive an annual meeting, or hold the meeting at a later date, upon the unanimous written consent of the Members. The annual meeting shall be held at a location in the Chair's State at a time and place acceptable to the other members.
10. The RRCA shall hold a special meeting, other than a meeting to address a "fast track issue" as provided for in the Section VII of the Final Settlement Stipulation, upon written request of any Member and with the concurrence of the other two Members. The Chair of the RRCA shall poll all of the Members prior to setting the meeting date, time, and place of a specially scheduled

meeting. All Members shall make a good faith effort to arrange a mutually agreeable date, time, and place for all meetings.

11. A quorum for a RRCA meeting shall be present only when all of the Members or their duly appointed alternates are in attendance. The RRCA may act only by unanimous vote of all members or duly appointed alternates. Each State shall have one vote. The Chair shall document each action of the RRCA by formal written resolution or such action shall be recorded in the approved minutes. The RRCA shall honor a request by any Member or duly appointed alternate that action on any matter be by formal resolution.
12. The RRCA shall prepare and approve an annual report that includes the official actions taken by the RRCA at the annual meeting and at any special meetings, a summary of the compact accounting for the previous year and such other matters as the RRCA may deem appropriate. The Chair shall furnish copies of the report to the President of the United States, the Governors of the States of Colorado, Nebraska and Kansas, the officials of appropriate State and federal agencies and to any other person, as the RRCA determines appropriate.
13. The RRCA may make amendments, revisions, deletions, or additions to these Rules and Regulations at any meeting of the RRCA. Unless otherwise agreed to by the RRCA, written notice and a copy of any proposed change must be sent to all Members by the Member proposing the change at least 15 days in advance of any meeting at which the RRCA shall consider such changes. Any Member may offer modifications of any such proposed changes at any time prior to the RRCA acting on those proposed changes.
14. Compact accounting and data exchanges among the States shall be done annually in accordance with the Final Settlement Stipulation, including the RRCA Accounting Procedures and Reporting Requirements, dated August 12, 2010, and the Republican River Compact Administration Groundwater Model, Version 12s2 (V12s2), dated August 6, 2010. Unless otherwise agreed to

by the RRCA Members, the annual accounting shall be completed by the Engineering Committee and submitted to the RRCA no later than June 1st of the year following the year for which the accounting is being done. The RRCA may modify the RRCA Accounting Procedures and the RRCA Groundwater model only by contemporaneously amending these Rules and Regulations to show the date, title or version, as appropriate, of the RRCA Accounting Procedures and/or the RRCA Groundwater model that the RRCA shall use. At the time of any modification, the RRCA shall specify the time and method for implementation of each modification.

15. Any dispute arising among the States shall be resolved in accordance with the procedures set forth in Article VII of the Final Settlement Stipulation.

Adopted by the Republican River Compact Administration this 11th day of December, 2012.

David W. Barfield
Commissioner for Kansas

Dick Wolfe
Commissioner for Colorado

Brian P. Dunnigan
Commissioner for Nebraska

Outline for Augmentation Plan to RRCA

I. Background on Augmentation in the FSS

The Final Settlement Stipulation (FSS) expressly recognizes augmentation as a management tool to facilitate Republican River Compact compliance. Augmentation is mentioned in three locations throughout the FSS. The first, Subsection III.B.1.k, states that the moratorium on new wells shall not apply to the following:

> *Wells acquired or constructed by a State for the sole purpose of offsetting stream depletions in order to comply with its Compact Allocations. Provided that, such Wells shall not cause any new net depletion to stream flow either annually or long-term. The determination of net depletions from these Wells will be computed by the RRCA Groundwater Model and included in the State's Computed Beneficial Consumptive Use.* ***Augmentation plans*** *and related accounting procedures submitted under this Subsection III.B.1.k. shall be approved by the RRCA prior to implementation.*

The second and third references to augmentation occur in Section IV. Subsection IV.A. states:

> *The States will determine Virgin Water Supply, Computed Water Supply, Allocations, Imported Water Supply Credit,* ***augmentation credit*** *and Computed Beneficial Consumptive Use based on a methodology set forth in the RRCA Accounting Procedures, attached hereto as Appendix C.*

There presently are no "methodologies" set forth in the RRCA Accounting Procedures to determine the augmentation credit referenced in Subsection IV.A. However, Subsection IV.H. states:

> ***Augmentation credit****, as further described in Subsection III.B.1.k., shall be calculated in accordance with the RRCA Accounting Procedures and by using the RRCA Groundwater Model.*

Taken together, these references suggest the following minimal requirements:

1. If the project involves the acquisition or construction of augmentation wells in the moratorium area, those wells may not cause a "new" net depletion either annually or over the "long-term".

2. The RRCA Groundwater Model will be used to determine the extent of any net depletion and whether such net depletion is "new".

3. The RRCA Accounting Procedures will be revised to reflect the appropriate methodology for calculating the augmentation credit.

4. The RRCA Groundwater Model will be used to calculate the credit, assuming, of course, that the project involves an activity that influences groundwater CBCU or the IWS Credit.

5. The RRCA must approve any augmentation plan and related accounting procedures before a state may receive "augmentation credit" for the project, beyond the effect of simply increasing water supply, which will manifest itself in the current RRCA Accounting Procedures.

The States elaborated on these concepts before Special Master McKusick in 2003. See Transcript at 81-3; id. at 16-17. Using the example there provided, a State would be entitled to claim as an "augmentation credit" all water over and above the historic depletion to streamflow, which must be offset first as part of an augmentation project.

II. Baseline Conditions of the Project Area

This section describes the current conditions of the project area.

A. Current Uses of the Project Area

Current acreage

Current number of wells

Map of the area

B. Groundwater Pumping Under Baseline Operations

Meter data

Consumptive use estimates/Recharge

III. Operational Aspects of the Project

This section describes the expected operations of the project once implemented.

A. Conceptual Description of Project Operations

Period of operation

Augmentation delivery point

B. Groundwater Pumping Under Project Operations

Pumping schedule and volumes under the project

Recharge modifications

IV. Groundwater Modeling Analysis of the Project

This section describes the evaluation of the groundwater CBCU to assess the net impact of the project operations on streamflows of the Republican River Basin.

A. Groundwater Depletions Under Baseline Conditions

Depletions under baseline operations historically and projected into the future

B. Groundwater Depletions Under Project Operations

Depletions under the new project operations

C. Net Groundwater Depletions Under Project Operation

No new net depletions either annually or long-term (FSS III.B.1.k)

V. Accounting Procedures Modifications for Crediting the Project

This section describes the modifications to the RRCA Accounting Procedures needed to determine the augmentation credit to be provided in conjunction with the augmentation project.

A. Modifications to the Accounting and Reporting Procedures

Draft of strike-through edits to accounting procedures

Modifications to reporting requirements to include data related to project operations pumping

December 10, 2012

Inclusion of Imports of Platte River Basin Water Supplies into the RRCA Accounting

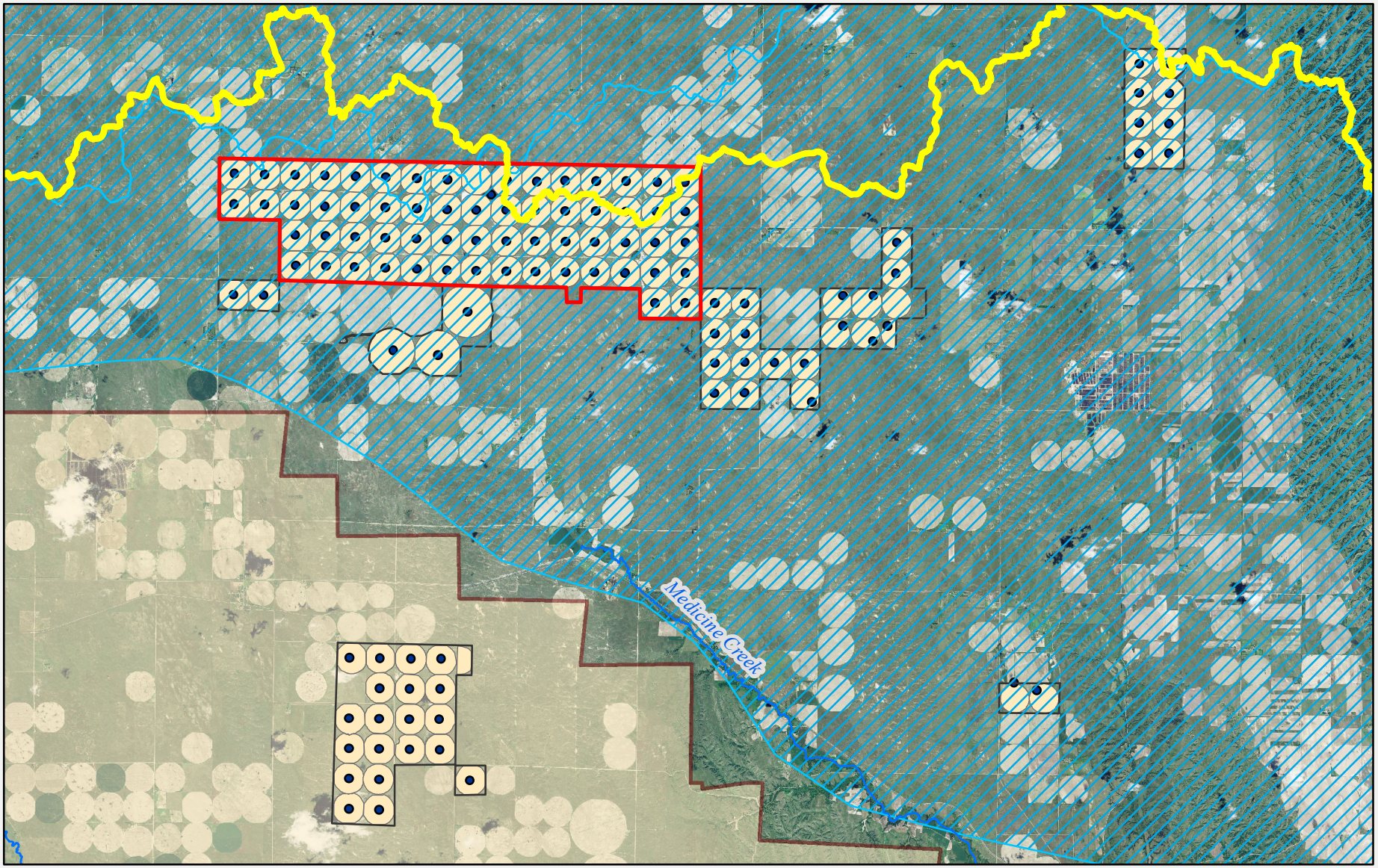
The importation of water from the Platte River Basin is an established element of the Final Settlement Stipulation (FSS). The Imported Water Supply Credit was established to recognize that waters from the Platte River Basin should not be included in the Virgin Water Supply, but rather credit for these imports should be given exclusively to Nebraska.

Nebraska is proposing to enhance these imports through directly pumping this water supply into the Republican River Basin from areas within the Platte River Basin and mound areas near the drainage divide (see figure 1. Project Area Map). These direct imports can easily be accommodated into the Republican River Compact Administration (RRCA) Accounting Procedures and Reporting Requirements (Appendix C of the FSS). Nebraska is proposing to include these imports through modifications to the accounting procedures that will reflect that portion of Platte Basin water recharge that is introduced into the Republican River Basin via pipeline, canal, stream course or combination thereof.

The general nature of the project will be to pump mound recharge from an area in northern Frontier and southern Lincoln counties via a pipeline to the headwaters of Medicine Creek. The well field area from which the pumping will occur is located in the mound area near the drainage divide of the Platte River and Republican River basins and is within the area excluded from the moratorium that was established in the FSS. The lands in the project area were formally cropland with approximately 15,800 acres of irrigated lands that will be permanently retired.

The water pumped from the project will be transported through a pipeline and measured at the point where it is delivered to Medicine Creek. From this delivery point these waters will flow through the stream course into the Main Stem and into or through Harlan County Reservoir.

Figure 1. Project Area Map



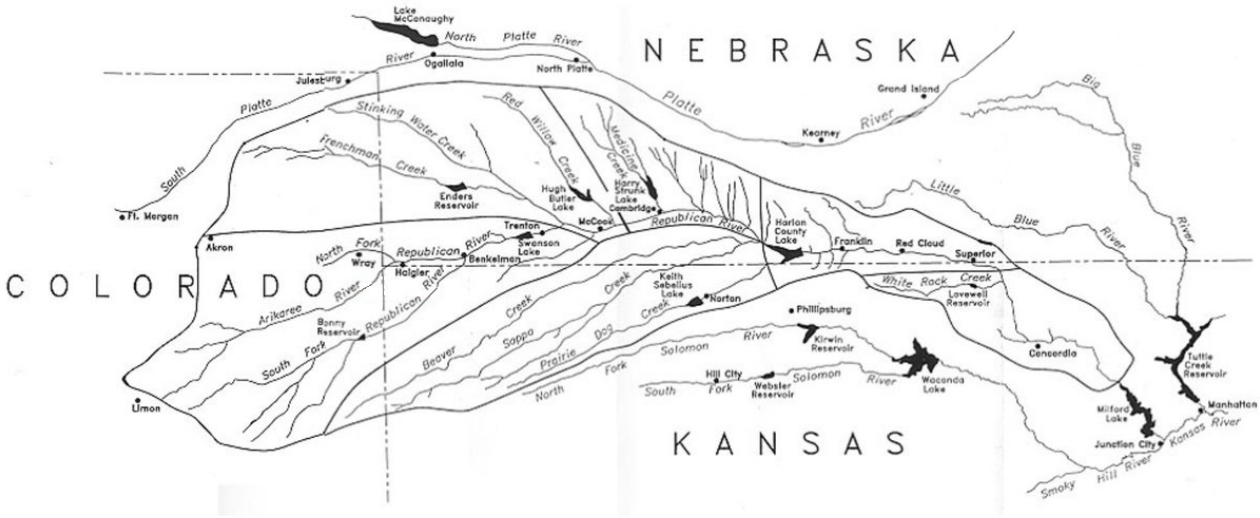
Nebraska
Department of Natural Resources

Mound Area
Project Area
Drainage Divide
Area Excluded from the Moratorium
Previously Irrigated Acres

0 1.25 2.5 5 Miles

N

Attachments



Special Meeting of the RRCA, March 8, 2013

Exhibit A - Transcript

Exhibit B – Attendance List

Exhibit C - Agenda

Exhibit D – Rock Creek Augmentation Project & Resolution

Exhibit E – Kansas March 8, 2013 Letter Regarding Rock Creek Augmentation Proposal

SPECIAL MEETING OF THE

REPUBLICAN RIVER COMPACT ADMINISTRATION

March 8, 2013

9:00 a.m. Central Standard Time

Via Telephone

In Kansas:

Topeka location:
David Barfield, P.E., Commissioner & RRCA Chairman
Chris Beightel, Kansas DWR
Christopher M. Grunewald, KS Attorney Gen.'s office

KBID listening location:
Kenneth Nelson
Monty Dahl
Brad Peterson

Stockton listening location:
Scott Ross, KS DWR water commissioner
Chelsea Erickson, KS DWR

Colby listening location:
Wayne Bossert, GMD4

Kansas City listening location:
Chris Purzer, P.E., USACE
Edward Parker, P.E., USACE
Matthew Jeppson, Esquire, USACE
Eric Shumate, P.E., USACE

Other Kansas call-in:
Burke Griggs, Esquire, KS Attorney General's office

In Colorado:

Denver location:
Dick Wolfe, P.E., Commissioner
Scott Steinbrecher, Esquire
Michael Sullivan, P.E., Deputy State Engineer
Ivan Franco
Willem Schreüder
Keith Vander Horst

Other Colorado call-ins:
Peter J. Ampe, Esquire, RRWCD
Dawn Webster, RRWCD
David Robbins, Esquire, Hill & Robbins
Dave L. Keeler, Colorado water commissioner

In Nebraska:

Lincoln Listening location
Brian P. Dunnigan, P.E., Commissioner
Justin Lavene, Nebraska Attorney General's office
Jim Schneider, P.E., NDNR
Jesse Bradley, NDNR
Don Blankenau, Esquire, Bankenau & Wilmoth LLP
Tom Wilmoth, Esquire, Blankenau & Wilmoth LLP
Mark Groff, TFG
David Kracman, TFG
Tom Riley, TFG
Jason Lambrecht, USGS
Phil Erdman, Senator Mike Johanns' office

McCook listening location:
Rick Ruggles, Red Willow Irrigation District
Steve Cappel, MRNRD
John Palic, MRNRD
James Uerling, MRNRD
Brad Edgerton, FCID
Clarence Jankovits, Jr., FVID
Don Felker, FV ID and H&RW
Bill Peck, USBR

Red Cloud listening location:
Mike Delka, NBID
Tracy Smith, NBID
Walter Knehans, NBID

Curtis listening location:
Daniel L. Smith, MRNRD
Ken Rahjes, Congressman Adrian Smith's office

Holdredge listening location:
John Thorburn, Tri-Basin NRD

Imperial listening location:
Nate Jenkins, URNRD

Other Nebraska call-ins:
Gary Campbell, USBR Billings, Montana
John Miller, North Platte USGS

PROCEEDINGS

CHAIRMAN BARFIELD: Good morning. My name is David Barfield. I am Kansas Chief Engineer and Chairman of the Republican River Compact Administration. I welcome you to this special meeting of the Republican River Compact Administration on this date of March 8, 2013. We have an agenda that we'll look at here in a minute. But before we do we'll have introductions.

This is a telephonic meeting, and therefore we have a number of listening stations at various locations in the states. And so we're going to go through each of those listening stations and ask those attending to introduce themselves. So I guess I would turn first to Colorado and turn it over to Commissioner Wolfe and ask you to make introductions of those there with you and at the other listening station in Colorado.

CHAIRMAN WOLFE: All right. Thank you, Chairman Barfield. This is Dick Wolfe, Colorado State Engineer and the Commissioner for Colorado on the Republican River Compact Administration. Also here in the Denver office with me is Deputy State Engineer Mike Sullivan. And also with the Division

of Water Resources we have Keith Vander Horst and Ivan Franco. And we've got Willem Schreüder, who is with Principia Mathmatica, and Scott Steinbrecher with the Colorado Attorney General's Office.

And it is my understanding that we've got a listening station at the Republican River Water Conservation District, and I'll let them introduce whoever is there in just a moment. And I also -- my understanding, we may have a couple people who are just calling in. Pete Ampe, I think, has already indicated that he has joined in. He is with Hill & Robbins. And I think our water commissioner, Dave Keeler, was anticipated to join in. And I'll just ask if Mr. Keeler is on the line.

MR. KEELER: I am.

CHAIRMAN WOLFE: All right. Thank you. I will at this point turn it over to the Republican River Water Conservation District, assuming they've joined in, and indicate who is all at that listening location.

(Pause.)

CHAIRMAN WOLFE: Maybe they have not joined in yet. Is there anybody else on the line who's called in who is in Colorado?

MR. ROBBINS: Dick, this is David Robbins.

I'm on the call.

CHAIRMAN WOLFE: Good morning, David. David is also with Hill & Robbins. Anybody else with Colorado?

(Pause.)

CHAIRMAN WOLFE: Well, we'll -- I'll turn it over to Nebraska at this point. Again, just to indicate for the record, we did anticipate that someone or more than one could possibly join from the Republican River Water Conservation District in Wray. And if we hear somebody join later, we'll try to get them introduced. So at this point I'll turn it over to Commissioner Dunnigan for introductions from Nebraska.

CHAIRMAN DUNNIGAN: Thank you, Commissioner Wolfe. This is Brian Dunnigan. I'm the Director of the Nebraska Department of Natural Resources and Commissioner for the Republican River Compact Administration. With me in Lincoln at our Lincoln listening station is Jim Schneider, Deputy Director for DNR; Jesse Bradley from DNR; Justin Lavene from the attorney general's office; David Kracman from the Flatwater Group; Mark Groff from the Flatwater Group; Tom Riley from the Flatwater Group; Don Blankenau, outside counsel for Nebraska; Tom

Wilmoth, outside counsel for Nebraska; and Jason Lambrecht from the USGS. And that's it from the Lincoln listening station.

I will go down the list and see if we have our other listening stations on the line; and if you would, please, say who is with you. Going to the Lower Republican Natural Resources District in Alma.

(Pause.)

CHAIRMAN DUNNIGAN: The Tri-Basin Natural Resources District in Holdrege?

MR. THORBURN: Yes, Brian. John Thorburn at Tri-Basin NRD in Holdrege.

CHAIRMAN DUNNIGAN: Thank you, John. The Bostwick Irrigation District in Red Cloud?

MR. DELKA: Yeah. Mike Delka, Tracy Smith, and Walter Knehans with the Bostwick Irrigation District.

CHAIRMAN DUNNIGAN: Thank you. With the Middle Republican Natural Resources District in Curtis?

MR. SMITH: Yes. Dan Smith, Manager, Middle Republican NRD, and Ken Rahjes with Congressman Adrian Smith's office.

CHAIRMAN DUNNIGAN: Thank you. With the Upper Republican Natural Resources District in

Imperial?

MR. JENKINS: Nate Jenkins, Assistant Manager with the Upper.

CHAIRMAN DUNNIGAN: Thank you. With the US Bureau of Reclamation in McCook?

(Pause.)

MR. PECK: Yes. This is Bill Peck with the Bureau of Reclamation here in the McCook office, Water Operations Group.

CHAIRMAN DUNNIGAN: Thank you, Bill.

MR. PECK: I think we'll go around the table here.

MR. EDGERTON: Okay. Brad Edgerton with Frenchman Cambridge Irrigation District.

MR. UERLING: James Uerling from the Middle Republican NRD.

MR. PALIC: John Palic, Middle Republican NRD.

MR. RUGGLES: Brent Ruggles, H & RW Irrigation.

MR. CAPPEL: Steve Cappel, Middle Republican NRD.

MR. JANKOVITS: Clarence Jankovits, Frenchman Valley.

MR. FELKER: Don Felker, Frenchman Valley

H & RW.

MR. PECK: That's it for McCook.

CHAIRMAN DUNNIGAN: Thank you. That should be the Nebraska listening stations.

CHAIRMAN BARFIELD: Okay. Thank you very much. This is Dave Barfield. I'll work through the Kansas listening stations. Before I do so, Dick, I don't know if -- Commissioner Wolfe, if you would like to have somebody call Wray and make sure they're not having trouble calling in.

CHAIRMAN WOLFE: We did contact them, and I think they got confused on the time being nine o'clock central time. So we have made contact with them and -- in hopes that they will be joining us here shortly. So thank you, Chairman.

CHAIRMAN BARIFELD: Okay. Well, again this is Chairman Barfield. And here with me is Chris Grunewald of the attorney general's office, and Chris Beightel, Program Manager for the Water Management Services Program for the division. We have a listening station for our field office in Stockton, Kansas. Are you there?

MR. ROSS: Yes. Scott Ross and Chelsea Erickson are here.

CHAIRMAN BARFIELD: Very good then. We have

a listening station in Colby. Are you there?

(Pause.)

CHAIRMAN BARFIELD: Maybe they are confused on the time as well. So we -- I think we can go ahead and proceed. Appreciate --

MR. NELSON: Chairman Barfield?

CHAIRMAN BARFIELD: Yes.

MR. NELSON: This is Kenny Nelson, and we are here with Monty Dahl and Brad Peterson

CHAIRMAN BARFIELD: Okay. Welcome, Kenny. Is there -- are there any other individuals on the call that are not part of a listening station already introduced?

MR. GRIGGS: Yeah. This is Burke Griggs. I'm calling in from Dodge City

CHAIRMAN BARFIELD: Right. Okay. Thank you. And then I failed to turn to the Corps of Engineers. I understand you have -- is there anyone else besides Burke?

(Pause.)

CHAIRMAN BARFIELD: Okay. No other individuals. I guess I would -- I understand the Kansas City District of the Corps of Engineers is on as well. If you all could make your introductions, I would appreciate it.

MR. PURZER: Yes, chairman. Can you hear us?

CHAIRMAN BARFIELD: Yes.

MR. PURZER: Okay. Very well. I am -- my name is Christopher Purzer. I'm the Water Management Section Chief here in Kansas City District. My boss, Eric Shumate, the chief of hydrologic engineering branch is here as well. We have Edward Parker, an engineer with the water management section, is also present. And Matthew Jeppson from the Office of counsel is here with us also.

CHAIRMAN BARFIELD: Thank you very much. And I think that concludes introductions. Just a couple of other preliminary matters. Again, we have a court reporter on. So please, as you make remarks, we'd -- she'd appreciate it if you would introduce yourself at the beginning of those remarks. If the court reporter needs us to slow down or repeat anything, you know, obviously she'll interrupt us. But do your best to have one person speaking at a time and making those introductions. Okay?

This meeting was requested by Nebraska on February 8th to consider its Rock Creek Augmentation Project. And that's the primary purpose of the meeting, for that consideration. So

the states have set essentially the date and time of this meeting approximately two weeks ago via e-mail and I -- a formal notice of the meeting was put out on Monday, March 4. The states agreed to waive the 30-day meeting notice requirement.

With that I would -- the second item is consideration of the agenda. Are there any -- any changes to the agenda as noticed?

CHAIRMAN WOLFE: Colorado has no changes. This is Dick Wolfe.

CHAIRMAN DUNNIGAN: Nebraska has no changes. Brian Dunnigan

CHAIRMAN BARFIELD: Okay. Would someone move the adoption of the agenda then as proposed?

CHAIRMAN DUNNIGAN: So moved.

CHAIRMAN WOLFE: Second

CHAIRMAN BARFIELD: All right. Been moved and seconded. All in favor say aye.

CHAIRMAN DUNNIGAN: Aye.

CHAIRMAN WOLFE: Aye

CHAIRMAN BARFIELD: All right. Thank you very much. The next item on the agenda is the discussion and potential action on the Rock Creek Augmentation Proposal that I noted earlier. So Commissioner Dunnigan, I would turn it over to you

for any remarks you would like to make to get this item started.

CHAIRMAN DUNNIGAN: Thank you, Chairman Barfield. On February 8th of this year I submitted by letter to Commissioner Barfield and Commissioner Wolfe the Rock Creek Augmentation Proposal pursuant to Subsection VII.A of the FSS. I also notified the commissioners that pursuant to Subsection VII.A.3 Nebraska was designating this as a fast-track issue and was seeking resolution within 30 days. On March 5th of this year I sent Commissioner Barfield and Commissioner Wolfe a resolution regarding Nebraska's Rock Creek Augmentation Proposal. I would now like to read that resolution into the record.

"Resolution of the Republican River Compact Administration regarding Nebraska's Rock Creek Augmentation Proposal. Whereas the states of Kansas, Nebraska, and Colorado entered into a Final Settlement Stipulation (FSS) as of December 15th, 2002, to resolve pending litigation in the United States Supreme Court regarding the Republican River Compact (Compact) in *Kansas V. Nebraska and Colorado*, No. 126;

"Whereas, the FSS was approved by the United

States Supreme Court on May 19th, 2003;

"Whereas, by letter dated February 8th, 2013, the State of Nebraska submitted to the State of Kansas and the State of Colorado a copy of the Rock Creek Augmentation Project Plan (Rock Creek Plan), a copy of which is attached hereto and incorporated by reference as Exhibit A;

"Whereas, the states held a working session of the RRCA on March 1st, 2013, concerning the Rock Creek Plan, during which Nebraska clarified that: One, the Augmentation Water Supply Credit referenced on Page 36 of 98 of the Rock Creek Plan describes the Augmentation Water Supply Credit Calculation and; Two, the annual reporting for the augmentation plan described on Page 66 of 98 is intended to serve as a narrative summarizing the annual operations for each augmentation;

"Whereas, Nebraska's Rock Creek Plan has been properly presented and submitted to the Republican River Compact Administration pursuant to the FSS;

"Whereas on February 8th, 2013, the State of Nebraska provided the State of Kansas and State of Colorado notice that it wished to pursue fast-track resolution of this issue -- of the issue;

"Whereas, Nebraska has developed a

methodology to provide the appropriate augmentation credit referenced in Subsection IV.A of the FSS and that methodology has been submitted to the RRCA as part of the Rock Creek Plan;

"Whereas, the states agree that Nebraska's proposed Rock Creek Plan and the augmentation credit conform to the requirements set forth in the FSS and that the RRCA should adopt Nebraska's proposed Rock Creek Plan;

"And now therefore it is hereby resolved that the RRCA approves and adopts the State of Nebraska's Rock Creek Plan attached as Exhibit A.

"Approved by the Republican River Compact Administration this 8th day of March, 2013, with signature lines for David Barfield, P.E., Kansas Commissioner and chairman; Brian Dunnigan, P.E., Nebraska Commissioner; Dick Wolfe, P.E., Colorado Commissioner."

At this time I'll make a motion to approve the resolution.

CHAIRMAN WOLFE: This is Colorado. I'll second that motion

CHAIRMAN BARFIELD: All right. Thank you very much. Before we proceed, I heard a couple beeps that I think indicates others have joined us.

Can I just find out who else has joined us?

MR. BOSSERT: This is Wayne Bossert, Groundwater District 4 in Colby joining.

CHAIRMAN BARFIELD: All right. Do you have anyone with you, Wayne?

MR. BOSSERT: No, sir.

MR. BARFIELD: All right. Thank you very much.

MS. WEBSTER: And this is Dawn Webster with Republican River Water Conservation District.

CHAIRMAN BARFIELD: All right. In Wray, Colorado, correct?

MS. WEBSTER: Yes. Correct.

CHAIRMAN BARFIELD: Do you have anyone with you?

MS. WEBSTER: No, I do not.

CHAIRMAN BARFIELD: Thank you very much.

MS. WEBSTER: Uh-huh.

CHAIRMAN BARFIELD: Okay. And no one else, right?

(Pause.)

CHAIRMAN BARFIELD: Okay. Well, very good. It's been moved and seconded to consider this resolution. I sent a letter this morning to -- responding to Commissioner Dunnigan's March 5 letter

that sort of memorializes our concerns with the Rock Creek Augmentation Proposal and really the process of its consideration. So I would ask that both Brian's -- I'm sorry -- Commissioner Dunnigan's letter of March 5, including the resolution, the proposal, as well as that letter, be made a part of this record. Is there any further discussion that's needed?

CHAIRMAN WOLFE: This is Commissioner Wolfe. I would just like to make a few statements for the record, if I could, please. I want to thank Commissioner Dunnigan and the State of Nebraska for their preparation of this proposal and the detailed report and also want to thank them and the State of Kansas for hosting a meeting on March 1st, a work session whereby we were able to inquire into -- into more details in regards to the plan and try to address any questions that we had -- and I'm speaking on behalf of Colorado, the questions and concerns that we had had.

I felt from that workshop and from the correspondence we've had in regard to those questions and the responses from Commissioner Dunnigan and the work that we've done internally to evaluate this proposal, Colorado has confidence that

the proposal that's -- that's been presented and is outlined will be satisfactory and meet the requirements under the FSS.

And we have confidence that if we do have any ongoing questions after approval of this project, that Nebraska's shown a willingness to respond to Colorado's questions and concerns and address them. We feel that if any particular issues come up as a result of the operation of that, that we can resolve those in an amicable way with the states. Thank you.

CHAIRMAN BARFIELD: Thank you, Commissioner Wolfe. Any other remarks before we proceed to a vote? Commissioner Dunnigan?

CHAIRMAN DUNNIGAN: No further remarks.

CHAIRMAN BARFIELD: All right. Thank you very much. Okay. It's been moved and seconded that we adopt the resolution that Commissioner Dunnigan read into the record and provided on March 5. I'll call for a vote. Commissioner Dunnigan?

CHAIRMAN DUNNIGAN: Yes.

CHAIRMAN BARFIELD: Commissioner Wolfe?

CHAIRMAN WOLFE: Yes.

CHAIRMAN BARFIELD: And Kansas would vote no, again for purposes that are outlined in the letter I

referenced earlier. Okay. Well, thank you very much. The next item on the agenda is an update on federal discussions of the 2013 operation of Harlan County Lake. Commissioner Dunnigan asked that this matter be added to the agenda. I guess before I turn to the federal agencies, Commissioner Dunnigan, would you like to make any introductory remarks to this topic?

CHAIRMAN DUNNIGAN: Only that we had discussions with the Bureau of Reclamation in December and went up to Billings and spoke with the Bureau. And I know that they've been diligently working on this since then. And we were interested in what progress has been made and what the status is to date. Thank you.

CHAIRMAN BARFIELD: Okay. Very good. Aaron Thompson, area manager, I believe could not be on the call. So I understand Gary Campbell, Deputy Regional Director, will sort of provide us an update from the Bureau's perspective. Is that correct?

MR. CAMPBELL: Yes. Thank you, Mr. Chairman. So I'll start off, at Reclamation we're trying to do everything within our authorities to get our surface-water irrigators as near a full water supply this year as possible. So we've went down this road

of looking at a deviation request at Harlan County Lake, working with the Corps of Engineers.

What we've requested is 13,600 acre-feet of water from the sediment pool to be utilized. And that number comes from Nebraska's final forecast. So that's where the 13,600 acre-feet comes from. This is storage water that would otherwise not be available for irrigation releases in 2013. And that's pursuant to the consensus plan.

This water would be made available to Kansas Bostwick Irrigation District for irrigation purposes. Okay. If the deviation request is approved Reclamation would request that Nebraska be in our list of closing notices on the federal projects within the basin. Okay?

We've met with the Corps of Engineers on the phone multiple times, as well as we had a meeting in Kansas City on February 20th. The Corps -- and I'll let them go into more detail -- are currently completing an analysis of the impacts, looking at both positive benefits and negative outcomes to the authorized purposes of the project. The Corps asked for more information from us. We provided additional information to them on February 28th, from some of the benefits to agriculture in

Nebraska, as well as Kansas.

If the deviation request is not approved water storage -- water stored after December 31st in upstream reservoirs may not -- may need to be released by DNR's order if this deviation request is not approved. To date the accumulated storage of all the reservoirs on the Republican under federal control right now -- and that's January 1st through March 7th -- is approximately 8,000 acre-feet.

Okay. The current Harlan County Lake elevation is at 1935.6. Pursuant to the consensus plan that would equate to a 2013 irrigation supply of 84,500 acre-feet. The estimated shut-off elevation at this point time is 1930.55. So if the deviation request is granted, the water supply split would -- Nebraska Bostwick -- or I should say the State of Nebraska would get 39,880 acre-feet. Kansas would get 44,700 acre-feet.

That equates to an estimated delivery to Nebraska Bostwick Irrigation District of 10 inches. Kansas Bostwick Irrigation District will get 12 inches. And that's based on a historic delivery efficiencies. If the deviation request is denied, Nebraska Bostwick supplies estimated are around 5 to 6 inches this year.

Now there is a hard shut-off at Harlan County Lake at 1927.0. And if the inflows are insufficient to provide this 84,500 acre-feet of irrigation supply, the estimated shut-off will be adjusted to provide the assured irrigation supply to the entities out there.

So some of the challenges we've got as we move forward on this is we need agreement from Nebraska Bostwick Irrigation District to utilize this additional storage water in the sediment pool. Right now we have a letter from Nebraska Bostwick Irrigation District that's opposed to the deviation request. My understanding is I believe they are rethinking their position, but they are also seeking input from their board, as well as seeking input from their legal counsel -- or advice from their legal counsel.

If Kansas Bostwick -- if the deviation request were to go forward, if Kansas Bostwick did not utilize the deviation storage this year, that would mean then that we would need to have an agreement in place with Nebraska Irrigation District to cover any carry-over supplies exclusively for Kansas Bostwick Irrigation District pursuant to the existing contracts that we have in place with these

folks.

Right now the current storage level is not adequate to provide the assured irrigation supply and additional water for this deviation request. To date we need to gain an additional 22,000 acre-feet of storage in Harlan County Lake to have assurance that the 13,600 acre-feet would be available for the deviation request. To date Harlan County, this year, from January 1 until March 7th has only gained 2,800 acre-feet at this point in time.

So that is where we're at in this process as -- where we've been and how we're moving forward. We're still hopeful that the flows will increase and that we can work with folks to get our surface irrigators as near a full supply of irrigation water as possible. That's all I have, Mr. Chairman.

CHAIRMAN BARFIELD: Any questions for Mr. Campbell?

(Pause.)

CHAIRMAN BARFIELD: I appreciate that update. And I think I follow the facts and figures there. I'm not quite sure I fully understand the implications of the last portion of your statement, that the current status of the reservoir in Harlan is not adequate to support the deviation. So that

means -- does that mean even if the Corps agrees to the deviation, there would have to be more inflow -- or 22,000 additional inflow between now and the beginning of the irrigation season in order for that water to be available above the hard shut-off? Is that what you're saying?

MR. CAMPBELL: Yes

CHAIRMAN BARFIELD: Okay. Well, I guess if there's no additional questions of Mr. Campbell -- I'm not sure who from the Corps of Engineers wishes to update us. But I would turn to the Corps of Engineers.

MR. JEPPSON: Mr. Barfield, this is Matt Jeppson with the Corps of Engineers. And what Mr. Campbell conveyed is an accurate status from our perspective, with one exception. It's our understanding -- it's a minor point -- that the preliminary shut-off elevation is 31.55. Aside from that, we received an updated request from the Bureau on 28 February, 2013, and expect to have our assessment complete by the end of the month. And that's a preliminary assessment by the district that would then go to our division for ultimate decision.

CHAIRMAN BARFIELD: Okay. Any questions for -- for the Corps?

CHAIRMAN DUNNIGAN: This is Commissioner Dunnigan. I would like to turn it over to Deputy Director Jim Schneider, please.

MR. SCHNEIDER: Thank you. This is Jim Schneider. I was just -- the question for the Corps would be in that evaluation that you're conducting, what are the factors that you're evaluating?

MR. JEPPSON: The Corps has authorized project purposes -- congressionally-authorized project purposes of irrigation, flood control, water quality, and fish and wildlife in Harlan County Lake. And we are required to follow our water control manuals for those authorized purposes. In the event that a deviation is requested, the Corps assesses the impact to those authorized purposes associated with the deviation request.

And the district makes the recommendation to the division, the ultimate deciding authority for the Corps, as to whether that authorization is appropriate. There are several factors that go into that; obviously the severity of the impact, the forseeability and other alternatives that were available -- are available to meet the dev -- or to meet the need, without deviating from the water control manual, and some other factors.

MR. SCHNEIDER: Thanks. So to follow-up on that I would ask, have you identified any conflicts to date?

MR. JEPPSON: We are still in the process of evaluation. But obviously there are potential impacts to recreation and to fish and wildlife resources at the lake due to the elevation of this would cause the lake to drop to. And then we are assessing the beneficial or detrimental impact associated with irrigation. So we're in that process right now.

MR. SCHNEIDER: Okay. I was also wondering -- and that's very helpful. Thank you. Within those purposes, what's the relative priority of them?

MR. JEPPSON: There is not specifically identified priorities within the water control manual. Flood control and irrigation are obviously very important authorized purposes, and the Corps does look heavily to those impacts associated with those when it's considering a deviation at Harlan County Lake.

MR. SCHNEIDER: Okay. Kind of following up on that then, where does the Compact fit in with regards to those purposes?

MR. JEPPSON: Excuse me? Where does the context fit in?

MR. SCHNEIDER: The Republican River Compact.

MR. JEPPSON: Sorry. The Compact is not a -- a direct purpose to the operation of the Harlan County Lake, absent action by Congress to modify the authorized purposes. The closest that the lake has in terms of purposes is irrigation.

MR. SCHNEIDER: So does that mean that those purposes are, I guess, a higher priority than the Compact?

MR. JEPPSON: Well, it's not so much a matter of -- I mean, the Corps is obviously interested in helping the Compact parties to the extent we can within our authority. It's rather that the Corps' authorities don't contemplate the Compact, and so we have to look at the context of the Compact compliance within our authorities and how it relates to those authorized purposes.

MR. SCHNEIDER: So it sounds like those are -- in your view those authorities would trump the Compact?

MR. JEPPSON: I'm not going to answer that directly, because it's a little bit loaded and it could be interpreted different ways. But as I said,

the Corps is required to look at the impact to the authorized purposes, and those are irrigation, flood control, water quality, recreation, and fish and wildlife.

MR. SCHNEIDER: Okay. Thank you. That's very helpful. I appreciate your answers. That's all that I had.

CHAIRMAN DUNNIGAN: This is Commissioner Dunnigan. I was wondering again if the Bureau and the Corps could give us any time frames related to the deviation request.

MR. PURZER: Commissioners, if I can, we are working towards providing a -- a response from the district by the end of month, by 29 March. That -- that said, Commissioner, there will have to be a review period and consideration from the division engineer and his staff. And that will extended probably -- at least 30 days is the statutory request that they place upon a district when submitting those.

COURT REPORTER: And who was that, please, speaking?

MR. PURZER: Christopher Purzer, Water Management Section Chief, Kansas City District.

COURT REPORTER: Thank you very much.

CHAIRMAN DUNNIGAN: This is Commissioner Dunnigan again. And we -- originally when we spoke to the Bureau, and the Bureau had subsequent correspondence with us on going through this deviation request, certainly what we're most interested in is compliance with the Compact, and within that context providing flexibility to make sure that water is available to the -- to Kansas water users. We're anticipating that we're going to have to make a decision by sometime around the first of April on what we need to do and what further orders that we are going to place on release of storage water.

CHAIRMAN BARFIELD: Okay. Other comments or questions?

(Pause.)

CHAIRMAN BARFIELD: Well, we appreciate the federal agency's work here. And again, I would also encourage the agencies to act as diligently and expeditiously as they can. Again, there's lots of questions about operations and many other factors that need to -- need to be resolved, even beyond the deviation request itself. And again, the sooner we understand the alternatives, the better that those decisions can be. So -- okay.

If there's nothing else I'll move this on to the next agenda item. The next agenda item is really just a carryover from our last special meeting, and really from our annual meeting of last year. We have a number of outstanding annual reports that -- going back to 2007, I believe, that have been drafted and the states desire additional time to review those drafts.

So I'm just checking to see if -- I know Kansas has indicated in the past that we are ready to approve the -- that set of annual reports, but -- so I'm just checking in to see if we're ready to act on that today or not.

CHAIRMAN DUNNIGAN: This is Commissioner Dunnigan. I'll turn to Deputy Director Jim Schneider.

MR. SCHNEIDER: Thanks. I guess I would -- I would remind the commissioners that during the special meeting -- the previous special meeting, I believe, in December when we discussed this, it was noted that we didn't anticipate having any issues either. But we needed to have a package of what those reports were; you know, something to reference so that we knew what we would be taking action on. And I believe the engineering committee was tasked

with that. And to my knowledge nothing has happened.

I would, I guess, defer to the chairman, Scott Ross, if he has anything additional to add on that from the engineering committee. But from our standpoint we're ready to take action. But we need some -- we need to come together in some kind of -- so we have a package of materials that we know that that's what we're acting on. Thank you.

CHAIRMAN WOLFE: And this is Commissioner Wolfe. In talking to my engineer advisor, Ivan Franco, those reports are all simulated -- assimilated and are online. And Colorado is satisfied that those annual reports from 2007 through 11 are complete and ready to take action today, if necessary.

MR. SCHNEIDER: This is Jim Schneider. Yeah. I think it is just a matter of -- you know, I don't know how we -- how to take action -- how to reference -- how to give my commissioner, you know, a sense of what we're taking action on in terms of a specific reference at this time. So I think we just need to attend to that detail, and we should be ready in the future.

CHAIRMAN BARFIELD: Okay. Well, thank you

for those remarks. My understanding is that those reports, you know, are available online and have been for some time. But I certainly want to give Nebraska it's opportunity to make sure it's fully comfortable with those. So we'll defer this agenda item again. Scott, I would ask you to -- or Chelsea, send a link to where those are to Nebraska to ensure they have that. And we'll --

MR. ROSS: We can do that.

CHAIRMAN BARFIELD: And we'll defer this to our next opportunity to meet. Okay? Is that satisfactory?

CHAIRMAN DUNNIGAN: That's satisfactory. We have one more comment.

MR. SCHNEIDER: Yeah. This is Jim Schneider again. I think probably whether it's a location online or we put them onto a CD or print them out, you know, we need something with some cover letter that references the location of the materials so that we have something specific to take action on.

So that's really what we're looking for is, you know, if we print them all out and put them in an envelope with a cover letter, then we would know what we were taking action on. That could be a location online. But, you know, still we need some

-- some ability to know specifically what we're taking action on.

MR. ROSS: This is Scott Ross. We can make that happen.

MR. SCHNEIDER: Great.

CHAIRMAN BARFIELD: Very good. Yes. We will ensure that there's that specificity that I hear you asking for. Appreciate that. With that, unless -- is there anything else to come before us this morning?

CHAIRMAN DUNNIGAN: Nothing from Nebraska's standpoint

CHAIRMAN BARFIELD: Thank you. Colorado?

CHAIRMAN WOLFE: Nothing further from Colorado.

CHAIRMAN BARFIELD: All right. With that I would move adjournment.

CHAIRMAN WOLFE: So moved. Colorado.

CHAIRMAN DUNNIGAN: Yes. And I'm going to move, too. But I just wanted to make one comment with that. We did have Phil Erdman from U.S. Senator's Mike Johann's office join us for the record. And with that, move for adjournment.

CHAIRMAN BARFIELD: All right. I'll take that as a second. All in favor say aye.

CHAIRMAN DUNNIGAN: Aye.

CHAIRMAN WOLFE: Aye

CHAIRMAN BARFIELD: Aye. Thank you very much. Goodbye. Thank you.

* * * CONCLUSION OF TELECONFERENCE AT 9:46 A.M. * * *

C E R T I F I C A T E

I, Coleen F. Boxberger, Registered Professional Reporter, do hereby certify the above and foregoing teleconference was taken at the time and place as specified; that the same was taken before myself in shorthand and later transcribed and extended into typewritten form to the best of my ability, and is a true and correct extension hereof;

_____
Coleen F. Boxberger, R.P.R.
P.O. Box 184
Russell, KS 67665-0184

Republican River Compact Special Meeting

March 8, 2013 – via Telephonic Conference

Attendance List by Location

Name	Representing
Topeka, Kansas – Division of Water Resources Headquarters	
David Barfield	Kansas Commissioner, Chair
Chris Grunewald	Kansas Attorney General's Office
Chris Beightel	Kansas Division of Water Resources
Stockton, Kansas – Division of Water Resources Field Office	
Scott Ross	Kansas Division of Water Resources
Chelsea Erickson	Kansas Division of Water Resources
Courtland, Kansas – Kansas Bostwick Irrigation District Office	
Kenneth Nelson	Manager, Kansas Bostwick
Monty Dahl	Kansas Bostwick Irrigation District
Brad Peterson	Kansas Bostwick Irrigation District
Colby, Kansas – Groundwater Management District #4 Office	
Wayne Bossert	Manager, Groundwater Management District #4
Unspecified Kansas Call-In Location	
Burke Griggs	Kansas Attorney General's Office
Kansas City, Missouri – Corps of Engineers, Kansas City District Office	
Chris Purzer	Corps of Engineers
Edward Parker	Corps of Engineers
Matthew Jeppson	Corps of Engineers
Eric Shumate	Corps of Engineers
Denver, Colorado – Colorado Division of Water Resources Headquarters	
Dick Wolfe	Colorado Commissioner
Mike Sullivan	Colorado Division of Water Resources
Ivan Franco	Colorado Division of Water Resources
Scott Steinbrecher	Colorado Attorney General's Office
Willem Schreüder	Principia Mathematica
Keith Vander Horst	Independent
Unspecified Colorado Call-In Locations	
Dave Keeler	Colorado Division of Water Resources
Peter Ampe	Republican River Water Conservation District
Dawn Webster	Republican River Water Conservation District
David Robbins	Hill & Robbins, Republican River Water Conservation District

Name	Representing	March 8, 2013

Lincoln, Nebraska - Department of Natural Resources Headquarters

Brian P. Dunnigan	Nebraska Commissioner
Jim Schneider	Nebraska Department of Natural Resources
Jesse Bradley	Nebraska Department of Natural Resources
Justin Lavene	Nebraska Attorney General's Office
Tom Wilmoth	Council for Nebraska
Don Blankenau	Council for Nebraska
Tom Riley	Flatwater Group
David Kracman	Flatwater Group
Mark Groff	Flatwater Group
Jason Lambrecht	United States Geologic Survey
Phil Erdman	Senator Mike Johanns' Office

McCook, Nebraska - United States Bureau of Reclamation Office

Bill Peck	Bureau of Reclamation
Brad Edgerton	Frenchman-Cambridge Irrigation District
Steve Cappel	Middle Republican Natural Resource District
John Palic	Middle Republican Natural Resource District
James Uerling	Middle Republican Natural Resource District
Don Felker	Frenchman Valley and H&RW
Rick Ruggles	Red Willow Irrigation District
Clarence Jankovits Jr.	Frenchman Valley Irrigation District

Red Cloud, Nebraska - Nebraska Bostwick Irrigation District Office

Mike Delka	Manager, Nebraska Bostwick Irrigation District
Tracy Smith	Nebraska Bostwick Irrigation District
Walter Knehans	Nebraska Bostwick Irrigation District

Curtis, Nebraska - Middle Republican Natural Resource District Office

Dan Smith	Manager, Middle Republican Natural Resource District
Ken Rahjes	Congressman Adrian Smith's Office

Holdrege, Nebraska - Tri-Basin Natural Resource District Office

John Thorburn	Manager, Tri-Basin Natural Resource District

Imperial, Nebraska - Upper Republican Natural Resource District Office

Nate Jenkins	Assistant Manager, Upper Republican Natural Resource District

North Platte, Nebraska - United States Geologic Survey Office

John Miller	United States Geologic Survey

March 8, 2013

Billings, Montana - United States Bureau of Reclamation

Gary Campbell Bureau of Reclamation

AGENDA FOR

SPECIAL MEETING OF THE
REPUBLICAN RIVER COMPACT ADMINISTRATION

March 8, 2013, 9:00 a.m., Central Standard Time
Via Telephone

1. Introductions
2. Modification and adoption of agenda
3. Discussion and potential action regarding Nebraska's Rock Creek Augmentation Proposal submitted on February 8, 2013.
4. Update on federal discussion on 2013 operation of Harlan County Lake
5. Discussion and potential action regarding past unapproved annual reports
6. Adjournment

STATE OF NEBRASKA

Dave Heineman
Governor

DEPARTMENT OF NATURAL RESOURCES
Brian P. Dunnigan, P.E.
Director

March 5, 2013

IN REPLY TO:

David Barfield, P.E.
Kansas Commissioner, RRCA
Kansas State Engineer
Division of Water Resources
109 SW 9th Street, 2nd Floor
Topeka, KS 66612-1283

Dick Wolfe, P.E.
Colorado Commissioner, RRCA
Colorado State Engineer
Colorado Division of Water Resources
1313 Sherman Street, Room 818
Denver, CO 80203

RE: Resolution Regarding Nebraska's Rock Creek Augmentation Proposal

Dear Commissioners Barfield and Wolfe:

Attached to this letter please find the Resolution regarding Nebraska's Rock Creek Augmentation Proposal submitted by Nebraska for action during the Friday, March 1, 2013, conference call. I look forward to our meeting.

Sincerely,

Brian P. Dunnigan

Brian P. Dunnigan, P.E.
Director

301 Centennial Mall South, 4th Floor • P.O. Box 94676 • Lincoln, Nebraska 68509-4676 • Phone (402) 471-2363 • Telefax (402) 471-2900

RESOLUTION
OF
THE REPUBLICAN RIVER COMPACT ADMINISTRATION REGARDING NEBRASKA'S ROCK CREEK AUGMENTATION PROPOSAL

Whereas, the States of Kansas, Nebraska and Colorado entered into a Final Settlement Stipulation (FSS) as of December 15, 2002, to resolve pending litigation in the United States Supreme Court regarding the Republican River Compact (Compact) in *Kansas v. Nebraska and Colorado*, No 126 Original;

Whereas, the FSS was approved by the United States Supreme Court on May 19, 2003;

Whereas, by letter dated February 8, 2013, the State of Nebraska submitted to the State of Kansas and the State of Colorado a copy of the "Rock Creek Augmentation Project" plan (Rock Creek Plan), a copy of which is attached hereto and incorporated by reference as Exhibit A;

Whereas, The States held a working session of the RRCA on March 1, 2013, concerning the Rock Creek Plan, during which Nebraska clarified that:

1) The "Augmentation Water Supply Credit" referenced on page 36 of 98 of the Rock Creek Plan describes the Augmentation Water Supply Credit Calculation; and
2) The annual reporting for the Augmentation Plan described on page 66 of 98 is intended to serve as a narrative summarizing the annual operations for each augmentation project.

Whereas, Nebraska's Rock Creek Plan has been properly presented and submitted to the Republican River Compact Administration pursuant to the FSS;

Whereas, on February 8, 2013, the State of Nebraska provided the State of Kansas and the State of Colorado notice that it wished to pursue "fast track" resolution of the issue;

Whereas, Nebraska has developed a methodology to provide the appropriate "Augmentation Credit" referenced in Subsection IV.A. of the FSS, and that methodology has been submitted to the RRCA as part of the Rock Creek Plan;

Whereas, the States agree that Nebraska's proposed Rock Creek Plan and the Augmentation Credit conform to the requirements set forth in the FSS and that the RRCA should adopt Nebraska's proposed Rock Creek Plan; and

Now, therefore, it is hereby resolved that the RRCA approves and adopts the State of Nebraska's Rock Creek Plan attached as Exhibit A.

Approved by the Republican River Compact Administration this 8th day of March 2013.

_____ _____

David Barfield, P.E. Date
Kansas Commissioner
Chairman

_____ _____

Brian Dunnigan, P.E. Date
Nebraska Commissioner

_____ _____

Dick Wolfe, P.E. Date
Colorado Commissioner

Exhibit A

Rock Creek Augmentation Project

Rock Creek Augmentation Project

Submitted to the Republican River Compact Administration

February 8, 2013

Nebraska
Department of Natural Resources

I. Project Background and FSS Requirements for Augmentation Projects

The Upper Republican Natural Resources District (URNRD) is developing the Rock Creek Augmentation Project (Project) located in southwest Nebraska (Figure 1). The purpose of this project is to assist Nebraska in maintaining compliance with the Republican River Compact (Compact). The Project involves the retirement of the 23 existing irrigation wells and the 3,262 certified irrigated acres those wells irrigated. Ten augmentation wells were drilled for the project, replacing the irrigation wells and providing an optimized capacity and spatial distribution to match the design capacity of the Project. The lands that were previously cropped are being seeded back to natural grasses. Groundwater pumped from the new augmentation wells will be delivered by means of a pipeline that spans the approximately six miles from the wells to the discharge location directly into Rock Creek.

The Final Settlement Stipulation (FSS) specifically recognizes augmentation as a management tool to facilitate Compact compliance. Augmentation is referenced in three locations throughout the FSS. The first occurs in Section III in the list of exceptions to the moratorium on new wells. Subsection III.B.1.k., states that the moratorium on new wells shall not apply to the following:

> *Wells acquired or constructed by a State for the sole purpose of offsetting stream depletions in order to comply with its Compact Allocations. Provided that, such Wells shall not cause any new net depletion to stream flow either annually or long-term. The determination of net depletions from these Wells will be computed by the RRCA Groundwater Model and included in the State's Computed Beneficial Consumptive Use.* ***Augmentation plans*** *and related accounting procedures submitted under this Subsection III.B.1.k. shall be approved by the RRCA prior to implementation.*

The second and third references to augmentation occur in Section IV, which lays out the provisions for Compact accounting under the FSS. Subsection IV.A. states:

> *The States will determine Virgin Water Supply, Computed Water Supply, Allocations, Imported Water Supply Credit,* ***augmentation credit*** *and Computed Beneficial Consumptive Use based on a methodology set forth in the RRCA Accounting Procedures, attached hereto as Appendix C.*

There presently are no "methodologies" set forth in the Republican River Compact Administration (RRCA) Accounting Procedures and Reporting Requirements (Accounting Procedures) to determine the augmentation credit referenced in Subsection IV.A. The only additional guidance in the FSS is found in Subsection IV.H., which states:

> ***Augmentation credit****, as further described in Subsection III.B.1.k., shall be calculated in accordance with the RRCA Accounting Procedures and by using the RRCA Groundwater Model.*

Finally, Subsection I.F. of the FSS provides:

> *The RRCA may modify the RRCA Accounting Procedures, or any portion thereof, in any manner consistent with the Compact and this Stipulation.*

Taken together, these references suggest the following:

1. If the project involves the acquisition or construction of augmentation wells in the moratorium area, those wells may not cause a "new" net depletion either annually or over the "long-term."

2. The RRCA Groundwater Model (Model) will be used to determine the extent of any net depletion and whether such net depletion is "new."

3. The Accounting Procedures will be revised to reflect the appropriate methodology for calculating the augmentation credit.

4. The Model will be used to calculate the credit, assuming, of course, that the project involves an activity that implicates groundwater Computed Beneficial Consumptive Use (CBCU).

5. The RRCA must approve any augmentation plan and related accounting procedures before a state may receive "augmentation credit" for the project, beyond the effect of simply increasing water supply, which will manifest itself in the current Accounting Procedures.

The States elaborated on these concepts before Special Master Vincent McKusick in 2003. (Transcript at 81-3; id. at 16-17.) Using the example there provided, a State would be entitled to claim as an "augmentation credit" all water pumped to the stream.

II. Baseline Conditions of the Project Area

This section describes the conditions of the project area prior to the acquisition of lands to implement the Project (Figure 2). Tables 1 and 2 provide information on the historical pumping and certified irrigated acreage of the 23 wells which were retired and decommissioned when the land acquisition was made. The cropped lands (irrigated acres and dryland acres) that were acquired as part of this project will be seeded back to natural grasses and irrigation that previously occurred will be retired permanently.

III. Operational Aspects of the Project

This section describes the operational conditions of the Project (see Figure 3). The new augmentation wells developed as part of the Project will be used to offset stream depletions to assist the State of Nebraska with Compact compliance efforts. The actual amount delivered in any one year will be subject to current conditions affecting Nebraska's Compact compliance outlook and on ensuring that no new net depletion is

associated with the project. Thus, Project operations will fall into two categories: 1) Annual operations to support Compact compliance efforts (Compact Operations Years) and 2) Annual operations specially designed to ensure that no new net depletions occur (Maintenance Operations Years) during those years when the Project is not needed to support Compact compliance efforts.

The groundwater pumping associated with the new augmentation wells will be incorporated into the Model on an annual basis and charged as groundwater CBCU by the State of Nebraska. The detailed analysis of potential net depletions associated with project operations relative to historical conditions, and an operational pattern that would have prevented the occurrence of any new net depletions, is described in Section IV.

The augmentation water delivered to Rock Creek via the Project pipeline will be measured and incorporated into the Accounting Procedures. Details of the Accounting Procedure modifications necessary to properly account for the Augmentation Water Supply (AWS) Credit are described in Section V and Appendix A.

IV. Groundwater Modeling Analysis of the Project

This section describes the evaluation of any change in the groundwater CBCU with respect to potential augmentation deliveries. Any increase in groundwater CBCU, or new depletion, is compared to the augmentation deliveries to assess the net impact of the project operations on streamflows of the Republican River Basin. The new depletion is determined by comparing the groundwater CBCU under the baseline (i.e., groundwater pumping for irrigation in the Project area) simulation of the Model to the groundwater CBCU that results from a Model simulation with the Project operating under this augmentation plan. Finally, any new depletion is compared to the AWS Credit in that same year to determine the net depletion to streamflow. The analysis in this section evaluates operations under a historical period, operations under a hypothetical future scenario, and a tracking system that will ensure no new net depletions as the project is operated going forward.

A. Net Depletions of Project Operations When Assessed Against Historical Baseline Conditions

This analysis evaluates hypothetical Project operations under historical circumstances that may have warranted operation- of the Project. The 1985-2010 period was chosen for this analysis to represent a reasonably long historic period as well as capture multiple cycles of Compact Operation Years. The historic groundwater CBCU under baseline Project conditions is represented by the Model simulations for the period 1985 through 2010 (26 years). The Model files used in this baseline simulation were intended to be consistent with the historical files developed for assisting with the RRCA annual accounting. These same Model simulations were then updated to reflect how Project operations may have functioned through this period. The key difference for the Model simulation of Project operations is that the historical recharge and groundwater pumping were modified for those Model cells which

correspond to the Project area. The recharge in the modified historical simulation differed from the recharge in the historical simulation in that the baseline recharge was modified to remove the additional recharge associated with Project irrigated lands for the entire simulation period.

The Project has the capacity to provide an augmentation delivery of up to 20,000 acre-feet in a given year. In this example, the baseline pumping conditions were modified in a manner that reduced groundwater pumping to 300 acre-feet during Maintenance Operations Years (17 of 26 years) and modified groundwater pumping to reflect a volume of 15,000 acre-feet during Compact Operations Years (Table 3). The 15,000 acre-feet value is intended to serve as a representative average value of typical Compact Operations Years. The minimum pumping value of 300 acre-feet was adopted as the Maintenance Operations Year pumping volume in this scenario because it was determined to be more than sufficient to offset any new depletion related to Compact Operations Years. Documentation and model files for this simulation are contained in Appendix B.

The Compact Operations Years include: 1988-1991 and 2002-2006. The Maintenance Operations Years for the simulation include: 1985-1987, 1992-2001, and 2007-2010. The Compact Operations Years were chosen from the historical record as they represent periods of lower water supplies when it is more likely that the project would be operated to offset a projected shortfall in Nebraska's Compact balance. The results of the historical simulation under Project operations, as compared to historical operations, are summarized in Table 4 and Figure 4. Under the Project operations described in Table 3, the Project would not cause a new net depletion in any of the historic years as shown in Table 4.

B. Net Depletions of Project Operations When Assessed Against Future Baseline Conditions

The second analysis of Project operations was to evaluate a hypothetical future scenario. While the process Nebraska intends to use to annually track net depletions of the Project will ensure the standard of no new net depletions is met each and every year now and into the future, a future scenario was developed to address questions or concerns that may be raised by the other States. This scenario was developed from a hypothetical future scenario first created by the State of Kansas. This scenario was utilized by Kansas for expert reports generated in 2011 for Kansas v. Nebraska and Colorado, Original No. 126. It is recognized that this scenario represents one of an infinite number of potential future scenarios and in no way serves as a barometer of what future conditions may be. Moreover, this analysis is simply presented to illustrate how net depletions may be manifest over the long term.

This portion of the analysis was completed by comparing the results of a simulation of hypothetical future conditions for the period 2010-2069 for the following conditions: 1) the certified irrigated acres continue to be irrigated in a manner consistent with the historical hydrology with some consideration for current regulations; and 2) with the irrigation removed and the project operated to provide augmentation deliveries. This hypothetical future scenario was developed by

repeating the years 1995-2009 four times into the future. The key difference for the simulation of project operations is that the recharge due to irrigation and groundwater pumping were modified for those model cells which correspond to the project area. The modified simulation differed from the "baseline" (unchanged) simulation in that the baseline recharge was modified to remove the additional recharge associated with project irrigated lands for the entire simulation period.

The baseline pumping conditions were modified in a manner that reduced groundwater pumping to 300 acre-feet during Maintenance Operations Years (40 of 60 years) and modified groundwater pumping to reflect a volume of 15,000 acre-feet during Compact Operations Years (Table 5). The results of the future simulation of new depletions and the net depletion given the AWS credit for each year are summarized in Table 6 and Figure 5. Documentation and model files for this simulation are contained in Appendix B.

As demonstrated by the results in Table 6, the net depletions are always negative for this scenario, indicating the AWS Credit is always greater than the new depletion and streamflow is increased by that value. Therefore, the pumping volume of 300 acre-feet per year for the Maintenance Operations Years is sufficient to ensure no new net depletions in this hypothetical future scenario. As stated above, this value would be adjusted as necessary to ensure no new net depletions in every year.

C. Process for Tracking Net Depletions and Determining Future Pumping During Maintenance Operations Years to Ensure No New Net Depletions

In the previous examples, the net depletions could be analyzed for the entire time period and a pumping volume chosen for the Maintenance Operations Years such that the project would not cause any new net depletion. For project operations going forward under this plan, a process is needed to be able to track any new depletions caused by the project operations to determine a sufficient pumping volume for the Maintenance Operations Years to ensure no new net depletions in those years. The following process will achieve that result.

The historic groundwater pumping for irrigation at the project site is well documented (Table 1). Therefore, while the official Model runs will incorporate the actual pumping that occurs in any given year, Nebraska will perform additional Model simulations to determine any new depletions that may occur each year due to the Project operations above those that would have existed had the Project remained under its historical operations (irrigated agriculture). These model simulations will essentially involve constructing an additional model scenario for each year that reflects the average historical irrigation pumping and irrigation recharge. The difference in the groundwater CBCU in this hypothetical simulation relative to the official Model runs will represent the increase (or decrease) in depletions as a result of the Project.

These simulations will only provide an indication of the new depletions that occurred under project operations after a given year has ended. However, the pumping volume

during a Maintenance Operations Year would need to be determined at the beginning of that year. Therefore, the pumping volume that will occur in a Maintenance Operations Year will be based on the maximum new depletion observed from project operations over time. This maximum value will be adjusted accordingly to account for potential increases in new depletions in that year over and above the historical observed maximum. In no event will the Maintenance Operation Year pumping be less than 300 acre-feet.

Nebraska will notify the states prior to the initiation of Project operations in the upcoming year to inform them of the volume of water that is intended to be pumped by the Project. Additionally, the Model runs conducted by Nebraska to determine the Maintenance Operations Year pumping will be exchanged with the other states during the annual data exchange. This additional element of the annual data exchange is set forth in Appendix A and reflects the fact that the State of Nebraska would annually report on the operations of the Project.

V. RRCA Accounting Procedure Modifications for Augmentation Credit Calculations

The examples above demonstrate how the Model would be used to determine any new depletion from the operation of the Project. This section describes the modifications to the Accounting Procedures needed to determine the augmentation credit to be provided in conjunction with the Project. The August 12, 2010, version of the Accounting Procedures are included as Appendix A, with the modifications required to implement this proposal indicated in red-line format. Below is an example of the current RRCA sub-basin calculations for determining the Virgin Water Supply (VWS) as well as the necessary modifications to account for the AWS and any new depletion caused by the Project.

Current Accounting Procedures Formula for Calculating Rock Creek Subbasin Virgin Water Supply:

VWS = Gage + All CBCU – IWS

VWS = 1,000 + 1,000 + 0 – 0 = 2,000

Nebraska Allocation = 0.6934[1] * 2,000 = 1,386.8

Kansas Allocation = 0.3066 * 2,000 = 613.2

Nebraska Balance in Rock Creek Subbasin = Nebraska Allocation – Nebraska CBCU = 1,386.8 – 1,000[2] = 386.8

[1] The allocation percentages for both Nebraska and Kansas include the each states share of the unallocated water supply and that the VWS is equivalent to the CWS (i.e., no flood flows included).
[2] Assumes all CBCU is assigned to Nebraska.

Proposed RRCA Accounting Procedures to include Augmentation Water Supply Credit (with Project operations of 300 acre-feet and an additional groundwater depletion of 5 acre-feet):

Gage + All CBCU – IWS – AWS

VWS = 1,295 + [1,005 - 300] + 0 – 0 = 2,000

Nebraska Allocation = 0.6934 * 2,000 = 1,386.8

Kansas Allocation = 0.3066 * 2,000 = 613.2

Nebraska Balance in Rock Creek Subbasin = Nebraska Allocation – Nebraska CBCU + AWS Credit = 1,386.8 – 1,005 + 300 = 681.8

The Main Stem accounting procedures would remain unchanged as the necessary modifications are reflected in the Designated Drainage Basin[3] where the Augmentation Plan is being implemented. Examples of the impact of the AWS Credit on the final Compact Accounting Balance for Tables 3C and 5C are illustrated below (Tables 7 and 8)[4]. Similar modifications to those made to Tables 3C and 5C of the Accounting Procedures would also be made to Tables 5D and 5E.

VI. Summary

This report has described the required elements of an augmentation plan pursuant to the requirements set forth in the FSS. Nebraska has included additional elements within this plan, beyond those strictly required by the FSS, to accommodate previous comments provided by the other states as wells as any concerns the states may have related to data sharing and future tracking of project operations. Nebraska submits this plan with time being of the essence and seeks the good faith efforts of the states in working to implement this plan in a timely fashion.

[3] As defined in the Accounting Procedures pg. 6.
[4] The values contained in Tables 7 and 8 are for illustrative purposes only.

WellID	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
49222	231	155	208	268	194	278	129	119	116	223	139	174	167
49223	152	183	191	208	179	219	124	149	126	106	158	94	117
49224	236	225	169	294	213	209	177	120	99	73	129	113	119
49225	278	213	214	262	221	275	145	112	154	107	192	252	339
49226	274	242	233	277	239	275	172	82	138	160	83	179	225
49227	268	236	244	305	213	267	140	85	147	152	93	155	112
49228	236	214	174	293	211	241	163	74	113	167	87	128	238
49229	242	207	176	283	215	264	195	73	118	178	73	122	219
49244	322	260	289	412	309	338	161	117	143	135	183	165	255
49245	256	231	231	276	256	300	193	81	129	200	192	139	117
49246	191	200	163	170	209	263	195	139	107	224	202	184	147
49367	278	259	229	318	230	329	152	137	125	111	174	143	212
49368	242	209	209	290	191	273	193	160	111	217	183	168	138
49369	419	359	289	429	265	418	318	281	175	389	359	241	444
49370	215	187	188	202	211	276	152	102	152	224	145	149	217
49472	236	227	223	306	194	279	142	116	129	97	138	134	195
51544	215	200	199	242	213	188	172	101	80	186	181	165	155
51545	239	228	223	266	227	194	207	121	68	172	206	180	152
51546	237	206	0	52	334	279	33	0	120	198	189	140	242
51722	233	133	233	309	177	195	140	103	14	157	148	183	244
51723	157	74	27	150	195	264	156	129	114	178	99	51	148
51724	172	77	154	289	206	276	203	150	109	162	179	122	222
52006	233	137	122	292	173	217	149	107	16	219	107	168	250
Total	5,561	4,664	4,390	6,192	5,073	6,117	3,811	2,659	2,601	4,035	3,641	3,548	4,673

Table 1. Historical Pumping 1985-2010 (ac-ft)

WellID	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Avg
49222	263	113	263	242	267	213	156	215	204	129	210	167	199	194
49223	118	112	183	223	280	163	244	115	185	157	80	88	68	155
49224	119	178	259	231	280	152	248	110	56	14	63	47	223	160
49225	349	228	355	302	351	376	288	32	130	137	195	146	114	222
49226	213	154	194	90	271	202	211	156	83	104	100	55	58	172
49227	223	149	212	103	33	143	213	144	183	164	135	39	150	166
49228	239	156	201	88	253	203	224	175	85	123	104	80	65	167
49229	221	165	210	94	110	141	189	139	184	186	182	143	188	174
49244	200	199	295	283	312	183	301	257	261	224	238	199	223	241
49245	169	169	182	176	81	154	150	113	71	95	103	71	75	162
49246	228	104	225	224	179	210	223	193	163	57	222	191	235	186
49367	177	171	160	170	206	210	222	97	230	212	217	192	218	199
49368	219	97	218	202	163	42	75	183	124	49	186	158	188	173
49369	496	236	512	431	487	396	334	18	144	115	148	105	85	304
49370	239	114	267	227	267	210	160	189	181	190	201	157	186	193
49472	148	142	230	218	255	131	252	114	221	178	207	172	215	188
51544	222	89	215	210	169	39	8	109	96	44	66	149	172	149
51545	226	102	227	218	180	45	48	155	143	50	211	166	215	172
51546	225	145	223	160	125	43	76	184	177	73	75	172	213	151
51722	141	164	263	225	275	207	259	128	157	140	150	190	185	183
51723	207	144	226	159	122	29	38	8	92	35	32	51	22	112
51724	213	143	184	82	256	191	207	151	65	88	80	0	0	153
52006	215	134	211	201	248	143	236	184	197	173	188	161	192	180
Total	5,070	3,407	5,517	4,562	5,171	3,827	4,360	3,168	3,430	2,736	3,393	2,900	3,486	4,154

Table 1 (Continued). Historical Pumping 1985-2010 (ac-ft)

WellID	2010 Certified Acres
49222	130.7
49223	133.8
49224	130.1
49225	224.7
49226	128.4
49227	133.6
49228	133.8
49229	132.8
49244	155.0
49245	132.3
49246	134.6
49367	128.0
49368	133.7
49369	251.0
49370	129.8
49472	134.0
51544	127.2
51545	124.8
51546	129.3
51722	132.4
51723	133.5
51724	133.4
52006	134.7
Total	3,261.6

Table 2. Historical Certified Acres.

Year	Type of Operation Year	Groundwater Pumping under Project Operations
1985	Maintenance	300
1986	Maintenance	300
1987	Maintenance	300
1988	Compact	15,000
1989	Compact	15,000
1990	Compact	15,000
1991	Compact	15,000
1992	Maintenance	300
1993	Maintenance	300
1994	Maintenance	300
1995	Maintenance	300
1996	Maintenance	300
1997	Maintenance	300
1998	Maintenance	300
1999	Maintenance	300
2000	Maintenance	300
2001	Maintenance	300
2002	Compact	15,000
2003	Compact	15,000
2004	Compact	15,000
2005	Compact	15,000
2006	Compact	15,000
2007	Maintenance	300
2008	Maintenance	300
2009	Maintenance	300
2010	Maintenance	300

Table 3. Groundwater pumping incorporated into the historical project operations simulation.

Year	New Depletion	AWS Credit	Net Depletion
1985	-4	-300	-304
1986	-29	-300	-329
1987	-54	-300	-354
1988	-60	-15,000	-15,060
1989	-27	-15,000	-15,027
1990	-40	-15,000	-15,040
1991	-8	-15,000	-15,008
1992	66	-300	-234
1993	144	-300	-156
1994	278	-300	-22
1995	171	-300	-129
1996	187	-300	-113
1997	174	-300	-126
1998	199	-300	-101
1999	173	-300	-127
2000	138	-300	-162
2001	13	-300	-287
2002	25	-15,000	-14,975
2003	-11	-15,000	-15,011
2004	0	-15,000	-15,000
2005	64	-15,000	-14,936
2006	118	-15,000	-14,882
2007	183	-300	-117
2008	233	-300	-67
2009	288	-300	-12
2010	261	-300	-39

Table 4. Simulated new depletion under project operations groundwater pumping, AWS credit, and the net depletions of project operation on the stream (negative depletion values indicate an accretion to streamflow). Net Depletion = New AWS credit + New Depletion.

Year	Type of Operation Year	Groundwater Pumping under Project Operations
2010	Maintenance	300
2011	Maintenance	300
2012	Maintenance	300
2013	Maintenance	300
2014	Maintenance	300
2015	Maintenance	300
2016	Maintenance	300
2017	Compact	15,000
2018	Compact	15,000
2019	Compact	15,000
2020	Compact	15,000
2021	Compact	15,000
2022	Maintenance	300
2023	Maintenance	300
2024	Maintenance	300
2025	Maintenance	300
2026	Maintenance	300
2027	Maintenance	300
2028	Maintenance	300
2029	Maintenance	300
2030	Maintenance	300
2031	Maintenance	300
2032	Compact	15,000
2033	Compact	15,000
2034	Compact	15,000
2035	Compact	15,000
2036	Compact	15,000
2037	Maintenance	300
2038	Maintenance	300
2039	Maintenance	300
2040	Maintenance	300
2041	Maintenance	300
2042	Maintenance	300

Table 5. Groundwater pumping incorporated into the future project operations simulation.

Year	Type of Operation Year	Groundwater Pumping under Project Operations
2043	Maintenance	300
2044	Maintenance	300
2045	Maintenance	300
2046	Maintenance	300
2047	Compact	15,000
2048	Compact	15,000
2049	Compact	15,000
2050	Compact	15,000
2051	Compact	15,000
2052	Maintenance	300
2053	Maintenance	300
2054	Maintenance	300
2055	Maintenance	300
2056	Maintenance	300
2057	Maintenance	300
2058	Maintenance	300
2059	Maintenance	300
2060	Maintenance	300
2061	Maintenance	300
2062	Compact	15,000
2063	Compact	15,000
2064	Compact	15,000
2065	Compact	15,000
2066	Compact	15,000
2067	Maintenance	300
2068	Maintenance	300
2069	Maintenance	300

Table 5 (Continued). Groundwater pumping incorporated into the future project operations simulation.

Year	New Depletion	AWS Credit	Net Depletion
2010	-1	-300	-301
2011	-24	-300	-324
2012	-40	-300	-340
2013	-60	-300	-360
2014	-119	-300	-419
2015	-106	-300	-406
2016	-152	-300	-452
2017	-100	-15,000	-15,100
2018	-120	-15,000	-15,120
2019	-100	-15,000	-15,100
2020	-99	-15,000	-15,099
2021	-71	-15,000	-15,071
2022	-56	-300	-356
2023	-30	-300	-330
2024	-1	-300	-301
2025	15	-300	-285
2026	37	-300	-263
2027	35	-300	-265
2028	31	-300	-269
2029	48	-300	-252
2030	23	-300	-277
2031	26	-300	-274
2032	13	-15,000	-14,987
2033	7	-15,000	-14,993
2034	-2	-15,000	-15,002
2035	7	-15,000	-14,993
2036	19	-15,000	-14,981
2037	47	-300	-253
2038	72	-300	-228
2039	124	-300	-176
2040	100	-300	-200

Table 6. Simulated future new depletion under project operations groundwater pumping, AWS credit, and the net depletions of project operation on the stream (negative depletion values indicate an accretion to streamflow). Net Depletion = AWS credit + New Depletion.

Year	New Depletion	AWS Credit	Net Depletion
2041	160	-300	-140
2042	122	-300	-178
2043	94	-300	-206
2044	188	-300	-112
2045	73	-300	-227
2046	117	-300	-183
2047	97	-15,000	-14,903
2048	87	-15,000	-14,913
2049	101	-15,000	-14,899
2050	115	-15,000	-14,885
2051	94	-15,000	-14,906
2052	146	-300	-154
2053	161	-300	-139
2054	242	-300	-58
2055	134	-300	-166
2056	291	-300	-9
2057	170	-300	-130
2058	180	-300	-120
2059	284	-300	-16
2060	136	-300	-164
2061	187	-300	-113
2062	130	-15,000	-14,870
2063	109	-15,000	-14,891
2064	80	-15,000	-14,920
2065	174	-15,000	-14,826
2066	118	-15,000	-14,882
2067	163	-300	-137
2068	176	-300	-124
2069	284	-300	-16

Table 6 (Continued). Simulated future new depletion under project operations groundwater pumping, AWS credit, and the net depletions of project operation on the stream (negative depletion values indicate an accretion to streamflow). Net Depletion = AWS credit + New Depletion.

Nebraska				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive Use	Imported Water Supply Credit **and/or Augmentation Water Supply Credit**	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit and/or Augmentation Water Supply Credit Col 1 – (Col 2- Col 3)
Year 2002	236,550 236,550	265,910 265,910	13,996 13,996	-15,364 -15,364
Year 2003	227,580 227,580	262,780 262,780	9,782 9,782	-25,418 -25,418
Year 2004	205,630 205,630	252,650 252,650	10,386 10,386	-36,634 -36,634
Year 2005	199,450 199,450	**253 ,940** 253,740	**26,965** 11,965	**-27,525** -42,325
Current Year 2006	187,090 187,090	**228,620** 228,420	**27,214** 12,214	**-14,316** -29,116
Average	211,260 211,260	**252,780** 252,700	**17,670** 11,670	**-23,850** -29,770

Table 7. Example of RRCA Accounting Procedure Table 3C Results with the Augmentation Water Supply Credit (top values in each column) and without the Augmentation Water Supply Credit (bottom values in each column). The gray shaded years (2005-2006) represent Compact Operation Years in which hypothetical new depletions (200 acre-feet) and deliveries (15,000 acre-feet) of operating the project are superimposed on the historical accounting data. Bold values represent data values that differ from the historical values due to project operations.

Nebraska								
Year	Allocation			Computed Beneficial Consumptive Use			Imported Water Supply Credit **and/or Augmentation Water Supply Credit**	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit and/or Augmentation Water Supply Credit Above Guide Rock
Column	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
	State Wide Allocation	Allocation below Guide Rock	State Wide Allocation above Guide Rock	State Wide CBCU	CBCU below Guide Rock	State Wide CBCU above Guide Rock	Credits above Guide Rock	Col 3 – (Col 6 – Col 7)
Previous Year	199,450	4,586	194,864	**253,940**	4,052	**249,889**	**26,965**	**-28,060**
	199,450	4,586	194,864	253,740	4,052	249,689	11,965	-44,234
Current Year	187,090	2,286	184,804	**228.62**	3,057	**225,563**	**27,214**	**-13,545**
	187,090	2,286	184,804	228,420	3,057	225,363	12,214	-28,345
Average	193,270	2,286	189,830	**241,280**	3,550	**237,730**	**27,090**	**-20,800**
	193,270	3,440	189,830	241,080	3,550	237,530	12,090	-36,290

Table 8. Example of RRCA Accounting Procedure Table 5C Results with the Augmentation Water Supply Credit (top values in each column) and without the Augmentation Water Supply Credit (bottom values in each column). The gray shaded years (2005-2006) represent Compact Operation Years in which hypothetical new depletions (200 acre-feet) and deliveries (15,000 acre-feet) of operating the project are superimposed on the historical accounting data. Bold values represent data values that differ from the historical values due to project operations.

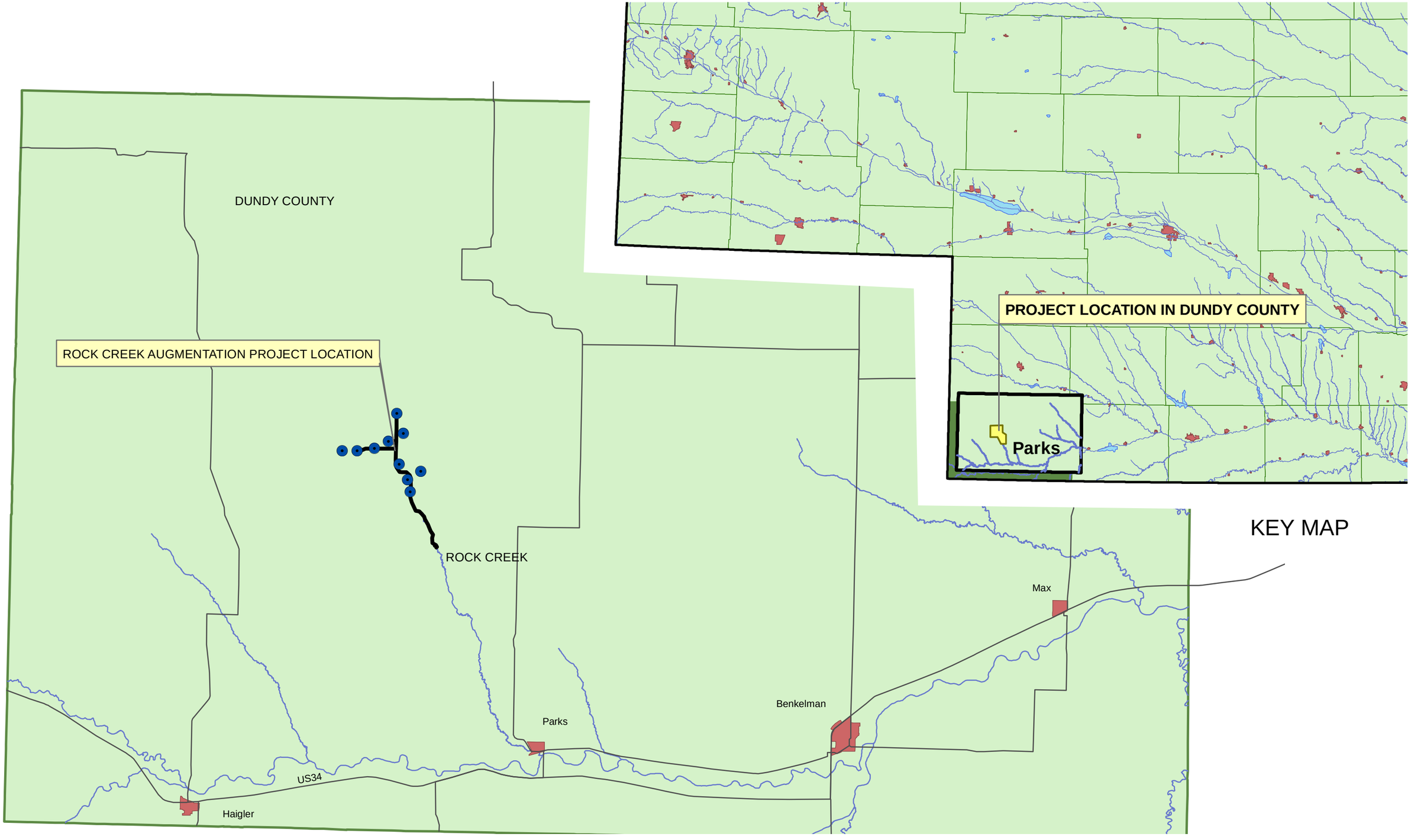


FIGURE 1: PROJECT LOCATION MAP

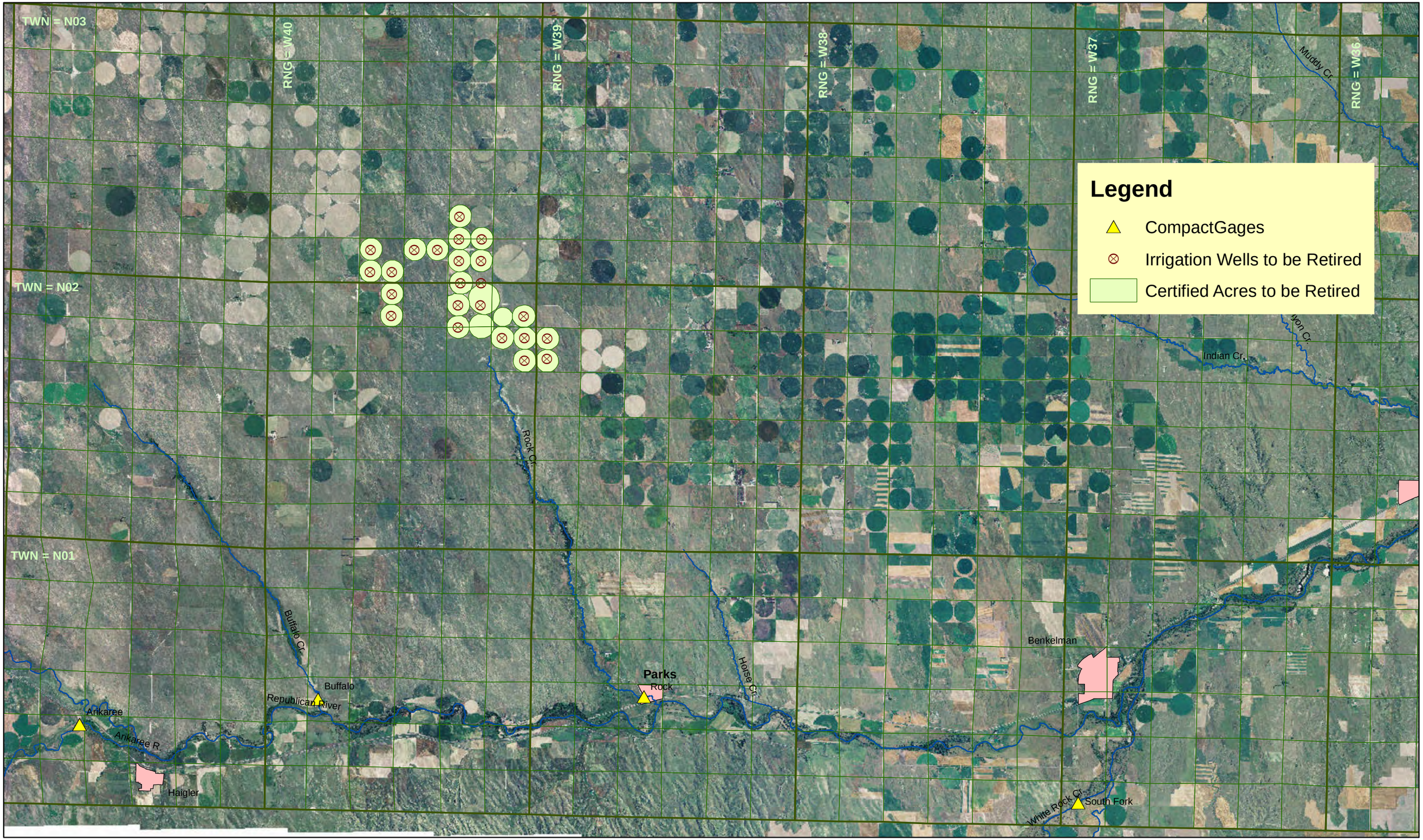


FIGURE 2: ROCK CREEK AUGMENTATION AREA PRIOR TO ACQUISITION

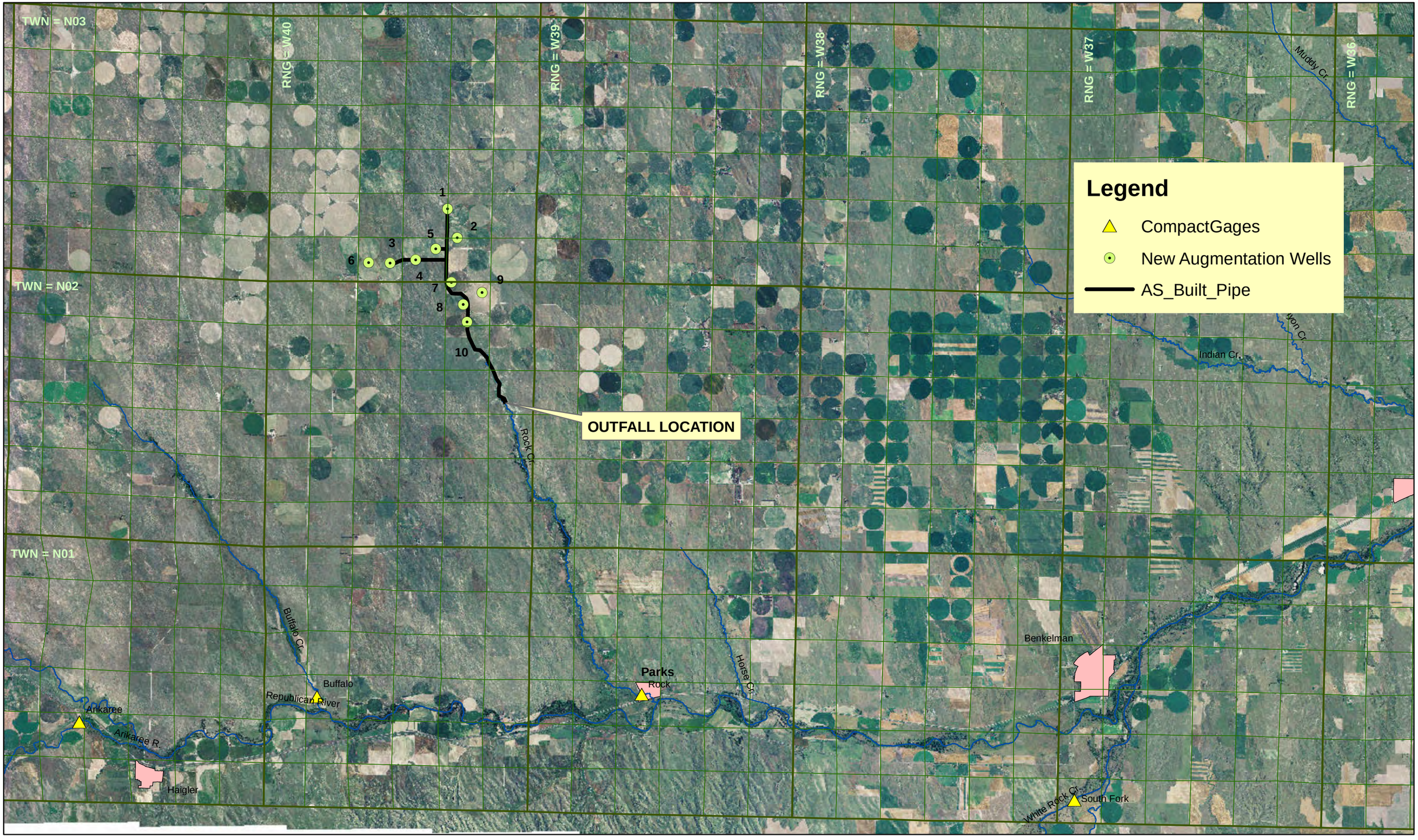


FIGURE 3: ROCK CREEK AUGMENTATION PROJECT PLAN

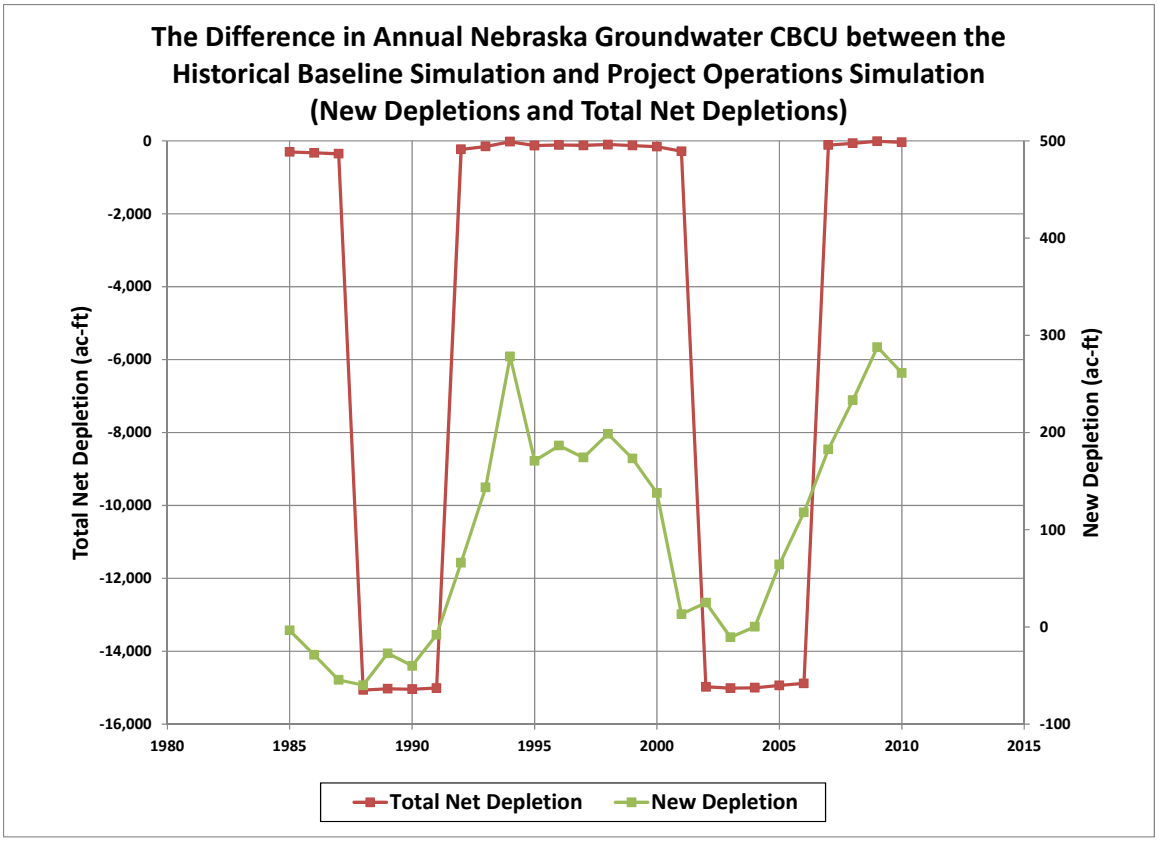


Figure 4. Simulated new depletion under projected future operations groundwater pumping, AWS credit, and the net depletions of project operation on the stream (negative net depletion values indicate no new net depletion).

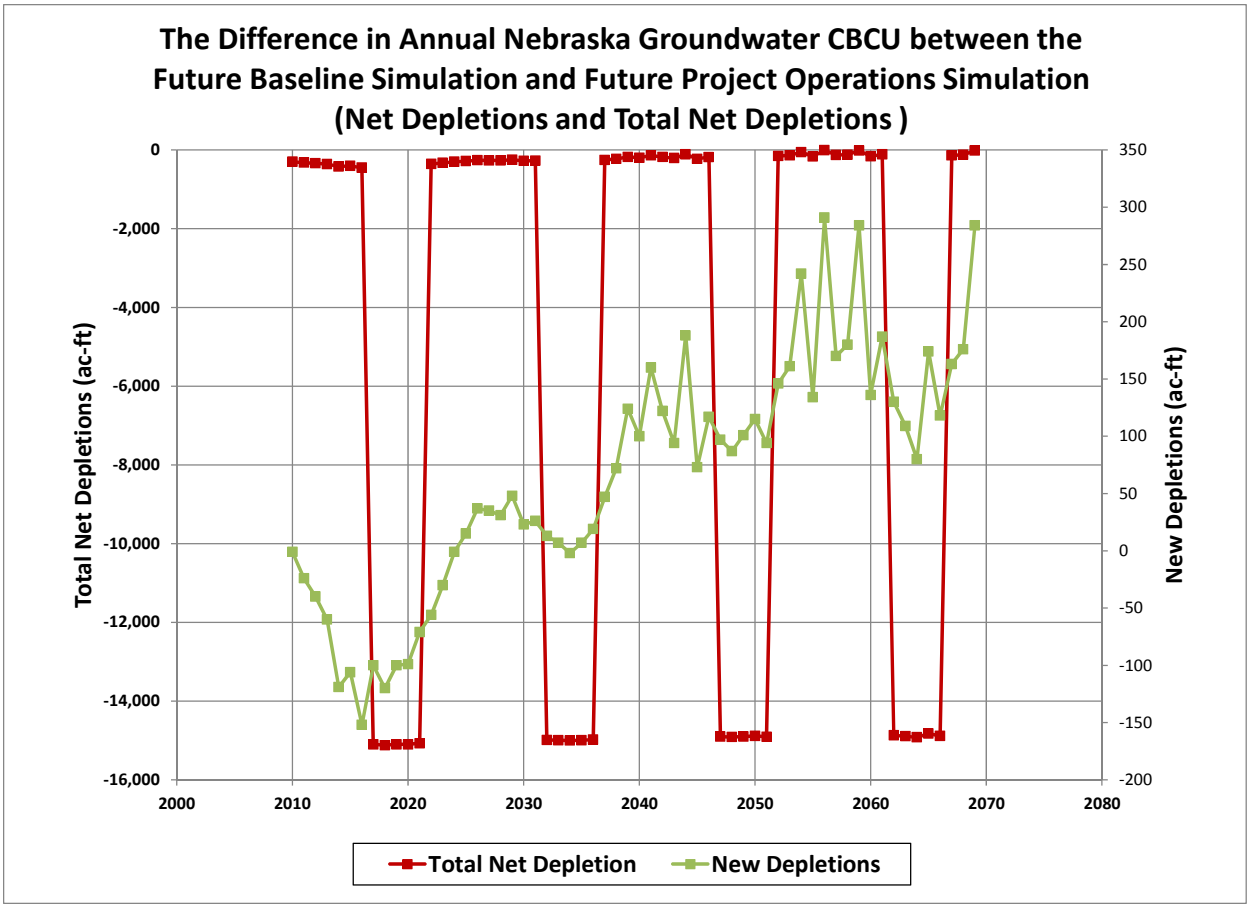


Figure 5. Simulated future net depletion of project operations groundwater pumping and augmentation vs. simulated baseline future groundwater pumping (negative values indicate no new net depletion).

Appendix A

Republican River Compact Administration

ACCOUNTING PROCEDURES

AND

REPORTING REQUIREMENTS

Revised August 12, 2010

Comment [A1]: Update to new date

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Comment [A2]: Update table of contents

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I. Introduction

This document describes the definitions, procedures, basic formulas, specific formulas, and data requirements and reporting formats to be used by the RRCA to compute the Virgin Water Supply, Computed Water Supply, Allocations, Imported Water Supply Credit, Augmentation Water Supply Credit, and Computed Beneficial Consumptive Use. These computations shall be used to determine supply, allocations, use and compliance with the Compact according to the Stipulation. These definitions, procedures, basic and specific formulas, data requirements and attachments may be changed by consent of the RRCA consistent with Subsection I.F of the Stipulation. This document will be referred to as the RRCA Accounting Procedures. Attached to these RRCA Accounting Procedures as Figure 1 is the map attached to the Compact that shows the Basin, its streams and the Basin boundaries.

II. Definitions

The following words and phrases as used in these RRCA Accounting Procedures are defined as follows:

Additional Water Administration Year - a year when the projected or actual irrigation water supply is less than 130,000 Acre-feet of storage available for use from Harlan County Lake as determined by the Bureau of Reclamation using the methodology described in the Harlan County Lake Operation Consensus Plan attached as Appendix K to the Stipulation.

Allocation(s): the water supply allocated to each State from the Computed Water Supply;

Annual: yearly from January 1 through December 31;

Augmentation Plan: the detailed program used by a State to offset stream depletions in order to comply with its Compact Allocations. The Augmentation Plans shall be approved by the RRCA prior to implementation;

Augmentation Water Supply Credit: The amount of water measured and discharged under an approved Augmentation Plan to a Designated Drainage Basin for the purpose of offsetting stream depletions to comply with a States' Compact allocation. The Augmentation Water Supply Credit of a State shall not be included in the Virgin Water Supply in the aforementioned Designated Drainage Basin and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water allocated to that State;

Basin: the Republican River Basin as defined in Article II of the Compact;

Beneficial Consumptive Use: that use by which the Water Supply of the Basin is consumed through the activities of man, and shall include water consumed by evaporation from any reservoir, canal, ditch, or irrigated area;

Change in Federal Reservoir Storage: the difference between the amount of water in storage in the reservoir on December 31 of each year and the amount of water in storage on December 31 of the previous year. The current area capacity table supplied by the appropriate federal operating agency shall be used to determine the contents of the reservoir on each date;

Compact: the Republican River Compact, Act of February 22, 1943, 1943 Kan. Sess. Laws 612, codified at Kan. Stat. Ann. § 82a-518 (1997); Act of February 24, 1943, 1943 Neb. Laws 377, codified at 2A Neb. Rev. Stat. App. § 1-106 (1995), Act of March 15, 1943, 1943 Colo. Sess. Laws 362, codified at Colo. Rev. Stat. §§ 37-67-101 and 37-67-102 (2001); Republican River Compact, Act of May 26, 1943, ch. 104, 57 Stat. 86;

Computed Beneficial Consumptive Use: for purposes of Compact accounting, the stream flow depletion resulting from the following activities of man:

Irrigation of lands in excess of two acres;
Any non-irrigation diversion of more than 50 Acre-feet per year;
Multiple diversions of 50 Acre-feet or less that are connected or otherwise combined to serve a single project will be considered as a single diversion for accounting purposes if they total more than 50 Acre-feet;
Net evaporation from Federal Reservoirs;
Net evaporation from Non-federal Reservoirs within the surface boundaries of the Basin;
Any other activities that may be included by amendment of these formulas by the RRCA;

Computed Water Supply: the Virgin Water Supply less the Change in Federal Reservoir Storage in any Designated Drainage Basin, and less the Flood Flows;

Designated Drainage Basins: the drainage basins of the specific tributaries and the Main Stem of the Republican River as described in Article III of the Compact. Attached hereto as Figure 3 is a map of the Sub-basins and Main Stem;

Dewatering Well: a Well constructed solely for the purpose of lowering the groundwater elevation;

Federal Reservoirs:

Bonny Reservoir
Swanson Lake
Enders Reservoir
Hugh Butler Lake
Harry Strunk Lake

Keith Sebelius Lake
Harlan County Lake
Lovewell Reservoir

Flood Flows: the amount of water deducted from the Virgin Water Supply as part of the computation of the Computed Water Supply due to a flood event as determined by the methodology described in Subsection III.B.1.;

Gaged Flow: the measured flow at the designated stream gage;

Guide Rock: a point at the Superior-Courtland Diversion Dam on the Republican River near Guide Rock, Nebraska; the Superior-Courtland Diversion Dam gage plus any flows through the sluice gates of the dam, specifically excluding any diversions to the Superior and Courtland Canals, shall be the measure of flows at Guide Rock;

Historic Consumptive Use: that amount of water that has been consumed under appropriate and reasonably efficient practices to accomplish without waste the purposes for which the appropriation or other legally permitted use was lawfully made;

Imported Water Supply: the water supply imported by a State from outside the Basin resulting from the activities of man;

Imported Water Supply Credit: the accretions to stream flow due to water imports from outside of the Basin as computed by the RRCA Groundwater Model. The Imported Water Supply Credit of a State shall not be included in the Virgin Water Supply and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water allocated to that State, except as provided in Subsection V.B.2. of the Stipulation and Subsections III.I. – J. of these RRCA Accounting Procedures;

Main Stem: the Designated Drainage Basin identified in Article III of the Compact as the North Fork of the Republican River in Nebraska and the main stem of the Republican River between the junction of the North Fork and the Arikaree River and the lowest crossing of the river at the Nebraska-Kansas state line and the small tributaries thereof, and also including the drainage basin Blackwood Creek;

Main Stem Allocation: the portion of the Computed Water Supply derived from the Main Stem and the Unallocated Supply derived from the Sub-basins as shared by Kansas and Nebraska;

Meeting(s): a meeting of the RRCA, including any regularly scheduled annual meeting or any special meeting;

Modeling Committee: the modeling committee established in Subsection IV.C. of the Stipulation;

Moratorium: the prohibition and limitations on construction of new Wells in the geographic area described in Section III. of the Stipulation;

Non-federal Reservoirs: reservoirs other than Federal Reservoirs that have a storage capacity of 15 Acre-feet or greater at the principal spillway elevation;

Northwest Kansas: those portions of the Sub-basins within Kansas;

Replacement Well: a Well that replaces an existing Well that a) will not be used after construction of the new Well and b) will be abandoned within one year after such construction or is used in a manner that is excepted from the Moratorium pursuant to Subsections III.B.1.c.-f. of the Stipulation;

RRCA: Republican River Compact Administration, the administrative body composed of the State officials identified in Article IX of the Compact;

RRCA Accounting Procedures: this document and all attachments hereto;

RRCA Groundwater Model: the groundwater model developed under the provisions of Subsection IV.C. of the Stipulation and as subsequently adopted and revised through action of the RRCA;

State: any of the States of Colorado, Kansas, and Nebraska;

States: the States of Colorado, Kansas and Nebraska;

Stipulation: the Final Settlement Stipulation to be filed in *Kansas v. Nebraska and Colorado*, No. 126, Original, including all Appendices attached thereto;

Sub-basin: the Designated Drainage Basins, except for the Main Stem, identified in Article III of the Compact. For purposes of Compact accounting the following Sub-basins will be defined as described below:

North Fork of the Republican River in Colorado drainage basin is that drainage area above USGS gaging station number 06823000, North Fork Republican River at the Colorado-Nebraska State Line,

Arikaree River drainage basin is that drainage area above USGS gaging station number 06821500, Arikaree River at Haigler, Nebraska,

Buffalo Creek drainage basin is that drainage area above USGS gaging station number 06823500, Buffalo Creek near Haigler, Nebraska,

Rock Creek drainage basin is that drainage area above USGS gaging station number 06824000, Rock Creek at Parks, Nebraska,

South Fork of the Republican River drainage basin is that drainage area above USGS gaging station number 06827500, South Fork Republican River near Benkelman, Nebraska,

Frenchman Creek (River) drainage basin in Nebraska is that drainage area above USGS gaging station number 06835500, Frenchman Creek in Culbertson, Nebraska,

Driftwood Creek drainage basin is that drainage area above USGS gaging station number 06836500, Driftwood Creek near McCook, Nebraska,

Red Willow Creek drainage basin is that drainage area above USGS gaging station number 06838000, Red Willow Creek near Red Willow, Nebraska,

Medicine Creek drainage basin is that drainage area above the Medicine Creek below Harry Strunk Lake, State of Nebraska gaging station number 06842500; and the drainage area between the gage and the confluence with the Main Stem,

Sappa Creek drainage basin is that drainage area above USGS gaging station number 06847500, Sappa Creek near Stamford, Nebraska and the drainage area between the gage and the confluence with the Main Stem; and excluding the Beaver Creek drainage basin area downstream from the State of Nebraska gaging station number 06847000 Beaver Creek near Beaver City, Nebraska to the confluence with Sappa Creek,

Beaver Creek drainage basin is that drainage area above State of Nebraska gaging station number 06847000, Beaver Creek near Beaver City, Nebraska, and the drainage area between the gage and the confluence with Sappa Creek,

Prairie Dog Creek drainage basin is that drainage area above USGS gaging station number 06848500, Prairie Dog Creek near Woodruff, Kansas, and the drainage area between the gage and the confluence with the Main Stem;

Attached hereto as Figure 2 is a line diagram depicting the streams, Federal Reservoirs and gaging stations;

Test hole: a hole designed solely for the purpose of obtaining information on hydrologic and/or geologic conditions;

Trenton Dam: a dam located at 40 degrees, 10 minutes, 10 seconds latitude and 101 degrees, 3 minutes, 35 seconds longitude, approximately two and one-half miles west of the town of Trenton, Nebraska;

Unallocated Supply: the "water supplies of upstream basins otherwise unallocated" as set forth in Article IV of the Compact;

Upstream of Guide Rock, Nebraska: those areas within the Basin lying west of a line proceeding north from the Nebraska-Kansas state line and following the western edge of Webster County, Township 1, Range 9, Sections 34, 27, 22, 15, 10 and 3 through Webster County, Township 2, Range 9, Sections 34, 27 and 22; then proceeding west along the southern edge of Webster County, Township 2, Range 9, Sections 16, 17 and 18; then proceeding north following the western edge of Webster County, Township 2, Range 9, Sections 18, 7 and 6, through Webster County, Township 3, Range 9, Sections 31, 30, 19, 18, 7 and 6 to its intersection with the northern boundary of Webster County. Upstream of Guide Rock, Nebraska shall not include that area in Kansas east of the 99° meridian and south of the Kansas-Nebraska state line;

Virgin Water Supply: the Water Supply within the Basin undepleted by the activities of man;

Water Short Year Administration: administration in a year when the projected or actual irrigation water supply is less than 119,000 acre feet of storage available for use from Harlan County Lake as determined by the Bureau of Reclamation using the methodology described in the Harlan County Lake Operation Consensus Plan attached as Appendix K to the Stipulation.

Water Supply of the Basin or **Water Supply within the Basin:** the stream flows within the Basin, excluding Imported Water Supply;

Well: any structure, device or excavation for the purpose or with the effect of obtaining groundwater for beneficial use from an aquifer, including wells, water wells, or groundwater wells as further defined and used in each State's laws, rules, and regulations.

III. Basic Formulas

The basic formulas for calculating Virgin Water Supply, Computed Water Supply, Imported Water Supply, Allocations and Computed Beneficial Consumptive Use are set forth below. The results of these calculations shall be shown in a table format as shown in Table 1.

Basic Formulas for Calculating Virgin Water Supply, Computed Water Supply, Allocations and Computed Beneficial Consumptive Use		
Sub-basin VWS	=	Gage + All CBCU +ΔS – IWS – AWS
Main Stem VWS	=	Hardy Gage – Σ Sub-basin gages + All CBCU in the Main Stem +ΔS – IWS
CWS	=	VWS - Δ S – FF

Allocation for each State in each Sub-basin And Main Stem	=	CWS x %
State's Allocation	=	Σ Allocations for Each State
State's CBCU	=	Σ State's CBCUs in each Sub-basin and Main Stem

Abbreviations:

CBCU = Computed Beneficial Consumptive Use
FF = Flood Flows
Gage = Gaged Flow
IWS = Imported Water Supply Credit
AWS = Augmentation Water Supply Credit
CWS = Computed Water Supply
VWS = Virgin Water Supply
% = the ratio used to allocate the Computed Water Supply between the States. This ratio is based on the allocations in the Compact
Δ S = Change in Federal Reservoir Storage

A. Calculation of Annual Virgin Water Supply

1. Sub-basin calculation:

The annual Virgin Water Supply for each Sub-basin will be calculated by adding: a) the annual stream flow in that Sub-basin at the Sub-basin stream gage designated in Section II., b) the annual Computed Beneficial Consumptive Use above that gaging station, and c) the Change in Federal Reservoir Storage in that Sub-basin; and from that total subtract any Imported Water Supply Credit and any Augmentation Water Supply Credit. The Computed Beneficial Consumptive Use will be calculated as described in Subsection III. D. Adjustments for flows diverted around stream gages and for Computed Beneficial Consumptive Uses in the Sub-basin between the Sub-basin stream gage and the confluence of the Sub-basin tributary and the Main Stem shall be made as described in Subsections III. D. 1 and 2 and IV. B.

2. Main Stem Calculation:

The annual Virgin Water Supply for the Main Stem will be calculated by adding: a) the flow at the Hardy gage minus the flows from the Sub-basin gages listed in Section II, b) the annual Computed Beneficial Consumptive Use in the Main Stem, and c) the Change in Federal Reservoir Storage from Swanson Lake and Harlan

County Lake; and from that total subtract any Imported Water Supply Credit for the Main Stem. Adjustments for flows diverted around Sub-basin stream gages and for Computed Beneficial Consumptive Uses in a Sub-basin between the Sub-basin stream gage and the confluence of the Sub-basin tributary and the Mains Stem shall be made as described in Subsections III. D. 1 and 2 and IV.B.,

3. Imported Water Supply Credit Calculation:

The amount of Imported Water Supply Credit shall be determined by the RRCA Groundwater Model. The Imported Water Supply Credit of a State shall not be included in the Virgin Water Supply and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water allocated to that State. Currently, the Imported Water Supply Credits shall be determined using two runs of the RRCA Groundwater Model:

a. The "base" run shall be the run with all groundwater pumping, groundwater pumping recharge, and surface water recharge within the model study boundary for the current accounting year turned "on." This will be the same "base" run used to determine groundwater Computed Beneficial Consumptive Uses.

b. The "no NE import" run shall be the run with the same model inputs as the base run with the exception that surface water recharge associated with Nebraska's Imported Water Supply shall be turned "off."

The Imported Water Supply Credit shall be the difference in stream flows between these two model runs. Differences in stream flows shall be determined at the same locations as identified in Subsection III.D.1.for the "no pumping" runs. Should another State import water into the Basin in the future, the RRCA will develop a similar procedure to determine Imported Water Supply Credits.

4. Augmentation Water Supply Credit: The amount of water measured and discharged under an approved Augmentation Plan to a Designated Drainage Basin for the purpose of offsetting stream depletions to comply with a States' Compact allocation.

B. Calculation of Computed Water Supply

On any Designated Drainage Basin without a Federal Reservoir, the Computed Water Supply will be equal to the Virgin Water Supply of that Designated Drainage Basin minus Flood Flows.

On any Designated Drainage Basin with a Federal Reservoir, the Computed Water Supply will be equal to the Virgin Water Supply minus the Change in Federal Reservoir Storage in that Designated Drainage Basin and minus Flood Flows.

1. Flood Flows

If in any calendar year there are five consecutive months in which the total actual stream flow[1] at the Hardy gage is greater than 325,000 Acre-feet, or any two consecutive months in which the total actual stream flow is greater than 200,000 Acre-feet, the annual flow in excess of 400,000 Acre-feet at the Hardy gage will be considered to be Flood Flows that will be subtracted from the Virgin Water Supply to calculate the Computed Water Supply, and Allocations. The Flood Flow in excess of 400,000 Acre-feet at the Hardy gage will be subtracted from the Virgin Water Supply of the Main Stem to compute the Computed Water Supply unless the Annual Gaged Flows from a Sub-basin were in excess of the flows shown for that Sub-basin in Attachment 1. These excess Sub-basin flows shall be considered to be Sub-basin Flood Flows.

If there are Sub-basin Flood Flows, the total of all Sub-basin Flood Flows shall be compared to the amount of Flood Flows at the Hardy gage. If the sum of the Sub-basin Flood Flows are in excess of the Flood Flow at the Hardy gage, the flows to be deducted from each Sub-basin shall be the product of the Flood Flows for each Sub-basin times the ratio of the Flood Flows at the Hardy gage divided by the sum of the Flood Flows of the Sub-basin gages. If the sum of the Sub-basin Flood Flows is less than the Flood Flow at the Hardy gage, the entire amount of each Sub-basin Flood Flow shall be deducted from the Virgin Water Supply to compute the Computed Water Supply of that Sub-basin for that year. The remainder of the Flood Flows will be subtracted from the flows of the Main Stem.

C. Calculation of Annual Allocations

Article IV of the Compact allocates 54,100 Acre-feet for Beneficial Consumptive Use in Colorado, 190,300 Acre-feet for Beneficial Consumptive Use in Kansas and 234,500 Acre-feet for Beneficial Consumptive Use in Nebraska. The Compact provides that the Compact totals are to be derived from the sources and in the amounts specified in Table 2.

The Allocations derived from each Sub-basin to each State shall be the Computed Water Supply multiplied by the percentages set forth in Table 2. In addition, Kansas shall receive 51.1% of the Main Stem Allocation and the Unallocated

[1] These actual stream flows reflect Gaged Flows after depletions by Beneficial Consumptive Use and change in reservoir storage above the gage.

Supply and Nebraska shall receive 48.9% of the Main Stem Allocation and the Unallocated Supply.

D. Calculation of Annual Computed Beneficial Consumptive Use

1. Groundwater

Computed Beneficial Consumptive Use of groundwater shall be determined by use of the RRCA Groundwater Model. The Computed Beneficial Consumptive Use of groundwater for each State shall be determined as the difference in streamflows using two runs of the model:

The "base" run shall be the run with all groundwater pumping, groundwater pumping recharge, and surface water recharge within the model study boundary for the current accounting year "on".

The "no State pumping" run shall be the run with the same model inputs as the base run with the exception that all groundwater pumping and pumping recharge of that State shall be turned "off."

An output of the model is baseflows at selected stream cells. Changes in the baseflows predicted by the model between the "base" run and the "no-State-pumping" model run is assumed to be the depletions to streamflows. i.e., groundwater computed beneficial consumptive use, due to State groundwater pumping at that location. The values for each Sub-basin will include all depletions and accretions upstream of the confluence with the Main Stem. The values for the Main Stem will include all depletions and accretions in stream reaches not otherwise accounted for in a Sub-basin. The values for the Main Stem will be computed separately for the reach above Guide Rock, and the reach below Guide Rock.

2. Surface Water

The Computed Beneficial Consumptive Use of surface water for irrigation and non-irrigation uses shall be computed by taking the diversions from the river and subtracting the return flows to the river resulting from those diversions, as described in Subsections IV.A.2.a.-d. The Computed Beneficial Consumptive Use of surface water from Federal Reservoir and Non-Federal Reservoir evaporation shall be the net reservoir evaporation from the reservoirs, as described in Subsections IV.A.2.e.-f.

For Sub-basins where the gage designated in Section II. is near the confluence with the Main Stem, each State's Sub-basin Computed Beneficial Consumptive Use of surface water shall be the State's Computed Beneficial Consumptive Use of surface water above the Sub-basin gage. For Medicine Creek, Sappa Creek, Beaver Creek and Prairie Dog Creek, where the gage is not near the confluence with the Main Stem, each State's Computed Beneficial Consumptive Use of surface water shall be the sum of the State's Computed Beneficial Consumptive Use of surface water above the gage, and its Computed Beneficial Consumptive Use of surface water between the gage and the confluence with the Main Stem.

E. Calculation to Determine Compact Compliance Using Five-Year Running Averages

Each year, using the procedures described herein, the RRCA will calculate the Annual Allocations by Designated Drainage Basin and total for each State, the Computed Beneficial Consumptive Use by Designated Drainage Basin and total for each State and the Imported Water Supply Credit and the Augmentation Water Supply Credit that a State may use for the preceding year. These results for the current Compact accounting year as well as the results of the previous four accounting years and the five-year average of these results will be displayed in the format shown in Table 3.

F. Calculations To Determine Colorado's and Kansas's Compliance with the Sub-basin Non-Impairment Requirement

The data needed to determine Colorado's and Kansas's compliance with the Sub-basin non-impairment requirement in Subsection IV.B.2. of the Stipulation are shown in Tables 4.A. and B.

G. Calculations To Determine Projected Water Supply

1. Procedures to Determine Water Short Years

The Bureau of Reclamation will provide each of the States with a monthly or, if requested by any one of the States, a more frequent update of the projected or actual irrigation supply from Harlan County Lake for that irrigation season using the methodology described in the Harlan County Lake Operation Consensus Plan, attached as Appendix K to the Stipulation. The steps for the calculation are as follows:

Step 1. At the beginning of the calculation month (1) the total projected inflow for the calculation month and each succeeding month through the end of May shall be added to the previous end of month Harlan County Lake content and (2) the total projected 1993 level evaporation loss for the calculation month and each succeeding month through the end of May shall then be subtracted. The total projected inflow shall be the 1993 level average monthly inflow or the running average monthly inflow for the previous five years, whichever is less.

Step 2. Determine the maximum irrigation water available by subtracting the sediment pool storage (currently 164,111 Acre-feet) and adding the summer sediment pool evaporation (20,000 Acre-feet) to the result from Step 1.

Step 3. For October through January calculations, take the result from Step 2 and using the Shared Shortage Adjustment Table in Attachment 2 hereto, determine the preliminary irrigation water available for release. The calculation using the end of December content (January calculation month) indicates the minimum amount of irrigation water available for release at the end of May. For February through June calculations, subtract the maximum irrigation water available for the January calculation month from the maximum irrigation water available for the calculation month. If the result is negative, the irrigation water available for release (January calculation month) stays the same. If the result is positive the preliminary irrigation water available for release (January calculation month) is increased by the positive amount.

Step 4. Compare the result from Step 3 to 119,000 Acre-feet. If the result from Step 3 is less than 119,000 Acre-feet Water Short Year Administration is in effect.

Step 5. The final annual Water-Short Year Administration calculation determines the total estimated irrigation supply at the end of June (calculated in July). Use the result from Step 3 for the end of May irrigation release estimate, add the June computed inflow to Harlan County Lake and subtract the June computed gross evaporation loss from Harlan County Lake.

2. Procedures to Determine 130,000 Acre Feet Projected Water Supply

To determine the preliminary irrigation supply for the October through June calculation months, follow the procedure described in steps 1 through 4 of the "Procedures to determine Water Short Years" Subsection III. G. 1. The result from step 4 provides the forecasted water supply, which is compared to 130,000 Acre-feet. For the July through September calculation months, use the previous end of calculation month preliminary irrigation supply, add the previous month's Harlan County Lake computed inflow and subtract the previous month's computed gross

evaporation loss from Harlan County Lake to determine the current preliminary irrigation supply. The result is compared to 130,000 Acre-feet.

H. Calculation of Computed Water Supply, Allocations and Computed Beneficial Consumptive Use Above and Below Guide Rock During Water-Short Administration Years.

For Water-Short-Administration Years, in addition to the normal calculations, the Computed Water Supply, Allocations, Computed Beneficial Consumptive Use and Imported Water Supply Credits, and Augmentation Water Supply Credits shall also be calculated above Guide Rock as shown in Table 5C. These calculations shall be done in the same manner as in non-Water-Short Administration years except that water supplies originating below Guide Rock shall not be included in the calculations of water supplies originating above Guide Rock. The calculations of Computed Beneficial Consumptive Uses shall be also done in the same manner as in non-Water-Short Administration years except that Computed Beneficial Consumptive Uses from diversions below Guide Rock shall not be included. The depletions from the water diverted by the Superior and Courtland Canals at the Superior-Courtland Diversion Dam shall be included in the calculations of Computed Beneficial Consumptive Use above Guide Rock. Imported Water Supply Credits and Augmentation Water Supply Credits above Guide Rock, as described in Sub-section III.I., may be used as offsets against the Computed Beneficial Consumptive Use above Guide Rock by the State providing the Imported Water Supply Credits or Augmentation Water Supply Credits.

The Computed Water Supply of the Main Stem reach between Guide Rock and the Hardy gage shall be determined by taking the difference in stream flow at Hardy and Guide Rock, adding Computed Beneficial Consumptive Uses in the reach (this does not include the Computed Beneficial Consumptive Use from the Superior and Courtland Canal diversions), and subtracting return flows from the Superior and Courtland Canals in the reach. The Computed Water Supply above Guide Rock shall be determined by subtracting the Computed Water Supply of the Main Stem reach between Guide Rock and the Hardy gage from the total Computed Water Supply. Nebraska's Allocation above Guide Rock shall be determined by subtracting 48.9% of the Computed Water Supply of the Main Stem reach between Guide Rock and the Hardy gage from Nebraska's total Allocation. Nebraska's Computed Beneficial Consumptive Uses above Guide Rock shall be determined by subtracting Nebraska's Computed Beneficial Consumptive Uses below Guide Rock from Nebraska's total Computed Beneficial Consumptive Use.

I. Calculation of Imported Water Supply Credits During Water-Short Year Administration Years.

Imported Water Supply Credit during Water-Short Year Administration years shall be calculated consistent with Subsection V.B.2.b. of the Stipulation.

The following methodology shall be used to determine the extent to which Imported Water Supply Credit, as calculated by the RRCA Groundwater Model, can be credited to the State importing the water during Water-Short Year Administration years.

1. Monthly Imported Water Supply Credits

The RRCA Groundwater Model will be used to determine monthly Imported Water Supply Credits by State in each Sub-basin and for the Main Stem. The values for each Sub-basin will include all depletions and accretions upstream of the confluence with the Main Stem. The values for the Main Stem will include all depletions and accretions in stream reaches not otherwise accounted for in a Sub-basin. The values for the Main Stem will be computed separately for the reach 1) above Harlan County Dam, 2) between Harlan County Dam and Guide Rock, and 3) between Guide Rock and the Hardy gage. The Imported Water Supply Credit shall be the difference in stream flow for two runs of the model: a) the "base" run and b) the "no State import" run.

During Water-Short Year Administration years, Nebraska's credits in the Sub-basins shall be determined as described in Section III. A. 3.

2. Imported Water Supply Credits Above Harlan County Dam

Nebraska's Imported Water Supply Credits above Harlan County Dam shall be the sum of all the credits in the Sub-basins and the Main Stem above Harlan County Dam.

3. Imported Water Supply Credits Between Harlan County Dam and Guide Rock During the Irrigation Season

a. During Water-Short Year Administration years, monthly credits in the reach between Harlan County Dam and Guide Rock shall be determined as the differences in the stream flows between the two runs at Guide Rock.

b. The irrigation season shall be defined as starting on the first day of release of water from Harlan County Lake for irrigation use and ending on the last day of release of water from Harlan County Lake for irrigation use.

c. Credit as an offset for a State's Computed Beneficial Consumptive Use above Guide Rock will be given to all the Imported Water Supply accruing in the reach between Harlan County Dam and Guide Rock during the

irrigation season. If the period of the irrigation season does not coincide with the period of modeled flows, the amount of the Imported Water Supply credited during the irrigation season for that month shall be the total monthly modeled Imported Water Supply Credit times the number of days in the month occurring during the irrigation season divided by the total number of days in the month.

4. Imported Water Supply Credits Between Harlan County Dam and Guide Rock During the Non-Irrigation Season

a. Imported Water Supply Credit shall be given between Harlan County Dam and Guide Rock during the period that flows are diverted to fill Lovewell Reservoir to the extent that imported water was needed to meet Lovewell Reservoir target elevations.

b. Fall and spring fill periods shall be established during which credit shall be given for the Imported Water Supply Credit accruing in the reach. The fall period shall extend from the end of the irrigation season to December 1. The spring period shall extend from March 1 to May 31. The Lovewell target elevations for these fill periods are the projected end of November reservoir level and the projected end of May reservoir level for most probable inflow conditions as indicated in Table 4 in the current Annual Operating Plan prepared by the Bureau of Reclamation.

c. The amount of water needed to fill Lovewell Reservoir for each period shall be calculated as the storage content of the reservoir at its target elevation at the end of the fill period minus the reservoir content at the start of the fill period plus the amount of net evaporation during this period minus White Rock Creek inflows for the same period.

d. If the fill period as defined above does not coincide with the period of modeled flows, the amount of the Imported Water Supply Credit during the fill period for that month shall be the total monthly modeled Imported Water Supply Credit times the number of days in the month occurring during the fill season divided by the total number of days in the month.

e. The amount of non-imported water available to fill Lovewell Reservoir to the target elevation shall be the amount of water available at Guide Rock during the fill period minus the amount of the Imported Water Supply Credit accruing in the reach during the same period.

f. The amount of the Imported Water Supply Credit that shall be credited against a State's Consumptive Use shall be the amount of water imported by

that State that is available in the reach during the fill period or the amount of water needed to reach Lovewell Reservoir target elevations minus the amount of non-imported water available during the fill period, whichever is less.

5. Other Credits

Kansas and Nebraska will explore crediting Imported Water Supply that is otherwise useable by Kansas.

J. Calculations of Compact Compliance in Water-Short Year Administration Years

During Water-Short Year Administration, using the procedures described in Subsections III.A-D, the RRCA will calculate the Annual Allocations for each State, the Computed Beneficial Consumptive Use by each State, the ~~and~~ Imported Water Supply Credit, and the Augmentation Water Supply Credit that a State may use to offset Computed Beneficial Consumptive Use in that year. The resulting annual and average values will be calculated as displayed in Tables 5 A-C and E.

If Nebraska is implementing an Alternative Water-Short-Year Administration Plan, data to determine Compact compliance will be shown in Table 5D. Nebraska's compliance with the Compact will be determined in the same manner as Nebraska's Above Guide Rock compliance except that compliance will be based on a three-year running average of the current year and previous two year calculations. In addition, Table 5 D. will display the sum of the previous two-year difference in Allocations above Guide Rock and Computed Beneficial Consumptive Uses above Guide Rock minus any Imported Water Credits and compare the result with the Alternative Water-Short-Year Administration Plan's expected decrease in Computed Beneficial Consumptive Use above Guide Rock. Nebraska will be within compliance with the Compact as long as the three-year running average difference in Column 8 is positive and the sum of the previous year and current year deficits above Guide Rock are not greater than the expected decrease in Computed Beneficial Consumptive Use under the plan.

IV. Specific Formulas

A. Computed Beneficial Consumptive Use

1. Computed Beneficial Consumptive Use of Groundwater:

The Computed Beneficial Consumptive Use caused by groundwater diversion shall be determined by the RRCA Groundwater Model as described in Subsection III.D.1.

2. Computed Beneficial Consumptive Use of Surface Water:

The Computed Beneficial Consumptive Use of surface water shall be calculated as follows:

a) Non-Federal Canals

Computed Beneficial Consumptive Use from diversions by non- federal canals shall be 60 percent of the diversion; the return flow shall be 40 percent of the diversion

b) Individual Surface Water Pumps

Computed Beneficial Consumptive Use from small individual surface water pumps shall be 75 percent of the diversion; return flows will be 25 percent of the diversion unless a state provides data on the amount of different system types in a Sub-basin, in which case the following percentages will be used for each system type:

Gravity Flow.	30%
Center Pivot	17%
LEPA	10%

c) Federal Canals

Computed Beneficial Consumptive Use of diversions by Federal canals will be calculated as shown in Attachment 7. For each Bureau of Reclamation Canal the field deliveries shall be subtracted from the diversion from the river to determine the canal losses. The field delivery shall be multiplied by one minus an average system efficiency for the district to determine the loss of water from the field. Eighty-two percent of the sum of the field loss plus the canal loss shall be considered to be the return flow from the canal diversion. The assumed field efficiencies and the amount of the field and canal loss that reaches the stream may be reviewed by the RRCA and adjusted as appropriate to insure their accuracy.

d) Non-irrigation Uses

Any non-irrigation uses diverting or pumping more than 50 acre-feet per year will be required to measure diversions. Non-irrigation uses diverting more than 50 Acre-feet per year will be assessed a Computed Beneficial Consumptive Use of 50% of what is pumped or diverted, unless the entity presents evidence to the RRCA demonstrating a different percentage should be used.

e) Evaporation from Federal Reservoirs

Net Evaporation from Federal Reservoirs will be calculated as follows:

(1) Harlan County Lake, Evaporation Calculation

April 1 through October 31:

Evaporation from Harlan County Lake is calculated by the Corps of Engineers on a daily basis from April 1 through October 31. Daily readings are taken from a Class A evaporation pan maintained near the project office. Any precipitation recorded at the project office is added to the pan reading to obtain the actual evaporation amount. The pan value is multiplied by a pan coefficient that varies by month. These values are:

March	.56
April	.52
May	.53
June	.60
July	.68
August	.78
September	.91
October	1.01

The pan coefficients were determined by studies the Corps of Engineers conducted a number of years ago. The result is the evaporation in inches. It is divided by 12 and multiplied by the daily lake surface area in acres to obtain the evaporation in Acre-feet. The lake surface area is determined by the 8:00 a.m. elevation reading applied to the lake's area-capacity data. The area-capacity data is updated periodically through a sediment survey. The last survey was completed in December 2000.

November 1 through March 31

During the winter season, a monthly total evaporation in inches has been determined. The amount varies with the percent of ice cover. The values used are:

HARLAN COUNTY LAKE

Estimated Evaporation in Inches
Winter Season -- Monthly Total

PERCENTAGE OF ICE COVER

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
JAN	0.88	0.87	0.85	0.84	0.83	0.82	0.81	0.80	0.78	0.77	0.76
FEB	0.90	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.81	0.80	0.79
MAR	1.29	1.28	1.27	1.26	1.25	1.24	1.23	1.22	1.21	1.20	1.19
OCT	4.87			NO ICE							
NOV	2.81			NO ICE							
DEC	1.31	1.29	1.27	1.25	1.24	1.22	1.20	1.18	1.17	1.16	1.14

The monthly total is divided by the number of days in the month to obtain a daily evaporation value in inches. It is divided by 12 and multiplied by the daily lake surface area in acres to obtain the evaporation in Acre-feet. The lake surface area is determined by the 8:00 a.m. elevation reading applied to the lake's area-capacity data. The area-capacity data is updated periodically through a sediment survey. The last survey was completed in December 2000.

To obtain the net evaporation, the monthly precipitation on the lake is subtracted from the monthly gross evaporation. The monthly precipitation is calculated by multiplying the sum of the month's daily precipitation in inches by the average of the end of the month lake surface area for the previous month and the end of the month lake surface area for the current month in acres and dividing the result by 12 to obtain the precipitation for the month in acre feet.

The total annual net evaporation (Acre-feet) will be charged to Kansas and Nebraska in proportion to the annual diversions made by the Kansas Bostwick Irrigation District and the Nebraska Bostwick Irrigation District during the time period each year when irrigation

releases are being made from Harlan County Lake. For any year in which no irrigation releases were made from Harlan County Lake, the annual net evaporation charged to Kansas and Nebraska will be based on the average of the above calculation for the most recent three years in which irrigation releases from Harlan County Lake were made. In the event Nebraska chooses to substitute supply for the Superior Canal from Nebraska's allocation below Guide Rock in Water-Short Year Administration years, the amount of the substitute supply will be included in the calculation of the split as if it had been diverted to the Superior Canal at Guide Rock.

(2) Evaporation Computations for Bureau of Reclamation Reservoirs

The Bureau of Reclamation computes the amount of evaporation loss on a monthly basis at Reclamation reservoirs. The following procedure is utilized in calculating the loss in Acre-feet.

An evaporation pan reading is taken each day at the dam site. This measurement is the amount of water lost from the pan over a 24-hour period in inches. The evaporation pan reading is adjusted for any precipitation recorded during the 24-hour period. Instructions for determining the daily pan evaporation are found in the "National Weather Service Observing Handbook No. 2 – Substation Observations." All dams located in the Kansas River Basin with the exception of Bonny Dam are National Weather Service Cooperative Observers. The daily evaporation pan readings are totaled at the end of each month and converted to a "free water surface" (FWS) evaporation, also referred to as "lake" evaporation. The FWS evaporation is determined by multiplying the observed pan evaporation by a coefficient of .70 at each of the reservoirs. This coefficient can be affected by several factors including water and air temperatures. The National Oceanic and Atmospheric Administration (NOAA) has published technical reports describing the determination of pan coefficients. The coefficient used is taken from the "NOAA Technical Report NWS 33, Map of coefficients to convert class A pan evaporation to free water surface evaporation". This coefficient is used for the months of April through October when evaporation pan readings are recorded at the dams. The monthly FWS evaporation is then multiplied by the average surface area of the reservoir during the month in acres. Dividing this value by twelve will result in the amount of water lost to evaporation in Acre-feet during the month.

During the winter months when the evaporation pan readings are not taken, monthly evaporation tables based on the percent of ice cover are used. The tables used were developed by the Corps of Engineers and were based on historical average evaporation rates. A separate table was developed for each of the reservoirs. The monthly evaporation rates are multiplied by the .70 coefficient for pan to free water surface adjustment, divided by twelve to convert inches to feet and multiplied by the average reservoir surface area during the month in acres to obtain the total monthly evaporation loss in Acre-feet.

To obtain the net evaporation, the monthly precipitation on the lake is subtracted from the monthly gross evaporation. The monthly precipitation is calculated by multiplying the sum of the month's daily precipitation in inches by the average of the end of the month lake surface area for the previous month and the end of the month lake surface area for the current month in acres and dividing the result by 12 to obtain the precipitation for the month in acre feet.

f) Non-Federal Reservoir Evaporation:

For Non-Federal Reservoirs with a storage capacity less than 200 Acre-feet, the presumptive average annual surface area is 25% of the area at the principal spillway elevation. Net evaporation for each such Non-Federal Reservoir will be calculated by multiplying the presumptive average annual surface area by the net evaporation from the nearest climate and evaporation station to the Non-Federal Reservoir. A State may provide actual data in lieu of the presumptive criteria.

Net evaporation from Non-Federal Reservoirs with 200 Acre-feet of storage or greater will be calculated by multiplying the average annual surface area (obtained from the area-capacity survey) and the net evaporation from the nearest evaporation and climate station to the reservoir. If the average annual surface area is not available, the Non-Federal Reservoirs with 200 Acre-feet of storage or greater will be presumed to be full at the principal spillway elevation.

B. Specific Formulas for Each Sub-basin and the Main Stem

All calculations shall be based on the calendar year and shall be rounded to the nearest 10 Acre-feet using the conventional rounding formula of rounding up for all numbers equal to five or higher and otherwise rounding down.

Abbreviations:

AWS = Augmentation Water Supply Credit
CBCU = Computed Beneficial Consumptive Use
CWS = Computed Water Supply
D = Non-Federal Canal Diversions for Irrigation
Ev = Evaporation from Federal Reservoirs
EvNFR = Evaporation from Non-Federal Reservoirs
FF = Flood Flow
GW = Groundwater Computed Beneficial Consumptive Use (includes irrigation and non-irrigation uses)
IWS = Imported Water Supply Credit from Nebraska
M&I = Non-Irrigation Surface Water Diversions (Municipal and Industrial)
P = Small Individual Surface Water Pump Diversions for Irrigation
RF = Return Flow
VWS = Virgin Water Supply
c = Colorado
k = Kansas
n = Nebraska
ΔS = Change in Federal Reservoir Storage
% = Average system efficiency for individual pumps in the Sub-basin
% BRF = Percent of Diversion from Bureau Canals that returns to the stream
= Value expected to be zero

3. North Fork of Republican River in Colorado [2]

CBCU Colorado	= 0.6 x Haigler Canal Diversion Colorado + 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.6 x Haigler Canal Diversion Nebraska + GWn Note: The diversion for Haigler Canal is split between Colorado and Nebraska based on the percentage of land irrigated in each state
VWS	= North Fork of the Republican River at the State Line, Stn.

[2] The RRCA will investigate whether return flows from the Haigler Canal diversion in Colorado may return to the Arikaree River, not the North Fork of the Republican River, as indicated in the formulas. If there are return flows from the Haigler Canal to the Arikaree River, these formulas will be changed to recognize those returns.

	No. 06823000 + CBCUc + CBCUk + CBCUn + Nebraska Haigler Canal RF– IWS
	Note: The Nebraska Haigler Canal RF returns to the Main Stem
CWS	= VWS - FF
Allocation Colorado	= 0.224 x CWS
Allocation Nebraska	= 0.246 x CWS
Unallocated	= 0.53 x CWS

4. Arikaree River [2]

CBCU Colorado	= 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Arikaree Gage at Haigler Stn. No. 06821500 + CBCUc + CBCUk + CBCUn – IWS
CWS	= VWS - FF
Allocation Colorado	= 0.785 x CWS
Allocation Kansas	= 0.051 x CWS
Allocation Nebraska	= 0.168 x CWS
Unallocated	=-0.004 x CWS

5. Buffalo Creek

CBCU Colorado	= 0.6 x Dc + % x Pc + 0.5 x M&In + EvNFRc + GWc
CBCU Kansas	= GWk

CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Buffalo Creek near Haigler Gage Stn. No. 06823500 + CBCUc + CBCUk + CBCUn – IWS
CWS	= VWS - FF
Allocation Nebraska	= 0.330 x CWS
Unallocated	= 0.670 x CWS

6. Rock Creek

CBCU Colorado	= GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Rock Creek at Parks Gage Stn. No. 06824000 + CBCUc + CBCUk + CBCUn – IWS – AWS
CWS	= VWS - FF
Allocation Nebraska	= 0.400 x CWS
Unallocated	= 0.600 x CWS

7. South Fork Republican River

CBCU Colorado	= 0.6 x Hale Ditch Diversion + 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + Bonny Reservoir Ev + GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= South Fork Republican River near Benkelman Gage Stn. No. 06827500 + CBCUc + CBCUk + CBCUn + ΔS Bonny Reservoir – IWS

CWS	= VWS - ΔS Bonny Reservoir - FF
Allocation Colorado	= 0.444 x CWS
Allocation Kansas	= 0.402 x CWS
Allocation Nebraska	= 0.014 x CWS
Unallocated	= 0.140 x CWS

8. Frenchman Creek in Nebraska

CBCU Colorado	= GWc
CBCU Kansas	= GWk
CBCU Nebraska	= Culbertson Canal Diversions x (1-%BRF) + Culbertson Extension x (1-%BRF) + 0.6 x Champion Canal Diversion + 0.6 x Riverside Canal Diversion + 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + Enders Reservoir Ev + GWn
VWS	= Frenchman Creek in Culbertson, Nebraska Gage Stn. No. 06835500 + CBCUc + CBCUk + CBCUn + 0.17 x Culbertson Diversion RF + Culbertson Extension RF + 0.78 x Riverside Diversion RF + ΔS Enders Reservoir – IWS Note: 17% of the Culbertson Diversion RF and 100% of the Culbertson Extension RF return to the Main Stem
CWS	= VWS - ΔS Enders Reservoir – FF
Allocation Nebraska	= 0.536 x CWS
Unallocated	= 0.464 x CWS

9. Driftwood Creek

CBCU Colorado	= GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk

CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Driftwood Creek near McCook Gage Stn. No. 06836500 + CBCUc + CBCUk + CBCUn – 0.24 x Meeker Driftwood Canal RF - IWS Note: 24 % of the Meeker Driftwood Canal RF returns to Driftwood Creek
CWS	= VWS – FF
Allocation Kansas	= 0.069 x CWS
Allocation Nebraska	= 0.164 x CWS
Unallocated	= 0.767 x CWS

10. Red Willow Creek in Nebraska

CBCU Colorado	= GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.1 x Red Willow Canal CBCU + 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + 0.1 x Hugh Butler Lake Ev + GWn Note: Red Willow Canal CBCU = Red Willow Canal Diversion x (1- % BRF) 90% of the Red Willow Canal CBCU and 90% of Hugh Butler Lake Ev charged to Nebraska's CBCU in the Main Stem
VWS	= Red Willow Creek near Red Willow Gage Stn. No. 06838000 + CBCUc + CBCUk + CBCUn + 0.9 x Red Willow Canal CBCU + 0.9 x Hugh Butler Lake Ev + 0.9 xRed Willow Canal RF + ΔS Hugh Butler Lake – IWS Note: 90% of the Red Willow Canal RF returns to the Main Stem

CWS	= VWS - ΔS Hugh Butler Lake - FF
Allocation Nebraska	= 0.192 x CWS
Unallocated	= 0.808 x CWS

11. Medicine Creek

CBCU Colorado	= GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.6 x Dn above and below gage + % x Pn above and below gage + 0.5 x M&In above and below gage + EvNFRn above and below gage + GWn Note: Harry Strunk Lake Ev charged to Nebraska's CBCU in the Main Stem. CU from Harry Strunk releases in the Cambridge Canal is charged to the Main stem (no adjustment to the VWS formula is needed as this water shows up in the Medicine Creek gage).
VWS	= Medicine Creek below Harry Strunk Lake Gage Stn. No. 06842500 + CBCUc + CBCUk + CBCUn – 0.6 x Dn below gage - % x Pn below gage – 0.5 * M&In below gage - EvNFRn below gage + Harry Strunk Lake Ev + ΔS Harry Strunk Lake– IWS Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem
CWS	= VWS - ΔS Harry Strunk Lake - FF
Allocation Nebraska	= 0.091 x CWS
Unallocated	= 0.909 x CWS

12. Beaver Creek

CBCU Colorado	= 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn above and below gage + % x Pn above and below gage + 0.5 x M&In above and below gage + EvNFRn above and below gage + GWn
VWS	= Beaver Creek near Beaver City gage Stn. No. 06847000 + BCUc + CBCUk + CBCUn – 0.6 x Dn below gage - % x Pn below gage – 0.5 * M&In below gage - EvNFRn below gage – IWS Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem
CWS	= VWS – FF
Allocation Colorado	= 0.200 x CWS
Allocation Kansas	= 0.388 x CWS
Allocation Nebraska	= 0.406 x CWS
Unallocated	= 0.006 x CWS

13. Sappa Creek

CBCU Colorado	= GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn above and below gage + % x Pn above and below gage + 0.5 x M&In above and below gage + EvNFRn above and below gage + GWn
VWS	= Sappa Creek near Stamford gage Stn. No. 06847500 – Beaver Creek near Beaver City gage Stn. No. 06847000 + CBCUc + CBCUk + CBCUn – 0.6 x Dn below gage - % x

Pn below gage – 0.5 * M&In below gage - EvNFRn below gage – IWS

Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem

CWS = VWS - FF

Allocation Kansas = 0.411 x CWS

Allocation Nebraska = 0.411 x CWS

Unallocated = 0.178 x CWS

14. Prairie Dog Creek

CBCU Colorado = GWc

CBCU Kansas = Almena Canal Diversion x (1-%BRF) + 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + Keith Sebelius Lake Ev + GWk

CBCU Nebraska = 0.6 x Dn below gage + % x Pn below gage + 0.5 x M&In below gage + EvNFRn + GWn below gage

VWS = Prairie Dog Creek near Woodruff, Kansas USGS Stn. No. 06848500 + CBCUc + CBCUk + CBCUn - 0.6 x Dn below gage - % x Pn below gage - 0.5 x M&In below gage - EvNFRn below gage + ΔS Keith Sebelius Lake – IWS

Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem

CWS = VWS- ΔS Keith Sebelius Lake - FF

Allocation Kansas = 0.457 x CSW

Allocation Nebraska = 0.076 x CWS

Unallocated = 0.467 x CWS

15. The North Fork of the Republican River in Nebraska and the Main Stem of the Republican River between the junction of the North Fork and the Arikaree River and the Republican River near Hardy

CBCU Colorado = GWc

CBCU Kansas =
(Deliveries from the Courtland Canal to Kansas above Lovewell) x (1-%BRF)
+ Amount of transportation loss of Courtland Canal deliveries to Lovewell that does not return to the river, charged to Kansas
+ (Diversions of Republican River water from Lovewell Reservoir by the Courtland Canal below Lovewell) x (1-%BRF)
+ 0.6 x Dk
+ % x Pk
+ 0.5 x M&Ik
+ EvNFRk
+ Harlan County Lake Ev charged to Kansas
+ Lovewell Reservoir Ev charged to the Republican River
+ GWk

CBCU Nebraska =
Deliveries from Courtland Canal to Nebraska lands x (1-%BRF)
+ Superior Canal x (1- %BRF)
+ Franklin Pump Canal x (1- %BRF)
+ Franklin Canal x (1- %BRF)
+ Naponee Canal x (1- %BRF)
+ Cambridge Canal x (1- %BRF)
+ Bartley Canal x (1- %BRF)
+ Meeker-Driftwood Canal x (1- %BRF)
+ 0.9 x Red Willow Canal CBCU
+ 0.6 x Dn
+ % x Pn
+ 0.5 x M&In
+ EvNFRn
+ 0.9 x Hugh Butler Lake Ev
+ Harry Strunk Lake Ev
+ Swanson Lake Ev
+ Harlan County Lake Ev charged to Nebraska
+ GWn

Notes:
The allocation of transportation losses in the Courtland Canal above Lovewell between Kansas and Nebraska shall be done by the Bureau of Reclamation and reported in their "Courtland Canal Above Lovewell" spreadsheet. Deliveries and losses associated with deliveries to both Nebraska and Kansas above Lovewell shall be reflected in the Bureau's Monthly Water District reports. Losses associated with delivering water to Lovewell shall be separately computed.

Amount of transportation loss of the Courtland Canal deliveries to Lovewell that does not return to the river, charged to Kansas shall be 18% of the Bureau's estimate of losses associated with these deliveries.

Red Willow Canal CBCU = Red Willow Canal Diversion x (1- % BRF)

10% of the Red Willow Canal CBCU is charged to Nebraska's CBCU in Red Willow Creek sub-basin

10% of Hugh Butler Lake Ev is charged to Nebraska's CBCU in the Red Willow Creek sub-basin

None of the Harry Strunk Lake EV is charged to Nebraska's CBCU in the Medicine Creek sub-basin

VWS =

Republican River near Hardy Gage Stn. No. 06853500
- North Fork of the Republican River at the State Line, Stn. No. 06823000
- Arikaree Gage at Haigler Stn. No. 06821500
- Buffalo Creek near Haigler Gage Stn. No. 06823500
- Rock Creek at Parks Gage Stn. No. 06824000
-South Fork Republican River near Benkelman Gage Stn. No. 06827500
- Frenchman Creek in Culbertson Stn. No. 06835500
- Driftwood Creek near McCook Gage Stn. No. 06836500
- Red Willow Creek near Red Willow Gage Stn. No. 06838000
- Medicine Creek below Harry Strunk Lake Gage Stn. No. 06842500

- Sappa Creek near Stamford Gage Stn. No. 06847500
- Prairie Dog Creek near Woodruff, Kansas Stn. No. 68-485000

+ CBCUc
+ CBCUn

+GWk
+ 0.6 x Dk
+ % x Pk
+ 0.5 x M&Ik
+ EvNFRk
+ Harlan County Lake Ev charged to Kansas
+Amount of transportation loss of the Courtland Canal above the Stateline that does not return to the river, charged to Kansas

- 0.9 x Red Willow Canal CBCU
- 0.9 x Hugh Butler Ev
- Harry Strunk Ev

+ 0.6 x Dn below Medicine Creek gage
+ % x Pn below Medicine Creek gage
+ 0.5 * M&In below Medicine Creek gage
+ EvNFRn below Medicine Creek gage

+ 0.6 x Dn below Beaver Creek gage
+ % x Pn below Beaver Creek gage
+ 0.5 * M&In below Beaver Creek gage
+ EvNFRn below Beaver Creek gage

+ 0.6 x Dn below Sappa Creek gage
+ % x Pn below Sappa Creek gage
+ 0.5 * M&In below Sappa Creek gage
+ EvNFRn below Sappa Creek gage

+ 0.6 x Dn below Prairie Dog Creek gage
+ % x Pn below Prairie Dog Creek gage
+ 0.5 * M&In below Prairie Dog Creek gage
+ EvNFRn below Prairie Dog Creek gage

+ Change in Storage Harlan County Lake
+ Change in Storage Swanson Lake

- Nebraska Haigler Canal RF
- 0.78 x Riverside Canal RF
- 0.17 x Culbertson Canal RF
- Culbertson Canal Extension RF to Main Stem
+ 0.24 x Meeker Driftwood Canal RF which returns to Driftwood Creek
- 0.9 x Red Willow Canal RF

+ Courtland Canal at Kansas-Nebraska State Line Gage Stn No. 06852500
- Courtland Canal RF in Kansas above Lovewell Reservoir

-IWS

Notes:
None of the Nebraska Haigler Canal RF returns to the North Fork of the Republican River

83% of the Culbertson Diversion RF and none of the Culbertson Extension RF return to Frenchman Creek

24 % of the Meeker Driftwood Canal RF returns to Driftwood Creek.

10% of the Red Willow Canal RF returns to Red Willow Creek

Courtland Canal RF in Kansas above Lovewell Reservoir = 0.015 x (Courtland Canal at Kansas-Nebraska State Line Gage Stn No. 06852500)

CWS	= VWS - Change in Storage Harlan County Lake - Change in Storage Swanson Lake - FF
Allocation Kansas	= 0.511 x CWS
Allocation Nebraska	= 0.489 x CWS

V. Annual Data/ Information Requirements, Reporting, and Verification

The following information for the previous calendar year shall be provided to the members of the RRCA Engineering Committee by April 15th of each year, unless otherwise specified.

All information shall be provided in electronic format, if available.

Each State agrees to provide all information from their respective State that is needed for the RRCA Groundwater Model and RRCA Accounting Procedures and Reporting Requirements, including but not limited to the following:

A. Annual Reporting

1. Surface water diversions and irrigated acreage:

Each State will tabulate the canal, ditch, and other surface water diversions that are required by RRCA annual compact accounting and the RRCA Groundwater Model on a monthly format (or a procedure to distribute annual data to a monthly basis) and will forward the surface water diversions to the other States. This will include available diversion, wasteway, and farm delivery data for canals diverting from the Platte River that contribute to Imported Water Supply into the Basin. Each State will provide the water right number, type of use, system type, location, diversion amount, and acres irrigated.

2. Groundwater pumping and irrigated acreage:

Each State will tabulate and provide all groundwater well pumping estimates that are required for the RRCA Groundwater Model to the other States.

Colorado – will provide an estimate of pumping based on a county format that is based upon system type, Crop Irrigation Requirement (CIR), irrigated acreage, crop distribution, and irrigation efficiencies. Colorado will require installation of a totalizing flow meter, installation of an hours meter with a measurement of the pumping rate, or determination of a power conversion coefficient for 10% of the active wells in the Basin by December 31, 2005. Colorado will also provide an annual tabulation for each groundwater well that measures groundwater pumping by a totalizing flow meter, hours meter or power conversion coefficient that includes: the groundwater well permit number, location, reported hours, use, and irrigated acreage.

Kansas - will provide an annual tabulation by each groundwater well that includes: water right number, groundwater pumping determined by a meter on each well (or group of wells in a manifold system) or by reported hours of use and rate; location; system type (gravity, sprinkler, LEPA, drip, etc.); and irrigated acreage. Crop distribution will be provided on a county basis.

Nebraska – will provide an annual tabulation through the representative Natural Resource District (NRD) in Nebraska that includes: the well registration number or other ID number; groundwater pumping determined by a meter on each well (or group of wells in a manifold system) or by reported hours of use and rate; wells will be identified by; location; system type (gravity, sprinkler, LEPA, drip, etc.); and irrigated acreage. Crop distribution will be provided on a county basis.

3. Climate information:

Each State will tabulate and provide precipitation, temperature, relative humidity or dew point, and solar radiation for the following climate stations:

State	Identification	Name
Colorado		
Colorado	C050109	Akron 4 E
Colorado	C051121	Burlington
Colorado	C054413	Julesburg
Colorado	C059243	Wray
Kansas	C140439	Atwood 2 SW
Kansas	C141699	Colby 1SW
Kansas	C143153	Goodland
Kansas	C143837	Hoxie
Kansas	C145856	Norton 9 SSE
Kansas	C145906	Oberlin1 E
Kansas	C147093	Saint Francis
Kansas	C148495	Wakeeny
Nebraska	C250640	Beaver City
Nebraska	C250810	Bertrand
Nebraska	C252065	Culbertson
Nebraska	C252690	Elwood 8 S
Nebraska	C253365	Gothenburg
Nebraska	C253735	Hebron
Nebraska	C253910	Holdredge
Nebraska	C254110	Imperial
Nebraska	C255090	Madrid
Nebraska	C255310	McCook
Nebraska	C255565	Minden
Nebraska	C256480	Palisade
Nebraska	C256585	Paxton
Nebraska	C257070	Red Cloud
Nebraska	C258255	Stratton
Nebraska	C258320	Superior
Nebraska	C258735	Upland
Nebraska	C259020	Wauneta 3 NW

4. Crop Irrigation Requirements:

Each State will tabulate and provide estimates of crop irrigation requirement information on a county format. Each State will provide the percentage of the crop irrigation requirement met by pumping; the percentage of groundwater irrigated lands served by sprinkler or flood irrigation systems, the crop irrigation requirement; crop distribution; crop coefficients; gain in soil moisture from winter and spring precipitation, net crop irrigation requirement; and/or other information necessary to compute a soil/water balance.

5. Streamflow Records from State-Maintained Gaging Records:

Streamflow gaging records from the following State maintained gages will be provided:

Station No.	Name
00126700	Republican River near Trenton
06831500	Frenchman Creek near Imperial
06832500	Frenchman Creek near Enders
06835000	Stinking Water Creek near Palisade
06837300	Red Willow Creek above Hugh Butler Lake
06837500	Red Willow Creek near McCook
06841000	Medicine Creek above Harry Strunk Lake
06842500	Medicine Creek below Harry Strunk Lake
06844000	Muddy Creek at Arapahoe
06844210	Turkey Creek at Edison
06847000	Beaver Creek near Beaver City
	Republican River at Riverton
06851500	Thompson Creek at Riverton
06852000	Elm Creek at Amboy
	Republican River at the Superior-Courtland Diversion Dam

6. Platte River Reservoirs:

The State of Nebraska will provide the end-of-month contents, inflow data, outflow data, area-capacity data, and monthly net evaporation, if available, from Johnson Lake; Elwood Reservoir; Sutherland Reservoir; Maloney Reservoir; and Jeffrey Lake.

7. Water Administration Notification:

The State of Nebraska will provide the following information that describes the protection of reservoir releases from Harlan County Lake and for the administration of water rights junior in priority to February 26, 1948:

Date of notification to Nebraska water right owners to curtail their diversions, the amount of curtailment, and length of time for curtailment.
The number of notices sent.
The number of diversions curtailed and amount of curtailment in the Harlan County Lake to Guide Rock reach of the Republican River.

8. Moratorium:

Each State will provide a description of all new Wells constructed in the Basin Upstream of Guide Rock including the owner, location (legal description), depth and diameter or dimension of the constructed water well, casing and screen information, static water level, yield of the water well in gallons per minute or gallons per hour, and intended use of the water well.

Designation whether the Well is a:

a. Test hole;

b. Dewatering Well with an intended use of one year or less;

c. Well designed and constructed to pump fifty gallons per minute or less;

d. Replacement Water Well, including a description of the Well that is replaced providing the information described above for new Wells and a description of the historic use of the Well that is replaced;

e. Well necessary to alleviate an emergency situation involving provision of water for human consumption, including a brief description of the nature of the emergency situation and the amount of water intended to be pumped by and the length of time of operation of the new Well;

f. Transfer Well, including a description of the Well that is transferred providing the information described above for new Wells and a description of the Historic Consumptive Use of the Well that is transferred;

g. Well for municipal and/or industrial expansion of use;

Wells in the Basin in Northwest Kansas or Colorado. Kansas and Colorado will provide the information described above for new Wells along with copies of any other information that is required to be filed with either State of local agencies under the laws, statutes, rules and regulations in existence as of April 30, 2002, and;

Any changes in State law in the previous year relating to existing Moratorium.

9. Non-Federal Reservoirs:

Each State will conduct an inventory of Non Federal Reservoirs by December 31, 2004, for inclusion in the annual Compact Accounting. The inventory shall include the following information: the location, capacity (in Acre-feet) and area (in acres) at the principal spillway elevation of each Non-Federal Reservoir. The States will annually provide any updates to the initial inventory of Non-Federal Reservoirs, including enlargements that are constructed in the previous year.

Owners/operators of Non-Federal Reservoirs with 200 Acre-feet of storage capacity or greater at the principal spillway elevation will be required to provide an area-capacity survey from State-approved plans or prepared by a licensed professional engineer or land surveyor.

10. Augmentation Plan:

Each State will provide a description of the wells, measuring devices, conveyance structure(s), and other infrastructure to describe the physical characteristics of each augmentation plan. The States will provide necessary updates to the plan on an annual basis.

B. RRCA Groundwater Model Data Input Files

1. Monthly groundwater pumping, surface water recharge, groundwater recharge, and precipitation recharge provided by county and indexed to the one square mile cell size.

2. Potential Evapotranspiration rate is set as a uniform rate for all phreatophyte vegetative classes – the amount is X at Y climate stations and is interpolated spatially using kriging.

C. Inputs to RRCA Accounting

1. Surface Water Information

a. Streamflow gaging station records: obtained as preliminary USGS or Nebraska streamflow records, with adjustments to reflect a calendar year, at the following locations:

Arikaree River at Haigler, Nebraska
North Fork Republican River at Colorado-Nebraska state line
Buffalo Creek near Haigler, Nebraska
Rock Creek at Parks, Nebraska
South Fork Republican River near Benkelman, Nebraska
Frenchman Creek at Culbertson, Nebraska
Red Willow Creek near Red Willow, Nebraska
Medicine Creek below Harry Strunk Lake, Nebraska*
Beaver Creek near Beaver City, Nebraska*
Sappa Creek near Stamford, Nebraska
Prairie Dog Creek near Woodruff, Kansas
Courtland Canal at Nebraska-Kansas state line
Republican River near Hardy, Nebraska
Republican River at Superior-Courtland Diversion Dam near Guide Rock,
Nebraska (new)*

b. Federal reservoir information: obtained from the United States Bureau of Reclamation:

Daily free water surface evaporation, storage, precipitation, reservoir release information, and updated area-capacity tables.
Federal Reservoirs:
Bonny Reservoir
Swanson Lake
Harry Strunk Lake
Hugh Butler Lake
Enders Reservoir
Keith Sebelius Lake
Harlan County Lake
Lovewell Reservoir

c. Non-federal reservoirs obtained by each state: an updated inventory of reservoirs that includes the location, surface area (acres), and capacity (in Acre-feet), of each non-federal reservoir with storage capacity of fifteen (15) Acre-feet or greater at the principal spillway

elevation. Supporting data to substantiate the average surface water areas that are different than the presumptive average annual surface area may be tendered by the offering State.

d. Diversions and related data from USBR

Irrigation diversions by canal, ditch, and pumping station that irrigate more than two (2) acres
Diversions for non-irrigation uses greater than 50 Acre-feet
Farm Deliveries
Wasteway measurements
Irrigated acres

e. Diversions and related data – from each respective State

Irrigation diversions by canal, ditch, and pumping station that irrigate more than two (2) acres
Diversions for non-irrigation uses greater than 50 Acre-feet
Wasteway measurements, if available

2. Groundwater Information

(From the RRCA Groundwater model as output files as needed for the accounting procedures)

a. Imported water - mound credits in amount and time that occur in defined streamflow points/reaches of measurement or compliance – ex: gaging stations near confluence or state lines

b. Groundwater depletions to streamflow (above points of measurement or compliance – ex: gaging stations near confluence or state lines)

3. Summary

The aforementioned data will be aggregated by Sub-basin as needed for RRCA accounting.

D. Verification

1. Documentation to be Available for Inspection Upon Request

a. Well permits/ registrations database
b. Copies of well permits/ registrations issued in calendar year
c. Copies of surface water right permits or decrees
d. Change in water right/ transfer historic use analyses
e. Canal, ditch, or other surface water diversion records
f. Canal, ditch, or other surface water measurements
g. Reservoir storage and release records
h. Irrigated acreage
i. Augmentation Plan well pumping and augmentation delivery records

2. Site Inspection

a. Accompanied – reasonable and mutually acceptable schedule among representative state and/or federal officials.

b. Unaccompanied – inspection parties shall comply with all laws and regulations of the State in which the site inspection occurs.

Table 1: Annual Virgin and Computed Water Supply, Allocations and Computed Beneficial Consumptive Uses by State, Main Stem and Sub-basin

Designated Drainage Basin	Col. 1: Virgin Water Supply	Col. 2: Computed Water Supply	Col. 3: Allocations				Col. 4: Computed Beneficial Consumptive Use		
			Colorado	Nebraska	Kansas	Unallocated	Colorado	Nebraska	Kansas
North Fork in Colorado									
Arikaree									
Buffalo									
Rock									
South Fork of Republican River									
Frenchman									
Driftwood									
Red Willow									
Medicine									
Beaver									
Sappa									
Prairie Dog									
North Fork of Republican River in Nebraska and Main Stem									
Total All Basins									
North Fork Of Republican River in Nebraska and Mainstem Including Unallocated Water									
Total									

Table 2: Original Compact Virgin Water Supply and Allocations

Designated Drainage Basin	Virgin Water Supply	Colorado Allocation	% of Total Drainage Basin Supply	Kansas Allocation	% of Total Drainage Basin Supply	Nebraska Allocation	% of Total Drainage Basin Supply	Unallo-cated	% of Total Drainage Basin Supply
North Fork - CO	44,700	10,000	22.4			11,000	24.6	23,700	53.0
Arikaree River	19,610	15,400	78.5	1,000	5.1	3,300	16.8	-90	-0.4
Buffalo Creek	7,890					2,600	33.0	5,290	67.0
Rock Creek	11,000					4,400	40.0	6,600	60.0
South Fork	57,200	25,400	44.4	23,000	40.2	800	1.4	8,000	14.0
Frenchman Creek	98,500					52,800	53.6	45,700	46.4
Driftwood Creek	7,300			500	6.9	1,200	16.4	5,600	76.7
Red Willow Creek	21,900					4,200	19.2	17,700	80.8
Medicine Creek	50,800					4,600	9.1	46,200	90.9
Beaver Creek	16,500	3,300	20.0	6,400	38.8	6,700	40.6	100	0.6
Sappa Creek	21,400			8,800	41.1	8,800	41.1	3,800	17.8
Prairie Dog Creek	27,600			12,600	45.7	2,100	7.6	12,900	46.7
Sub-total Tributaries	384,400							175,500	
Main Stem + Blackwood Creek	94,500								
Main Stem + Unallocated	270,000			138,000	51.1	132,000	48.9		
Total	478,900	54,100		190,300		234,500			

Table 3A: Table to Be Used to Calculate Colorado's Five-Year Running Average Allocation and Computed Beneficial Consumptive Use for Determining Compact Compliance

Colorado				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive	Imported Water Supply Credit	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Col 1 – (Col 2- Col 3)
Year t= -4				
Year t= -3				
Year t= -2				
Year t= -1				
Current Year t= 0				
Average				

Table 3B. Table to Be Used to Calculate Kansas's Five-Year Running Average Allocation and Computed Beneficial Consumptive Use for Determining Compact Compliance

Kansas				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive	Imported Water Supply Credit	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Col 1 – (Col 2- Col 3)
Year t= -4				
Year t= -3				
Year t= -2				
Year t= -1				
Current Year t= 0				
Average				

Table 3C. Table to Be Used to Calculate Nebraska's Five-Year Running Average Allocation and Computed Beneficial Consumptive Use for Determining Compact Compliance

Nebraska				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive	Imported Water Supply Credit and/or Augmentation Water Supply Credit	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Col 1 – (Col 2- Col 3)
Year T= -4				
Year T= -3				
Year T= -2				
Year T= -1				
Current Year T= 0				
Average				

Table 4A: Colorado Compliance with the Sub-basin Non-impairment Requirement

	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6
Sub-basin	Colorado Sub-basin Allocation (5-year running average)	Unallocated Supply (5-year running average)	Credits from Imported Water Supply (5-year running average)	Total Supply Available = Col 1+ Col 2 + Col 3 (5-year running average)	Colorado Computed Beneficial Consumptive Use (5-year running average)	Difference Between Available Supply and Computed Beneficial Consumptive Use = Col 4 – Col 5 (5-year running average)
North Fork Republican River Colorado						
Arikaree River						
South Fork Republican River						
Beaver Creek						

Table 4B: Kansas Compliance with the Sub-basin Non-impairment Requirement

	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7
Sub-basin	Kansas Sub-basin Allocation (5-year running average)	Unallocated Supply (5-year running average)	Unused Allocation from Colorado (5-year running average)	Credits from Imported Water Supply (5-year running average)	Total Supply Available = Col 1+ Col 2+ Col 3 + Col 4 (5-year running average)	Kansas Computed Beneficial Consumptive Use (5-year running average)	Difference Between Available Supply and Computed Beneficial Consumptive Use = Col 5 – Col 6 (5-year running average)
Arikaree River							
South Fork Republican River							
Driftwood Creek							
Beaver Creek							
Sappa Creek							
Prairie Dog Creek							

Table 5A: Colorado Compliance During Water-Short Year Administration

Colorado				
	Col. 1	Col. 2	Col. 3	Col 4
Year	Allocation minus Allocation for Beaver Creek	Computed Beneficial Consumptive minus Computed Beneficial Consumptive Use for Beaver Creek	Imported Water Supply Credit excluding Beaver Creek	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit for All Basins Except Beaver Creek Col 1 – (Col 2 – Col 3)
Year T= -4				
Year T= -3				
Year T= -2				
Year T= -1				
Current Year T= 0				
Average				

Table 5B: Kansas Compliance During Water-Short Year Administration

Kansas						
Year	Allocation			Computed Beneficial Consumptive Use`	Imported Water Supply Credit	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit
Column	1	2	3	4	5	6
	Sum Sub-basins	Kansas's Share of the Unallocated Supply	Total Col 1 + Col 2			Col 3 – (Col 4 – Col 5)
Previous Year						
Current Year						
Average						

Table 5C: Nebraska Compliance During Water-Short Year Administration

Nebraska								
Year	Allocation			Computed Beneficial Consumptive Use			Imported Water Supply Credit and/or Augmentation Water Supply Credit	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Above Guide Rock
Column	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
	State Wide Allocation	Allocation below Guide Rock	State Wide Allocation above Guide Rock	State Wide CBCU	CBCU below Guide Rock	State Wide CBCU above Guide Rock	Credits above Guide Rock	Col 3 – (Col 6 – Col 7)
Previous Year								
Current Year								
Average								

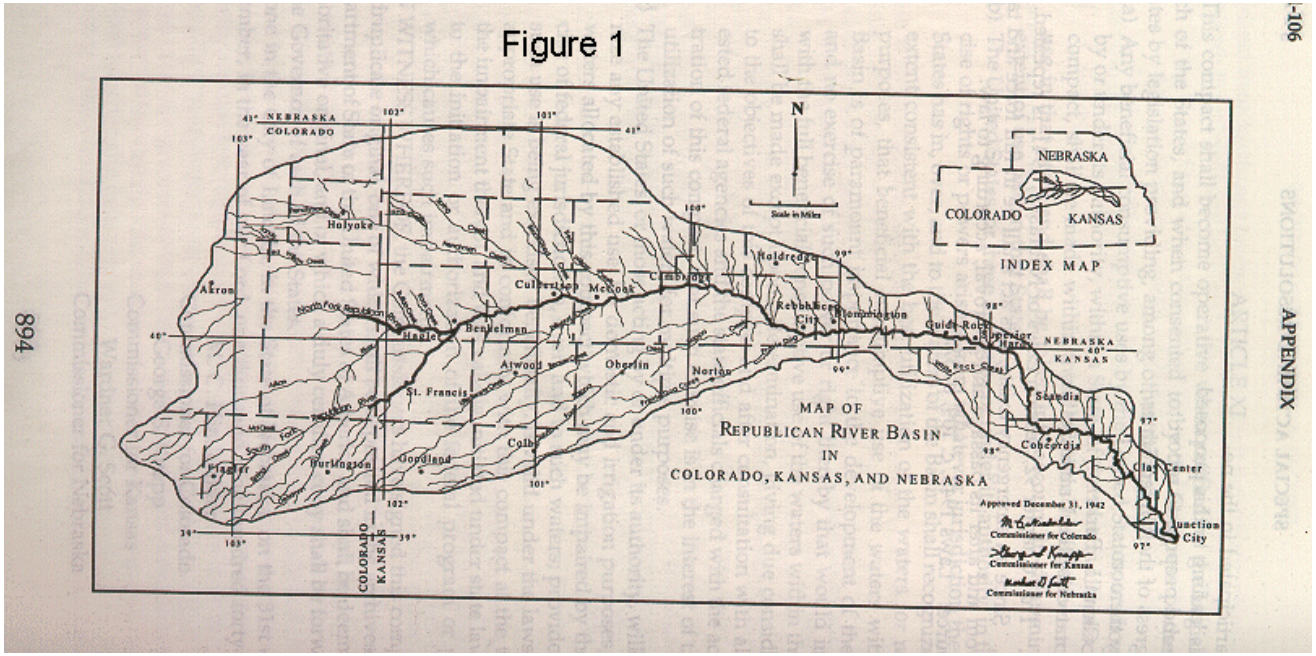
Table 5D: Nebraska Compliance Under a Alternative Water-Short Year Administration Plan

Year	Allocation			Computed Beneficial Consumptive Use			Imported Water Supply Credit and/or Augmentation Water Supply Credit	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit and/or Augmentation Water Supply Credit Above Guide Rock
Column	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
	State Wide Allocation	Allocation below Guide Rock	State Wide Allocation above Guide Rock	State Wide CBCU	CBCU below Guide Rock	State Wide CBCU above Guide Rock	Credits above Guide Rock	Col 3 – (Col 6- Col 7)
Year = -2								
Year = -1								
Current Year								
Three-Year Average								
Sum of Previous Two-year Difference								
Expected Decrease in CBCU Under Plan								

Table 5E: Nebraska Tributary Compliance During Water-Short Year Administration

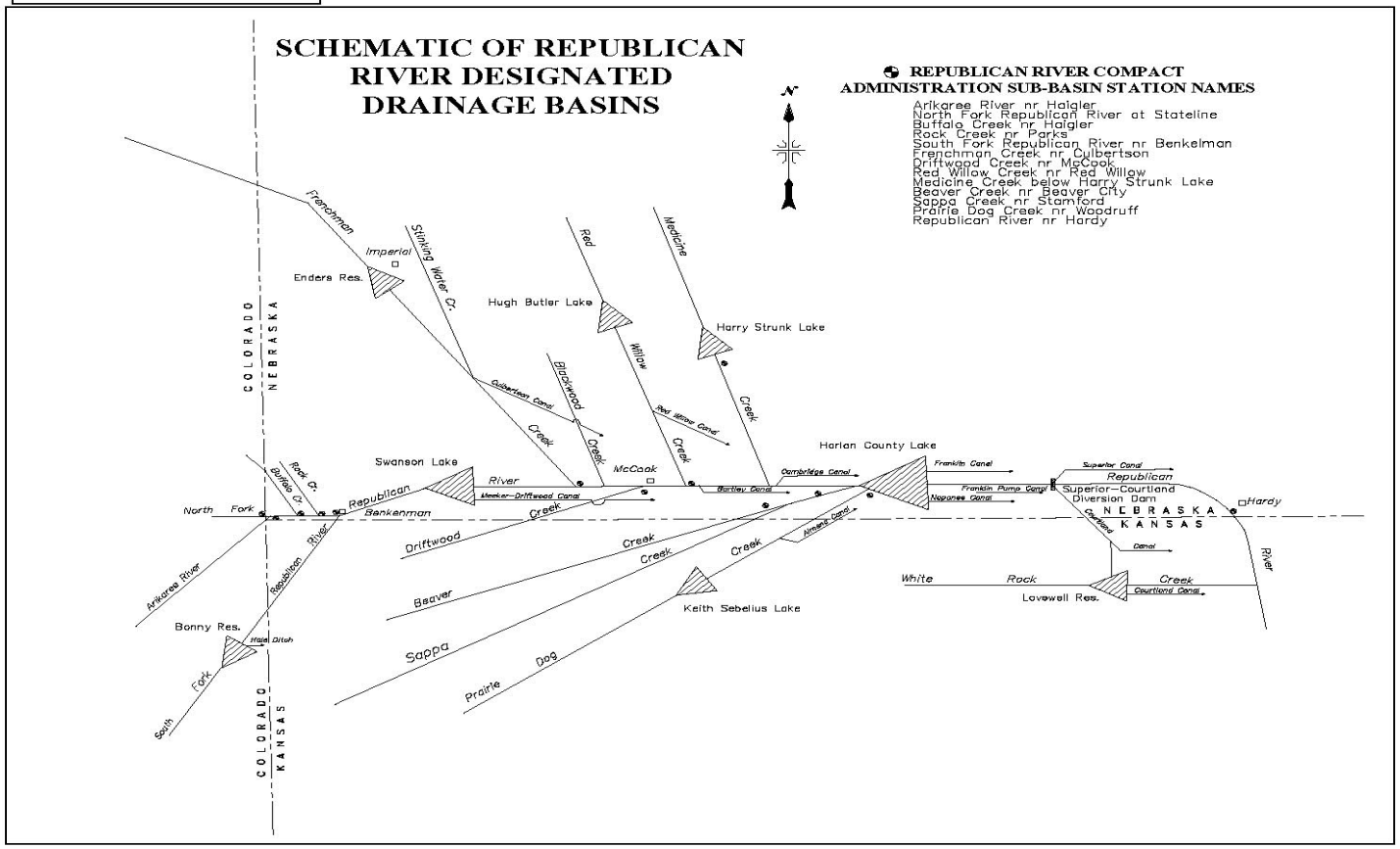
Year	Sum of Nebraska Sub-basin Allocations	Sum of Nebraska's Share of Sub-basin Unallocated Supplies	Total Available Water Supply for Nebraska	Computed Beneficial Consumptive Use	Imported Water Supply Credit and/or Augmentation Water Supply Credit	Difference between Allocation And the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit and/or Augmentation Water Supply Credit
	Col 1	Col 2	`Col 3	Col 4	Col 5	Col 6
Previous Year						Col 3 -(Col 4-Col 5)

Current Year						
Average						

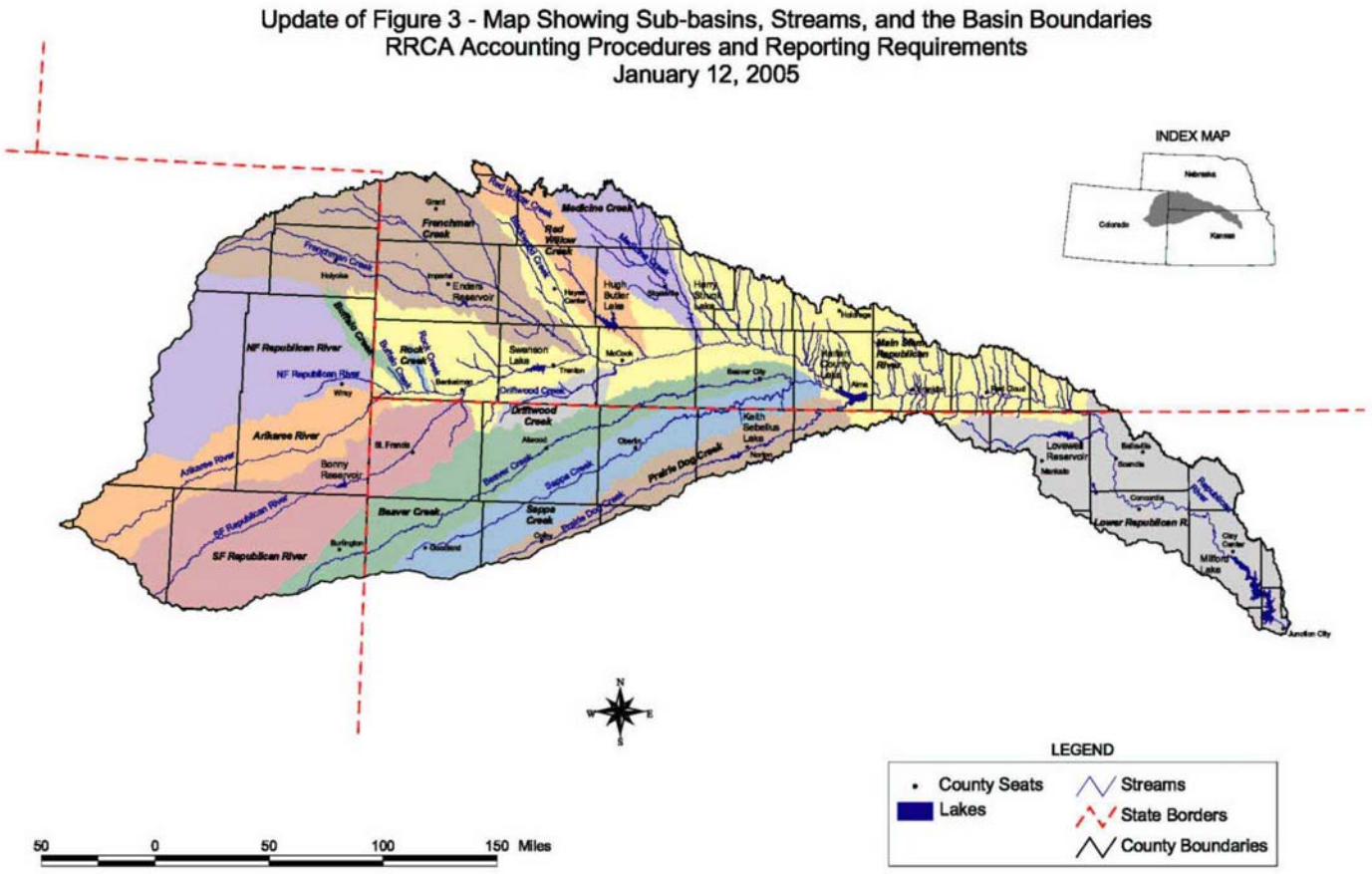


Basin Map Attached to Compact that Shows the Streams and the Basin Boundaries

Figure 2



Line Diagram of Designated Drainage Basins Showing Federal Reservoirs and Sub-basin Gaging Stations



Map Showing Sub-basins, Streams, and the Basin Boundaries

Attachment 1: Sub-basin Flood Flow Thresholds

Sub-basin	Sub-basin Flood Flow Threshold Acre-feet per Year[3]
Arikaree River	16,400
North Fork of Republican River	33,900
Buffalo Creek	4,800
Rock Creek	9,800
South Fork of Republican River	30,400
Frenchman Creek	51,900
Driftwood Creek	9,400
Red Willow Creek	15,100
Medicine Creek	55,100
Beaver Creek	13,900
Sappa Creek	26,900
Prairie Dog	15,700

[3] Flows considered to be Flood Flows are flows in excess of the 94% flow based on a flood frequency analysis for the years 1971-2000. The Gaged Flows are measured after depletions by Beneficial Consumptive Use and change in reservoir storage. For the purpose of compliance with III.B.1, the Gaged Flows shall not include Augmentation Water Supply Credits delivered in any calendar year.

Attachment 2: Description of the Consensus Plan for Harlan County Lake

The Consensus Plan for operating Harlan County Lake was conceived after extended discussions and negotiations between Reclamation and the Corps. The agreement shaped at these meetings provides for sharing the decreasing water supply into Harlan County Lake. The agreement provides a consistent procedure for: updating the reservoir elevation/storage relationship, sharing the reduced inflow and summer evaporation, and providing a January forecast of irrigation water available for the following summer.

During the interagency discussions the two agencies found agreement in the following areas:

- The operating plan would be based on current sediment accumulation in the irrigation pool and other zones of the project.
- Evaporation from the lake affects all the various lake uses in proportion to the amount of water in storage for each use.
- During drought conditions, some water for irrigation could be withdrawn from the sediment pool.
- Water shortage would be shared between the different beneficial uses of the project, including fish, wildlife, recreation and irrigation.

To incorporate these areas of agreement into an operation plan for Harlan County Lake, a mutually acceptable procedure addressing each of these items was negotiated and accepted by both agencies.

1. Sediment Accumulation.

The most recent sedimentation survey for Harlan County project was conducted in 1988, 37 years after lake began operation. Surveys were also performed in 1962 and 1972; however, conclusions reached after the 1988 survey indicate that the previous calculations are unreliable. The 1988 survey indicates that, since closure of the dam in 1951, the accumulated sediment is distributed in each of the designated pools as follows:

Flood Pool	2,387 Acre-feet
Irrigation Pool	4,853 Acre-feet
Sedimentation Pool	33,527 Acre-feet

To insure that the irrigation pool retained 150,000 Acre-feet of storage, the bottom of the irrigation pool was lowered to 1,932.4 feet, msl, after the 1988 survey.

To estimate sediment accumulation in the lake since 1988, we assumed similar conditions have occurred at the project during the past 11 years. Assuming a consistent rate of deposition since 1988, the irrigation pool has trapped an additional 1,430 Acre-feet.

A similar calculation of the flood control pool indicates that the flood control pool has captured an additional 704 Acre-feet for a total of 3,090 Acre-feet since construction.

The lake elevations separating the different pools must be adjusted to maintain a 150,000-acre-foot irrigation pool and a 500,000-acre-foot flood control pool. Adjusting these elevations results in the following new elevations for the respective pools (using the 1988 capacity tables).

Top of Irrigation Pool	1,945.70 feet, msl
Top of Sediment Pool	1,931.75 feet, msl

Due to the variability of sediment deposition, we have determined that the elevation capacity relationship should be updated to reflect current conditions. We will complete a new sedimentation survey of Harlan County Lake this summer, and new area capacity tables should be available by early next year. The new tables may alter the pool elevations achieved in the Consensus Plan for Harlan County Lake.

2. Summer Evaporation.

Evaporation from a lake is affected by many factors including vapor pressure, wind, solar radiation, and salinity of the water. Total water loss from the lake through evaporation is also affected by the size of the lake. When the lake is lower, the surface area is smaller and less water loss occurs. Evaporation at Harlan County Lake has been estimated since the lake's construction using a Weather Service Class A pan which is 4 feet in diameter and 10 inches deep. We and Reclamation have jointly reviewed this information and assumed future conditions to determine an equitable method of distributing the evaporation loss from the project between irrigation and the other purposes.

During those years when the irrigation purpose expected a summer water yield of 119,000 Acre-feet or more, it was determined that an adequate water supply existed and no sharing of evaporation was necessary. Therefore, evaporation evaluation focused on the lower pool elevations when water was scarce. Times of water shortage would also generally be times of higher evaporation rates from the lake.

Reclamation and we agreed that evaporation from the lake during the summer (June through September) would be distributed between the irrigation and sediment pools based on their relative percentage of the total storage at the time of evaporation. If the sediment pool held 75 percent of the total storage, it would be charged 75 percent of the evaporation. If the sediment pool held 50 percent of the total storage, it would be charged 50 percent of the evaporation. At the bottom of the irrigation pool (1,931.75 feet, msl) all of the evaporation would be charged to the sediment pool.

Due to downstream water rights for summer inflow, neither the irrigation nor the sediment pool is credited with summer inflow to the lake. The summer inflows would be

assumed passed through the lake to satisfy the water right holders. Therefore, Reclamation and we did not distribute the summer inflow between the project purposes.

As a result of numerous lake operation model computer runs by Reclamation, it became apparent that total evaporation from the project during the summer averaged about 25,000 Acre-feet during times of lower lake elevations. These same models showed that about 20 percent of the evaporation should be charged to the irrigation pool, based on percentage in storage during the summer months. About 20 percent of the total lake storage is in the irrigation pool when the lake is at elevation 1,935.0 feet, msl. As a result of the joint study, Reclamation and we agreed that the irrigation pool would be credited with 20,000 Acre-feet of water during times of drought to share the summer evaporation loss.

Reclamation and we further agreed that the sediment pool would be assumed full each year. In essence, if the actual pool elevation were below 1,931.75 feet, msl, in January, the irrigation pool would contain a negative storage for the purpose of calculating available water for irrigation, regardless of the prior year's summer evaporation from sediment storage.

3. Irrigation withdrawal from sediment storage.

During drought conditions, occasional withdrawal of water from the sediment pool for irrigation is necessary. Such action is contemplated in the Field Working Agreement and the Harlan County Lake Regulation Manual: "Until such time as sediment fully occupies the allocated reserve capacity, it will be used for irrigation and various conservation purposes, including public health, recreation, and fish and wildlife preservation."

To implement this concept into an operation plan for Harlan County Lake, Reclamation and we agreed to estimate the net spring inflow to Harlan County Lake. The estimated inflow would be used by the Reclamation to provide a firm projection of water available for irrigation during the next season.

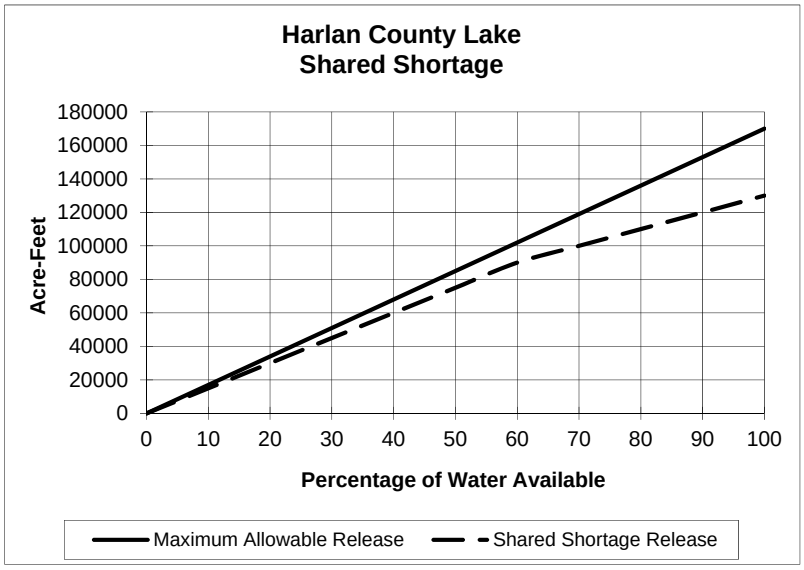
Since the construction of Harlan County Lake, inflows to the lake have been depleted by upstream irrigation wells and farming practices. Reclamation has recently completed an in-depth study of these depleted flows as a part of their contract renewal process. The study concluded that if the current conditions had existed in the basin since 1931, the average spring inflow to the project would have been 57,600 Acre-feet of water. The study further concluded that the evaporation would have been 8,800 Acre-feet of water during the same period. Reclamation and we agreed to use these values to calculate the net inflow to the project under the current conditions.

In addition, both agencies also recognized that the inflow to the project could continue to decrease with further upstream well development and water conservation farming. Due to these concerns, Reclamation and we determined that the previous 5-year inflow values would be averaged each year and compared to 57,600 Acre-feet. The inflow estimate for Harlan County Lake would be the smaller of these two values.

The estimated inflow amount would be used in January of each year to forecast the amount of water stored in the lake at the beginning of the irrigation season. Based on this forecast, the irrigation districts would be provided a firm estimate of the amount of water available for the next season. The actual storage in the lake on May 31 would be reviewed each year. When the actual water in storage is less than the January forecast, Reclamation may draw water from sediment storage to make up the difference.

4. Water Shortage Sharing.

A final component of the agreement involves a procedure for sharing the water available during times of shortage. Under the shared shortage procedure, the irrigation purpose of the project would remove less water then otherwise allowed and alleviate some of the adverse effects to the other purposes. The procedure would also extend the water supply during times of drought by "banking" some water for the next irrigation season. The following graph illustrates the shared shortage releases.



5. Calculation of Irrigation Water Available

Each January, the Reclamation would provide the Bostwick irrigation districts a firm estimate of the quantity of water available for the following season. The firm estimate of water available for irrigation would be calculated by using the following equation and shared shortage adjustment:

Storage + Summer Sediment Pool Evaporation + Inflow – Spring Evaporation=Maximum Irrigation Water Available

The variables in the equation are defined as:

- Maximum Irrigation Water Available. Maximum irrigation supply from Harlan County Lake for that irrigation season.
- Storage. Actual storage in the irrigation pool at the end of December. The sediment pool is assumed full. If the pool elevation is below the top of the sediment pool, a negative irrigation storage value would be used.
- Inflow. The inflow would be the smaller of the past 5-year average inflow to the project from January through May, or 57,600 Acre-feet.
- Spring Evaporation. Evaporation from the project would be 8,800 Acre-feet which is the average January through May evaporation.
- Summer Sediment Pool Evaporation. Summer evaporation from the sediment pool during June through September would be 20,000 Acre-feet. This is an estimate based on lower pool elevations, which characterize the times when it would be critical to the computations.

6. Shared Shortage Adjustment

To ensure that an equitable distribution of the available water occurs during short-term drought conditions, and provide for a "banking" procedure to increase the water stored for subsequent years, a shared shortage plan would be implemented. The maximum water available for irrigation according to the above equation would be reduced according to the following table. Linear interpolation of values will occur between table values.

Shared Shortage Adjustment Table

Irrigation Water Available (Acre-feet)	Irrigation Water Released (Acre-feet)
0	0
17,000	15,000
34,000	30,000
51,000	45,000
68,000	60,000
85,000	75,000
102,000	90,000
119,000	100,000
136,000	110,000
153,000	120,000
170,000	130,000

7. Annual Shutoff Elevation for Harlan County Lake

The annual shutoff elevation for Harlan County Lake would be estimated each January and finally established each June.

The annual shutoff elevation for irrigation releases will be estimated by Reclamation each January in the following manner:

1. Estimate the May 31 Irrigation Water Storage (IWS) (Maximum 150,000 Acre-feet) by taking the December 31 irrigation pool storage plus the January-May inflow estimate (57,600 Acre-feet or the average inflow for the last 5-year period, whichever is less) minus the January-May evaporation estimate (8,800 Acre-feet).
2. Calculate the estimated Irrigation Water Available, including all summer evaporation, by adding the Estimated Irrigation Water Storage (from item 1) to the estimated sediment pool summer evaporation (20,000 AF).
3. Use the above Shared Shortage Adjustment Table to determine the acceptable Irrigation Water Release from the Irrigation Water Available.
4. Subtract the Irrigation Water Release (from item 3) from the Estimated IWS (from item 1). The elevation of the lake corresponding to the resulting irrigation storage is the Estimated Shutoff Elevation. The shutoff elevation will not be below the bottom of the irrigation pool if over 119,000 AF of water is supplied to the districts, nor below 1,927.0 feet, msl. If the shutoff elevation is below the irrigation pool, the maximum irrigation release is 119,000 AF.

The annual shutoff elevation for irrigation releases would be finalized each June in accordance with the following procedure:

1. Compare the estimated May 31 IWS with the actual May 31 IWS.
2. If the actual end of May IWS is less than the estimated May IWS, lower the shutoff elevation to account for the reduced storage.
3. If the actual end of May IWS is equal to or greater than the estimated end of May IWS, the estimated shutoff elevation is the annual shutoff elevation.
4. The shutoff elevation will never be below elevation1,927.0 feet, msl, and will not be below the bottom of the irrigation pool if more than 119,000 Acre-feet of water is supplied to the districts.

Attachment 3: Inflows to Harlan County Lake 1993 Level of Development

BASELINE RUN - 1993 LEVEL INFLOW TO HARLAN COUNTY RESERVOIR

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1931	10.2	10.8	13.4	5.0	18.8	15.8	4.3	1.8	1.8	0.0	0.1	0.1	82.1
1932	6.8	16.6	18.5	4.6	3.8	47.6	3.8	2.8	4.8	0.0	0.0	0.4	109.7
1933	0.4	0.0	3.9	30.2	31.0	5.4	1.8	0.0	10.4	0.0	2.6	5.5	91.2
1934	2.1	0.0	3.2	1.8	0.7	7.3	0.8	0.0	1.3	0.0	2.2	0.0	19.4
1935	0.3	0.1	0.7	4.2	0.8	389.3	6.1	19.1	26.1	2.4	5.2	0.9	455.2
1936	0.3	0.0	11.9	0.0	35.9	4.7	0.4	0.0	1.8	0.0	1.6	3.8	60.4
1937	4.8	12.9	6.0	2.5	0.0	12.6	6.3	6.9	2.4	0.0	0.0	12.4	66.8
1938	9.9	7.8	8.7	10.4	18.7	8.6	7.3	7.8	4.9	0.2	0.0	4.7	89.0
1939	2.7	7.5	9.6	12.2	6.6	13.3	5.0	4.1	0.0	0.0	0.0	0.0	61.0
1940	0.0	0.0	12.2	5.2	4.6	23.7	2.8	3.2	0.0	3.6	0.0	1.4	56.7
1941	0.0	10.6	10.6	7.7	17.2	67.1	28.9	19.7	14.9	8.3	6.7	7.1	198.8
1942	3.3	10.6	0.5	34.1	30.8	83.9	11.7	10.9	36.5	3.1	8.7	0.3	234.4
1943	1.2	11.2	14.6	31.4	4.7	28.3	4.8	0.3	0.9	0.0	0.0	11.8	109.2
1944	0.1	4.3	9.0	43.1	31.9	63.9	26.6	15.4	0.5	0.3	3.0	4.5	202.6
1945	4.3	7.8	5.7	9.5	4.1	53.5	5.0	0.9	1.5	5.0	6.0	6.3	109.6
1946	5.9	11.2	9.3	4.9	7.0	3.1	1.6	11.4	28.1	129.9	25.0	12.1	249.5
1947	1.1	3.2	10.4	8.2	11.9	195.4	22.3	5.9	2.9	0.2	0.3	0.3	262.1
1948	6.2	9.8	24.1	5.4	0.2	39.8	13.5	6.8	4.2	0.0	0.1	0.1	110.2
1949	2.0	1.5	25.2	16.3	49.0	57.4	9.2	5.5	2.1	3.0	2.8	0.3	174.3
1950	0.3	5.7	10.8	10.9	28.9	10.1	12.7	9.3	7.8	7.2	3.8	3.1	110.6
1951	3.8	3.4	7.1	5.3	42.0	39.9	42.1	10.1	36.0	15.5	14.8	8.9	228.9
1952	16.4	21.4	26.3	23.8	34.6	4.0	9.3	3.1	1.5	11.7	4.3	0.1	156.5
1953	1.8	4.6	5.3	3.3	15.1	9.5	1.8	0.2	0.0	0.0	2.8	0.1	44.5
1954	1.0	6.8	1.9	3.2	7.1	2.4	0.0	1.2	0.0	0.0	0.0	0.0	23.6
1955	0.0	4.0	6.3	4.8	2.9	6.4	2.7	0.0	1.4	0.0	0.0	0.0	28.5
1956	1.6	3.4	2.9	2.4	1.3	1.5	0.0	0.6	0.0	0.0	0.0	0.0	13.7
1957	0.0	4.1	6.2	12.8	3.5	62.4	21.3	1.2	2.0	3.4	4.5	4.7	126.1
1958	0.8	3.0	14.2	14.0	18.7	1.3	3.4	2.2	0.0	0.4	0.0	0.6	58.6
1959	1.9	15.4	16.4	8.5	13.6	4.2	1.4	1.2	0.0	4.3	1.0	4.5	72.4
1960	1.4	12.3	71.4	23.9	21.7	53.7	14.1	3.2	0.0	0.0	0.2	2.8	204.7
1961	2.3	6.4	7.7	7.4	26.5	24.0	7.2	4.9	0.0	2.3	4.8	1.7	95.2

Attachment 3: Inflows to Harlan County Lake 1993 Level of Development

BASELINE RUN - 1993 LEVEL INFLOW TO HARLAN COUNTY RESERVOIR

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1962	4.5	9.1	16.2	9.9	14.4	42.6	41.6	21.1	2.3	8.7	8.3	5.7	184.4
1963	3.4	18.2	18.2	15.0	12.7	14.7	3.4	6.1	8.7	0.8	5.3	1.8	108.3
1964	5.4	7.6	8.3	8.4	9.9	11.9	7.2	6.5	2.4	1.9	1.4	2.3	73.2
1965	6.0	8.1	11.1	12.8	32.8	40.0	22.9	6.5	37.2	53.7	19.5	11.0	261.6
1966	8.9	21.4	15.7	11.4	12.0	34.7	12.4	2.5	3.5	5.4	6.8	5.7	140.4
1967	7.2	11.5	11.5	12.9	9.1	75.3	43.7	15.3	4.4	7.3	6.9	5.4	210.5
1968	3.9	10.2	8.5	11.6	10.8	12.5	3.1	2.7	1.6	2.0	4.3	3.4	74.6
1969	4.2	10.8	24.5	15.1	18.9	17.5	17.0	12.6	16.6	9.2	11.8	9.9	168.1
1970	3.5	8.7	8.5	10.5	11.1	7.7	4.6	3.2	0.5	3.3	4.7	4.5	70.8
1971	4.1	10.3	12.4	12.8	18.3	7.2	8.4	6.2	1.9	4.2	7.3	7.1	100.2
1972	5.5	8.1	9.2	8.3	14.8	8.5	6.5	4.4	0.1	2.9	7.6	4.1	80.0
1973	11.4	14.2	19.0	16.2	17.4	20.9	9.1	1.9	8.4	19.6	11.9	13.2	163.2
1974	13.2	13.4	12.0	14.3	15.4	17.2	5.5	0.0	0.0	0.0	4.9	5.5	101.4
1975	7.2	8.2	13.6	14.8	12.0	48.1	11.6	7.4	0.1	3.0	6.2	7.3	139.5
1976	7.0	10.2	10.1	16.0	12.1	3.5	2.2	1.8	0.9	1.0	3.2	3.1	71.1
1977	4.4	9.6	12.9	21.2	31.5	12.1	5.9	1.9	10.6	4.1	5.5	5.3	125.0
1978	5.0	6.5	20.6	12.9	11.8	3.8	0.0	1.0	0.0	0.0	0.3	1.6	63.5
1979	1.3	7.6	21.5	18.8	15.9	5.4	10.4	10.6	1.6	0.9	3.6	6.2	103.8
1980	5.7	9.3	11.6	15.2	10.4	2.1	2.5	0.0	0.0	0.0	2.5	2.2	61.5
1981	5.5	6.0	11.6	14.9	22.5	6.4	11.5	16.3	4.3	2.5	6.7	6.2	114.4
1982	5.3	12.5	17.9	14.3	26.8	27.1	8.9	2.7	0.0	6.5	6.3	15.5	143.8
1983	6.5	9.7	27.2	16.4	41.4	74.2	10.7	7.6	3.8	3.1	6.7	5.2	212.5
1984	6.8	14.6	17.2	32.9	40.6	15.5	8.1	4.5	0.0	5.5	4.8	6.2	156.7
1985	6.9	14.1	13.6	11.9	27.4	9.9	10.0	2.0	6.0	8.5	5.6	5.8	121.7
1986	9.1	9.4	12.2	11.7	34.3	13.0	13.5	4.6	3.3	5.9	5.4	7.1	129.5
1987	5.9	9.2	19.7	24.1	24.3	11.7	19.0	5.7	2.3	2.7	8.2	7.0	139.8
1988	6.2	13.7	11.6	15.2	15.2	7.0	17.9	10.4	0.6	2.0	5.9	5.4	111.1
1989	5.4	5.9	10.5	9.1	11.4	11.8	14.0	6.2	0.2	3.1	3.1	3.5	84.2
1990	6.6	7.7	13.2	9.7	15.5	1.4	4.3	10.7	0.6	3.2	2.0	2.7	77.6
1991	2.4	8.0	9.0	10.6	15.2	3.9	1.9	0.5	0.0	0.0	2.7	4.8	59.0
1992	8.0	8.8	12.7	8.5	4.5	6.1	6.5	9.4	2.4	6.9	6.7	5.2	85.7
1993	5.2	14.4	71.6	22.7	21.0	17.0	68.0	37.5	23.3	16.8	30.1	17.7	345.3
Avg	4.5	8.8	14.1	13.0	17.2	30.6	11.0	6.2	5.4	6.3	5.0	4.7	126.8

Attachment 4: Evaporation Loss Harlan County Lake 1993 Level of Development

BASELINE - 1993 LEVEL FLOWS - HARLAN COUNTY EVAPORATION

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1931	0.7	0.9	1.6	2.9	4.2	7.4	6.9	5.2	2.7	2.1	1.2	0.4	36.2
1932	0.6	0.8	1.5	2.7	4.1	5.0	6.8	5.0	2.7	2.1	1.2	0.4	32.9
1933	0.6	0.8	1.4	2.5	3.8	7.8	6.1	4.2	2.7	2.1	1.2	0.4	33.6
1934	0.6	0.8	1.4	2.4	4.5	6.5	8.0	6.2	2.7	2.0	1.2	0.4	36.7
1935	0.6	0.8	1.3	2.3	2.2	3.6	9.7	6.2	3.1	2.5	1.4	0.5	34.2
1936	0.7	0.9	1.6	2.9	5.5	6.8	8.7	6.5	2.7	2.1	1.2	0.4	40.0
1937	0.6	0.8	1.4	2.5	3.6	4.0	6.2	6.5	2.7	2.1	1.2	0.4	32.0
1938	0.6	0.9	1.5	2.7	3.4	4.9	6.5	5.7	2.7	2.1	1.2	0.4	32.6
1939	0.6	0.8	1.4	2.6	4.3	4.9	6.8	4.6	2.7	2.1	1.2	0.4	32.4
1940	0.6	0.8	1.4	2.4	3.5	5.0	6.5	4.6	2.7	2.1	1.2	0.4	31.2
1941	0.6	0.8	1.4	2.5	3.9	4.2	6.7	5.3	2.8	2.1	1.3	0.5	32.1
1942	0.6	0.9	1.5	2.8	4.0	5.2	8.3	5.1	3.2	2.5	1.5	0.5	36.1
1943	0.7	1.0	1.8	3.2	4.3	5.7	7.9	6.3	2.7	2.1	1.2	0.4	37.3
1944	0.6	0.8	1.4	2.7	4.2	5.3	7.0	5.8	3.5	2.6	1.5	0.5	35.9
1945	0.7	1.0	1.8	3.1	3.8	3.0	6.7	5.7	2.9	2.2	1.3	0.5	32.7
1946	0.6	0.9	1.6	2.8	3.5	5.1	5.6	4.4	2.9	2.7	1.8	0.6	32.5
1947	1.0	1.5	2.9	3.2	3.4	-1.2	5.8	5.3	3.7	1.7	0.5	0.1	27.9
1948	0.8	0.7	1.5	3.6	3.1	2.4	4.2	4.7	3.0	2.7	0.8	0.3	27.8
1949	0.1	0.9	0.7	1.8	1.1	0.7	6.5	4.1	3.1	1.7	1.5	0.4	22.6
1950	0.7	0.1	0.8	2.8	2.0	5.6	0.8	2.8	4.5	2.3	1.6	0.6	24.6
1951	0.5	0.2	2.1	0.7	-0.1	1.9	3.5	4.1	0.4	3.1	2.2	0.9	19.5
1952	1.1	1.2	1.9	2.5	5.2	6.2	1.5	3.4	3.6	2.9	1.1	-0.1	30.5
1953	0.5	1.0	1.5	2.9	4.7	4.5	4.6	6.6	5.3	3.3	0.1	0.0	35.0
1954	0.7	0.6	2.2	3.6	0.3	4.9	6.7	1.6	3.6	1.6	1.5	0.6	27.9
1955	0.5	1.0	2.1	4.6	3.4	-0.5	7.3	6.9	2.7	2.6	1.4	0.4	32.4
1956	0.6	1.1	1.9	2.8	3.9	4.5	5.0	3.7	4.7	3.7	1.3	0.5	33.7
1957	0.7	1.0	1.3	0.5	-0.6	-1.1	6.1	3.7	2.3	1.7	1.2	0.4	17.2
1958	0.7	0.1	1.0	0.6	2.3	4.4	1.0	1.9	3.3	3.3	1.0	0.6	20.2
1959	0.4	1.0	1.1	2.1	1.0	3.5	5.0	4.8	2.3	0.7	1.5	0.6	24.0
1960	0.1	0.7	2.0	2.7	0.9	0.1	4.9	3.6	3.9	2.0	1.3	0.4	22.6
1961	0.9	1.0	1.4	2.7	-1.1	0.6	5.1	2.9	1.2	2.4	0.7	0.1	17.9

Attachment 4: Evaporation Loss Harlan County Lake 1993 Level of Development

BASELINE - 1993 LEVEL FLOWS - HARLAN COUNTY EVAPORATION

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1962	0.6	0.6	0.9	3.7	3.4	1.5	0.3	1.6	2.0	2.0	1.7	0.3	18.6
1963	0.7	1.4	1.3	4.5	4.6	6.3	6.1	3.1	-0.8	2.7	1.5	0.4	31.8
1964	0.8	0.8	1.7	3.2	5.6	1.2	6.9	3.0	3.0	3.3	1.2	0.6	31.3
1965	0.4	0.7	1.2	2.8	1.5	-0.5	2.0	2.8	-3.9	1.7	2.1	0.4	11.2
1966	0.9	0.8	2.9	2.7	7.5	2.8	5.8	3.7	2.7	2.8	1.5	0.4	34.5
1967	0.7	1.2	2.5	3.0	2.0	-2.9	1.6	4.5	3.5	2.0	1.6	0.4	20.1
1968	0.9	1.2	2.8	2.6	3.2	4.9	4.7	1.8	2.3	0.7	1.2	0.2	26.5
1969	0.4	0.6	2.4	3.3	0.1	3.8	-0.7	2.9	2.2	-1.0	1.5	0.4	15.9
1970	0.7	1.4	2.3	2.8	4.7	4.4	6.5	5.9	0.9	1.0	1.5	0.7	32.8
1971	0.7	0.2	2.0	2.9	0.7	5.1	3.4	4.5	1.4	1.5	0.2	0.5	23.1
1972	0.8	1.3	2.0	1.7	1.1	0.0	3.3	1.8	2.1	1.7	-0.4	0.1	15.5
1973	0.5	1.1	-0.7	2.5	3.4	6.7	-1.7	4.2	-3.0	0.2	0.2	0.2	13.6
1974	0.7	1.5	2.6	1.5	3.7	2.5	9.1	2.6	3.4	1.4	1.1	0.3	30.4
1975	0.7	0.7	2.0	2.1	0.8	1.1	4.3	2.7	3.0	3.4	0.7	0.6	22.1
1976	0.8	1.2	1.7	0.7	1.5	5.0	5.9	5.7	-0.2	1.4	1.4	0.7	25.8
1977	0.7	1.3	0.2	1.1	0.0	4.6	4.0	0.6	2.0	1.6	1.0	0.4	17.5
1978	0.5	0.7	1.2	3.4	3.9	6.2	7.1	4.5	4.5	3.0	1.1	0.5	36.6
1979	0.5	0.6	1.1	3.9	4.4	4.6	3.5	5.1	4.1	2.8	1.4	0.7	32.7
1980	0.5	0.6	1.2	3.4	3.7	4.7	6.8	6.0	3.9	2.7	1.3	0.6	35.4
1981	0.5	0.6	1.2	3.8	3.2	4.8	4.2	3.7	2.9	1.7	1.3	0.7	28.6
1982	0.5	0.7	1.2	3.9	3.8	3.9	5.1	3.8	2.9	2.2	1.4	0.8	30.2
1983	0.5	0.7	1.4	2.9	4.2	5.3	8.6	7.2	4.6	1.8	1.5	0.6	39.3
1984	0.6	0.8	1.4	2.9	4.2	5.8	7.2	5.7	4.7	1.4	1.4	0.7	36.8
1985	0.5	0.7	1.3	2.3	4.0	4.5	5.6	3.5	3.8	1.5	1.5	0.7	29.9
1986	0.6	0.7	1.3	2.8	4.4	5.8	6.7	4.0	2.7	1.3	1.4	0.7	32.4
1987	0.5	0.8	1.3	3.1	4.2	6.2	6.9	3.5	3.1	2.2	1.4	0.7	33.9
1988	0.5	0.7	1.3	3.5	4.9	6.6	4.6	4.8	3.5	2.2	1.4	0.7	34.7
1989	0.5	0.7	1.2	4.2	4.5	4.4	4.8	3.6	3.0	2.5	1.4	0.7	31.5
1990	0.5	0.7	1.2	3.0	3.5	5.6	6.4	4.0	5.0	3.4	1.4	0.6	35.3
1991	0.5	0.7	1.2	2.8	3.3	5.5	6.0	5.0	5.1	3.2	1.3	0.6	35.2
1992	0.6	0.7	1.2	1.8	3.2	2.2	4.1	3.5	4.2	2.9	1.9	1.0	27.3
1993	0.6	0.5	1.0	2.2	3.1	4.6	4.2	4.9	4.5	4.4	3.1	1.2	34.3
Avg	0.6	0.8	1.5	2.7	3.2	3.9	5.3	4.3	2.8	2.2	1.3	0.5	29.1

Attachment 5: Projected Water Supply Spread Sheet Calculations

Trigger Calculations Based on Harlan County Lake Irrigation Supply	Units-1000 Acre-feet	Irrigation Trigger	119.0	Assume that during irrigation release season HCL Inflow = Evaporation Loss
		Total Irrigation Supply	130.0	
		Bottom Irrigation	164.1	
		Evaporation Adjust	20.0	

	Oct	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
1993 Level AVE inflow	6.3	5	4.7	4.5	8.8	14.1	13.0	17.2	30.6	11.0	6.2	5.4	126.8
1993 Level AVE evap	2.2	1.3	0.5	0.6	0.8	1.5	2.7	3.2	3.9	5.3	4.3	2.8	29.1
(1931-93)													
Avg. Inflow Last 5 Years	10.8	13.0	12.3	12.9	16.6	22.4	19.4	18.1	14.8	16.5	11.0	4.7	172.6

Year 2001-2002 Oct - Jun Trigger and Irrigation Supply Calculation									
Calculation Month	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Previous EOM Content	236.5	235.9	238.6	242.9	248.1	255.1	263.8	269.6	276.2
Inflow to May 31	73.6	67.3	62.3	57.6	53.1	44.3	30.2	17.2	0.0
Last 5 Yrs Avg Inflow to May 31	125.6	114.8	101.7	89.5	76.6	59.9	37.5	18.1	0.0
Evap to May 31	12.8	10.6	9.3	8.8	8.2	7.4	5.9	3.2	0.0
Est. Cont May 31	297.3	292.6	291.6	291.7	293.0	292.0	288.1	283.6	276.2
Est. Elevation May 31	1944.44	1944.08	1944.00	1944.01	1944.11	1944.03	1943.72	1943.37	1942.77
Max. Irrigation Available	153.2	148.5	147.5	147.6	148.9	147.9	144.0	139.5	132.1
Irrigation Release Est.	120.1	117.4	116.8	116.8	118.1	117.1	116.8	116.8	116.8
Trigger - Yes/No	NO	YES	YES	YES	YES	YES	YES	YES	YES
130 kAF Irrigation Supply - Yes/No	NO	NO	NO	NO	NO	NO	NO	NO	NO

Attachment 5: Projected Water Supply Spread Sheet Calculations

Year 2002 **Jul - Sep** **Final Trigger and** **Total Irrigation Supply** **Calculation**				
Calculation Month		**Jul**	**Aug**	**Sep**
Previous EOM Irrigation Release Est.		116.8	116.0	109.7
Previous Month Inflow		5.5	0.5	1.3
Previous Month Evap		6.3	6.8	6.6
Irrigation Release Estimate		116.0	109.7	104.4
Final Trigger - Yes/No		YES		
130 kAF Irrigation Supply - Yes/No		NO	NO	NO

Attachment 6: Computing Water Supplies and Consumptive Use Above Guide Rock

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Total Main Stem VWS	Hardy gage	Superior-Courtland Diversion Dam Gage	Courtland Canal Diversions	Superior Canal Diversions	Courtland Canal Returns	Superior Canal Returns	Total Bostwick Returns Below Guide Rock	NE CBCU Below Guide Rock	KS CBCU Below Guide Rock	Total CBCU Below Guide Rock	Gain Guide Rock to Hardy	VWS Guide Rock to Hardy	Main Stem Virgin Water Supply Above Guide Rock	Nebraska Main Stem Allocation Above Hardy	Kansas Main Stem Allocation Above Hardy	Nebraska Guide Rock to Hardy Allocation	Kansas Guide Rock to Hardy Allocation
							Col F+ Col G			Col I + Col J	+ Col B - Col C+ Col K - Col H	+ Col L + Col K	Col A - Col M	.489 x Col N	.511 x Col N	.489 x Col M	.511 x Col M

Attachment 7: Calculations of Return Flows from Bureau of Reclamation Canals

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11
Canal	Canal Diversion	Spill to Waste-way	Field Deliveries	Canal Loss	Average Field Loss Factor	Field Loss	Total Loss from District	Percent Field and Canal Loss That Returns to the Stream	Total Return to Stream from Canal and Field Loss	Return as Percent of Canal Diversion
Name Canal	Headgate Diversion	Sum of measured spills to river	Sum of deliveries to the field	+Col 2 - Col 4	1 -Weighted Average Efficiency of Application System for the District*	Col 4 x Col 6	Col 5 + Col 7	Estimated Percent Loss*	Columns 8 x Col 9	Col 10/Col 2
Example	100	5	60	40	30%	18	58	82%	48	48%
Culbertson					30%					
Culbertson Extension					30%					
Meeker-Driftwood					30%					
Red Willow					30%					
Bartley					30%					
Cambridge					30%					
Naponne					35%					
Franklin					35%					
Franklin Pump					35%					
Almena					30%					
Superior					31%					
Nebraska Courtland					23%					
Courtland Canal Above Lovewell (KS)					23%					
Courtland Canal Below Lovewell					23%					

*The average field efficiencies for each district and percent loss that returns to the stream may be reviewed and, if necessary, changed by the RRCA to improve the accuracy of the estimates.

Appendix B

Model Documentation and Model Files

The contents of Appendix B can be found at:

ftp://ftp.dnr.ne.gov/

login: rrca
password eLabor8ate

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Dale A. Rodman, Secretary
David W. Barfield, Chief Engineer

Sam Brownback, Governor

March 8, 2013

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RE: Deficiencies of Rock Creek Augmentation Proposal and process

Dear Commissioner Dunnigan and Commissioner Wolfe,

This letter is in response to the letter I received from Commissioner Dunnigan dated March 5, 2013, that referred to Nebraska's Rock Creek Augmentation Proposal ("the Proposal") and provided a draft resolution for the Republican River Compact Administration (RRCA) that approves the Proposal without insufficient terms or conditions. Subject to any further discussion of the matter that occurs during this morning's Special Meeting of the RRCA, I anticipate that Kansas will be unable to approve the Proposal in its current form. As you know, Kansas has repeatedly explained that it is willing to discuss the matter to attempt to find a proposal that is mutually agreeable to all of the States. The purpose of this letter is to memorialize Kansas' concerns with Nebraska's approach to this matter and with the Proposal.

The Final Settlement Stipulation (FSS) requires that augmentation plans and their related accounting procedures be agreed upon by the States prior to implementation. This requirement is clearly reflected in the testimony of both former Nebraska Director Roger Patterson and former Colorado State Engineer Hal Simpson at the hearing before Special Master McKusick in January 2003. Both testified that the RRCA's review and approval of any plan and accounting procedures would be done before any project was developed. Augmentation plans are not a continuation of the existing flexibility regarding allocations and consumptive use that the States agreed to provide to each other under the Republican River Compact ("Compact") and FSS.

Instead, augmentation plans are a compliance tool of last resort directed at offsetting over-consumption, which sets them apart from any existing water management flexibility.

As we understand it, in Colorado, augmentation plans are intended to enable junior ground water users to pump in return for protecting senior water users from any injury that may result from such pumping. Such plans are carefully crafted with terms and conditions to ensure that the interests of other water users are not compromised. The plans also include provisions to resolve any future problems that may arise. These plans require Water Court approval and retained jurisdiction. Kansas agreed to the augmentation provisions of the FSS based on the assurances of the other States that unanimous agreement was required and that any plans and accounting procedures would be worked out well ahead of time, with terms and conditions protecting all of the States' interests.

This critical review has not occurred in this case. As early as the 2007 RRCA annual meeting, Kansas became aware that Nebraska was exploring options for augmentation. Since then, I have continued to encourage Nebraska to bring information and tentative plans to the RRCA for discussion. Yet it was not until February 8, 2013 that Nebraska provided its plan to seek augmentation credit for its Rock Creek Augmentation Project, even as the project was being completed and starting operations.

On the eve of the December 11, 2012 RRCA Special Meeting, Nebraska submitted a general outline of elements related to augmentation plans, but did not provide the Rock Creek Augmentation Proposal at that time. At the December 11 meeting, Nebraska requested feedback by the end of December from Colorado and Kansas. Kansas worked hard to review the submitted material during the holiday period, and provided initial comments on January 14, 2013. In that letter, Kansas explained that "any specific augmentation plan will need to include sufficient detail to allow identification of all relevant issues and concerns and a thorough review by the technical staff of each state." (*See* my letter of January 14, 2013 attached) Kansas also explained that the purpose of that request was to help Kansas "ensure that [the augmentation plan] will not reduce the usability of Kansas' allocation under the Compact in quantity, timing, or location." Another important consideration was that "given the lack of experience the states have with augmentation plans under the FSS and the complexity of operations, periodic review and a limited term of approval would be appropriate." Given those considerations, Kansas provided specific items that Kansas views as appropriate components of an augmentation plan. This listing included items provided by Colorado in its 2009 proposed augmentation plan and items determined to be reasonable requests by Arbitrator Martha Pagel, who issued a decision regarding Colorado's 2009 proposed augmentation plan.

The first time that Nebraska provided to Kansas a specific augmentation proposal was 28 days ago, on February 8, 2013. Nebraska failed to address many of the elements recommended by Kansas, and requested that a vote on the proposal be scheduled within 30 days. As chairman of the RRCA, I attempted to facilitate discussion of the matter by the states' technical representatives by scheduling a Work Session of the RRCA for March 1. I recommended that the Work Session include discussions of Kansas' concerns. (*See my letter of February 27, 2013 with draft work session agenda* attached) In advance of that Work Session, I received a letter dated February 28, 2013, from Commissioner Dunnigan explaining that while Nebraska was "willing to listen to Kansas' concerns . . . Nebraska does not believe that the 'requested items' form a legitimate foundation for 'continued discussions' or 'amendment to the [P]lan." (*See* Commissioner Dunnigan's Letter of February 28, 2013, attached) Based on this letter, it appears that Nebraska rejected outright the possibility of revising the proposal even before the Work Session occurred, which frustrates one of the main purposes of the RRCA, which is to facilitate productive dialogue among the States.

Based on Kansas' expedited review, the Proposal is materially deficient for at least six reasons. First, it allows for the expansion of use of existing wells, in contravention to the FSS' requirement for augmentation wells. Second, it makes no provision for transit losses below the project's outlet. Third, it ignores the effect of augmentation flows on Compact accounting (particularly groundwater consumptive beneficial use). Fourth, it has no stated operational limits or other terms and conditions that would ensure that Kansas would not be injured by the operation of the plan. Fifth, it makes no provision for periodic review and evaluation of the project. Finally, it suffers from a lack of specificity in many details of project operations. When combined with the Proposal's assumption that 100% of the pumped augmentation water be credited against Nebraska's depletions, the Proposal would inflate the appropriate augmentation credit and underestimate Nebraska's water use. Because of these concerns, and because Nebraska has deprived Kansas and the RRCA of a meaningful opportunity to address them, Kansas cannot be reasonably confident that the Proposal will not cause harm to Kansas. Consequently, Kansas cannot approve the Proposal in its current form.

I would also note that although the FSS requires prior approval by the RRCA for augmentation plans, Nebraska has already begun pumping from new wells and delivering water into Rock Creek.

Kansas is disappointed with this result but remains willing to engage in discussions over appropriate terms and conditions for an augmentation plan involving Rock Creek. In view of the current water-short conditions, the need for more time to address appropriate elements of a long-term plan, and to gain experience with the actual operation of the Proposal, with time and willing parties, one approach would have been a temporary plan to allow for Rock Creek deliveries and credit with the appropriate terms and conditions, such as those previously identified by Arbitrator Pagel. It is possible that discussions of the matter might have produced a mutually agreeable proposal that addressed the interests and concerns of all the States.

In sum, Nebraska's procedural approach to the Proposal has undermined both the letter and the intent of the FSS, and foreclosed any opportunity for constructive dialogue that might have resolved the dispute.

Attachments:

- Kansas January 14, 2013 letter
- my letter of February 27, 2013 with draft work session agenda
- Nebraska February 28, 2013 letter

Sincerely,

David W. Barfield, P.E.
Kansas Chief Engineer
Chairman, RRCA

Enclosures
DWB:spf

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Dale A. Rodman, Secretary
David W. Barfield, Chief Engineer

Sam Brownback, Governor

February 27, 2013

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RE: Draft agenda RRCA work session, March 1 2013, regarding Nebraska's Rock Creek Augmentation Proposal

Dear Commissioner Dunnigan and Commissioner Wolfe,

To help us prepare for and organize Friday's RRCA work session regarding Nebraska's Rock Creek Augmentation Proposal provided to the states on February 8th, I would offer the draft agenda on page 2.

The draft agenda is organized around: 1) a review of the specifics of the proposal and the underlying technical work provided, and 2) discussing the elements Kansas requested be included in augmentation plans in its letter of January 14, 2013.

The draft agenda includes specifics under these general headings that Kansas would like to discuss. I invite your additions to the agenda at your earliest convenience

Per our agreement via email, we will meet starting at 11:00 a.m. We will meet in the Kansas Water Office's conference room, at 901 S. Kansas Avenue (KWO is in the same building as DWR, on the first floor; its entrance is on Kansas Avenue, rather than 9th Street).

Sincerely,

David W. Barfield, P.E.
Kansas Chief Engineer
Chairman, RRCA

DWB:spf

Draft agenda
RRCA work session, March 1, 2013, 11:00 a.m.
Regarding Nebraska's Rock Creek Augmentation Project of February 8, 2013

1. Review draft agenda
2. Discussion of Nebraska's proposal
    a. Section II, Baseline conditions
        i. Review and discuss wateruse data, consumptive use
    b. Section III, Operational aspects
        i. When will deliveries be determined?
        ii. When will deliveries typically be made, seasonal operations?
        iii. Flow rates
        iv. How will deliveries be administered, esp. with respect to Swanson Reservoir, the Frenchman Cambridge Irrigation District, and Harlan County Reservoir?
    c. Section IV, Groundwater modeling analysis
        i. Discuss runs completed, their inputs and results
        ii. Discuss Nebraska's method to demonstrate "No new net depletions" and results
    d. Section V, RRCA Accounting Procedures Modifications
        i. Example calculations and tables
        ii. Appendix A, Accounting Procedure markup
    e. Related matters:
        i. Is an RRCA Resolution and/or any type of stipulation planned? Any other documents?
3. Kansas requested items to be included in an augmentation plan (January 14, 2013 letter)
    a. Consumptive use of augmentation water.
        i. Kansas initial estimates of impacts of including augmentation flows in the model
    b. Location and extent of stream depletions being offset
    c. Potential effects to usability of Kansas' allocations
    d. Operational limits and accounting to ensure usability to Kansas not impaired by planned operations.
    e. Periodic review and term of approval
4. Next steps on the Rock Creek Proposal. Options:
    a. Move to a vote on the plan submitted on Feb 8 as soon as possible.
    b. Continued discussions on the plan
        i. Allow Kansas and Colorado a limited time to provide written comments
        ii. Nebraska amendment to the plan
        iii. Telephonic RRCA work session to discuss revised plan
        iv. RRCA consideration
    c. Other
5. RRCA special meeting arrangements

STATE OF NEBRASKA

Dave Heineman
Governor

DEPARTMENT OF NATURAL RESOURCES
Brian P. Dunnigan, P.E.
Director

February 28, 2013

IN REPLY TO:

David Barfield, P.E.
Kansas Commissioner, RRCA
Kansas State Engineer
Division of Water Resources
109 SW 9th Street, 2nd Floor
Topeka, KS 66612-1283

Dick Wolfe, P.E.
Colorado Commissioner, RRCA
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1313 Sherman Street, Room 818
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RE: (Amended) Draft Agenda for RRCA Work Session, March 1, 2013

Dear Commissioners Barfield and Wolfe:

I am in receipt of the February 20, 2013, draft agenda for the upcoming RRCA work session, which was transmitted to us February 27, 2013, and which Commissioner Barfield further amended today. Certain portions of the Amended Draft Agenda imply that Kansas expects Nebraska to further modify its Rock Creek Augmentation Plan (Plan). See Amended Draft Agenda Item No. 4.b.ii. Nebraska has developed its Plan after careful consideration of the requirements specified in the Final Settlement Stipulation (FSS) and maintains that the Plan comports with all such requirements. Moreover, the Plan has been submitted in accordance with all requirements of the Dispute Resolution procedures under the FSS. Therefore, Nebraska is prepared to answer any questions the States pose concerning Amended Draft Agenda Item Nos. 2.a.; 2.c.; 2.d.; 2.e.; 4.a.; and 5.

It appears from Draft Agenda Item No. 3 that Kansas desires to discuss additional issues on which it would like to be heard. Nebraska is prepared to listen to Kansas' concerns. However, as previously stated, Nebraska has been unable to locate any foundation in the FSS for the "requested items" Kansas identifies there. Nebraska does not believe the "requested items" form a legitimate foundation for "continued discussions" or "amendment to the [P]lan" as contemplated in Amended Draft Agenda Item Nos. 4.b. and 4.b.ii.

Nebraska has identified this as a "Fast-Track Issue" in part because the Basin is presently forecast to be in a Water-Short Year, and we need to move forward with all available tools to ensure that Kansas water users receive the water to which they are entitled. Given the importance of this issue to Kansas water users, I want to ensure that our upcoming meeting is as productive as possible. We look forward to working through the issues identified in Amended Draft Agenda Item Nos. 2.a.; 2.c.; 2.d.; 2.e.; 4.a.; and 5.

As to the newly proposed agenda items, I do not believe additional discussions of the Integrated Management Plans will be fruitful. Kansas has been in possession of those plans since they were adopted, and we have recently completed a trial over those plans before the U.S. Supreme Court. Nebraska has nothing additional to explain in that regard.

Finally, as you are aware, there have been ongoing discussions among the U.S. Bureau of Reclamation and the U.S. Army Corps of Engineers concerning the manner in which Harlan County Lake will be operated for the benefit of the Kansas Bostwick Irrigation District (KBID) this year in the Republican River Basin. Given the importance of this issue also to Kansas water users, Nebraska agrees that the RRCA should be provided an update on the status of the federal discussions. If the federal parties are unable to agree on a plan, Nebraska will soon require the release of any water that has been temporarily held in Harlan County Lake this year in order to facilitate Nebraska's compliance with the Republican River Compact. It would be a shame if Kansas water users were unable to maximize the use of their water due to the federal parties' inaction. An update on the progress of the federal deliberations, along with a report on any perceived challenges and obstacles, would be most helpful. To the extent this is contemplated in Amended Draft Agenda Item No. 7, I agree it would be appropriate to address.

Sincerely,

Brian P. Dunnigan

Brian P. Dunnigan, P.E.
Director

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Dale A. Rodman, Secretary
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January 14, 2013

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Republican River Compact Administration
Nebraska Department of Natural Resources
301 Centennial Mall South
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Lincoln NE 68509-4676

RE: Republican River Compact, Nebraska augmentation plans

Dear Commissioner Dunnigan:

On the evening before the December 11, 2012 Special Meeting of the Republican River Compact Administration (RRCA) requested by Nebraska, Nebraska provided to Colorado and Kansas, via email, three documents related to possible augmentation plans by Nebraska to offset consumptive use by Nebraska in excess of its allocation, that Nebraska wished to discuss. One of those documents is entitled "Inclusion of Imports of Platte River Basin Water Supplies into the RRCA Accounting," ("Imports Document") dated December 10, 2012. The Imports Document outlines a concept by Nebraska to "enhance" the "Imported Water Supply Credit" that is calculated under the current RRCA Accounting Procedures. The Imports document refers to a map, labeled "Project Area Map," which was also one of the three documents provided on December 10. The third document was entitled "Outline for Augmentation Plan to RRCA" ("Augmentation Outline") and offered Nebraska's vision of the topics and issues that need to be addressed in order for the RRCA to agree upon an augmentation plan.

At the special meeting of the RRCA, Nebraska asked that Kansas and Colorado evaluate the Imports Document and the Augmentation Outline and provide Nebraska with their initial responses. Kansas also asked that Nebraska provide the calculations and backup for Nebraska's preliminary and final Republican River Basin Forecast. Although Nebraska initially agreed to this request, I now understand from your letter of January 7, 2013, that Nebraska is declining to do so. Also, I note that no response to Nebraska's request has been forthcoming from Colorado. Nevertheless, Kansas is responding to Nebraska's request as fully as practicable given the shortness of time, the lack of specifics provided by Nebraska, and the fact that Nebraska's documents raise issues that are presently before the Special Master or likely to be affected by rulings of the Special Master and the Supreme Court in the pending litigation. With those substantial caveats, Kansas now provides an initial response to Nebraska in order to alert Nebraska to Kansas' initial reactions to Nebraska's submittals.

With regard to the Imports Document's new proposal to convert some 62 wells shown on the Project Area Map from irrigation to augmentation purposes, it may be helpful to note the following. The proposed pumping would be mostly from wells in the Republican River Basin, not the Platte River Basin (55 of the 62 wells shown on the Project Area Map are in the Republican River Basin). There is no evidence that these wells pump water that was recharged from the Platte River canals.

The Imported Water Supply Credit established in the Final Settlement Stipulation (FSS) was a result of negotiations regarding Nebraska's assertion that the irrigation projects in the Platte River Basin have artificially created additional water supplies within the Republican River Basin. This specific credit was designed to address the uncontrolled effects of these irrigation projects on the groundwater levels in the area straddling the two basins and on stream baseflows. The FSS contains no provisions addressing the artificial "enhancement" of these baseflows to produce an altered IWS credit.

The concept described by Nebraska's Imports document appears to be a proposal for an augmentation project, i.e., a plan to pump groundwater and deliver it as surface flow for the sole purpose of offsetting stream depletions in order to comply with the Compact. Based only on an initial review of the concept, it appears to Kansas that it would be a poor fit to combine the proposed augmentation pumping concept with the existing Imported Water Supply Credit calculation of uncontrolled irrigation effects. As an augmentation project that pumps groundwater, we believe that Nebraska must show that pumping from these wells will not cause any new net depletions to streamflow either annually or long-term. Kansas is interested in discussing further with Nebraska how best to accomplish Nebraska's desire to augment streamflow in a way that protects the interests of Kansas.

Nebraska's Augmentation Outline seems to be a general characterization of a generic proposal for an augmentation plan and includes many of the broad topics about which Kansas would be concerned.

Of course, any specific augmentation plan will need to include sufficient detail to allow identification of all relevant issues and concerns and a thorough review by the technical staff of each state. For example, an augmentation project downstream of the storage afforded by Harlan County Reservoir would have different considerations than projects above that storage.

Moreover, Kansas needs to see the specifics of each augmentation plan in order to ensure that it will not reduce the usability of Kansas' allocation under the Compact in quantity, timing, or location. In addition, given the lack of experience the states have with augmentation plans under the FSS and the complexity of operations, periodic review and a limited term of approval would be appropriate.

To begin addressing the issues identified above, the following topics should be included in the outline:

- Location and extent of the stream depletions that the project is intended to offset;
- Records and analysis of the historical use of the wells to be used for augmentation;
- Proposed operational limits and proposed project accounting to ensure that the usability to Kansas will not be impaired by planned operations. Supporting analysis should accompany the proposed limits and accounting;
- Other operational details should include but not be limited to: Seasonal operating plans, considerations for water short and normal years, flow rates, and location of discharge;
- Plan for periodic review and evaluation of the project; and
- Consumptive use of the augmentation water and how it will be modeled.

More meaningful comments by Kansas would be facilitated by a more detailed presentation by Nebraska of its specific plans, including operational aspects and proposed accounting changes.

Kansas recognizes Nebraska's efforts in these documents to raise issues that are important to all the states. Nebraska should recognize that this brief response was prepared in a compressed time frame to accommodate Nebraska's request.

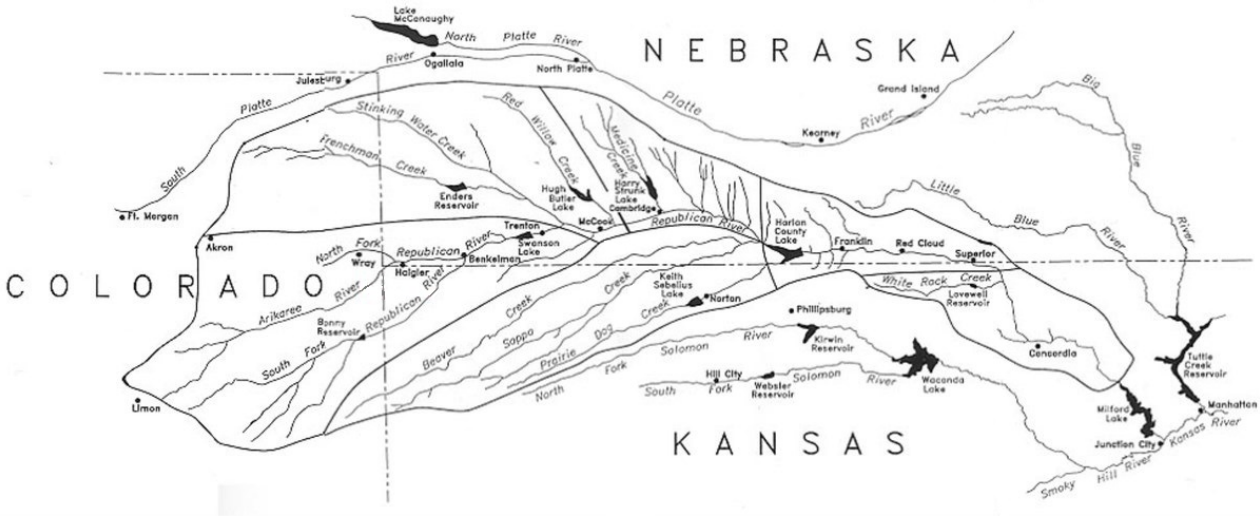
Sincerely,

David Barfield

David Barfield, P.E.
Kansas Chief Engineer

pc: Dick Wolfe

Attachments



Special Meeting of the RRCA, May 2, 2013

Exhibit A – Transcript

Exhibit B – Attendance List

Exhibit C – Amended Agenda

Exhibit D – Colorado Compact Compliance Pipeline Proposal

Exhibit E – Colorado Bonny Reservoir Accounting Proposal

SPECIAL MEETING OF THE

REPUBLICAN RIVER COMPACT ADMINISTRATION

May 2, 2013

3:06 p.m. Central Standard Time

Via Telephone

In Kansas:

Topeka location:
David Barfield, P.E., Commissioner & RRCA Chairman
Chris Beightel, Kansas DWR
Christopher M. Grunewald, KS Attorney Gen.'s office
Burke Griggs, Esquire, KS Attorney General's office

KBID listening location:
Kenneth Nelson

Stockton listening location:
Chelsea Erickson, KS DWR

Colby listening location:
Wayne Bossert, GMD4
Scott Ross, KS DWR water commissioner

In Colorado:

Denver location:
Dick Wolfe, P.E., Commissioner
Scott Steinbrecher, Esquire
Michael Sullivan, P.E., Deputy State Engineer
Ivan Franco

Wray RRWCD listening location:
Deb Daniel, RRWCD
Dennis Coryell, RRWCD
Dawn Webster, RRWCD
Jack Dowell, RRWCD
Bill Cure, landowner
Roy Smith, Y-W GMD
Denny Salvador, Y-W GMD
Nate Midcap, Frenchman, Marks Butte, Central Yuma, Sanhills GMD
Brent Deterding, Central Yuma GMD

Other Colorado call-ins:
Peter J. Ampe, Esquire, RRWCD
Dennis Montgomery, Esquire, RRWCD
Dave L. Keeler, Colorado water commissioner
Devin Ridnour, water commissioner
Jim Martin, well commissioner
Janelle Myotte, well commissioner
Willem Schreüder, consultant
BreAnn Ferguson, Plains and East Cheyenne GMD

In Nebraska:

Lincoln Listening location
Brian P. Dunnigan, P.E., Commissioner
Justin Lavene, Nebraska Attorney General's office
Jim Schneider, P.E., NDNR
Jesse Bradley, NDNR
Don Blankenau, Esquire, Blankenau & Wilmoth LLP
Tom Wilmoth, Esquire, Blankenau & Wilmoth LLP
Mark Groff, TFG
David Kracman, TFG
Tom Riley, TFG
Dean Edson

McCook listening location:
Aaron Thompson, USBR
Steve Cappel, MRNRD
John Palic, MRNRD
James Uerling, MRNRD
Don Felker, FV ID and H&RW
Bill Peck, USBR
Bill Hoyt, MRNRD

Red Cloud listening location:
Tracy Smith, NBID

Curtis listening location:
Daniel L. Smith, MRNRD

Imperial listening location:
Nate Jenkins, URNRD

PROCEEDINGS

CHAIRMAN BARFIELD: Well, I'll go ahead and get us started on the record. Thank you all for attending and participating in this meeting. For the record, it's May 2nd, 2013. The time is approximately 3:06, central standard time. This is a special meeting of the Republican River Compact Administration. My name is David Barfield, Kansas Commissioner to the Administration and chairman of the Administration this year.

We have a court reporter that's making notes of this meeting, so I would ask that everybody who is -- who wishes to address the group, to address the meeting, to make clear as you start your comments who you are and what station you're at. There should be sign-up sheets at each of the listening stations. If someone there can make sure that -- that those sheets are passed around, we would appreciate that, and sending that to Chelsea Erickson at our Stockton field office to make our record complete. So any questions on that?

(Pause.)

CHAIRMAN BARFIELD: This meeting was requested by Colorado on April 5th when it

transmitted to the states two proposals that we will consider at this meeting. In that transmission they asked for the states to have a special meeting by the 5th of May to consider these matters, and that's the -- the principal purpose of our meeting today.

Okay. With that, I guess I would like to go around and do introductions before we handle the agenda. So first of all, here in Topeka it is myself, Chris Beightel, Chris Grunewald, and Burke Griggs. Let me go ahead and go around to Kansas. First of all, GMD4 in Colby?

MR. ROSS: Scott Ross and Wayne Bossert.

CHAIRMAN BARFIELD: Okay. The Stockton field office?

MS. ERICKSON: Chelsea Erickson.

CHAIRMAN BARFIELD: Okay. And then at the Bostwick Irrigation District in Courtland?

MR. NELSON: Nelson.

CHAIRMAN BARFIELD: That was Kenny Nelson?

MR. NELSON: Kenny Nelson, yeah.

CHAIRMAN BARFIELD: Okay. That completes the Kansas listening stations. Commissioner Wolfe, I would like to turn it over to you to introduce those that are on with Colorado.

CHAIRMAN WOLFE: All right. Thank you,

Chairman Barfield. This is Dick Wolfe, the Commissioner for Colorado, and I am in the Denver location. And here with me is Mike Sullivan, Ivan Franco, and Scott Steinbrecher. And at the other listening locations, I will turn to them to let them introduce.

And I will start first with Wray and then move to our field staff. And then I think we've got counsel for the district on a separate line. And so if we could go in that order of introductions. And then if I've missed anybody, I'll let them add at the end of that. So Wray, if you want to identify who is there in your location.

MS. DANIEL: Okay. This is Deb Daniel. I'm the general manager of the Republican River Water Conservation District. In the district office we have today with us Dennis Coryell, who is the chairman of the Republican River Water Conservation District; Dawn Webster, who is the assistant manager of the RRWCD, Jack Dowell, board member of the RRWCD; Bill Cure, landowner; Roy Smith, representing the Y-W (verbatim) Groundwater District; Denny Salvador, representing the Y-W Groundwater Management District; Nate Midcap, who is the general manager of the Frenchman, Marks Butte, Central Yuma,

and Sandhills Groundwater Management Districts; and Brent Deterding, representing the Central Yuma Groundwater Management District. All of these individuals are present in the Republican River district office.

CHAIRMAN WOLFE: Thank you. This is Dick Wolfe again. And Dave Keeler, could you introduce yourself and those that are at your location?

MR. KEELER: Yes. Dave Keeler, Water Commissioner for Colorado for the Republican River Basin; Devin Ridnour, our hydro and water Commissioner; Jim Martin, well commissioner; Janelle Myotte, well commissioner.

CHAIRMAN WOLFE: Thank you. And then I think at another location is folks with the counsel of the district, and could you introduce yourselves.

MR. AMPE: Yes. This is Peter Ampe and Dennis Montgomery of Hill & Robbins, counsel to the Republican River Water Conservation District.

CHAIRMAN WOLFE: And are there any other folks who have joined in on behalf of Colorado that we have not introduced yet?

MR. SCHREÜDER: This is Willem Schreüder, consultant to Colorado.

MS. FERGUSON: BreAnn Ferguson, Plains and

East Cheyenne Groundwater Management District.

CHAIRMAN WOLFE: Okay. I think that is all that we were aware of that would be joining us, so I'll turn it over back to you, Chairman Barfield.

CHAIRMAN BARFIELD: Thank you, Commissioner Wolfe. Commissioner Dunnigan, do you want to walk us through the Nebraska participants?

CHAIRMAN DUNNIGAN: Thank you, Chairman Barfield. This is Brian Dunnigan in Lincoln, Nebraska. And with me in Lincoln are Tom Riley, Tom Wilmoth, Don Blankenau, Mark Groff, David Kracman, Jim Schneider, Justin Lavene, Jesse Bradley, and Dean Edson. And I will go down through the Nebraska listening stations and ask for introductions, starting with the Bostwick Irrigation District in Red Cloud.

MS. SMITH: Yes. This is Tracy Smith. I'm the assistant manager at Bostwick Irrigation District. Mike Delka, our general manager sends his regrets. He has a family illness and is unable to be here today.

CHAIRMAN DUNNIGAN: Thank you, Tracy. I'll go to the Upper Republican Natural Resources District in Imperial.

MR. JENKINS: This is Nate Jenkins, assistant

manager with the Upper.

CHAIRMAN DUNNIGAN: The U.S. Bureau of Reclamation in McCook?

MR. THOMPSON: Yes. Good afternoon. This is Aaron Thompson, the area manager for Reclamation, Nebraska/Kansas. And also at the listening station we have James Uerling, representing the Middle Republican; John Palic, representing the Middle Republican and H & RW Irrigation District; Don Felker, general manager of the Frenchman Valley and H & RW Irrigation District; Bill Hoyt and Steve Cappel representing Middle Republican NRD; and Bill Peck with USBR. That's all.

CHAIRMAN DUNNIGAN: Thank you, Aaron. And I would ask if there's anybody else from Nebraska on the call?

MR. SMITH: Dan Smith, Middle Republican NRD in Curtis.

CHAIRMAN DUNNIGAN: Thank you, Dan. Is that it?

(Pause.)

CHAIRMAN DUNNIGAN: With that, Chairman Barfield, I'll turn it back to you.

CHAIRMAN BARFIELD: Very good. Just is there anybody else that's on the call that hasn't been

introduced?

(Pause.)

CHAIRMAN BARFIELD: All right. Hearing no one, we'll move on. The date and time of this meeting was agreed to by the states via calls and confirmed via e-mail. The states each agree to wave the 30-day meeting notice. Formal notice of meeting was sent on April 25. With the notice of the meeting was a draft agenda for the meeting, our proposed agenda for the meeting. I guess I would ask if there's any wish to modify the agenda as proposed?

CHAIRMAN WOLFE: Chairman Barfield, I think pursuant to our earlier discussion -- this is Dick Wolfe -- the Agenda Item 5, I think you were going to state for the record what the disposition of that particular agenda item is. Did you want to discuss that and offer up the amendment in accordance with that?

CHAIRMAN BARFIELD: Yes. Thank you, Commissioner Wolfe. The proposed agenda item was discussion and potential action regarding an update to the regulations of the RRCA. It was pointed out -- I believe Jim Schneider pointed out that we actually -- the actual -- we took the action at the

last meeting to approve that. And so it will not be necessary to act on that.

What has not been done is to circulate the resolution for signature. So why don't -- why don't we modify the agenda item to say discussion of the status of updating the regulations. And then at that point I'll just tell you that we're going to send it around for signature. Okay?

CHAIRMAN WOLFE: That is acceptable to Colorado.

CHAIRMAN DUNNIGAN: That's acceptable to Nebraska.

CHAIRMAN BARFIELD: Okay. So is there any other potential changes to the agenda?

CHAIRMAN WOLFE: None from Colorado.

CHAIRMAN DUNNIGAN: None from Nebraska.

CHAIRMAN BARFIELD: If not, I'd entertain a motion to adopt the agenda as amended.

CHAIRMAN WOLFE: So moved. This is Commissioner Wolfe.

CHAIRMAN DUNNIGAN: Second. Commissioner Dunnigan.

CHAIRMAN BARFIELD: All right. Let's take a vote. All in favor say aye.

CHAIRMAN WOLFE: Aye.

CHAIRMAN DUNNIGAN: Aye.

CHAIRMAN BARFIELD: Nebraska says aye and Kansas says aye. Thank you. So we'll proceed along this agenda. The first agenda item then is discussion and potential action regarding Colorado's Compact Compliance Pipeline Proposal that they submitted on April 5. I guess I'll just turn it over to Commissioner Wolfe to maybe walk us through this item.

CHAIRMAN WOLFE: Thank you, Chairman Barfield. This is Commissioner Wolfe. And I would first like to thank both of the states for their consideration of holding this special meeting today for consideration of both of Colorado's proposals. So what I would like to do is just provide a brief background of how we got to this point in regards to our proposals and then certainly entertain any additional comments or questions that either states would have based on that presentation. And I anticipate to try to keep this brief and -- so we can move this -- through this in a -- in a expedited fashion.

As the record indicated, we did submit two proposals to the Republican River Compact Administration on April 5th, 2013. The first one

that we're discussing now on the agenda is in regards to Colorado's Compact Compliance Pipeline. And then secondly on the agenda we will be discussing and asking for consideration of a favorable vote on the Bonny Reservoir proposal.

As indicated in my letters -- cover letters, both of these proposals on April 5th, 2013, we designated both of them as fast-tract issues, and thus requested this meeting to vote on those proposals. So pursuant to the offer that was in the cover letter for the Compact Compliance Pipeline proposal -- and I may refer to this also as the CCP proposal for the record.

The Republican River Compact Administration had held an informal work session on April 22nd, and we appreciated both Nebraska and Kansas' willingness to have that informal discussion with hopes that we could work through and discuss what -- any potential questions or concerns there were to see if we could address those, as I indicated in the informal meeting, in hopes that we could seek a favorable decision by all three states today. I hope I'll characterize the discussions accurately in kind of a summary way.

Nebraska had had one question in that

discussion regarding the time frame, when the modeling was first prepared for the future operations of Bonny Reservoir. And I know we'll be getting to that secondarily. But this was a joint discussion of both proposals, so I just want the record to reflect that that discussion took place and we -- the one question that came from Nebraska. And we responded -- our consultant, Willem Schreüder, had responded to that question.

And our -- my recollection of those discussions, too, that Nebraska did not raise any specific issues related to the compliance with the FSS or the Compact in regards to the CCP proposal. Kansas -- State of Kansas had a number of questions that came out of that discussion on the 22nd. And I'll, I think, try to characterize them in kind of four types of questions and requests for information. And I would like to just step through those and indicate what Colorado did in response to those questions.

Kansas had a question regarding the groundwater commission, which is the commission that oversees the administration and permitting and rule-making-type activities within the designated groundwater basins, which is -- includes the

Republican River Basin. And there was a question regarding the banking provision that's described in our proposal and we -- how that would work. And so we responded to that and provided information to both states from our rules that specifically details how the banking provision would apply to the water rights that are associated with our proposal.

Secondly, Kansas had a question regarding a review of groundwater permits to determine the compliance period for the historic consumptive use. That analysis shows from the permit applications that were approved on this that they -- they are limited as described in our proposal, specifically a limit of 2500 acre-feet per year. And there's other provisions that are in those permits that dictate how those limits will be enforced in accordance with the rules that were provided to both states.

Thirdly, there was questions that Kansas had raised in regards to the model runs that Colorado had conducted in regards to its proposal and the operation of the Compact Compliance Pipeline. And this specifically deals with how the groundwater model is informed of the operation of the Compact compliance wells, as well as the deliveries that come from those Compact compliance wells as it's

introduced into the stream system. So those results and examples of that -- those model runs were provided by our consultant, Willem Schreüder, to both states.

And the kind of fourth area that we had talked about, the questions had come up and -- was in regards to a sample Excel spreadsheet that would be used to calculate the projected deliveries. We had talked in concept or in actual specifics in regards to this in accordance with the resolution that's identified as Exhibit A in our application. And so we had said that we would prepare a sample spreadsheet on how those calculated projected deliveries would be made.

But we -- under the time constraints Colorado was unable to complete that task. So we were unable to submit such a sample spreadsheet to both states. And as part of that informal discussion, beyond those questions that were asked, Kansas did not raise any specific issues related to the proposal as it -- regarding the compliance with the FSS or the Compact.

And I guess before I move on, I guess, just in terms of before I introduce the resolution, I would certainly entertain any questions from either

state or comments on that statement I just made, in case I mischaracterized or misrepresented anything that took place in regard to our informal discussion on April 22nd.

(Pause.)

CHAIRMAN DUNNIGAN: David Barfield here. I did not bring my notes of that meeting, so I -- I can't -- certainly the summary you did, those things did transpire. You also did, since the meeting, provide some model runs related to the Bonny simulations you did as well. I would just note that for the record.

CHAIRMAN WOLFE: Yes. That's correct, Chairman Barfield. And I will go into maybe those specifics as well when we get to the Bonny proposal. But thank you for stating that for the record.

(Pause.)

CHAIRMAN WOLFE: This is Commissioner Wolfe again. What I would like to do, I guess just, one, in the interest of time, as well as just documentation for the record, we will provide -- we have provided to each state a complete package of both of our proposals. Those were submitted on April 5th. We would like to make those -- that as part of the record for purposes of today's meeting

and available to the recorder.

And so unless directed otherwise, I guess the essence of our proposal is outlined in the resolution that was attached as Exhibit A to our letter dated April 5th. And I will just introduce that for consideration and action by the RRCA today and ask that we waive, if you will, the reading of the actual resolution by -- verbatim into the record, unless there's an objection.

Colorado has not made any changes to any of those documents. It's a part of the application -- or the proposals that were submitted to both states on April 5th. I guess before I go on I just wanted to make sure that was acceptable to both of the other states.

CHAIRMAN BARFIELD: David Barfield here. Yes. So you're speaking about Exhibit A? It's a five-page resolution that you're speaking of specifically, correct?

CHAIRMAN WOLFE: Yes. It's a -- what's labeled as Exhibit A to the April 5th letter. The -- and what's also further -- just for clarification and a refresher, Exhibit A also incorporates a number of attachments that are in there that are listed as exhibits that are also included in that

proposal. And then what's also referenced in the cover letter is an Exhibit B, which just basically outlines the time frame associated with the process we're under regarding the fast-tracked arbitration process.

CHAIRMAN BARFIELD: Kansas has no objection to that being a part of the record of this meeting.

CHAIRMAN DUNNIGAN: This is Commissioner Dunnigan. I would just note for the record that Exhibit A is six pages long, and there is a date of May 5th, 2013, on that exhibit.

CHAIRMAN WOLFE: Yes. Thank you, Commissioner Dunnigan. And I think I would -- I appreciate you bringing that up. I think when we had submitted this proposal, that we knew we would have to act on it within 30 days. And we had put the date of May 5th on there anticipating this could have gone up on the last day of that period. So I would ask that as part of a decision to act on this, that the record would reflect that as an amendment to that Exhibit A to be dated May 2nd, 2013.

What I would ask at this time is I would like to make a motion to approve this resolution dated May 2nd, 2013. And after such vote, Colorado anticipates that it would like to have a further

comment in regards to that action, depending on how the vote goes. So unless there's any other comments or questions, Colorado would move adoption and approval by the RRCA of its resolution dated May 2nd, 2013, for the Compact Compliance Pipeline.

CHAIRMAN DUNNIGAN: This is Commissioner Dunnigan. I'll second that.

CHAIRMAN BARFIELD: Okay. It's been moved and seconded. And just for clarification, the Exhibit A is six pages, as Commissioner Dunnigan noted, not five as I think I said earlier. And then Commissioner Wolfe suggested that it be dated -- that it be considered to be dated May 2nd, 2013, rather than May 5. Is that correct?

CHAIRMAN WOLFE: Yes, Chairman Barfield. What I would suggest as part of that is, it probably wasn't necessary that on Page 1 at the top that we listed the date, because on Page 6 -- as you indicated, this is a six-page resolution. There is a location where we can actually affix today's date to it, with each of the signatures by each of commission members. So that resolution, I think, is -- what would be reflected in the record is we could remove the date on Page 1 and just let the signature and date on Page 6 stand as the official date and

signature page.

CHAIRMAN BARFIELD: Okay. So is there any other discussion before the vote?

CHAIRMAN DUNNIGAN: Yes. This is Commissioner Dunnigan. I would just note for the record that Colorado's proposal has gone above and beyond the strict requirements of the FSS. And we recognize that some of this is in regard to Colorado state law and other negotiation -- negotiations that have taken place. Nebraska supported the original plan, and the modifications to that plan are also acceptable to Nebraska, and that it is unfortunate that an issue like this would remain unresolved for so many years after it's been presented to the RRCA. And that's all I have.

CHAIRMAN BARFIELD: Okay. Well, thank you, Commissioner Dunnigan. I guess Commissioner Wolfe wanted to make a statement after the vote, and I guess I would -- why don't we go ahead and take the vote. And then I would also like to make a statement after the vote as well. So why don't I call the question. Colorado?

CHAIRMAN WOLFE: Yes.

CHAIRMAN BARFIELD: Nebraska?

CHAIRMAN DUNNIGAN: Yes.

CHAIRMAN BARFIELD: Okay. And Kansas will vote no. And Dick, if you will permit me to maybe make my statement first, then I'll allow you to make your statement and move us further through this issue. You know, these issues are very important and, you know, we worked quite hard, and I believe in good faith, to work -- work through them with Colorado.

You know, Kansas is unable to vote yes today because we're still reviewing several aspects of the most recent version of the proposal; you know, most significantly the modeling results. And as I've spoken to Commissioner Wolfe about Kansas' desire to continue to work toward resolution of the outstanding issues that we do have, that Colorado's revisions in response to our concerns and the arbitrator's decision certainly narrow the issues considerably.

But there still are some issues that are outstanding that we would like to continue to dialogue and work as expeditiously as possible to finish our review and seek to work through those issues. So we have an arbitration process ahead of us, should Colorado elect to do that. And my understanding is they will. We -- as I talked to

Commissioner Wolfe about -- would like to, over the coming weeks, to sort of work through the issues that remain and see if we can, either through additional review of what's been proposed, get comfortable with those aspects of the modeling and such or find some resolution that can be mutually agreed to.

Again, I think there's -- as I told him, of the sort of eight issues that he outlined in his -- in the proposal, you know, there's five or six that I think are fairly simple and it's -- need a little time to work through it. So we're -- so that's where Kansas is at.

CHAIRMAN WOLFE: Thank you, Chairman Barfield. This is Commissioner Wolfe. And first I want to thank Nebraska for their favorable consideration of our proposal. Secondly, in response to Chairman Barfield's statements, I would like to maybe just get some additional clarification. We do appreciate Kansas' statement that they're continuing to be willing to work towards a resolution on this.

But as all three states know, Colorado has been at this for over five years now and did take action on this proposal back in 2009. And we've

worked in earnest to -- in many dozens of meetings, I know, with Chairman Barfield and members of his staff and our staff, working over the last three years, and certainly in earnest since the arbiter's decision on this proposal in 2010.

And so we -- as we've articulated in our application, in particular Exhibit 1 -- and Chairman Barfield had referenced the eight areas under Section 5 of that application that we enumerated in detail, specifically addressing the issues and concerns that were raised by Kansas that were addressed by the -- Arbiter Paygel (phonetic). And so we felt that through those discussions over the last particularly two years, almost three in that process, that we felt that we addressed the concerns of Kansas and felt that we made a good faith effort to present those. And it certainly has continued to seek input from Kansas on that.

So in light of that, Chairman Barfield, if it would be possible, if you could enumerate for us what your remaining issues are. And if it's specific -- on these specific points and whether it's -- because the analysis that you've conducted that's caused you to have this concern to vote no or if it's, as you stated earlier, due to time

constraints; you've just been unable to fully evaluate Colorado's proposal.

CHAIRMAN BARFIELD: Okay. Just give me a moment to gather my notes here to respond.

(Pause.)

CHAIRMAN BARFIELD: Okay. Well, let me give you the -- the principal response there. The first is the modeling aspect of this. I certainly recognize that you -- you know, we suggested that the augmentation flows need to be incorporated into the model. And your proposal does that. The specifics of how it does that is not something we had seen prior to receiving them and do require, I believe, some additional time for us to complete our review and determine, you know, if that's the correct -- or if that's an approach that we can agree to, or if there's some alternative to it.

The second aspect is the South Fork and whether the limitations imposed in the resolution and what you've offered here provide sufficient protection for our -- the South Fork issues. And related to that is the operational limitations. Again, we would like to understand more fully what the resolution does in terms of the operational concerns we had and whether incorporating some of

the elements that we've had during our discussions might make it more complete.

And I think finally, the periodic review aspect. Again, appreciate that you've addressed that. In our discussions we had provided a listing of the elements that we thought should be a part of that periodic review. And we would like to see if we can come to agreement on what -- more specifically incorporate in the document what should be in that review.

CHAIRMAN WOLFE: Thank you, Chairman Barfield. I appreciate your comments on that. And part of my, I guess, questioning or asking for that input was, I guess, leading to the next thing. Given that Kansas has voted no on that, and the time frames and constraints we're under as outlined in our Exhibit B for the arbitration process, does Kansas have any commitments that it's going to make in terms of when it's going to complete the review that you've described there and respond to Colorado with those concerns? And I guess I would just like to explore that a little bit and understand how we can stay on track in accordance with the timelines as outlined in Exhibit B.

CHAIRMAN BARFIELD: Well, thank you. And

yes, again, I would -- as we discussed before the call here, shortly before the call -- anticipate that we would perhaps work through any issues we have related to Issues 3 through 8 maybe in the next week or so. I think there's a -- several of those we can check off as already resolved, and others I think that are fairly easy to resolve; and then work through Issues 1 and 2 related to operational issues and the South Fork issues maybe the week or so after that; and then finally work through the modeling issues hopefully in the second half of May.

CHAIRMAN WOLFE: Colorado appreciates, I guess, the commitment to work through those in the time frame that you've just discussed. I guess -- although I don't think it needs action, but I guess I would ask that hopefully by tomorrow, somehow through our respective attorneys, that we can commit to, you know, memorializing whether -- in whatever fashion we need to get this -- those issues, as you described 3 through 8, discussed and hopefully resolved in a conditional form, if you will, next week and try to set some constraints on the additional work that you said that Kansas needs to complete for the modeling and the operational constraints.

And I'm just, I guess, suggesting that and seeing if there's any agreement to that approach. And certainly if any of the attorneys want to weigh in on that as part of the record here today, I certainly would turn to them as well for their comments or feedback.

CHAIRMAN BARFIELD: This is Commissioner Barfield. Dick -- Commissioner Wolfe, we'll work to make that happen; have our attorneys talk and figure out what would be appropriate in terms of memorializing this commitment.

CHAIRMAN WOLFE: And I guess along those lines, we've got to certainly ensure that Nebraska -- although they voted in support of our proposal, I think it would be important as well that they are kept in the loop to the degree they feel they need to be while we have these discussions in the upcoming weeks.

CHAIRMAN BARFIELD: Okay. Is that it for the CCP issues?

(Pause.)

CHAIRMAN BARFIELD: We look forward to continuing to work with you to work through this issue.

CHAIRMAN WOLFE: Thank you. We appreciate

that.

CHAIRMAN BARFIELD: Okay. Well, with that, I'll move us to the next agenda item, discussion of potential action regarding the Colorado's Bonny Reservoir accounting proposal. And again, Commissioner Wolfe, I'll turn it over to you.

CHAIRMAN WOLFE: Thank you, Chairman Barfield. Similarly to our CCP proposal, Colorado also submitted on April 5th, 2013, a second proposal that's referred to as the Bonny Proposal. It similarly has a cover letter that was dated April 5th, 2013, and also referenced two exhibits. One was Exhibit A, which is referred to as Bonny Exhibit A, which is the resolution for this proposal. And then it also within that resolution references an Exhibit 1, which is attached. And then lastly there's an Exhibit B, which is similar to the Exhibit B in the CCP proposal, with the identical time frames associated with the arbitration process.

Since these were submitted simultaneously, those time frames identified in Exhibit B are the same as in the CCP proposal. And again I'd like, for the record, to have this resolution and the attachments to it incorporated as part of the record

for the reporter. And Colorado does not intend to read verbatim the resolution, but I will represent for the record that this resolution is a three-page resolution that's -- it's referenced as Exhibit A.

And again, this had a date on it on Page 1 of May 5th, 2013. And I will also, in the point of introduction for a vote, I would ask that the resolution be amended to remove that date on Page 1 and left the date, once ultimate action is taken to approve that, be reflected on Page 3 or whatever subsequent page that may be in the future. But it also has a place for a date and signatures by each of the three states.

I'd like to just -- just step through this again. This particular proposal, this is obviously a very important part of Colorado's overall efforts for Compact compliance, particularly in regards to its efforts to achieve not only state-wide compliance, but also to ensure that it meets its obligations under the sub-basin nonimpairment test. And Colorado has taken extensive actions in the basin, not only in regards to the CCP proposal, but in addition to other efforts on acquisition of water rights, both surface and groundwater, as well as land retirement in the basin, throughout the basin.

And I think the record will reflect that Colorado's exhibits demonstrate a continued decline in its degree of noncompliance over the last several years due to those efforts. But we recognize the -- to reach and achieve ultimate compliance, would necessitate the operation of the Compact Compliance Pipeline, as well as its actions that it has undertaken in the South Fork Basin within Colorado, principally regarding the draining of Bonny Reservoir, which is a federal facility, and the -- this action was not taken lightly by Colorado.

We understand it had great impacts to not only water users and recreationalists in Colorado, but the other states surrounding Colorado as well who visited this site. But we recognize this was an action that Colorado needed to take, and that order was given by me to drain Bonny Reservoir to the Bureau back in September of 2011. In the early part of 2012 Bonny Reservoir was drained and has remained in a drained condition with no storage since that point in time.

So this proposal that we have submitted reflects that background, as well as the operational characteristics that would be employed for Bonny Reservoir into the future in terms of its accounting

and operation, as well as the actions and changes that would need to be conducted as part of the groundwater model to reflect these future operational conditions of Bonny Reservoir. And just briefly we've characterized in Exhibit 1 a write-up that describes these kind of three general operational conditions that Bonny Reservoir would result in in the future.

Obviously, currently in a dry condition we refer to that as dry Bonny. And there's a description in that exhibit of how that would be reflected in the groundwater model. And then there's -- the next stage would be a -- anything above the dry condition up to a certain reservoir level that would -- what we characterize as small Bonny.

And the write-up then also describes how that would be modified, changes in the model to reflect the small Bonny condition. And then the last kind of operational condition would be a full Bonny Reservoir, which is that stage in the reservoir that's above what we refer to as small Bonny. And likewise, the exhibit reflects those changes as well in the groundwater model and the associated accounting that goes along with that.

And I guess just as part of that, as well as Chairman Barfield had indicated, based on our meeting from April 22nd the states had requested the model runs from that. And those were provided to the states in -- I guess, before I step on to the next part I just wanted to confirm, it is our belief that you had received them and whether you had an opportunity to look at those runs that were provided by Mr. Schreüder.

CHAIRMAN BARFIELD: This is Commissioner Barfield. We did receive those, I believe, last week. I have not personally examined them, and I'm not sure that our modelers have been able to in this time frame.

CHAIRMAN WOLFE: Okay. I guess at this time I would invite any comments or questions in regards to this proposal. And I would ask each state if they would have any at this time.

CHAIRMAN BARFIELD: Commissioner Wolfe, yeah. This is Commissioner Barfield. Let me go ahead and make my comments here. We appreciate you bringing this proposal. Obviously this is something that we have been discussing in our -- as part of the whole CCP issue, although it is distinct from it, but part of your overall compliance plan as well. Some of

the -- you know, some of the elements of this proposal we've seen, and some of the elements of it are new as well. And so we have not had the opportunity to fully work through sort of our review of that model to determine its impacts fully.

We have started that assessment based on some work we've done. And the implications of this model change are quite significant, just as the implications of draining Bonny were quite significant. It results in some significant reductions in groundwater -- in estimates of groundwater beneficial consumptive use; I mean, on the order of at least, looking into the future, of 6, 7, 8,000 acre-feet for Colorado, and I think some for Kansas as well.

It has some significant implications to Kansas, northwest Kansas compliance test during water-short years, because Colorado -- the South Fork is a part of that. So we -- we're working on it. We just have not had a chance to complete an understanding of the modeling and its implications and appropriateness.

CHAIRMAN WOLFE: Thank you, Chairman Barfield. Oh, go ahead, Commissioner Dunnigan.

CHAIRMAN DUNNIGAN: This is Commissioner

Dunnigan and I would add a few comments. I would note for the record that this appears to be a straight-forward technical issue that needs to be addressed by the RRCA. And this solution reflects real-world conditions and has been before the RRCA for several years.

CHAIRMAN BARFIELD: This is Commissioner Barfield. Just one more thing to add to my statement. When we spoke a few minutes ago on the CCP items, and I spoke about modeling issues in terms of the time frames under which we would seek to work through those, I was including this issue as well. So we're committed to working through these issues in the short-term future.

CHAIRMAN WOLFE: Thank you, Chairman Barfield. And also thank you, Commissioner Dunnigan, for your comments. Just for clarification, Chairman Barfield, you had stated in your comments that -- the concerns of the implications that this proposal would have on Kansas. And I guess I would like further definition of that statement. When you refer to implications, is this conjecture that this has some potential impact on Kansas, or have you looked at the actual analysis and determined that there's

actually a impact and whether those -- that this proposal is any way inconsistent with the Compact or the FSS?

CHAIRMAN BARFIELD: Well, we're still working through, again, what are the implications. Again, it means changes in consumptive use estimates in Colorado and Kansas and, I believe, in Nebraska. that has implications to the computedwater supply and allocations, both on the South Fork, and therefore the South Fork compliance test of the various states. So what does it mean to those? And then in our northwest Kansas test, unused South Fork allocations are part of that test. And if they're dramatically reduced, what does that mean?

CHAIRMAN WOLFE: So if I understand correctly, you've not actually determined what those impacts are. You're just stating that you need to evaluate this proposal to determine how it may affect those parameters that you just described.

CHAIRMAN BARFIELD: Yeah. We're working through that analysis of what they've been historically and what they might be in the future.

CHAIRMAN WOLFE: Okay. Thank you, Chairman. Are there any other comments or questions for Colorado before we take a vote?

(Pause.)

CHAIRMAN WOLFE: Hearing none, I -- Colorado would move adoption by the RRCA of its resolution for the Bonny Proposal as submitted in our April 5th, 2013 -- and again the -- it's referenced as Exhibit A to our April 5th letter. It's a three-page proposal. And I would like that to be incorporated in as part of the record for the reporter today.

CHAIRMAN DUNNIGAN: This is Commissioner Dunnigan. I'll second the motion.

CHAIRMAN BARFIELD: Very good. It's been moved and seconded. Let's take a vote. Commissioner Wolfe?

CHAIRMAN WOLFE: Yes.

CHAIRMAN BARFIELD: Commissioner Dunnigan?

CHAIRMAN DUNNIGAN: Yes.

CHAIRMAN BARFIELD: And Kansas votes no. Okay. Well, thank you for that. And again, we'll work through those issues as we've stated. The next item is discussion of the status of an update to the regulations of the RRCA. And pursuant to the earlier discussion I would note that during the December 11th special meeting of the RRCA we did, in, fact approve those changes that updated, I

believe, the dates of the accounting procedure and the model and change the date by which we should have the annual meeting to September 1. There is provision to extend it, but that's sort of the default expectation of the rule. So I will make sure we move those around for signature pursuant to that previous action. Any other discussion on this point?

CHAIRMAN WOLFE: None from Colorado.

CHAIRMAN DUNNIGAN: None from Nebraska.

CHAIRMAN BARFIELD: Okay. Very good. We'll move on to Item 6, discussion potential action regarding the RRCA annual reports for 2007 to 2011. My understanding is that last week -- well, let me back up. We've had drafts of those five annual reports, which in some cases include summaries of special meetings as well, out on our website for review for some time. It was suggested that we put those on a CD and send it to the states to have to sort of memorialize precisely what we were seeking to approve. We accomplished that last week.

My understanding is that the states have -- have some review of that, and there are some corrections that need to be made. And perhaps after that we can actually consider approving these. So I

guess I'd invite the floor to whoever has comments on those needed changes.

CHAIRMAN WOLFE: This is Commissioner Wolfe. Did we want one of the engineer advisors to articulate those now, or did I understand maybe these could be documented and make the actual amendments and then take this action -- or consideration for action at a further date after we've looked at all of the amendments that might be the most appropriate to make sure we've caught everything?

I think from what Ivan Franco has indicated to me that we are acceptable with the amendments being proposed. But maybe just in -- for efficiency sake and completeness, maybe we ought to just direct the engineer advisors to document those actual amendments and circulate those for concurrence by all three states and defer action on this agenda item until a subsequent meeting.

CHAIRMAN BARFIELD: Okay. How extensive are the changes that are suggested? Chelsea, can you answer that, or who is the appropriate person?

MS. ERICKSON: This is Chelsea Erickson in Stockton. I can probably answer that. I would say the changes are minor. A couple of them have

already been made. But considering the time frame, perhaps it would be better to have a little more time for people to complete their review, if they have not. Otherwise, I do have -- I can do the memorializing that list, if that's what people want to do.

CHAIRMAN BARFIELD: David Barfield here. I guess if there's sort of a list, perhaps it is best to -- to circulate that list and make sure everybody's agreeable and to act on this next time. Is that the consensus of the group? Anybody opposed to that procedure?

CHAIRMAN WOLFE: Colorado is acceptable to that proposal.

CHAIRMAN DUNNIGAN: That's also acceptable to Nebraska.

CHAIRMAN BARFIELD: Very good. I don't think that needs any sort of resolution or vote, so we'll plan on that then. So again if -- if the states can provide Chelsea, I guess, with any final corrections, we'll hopefully be able to approve those five annual reports at our next meeting. Okay. Well, that completes our agenda. I would take a motion for adjournment.

CHAIRMAN WOLFE: So moved.

CHAIRMAN DUNNIGAN: Second.

CHAIRMAN BARFIELD: All right. I'll take that as were adjourned. Thank you very much.

CHAIRMAN WOLFE: Thank you all.

* * * CONCLUSION OF MEETING AT 4:05 P.M. * * *

C E R T I F I C A T E

I, Coleen F. Boxberger, Registered Professional Reporter, do hereby certify the above and foregoing teleconference was taken at the time and place as specified; that the same was taken before myself in shorthand and later transcribed and extended into typewritten form to the best of my ability, and is a true and correct extension hereof;

Coleen F. Boxberger, R.P.R.
P.O. Box 184
Russell, KS 67665-0184

Republican River Compact Special Meeting

May 2, 2013 – via Telephonic Conference

Attendance by Location

Name	Representing
Topeka, Kansas – Division of Water Resources Headquarters	
David Barfield	Kansas Commissioner, Chair
Chris Beightel	Kansas Division of Water Resources
Chris Grunewald	Kansas Attorney General's Office
Burke Griggs	Kansas Attorney General's Office
Stockton, Kansas – Division of Water Resources Field Office	
Chelsea Erickson	Kansas Division of Water Resources
Courtland, Kansas – Kansas Bostwick Irrigation District Office	
Kenneth Nelson	Manager, Kansas Bostwick
Colby, Kansas – Groundwater Management District #4 Office	
Wayne Bossert	Manager, Groundwater Management District #4
Scott Ross	Kansas Division of Water Resources
Denver, Colorado – Colorado Division of Water Resources Headquarters	
Dick Wolfe	Colorado Commissioner
Mike Sullivan	Colorado Division of Water Resources
Ivan Franco	Colorado Division of Water Resources
Scott Steinbrecher	Colorado Attorney General's Office
Wray, Colorado - Republican River Water Conservation District Office	
Deb Daniel	Manager, Republican River Water Conservation District
Dawn Webster	Republican River Water Conservation District
Dennis Coryell	Republican River Water Conservation District
Jack Dowell	Republican River Water Conservation District
Bill Cure	Colorado landowner
Roy Smith	Y-W Groundwater Management District
Denny Salvador	Y-W Groundwater Management District
Brent Deterding	Central Yuma Groundwater Management District
Nate Midcap	Frenchman, Marks Butte, Central Yuma & Sandhills Groundwater Management Districts
Unspecified Colorado Call-In Locations	
Dave Keeler	Colorado Division of Water Resources
Devin Ridnour	Colorado Division of Water Resources
Jim Martin	Colorado Division of Water Resources
Janelle Myotte	Colorado Division of Water Resources
Peter Ampe	Republican River Water Conservation District

May 2, 2013

Name	Representing
Unspecified Colorado Call-In Locations	
Dennis Montgomery	Republican River Water Conservation District
Willem Schreüder	Principia Mathematica
BreAnn Ferguson	Plains and East Cheyenne Groundwater Management District
Lincoln, Nebraska -Department of Natural Resources Headquarters	
Brian P. Dunnigan	Nebraska Commissioner
Jim Schneider	Nebraska Department of Natural Resources
Jesse Bradley	Nebraska Department of Natural Resources
Justin Lavene	Nebraska Attorney General's Office
Tom Wilmoth	Council for Nebraska
Don Blankenau	Council for Nebraska
Tom Riley	Flatwater Group
David Kracman	Flatwater Group
Mark Groff	Flatwater Group
Dean Edson	Independent
McCook, Nebraska - United States Bureau of Reclamation Office	
Aaron Thompson	Bureau of Reclamation
Bill Peck	Bureau of Reclamation
Steve Cappel	Middle Republican Natural Resource District
John Palic	Middle Republican Natural Resource District
Bill Hoyt	Middle Republican Natural Resource District
James Uerling	Middle Republican Natural Resource District
Don Felker	Frenchman Valley and H&RW
Red Cloud, Nebraska - Nebraska Bostwick Irrigation District Office	
Tracy Smith	Nebraska Bostwick Irrigation District
Curtis, Nebraska - Middle Republican Natural Resource District Office	
Dan Smith	Manager, Middle Republican Natural Resource District
Imperial, Nebraska - Upper Republican Natural Resource District Office	
Nate Jenkins	Assistant Manager, Upper Republican Natural Resource District

AMENDED AGENDA FOR

SPECIAL MEETING OF THE
REPUBLICAN RIVER COMPACT ADMINISTRATION

May 2, 2013, 3:00 p.m., Central Standard Time
Via Telephone

1. Introductions
2. Modification and adoption of agenda
3. Discussion and potential action regarding Colorado's Compact Compliance Pipeline proposal submitted on April 5, 2013.
4. Discussion and potential action regarding Colorado's Bonny Reservoir Accounting proposal submitted on April 5, 2013.
5. Discussion regarding the status of updating the RRCA Rules and Regulations.
6. Discussion and potential action regarding RRCA Annual Reports for 2007 to 2011.
7. Adjournment

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WATER RESOURCES

John W. Hickenlooper
Governor

Mike King
Executive Director

Dick Wolfe, P.E.
Director/State Engineer

April 5, 2013

David Barfield
Kansas Commissioner, RRCA
Kansas Division of Water Resources
109 SW 9th Street, 2nd Floor
Topeka, KS 66612-1283

Brian Dunnigan
Nebraska Commissioner, RRCA
Nebraska Department of Natural Resources
301 Centennial Mall South
P.O. Box 94676
Lincoln, NE 68509-4676

Re: Colorado Compact Compliance Pipeline Proposal; Submittal to RRCA

Dear Commissioners Barfield and Dunnigan,

The State of Colorado hereby submits its Compact Compliance Pipeline Proposal ("CCP Proposal") to the RRCA pursuant to section VII.A of the Final Settlement Stipulation. A copy of the CCP Proposal is attached hereto as Exhibit A.

Further pursuant to section VII.A.3, Colorado designates the CCP Proposal as a "Fast Track" issue for action by the RRCA within the next 30 days. A schedule for resolution before the RRCA, and for non-binding arbitration, is attached hereto as Exhibit B. Colorado requests the Chairman schedule a special meeting of the RRCA on or before May 5, 2013.

Best Regards,

Dick Wolfe

Dick Wolfe, P.E.
Colorado Commissioner, RRCA
State Engineer
Colorado Division of Water Resources

RESOLUTION BY THE REPUBLICAN RIVER COMPACT ADMINISTRATION APPROVING AN AUGMENTATION PLAN AND RELATED ACCOUNTING PROCEDURES FOR THE COLORADO COMPACT COMPLIANCE PIPELINE

May 5, 2013

Whereas, the States of Kansas, Nebraska, and Colorado entered into a Final Settlement Stipulation ("FSS") as of December 15, 2002, to resolve pending litigation in the United States Supreme Court regarding the Republican River Compact ("Compact") in the case of *Kansas v. Nebraska and Colorado*, No. 126 Original;

Whereas, the FSS was approved by the United States Supreme Court on May 19, 2003;

Whereas, the State of Colorado's Computed Beneficial Consumptive Use of the waters of the Republican River Basin exceeded Colorado's Compact Allocation using the five-year running average to determine Compact compliance from 2003 through 2012, as provided in Subsection IV.D of the FSS;

Whereas, the Republican River Water Conservation District is a water conservation district created by Colorado statute to assist the State of Colorado to comply with the Compact;

Whereas, the Republican River Water Conservation District, acting by and through its Water Activity Enterprise ("RRWCD WAE"), has acquired fifteen wells ("Compact Compliance Wells") in the Republican River Basin in Colorado and has constructed collector pipelines, a storage tank, a main transmission pipeline, and an outlet structure capable of delivering groundwater to the North Fork of the Republican River for the sole purpose of offsetting stream depletions in order to comply with the State of Colorado's Compact Allocations;

Whereas, the RRWCD WAE has purchased groundwater rights in the Republican River Basin within Colorado and proposes to pump the historical consumptive use of some or all of these groundwater rights from the Compact Compliance Wells into the pipeline it has constructed and deliver that water into the North Fork of the Republican River near the Colorado/Nebraska State Line to offset stream depletions in order to comply with Colorado's Compact Allocations (the "Colorado Compact Compliance Pipeline" or the "Pipeline");

Whereas, the States of Kansas, Nebraska, and Colorado adopted a Moratorium on New Wells in Subsection III.A of the FSS, with certain exceptions set forth in subsection III.B of the FSS;

Whereas, Subsection III.B.1.k of the FSS provides that the Moratorium shall not apply to wells acquired or constructed by a State for the sole purpose of offsetting stream depletions in order to comply with its Compact Allocations, provided that such wells shall not cause any new net depletion to stream flow either annually or long term;

Whereas, Subsection III.B.1.k of the FSS further provides that augmentation plans and related accounting procedures submitted under this Subsection III.B.1.k shall be approved by the Republican River Compact Administration ("RRCA") prior to implementation;

Whereas, Subsection I.F of the FSS also provides that: "The RRCA may modify the RRCA Accounting Procedures, or any portion thereof, in any manner consistent with the Compact and this Stipulation;" and

Whereas, the State of Colorado and the RRWCD WAE have submitted a revised application for approval of an augmentation plan and related accounting procedures for the Pipeline to account for water delivered to the North Fork of the Republican River for the purpose of offsetting stream depletions in order to comply with Colorado's Compact Allocations.

Now, therefore, it is hereby resolved that the RRCA approves an augmentation plan and the related accounting procedures for the Colorado Compact Compliance Pipeline subject to the terms and conditions set forth herein. The Colorado Compact Compliance Pipeline project is described in the revised application submitted by the State of Colorado and the RRWCD WAE, which is attached hereto as Exhibit 1. The augmentation plan for the Pipeline and the terms and conditions for the operation of the augmentation plan are described below. The related accounting procedures are included in the revised RRCA Accounting Procedures and Reporting Requirements ("revised RRCA Accounting Procedures"), which are attached hereto as Exhibit 2. This approval of the augmentation plan and the related accounting procedures for the Pipeline is subject to the following terms and conditions:

1. The average annual historical consumptive use of the groundwater rights that will be diverted at the Compact Compliance Wells shall be the amounts determined by the Colorado Ground Water Commission pursuant to its rules and regulations, as shown on Exhibit 3.

2. Diversions from any individual Compact Compliance Well shall not exceed 2,500 acre-feet per year.

3. Diversions during any calendar year under the groundwater rights listed on Exhibit 3 and any additional groundwater rights approved for diversion through the Compact Compliance Wells pursuant to paragraph 11 shall not exceed the total average annual historical consumptive use of the rights, except that banking of groundwater shall be permitted in accordance with the rules and regulations of the Colorado Ground Water Commission, subject to the terms and conditions of this resolution.

4. Diversions from the Compact Compliance Wells shall be measured by totalizing flow meters in compliance with the Colorado State Engineer's rules and regulations for the measurement of groundwater diversions in the Republican River basin, and the measured

groundwater pumping from such wells shall be included in the base "run" of the RRCA Groundwater Model in accordance with paragraph III.D.1 of the revised RRCA Accounting Procedures. Net depletions from the Colorado Compact Compliance Wells shall be computed by the RRCA Groundwater Model and included in Colorado's Computed Beneficial Consumptive Use of groundwater pursuant to paragraph III.D.1 of the revised RRCA Accounting Procedures (See Exhibit 2; also Exhibit 4).

5. Deliveries from the Colorado Compact Compliance Pipeline to the North Fork of the Republican River shall be measured by a Parshall flume or other measuring device located at the outlet structure. Authorized representatives of Kansas and Nebraska shall have the right to inspect the Parshall flume and other measurement devices for the Pipeline at any reasonable time upon notice to the RRWCD WAE.

6. Each year, the measured deliveries from the Colorado Compact Compliance Pipeline, to the extent they are in compliance with this resolution, shall offset stream depletions to the North Fork of the Republican River sub-basin on an acre-foot for acre-foot basis in accordance with the revised RRCA Accounting Procedures.

7. Each year, the measured deliveries from the Colorado Compact Compliance Pipeline shall be added to the RRCA Groundwater Model in all model runs in accordance with the revised RRCA Accounting Procedures (See Exhibit 2; also Exhibit 4).

8. Colorado shall determine the Projected Augmentation Water Supply Delivery ("Projected Delivery") for the upcoming accounting year (the "subject accounting year") to estimate the volume of augmentation water that will be delivered from the Pipeline during the subject accounting year as provided below, and the RRWCD WAE shall make deliveries from the Pipeline as provided below:

    A. Colorado will initially estimate the Projected Delivery required for the current year based on the largest stream depletions to the North Fork of the Republican River sub-basin during the previous five years without Pipeline deliveries. The RRWCD WAE will begin deliveries from the Colorado Compact Compliance Pipeline during the subject accounting year based on the Projected Delivery and shall make a minimum delivery of 4,000 acre-feet per year as provided below.

    B. Accounting for deliveries will start January 1 of each year.

    C. The RRWCD WAE will begin deliveries from the Pipeline on January 1 and will make the minimum annual delivery of 4,000 acre-feet during the months of January, February, and March, unless such deliveries cannot be made due to operational conditions beyond the control of the RRWCD WAE. If the minimum annual delivery of 4,000 acre-feet cannot be made during the months of January,

February and March due to such operational conditions, Colorado will consult with Nebraska and Kansas to schedule such deliveries later in the year.

D. Colorado will calculate and provide notice to the Kansas and Nebraska RRCA Members by April 1, of the Projected Delivery as provided in the Colorado resolution. Unless Colorado determines by April 1 that it will not be able to deliver additional required augmentation water in October through December, Colorado shall stop deliveries at the end of March. If Colorado anticipates that deliveries in the months of November and December will not be sufficient for Compact compliance, Colorado will maximize deliveries first in January, then sequentially in the months of February, March, and April. Deliveries will be made in May only if there is reason to believe that additional deliveries in the months of October through December will not be sufficient for Compact compliance.

E. Because the final accounting for determining Compact compliance is not done until after the compact year is completed and because Colorado's allocations and computed beneficial consumptive use are dependent upon such factors as runoff, the amount of pumping, precipitation and crop evapotranspiration, Colorado cannot know the precise amount of augmentation water that will be needed in any given year. However, because Compact accounting is done on a five-year running average, Colorado will know the accounting for the previous four years and will know whether there is a deficit from the prior four years that will need to be made up in the subject accounting year in addition to the delivery required for the coming year. After the initial minimum delivery of 4,000 acre-feet, Colorado will collect preliminary data for Compact accounting for the subject accounting year and, no later than September 1 of the subject accounting year, will update the Projected Delivery required for the remainder of the subject accounting year, including any deficit owed from the previous 4 years, less the initial minimum delivery of the 4,000 acre-feet that has already been delivered; provided that during the first four years of full operation of the Pipeline under this augmentation plan, the RRWCD WAE may limit deliveries to the updated Projected Delivery for the subject accounting year or the updated Projected Delivery for the subject accounting year plus a percentage of the deficit owed from the previous 4 years to prevent large over deliveries in subsequent years.

F. After updating the Projected Delivery, as described above, if additional deliveries in excess of the initial delivery of 4,000 acre-feet are necessary, Colorado and the RRWCD WAE will maximize such additional deliveries first in the month of December, then November and October of the subject accounting year. If the total necessary additional deliveries cannot be made within those three months,

Colorado will attempt to schedule those deliveries in April and May of the subject accounting year, or at such time so as to avoid, to the extent practicable, deliveries during the subject accounting year's irrigation season.

G. Colorado's shortage and Projected Delivery will be calculated in accordance with the FSS.

9. The as-built design for the Colorado Compact Compliance Pipeline, including the location of the Compact Compliance Wells and the river outlet structure, is described in the revised application attached hereto as Exhibit 1. No future changes to the Pipeline that would materially change the location of the Compact Compliance Wells or the river outlet structure shall be made without prior approval of the RRCA.

10. Augmentation credit for deliveries from the Pipeline to the North Fork of the Republican River shall be limited to offsetting stream depletions to the North Fork of the Republican River Colorado sub-basin for the purpose of determining Colorado's compliance with the sub-basin non-impairment requirement (Table 4A) and for calculating Colorado's five-year running average allocation and computed beneficial use for determining Compact compliance (Table 3A).

11. The RRWCD WAE may acquire additional groundwater rights to be diverted through the Compact Compliance Wells upon the terms and conditions of this resolution, provided that such groundwater rights in total do not to exceed an average annual historical consumptive use of 1,500 acre-feet, as determined by the Colorado Ground Water Commission in accordance with its rules and regulations. The State of Colorado and the RRWCD WAE shall file a notice with the RRCA identifying the additional groundwater rights and the historical consumptive use of the groundwater rights. The RRCA members shall have sixty days from the date the notice is given to review the information. If no objection is made within sixty days from the date the notice is given, the additional groundwater rights may be pumped through the Compact Compliance Wells upon the terms and conditions of this resolution. If an objection is made by any RRCA member, the objection shall be shall be given in writing to the RRWCD WAE within 60 days from the date the notice is given and the notice shall be treated as an application for approval of an augmentation plan and related accounting procedures under Subsection III.B.1.k of the FSS and the State of Colorado and the RRWCD WAE may submit any additional information to address the objection. Any increase in the groundwater rights to be diverted through the Compact Compliance Wells, other than as provided in this paragraph, shall require approval of the RRCA.

12. The approval of this augmentation plan and the related accounting procedures for the Pipeline shall not govern the approval of any future proposed augmentation plan and

related accounting procedures submitted by the State of Colorado or any other State under Subsection III.B.1.k of the FSS.

13. The approval of this augmentation plan and the related accounting procedures for the Pipeline shall not waive any State's rights to seek damages from any other State for violations of the Compact or the FSS subsequent to December 15, 2002.

14. Except for the approval of the augmentation plan and the related accounting procedures as provided herein, nothing in this Resolution shall relieve the State of Colorado from complying with the obligations set forth in the Compact or FSS.

15. The approval of this augmentation plan and the related accounting procedures for the Pipeline shall be subject to review every twenty years after the date of the approval of this resolution to determine whether aquifer conditions are capable of sustaining the augmentation plan based on the Pipeline; provided that the Pipeline may continue in operation in accordance with this resolution unless there is a substantial change in aquifer conditions demonstrating the augmentation plan for the Pipeline is not sustainable. The State suggesting that there has been a change in aquifer conditions demonstrating that the augmentation plan is not sustainable shall have the burden of proof on that issue. If it is determined that there has been a change in aquifer conditions demonstrating that the augmentation plan for the Pipeline is not sustainable, Colorado shall propose a plan to comply with the State of Colorado's Compact Allocations.

Approved by the RRCA this ____ day of ____, 2013.

_____ _____

Brian Dunnigan, P.E. date
Nebraska Member

_____ _____

David Barfield, P.E. date
Kansas Member
Chairman, RRCA

_____ _____

Dick Wolfe, P.E. date
Colorado Member

Exhibit 1

REVISED APPLICATION FOR APPROVAL OF AN AUGMENTATION PLAN AND RELATED ACCOUNTING PROCEDURES UNDER SUBSECTION III.B.I.K. OF THE FINAL SETTLEMENT STIPULATION IN KANSAS V. NEBRASKA AND COLORADO, NO. 126, ORIGINAL

For

The Colorado Compact Compliance Pipeline

Submitted by

The State of Colorado
And
The Republican River Water Conservation District, acting by and through its Water Activity Enterprise

April 5, 2013

Exhibit 1

STATE OF COLORADO
DIVISION OF WATER RESOURCES
1313 Sherman Street, Room 818
Denver, Colorado 80203
(303) 866-3581

Colorado Compact Commissioner	Dick Wolfe
Colorado Engineer Advisor	Michael Sullivan

REPUBLICAN RIVER WATER CONSERVATION DISTRICT
410 MAIN STREET, SUITE 8
WRAY, COLORADO 80758
(970) 332-3552

BOARD MEMBERS

Dennis Coryell, President
Greg Larson, Vice President
Tim Pautler, Secretary
Byron Weathers, Treasurer
Eugene Bauerle
Wil Bledsoe
Brent Deterding
Jack Dowell
Garry Kramer
Steve Kramer
Rod Lenz
Stan Laybourn
Rod Mason
Wayne Skold
Aaron Sprague

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Exhibit 1

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1.0 INTRODUCTION

In March 2008, the State of Colorado submitted an application to the Republican River Compact Administration (RRCA) requesting approval of an augmentation plan and revisions to the RRCA Accounting Procedures pursuant to Subsection III.B.1.k of the Final Settlement Stipulation (FSS) for a pipeline project to deliver groundwater to the North Fork of the Republican River (the "Colorado CCP" or "CCP"). The purpose of the project was to offset stream depletions so that Colorado can comply with its Compact Allocations.

In 2009, Colorado submitted two resolutions to the RRCA to approve an augmentation plan and proposed revisions to the RRCA Accounting Procedures. The RRCA did not approve the resolution, and Colorado then invoked non-binding arbitration pursuant to the FSS to resolve the dispute. An arbitrator was selected, and Colorado resolved Nebraska's concerns with the CCP prior to the arbitration hearing.

On October 7, 2010, Arbitrator Martha Pagel issued a Final Decision on the Colorado CCP Dispute which addressed deficiencies that Kansas had raised concerning the Colorado CCP. The Arbitrator concluded that Kansas had not unreasonably withheld its consent to the CCP proposal; however, the Arbitrator concluded that with certain clarifications and revisions she recommended in the Decision, the CCP proposal would provide a reasonable and necessary approach for meeting Colorado's Compact obligations that should be approved by the RRCA.

This revised application for approval of an augmentation plan and related accounting procedures for the Colorado CCP is based on the agreement between Colorado and Nebraska, the Arbitrator's Final Decision, and subsequent discussions with Kansas.

1.1. The Republican River Compact and the Final Settlement Stipulation in *Kansas v. Nebraska and Colorado*

Colorado, Kansas, and Nebraska entered into the Republican River Compact (Compact), which became operative in 1943, to allocate the waters of the Republican River Basin. The Compact allocates water for beneficial consumptive use to each State derived from the computed average annual virgin water supply for designated drainage basins (sub-basins).

In 1959, pursuant to Article IX of the Compact, the RRCA was formed to administer the Compact. Each State appoints one member to the RRCA, but the RRCA requires unanimity to take any action.

Following the formation of the RRCA, the States debated whether the Compact included ground water in the water supply allocated for beneficial consumptive use. The States were unable to resolve this dispute, and in 1997 Kansas filed a motion with the U.S. Supreme Court for leave to file a bill of complaint against Nebraska claiming that Nebraska was violating the Compact by permitting excessive pumping of groundwater. In January 1999, the U.S. Supreme Court granted Kansas' motion. Although Kansas made no claims against Colorado in its initial complaint, Colorado was named a party to the suit because it is a signatory to the Compact.

A special master was appointed, and settlement negotiations resulted in a Final Settlement Stipulation (FSS). In the FSS, the States agreed to (1) dismissal of all claims against each other with respect to activities or conditions occurring before December 15, 2002; (2) a moratorium on the construction of all new wells in the basin upstream of Guide Rock, Nebraska, with certain exceptions listed in the FSS; (3) the development of a groundwater model to determine stream flow depletions caused by well pumping and the credit for water imported into the basin; (4) revised accounting procedures to determine Compact compliance; and (5) a procedure to resolve disputes relating to Compact administration. The U.S. Supreme Court approved the FSS in 2003.

1.2. Subsection III.B.1.k of the FSS

Subsection III.B.1.k of the FSS provides that the moratorium on the construction of new wells in the basin upstream of Guide Rock, Nebraska, does not apply to wells acquired or constructed for the purpose of offsetting stream depletions in order to comply with a State's Compact Allocations. Subsection III.B.1.k includes a proviso that such wells "shall not cause any new net depletion to stream flow either annually or long-term." It further states:

> The determination of net depletions from these Wells will be computed by the RRCA Groundwater Model and included in the State's Computed Beneficial Consumptive Use. Augmentation plans and related accounting procedures submitted under this Subsection III.B.1.k. shall be approved by the RRCA.

1.3. The Republican River Water Conservation District

In 2004, the Republican River Water Conservation District ("RRWCD" or "District") was created to assist Colorado in complying with Compact. The RRWCD is located in northeastern Colorado and includes all of Yuma and Phillips Counties and

those portions of Kit Carson, Lincoln, Logan, Sedgwick, and Washington Counties that overlie the Ogallala aquifer. Figure 2 is a map showing the boundaries of the RRWCD and local groundwater management districts, as well as the approximate location of the pipeline. Currently, with the exception of approximately 200 acres irrigated by surface water, virtually all the irrigated acreage in the RRWCD is irrigated with groundwater from the Ogallala aquifer.

The RRWCD established a water activity enterprise (the RRWCD WAE) as authorized by Colorado statute and imposed a water use fee on the diversion of water in the District to raise revenues to assist Colorado in complying with the Compact. The RRWCD WAE has used revenues from use fees to retire approximately 48,000 acres that were historically irrigated with groundwater in the District. In addition, revenues have been used to purchase and lease surface water rights in the District to reduce beneficial consumptive use in Colorado by approximately 3,000 acre-feet per year.

1.4. The Ground Water Rights for the CCP and the Compact Compliance Wells

In 2009, the RRWCD WAE purchased groundwater rights that will be diverted for the CCP. These ground water rights are located north of the North Fork of the Republican River in Colorado and have an aggregate historical consumptive use of approximately 13,000 acre-feet per year. The RRWCD WAE also acquired easements for fifteen well sites, collector pipelines, a storage tank, and a main transmission pipeline, and acquired a parcel of land for an outlet structure on the North Fork of the Republican River for the CCP. In 2012, construction of the CCP was completed.

The groundwater rights acquired by the RRWCD WAE for the CCP were historically used for irrigation in the Republican River Basin in Colorado. The RRWCD WAE applied to change the use of these groundwater rights and to consolidate them at eight existing wells (Compact Compliance Wells) to be used to pump groundwater from the Ogallala aquifer to the North Fork of the Republican River. An additional seven existing wells will be alternate points of diversion that can be brought into production in the future as needed. The location of the CCP, including the Compact Compliance Wells, is shown in Figure 4.

The historical consumptive use of the groundwater rights that will be diverted at the Compact Compliance Wells is discussed in Section 2.1.1.

The 15 Compact Compliance Wells have a pumping capacity between 1,500 to 1,800 gallons per minute per well. New motors, pumps and a valve vault with control and measurement valves have been installed at each well. PVC collector pipelines connect the wells to a 140,000 gallon storage tank. Water will be delivered from the storage tank to the North Fork of the Republican River by gravity through 12 miles of 42" to 30" diameter pipe at rates up to 40 cfs. At the outlet structure near the river, water will be discharged through a multiple-orifice valve located in a partially buried concrete outlet structure, which dissipates the pressure head before the water is discharged into a rip-rap lined outlet channel and then enters the river.

Surge control and flow measurement have been provided at the outlet structure, along with a measurement flume located in the outlet channel. The CCP is initially capable of delivering 15,000 acre-feet per year. However, the capacity of the CCP can be increased to 25,000 acre-feet per year in the future if additional wells are connected to the system and additional groundwater rights are acquired.

1.5. The Arbitrator's Final Decision

In the Final Decision, the Arbitrator concluded that Kansas had not unreasonably withheld its consent to the CCP proposal with respect to five of the factual issues. At a minimum, the Arbitrator concluded that the CCP proposal was deficient in its current form because it did not adequately incorporate into a single, integrated proposal all of the operational details and limits Colorado had described and relied upon at the trial. However, the Arbitrator concluded that with certain clarifications and revisions recommended in the Decision, the CCP proposal "represents an appropriate and necessary augmentation plan that should be approved by the RRCA." (Colorado Compact Compliance Pipeline Dispute, Arbitrator's Final Decision (October 7, 2010) at 4)

Following the Arbitrator's Final Decision, Colorado and Kansas have conducted additional discussions in an effort to resolve Kansas' concerns regarding the Colorado CCP. This revised application incorporates the operational details and limits Colorado described and relied upon at the 2010 arbitration trial, as well as modifications based on the Arbitrator's Final Decision and subsequent discussions with Kansas.

1.6. Project Sponsor of the Colorado CCP – The Republican River Water Conservation District, acting by and through its Water Activity Enterprise

The RRWCD encompasses approximately 7,761 square miles or about 7.5% of Colorado's 104,247 square miles. A map of the RRWCD boundaries is shown in Figure

2. The RRWCD is managed and controlled by a 15-member board of directors comprised of one member appointed by the county commissioners of each of the seven counties wholly or partially within the RRWCD, one member appointed by the boards of the seven ground water management districts within the RRWCD, and one member appointed by the Colorado Ground Water Commission ("CGWC").

The RRWCD Board of Directors has imposed use fees on the diversion of water within the District. In 2008, the use fee on the diversion of water for irrigation use was increased to $14.50 per assessed irrigated acre to pay for the Colorado CCP. There are approximately 500,500 assessed irrigated acres within the RRWCD subject to the use fee, and use fees generate approximately $7.3 million per year to repay the CWCB loan for the Colorado CCP and for other expenses.

The RRWCD WAE uses a portion of the revenues collected from use fees to purchase and/or lease surface water rights to reduce Colorado's beneficial consumptive use and to provide local cost-sharing for federal programs designed to retire irrigated acreage in the basin, including the Republican River Conservation Reserve Enhancement Program (CREP) and the Environmental Quality Improvement Program (EQIP). To date, approximately 48,000 irrigated acres have been voluntarily retired in the basin under CREP and EQIP, or approximately ten percent (10%) of the irrigated acreage in the basin. RRWCD WAE has submitted to the US. Department of Agriculture for its approval an amendment to the Republican River CREP designed to retire an additional 30,000 irrigated acres. The RRWCD WAE has committed to provide local cost-sharing for the amendment. CREP is an important part of the RRWCD's efforts to implement conservation measures in the basin to reduce ground water pumping in Colorado to assist in meeting Colorado's compact obligations. However, reduction of ground water pumping in Colorado alone is not sufficient for Colorado to comply with its Compact obligations. Therefore, the RRWCD has constructed the Colorado CCP.

2.0 PROPOSED AUGMENTATION PLAN AND RELATED ACCOUNTING PROCEDURES

2.1. Groundwater Water Rights Acquired for the CCP

2.1.1. The Historical Consumptive Use of the Groundwater Rights

A change of use and a change of well location of ground water rights permitted under the Colorado Ground Water Management Act requires approval of the CGWC.

The procedures for changing the use of existing rights to designated ground water based on historical consumptive use are established in the CGWC's rules and regulations.

In 2008, the RRWCD WAE applied to the CGWC to change the use of the ground water rights acquired for the CCP and to consolidate them at fifteen existing wells (Compact Compliance Wells) to be used to offset stream depletions in order to comply with Colorado's Compact Allocations, with provision for limited use to revegetate the lands historically irrigated by the ground water rights. Initially, only eight of the wells will be used to pump ground water for the Colorado CCP, and seven wells will serve as backup if additional well capacity is needed. The locations of the 15 wells are shown in Figure 4 (wells A2 through A8, and B5 are the initial wells; wells numbered A1 and B1 through 4, B6, and B7 are the backup wells).

The lands historically irrigated by the ground water rights for the CCP are shown in Figure 3. The average annual historical consumptive use was determined for the period 1998-2007 from historical cropping records, pumping estimated from power consumption records and a power coefficient that converts the kilowatt-hours to acre-feet pumped, irrigated acreage, and climate records. The crop irrigation requirement was determined using the same procedures used in the RRCA Accounting Procedures.

Nebraska and Kansas previously reviewed the average annual historical consumptive use calculations for the groundwater rights to be used in the CCP. Nebraska provided comments and Colorado revised the average annual historical consumptive use amounts based on Nebraska's comments. The Colorado Division of Water Resources also provided comments, resulting in additional changes to average annual historical consumptive use amounts. The Compact Compliance Wells will cause no new net depletions because pumping will be limited to the historical consumptive use of the existing rights.

The final average annual historical consumptive use amounts of the groundwater rights that were acquired for the CCP have now been determined by the CGWC pursuant to its rules and regulations, which are shown in Table 1. The CGWC's rules and regulations limit withdrawals under the groundwater rights that were acquired for the CCP to the historical consumptive use of the groundwater rights, subject to banking provisions in the rules. Colorado has incorporated these limits and the provision for banking in the proposed resolution.

In areas where a ground water management district (GWMD) has been formed, the board of directors of the GWMD can prohibit the use of ground water outside the boundaries of the GWMD. All but one of the ground water rights acquired for the CCP are located within the Sandhills GWMD, and the RRWCD WAE filed an application with the Sandhills GWMD for approval to export ground water from the Sandhills GWMD, and the Sandhills GWMD has approved the export, subject to terms and conditions contained in its order. A copy of the order is attached as Appendix A.

One ground water right acquired by the RRWCD WAE for the CCP is located in the Central Yuma GWMD, but the RRWCD WAE has not requested approval of the Central Yuma GWMD for export at this time and this right is not included in the proposed augmentation plan at this time.

2.1.2. Additional Terms and Conditions on Pumping from the Compact Compliance Wells

The Colorado State Engineer has adopted rules and regulations for the Republican River Basin in Colorado that require measurement of ground water withdrawals. Totalizing flow meters have been installed on the Compact Compliance Wells in compliance with the State Engineer's rules and regulations, and pumping from the Compact Compliance Wells will be measured in accordance with those rules and regulations and will be provided to the Division of Water Resources for inclusion in the RRCA Groundwater Model in accordance with Subsection III.B.1.k of the FSS. Terms and conditions requiring measurement of withdrawals by totalizing flow meters and including the pumping in the RRCA Groundwater Model are incorporated into the proposed resolution to approve the augmentation plan and revised RRCA Accounting Procedures for the CCP.

As a term and condition of the change of the groundwater rights to the Compact Compliance Wells, the RRWCD WAE agreed that diversions from any individual Compact Compliance Well shall be limited to no more than 2,500 acre-feet per year. This limit was included here and in the proposed resolution to address concerns that the future drawdowns under the CCP operations might be significantly different than the historical drawdowns.

Colorado proposes that banking of ground water be permitted in accordance with the CGWC's rules and regulations; however, the banking reserve would not override the provisions for calculating the Projected Delivery or the minimum annual delivery of 4,000 acre-feet in the proposed resolution. Under the CGWC's rules and regulations,

the RRWCD WAE can be authorized to use a three-year banking reserve, which would allow the RRWCD WAE to initiate a banking reserve for consumptive use water that is not pumped, subject to limits in the CGWC's rules and regulations. The amount of water in the banking reserve is then available for withdrawals in future years, but the banking reserve is limited to an amount equal to three times the difference between the maximum annual permitted appropriation and the average annual historical withdrawal.

For the CCP groundwater rights, the banking reserve would be limited to 30,996 acre-feet (23,391 ac-ft – 13,059 ac-ft x 3), but the amount that could be withdrawn in any year is limited to the maximum annual appropriation of 23,391 acre-feet per year. However, the physical limitations of the pipeline and wells itself provide for a maximum ability to divert 25,000 acre-feet per year. Further, while that much could be theoretically withdrawn from the banking reserve in any year, Colorado agrees that the Augmentation Water Supply Credit will be limited as set forth in paragraph 3 of the resolution.

2.2. Proposed Augmentation Plan and Related Accounting Procedures

Groundwater pumped by the Compact Compliance Wells will be delivered through collector pipelines to a storage tank and then by a main pipeline to the North Fork of the Republican River a short distance upstream from the streamflow gage at the Colorado-Nebraska state line (USGS gaging station number 06823000, North Fork Republican River at the Colorado-Nebraska State Line). The locations of the Compact Compliance Wells, the collector pipelines, and the main pipeline are shown in Figure 4.

Colorado's proposed revisions to the RRCA Accounting Procedures for the CCP provide that the discharges from the CCP will be measured at the outfall structure and subtracted from the gaged flow of the North Fork of the Republican River to calculate the Augmentation Water Supply Credit to the North Fork of the Republican River in Colorado. The proposed revisions to the RRCA Accounting Procedures further provide that the amount of the discharge to the North Fork of the Republican River from the CCP will be the Augmentation Water Supply Credit for the purpose of offsetting stream depletions to the North Fork of the Republican River to comply with Colorado's Compact Allocations.

2.3. Operation of the Compact Compliance Pipeline

Based on the delivery schedule agreed to with Nebraska and discussions with Kansas, the CCP will be operated as follows:

1. Accounting for deliveries will start January 1 of each year.
2. Colorado will begin deliveries on January 1 and will make a minimum annual delivery of 4,000 acre-feet during the months of January through March.
3. Colorado will calculate and provide notice to the Kansas and Nebraska RRCA Members by April 1, of the Projected Delivery as provided in the Colorado resolution. Unless Colorado determines by April 1 that it will not be able to deliver additional required augmentation water in October through December, Colorado shall stop deliveries at the end of March. If Colorado anticipates that deliveries in the months of November and December will not be sufficient for Compact compliance, Colorado will maximize deliveries first in January, then sequentially in the months of February, March, and April. Deliveries will be made in May only if there is reason to believe that additional deliveries in the months of October through December will not be sufficient for Compact compliance.
4. No later than September 1st, Colorado will gather provisional hydrologic data for the months of January through August of the same year and will estimate the amount of deliveries needed for Compact compliance for the remainder of the year after accounting for the deliveries earlier in the year. Colorado will then maximize any additional water deliveries first in the month of December, then sequentially in November, and October.

Because the final accounting for determining Compact compliance is not done until after the compact year is completed and because Colorado's allocations and computed beneficial consumptive use are dependent upon such factors as runoff, the amount of pumping, precipitation, and crop evapotranspiration, Colorado cannot know the precise amount of augmentation water that will needed in any given year. However, because Compact accounting is done on a five-year running average, Colorado will know the accounting for the previous four years and will know whether there is a deficit in the prior four years that will need to be made up in the coming year in addition to the delivery required for the coming year.

Colorado has agreed to make a minimum annual delivery of 4,000 acre-feet from the CCP and, assuming there is no deficit to be made up, will deliver the 4,000 acre-feet in January, February, and March. Colorado will then collect preliminary data for Compact accounting for the current year and, by no later than September 1, will update the projected delivery required for the remainder of the year. If additional deliveries are required, Colorado will then schedule them in October, November, and December. If there is a deficit to be made up, Colorado will determine if additional deliveries need to be made in April or May in addition to deliveries that will be made in October, November, and December. In the first years of operation, Colorado will have a large deficit; however, deliveries are limited by the historical consumptive use of the groundwater rights for the CCP. Thus, the maximum amount of water that Colorado

could deliver in the first four years of operation of the CCP is approximately 13,000 acre-feet per year, or a maximum of 52,000 over the four year period. Even assuming these deliveries resulted in Colorado having no deficit at the beginning of the fifth year, Colorado would still be obligated to deliver a minimum of 4,000 acre-feet in the fifth year. By September 1, most of the irrigation pumping during the year is completed and preliminary data are available for the portion of the year that is most critical in determining beneficial consumptive use. Thus, no later than September 1, Colorado can update the earlier Projected Delivery and produce a better estimate of the Projected Delivery that will be required for the year, and this method of operating the CCP and the minimum delivery of 4,000 acre-feet per year are intended to avoid large over or under deliveries in any given year. The provision for a minimum delivery of 4,000 acre-feet per year is also designed to address concerns that Colorado would make large over-deliveries in wet years and no deliveries in dry years.

As with the operation of any facility of this size, operational and structural problems could prevent the CCP from operating in the precise manner described above, but Colorado has agreed to consult with Nebraska prior to December 31st of the year preceding the scheduled deliveries and Colorado and the RRWCD WAE together have agreed to consult with Nebraska as needed to coordinate the timing and volume of deliveries to the North Fork of the Republican River.

2.4. Proposed Revisions to the RRCA Accounting Procedures and Terms and Conditions for Operation of the CCP

Colorado's proposed revisions to the RRCA Accounting Procedures are attached to the proposed RRCA resolution. For the CCP, Colorado proposes that the Computed Beneficial Consumptive Use of the Compact Compliance Wells, specifically the ground water impacts of these wells upon the stream system, will be determined by use of the RRCA Groundwater Model as the difference in streamflows using two runs of the model, as specified Section III.D.1 of the RRCA Accounting Procedures and Reporting Requirements. Terms and conditions on pumping from the Compact Compliance Wells are discussed in Sections 2.1.1 and 2.1.2.

The ground water pumped by the Compact Compliance Wells will be delivered to a storage tank by collector pipelines and then delivered by the main transmission pipeline to the North Fork of the Republican River through an outfall structure located a short distance upstream from the streamflow gage at the Colorado-Nebraska state line (USGS gaging station number 06823000, North Fork Republican River at the Colorado-

Nebraska State Line). Discharges from the Colorado CCP will be measured by a Parshall flume at the outlet structure.

Colorado's proposed revisions to the RRCA Accounting Procedures provide that these discharges will be subtracted from the gaged flow of the North Fork of the Republican River to calculate the Annual Virgin Water Supply and that the discharges to the North Fork of the Republican River from the Colorado CCP will be credited against depletions in the North Fork sub-basin for purposes of demonstrating sub-basin compliance with Compact Allocations. Likewise, Colorado's proposed revisions to the RRCA Accounting Procedures provide that these discharges will be the Augmentation Credit for the purpose of offsetting stream depletions to comply with the State of Colorado's Compact Allocations and shall be counted as a credit/offset against the Computed Beneficial Consumptive use of water allocated to Colorado.

3.0 NEED FOR THE CCP

Although the RRCA has not approved the final accounting for all of these years, the approximate amount that Colorado exceeded its Compact allocations for the years 2003-2008 is shown in Figure 5. Figure 6 shows the components of Colorado's average annual computed beneficial consumptive use for the years 2003-2007. As shown in Figure 6, stream depletions from groundwater pumping are the largest component of Colorado's average annual computed beneficial consumptive use.

Figure 7 shows a projection of the annual amounts Colorado's statewide Compact allocation is exceeded for two scenarios, with current pumping and eliminating all pumping. As shown in the graph, Colorado's computed beneficial consumptive use exceeds Colorado's Statewide Compact allocations 25 years in the future even when all pumping is eliminated.

Figure 8 shows how Colorado can achieve Compact compliance with the CCP. In addition to the CCP deliveries, Figure 8 shows the effect of other actions Colorado and the RRWCD WAE have or could take to assist with Compact compliance. The projection of the amounts Colorado's Compact allocation is exceeded with current pumping is the same as shown on Figure 7. The annual bars on Figure 8 show the effects of 1) the elimination of beneficial consumptive use from irrigation with surface water rights, 2) draining Bonny Reservoir to eliminate the beneficial consumptive use resulting from evaporation of water stored in the reservoir and seepage losses to the Ogallala Aquifer, and 3) the operation of the CCP. Colorado can achieve Compact

compliance under the projection made for this scenario with the combination of actions shown in Figure 8. However, as shown in Figure 7, Colorado cannot achieve Compact compliance in the next 25 years without the CCP, absent a dramatic change in the hydrology of the basin in Colorado.

The State of Colorado exceeded its compact allocation by approximately 11,000 ac-ft/yr for period of 2003-2007. In order to comply with Colorado's Compact Allocations, the RRWCD WAE has purchased ground water rights that were historically used for irrigation in the Republican River Basin in Colorado and has constructed the Colorado CCP to deliver ground water pumped under these rights to the North Fork of the Republican River through an outlet structure located a short distance upstream from the Colorado-Kansas State line. This is the stream gage location where the Virgin Water Supply of the North Fork and Colorado stream depletions on the North Fork are calculated under the RRCA Accounting Procedures.

The Compact Compliance Wells are located in the area of the Ogallala Aquifer in Colorado that has the greatest saturated thickness. The wells typically have 250 to 300 feet of saturated thickness. The well field is also located in the sand hills region of Colorado, which has the highest recharge rates of any location in the Republican River Basin in Colorado. The location of the Compact Compliance Wells was selected to ensure a long-term water supply as water levels decline.

4.0 CLARIFICATIONS AND REVISIONS TO ADDRESS THE ARBITRATOR'S 2010 FINAL DECISION

During the 2010 arbitration, Kansas raised eight deficiencies in the Colorado CCP proposal ("Colorado's Proposal"), which were addressed by the Arbitrator in the Final Decision. The objections were: (1) the augmentation water to be delivered to the North Fork of the Republican River was not included in the RRCA ("Republican River Compact Administration") Groundwater Model; (2) the Colorado Proposal did not address Colorado's failure to meet the sub-basin non-impairment requirement in the South Fork sub-basin; (3) the limitations set forth in the Colorado Resolution were insufficient to require augmentation deliveries on a reliable basis and left those deliveries to Colorado's discretion; (4) the Colorado Proposal lacked "temporal limits"; (5) the States had not conducted a detailed review of Colorado's proposed changes to the RRCA Accounting Procedures; (6) Colorado's "catch-up" provisions were inadequate; (7) Colorado had not explained the reasons for adding language to the Resolution that would allow future augmentation deliveries to increase to 25,000 acre-

feet per year; and (8) Colorado and Nebraska had refused to disclose the terms of their stipulated agreement.

The following sections respond to the Arbitrator's rulings.

5.0 Responses to Kansas' Objections Noted in Arbitrator's Final Decision

5.1. Kansas' Objection Number 1: The Colorado Proposal Did Not Include the Augmentation Water in the RRCA Groundwater Model

Kansas' first objection to Colorado's Proposal was that the augmentation water to be delivered to the North Fork of the Republican River was not included in the RRCA Groundwater Model.

The States were in agreement that pumping from the Compact Compliance Wells would be included in the RRCA Groundwater Model to determine the net depletions from these wells, but disagreed on whether the RRCA Groundwater Model should be informed of the water delivered from the CCP. The Arbitrator reviewed Kansas' and Colorado's positions and noted that the expert evidence provided by Kansas had demonstrated that use of the CCP would result in an increase in negative pumping impacts and had raised a related issue regarding the treatment of transit losses between the point of discharge and Swanson Reservoir. The Arbitrator concluded that it was reasonable for Kansas to insist that such impacts be considered in calculating the amount of augmentation credit, whether by use of the RRCA Groundwater Model or through some other approach.

Based on further discussion with Kansas, Colorado proposes that Colorado be given 100% credit for CCP deliveries as an offset to stream depletions to the North Fork of the Republican River, provided the deliveries are in compliance with the other terms and conditions of the resolution, and that the CCP deliveries be included in all runs of the RRCA Groundwater Model (including the "Colorado Pumping" and the "No Colorado Pumping" runs used to determine stream depletions), as shown in the proposed revisions to the RRCA Accounting Procedures.

5.2. Kansas' Objection Number 2: The North Fork Credits Should be Limited to Protect Kansas' Allocation in the South Fork Sub-basin

Kansas' second objection to Colorado's Proposal was that it would allow Colorado to replace its South Fork overuse on the North Fork for purposes of determining Compact compliance with sub-basin allocations.

The Arbitrator concluded that, at a minimum, the CCP proposal as presented for the arbitration did not clearly describe the specific limitation Colorado acknowledged was intended with respect to providing sub-basin credit only in the North Fork sub-basin and that the proposal should be clarified. She also recommended that the amount of augmentation credit approved for the North Fork, and subsequently applied to the determination of Statewide compliance, should be reasonably tied to the amount of estimated overuse in the North Fork.

Colorado's proposed revisions to the RRCA Accounting Procedures have clarified that augmentation deliveries to the North Fork from the Pipeline will be credited only against stream depletions in the North Fork sub-basin in Table 4A of the RRCA Accounting Procedures and will not be credited against stream depletions in the South Fork of the Republican River. (Table 4A is used to determine Colorado's compliance with the sub-basin non-impairment requirement.)

Kansas also objected to Colorado's CCP Proposal because it did not address the sub-basin non-impairment requirement on the South Fork of the Republican River. To address Kansas' concern about Colorado's compliance with the South Fork sub-basin non-impairment requirement, the Colorado State Engineer ordered Bonny Reservoir to be drained and has proposed revisions to the RRCA Groundwater Model accounting for Bonny Reservoir. That proposal and a resolution are before the RRCA contemporaneously with the CCP proposal and resolution.

5.3. Kansas' Objection Number 3: The Operational Limits in Colorado's Proposal Are Insufficient

Kansas' third objection to Colorado's Proposal was that the limitations set forth in the Colorado Resolution were insufficient to require such deliveries on a reliable basis and instead left those deliveries to Colorado's discretion.

The Arbitrator reviewed Kansas' concerns and Colorado's responses concerning operation of the CCP and concluded, at a minimum, that the specific additional operation details should be integrated into a single, unified CCP Proposal and that clarification was also needed regarding substantive standards and operational limits in response to the questions raised by Kansas.

Colorado has revised the Colorado Proposal regarding the operational details and limits for projected deliveries based on the Arbitrator's recommendations.

There was little or no disagreement between Kansas and Colorado on the basic procedure that would be used to estimate the projected Pipeline deliveries each year. The status of Colorado's compliance with its allocations in the prior four years would be considered and a projection would be made of the amount of the deliveries required for the current year. The status of Colorado's compliance over the prior four years will be more or less known at the beginning of the current year (although the final accounting for the prior four years will not have been completed). The more difficult problem is making a projection of the deliveries required for the current year because Colorado's allocations and computed beneficial consumptive use are not known at the beginning of the year and are determined by the hydrology during the year.

To address concerns that Colorado would over-deliver a large amount of augmentation water in one year and then little or no augmentation water in the succeeding four years, Colorado agreed to make a minimum annual delivery of 4,000 acre-feet. By April 1, Colorado will make a projection of deliveries for the year based on any deficit from the prior four years and the minimum annual delivery of 4,000 acre-feet. No later than September 1st, Colorado will gather provisional hydrologic data for the months of January through August of the year and will update the estimate of the amount of deliveries needed for Compact compliance for the remainder of the year after accounting for the deliveries earlier in the year. These operational details are incorporated into the revised Colorado resolution.

Colorado had proposed a limit on the augmentation water supply credit based on a "Projected Delivery." Colorado has revised how the Projected Delivery will be estimated consistent with the presentation during the 2010 arbitration.

5.4. Kansas' Objection Number 4: The Colorado Resolution Lacked "Temporal Limits"

Kansas objected to the Colorado CCP Proposal because it did not include "temporal limits". Kansas asserted that the Ogallala aquifer of eastern Colorado, which is the source of augmentation supply for the CCP, is finite and exhaustible and is not sustainable at current rates of water level declines. Colorado asserted that water level declines in the area would diminish in the future as irrigated lands at the edge of the aquifer went out of production and that the CCP would have an indefinite life span.

The Arbitrator reviewed both States' positions and concluded that some type of time limit or periodic review should be included and recommended that an initial

approval for a period of 20 years would be appropriate and should include provisions for on-going periodic review with assurances that the CCP may continue in operation unless there is a substantial change in basin conditions demonstrating the augmentation plan is not sustainable.

Colorado has incorporated the Arbitrator's recommendation for an initial 20-year approval after the CCP begins operation and periodic review every 20 years thereafter, with the provision that the CCP may continue in operation unless there is a substantial change in basin conditions demonstrating that the augmentation plan is not sustainable.

5.5. Kansas' Objection Number 5: Colorado's Proposed Changes for the RRCA Accounting Procedures Were Incomplete and Required Further Review

Kansas asserted that the States had not conducted a detailed review of Colorado's proposed changes to the RRCA Accounting Procedures.

The Arbitrator concluded that the specific changes Colorado had proposed to the RRCA Accounting Procedures were complete for the purposes of implementing the CCP Plan as proposed, but that further changes would be needed to incorporate recommended changes in order to allow for final approval.

Colorado has revised the proposed changes to the RRCA Accounting Procedures based on the Arbitrator's recommendations and further discussions with Kansas, and Kansas will have an opportunity to review them before action is taken by the RRCA on Colorado's proposed resolution.

5.6. Kansas' Objection Number 6: Colorado's Proposed "Catch-Up" Provisions Were Unreasonable

Kansas expressed concern that the "catch-up" provisions Colorado had proposed had not been the subject of any sustained discussion among the States prior to the arbitration and were not reasonable.

The Arbitrator concluded that there was nothing inherently wrong with the methodology Colorado had developed for determining projected deliveries and for making subsequent adjustments in the following year to reflect its actual compliance obligations, but said that the essence of Kansas' objection to the so-called "catch-up" provisions was its underlying concern about the potential for under- or over-deliveries under the augmentation plan. The Arbitrator concluded that the CCP proposal was deficient in its current form because it did not adequately incorporate into a single,

integrated proposal all of the operational details and limits that Colorado had described and relied upon at trial, including the "catch-up" provision.

Colorado has revised the Colorado resolution based on the Arbitrator's recommendations to include a required minimum delivery to address concerns regarding the potential for under- or over-deliveries under the augmentation plan.

5.7. Kansas' Objection Number 7: Colorado's Proposed Expansion of its Augmentation Plan Was Unreasonable and Must Be Separately Approved by the RRCA

Kansas expressed concern that the proposed Colorado resolution would allow its augmentation to increase to 25,000 acre-feet per year, which was far greater than the amount by which Colorado had exceeded its Compact Allocation. Kansas insisted that any plans to expand the water supply must be separately approved by the RRCA.

Paragraph 6 of the previously proposed Colorado resolution provided that Colorado could acquire additional groundwater rights to be pumped through the Compact Compliance Wells upon the terms and conditions of the resolution; however, it required Colorado to file a notice identifying the additional groundwater rights and gave RRCA members sixty days from the notice to object to the addition of groundwater rights. If there was an objection, the notice would be treated as an application for approval of an augmentation plan.

The Arbitrator concluded that the approach proposed by Colorado offered essentially the same procedural safeguard that Kansas asserted was lacking and that the Colorado plan was sufficient in this regard and no further changes were needed.

While the Arbitrator concluded that no further changes were needed, Colorado has revised its proposal regarding the addition of additional groundwater rights based on further discussions with Kansas (see Resolution, ¶ 11).

5.8. Kansas' Objection Number 8: Colorado and Nebraska's Refusal to Disclose the Terms of a Stipulated Agreement was Unreasonable and Required that the CCP be rejected

Kansas asserted that Colorado and Nebraska's refusal to disclose the terms of a stipulated agreement was unreasonable and required that the CCP be rejected.

The Arbitrator concluded that the refusal by Colorado and Nebraska to disclose the terms of the stipulated agreement did not mandate that the CCP proposal be rejected and that in the absence of a motion to compel production of the document, it

was not necessary to deal directly with this issue in the arbitration proceedings. This issue is now moot because the stipulated agreement has been produced to Kansas.

5.9. Revised Colorado Resolution

The revised resolution for the RRCA to approve the Colorado CCP is submitted contemporaneously to the RRCA with this Application.

6.0 ENGINEERING ANALYSIS FOR THE COLORADO COMPACT COMPLIANCE PIPELINE

At the present time, Colorado has estimated that at least 4,000 acre-feet of water per year needs to be supplied by the Colorado CCP to meet Colorado's Compact statewide allocation, and Colorado has agreed with Nebraska that it will make a minimum delivery of 4,000 acre-feet during the months of January through March. The other terms agreed to be Colorado and Nebraska are set forth in the Joint Notice of Stipulation filed in the arbitration before Martha Pagel, Arbitrator. A copy of the Joint Notice of Stipulation is attached as Appendix B.

The initial capacity of the main transmission pipeline is 3,000 acre-feet per month.

Second, to address Kansas' concern that the CCP proposal would allow Colorado to replace South Fork overuse with augmentation flow delivered to the North Fork for purposes of determining Compact compliance with sub-basin allocations, the Colorado State Engineer has ordered Bonny Reservoir to be drained to reduce Colorado's beneficial consumptive use in the South Fork sub-basin.

6.1. Water Quality

All of the streamflow in the North Fork of the Republican River, with the exception of occasional rainstorm events, is derived from ground water inflow from the Ogallala Aquifer. The Colorado CCP will deliver ground water from the Ogallala aquifer to the North Fork of the Republican River at an outlet structure a short distance upstream from the Colorado-Nebraska State line. Table 2 represents the ground water quality of the Ogallala aquifer relative to the water quality standards for the North Fork of the Republican River, as published by the Colorado Water Quality Control Commission. The water quality of the Ogallala Aquifer meets or exceeds drinking water standards. Thus, the water quality of ground water for the Republican River Compact Compliance

Pipeline is appropriate for delivery to the North Fork of the Republican River to offset stream depletions.

6.2. Colorado CCP Design and Construction

The RRWCD WAE contracted with GEI Consultants to prepare a preliminary feasibility study for the design of a compact compliance pipeline. The $50,000 study was completed in January of 2008. Based on the recommendations in the preliminary report, the RRWCD WAE contracted with GEI Consultants to proceed with the final design of the Colorado CCP. The final design was completed in 2008, and construction of the Colorado CCP was completed in 2012.

The well field to pump ground water consists of 8 wells numbered A2 through A8 and B5 as shown in Figure 4. The design of the Colorado CCP allows for an additional 7 wells numbered A1, and B2 through B4, B6, and B7 in Figure 4 to be connected as needed. The RRWCD has agreed that pumping from any individual Compact Compliance Wells will not exceed 2,500 acre-feet per year, and this limitation was incorporated into the Colorado Ground Water CGWC's approval of the change of the ground water rights.

Water pumped from the individual wells is collected in a series of collector pipelines that vary in size from 12" to 24." The water is then conveyed to a 140,000 gallon re-regulating storage tank. The storage tank provides reserve capacity allowing the main pipeline to operate for 11 minutes at two-thirds capacity with no inflow to the tank from the well field. The storage tank also provides protection of the main pipeline from surges and negative pressures that could develop if the main pipeline were connected directly to the well field collection system.

From the storage tank water flows by gravity through the main transmission pipeline approximately 12.7 miles to the North Fork of the Republican River. The alignment of the pipeline is shown on Figure 4.

Releases from the tank are regulated by a discharge valve located at the end of the transmission pipeline, and an electromagnetic flow meter is located just upstream of the discharge valve. The electromagnetic flow meter readings may be used in conjunction with turbine flow meters at each supply well to monitor the pipeline for leakage. A SCADA system is used to monitor and operate the wells and pipeline. The main transmission pipeline is designed so that additional wells may be added to the

project to increase the pipeline capacity to approximately 25,000 acre-feet per year. The pipeline is buried with minimum cover of three feet above the crown of the pipe. Access manholes, air release valves, and drain valves have been provided at appropriate locations along the pipeline.

The Colorado CCP was tested in 2012, and is currently functional and capable of delivering water; however, the water rights for the CCP are currently under lease for irrigation use. Therefore, deliveries will not begin until January 2014 at the earliest.

7.0 REQUEST FOR APPROVAL

The State of Colorado on behalf of the RRWCD WAE requests that the RRCA approve the revised augmentation plan and related accounting procedures for the Colorado CCP described above under Subsection III.B.1.k of the Final Settlement Stipulation. A proposed resolution for approval of the Colorado CCP that incorporates terms and conditions consistent with the State of Nebraska's approval of the Colorado CCP Project and revisions based on the Arbitrator's Final Decision and discussions with Kansas is submitted contemporaneously to the RRCA with this Application. Because Colorado's compliance with the sub-basin non-impairment requirement in the Final Settlement Stipulation (Art. IV.B) for the South Fork of the Republican River was raised by the State of Kansas as an issue during the 2010 arbitration, the Colorado State Engineer ordered Bonny Reservoir to be drained to reduce the beneficial consumptive use charged to Colorado under the RRCA Accounting Procedures so as not to impair the ability of Kansas to use its South Fork sub-basin allocation within the South Fork sub-basin. To properly reflect the change in operation of Bonny Dam and Reservoir, Colorado is separately submitting a proposed resolution to change the representation of Bonny Reservoir in the RRCA Groundwater Model.

Table 1

RRWCD Compact Compliance Wells						4-Jan-2013
Permit #		RRWCD submitted & GWC published (af/yr)	Corrected amount (af/yr)	Sand Hills approved for export (af/yr)	To be approved by GWC (af/yr)	Comments
		first publication				
12567-FP		201		N/A	0	Located in Central Yuma GWMD
12589-FP		376	297	372	297	Acres corrected from 309 ac to 200 ac
12967-FP	same well	345		333	333	
16920-FP		0			0	
13509-FP	same well	254		273	244	
16075-FP		30			29	
13511-FP		192		173	173	
13513-FP	same well	258		257	220	
16074-FP		44			37	
13522-FP		204		189	189	
13813-FP	same well	174		203	171	
16923-FP		32			32	
13814-FP		334		323	323	
13815-FP		291		311	291	Sand Hills approved more than hisorical amount
13856-FP	same well	241		249	241	
16067-FP		8			8	
13857-FP		229		217	217	
13858-FP		228		206	206	
13859-FP	same well	228		260	220	
16069-FP		42			40	
14018-FP		252		234	234	
14019-FP		217		206	206	
14022-FP		289		255	255	
14023-FP		219		197	197	
14024-FP		141		129	129	
14027-FP		251		237	237	
14028-FP		218		202	202	
14121-FP		437		420	420	
14122-FP		215		204	204	
14396-FP		192		180	180	
14397-FP		192		184	184	
14398-FP		240		230	230	
14600-FP		197		187	187	
14718-FP		526		526	526	
14719-FP		455		424	424	
14753-FP		310		267	267	
15285-FP		161		140	140	
18011-FP		431		421	421	
18012-FP	same well	221		317	218	
19000-FP		101			99	
18013-FP		350	291	350	291	Acres corrected from 250 ac to 228 ac
18014-FP		259		247	247	
18015-FP		549		497	497	
18017-FP	same well	180.5		353	177	
19001-FP		180.5			177	
18018-FP		230		218	218	
18019-FP		173		163	163	
18780-FP		192		192	192	
18781-FP		216		206	206	
18783-FP		273		273	273	
18966-FP		172		172	172	
19005-FP		178		174	174	
19372-FP		218		211	211	
20896-FP		169		168	168	
21476-FP		144		139	139	
subtotal		12,259	12,121	11,689	11,535	
		second publication				
14033-FP		279		279	279	
19004-FP		141		141	141	
23222-FP		230	168	230	168	Pumping corrected to permitted amount
4319-FP	same well	75		75	75	
4922-FP		0			0	
20198-FP		194		194	194	
20196-FP		249		249	249	
subtotal		1,168	1,106	1,168	1,106	
Total		13,427	13,227	12,857	12,641	

Table 2

Comparison of stream water quality in the North Fork to the ground water quality in the Ogallala Formation.

Surface Water Classification and Associated In-Stream or Drinking Water Standards [1]	
Classifications:	
Aquatic Life -- Cold Water 1	N/A
Recreation -- 1a	N/A
Water Supply – Agriculture	N/A
Physical and Biological Standards:	
Dissolved Oxygen = 6.0 mg/l	0.2 to 8.6 mg/l; 50% > 5.4 mg/l
pH = 6.5-9.0	7.0 – 7.9
Fecal coliforms = 200/100 ml	
E Coli = 126/100 ml	
Inorganic Standards:	
Ammonia (acute) = Table Value Standard (TVS)	
Ammonia (chronic) = 0.02 mg/l	0.01 to 0.244 mg/l; 50% < 0.015 mg/l
Chlorine (acute) = 0.019 mg/l	
Chlorine (chronic) = 0.011 mg/l	
Cyanide = 0.005 mg/l	
Sulfide = 0.002 mg/l	
Boron = 0.75 mg/l	Dissolved boron: 20 – 130 µg/l
Nitrate NO_2 = 0.05 mg/l	< 0.01 mg/l
Nitrate NO_3 =10 mg/l	1.1 to 8.9 mg/l
Chloride = 250 mg/l	1.4 to 29.5 mg/l
Sulfate = 250 mg/l	5.5 to 95.7 mg/l
Total Dissolved Solids = 500 mg/l	219 to 461 mg/l
Metal Standards:	
Arsenic (acute) = 50 µg/l (total recoverable)	Dissolved arsenic: <5-12 µg/l
Cadmium (acute) = TVS (trout)	
Cadmium (chronic) = TVS	
Trivalent Chromium (acute) = 50 µg/l (total)	
Hexavalent Chromium (acute/chronic) = TVS	
Copper (acute/chronic) = 1.3 mg/l	Dissolved copper: <5-35 µg/l
Iron (chronic) = 300 µg/l	Dissolved iron: <3-60 µg/l
Iron (chronic) =1000 µg/l (total recoverable)	
Lead (acute/chronic) = TVS (dissolved 15µg/l)	Dissolved lead <5 µg/l
Manganese (acute/chronic) = TVS (dissolved 50µg/l)	Dissolved manganese <3-40 µg/l
Manganese (chronic) = WS (dissolved)	
Mercury (chronic) = 0.01 µg/l (total)	
Nickel (acute/chronic) = TVS	
Selenium(acute/chronic) = TVS (dissolved 50 µg/l)	Dissolved selenium: <5 µg/l
Silver (acute) = TVS	
Zinc (acute/chronic) = TVS	Dissolved Zinc < 5-124 µg/l

Notes:

1. Stream classifications and water quality standards obtained from a report by David Litke, U.S. Geological Survey, and Historical Water-Quality Data for the High Plains Regional Ground-Water Study Area (1930 – 1998) or from CDPHE/WQCC – Colorado Primary Drinking Water Standards.
2. Blanks indicate data that were not reported in the reference.
3. Reported ground water quality data is from Litke, USGS (see Note 1).

Kimball County
Cheyenne County
Deuel County
Keith County
Perkins County
Lincoln County
Sedgwick County
Weld County
Logan County
Phillips County
Chase County
Hayes County
Morgan County
Washington County
Yuma County
Dundy County
Hitchcock County
Cheyenne County
Rawlins County
Kit Carson County
Sherman County
Thomas County
Lincoln County
Cheyenne County
Wallace County
Logan County
Greeley County
Wichita County
Kiowa Coun

I80
I76
I70
US HWY 385
US HWY 138
US HWY 6
US HWY 34
US HWY 36
US HWY 40
STATE HWY 14
STATE HWY 61
STATE HWY 63
STATE HWY 59

Red Willow Creek
North Fork Frenchman Creek
Frenchman Creek
Rock Creek
Republican River
North Fork Republican River
South Fork Republican River
North Fork Driftwood Creek
Arikaree River
Buffalo Creek
Sand Creek
Beaver Creek
North Fork Sappa Creek
South Fork Sappa Creek
Middle Beaver Creek

NORTH FORK REPUBLICAN RIVER AT COLORADO-NEBRASKA
ARIKAREE RIVER AT HAIGLER, NEBR.
SOUTH FORK REPUBLICAN RIVER NEAR BENKELMAN, NEBR
SF REPUBLICAN R NR CO-KS ST LINE, KS

FIGURE 1
GENERAL LOCATION MAP

Prepared by
HELTON & WILLIAMSEN, P.C.

2008, RLH

0 2.5 5 10 15 20 Miles

Legend

- States
- Counties
- Ogallala Aquifer
- Drainage Basins
- Reservoirs
- Streams
- USGS Stream Gages
- Compact Compliance Pipeline

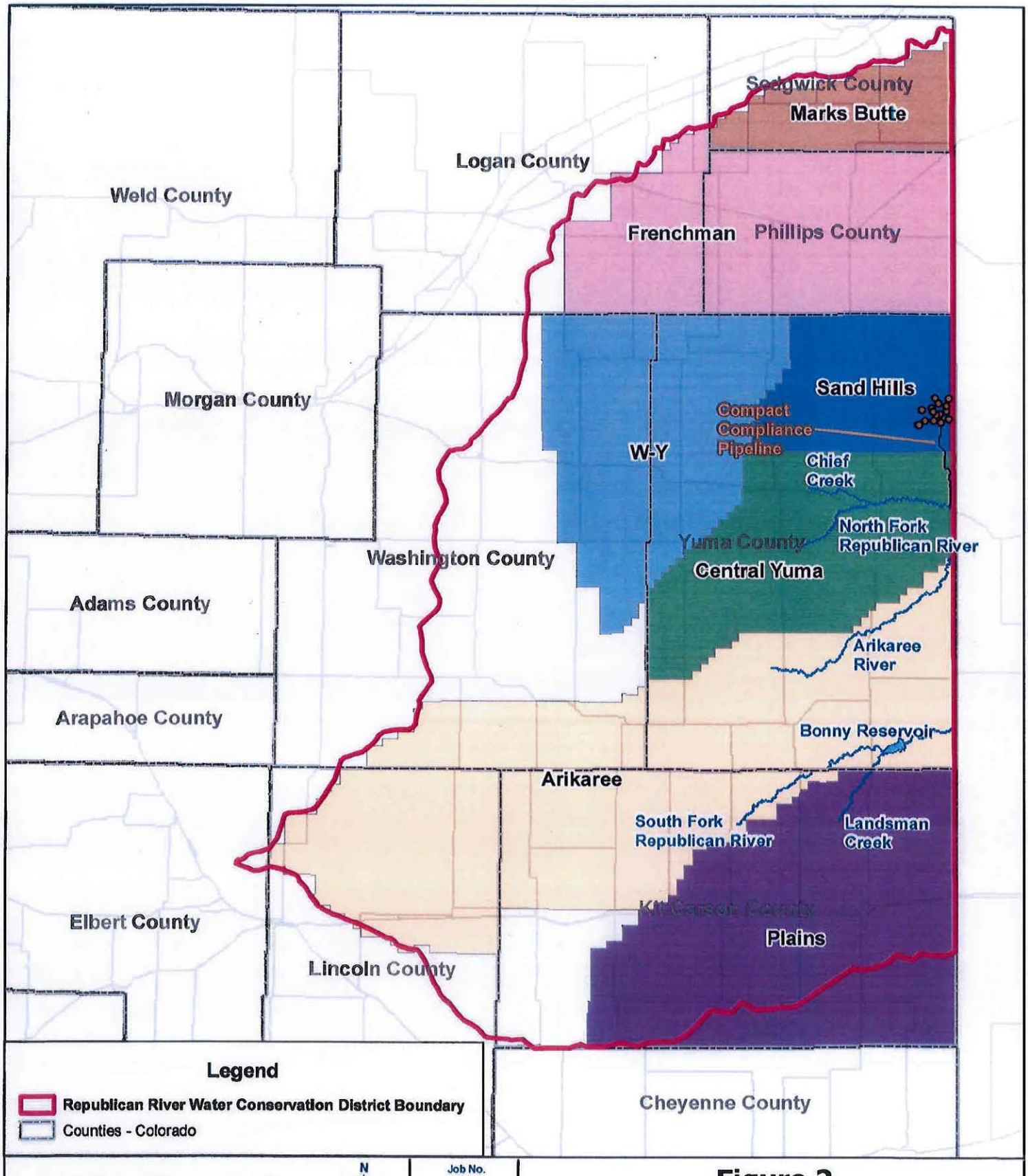
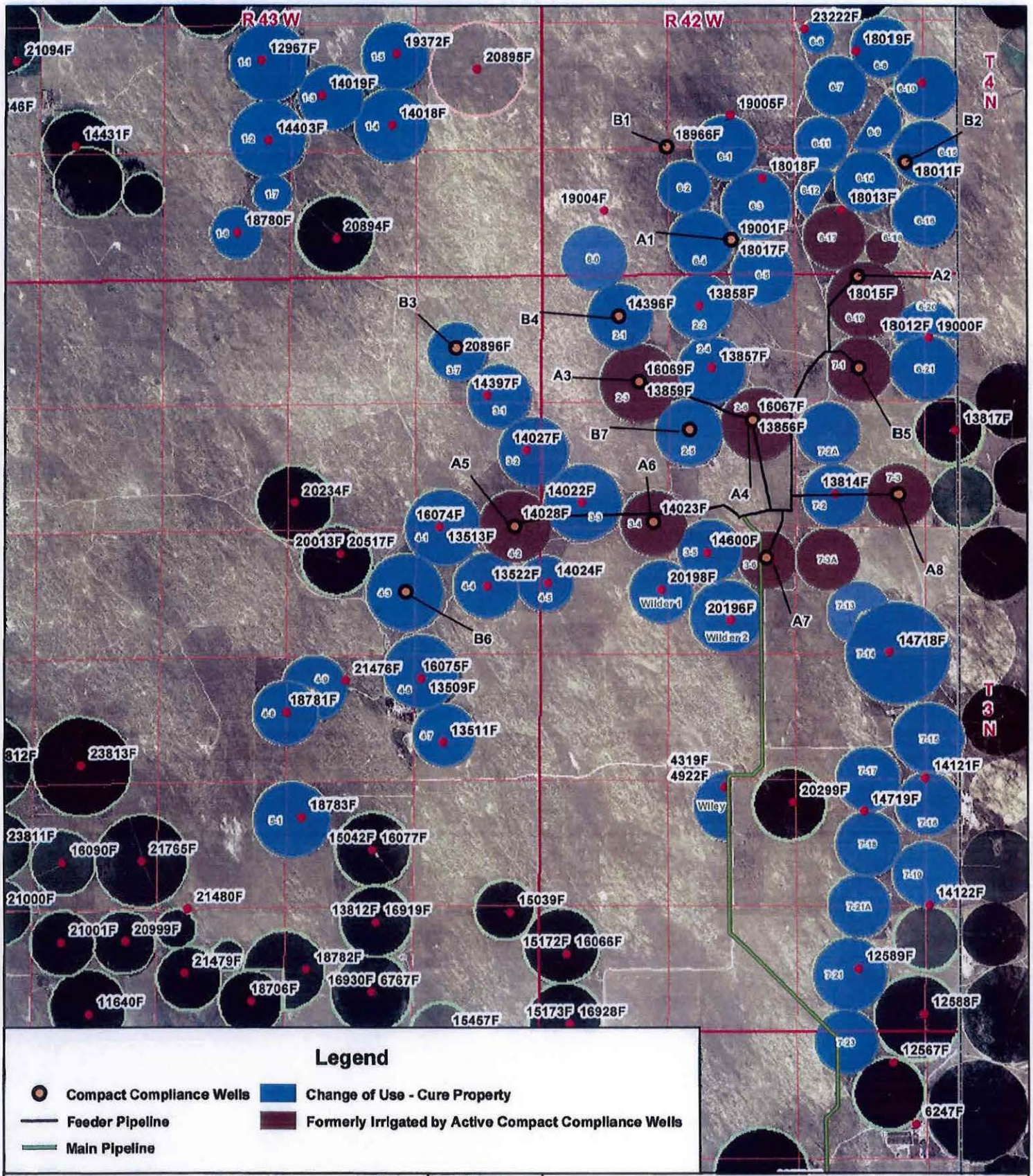


Figure 2

Colorado Republican River Basin

Republican River Water Conservation District
and
Groundwater Management Distrtict Boundaries



Job No.	R1601
File:	Cure Farms Lease.mxd
Date:	11/01/11
Prepared For:	RRWCD

Slattery & Hendrix Engineering LLC

Figure 3

General Location Map
Cure Farms
Compact Compliance Wells

Data Sources:
County Digital Raster Graphics from USDA;
Irrigated Acreage from Slattery & Hendrix Engineering LLC

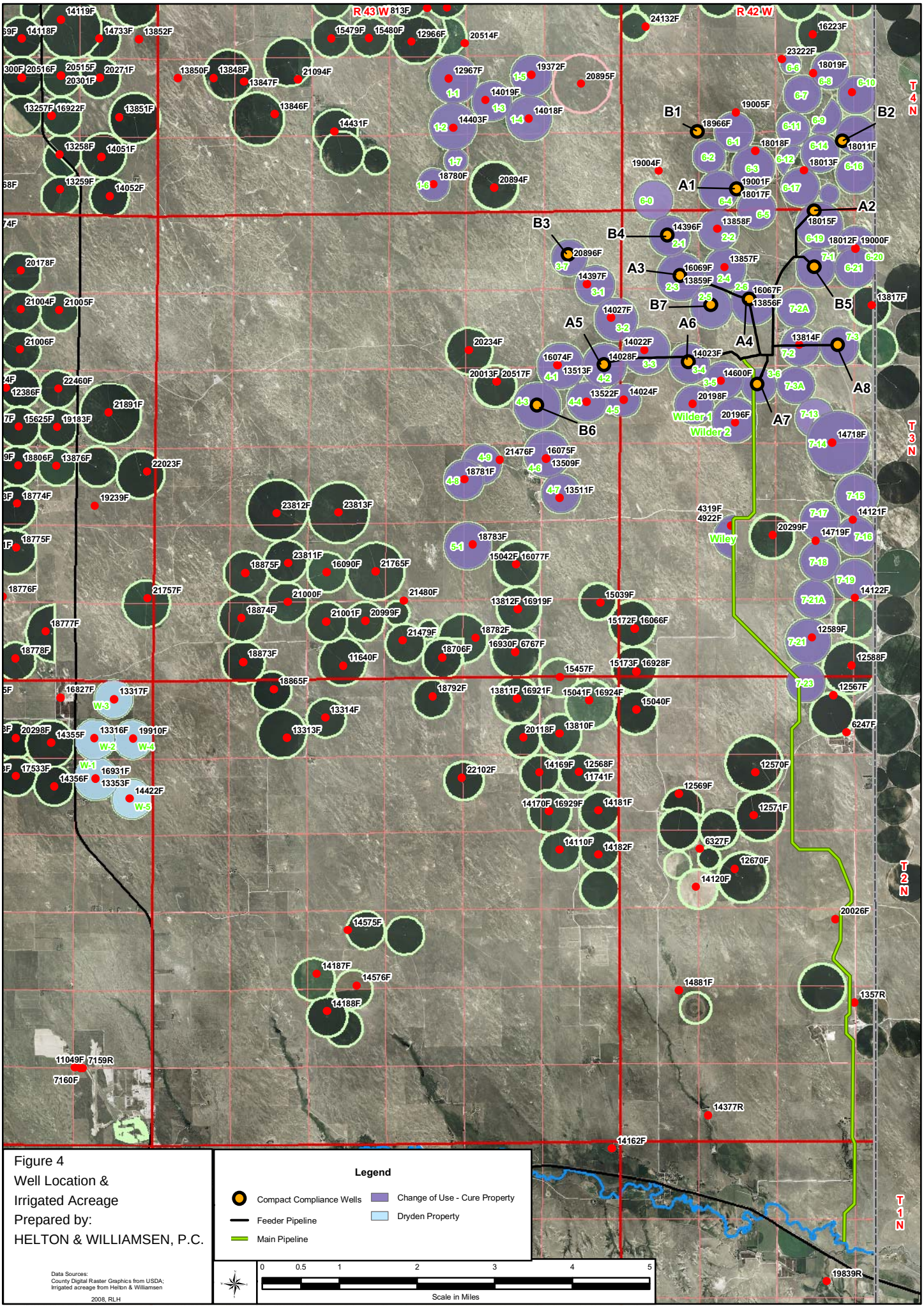


Figure 4
Well Location &
Irrigated Acreage
Prepared by:
HELTON & WILLIAMSEN, P.C.

Data Sources:
County Digital Raster Graphics from USDA;
Irrigated acreage from Helton & Williamsen

2008, RLH

Figure 5
Amount Colorado Exceeded Compact Allocation

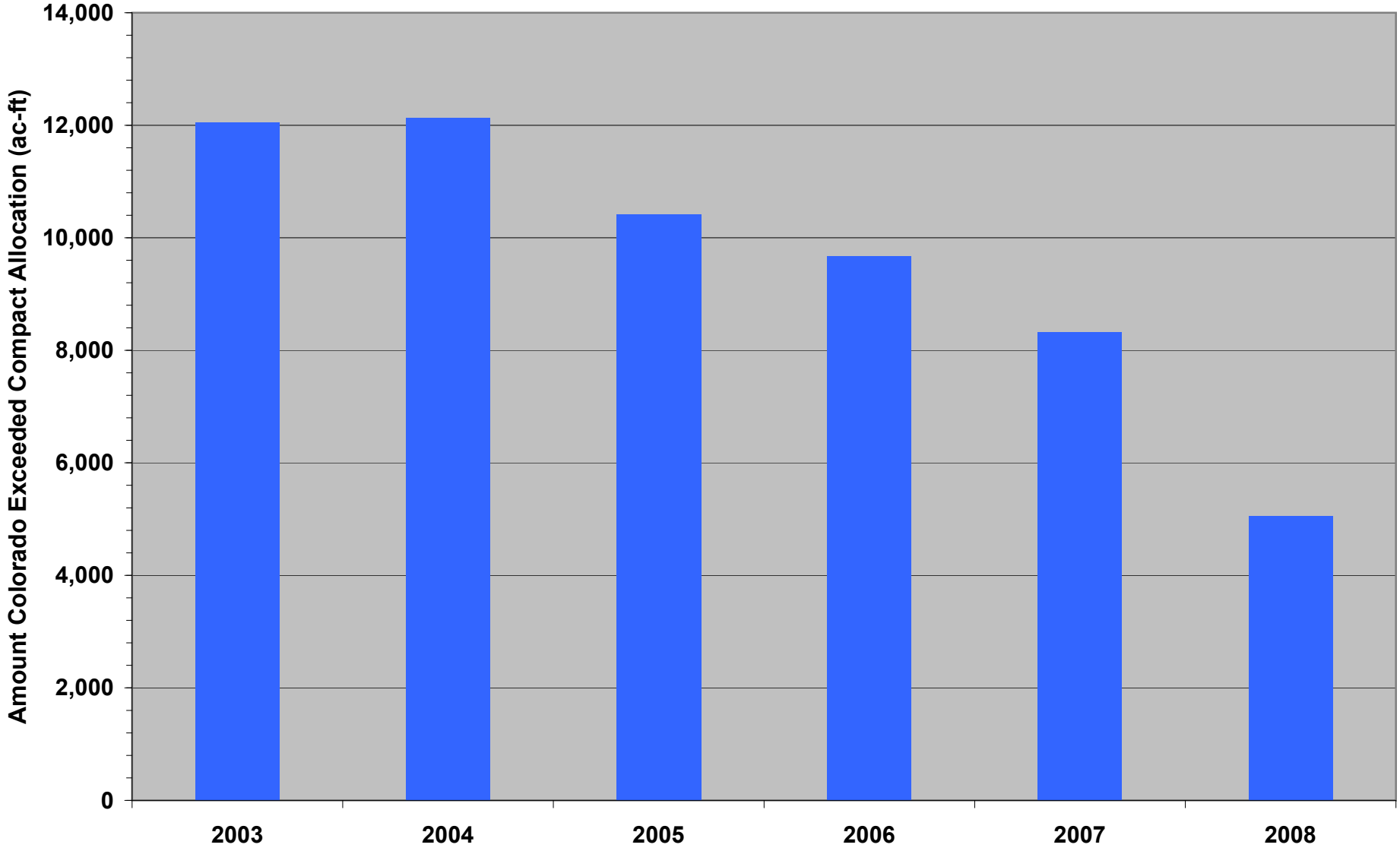


Figure 6
Components of Historical Consumptive Use In Colorado
(Average for 2003-2007)

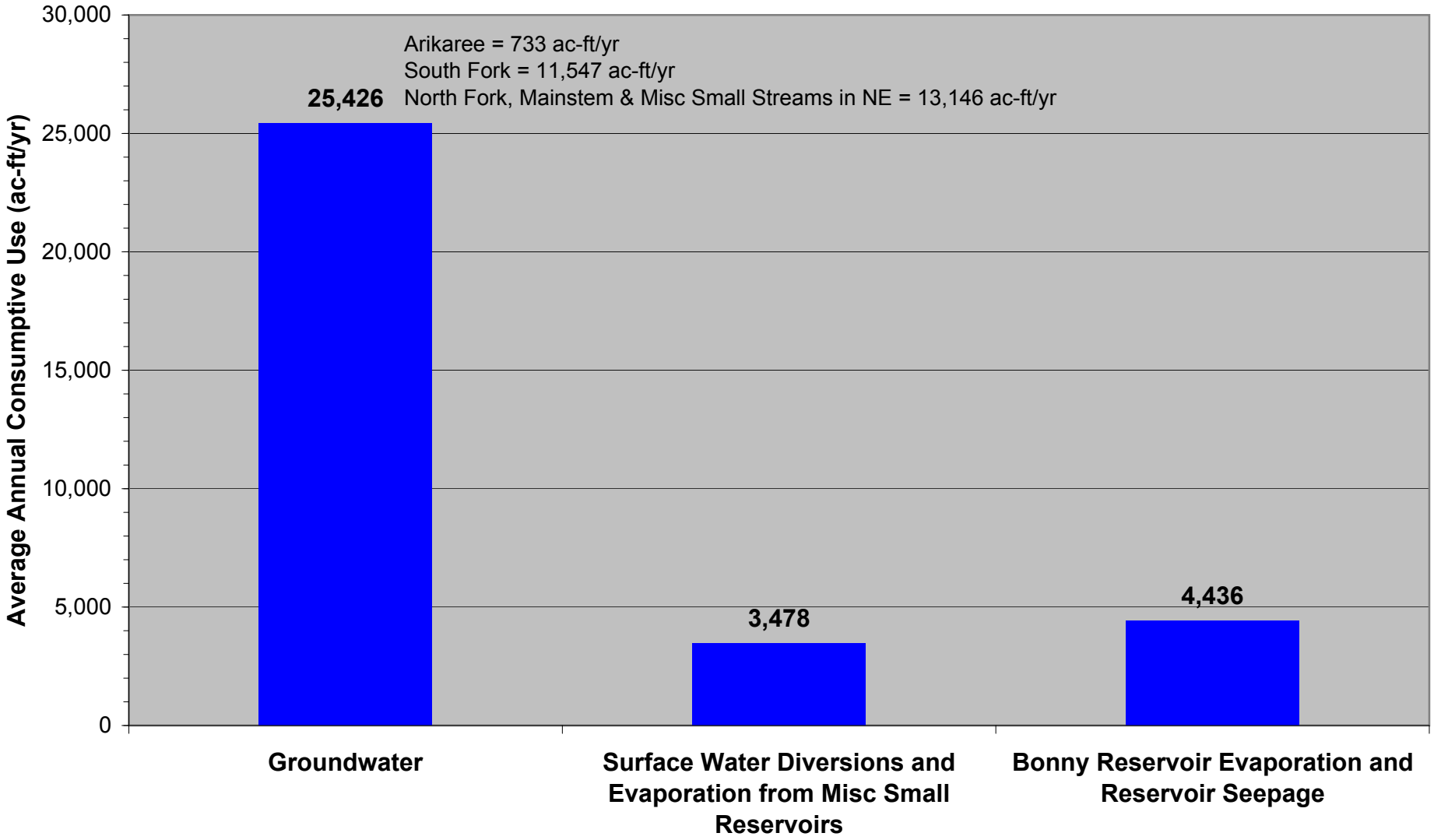
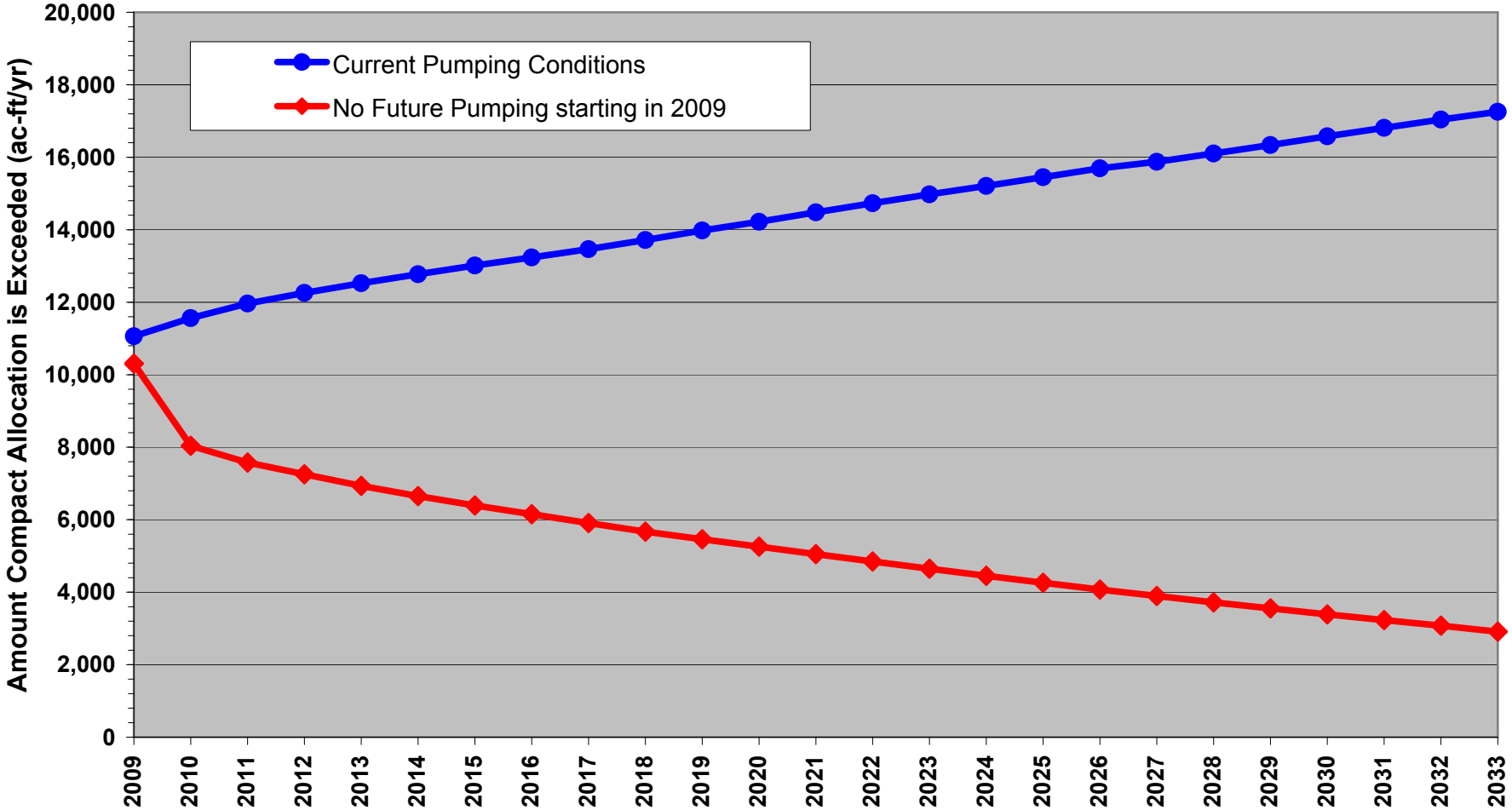


Figure 7

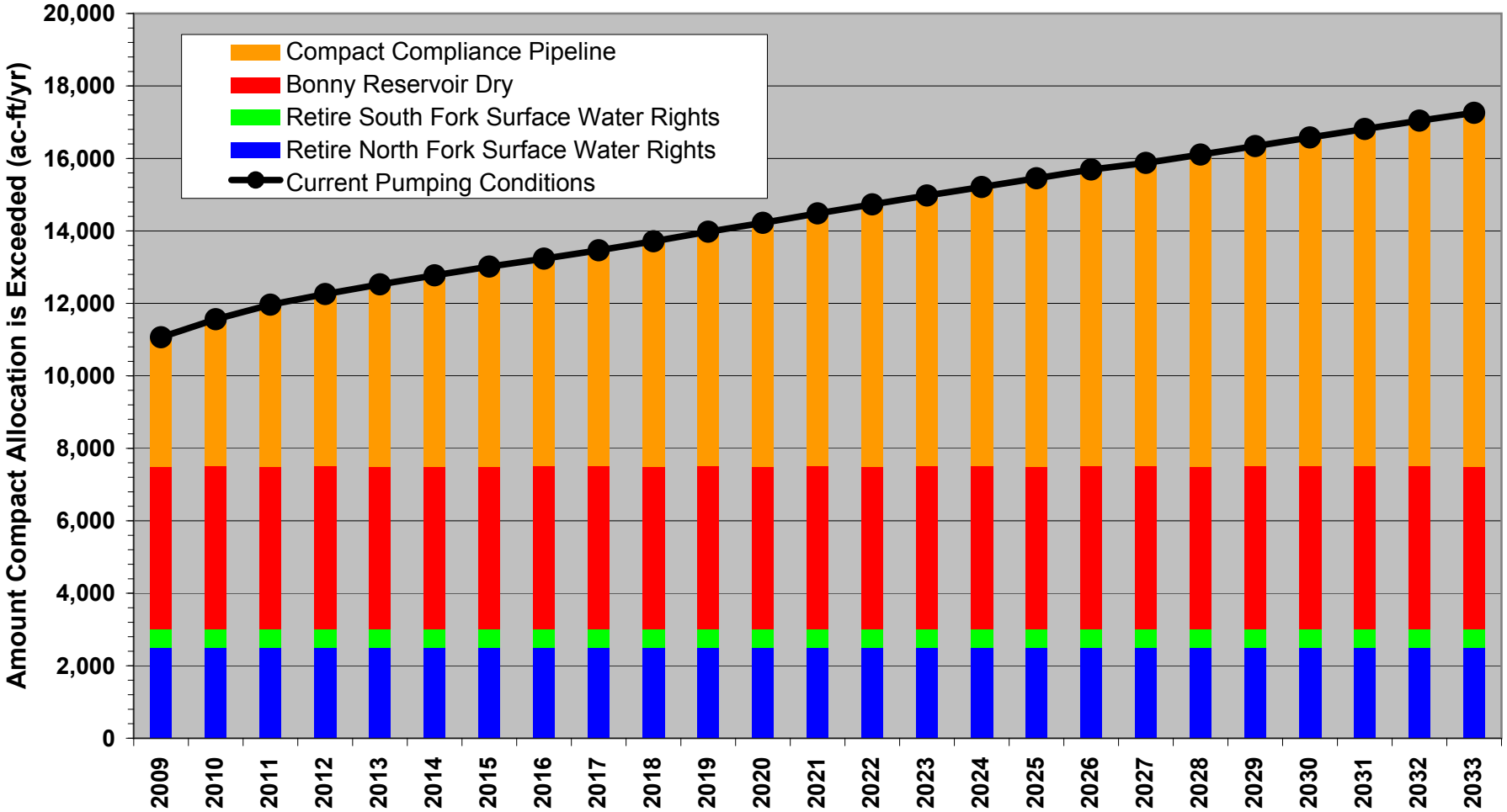
Projected Compact Compliance under Current Pumping and No Pumping Conditions



Note: The current pumping conditions projection assumes projected pumping conditions are equal to the average pumping for the 1999-2008 period and the precipitation recharge is equal to the 1918-2008 average. The amount the compact allocation is exceeded is based on the average value for the 2003-2007 period and does not reflect the 2,500 ac-ft/yr reduction in Colorado's consumptive use from the surface water rights purchased by Colorado.

Figure 8

Projected Compact Compliance with Compact Compliance Pipeline in Operation



Note: The current pumping conditions projection assumes projected pumping conditions are equal to the average pumping for the 1999-2008 period and the precipitation recharge is equal to the 1918-2008 average. The amount the compact allocation is exceeded under current pumping conditions is based on the average value for the 2003-2007 period and does not reflect the 2,500 ac-ft/yr reduction in Colorado's consumptive use from the surface water rights purchased by Colorado.

SANDHILLS GROUND WATER MANAGEMENT DISTRICT	
CONCERNING THE EXPORT APPLICATION OF THE REPUBLICAN RIVER WATER CONSERVATION DISTRICT, acting by and through its WATER ACTIVITY ENTERPRISE	
FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION	

This matter came on for hearing on January 24, 2012, before the Board of Directors ("Board") of the Sandhills Ground Water Management District ("GWMD" or "District") on the application of the Republican River Water Conservation District, acting by and through its Water Activity Enterprise ("RRWCD"), to use ground water outside the boundaries of the Sandhills GWMD.

Having considered the application and the evidence presented, the Sandhills GWMD Board makes the following findings of fact, conclusions of law, and decision:

1. The RRWCD initially submitted a letter dated February 25, 2008, to the Board requesting authorization and approval to use ground water under specified ground water rights outside the boundaries of the District for the sole purpose of offsetting stream depletions to the Republican River and its tributaries in order to comply with the State of Colorado's allocations under the Republican River Compact ("Compact") and the Final Settlement Stipulation ("FSS") in *Kansas v. Nebraska and Colorado*, No. 126, Original (U.S. Supreme Court). RRWCD Exh. 1. The RRWCD requested a hearing on its request at the Board's earliest convenience. *Id.*

2. At that time of the initial request, the RRWCD had entered into an agreement to purchase ground water rights in the District, had applied for a $60 million loan from the Colorado Water Conservation Board ("CWCB") to purchase the ground water rights and to build a pipeline to deliver ground water from existing wells in the District to the North Fork of the Republican River ("Pipeline project") and had filed applications with the Colorado Ground Water Commission ("Commission") to change the use of the ground water rights to be purchased to Compact Compliance wells and had requested a variance from certain Commission Rules to consolidate the wells to reduce the cost of constructing and operating the Pipeline project. RRWCD Exh. 1.

3. The District is a ground water management district formed under the provisions of the Colorado Ground Water Management Act ("Act") and has the powers provided in the Act. § 37-90-101 through 135, C.R.S.

4. Section 37-90-130(2)(f), C.R.S., of the Act provides that the District has the authority to regulate the use, control, and conservation of the ground water of the District covered by any well permit, including the authority "[t]o prohibit, after affording an opportunity for a hearing before the board of the local district and presentation of evidence, the use of ground water outside the boundaries of the district where such use materially affects the rights acquired by permit by any owner or operator of land within the district."

5. At the time of the RRWCD's February 28, 2008 initial request, the Board had adopted Rules, Regulations, and Guidelines ("Rules"), which included a rule prohibiting removal of ground water from the District unless authority is first obtained from the Board after a hearing. District Rule 3. The Board did not hold a hearing on the RRWCD's initial export request at that time because the RRWCD did not know the credit that Colorado would receive for the Pipeline deliveries to offset stream depletions under the Compact, and the RRWCD agreed to postpone the hearing until more was known about this issue.

6. The States of Kansas, Nebraska, and Colorado entered into the FSS as of December 15, 2002, to resolve pending litigation in the U.S. Supreme Court regarding the Compact. RRWCD Exh. 7 at p. 4. The Special Master and the U.S. Supreme Court subsequently approved the FSS. *Kansas v. Nebraska and Colorado*, 538 U.S. 720 (2003). In Subsection III.A of the FSS, the States of Kansas, Nebraska, and Colorado adopted a moratorium on new wells, with certain exceptions set forth in subsection III.B of the FSS.

7. Subsection III.B.1.k of the FSS provides that the moratorium shall not apply to wells acquired or constructed by a State for the sole purpose of offsetting stream depletions in order to comply with its Compact allocations, provided that such wells shall not cause any new net depletion to stream flow either annually or long term. Subsection III.B.1.K further provides that augmentation plans and related accounting procedures under this subsection shall be approved by the Republican River Compact Administration ("RRCA") prior to implementation.

8. In March, 2008, the State of Colorado and the RRWCD submitted an application to the RRCA seeking approval of an augmentation plan and related changes to the RRCA Accounting Procedures for the Pipeline project, which provided that Colorado would receive 100% credit for Pipeline deliveries to the North Fork of the Republican River to offset stream depletions.

9. In August, 2009, Colorado submitted a proposed resolution to the RRCA to approve an augmentation plan and related changes to the RRCA Accounting Procedures for the Pipeline project.

10. At the RRCA annual meeting in August, 2009, the Kansas and Nebraska RRCA members voted against Colorado's proposed resolution, and Colorado initiated non-binding arbitration pursuant to the FSS. RRWCD Exh. 9 at 2.

11. Before the arbitration hearing, Colorado and Nebraska entered in to a stipulation in which Nebraska agreed to support Colorado's Pipeline resolution, subject to terms concerning the operation of the Pipeline project. RRWCD Exh. 8; RRWCD Exh. 9 at 2.

12. Following a hearing in July, 2010, the Arbitrator selected by the States issued a Final Decision on the Pipeline project dispute on October 7, 2010, in which the Arbitrator concluded that Kansas had not arbitrarily withheld its approval of the Pipeline project, but also concluded that the Pipeline project, in general, provided a reasonable and necessary approach for meeting Colorado's Compact obligations and, with the changes recommended in the Final Decision, stated that the Pipeline project should be approved. RRWCD Exh. 9 at pp. 21-22. Colorado and Kansas disagreed as to whether the RRCA ground water model should be used to calculate the credit that Colorado would receive for the Pipeline deliveries. The Arbitrator agreed that the expert evidence provided by Colorado was convincing in demonstrating that discharge from the Pipeline can and should be measured, rather than modeled, but concluded that the expert evidence provided by Kansas demonstrated that the Pipeline would result in an increase in "negative pumping impacts," and thereby provide a long-term additional benefit to Colorado to the detriment of Kansas. *Id.* at 10. The Arbitrator recognized possible options, and recommended a 10% reduction in credit for Pipeline deliveries as a reasonable reflection of the potential impact based on seasonal deliveries. *Id.* at 11.

13. Because of a concern that the Colorado Legislature would take the CWCB loan funds for the Pipeline project for other purposes because of budget shortfalls, the RRWCD Board of Directors proceeded with the purchase of the ground water rights for the Pipeline project, which was completed on June 19, 2009, RRWCD Exh. 10, and construction of the Pipeline project, which began in September, 2011. RRWCD Exh. 13.

14. In 2011, the Board proposed an additional rule to supplement the District's existing Rule 17, to add more detailed procedural requirements to clarify how export applications would be processed by the District.

15. On August 16, 2011, in accordance with proposed Rule 17A, the RRWCD submitted an application for export of water ("export application"), an engineering report prepared by Slattery & Hendrix Engineering LLC in support of the application, evaluations by the State Engineer's Office regarding the average annual historical withdrawals and depletions to the aquifer by the wells included in the Pipeline project, and legal and engineering information to support the export application. Exh. 1. The RRWCD also submitted proposed terms and conditions to prevent the export from materially injuring the District and water users within the District, and supplemental terms and conditions for the approval to export up to 500 acre feet of groundwater from eight Compact Compliance Wells and to deliver that water to the North Fork of the Republican River to test the Pipeline in 2012. RRWCD Exhs. 3 and 4.

16. On September 16, 2011, the RRWCD and the District entered into an agreement in which it was agreed that proposed Rule 17A would apply to the RRWCD's export request without the need for formal promulgation of the Rule, and the Board agreed, in full compliance with the procedural steps contained in proposed Rule 17A, to make reasonable efforts to expedite the time for holding a hearing and to issue a written decision on the export application in accordance with proposed Rule 17A and relevant statutes. Exh. 1.

17. After determining that the application was complete, the Board caused notice of the export application to be published in a newspaper with general circulation in Yuma County, Colorado, and allowed any person wishing to support or object to the approval of the application,

to provide other comments concerning the application, or to request party status, to do so in writing to be filed with the District no later than October 31, 2011, by a time specified in the notice. Exh. 2.

18. No objections to the export application were received. Support for the export application was filed by the Colorado Agriculture Preservation Association, the Central Yuma Groundwater Management District, the W-Y Ground Water Management District, the Boards of County Commissioners of Lincoln County, Kit Carson County, Yuma County, Washington County, Sedgwick County, Phillips County, and the Plains Ground Water Management District. The Frenchman Groundwater Management District and the Marks Butte Groundwater Management District requested party status for the export hearing. Bill Cure, on behalf of Cure Land, requested approval of the export application if 100% credit for water is obtained from the project under the Compact. Exhs. 4-16.

19. The Board then set the date for a hearing to be held on the export application for January 24, 2012, at the Wauneta Fire Hall, located north of Wray, Colorado and within the District, and caused notice of the hearing to be published in a newspaper of general circulation in Yuma County, Colorado. Exh. 3. The hearing took place on January 24, 2012, pursuant to the notice. The Board designated Michael D. Shimmin, Esq., to be the hearing officer to conduct the hearing, but the entire Board was present at the hearing and heard all of the evidence and comments presented. Testimony and documentary evidence was presented by three witnesses for the RRWCD, which is summarized below. All parties were allowed the chance for cross examination and to present testimony. Opportunity was also allowed for public comment by non-parties. A summary of the evidence and comments presented, and the Board's findings based on the evidence and comments follows.

20. The RRWCD is a water conservation district that was created by Colorado statute to assist the State of Colorado to comply with the Compact. § 37-50-101, -103, C.R.S.

21. The RRWCD has purchased ground water rights associated with a total of 62 well permits, of which 61 are located in the District as described in the engineering report, RRWCD Exh. 2 at 9, and has acquired easements for fifteen wells ("Compact Compliance Wells") in the District for the Pipeline project. The RRWCD has also acquired easements for the collector pipelines, a storage tank, the main pipeline, and the outfall structure.

22. The RRWCD proposes to pump the historical consumptive use of some or all of these groundwater rights from the Compact Compliance Wells into a pipeline and deliver that water into the North Fork of the Republican River near the Colorado/Nebraska state line as necessary to offset stream depletions in order to comply with Colorado's Compact allocations.

23. The RRCA has not approved an augmentation plan for the Pipeline project at this time, but Colorado has entered into a stipulation with Nebraska that gives Colorado full credit for Pipeline deliveries that are made in accordance with the stipulation, and Colorado is currently in discussions with Kansas concerning the credit that Colorado will receive for the Pipeline deliveries under the Compact.

24. At the hearing on the export application, the RRWCD provided testimony in support of the export application by: Dennis Coryell, President of the RRWCD Board of Directors; James E. Slattery, RRWCD engineer; and Dick Wolfe, the Colorado State Engineer.

25. Mr. Coryell testified about the history of the RRWCD, the RRWCD Board of Directors' efforts to assist Colorado to comply with the Compact by providing cost-sharing for federal conservation programs, why the RRWCD Board of Directors concluded that a Pipeline project was necessary to assist Colorado in achieving Compact compliance, and the feasibility study conducted by the RRWCD to select the location for the Pipeline project.

26. Mr. Slattery gave a presentation on the Pipeline project based on the engineering report submitted in support of the application and explained why the Pipeline project is necessary for Compact compliance and how the Pipeline project will be operated based on the stipulation between Colorado and Nebraska. He also explained the proposed terms and conditions for the export of ground water from the District.

27. Mr. Wolfe testified about the status of discussions with Kansas and answered questions from the Board about Colorado's efforts to obtain approval from Kansas for the Pipeline project.

28. The RRWCD offered 15 exhibits at the hearing, including the Joint Notice of Stipulation between Colorado and Nebraska (RRWCD Exh. 8), the Arbitrator's Final Decision on the Colorado Compact Compliance Pipeline Dispute (RRWCD Exh. 9), Corrected Resolution No. 08-06 of the RRWCD Board of Directors agreeing to limit pumping from the Compact Compliance Wells to a maximum of 2,500 acre-feet per year per well (RRWCD Exh. 11), answers to Export Questions that the Sandhills GWMD had submitted to the RRWCD before the hearing (RRWCD Exh. 14), and a letter dated September 6, 2011, from Keith Vander Horst, Designated Basin Team Leader, Colorado Ground Water Commission, explaining the actions of the Commission on the RRWCD's applications to change existing rights to designated ground water (RRWCD Exh. 15). These exhibits were admitted without objection.

29. The RRWCD has begun construction of the Pipeline and will need to divert up to 500 acre feet of groundwater from eight of the Compact Compliance Wells and to deliver that water into the North Fork of the Republican River near the Colorado/Nebraska State Line to test the Pipeline in 2012.

30. The RRWCD proposed the following terms and conditions on the approval of the export application pursuant to proposed Rule 17.A, which are found by the Board to be reasonable and appropriate, and they are incorporated into this Decision as binding terms and conditions on the future operation of the requested export and the Pipeline project:

1. The average annual historical consumptive use of the groundwater rights that may be diverted at the Compact Compliance Wells shall be as determined by the Colorado Ground Water Commission pursuant to its rules and regulations, provided that the average annual historical consumptive use of the groundwater rights listed on Table 3 of the Engineering Report prepared by Slattery & Hendrix Engineering LLC

dated August 17, 2011 (RRWCD Exh. 2), shall not exceed the average annual amounts shown in column (6) on Table 3 (Corrected Historical Consumptive Use). Annual diversions during any calendar year under the groundwater rights listed on Table 3 shall not exceed the total corrected annual historical consumptive use of the groundwater rights as shown in column (6) of Table 3, except as provided in paragraph 5 below. A copy of Table 3 is attached as Exhibit A and incorporated in these Findings.

2. Groundwater diversions from the Compact Compliance Wells shall be measured by totalizing flow meters, at the RRWCD's expense, in compliance with the Rules and Regulations Governing the Measurement of Ground Water Diversions located in the Republican River Basin and the RRWCD shall report annually or at other reasonable times to the State Engineer the readings of such measuring devices and the amounts pumped from the Compact Compliance Wells.

3. Diversions from the Compact Compliance Wells shall be limited to no more than 2,500 acre feet per year per well.

4. Discharges of groundwater to the North Fork of the Republican River from the Colorado Compact Compliance Pipeline will be measured at an outlet structure located approximately one-half mile from the Colorado-Nebraska State Line.

5. Banking of groundwater shall be permitted in accordance with the Rules and Regulations of the Colorado Ground Water Commission for the Management and Control of Designated Ground Water, as amended, but diversions from the Compact Compliance Wells shall be limited to the amount necessary to offset stream depletions in order to comply with Colorado's Allocations under the Republican River Compact in accordance with the terms of the Stipulation between the States of Colorado and Nebraska, as set forth in the Joint Notice of Stipulation between the States of Colorado and Nebraska submitted to Arbitrator Martha O. Pagel on May 17, 2010 ("Joint Notice of Stipulation") (RRWCD Exh. 8).

6. Deliveries to the North Fork of the Republican River from the Colorado Compact Compliance Pipeline will be in compliance with the terms of the Stipulation between the States of Colorado and Nebraska, as set forth in the Joint Notice of Stipulation.

31. Additionally, the Board anticipates that when the Commission issues its approval of the change of use for the ground water rights to be used in the Pipeline project and export, that all of the typical terms and conditions that are usually included in such approvals pursuant to Commission Rule 7 will be included in this one, and specifically including those administrative terms and conditions for which the District typically plays a role in monitoring and administration of the change of use approval. The Board finds that such terms and conditions

should be included in that approval, and should also be incorporated into this Decision, but because they have not yet been issued, the Board cannot review them at this time. Therefore, the Board retains jurisdiction over this Decision for the purpose of reviewing those terms and conditions for adequacy and for the purpose of adding any additional terms and conditions that the Board determines to be needed, but that are not adequately addressed in the Commission's change of use approval. The retained jurisdiction described in this paragraph may be exercised by the Board only if it determines that the terms and conditions contained in the Commission approval of the change of use for the ground water rights to be used in the Pipeline project and export are not adequate, and need to be supplemented by the District. If the Board makes this decision, it will give written notice to the parties of the additional terms and conditions that it believes are needed, and give the RRWCD 60 days to submit a response. The Board will consider any request for an additional hearing, and determine if an additional hearing is needed, or whether the existing record is adequate for a decision about additional terms and conditions.

32. The Board also adds the term and condition of requiring the RRWCD to submit to the District by April 1 of each year, a copy of the annual projections of the amount and timing for Pipeline project deliveries that are prepared in accordance with the stipulation with Nebraska. The RRWCD indicated during the hearing that this term and condition would be acceptable. See RRWCD Exh. 14, at page 6.

33. The RRWCD proposed the following supplemental terms and conditions for the approval of the export of up to 500 acre feet of ground water to be pumped from Wells A-2 through A-8 and B-5 (the "Wells"), as shown on Figure 1 attached to RRWCD Exh. 4, to test the Pipeline in 2012 and delivery of that water into the North Fork of the Republican River near the Colorado/Nebraska State Line. These are found by the Board to be reasonable and appropriate, and they are incorporated into this Decision as binding terms and conditions on the requested export of 500 acre feet to test the Pipeline in 2012.

1. In calendar year 2012, no diversions of ground water shall be made from Well A-2, except as needed by the RRWCD to test the Pipeline, and the fields described in paragraph 2 below will be fallowed in 2012.

2. During 2012, the following fields that are permitted under Permit No. 18015-FP to be irrigated with Well A-2 shall not be irrigated: Fields 6-17, 6-18, and 6-19 (totaling approximately 329 acres), as shown on Figure 1, which is attached as Exhibit B and incorporated in these Findings.

3. In calendar year 2012, diversions of groundwater may be made from Wells A-3 through A-8 and B-5 for irrigation and to test the Pipeline, subject to the supplemental terms and conditions herein. Groundwater diversions from the Wells shall be measured by totalizing flow meters and the RRWCD shall record and report to the State Engineer the readings from such meters before and after the Wells are pumped to test the Pipeline and the amounts pumped from the Wells to test the Pipeline.

4. Discharges of groundwater to the North Fork of the Republican River from the Colorado Compact Compliance Pipeline shall be measured at an

outlet structure located approximately one-half mile from the Colorado-Nebraska State Line.

5. No more than 500 acre feet of groundwater in total shall be diverted from the Wells and delivered into the North Fork of the Republican River near the Colorado/Nebraska State Line to test the Pipeline in 2012.

6. The approval by the Sandhills GWMD to allow the RRWCD to divert up to 500 acre-feet of groundwater from the Wells to test the Pipeline in 2012, in accordance with the terms and conditions provided herein, shall not impair the right to use the water rights in the future for irrigation.

7. The approval of the Sandhills GWMD for the diversion of up to 500 acre feet of groundwater from the Wells and the export of that groundwater for delivery into the North Fork of the Republican River near the Colorado/Nebraska State Line to test the Pipeline in 2012 shall not be a precedent for the approval of any other export of groundwater from the Sandhills GWMD.

34. Additionally, the Board anticipates that the Commission will issue its approval of the change of use for the ground water rights to be used in the Pipeline project and export before any water is used for Pipeline testing, and that all of the typical terms and conditions that are usually included in such approvals pursuant to Commission Rule 7 will be included in this one, and specifically including those administrative terms and conditions for which the District typically plays a role in monitoring and administration of the change of use approval. The Board finds that such terms and conditions should be included in that approval, and should also be incorporated into this Decision, but because they have not yet been issued, the Board cannot review them at this time. Therefore, the Board retains jurisdiction over this Decision for the purpose of reviewing those terms and conditions for adequacy and for the purpose of adding any additional terms and conditions that the Board determines to be needed, but that are not adequately addressed in the Commission's change of use approval. The retained jurisdiction described in this paragraph may be exercised by the Board only if it determines that the terms and conditions contained in the Commission approval of the change of use for the ground water rights to be used in the Pipeline project and export are not adequate, and need to be supplemented by the District. If the Board makes this decision, it will give written notice to the parties of the additional terms and conditions that it believes are needed, and give the RRWCD 60 days to submit a response. The Board will consider any request for an additional hearing, and determine if an additional hearing is needed, or whether the existing record is adequate for a decision about additional terms and conditions.

35. At the hearing, those who had submitted written comments or sought party status were given an opportunity to make any further statement to the Board; none objected to the export application or requested to comment further. The Central Yuma Groundwater Management District, which had sought party status, submitted a letter in support of the export application, which was marked as Exh. 8-A and accepted as part of the record.

36. The Board then allowed public comment on the export application. The only member of the public who spoke was Sue Jarrett. She stated that Mr. Rex Tracy had signed up to give public comment and asked that she be allowed to submit a written statement on his behalf opposing the export application on the basis that it will be of no benefit, which was marked and admitted as Exh. 18. Ms. Jarrett objected to the export application because she questioned the wisdom of continuing to pump ground water from the Ogallala aquifer to maintain the existing agricultural economy and the wisdom of pumping ground water into a surface stream. She submitted a written statement, which was marked and admitted as Exh. 19.

37. At the conclusion of the hearing, the RRWCD requested that the Board approve the export application to allow the RRWCD to export up to 500 acre-feet of ground water in 2012 to test the Pipeline based on the supplemental terms and conditions the RRWCD had submitted (RRWCD Exh. 4), which includes the condition that approval is not a precedent for the approval of any other export of ground water from the District.

38. The RRWCD also requested that the Board approve the export application based on the terms and conditions the RRWCD had submitted (RRWCD Exh. 3) if Colorado receives 100% credit for Pipeline deliveries that are consistent with the stipulation with Nebraska. The terms and conditions include the condition that Pipeline deliveries be made in compliance with the terms of the stipulation with Nebraska.

39. Lastly, the RRWCD asked that the Board reserve consideration of the export application until Colorado has completed discussions with Kansas on the credit Colorado will receive for Pipeline deliveries in the event the States can agree to a percentage credit for Pipeline deliveries that is less than 100%. While the RRWCD believes Colorado should receive 100% credit for Pipeline deliveries that are consistent with the stipulation with Nebraska, the RRWCD recognizes that the Arbitrator recommended 90% credit to address Kansas' concern that Pipeline deliveries would result in "negative pumping impacts" to the detriment of Kansas.

40. The evidence presented at the hearing demonstrated that the Pipeline project is needed for Colorado to comply with the Compact at current levels of well pumping in the Republican River basin in Colorado. The evidence further showed that even shutting down all wells in the basin in Colorado would not bring Colorado into Compact compliance for decades. The FSS allows for the use of wells to offset stream depletions, and the RRWCD Board of Directors carefully evaluated the feasibility of a Pipeline project before it proceeded with the project.

CONCLUSIONS OF LAW

41. The Board has authority to prohibit, after affording an opportunity for hearing before the Board and presentation of evidence, the use of ground water outside the boundaries of the District where such use materially affects the rights acquired by permit by any owner or operator of land within the District, and may, in the reasonable discretion of the Board, condition approval to use ground water outside the boundaries of the District where such conditions are necessary to prevent such use from materially affecting the rights acquired by permit by any owner or operator of land within the District. C.R.S. Section 37-90-137(2)(f).

42. The export application in this matter was filed with the District pursuant to its Rules and the Agreement between the District and the RRWCD. The Board has jurisdiction to make a decision on the export application pursuant to District Rule 3 and C.R.S. Section 37-90-137(2)(f).

43. Timely and adequate notice of the export application and the hearing on the export application was published in accordance with C.R.S. Section 37-90-112(1).

44. The RRWCD has complied with all procedural requirements of the District's Rules and the Agreement between the District and the RRWCD.

DECISION BY THE BOARD

NOW, THEREFORE, it is hereby the decision of the Board of Directors of the District as follows:

45. The Board approves the export of up to 500 acre-feet of ground water in 2012 to test the Pipeline, subject to the supplemental terms and conditions and retained jurisdiction set forth in paragraphs 33 and 34 above.

46. The Board also approves the export of ground water under the ground water rights for the 61 permits located in the District specified in Table 3 of the engineering report attached as Exhibit A and delivery of the ground water to the North Fork of the Republican River for the sole purpose of offsetting stream depletions that reach the Republican River after the date of this decision in order to comply with Colorado's allocations under the Compact and the FSS, on the condition that Colorado receives 100% credit for such deliveries that are in compliance with the stipulation between Colorado and Nebraska, and subject to the other terms and conditions and retained jurisdiction set forth herein.

47. However, the Board retains jurisdiction for further consideration of the export application until Colorado has completed discussions with Kansas on the credit that Colorado will receive for Pipeline deliveries under the Compact in the event the States can agree to a percentage credit for Pipeline deliveries that is less than 100% or Colorado again initiates non-binding arbitration to resolve the dispute over the credit that Colorado will receive and that process results in a credit of less than 100%. The retained jurisdiction described in this paragraph may be exercised upon the request of any party made by filing a written request with the District asking that further consideration of the export be given by the District, and may also be exercised by the Board itself, by giving notice to all parties that further consideration of the export will be given by the District. Any written request filed by a party other than the District shall specify the terms and conditions that the person seeks to have the Board review and shall specify any modification to the terms and conditions the person seeks to have made. A notice given by the Board that the District will initiate additional review under this retained jurisdiction will state the reasons why the additional review is sought. The RRWCD shall have the opportunity to submit a response within 60 days. The Board shall hold a hearing and allow presentation of evidence before making a modification to the terms and conditions under this paragraph.

48. The approval of the export of ground water as provided in paragraph 46 shall also be subject to the retained jurisdiction of the Board to review the adequacy of the other terms and conditions set forth herein and the necessity for additional terms and conditions on the export, no earlier than five years after the first Pipeline project deliveries are made consistent with this approval and no more often than every five years thereafter. RRWCD shall give notice to the District within 60 days after the first deliveries are made so that the initial five year date can be determined with certainty. Any person seeking to invoke the retained jurisdiction of the Board described in this paragraph shall file a request in writing and shall specify the terms and conditions that the person seeks to have the Board review and shall specify any modification to the terms and conditions the person seeks to have made. The Board itself may also initiate additional review under this paragraph by giving the parties written notice that the District will initiate additional review and stating the reasons why the additional review is sought. The RRWCD shall have the opportunity to submit a response within 60 days. Any person other than the District requesting to invoke the retained jurisdiction shall have the burden to show why any modification to the terms and conditions is necessary if the RRWCD disagrees with the proposed modification. The Board shall hold a hearing and allow presentation of evidence before making a modification to the terms and conditions under this paragraph.

49. Subject to the terms and conditions and the retained jurisdiction provisions set forth herein, which the District thinks are matters for potential future consideration and resolution, this Decision is intended by the District to be a final decision on all of the matters currently pending in this proceeding. More specifically, the Commission should regard this Decision as final pursuant to Commission Rule 7.7.4.1.

Dated: March 12, 2012.

BY THE BOARD OF DIRECTORS

President

Table 3
Rights to Designated Groundwater

Field Number	Permit #1	Permit #2	Acreage in Change of Use Form	Colorado Groundwater Commission Historical Consumptive Use (ac-ft/yr)	Corrected Historical Consumptive Use (ac-ft/yr)	Maximum Annual Volume of Appropriation (ac-ft)	Groundwater Commission Preliminary Approval Date
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1-1	12967-FP	16920-FP	194	345	333	493	3/19/2008
1-2	14403-FP		181	279	279	458	12/12/2008
1-3	14019-FP		133	217	206	338	3/19/2008
1-4	14018-FP		164	252	234	418	3/19/2008
1-5	19372-FP		136	218	211	340	3/19/2008
1-6 and 1-7	18780-FP		127	192	192	345	3/19/2008
Subtotal			**935**	**1,502**	**1,455**	**2,392**	
2-1	14396-FP		130	192	180	325	3/19/2008
2-2	13858-FP		133	228	206	333	3/19/2008
2-3	13859-FP	16069-FP	188	270	260	473	3/19/2008
2-4	13857-FP		147	229	217	365	3/19/2008
2-5	14398-FP		144	240	230	360	3/19/2008
2-6	13856-FP	16067-FP	164	249	249	413	3/19/2008
Subtotal			**906**	**1,408**	**1,342**	**2,269**	
3-1	14397-FP		127	192	184	315	3/19/2008
3-2	14027-FP		153	251	237	385	3/19/2008
3-3	14022-FP		180	289	255	450	3/19/2008
3-4	14023-FP		133	219	197	333	3/19/2008
3-5	14600-FP		124	197	187	315	3/19/2008
3-6	15285-FP		98	161	140	243	3/19/2008
3-7	20896-FP		107	169	168	265	3/19/2008
Subtotal			**922**	**1,479**	**1,369**	**2,306**	
4-1	13513-FP	16074-FP	186	302	257	468	3/19/2008
4-2	14028-FP		146	218	202	365	3/19/2008
4-3	14753-FP		185	310	267	463	3/19/2008
4-4	13522-FP		135	204	189	343	3/19/2008
4-5	14024-FP		93	141	129	235	3/19/2008
4-6	13509-FP	16075-FP	179	284	273	448	3/19/2008
4-7	13511-FP		123	192	173	310	3/19/2008
4-8	18781-FP		128	216	206	320	3/19/2008
4-9	21476-FP		88	144	139	220	3/19/2008
5-1	18783-FP		173	273	273	400	3/19/2008
Subtotal			**1,437**	**2,285**	**2,108**	**3,572**	
6-0	19004-FP		82	141	141	700	12/12/2008
6-1	19005-FP		124	178	174	335	3/19/2008
6-2	18966-FP		94	172	172	900	3/19/2008
6-3	18018-FP		148	230	218	400	3/19/2008
6-4,6-5	18017-FP	19001-FP	245	361	353	800	3/19/2008
6-6, 6-7	23222-FP		148	230	230	200	12/12/2008
6-8	18019-FP		107	173	163	400	3/19/2008
6-9, 6-10	18014-FP		176	259	247	400	3/19/2008
6-11,12,13,14	18013-FP		250	350	350	400	3/19/2008
6-15, 6-16	18011-FP		244	431	421	900	3/19/2008
6-17, 6-18, 6-19	18015-FP		329	549	497	900	3/19/2008
6-20, 6-21	18012-FP	19000-FP	208	322	317	582	3/19/2008
Subtotal			**2,155**	**3,397**	**3,283**	**6,917**	
7-1	13813-FP	16923-FP	126	206	203	400	3/19/2008
7-2, 7-2A	13814-FP		219	334	323	480	3/19/2008
7-3, 7-3a	13815-FP		197	291	311	480	3/19/2008
7-13, 7-14	14718-FP		358	526	526	800	3/19/2008

EXHIBIT A – to
SHGWMD Export Decision

Appendix A

Field Number	Permit #1	Permit #2	Acreage in Change of Use Form	Colorado Groundwater Commission Historical Consumptive Use (ac-ft/yr)	Corrected Historical Consumptive Use (ac-ft/yr)	Maximum Annual Volume of Appropriation (ac-ft)	Groundwater Commission Preliminary Approval Date
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
7-15, 7-16	14121-FP		285	437	420	800	3/19/2008
7-17, 7-18	14719-FP		263	455	424	800	3/19/2008
7-19 [a]	14122-FP		131	215	204	400	3/19/2008
7-21, 7-21A	12589-FP		251	376	372	560	3/19/2008
Subtotal			**1,831**	**2,840**	**2,782**	**4,720**	
Wiley	4319-FP	4922-FP	65	75	75	125	12/12/2008
Wilder1	20198-FP		124	194	194	325	12/12/2008
Wilder2	20196-FP		163	249	249	450	12/12/2008
Subtotal			**352**	**518**	**518**	**900**	
Total Submitted for SGWMD Approval			**8,537**	**13,430**	**12,858**	**23,076**	

One Parcel that is not included with the SGMD Application but this Parcel is included in CGWC review and preliminary Approval and is shown here for Comparison Purposes. The well that irrigates this parcel is located in the Central Yuma Groundwater Management District.							
7-23	12567-FP		126	201	201	315	3/19/2008
Total with Parcel 7-23			**8,664**	**13,630**	**13,059**	**23,391**	

a) Permit allows for irrigation of parcels 7-19 and 7-20. Only the portion of permit historically

Explanation of Columns

(1) Field Number as shown on Figure 4.

(2) Final permit for the Northern High Plains Designated Ground Water Basin. See permit for well location, priority date, and other information, including any allowable commingling with other permits.

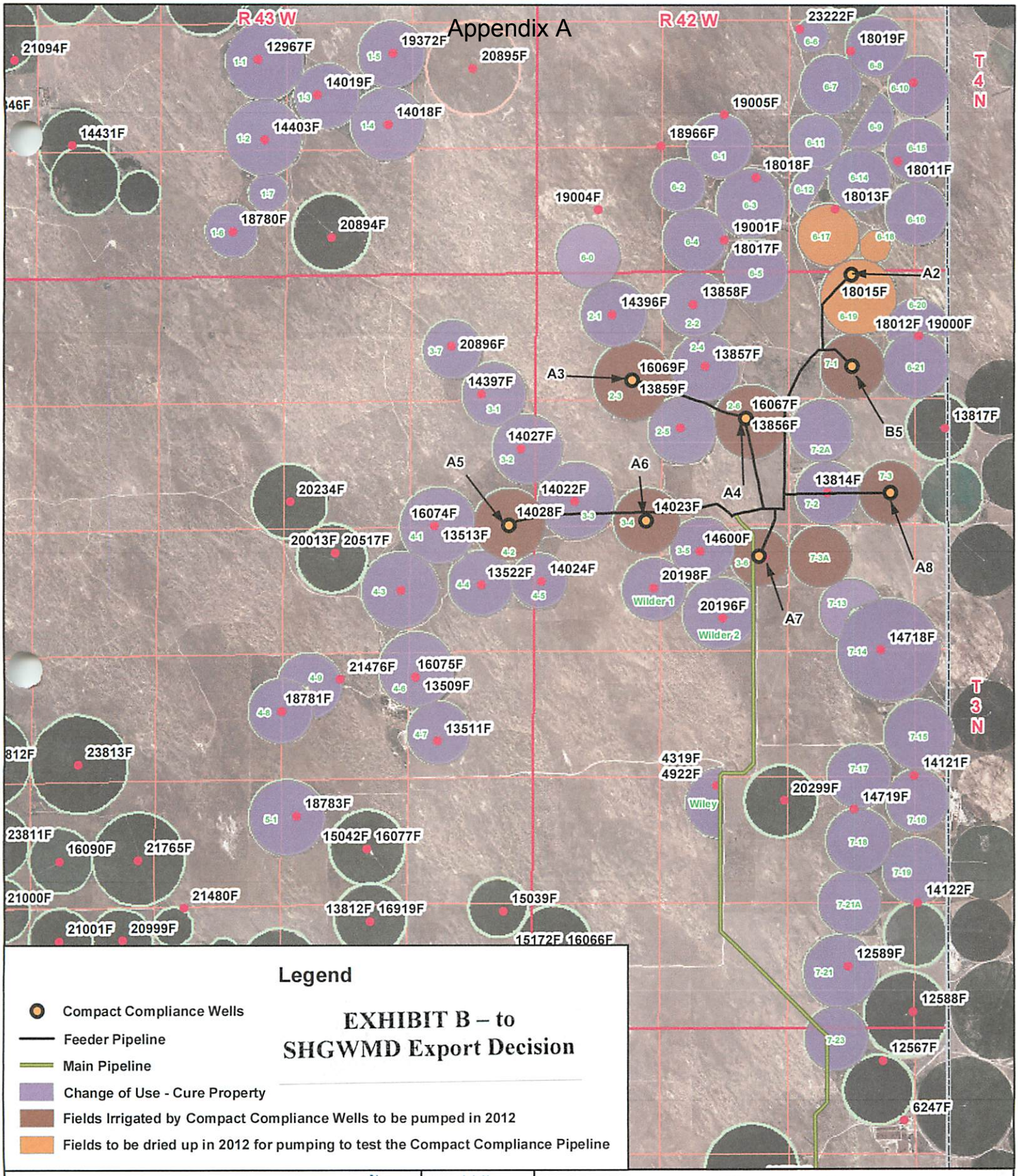
(3) Second permit associated with the permit shown in column 2. Typically, these are permits for additional acreage, but see permit for details.

(4) Average acreage reported in change of use form submitted to the Colorado Groundwater Commission

(5) Historical consumptive use determined from irrigated acreage, crop records and power records. For permits in February 25, 2008 application the values are from the March 19, 2008 DWR Publication letter. For permits in October 22, 2008 submittal the values are from the December 8, 2008 DWR Publication letter.

(6) In April of 2008 Marc Groff, a consultant for the State of Nebraska, identified an error in the consumptive use calculations made in the February 25, 2008 submittal to the Colorado Groundwater Commission. This error was documented by the State of Colorado in a memorandum provided to the State of Nebraska and the State of Kansas entitled "Revisions to Crop Irrigation Requirement Use Estimates included in March 2008 RRCA Submittal for the Republican River Compact Compliance" dated May 18, 2008. This error was corrected and was not included in the October 22, 2008 submittal. The Consumptive Use values shown in Column 7 are the corrected February 25, 2008 values and the October 22, 2008

(7) Amount of annual permitted withdrawal determined from well permit. This information is used to set the water banking limitations by the Colorado Groundwater Commission.



Legend

- Compact Compliance Wells
- Feeder Pipeline
- Main Pipeline
- Change of Use - Cure Property
- Fields Irrigated by Compact Compliance Wells to be pumped in 2012
- Fields to be dried up in 2012 for pumping to test the Compact Compliance Pipeline

EXHIBIT B – to
SHGWMD Export Decision

0 0.5 1 2
Miles

N W E S

Slattery & Hendrix Engineering LLC

Job No.	R1601
File:	Cure Farms Lease.mxd
Date:	12/23/11
Prepared For:	RRWCD

Figure 1

General Location Map
Cure Farms
Compact Compliance Wells

Data Sources:
County Digital Raster Graphics from USDA;
Irrigated Acreage from Slattery & Hendrix Engineering LLC

REPUBLICAN RIVER COMPACT ARBITRATION

COLORADO'S COMPACT COMPLIANCE PIPELINE ISSUE AND NEBRASKA'S CREDITING ISSUE

BEFORE MS. MARTHA PAGEL, ARBITRATOR

Pursuant to Section VII, Final Settlement Stipulation (December 15, 2002)

JOINT NOTICE OF STIPULATION

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The States of Colorado and Nebraska (the "Stipulating States") hereby notify the Arbitrator and the State of Kansas that the Stipulating States have resolved, as between the Stipulating States, all Issues presented in this Arbitration by both Nebraska and Colorado. In furtherance of the Stipulation, the States hereby inform the Arbitrator as follows:

1. Nebraska informs the Arbitrator that she supports Colorado's Compliance Pipeline (subject to the terms of the Stipulating States' agreement);
2. Nebraska withdraws the Additional Issues identified in her September 4, 2009 correspondence concerning the Colorado Compliance Pipeline (attached to the Colorado Compliance Pipeline Arbitration Agreement as Exhibit C);
3. Colorado informs the Arbitrator that she supports Nebraska's proposed resolution of the Nebraska Crediting Issue;
4. The States of Colorado and Nebraska have agreed to the following terms as part of the Stipulating States' agreement: Colorado and the RRWCD WAE shall deliver water to the North Fork of the Republican River to offset stream depletions in order to comply with Colorado's Compact Allocations as agreed upon by the two States not later than December 31 of the year preceding scheduled deliveries. Colorado and the RRWCD WAE together shall consult with Nebraska as needed to coordinate the timing and volume of deliveries to the North Fork of the Republican River. To the maximum extent possible, Colorado and the RRWCD WAE will make such deliveries per Nebraska's request consistent with the following delivery schedule:

a. For each year, except as provided in paragraph b, Colorado shall begin deliveries on January 1 and shall make the minimum annual delivery of 4,000 acre-feet provided for in the Colorado Resolution during the months of January through March. Colorado will calculate and provide notice of the Projected Delivery, as defined in the Colorado Resolution, to the Kansas and Nebraska RRCA Members by April 1 as provided in the Colorado Resolution. Unless Colorado determines by April 1 that it will not be able to deliver any remaining Projected Delivery in the months of October through December, Colorado shall stop deliveries at the end of March. If Colorado anticipates that deliveries in the months of November and December will not be sufficient for Compact compliance, Colorado shall maximize deliveries first in January, then sequentially in the months of February, March, and April. Only if there is reason to believe that additional deliveries in the months of October through December as described below in this paragraph will not be sufficient for Compact compliance will deliveries extend into the month of May. By September 1st, Colorado will gather provisional hydrologic data for the months of January through August of the year and shall estimate the amount of deliveries needed for Compact compliance for the remainder of the year after accounting for the deliveries earlier in the year. Colorado shall then maximize any

additional water deliveries first in the month of December, then sequentially in November, and October.

b. For the first year the Pipeline becomes operational, if the Pipeline becomes operational after January 1 and Colorado cannot make the minimum annual delivery of 4,000 acre-feet provided for in the Colorado Resolution during the months of January through March, Colorado and the RRWCD WAE together shall consult with Nebraska as needed to coordinate the timing and volume of deliveries to the North Fork of the Republican River and shall maximize deliveries prior to March 31 and in the months of October through December.

c. If the minimum annual delivery of 4,000 acre-feet provided for in the Colorado Resolution is modified by arbitrator's decision, RRCA action, or United States Supreme Court decision or by agreement of the States, the States agree to work together in good faith to agree upon a delivery schedule that, to the maximum extent possible, will make such deliveries per Nebraska's request consistent with the delivery schedule provided in paragraph a. In the event the States are unable to agree upon a delivery schedule pursuant to this Stipulation, and the dispute is not resolved, the States shall proceed in good faith to submit the dispute to mediation. Mediation is a process in which the parties meet with an impartial person who helps to resolve the dispute informally and confidentially. The parties to the dispute must agree

before any settlement is binding. The States will jointly appoint an acceptable mediator and will share equally in the cost of such mediation. The mediation, unless otherwise agreed, shall terminate in the event the dispute cannot be resolved within 30 calendar days of the date written notice requesting mediation is delivered by one State's RRCA Member to the other State's RRCA Member.

d. Unless otherwise requested by Nebraska, deliveries during the Irrigation Season, defined as being the months June through September, shall be avoided to the maximum extent possible and shall only be made as a last resort in order to satisfy the water deliveries called for under the Colorado Resolution; and,

5. The Stipulating States expressly reserve their right to prosecute their respective positions in this Arbitration to the fullest extent against all challenges by the State of Kansas, and nothing contained herein shall limit the Stipulating States' ability to defend any such challenge and participate in this Arbitration as set forth in Section VII of the Final Settlement Stipulation.

/// /// ///

/// /// ///

/// /// ///

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Exhibit 2

Republican River Compact Administration

ACCOUNTING PROCEDURES

AND

REPORTING REQUIREMENTS

Revised July 27, 2005

Updated November 7, 2008

Colorado Proposal
Updated April 5, 2013

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I. Introduction

This document describes the definitions, procedures, basic formulas, specific formulas, and data requirements and reporting formats to be used by the RRCA to compute the Virgin Water Supply, Computed Water Supply, Allocations, Imported Water Supply Credit, ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credit, and Computed Beneficial Consumptive Use. These computations shall be used to determine supply, allocations, use and compliance with the Compact according to the Stipulation. These definitions, procedures, basic and specific formulas, data requirements and attachments may be changed by consent of the RRCA consistent with Subsection I.F of the Stipulation. This document will be referred to as the RRCA Accounting Procedures. Attached to these RRCA Accounting Procedures as Figure 1 is the map attached to the Compact that shows the Basin, its streams and the Basin boundaries.

II. Definitions

The following words and phrases as used in these RRCA Accounting Procedures are defined as follows:

Additional Water Administration Year - a year when the projected or actual irrigation water supply is less than 130,000 Acre-feet of storage available for use from Harlan County Lake as determined by the Bureau of Reclamation using the methodology described in the Harlan County Lake Operation Consensus Plan attached as Appendix K to the Stipulation.

Allocation(s): the water supply allocated to each State from the Computed Water Supply;

Annual: yearly from January 1 through December 31;

Augmentation Plan: a detailed program used by a State to offset stream depletions in order to comply with its Compact Allocations. An Augmentation Plan shall be approved by the RRCA prior to implementation in accordance with Subsection III.B.1.k of the Stipulation;

Augmentation Water Supply: the water supply developed through the acquisition or construction of wells for the sole purpose of offsetting stream depletions in order to comply with a State's Compact Allocations in conformance with an Augmentation Plan;

~~**Augmentation Water Supply Credit**~~**CNF Augmentation Water Supply Credit:** the amount of water measured and discharged to the North Fork of the Republican River by the Colorado CCPstream flow ~~of a Designated Drainage Basin~~ due to the acquisition or construction of wells for the purpose of offsetting stream depletions to comply with a States' Compact Allocation in conformance with an Augmentation Plan. The ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credit of ~~a State~~Colorado shall not be included in the Virgin Water Supply in the Designated Drainage Basin and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water allocated to ~~that State~~Colorado;

Basin: the Republican River Basin as defined in Article II of the Compact;

Beneficial Consumptive Use: that use by which the Water Supply of the Basin is consumed through the activities of man, and shall include water consumed by evaporation from any reservoir, canal, ditch, or irrigated area;

Change in Federal Reservoir Storage: the difference between the amount of water in storage in the reservoir on December 31 of each year and the amount of water in storage on December 31 of the previous year. The current area capacity table supplied by the appropriate federal operating agency shall be used to determine the contents of the reservoir on each date;

Compact: the Republican River Compact, Act of February 22, 1943, 1943 Kan. Sess. Laws 612, codified at Kan. Stat. Ann. § 82a-518 (1997); Act of February 24, 1943, 1943 Neb. Laws 377, codified at 2A Neb. Rev. Stat. App. § 1-106 (1995), Act of March 15, 1943, 1943 Colo. Sess. Laws 362, codified at Colo. Rev. Stat. §§ 37-67-101 and 37-67-102 (2001); Republican River Compact, Act of May 26, 1943, ch. 104, 57 Stat. 86;

Computed Beneficial Consumptive Use: for purposes of Compact accounting, the stream flow depletion resulting from the following activities of man:

Irrigation of lands in excess of two acres;
Any non-irrigation diversion of more than 50 Acre-feet per year;
Multiple diversions of 50 Acre-feet or less that are connected or otherwise combined to serve a single project will be considered as a single diversion for accounting purposes if they total more than 50 Acre-feet;
Net evaporation from Federal Reservoirs;
Net evaporation from Non-federal Reservoirs within the surface boundaries of the Basin;
Any other activities that may be included by amendment of these formulas by the RRCA;

Computed Water Supply: the Virgin Water Supply less the Change in Federal Reservoir Storage in any Designated Drainage Basin, and less the Flood Flows;

Designated Drainage Basins: the drainage basins of the specific tributaries and the Main Stem of the Republican River as described in Article III of the Compact. Attached hereto as Figure 3 is a map of the Sub-basins and Main Stem;

Dewatering Well: a Well constructed solely for the purpose of lowering the groundwater elevation;

Federal Reservoirs:

Bonny Reservoir
Swanson Lake
Enders Reservoir
Hugh Butler Lake
Harry Strunk Lake
Keith Sebelius Lake
Harlan County Lake
Lovewell Reservoir

Flood Flows: the amount of water deducted from the Virgin Water Supply as part of the computation of the Computed Water Supply due to a flood event as determined by the methodology described in Subsection III.B.1.;

Gaged Flow: the measured flow at the designated stream gage;

Guide Rock: a point at the Superior-Courtland Diversion Dam on the Republican River near Guide Rock, Nebraska; the Superior-Courtland Diversion Dam gage plus any flows through the sluice gates of the dam, specifically excluding any diversions to the Superior and Courtland Canals, shall be the measure of flows at Guide Rock;

Historic Consumptive Use: that amount of water that has been consumed under appropriate and reasonably efficient practices to accomplish without waste the purposes for which the appropriation or other legally permitted use was lawfully made;

Imported Water Supply: the water supply imported by a State from outside the Basin resulting from the activities of man;

Imported Water Supply Credit: the accretions to stream flow due to water imports from outside of the Basin as computed by the RRCA Groundwater Model. The Imported Water Supply Credit of a State shall not be included in the Virgin Water Supply and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water allocated to that State, except as provided in Subsection V.B.2. of the Stipulation and Subsections III.I. – J. of these RRCA Accounting Procedures;

Main Stem: the Designated Drainage Basin identified in Article III of the Compact as the North Fork of the Republican River in Nebraska and the main stem of the Republican River between the junction of the North Fork and the Arikaree River and the lowest crossing of the river at the Nebraska-Kansas state line and the small tributaries thereof, and also including the drainage basin Blackwood Creek;

Main Stem Allocation: the portion of the Computed Water Supply derived from the Main Stem and the Unallocated Supply derived from the Sub-basins as shared by Kansas and Nebraska;

Meeting(s): a meeting of the RRCA, including any regularly scheduled annual meeting or any special meeting;

Modeling Committee: the modeling committee established in Subsection IV.C. of the Stipulation;

Moratorium: the prohibition and limitations on construction of new Wells in the geographic area described in Section III. of the Stipulation;

Non-federal Reservoirs: reservoirs other than Federal Reservoirs that have a storage capacity of 15 Acre-feet or greater at the principal spillway elevation;

Northwest Kansas: those portions of the Sub-basins within Kansas;

Replacement Well: a Well that replaces an existing Well that a) will not be used after construction of the new Well and b) will be abandoned within one year after such construction or is used in a manner that is excepted from the Moratorium pursuant to Subsections III.B.1.c.-f. of the Stipulation;

RRCA: Republican River Compact Administration, the administrative body composed of the State officials identified in Article IX of the Compact;

RRCA Accounting Procedures: this document and all attachments hereto;

RRCA Groundwater Model: the groundwater model developed under the provisions of Subsection IV.C. of the Stipulation and as subsequently adopted and revised through action of the RRCA;

State: any of the States of Colorado, Kansas, and Nebraska;

States: the States of Colorado, Kansas and Nebraska;

Stipulation: the Final Settlement Stipulation to be filed in *Kansas v. Nebraska and Colorado*, No. 126, Original, including all Appendices attached thereto;

Sub-basin: the Designated Drainage Basins, except for the Main Stem, identified in Article III of the Compact. For purposes of Compact accounting the following Sub-basins will be defined as described below:

> North Fork of the Republican River in Colorado drainage basin is that drainage area above USGS gaging station number 06823000, North Fork Republican River at the Colorado-Nebraska State Line,

Arikaree River drainage basin is that drainage area above USGS gaging station number 06821500, Arikaree River at Haigler, Nebraska,

Buffalo Creek drainage basin is that drainage area above USGS gaging station number 06823500, Buffalo Creek near Haigler, Nebraska,

Rock Creek drainage basin is that drainage area above USGS gaging station number 06824000, Rock Creek at Parks, Nebraska,

South Fork of the Republican River drainage basin is that drainage area above USGS gaging station number 06827500, South Fork Republican River near Benkelman, Nebraska,

Frenchman Creek (River) drainage basin in Nebraska is that drainage area above USGS gaging station number 06835500, Frenchman Creek in Culbertson, Nebraska,

Driftwood Creek drainage basin is that drainage area above USGS gaging station number 06836500, Driftwood Creek near McCook, Nebraska,

Red Willow Creek drainage basin is that drainage area above USGS gaging station number 06838000, Red Willow Creek near Red Willow, Nebraska,

Medicine Creek drainage basin is that drainage area above the Medicine Creek below Harry Strunk Lake, State of Nebraska gaging station number 06842500; and the drainage area between the gage and the confluence with the Main Stem,

Sappa Creek drainage basin is that drainage area above USGS gaging station number 06847500, Sappa Creek near Stamford, Nebraska and the drainage area between the gage and the confluence with the Main Stem; and excluding the Beaver Creek drainage basin area downstream from the State of Nebraska gaging station number 06847000 Beaver Creek near Beaver City, Nebraska to the confluence with Sappa Creek,

Beaver Creek drainage basin is that drainage area above State of Nebraska gaging station number 06847000, Beaver Creek near Beaver City, Nebraska, and the drainage area between the gage and the confluence with Sappa Creek,

Prairie Dog Creek drainage basin is that drainage area above USGS gaging station number 06848500, Prairie Dog Creek near Woodruff, Kansas, and the drainage area between the gage and the confluence with the Main Stem;

Attached hereto as Figure 2 is a line diagram depicting the streams, Federal Reservoirs and gaging stations;

Test hole: a hole designed solely for the purpose of obtaining information on hydrologic and/or geologic conditions;

Trenton Dam: a dam located at 40 degrees, 10 minutes, 10 seconds latitude and 101 degrees, 3 minutes, 35 seconds longitude, approximately two and one-half miles west of the town of Trenton, Nebraska;

Unallocated Supply: the "water supplies of upstream basins otherwise unallocated" as set forth in Article IV of the Compact;

Upstream of Guide Rock, Nebraska: those areas within the Basin lying west of a line proceeding north from the Nebraska-Kansas state line and following the western edge of Webster County, Township 1, Range 9, Sections 34, 27, 22, 15, 10 and 3 through Webster County, Township 2, Range 9, Sections 34, 27 and 22; then proceeding west along the southern edge of Webster County, Township 2, Range 9, Sections 16, 17 and 18; then proceeding north following the western edge of Webster County, Township 2, Range 9, Sections 18, 7 and 6, through Webster County, Township 3, Range 9, Sections 31, 30, 19, 18, 7 and 6 to its intersection with the northern boundary of Webster County. Upstream of Guide Rock, Nebraska shall not include that area in Kansas east of the 99° meridian and south of the Kansas-Nebraska state line;

Virgin Water Supply: the Water Supply within the Basin undepleted by the activities of man;

Water Short Year Administration: administration in a year when the projected or actual irrigation water supply is less than 119,000 acre feet of storage available for use from Harlan County Lake as determined by the Bureau of Reclamation using the methodology described in the Harlan County Lake Operation Consensus Plan attached as Appendix K to the Stipulation.

Water Supply of the Basin or **Water Supply within the Basin:** the stream flows within the Basin, excluding Imported Water Supply;

Well: any structure, device or excavation for the purpose or with the effect of obtaining groundwater for beneficial use from an aquifer, including wells, water wells, or groundwater wells as further defined and used in each State's laws, rules, and regulations.

III. Basic Formulas

The basic formulas for calculating Virgin Water Supply, Computed Water Supply, Imported Water Supply, Allocations and Computed Beneficial Consumptive Use are set forth below. The results of these calculations shall be shown in a table format as shown in Table 1.

Basic Formulas for Calculating Virgin Water Supply, Computed Water Supply, Allocations and Computed Beneficial Consumptive Use

Sub-basin VWS	=	Gage + All CBCU – CNFAWS +ΔS – IWS
Main Stem VWS	=	Hardy Gage – Σ Sub-basin gages + All CBCU in the Main Stem +ΔS – IWS
CWS	=	VWS - Δ S – FF
Allocation for each State in each Sub-basin And Main Stem	=	CWS x %
State's Allocation	=	Σ Allocations for Each State
State's CBCU	=	Σ State's CBCUs in each Sub-basin and Main Stem

Abbreviations:

CNFAWS = ~~Augmentation Water Supply Credit~~Colorado North Fork (CNF) Augmentation Water Supply Credit
CBCU = Computed Beneficial Consumptive Use
FF = Flood Flows
Gage = Gaged Flow
IWS = Imported Water Supply Credit
CWS = Computed Water Supply
VWS = Virgin Water Supply
% = the ratio used to allocate the Computed Water Supply between the States. This ratio is based on the allocations in the Compact
Δ S = Change in Federal Reservoir Storage

A. Calculation of Annual Virgin Water Supply

1. Sub-basin calculation:

The annual Virgin Water Supply for each Sub-basin will be calculated by adding: a) the annual stream flow in that Sub-basin at the Sub-basin stream gage designated in Section II., b) the annual Computed Beneficial Consumptive Use above that gaging station, and c) the Change in Federal Reservoir Storage in that Sub-basin; and from that total subtract any Imported Water Supply Credit and any ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credit.~~.~~ The Computed Beneficial Consumptive Use will be calculated as described in Subsection III. D. Adjustments for flows diverted around stream gages and for Computed Beneficial Consumptive Uses in the Sub-basin between the Sub-basin stream gage and the confluence of the

Sub-basin tributary and the Main Stem shall be made as described in Subsections III. D. 1 and 2 and IV. B.

2. Main Stem Calculation:

The annual Virgin Water Supply for the Main Stem will be calculated by adding: a) the flow at the Hardy gage minus the flows from the Sub-basin gages listed in Section II, b) the annual Computed Beneficial Consumptive Use in the Main Stem, and c) the Change in Federal Reservoir Storage from Swanson Lake and Harlan County Lake; and from that total subtract any Imported Water Supply Credit for the Main Stem. Adjustments for flows diverted around Sub-basin stream gages and for Computed Beneficial Consumptive Uses in a Sub-basin between the Sub-basin stream gage and the confluence of the Sub-basin tributary and the Mains Stem shall be made as described in Subsections III. D. 1 and 2 and IV.B.,

3. Imported Water Supply Credit Calculation:

The amount of Imported Water Supply Credit shall be determined by the RRCA Groundwater Model. The Imported Water Supply Credit of a State shall not be included in the Virgin Water Supply and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water allocated to that State. Currently, the Imported Water Supply Credits shall be determined using two runs of the RRCA Groundwater Model:

a. The "base" run shall be the run with all groundwater pumping, groundwater pumping recharge, and surface water recharge within the model study boundary for the current accounting year turned "on." This will be the same "base" run used to determine groundwater Computed Beneficial Consumptive Uses.

b. The "no NE import" run shall be the run with the same model inputs as the base run with the exception that surface water recharge associated with Nebraska's Imported Water Supply shall be turned "off."

The Imported Water Supply Credit shall be the difference in stream flows between these two model runs. Differences in stream flows shall be determined at the same locations as identified in Subsection III.D.1.for the "no pumping" runs.
Should another State import water into the Basin in the future, the RRCA will develop a similar procedure to determine Imported Water Supply Credits.

4. ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credit:

The amount of ~~Augmentation Water Supply Credit~~CNF Augmentation Water

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Supply Credit shall be the quantity of water delivered to the North Fork of the Republican River stream flow of a Designated Drainage Basin and shall be measured and subtracted from the Gaged Flow of the Designated Drainage Basin to calculate the Annual Virgin Water Supply. The ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credit of ~~a State~~Colorado shall not be included in the Annual Virgin Water Supply and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water allocated to ~~that State~~Colorado.

B. Calculation of Computed Water Supply

On any Designated Drainage Basin without a Federal Reservoir, the Computed Water Supply will be equal to the Virgin Water Supply of that Designated Drainage Basin minus Flood Flows.

On any Designated Drainage Basin with a Federal Reservoir, the Computed Water Supply will be equal to the Virgin Water Supply minus the Change in Federal Reservoir Storage in that Designated Drainage Basin and minus Flood Flows.

1. Flood Flows

If in any calendar year there are five consecutive months in which the total actual stream flow[1] at the Hardy gage is greater than 325,000 Acre-feet, or any two consecutive months in which the total actual stream flow is greater than 200,000 Acre-feet, the annual flow in excess of 400,000 Acre-feet at the Hardy gage will be considered to be Flood Flows that will be subtracted from the Virgin Water Supply to calculate the Computed Water Supply, and Allocations. The Flood Flow in excess of 400,000 Acre-feet at the Hardy gage will be subtracted from the Virgin Water Supply of the Main Stem to compute the Computed Water Supply unless the Annual Gaged Flows from a Sub-basin were in excess of the flows shown for that Sub-basin in Attachment 1. These excess Sub-basin flows shall be considered to be Sub-basin Flood Flows.

If there are Sub-basin Flood Flows, the total of all Sub-basin Flood Flows shall be compared to the amount of Flood Flows at the Hardy gage. If the sum of the Sub-basin Flood Flows are in excess of the Flood Flow at the Hardy gage, the flows to be deducted from each Sub-basin shall be the product of the Flood Flows for each Sub-basin times the ratio of the Flood Flows at the Hardy gage divided by the sum of the Flood Flows of the Sub-basin gages. If the sum of the Sub-basin Flood Flows

[1] These actual stream flows reflect Gaged Flows after depletions by Beneficial Consumptive Use and change in reservoir storage above the gage.

is less than the Flood Flow at the Hardy gage, the entire amount of each Sub-basin Flood Flow shall be deducted from the Virgin Water Supply to compute the Computed Water Supply of that Sub-basin for that year. The remainder of the Flood Flows will be subtracted from the flows of the Main Stem.

C. Calculation of Annual Allocations

Article IV of the Compact allocates 54,100 Acre-feet for Beneficial Consumptive Use in Colorado, 190,300 Acre-feet for Beneficial Consumptive Use in Kansas and 234,500 Acre-feet for Beneficial Consumptive Use in Nebraska. The Compact provides that the Compact totals are to be derived from the sources and in the amounts specified in Table 2.

The Allocations derived from each Sub-basin to each State shall be the Computed Water Supply multiplied by the percentages set forth in Table 2. In addition, Kansas shall receive 51.1% of the Main Stem Allocation and the Unallocated Supply and Nebraska shall receive 48.9% of the Main Stem Allocation and the Unallocated Supply.

D. Calculation of Annual Computed Beneficial Consumptive Use

1. Groundwater

Computed Beneficial Consumptive Use of groundwater shall be determined by use of the RRCA Groundwater Model. The Computed Beneficial Consumptive Use of groundwater for each State shall be determined as the difference in streamflows using two runs of the model:

The "base" run shall be the run with all groundwater pumping, groundwater pumping recharge, and surface water recharge within the model study boundary for the current accounting year "on".

The "no State pumping" run shall be the run with the same model inputs as the base run with the exception that all groundwater pumping and pumping recharge of that State shall be turned "off."

An output of the model is baseflows at selected stream cells. Changes in the baseflows predicted by the model between the "base" run and the "no-State-pumping" model run is assumed to be the depletions to streamflows. i.e., groundwater computed beneficial consumptive use, due to State groundwater pumping at that location. The values for each Sub-basin will include all depletions and accretions upstream of the confluence with the Main Stem. The values for the

Main Stem will include all depletions and accretions in stream reaches not otherwise accounted for in a Sub-basin. The values for the Main Stem will be computed separately for the reach above Guide Rock, and the reach below Guide Rock.

2. Surface Water

The Computed Beneficial Consumptive Use of surface water for irrigation and non-irrigation uses shall be computed by taking the diversions from the river and subtracting the return flows to the river resulting from those diversions, as described in Subsections IV.A.2.a.-d. The Computed Beneficial Consumptive Use of surface water from Federal Reservoir and Non-Federal Reservoir evaporation shall be the net reservoir evaporation from the reservoirs, as described in Subsections IV.A.2.e.-f.

For Sub-basins where the gage designated in Section II. is near the confluence with the Main Stem, each State's Sub-basin Computed Beneficial Consumptive Use of surface water shall be the State's Computed Beneficial Consumptive Use of surface water above the Sub-basin gage. For Medicine Creek, Sappa Creek, Beaver Creek and Prairie Dog Creek, where the gage is not near the confluence with the Main Stem, each State's Computed Beneficial Consumptive Use of surface water shall be the sum of the State's Computed Beneficial Consumptive Use of surface water above the gage, and its Computed Beneficial Consumptive Use of surface water between the gage and the confluence with the Main Stem.

E. Calculation to Determine Compact Compliance Using Five-Year Running Averages

Each year, using the procedures described herein, the RRCA will calculate the Annual Allocations by Designated Drainage Basin and total for each State, the Computed Beneficial Consumptive Use by Designated Drainage Basin and total for each State and the Imported Water Supply Credit and the ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credit that a State may use for the preceding year. These results for the current Compact accounting year as well as the results of the previous four accounting years and the five-year average of these results will be displayed in the format shown in Table 3.

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F. Calculations To Determine Colorado's and Kansas's Compliance with the Sub-basin Non-Impairment Requirement

The data needed to determine Colorado's and Kansas's compliance with the Sub-basin non-impairment requirement in Subsection IV.B.2. of the Stipulation are shown in Tables 4.A. and B.

G. Calculations To Determine Projected Water Supply

1. Procedures to Determine Water Short Years

The Bureau of Reclamation will provide each of the States with a monthly or, if requested by any one of the States, a more frequent update of the projected or actual irrigation supply from Harlan County Lake for that irrigation season using the methodology described in the Harlan County Lake Operation Consensus Plan, attached as Appendix K to the Stipulation. The steps for the calculation are as follows:

Step 1. At the beginning of the calculation month (1) the total projected inflow for the calculation month and each succeeding month through the end of May shall be added to the previous end of month Harlan County Lake content and (2) the total projected 1993 level evaporation loss for the calculation month and each succeeding month through the end of May shall then be subtracted. The total projected inflow shall be the 1993 level average monthly inflow or the running average monthly inflow for the previous five years, whichever is less.

Step 2. Determine the maximum irrigation water available by subtracting the sediment pool storage (currently 164,111 Acre-feet) and adding the summer sediment pool evaporation (20,000 Acre-feet) to the result from Step 1.

Step 3. For October through January calculations, take the result from Step 2 and using the Shared Shortage Adjustment Table in Attachment 2 hereto, determine the preliminary irrigation water available for release. The calculation using the end of December content (January calculation month) indicates the minimum amount of irrigation water available for release at the end of May. For February through June calculations, subtract the maximum irrigation water available for the January calculation month from the maximum irrigation water available for the calculation month. If the result is negative, the irrigation water available for release (January calculation month) stays the same. If the result is positive the preliminary irrigation water available for release (January calculation month) is increased by the positive amount.

Step 4. Compare the result from Step 3 to 119,000 Acre-feet. If the result from Step 3 is less than 119,000 Acre-feet Water Short Year Administration is in effect.

Step 5. The final annual Water-Short Year Administration calculation determines the total estimated irrigation supply at the end of June (calculated in July). Use the result from Step 3 for the end of May irrigation release estimate, add the June computed inflow to Harlan County Lake and subtract the June computed gross evaporation loss from Harlan County Lake.

2. Procedures to Determine 130,000 Acre Feet Projected Water Supply

To determine the preliminary irrigation supply for the October through June calculation months, follow the procedure described in steps 1 through 4 of the "Procedures to determine Water Short Years" Subsection III. G. 1. The result from step 4 provides the forecasted water supply, which is compared to 130,000 Acre-feet. For the July through September calculation months, use the previous end of calculation month preliminary irrigation supply, add the previous month's Harlan County Lake computed inflow and subtract the previous month's computed gross evaporation loss from Harlan County Lake to determine the current preliminary irrigation supply. The result is compared to 130,000 Acre-feet.

H. Calculation of Computed Water Supply, Allocations and Computed Beneficial Consumptive Use Above and Below Guide Rock During Water-Short Administration Years.

For Water-Short-Administration Years, in addition to the normal calculations, the Computed Water Supply, Allocations, Computed Beneficial Consumptive Use and Imported Water Supply Credits, and ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credits shall also be calculated above Guide Rock as shown in Table 5C. These calculations shall be done in the same manner as in non-Water-Short Administration years except that water supplies originating below Guide Rock shall not be included in the calculations of water supplies originating above Guide Rock. The calculations of Computed Beneficial Consumptive Uses shall be also done in the same manner as in non-Water-Short Administration years except that Computed Beneficial Consumptive Uses from diversions below Guide Rock shall not be included. The depletions from the water diverted by the Superior and Courtland Canals at the Superior-Courtland Diversion Dam shall be included in the calculations of Computed Beneficial Consumptive Use above Guide Rock. Imported Water Supply Credits and ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credits above Guide Rock, as described in Sub-section III.I., may be used as offsets against the Computed Beneficial

Consumptive Use above Guide Rock by the State providing the Imported Water Supply Credits or ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credits.~~.~~

The Computed Water Supply of the Main Stem reach between Guide Rock and the Hardy gage shall be determined by taking the difference in stream flow at Hardy and Guide Rock, adding Computed Beneficial Consumptive Uses in the reach (this does not include the Computed Beneficial Consumptive Use from the Superior and Courtland Canal diversions), and subtracting return flows from the Superior and Courtland Canals in the reach. The Computed Water Supply above Guide Rock shall be determined by subtracting the Computed Water Supply of the Main Stem reach between Guide Rock and the Hardy gage from the total Computed Water Supply. Nebraska's Allocation above Guide Rock shall be determined by subtracting 48.9% of the Computed Water Supply of the Main Stem reach between Guide Rock and the Hardy gage from Nebraska's total Allocation. Nebraska's Computed Beneficial Consumptive Uses above Guide Rock shall be determined by subtracting Nebraska's Computed Beneficial Consumptive Uses below Guide Rock from Nebraska's total Computed Beneficial Consumptive Use.

I. Calculation of Imported Water Supply Credits During Water-Short Year Administration Years.

Imported Water Supply Credit during Water-Short Year Administration years shall be calculated consistent with Subsection V.B.2.b. of the Stipulation.

The following methodology shall be used to determine the extent to which Imported Water Supply Credit, as calculated by the RRCA Groundwater Model, can be credited to the State importing the water during Water-Short Year Administration years.

1. Monthly Imported Water Supply Credits

The RRCA Groundwater Model will be used to determine monthly Imported Water Supply Credits by State in each Sub-basin and for the Main Stem. The values for each Sub-basin will include all depletions and accretions upstream of the confluence with the Main Stem. The values for the Main Stem will include all depletions and accretions in stream reaches not otherwise accounted for in a Sub-basin. The values for the Main Stem will be computed separately for the reach 1) above Harlan County Dam, 2) between Harlan County Dam and Guide Rock, and 3) between Guide Rock and the Hardy gage. The Imported Water Supply Credit shall be the difference in stream flow for two runs of the model: a) the "base" run and b) the "no State import" run.

During Water-Short Year Administration years, Nebraska's credits in the Sub-basins shall be determined as described in Section III. A. 3.

2. Imported Water Supply Credits Above Harlan County Dam

Nebraska's Imported Water Supply Credits above Harlan County Dam shall be the sum of all the credits in the Sub-basins and the Main Stem above Harlan County Dam.

3. Imported Water Supply Credits Between Harlan County Dam and Guide Rock During the Irrigation Season

a. During Water-Short Year Administration years, monthly credits in the reach between Harlan County Dam and Guide Rock shall be determined as the differences in the stream flows between the two runs at Guide Rock.

b. The irrigation season shall be defined as starting on the first day of release of water from Harlan County Lake for irrigation use and ending on the last day of release of water from Harlan County Lake for irrigation use.

c. Credit as an offset for a State's Computed Beneficial Consumptive Use above Guide Rock will be given to all the Imported Water Supply accruing in the reach between Harlan County Dam and Guide Rock during the irrigation season. If the period of the irrigation season does not coincide with the period of modeled flows, the amount of the Imported Water Supply credited during the irrigation season for that month shall be the total monthly modeled Imported Water Supply Credit times the number of days in the month occurring during the irrigation season divided by the total number of days in the month.

4. Imported Water Supply Credits Between Harlan County Dam and Guide Rock During the Non-Irrigation Season

a. Imported Water Supply Credit shall be given between Harlan County Dam and Guide Rock during the period that flows are diverted to fill Lovewell Reservoir to the extent that imported water was needed to meet Lovewell Reservoir target elevations.

b. Fall and spring fill periods shall be established during which credit shall be given for the Imported Water Supply Credit accruing in the reach. The fall period shall extend from the end of the irrigation season to December 1. The spring period shall extend from March 1 to May 31. The Lovewell

target elevations for these fill periods are the projected end of November reservoir level and the projected end of May reservoir level for most probable inflow conditions as indicated in Table 4 in the current Annual Operating Plan prepared by the Bureau of Reclamation.

c. The amount of water needed to fill Lovewell Reservoir for each period shall be calculated as the storage content of the reservoir at its target elevation at the end of the fill period minus the reservoir content at the start of the fill period plus the amount of net evaporation during this period minus White Rock Creek inflows for the same period.

d. If the fill period as defined above does not coincide with the period of modeled flows, the amount of the Imported Water Supply Credit during the fill period for that month shall be the total monthly modeled Imported Water Supply Credit times the number of days in the month occurring during the fill season divided by the total number of days in the month.

e. The amount of non-imported water available to fill Lovewell Reservoir to the target elevation shall be the amount of water available at Guide Rock during the fill period minus the amount of the Imported Water Supply Credit accruing in the reach during the same period.

f. The amount of the Imported Water Supply Credit that shall be credited against a State's Consumptive Use shall be the amount of water imported by that State that is available in the reach during the fill period or the amount of water needed to reach Lovewell Reservoir target elevations minus the amount of non-imported water available during the fill period, whichever is less.

5. Other Credits

Kansas and Nebraska will explore crediting Imported Water Supply that is otherwise useable by Kansas.

J. Calculations of Compact Compliance in Water-Short Year Administration Years

During Water-Short Year Administration, using the procedures described in Subsections III.A-D, the RRCA will calculate the Annual Allocations for each State, the Computed Beneficial Consumptive Use by each State, the ~~and~~ Imported Water Supply Credit, and the ~~Augmentation~~ CNF Augmentation Water Supply Credit that a State may use to offset Computed Beneficial Consumptive Use in that year. The resulting annual and average values will be calculated as displayed in Tables 5 A-C and E.

If Nebraska is implementing an Alternative Water-Short-Year Administration Plan, data to determine Compact compliance will be shown in Table 5D. Nebraska's compliance with the Compact will be determined in the same manner as Nebraska's Above Guide Rock compliance except that compliance will be based on a three-year running average of the current year and previous two year calculations. In addition, Table 5 D. will display the sum of the previous two-year difference in Allocations above Guide Rock and Computed Beneficial Consumptive Uses above Guide Rock minus any Imported Water Credits and compare the result with the Alternative Water-Short-Year Administration Plan's expected decrease in Computed Beneficial Consumptive Use above Guide Rock. Nebraska will be within compliance with the Compact as long as the three-year running average difference in Column 8 is positive and the sum of the previous year and current year deficits above Guide Rock are not greater than the expected decrease in Computed Beneficial Consumptive Use under the plan.

IV. Specific Formulas

A. Computed Beneficial Consumptive Use

1. Computed Beneficial Consumptive Use of Groundwater:

The Computed Beneficial Consumptive Use caused by groundwater diversion shall be determined by the RRCA Groundwater Model as described in Subsection III.D.1.

2. Computed Beneficial Consumptive Use of Surface Water:

The Computed Beneficial Consumptive Use of surface water shall be calculated as follows:

a) Non-Federal Canals

Computed Beneficial Consumptive Use from diversions by non- federal canals shall be 60 percent of the diversion; the return flow shall be 40 percent of the diversion

b) Individual Surface Water Pumps

Computed Beneficial Consumptive Use from small individual surface water pumps shall be 75 percent of the diversion; return flows will be 25 percent of the diversion unless a state provides data on the amount of

different system types in a Sub-basin, in which case the following percentages will be used for each system type:

Gravity Flow.	30%
Center Pivot	17%
LEPA	10%

c) Federal Canals

Computed Beneficial Consumptive Use of diversions by Federal canals will be calculated as shown in Attachment 7. For each Bureau of Reclamation Canal the field deliveries shall be subtracted from the diversion from the river to determine the canal losses. The field delivery shall be multiplied by one minus an average system efficiency for the district to determine the loss of water from the field. Eighty-two percent of the sum of the field loss plus the canal loss shall be considered to be the return flow from the canal diversion. The assumed field efficiencies and the amount of the field and canal loss that reaches the stream may be reviewed by the RRCA and adjusted as appropriate to insure their accuracy.

d) Non-irrigation Uses

Any non-irrigation uses diverting or pumping more than 50 acre-feet per year will be required to measure diversions. Non-irrigation uses diverting more than 50 Acre-feet per year will be assessed a Computed Beneficial Consumptive Use of 50% of what is pumped or diverted, unless the entity presents evidence to the RRCA demonstrating a different percentage should be used.

e) Evaporation from Federal Reservoirs

Net Evaporation from Federal Reservoirs will be calculated as follows:

(1) Harlan County Lake, Evaporation Calculation

April 1 through October 31:

Evaporation from Harlan County Lake is calculated by the Corps of Engineers on a daily basis from April 1 through October 31. Daily readings are taken from a Class A evaporation pan maintained near the project office. Any precipitation recorded at the project office is

added to the pan reading to obtain the actual evaporation amount. The pan value is multiplied by a pan coefficient that varies by month. These values are:

March	.56
April	.52
May	.53
June	.60
July	.68
August	.78
September	.91
October	1.01

The pan coefficients were determined by studies the Corps of Engineers conducted a number of years ago. The result is the evaporation in inches. It is divided by 12 and multiplied by the daily lake surface area in acres to obtain the evaporation in Acre-feet. The lake surface area is determined by the 8:00 a.m. elevation reading applied to the lake's area-capacity data. The area-capacity data is updated periodically through a sediment survey. The last survey was completed in December 2000.

November 1 through March 31

During the winter season, a monthly total evaporation in inches has been determined. The amount varies with the percent of ice cover. The values used are:

HARLAN COUNTY LAKE

Estimated Evaporation in Inches
Winter Season -- Monthly Total

PERCENTAGE OF ICE COVER

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
JAN	0.88	0.87	0.85	0.84	0.83	0.82	0.81	0.80	0.78	0.77	0.76
FEB	0.90	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.81	0.80	0.79
MAR	1.29	1.28	1.27	1.26	1.25	1.24	1.23	1.22	1.21	1.20	1.19
OCT	4.87			NO ICE							
NOV	2.81			NO ICE							

DEC	1.31	1.29	1.27	1.25	1.24	1.22	1.20	1.18	1.17	1.16	1.14

The monthly total is divided by the number of days in the month to obtain a daily evaporation value in inches. It is divided by 12 and multiplied by the daily lake surface area in acres to obtain the evaporation in Acre-feet. The lake surface area is determined by the 8:00 a.m. elevation reading applied to the lake's area-capacity data. The area-capacity data is updated periodically through a sediment survey. The last survey was completed in December 2000.

To obtain the net evaporation, the monthly precipitation on the lake is subtracted from the monthly gross evaporation. The monthly precipitation is calculated by multiplying the sum of the month's daily precipitation in inches by the average of the end of the month lake surface area for the previous month and the end of the month lake surface area for the current month in acres and dividing the result by 12 to obtain the precipitation for the month in acre feet.

The total annual net evaporation (Acre-feet) will be charged to Kansas and Nebraska in proportion to the annual diversions made by the Kansas Bostwick Irrigation District and the Nebraska Bostwick Irrigation District during the time period each year when irrigation releases are being made from Harlan County Lake. For any year in which no irrigation releases were made from Harlan County Lake, the annual net evaporation charged to Kansas and Nebraska will be based on the average of the above calculation for the most recent three years in which irrigation releases from Harlan County Lake were made. In the event Nebraska chooses to substitute supply for the Superior Canal from Nebraska's allocation below Guide Rock in Water-Short Year Administration years, the amount of the substitute supply will be included in the calculation of the split as if it had been diverted to the Superior Canal at Guide Rock.

(2) Evaporation Computations for Bureau of Reclamation Reservoirs

The Bureau of Reclamation computes the amount of evaporation loss on a monthly basis at Reclamation reservoirs. The following procedure is utilized in calculating the loss in Acre-feet.

An evaporation pan reading is taken each day at the dam site. This measurement is the amount of water lost from the pan over a 24-hour period in inches. The evaporation pan reading is adjusted for any precipitation recorded during the 24-hour period. Instructions for

determining the daily pan evaporation are found in the "National Weather Service Observing Handbook No. 2 – Substation Observations." All dams located in the Kansas River Basin with the exception of Bonny Dam are National Weather Service Cooperative Observers. The daily evaporation pan readings are totaled at the end of each month and converted to a "free water surface" (FWS) evaporation, also referred to as "lake" evaporation. The FWS evaporation is determined by multiplying the observed pan evaporation by a coefficient of .70 at each of the reservoirs. This coefficient can be affected by several factors including water and air temperatures. The National Oceanic and Atmospheric Administration (NOAA) has published technical reports describing the determination of pan coefficients. The coefficient used is taken from the "NOAA Technical Report NWS 33, Map of coefficients to convert class A pan evaporation to free water surface evaporation". This coefficient is used for the months of April through October when evaporation pan readings are recorded at the dams. The monthly FWS evaporation is then multiplied by the average surface area of the reservoir during the month in acres. Dividing this value by twelve will result in the amount of water lost to evaporation in Acre-feet during the month.

During the winter months when the evaporation pan readings are not taken, monthly evaporation tables based on the percent of ice cover are used. The tables used were developed by the Corps of Engineers and were based on historical average evaporation rates. A separate table was developed for each of the reservoirs. The monthly evaporation rates are multiplied by the .70 coefficient for pan to free water surface adjustment, divided by twelve to convert inches to feet and multiplied by the average reservoir surface area during the month in acres to obtain the total monthly evaporation loss in Acre-feet.

To obtain the net evaporation, the monthly precipitation on the lake is subtracted from the monthly gross evaporation. The monthly precipitation is calculated by multiplying the sum of the month's daily precipitation in inches by the average of the end of the month lake surface area for the previous month and the end of the month lake surface area for the current month in acres and dividing the result by 12 to obtain the precipitation for the month in acre feet.

f) Non-Federal Reservoir Evaporation:

For Non-Federal Reservoirs with a storage capacity less than 200 Acre-feet, the presumptive average annual surface area is 25% of the area at the principal spillway elevation. Net evaporation for each such Non-Federal Reservoir will be calculated by multiplying the presumptive average annual surface area by the net evaporation from the nearest climate and evaporation station to the Non-Federal Reservoir. A State may provide actual data in lieu of the presumptive criteria.

Net evaporation from Non-Federal Reservoirs with 200 Acre-feet of storage or greater will be calculated by multiplying the average annual surface area (obtained from the area-capacity survey) and the net evaporation from the nearest evaporation and climate station to the reservoir. If the average annual surface area is not available, the Non-Federal Reservoirs with 200 Acre-feet of storage or greater will be presumed to be full at the principal spillway elevation.

B. Specific Formulas for Each Sub-basin and the Main Stem

All calculations shall be based on the calendar year and shall be rounded to the nearest 10 Acre-feet using the conventional rounding formula of rounding up for all numbers equal to five or higher and otherwise rounding down.

Abbreviations:
~~AWS~~CNF~~ASW~~AWS = ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credit
CBCU = Computed Beneficial Consumptive Use
CWS = Computed Water Supply
D = Non-Federal Canal Diversions for Irrigation
Ev = Evaporation from Federal Reservoirs
EvNFR = Evaporation from Non-Federal Reservoirs
FF = Flood Flow
GW = Groundwater Computed Beneficial Consumptive Use (includes irrigation and non-irrigation uses)
IWS = Imported Water Supply Credit from Nebraska
M&I = Non-Irrigation Surface Water Diversions (Municipal and Industrial)
P = Small Individual Surface Water Pump Diversions for Irrigation
RF = Return Flow
VWS = Virgin Water Supply
c = Colorado
k = Kansas

n	= Nebraska
ΔS	= Change in Federal Reservoir Storage
%	= Average system efficiency for individual pumps in the Sub-basin
% BRF	= Percent of Diversion from Bureau Canals that returns to the stream
###	= Value expected to be zero

3. North Fork of Republican River in Colorado [2]

CBCU Colorado	= 0.6 x Haigler Canal Diversion Colorado + 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.6 x Haigler Canal Diversion Nebraska + GWn Note: The diversion for Haigler Canal is split between Colorado and Nebraska based on the percentage of land irrigated in each state
VWS	= North Fork of the Republican River at the State Line, Stn. No. 06823000 + CBCUc + CBCUk + CBCUn + Nebraska Haigler Canal RF– IWS ~~AWS~~CNFAWS Note: The Nebraska Haigler Canal RF returns to the Main Stem
CWS	= VWS - FF
Allocation Colorado	= 0.224 x CWS
Allocation Nebraska	= 0.246 x CWS
Unallocated	= 0.53 x CWS

4. Arikaree River [2]

[2] The RRCA will investigate whether return flows from the Haigler Canal diversion in Colorado may return to the Arikaree River, not the North Fork of the Republican River, as indicated in the formulas. If there are return flows from the Haigler Canal to the Arikaree River, these formulas will be changed to recognize those returns.

CBCU Colorado	= 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Arikaree Gage at Haigler Stn. No. 06821500 + CBCUc + CBCUk + CBCUn – IWS
CWS	= VWS - FF
Allocation Colorado	= 0.785 x CWS
Allocation Kansas	= 0.051 x CWS
Allocation Nebraska	= 0.168 x CWS
Unallocated	=-0.004 x CWS

5. Buffalo Creek

CBCU Colorado	= 0.6 x Dc + % x Pc + 0.5 x M&In + EvNFRc + GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Buffalo Creek near Haigler Gage Stn. No. 06823500 + CBCUc + CBCUk + CBCUn – IWS
CWS	= VWS - FF
Allocation Nebraska	= 0.330 x CWS
Unallocated	= 0.670 x CWS

6. Rock Creek

CBCU Colorado	= GWc
CBCU Kansas	= GWk

CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Rock Creek at Parks Gage Stn. No. 06824000 + CBCUc + CBCUk + CBCUn – IWS
CWS	= VWS - FF
Allocation Nebraska	= 0.400 x CWS
Unallocated	= 0.600 x CWS

7. South Fork Republican River

CBCU Colorado	= 0.6 x Hale Ditch Diversion + 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + Bonny Reservoir Ev + GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= South Fork Republican River near Benkelman Gage Stn. No. 06827500 + CBCUc + CBCUk + CBCUn + ΔS Bonny Reservoir – IWS
CWS	= VWS - ΔS Bonny Reservoir - FF
Allocation Colorado	= 0.444 x CWS
Allocation Kansas	= 0.402 x CWS
Allocation Nebraska	= 0.014 x CWS
Unallocated	= 0.140 x CWS

8. Frenchman Creek in Nebraska

CBCU Colorado	= GWc
CBCU Kansas	= GWk

CBCU Nebraska	= Culbertson Canal Diversions x (1-%BRF) + Culbertson Extension x (1-%BRF) + 0.6 x Champion Canal Diversion + 0.6 x Riverside Canal Diversion + 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + Enders Reservoir Ev + GWn
VWS	= Frenchman Creek in Culbertson, Nebraska Gage Stn. No. 06835500 + CBCUc + CBCUk + CBCUn + 0.17 x Culbertson Diversion RF + Culbertson Extension RF + ΔS Enders Reservoir – IWS Note: 17% of the Culbertson Diversion RF and 100% of the Culbertson Extension RF return to the Main Stem
CWS	= VWS - ΔS Enders Reservoir – FF
Allocation Nebraska	= 0.536 x CWS
Unallocated	= 0.464 x CWS

9. Driftwood Creek

CBCU Colorado	= GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Driftwood Creek near McCook Gage Stn. No. 06836500 + CBCUc + CBCUk + CBCUn – 0.24 x Meeker Driftwood Canal RF - IWS Note: 24 % of the Meeker Driftwood Canal RF returns to Driftwood Creek
CWS	= VWS – FF
Allocation Kansas	= 0.069 x CWS
Allocation Nebraska	= 0.164 x CWS
Unallocated	= 0.767 x CWS

10. Red Willow Creek in Nebraska

CBCU Colorado	= GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.1 x Red Willow Canal CBCU + 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + 0.1 x Hugh Butler Lake Ev + GWn Note: Red Willow Canal CBCU = Red Willow Canal Diversion x (1- % BRF) 90% of the Red Willow Canal CBCU and 90% of Hugh Butler Lake Ev charged to Nebraska's CBCU in the Main Stem
VWS	= Red Willow Creek near Red Willow Gage Stn. No. 06838000 + CBCUc + CBCUk + CBCUn + 0.9 x Red Willow Canal CBCU + 0.9 x Hugh Butler Lake Ev + 0.9 xRed Willow Canal RF + ΔS Hugh Butler Lake – IWS Note: 90% of the Red Willow Canal RF returns to the Main Stem
CWS	= VWS - ΔS Hugh Butler Lake - FF
Allocation Nebraska	= 0.192 x CWS
Unallocated	= 0.808 x CWS

11. Medicine Creek

CBCU Colorado	= GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.6 x Dn above and below gage + % x Pn above and below gage + 0.5 x M&In above and below gage + EvNFRn above and below gage + GWn

	Note: Harry Strunk Lake Ev charged to Nebraska's CBCU in the Main Stem. CU from Harry Strunk releases in the Cambridge Canal is charged to the Main stem (no adjustment to the VWS formula is needed as this water shows up in the Medicine Creek gage).
VWS	= Medicine Creek below Harry Strunk Lake Gage Stn. No. 06842500 + CBCUc + CBCUk + CBCUn – 0.6 x Dn below gage - % x Pn below gage – 0.5 * M&In below gage - EvNFRn below gage + Harry Strunk Lake Ev + ΔS Harry Strunk Lake– IWS Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem
CWS	= VWS - ΔS Harry Strunk Lake - FF
Allocation Nebraska	= 0.091 x CWS
Unallocated	= 0.909 x CWS

12. Beaver Creek

CBCU Colorado	= 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn above and below gage + % x Pn above and below gage + 0.5 x M&In above and below gage + EvNFRn above and below gage + GWn
VWS	= Beaver Creek near Beaver City gage Stn. No. 06847000 + BCUc + CBCUk + CBCUn – 0.6 x Dn below gage - % x Pn below gage – 0.5 * M&In below gage - EvNFRn below gage – IWS Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem

CWS	= VWS – FF
Allocation Colorado	= 0.200 x CWS
Allocation Kansas	= 0.388 x CWS
Allocation Nebraska	= 0.406 x CWS
Unallocated	= 0.006 x CWS

13. Sappa Creek

CBCU Colorado	= GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn above and below gage + % x Pn above and below gage + 0.5 x M&In above and below gage + EvNFRn above and below gage + GWn
VWS	= Sappa Creek near Stamford gage Stn. No. 06847500 – Beaver Creek near Beaver City gage Stn. No. 06847000 + CBCUc + CBCUk + CBCUn – 0.6 x Dn below gage - % x Pn below gage – 0.5 * M&In below gage - EvNFRn below gage – IWS Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem
CWS	= VWS - FF
Allocation Kansas	= 0.411 x CWS
Allocation Nebraska	= 0.411 x CWS
Unallocated	= 0.178 x CWS

14. Prairie Dog Creek

CBCU Colorado	= GWc
CBCU Kansas	= Almena Canal Diversion x (1-%BRF) + 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + Keith Sebelius Lake Ev + GWk
CBCU Nebraska	= 0.6 x Dn below gage + % x Pn below gage + 0.5 x M&In below gage + EvNFRn + GWn below gage
VWS	= Prairie Dog Creek near Woodruff, Kansas USGS Stn. No. 06848500 + CBCUc + CBCUk + CBCUn - 0.6 x Dn below gage - % x Pn below gage - 0.5 x M&In below gage - EvNFRn below gage + ΔS Keith Sebelius Lake – IWS Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem
CWS	= VWS- ΔS Keith Sebelius Lake - FF
Allocation Kansas	= 0.457 x CSW
Allocation Nebraska	= 0.076 x CWS
Unallocated	= 0.467 x CWS

15. The North Fork of the Republican River in Nebraska and the Main Stem of the Republican River between the junction of the North Fork and the Arikaree River and the Republican River near Hardy

CBCU Colorado	= GWc
CBCU Kansas	= (Deliveries from the Courtland Canal to Kansas above Lovewell) x (1-%BRF) + Amount of transportation loss of Courtland Canal deliveries to Lovewell that does not return to the river, charged to Kansas + (Diversions of Republican River water from Lovewell Reservoir by the Courtland Canal below Lovewell) x (1-%BRF) + 0.6 x Dk

+ % x Pk
+ 0.5 x M&Ik
+ EvNFRk
+ Harlan County Lake Ev charged to Kansas
+ Lovewell Reservoir Ev charged to the Republican River
+ GWk

CBCU Nebraska =
Deliveries from Courtland Canal to Nebraska lands x (1- %BRF)
+ Superior Canal x (1- %BRF)
+ Franklin Pump Canal x (1- %BRF)
+ Franklin Canal x (1- %BRF)
+ Naponee Canal x (1- %BRF)
+ Cambridge Canal x (1- %BRF)
+ Bartley Canal x (1- %BRF)
+ Meeker-Driftwood Canal x (1- %BRF)
+ 0.9 x Red Willow Canal CBCU
+ 0.6 x Dn
+ % x Pn
+ 0.5 x M&In
+ EvNFRn
+ 0.9 x Hugh Butler Lake Ev
+ Harry Strunk Lake Ev
+ Swanson Lake Ev
+ Harlan County Lake Ev charged to Nebraska
+ GWn

Notes:
The allocation of transportation losses in the Courtland Canal above Lovewell between Kansas and Nebraska shall be done by the Bureau of Reclamation and reported in their "Courtland Canal Above Lovewell" spreadsheet. Deliveries and losses associated with deliveries to both Nebraska and Kansas above Lovewell shall be reflected in the Bureau's Monthly Water District reports. Losses associated with delivering water to Lovewell shall be separately computed.

Amount of transportation loss of the Courtland Canal deliveries to Lovewell that does not return to the river, charged to Kansas shall be 18% of the Bureau's estimate of losses associated with these deliveries.

Red Willow Canal CBCU = Red Willow Canal Diversion x (1- % BRF)

10% of the Red Willow Canal CBCU is charged to Nebraska's CBCU in Red Willow Creek sub-basin

10% of Hugh Butler Lake Ev is charged to Nebraska's CBCU in the Red Willow Creek sub-basin

None of the Harry Strunk Lake EV is charged to Nebraska's CBCU in the Medicine Creek sub-basin

VWS =

Republican River near Hardy Gage Stn. No. 06853500
- North Fork of the Republican River at the State Line, Stn. No. 06823000
- Arikaree Gage at Haigler Stn. No. 06821500
- Buffalo Creek near Haigler Gage Stn. No. 06823500
- Rock Creek at Parks Gage Stn. No. 06824000
-South Fork Republican River near Benkelman Gage Stn. No. 06827500
- Frenchman Creek in Culbertson Stn. No. 06835500
- Driftwood Creek near McCook Gage Stn. No. 06836500
- Red Willow Creek near Red Willow Gage Stn. No. 06838000
- Medicine Creek below Harry Strunk Lake Gage Stn. No. 06842500
- Sappa Creek near Stamford Gage Stn. No. 06847500
- Prairie Dog Creek near Woodruff, Kansas Stn. No. 68-485000

+ CBCUc
+ CBCUn

+ 0.6 x Dk
+ % x Pk
+ 0.5 x M&Ik
+ EvNFRk
+ Harlan County Lake Ev charged to Kansas
+Amount of transportation loss of the Courtland Canal above the Stateline that does not return to the river, charged to Kansas

- 0.9 x Red Willow Canal CBCU
- 0.9 x Hugh Butler Ev
- Harry Strunk Ev

+ 0.6 x Dn below Medicine Creek gage
+ % x Pn below Medicine Creek gage
+ 0.5 * M&In below Medicine Creek gage
+ EvNFRn below Medicine Creek gage

+ 0.6 x Dn below Beaver Creek gage
+ % x Pn below Beaver Creek gage
+ 0.5 * M&In below Beaver Creek gage
+ EvNFRn below Beaver Creek gage

+ 0.6 x Dn below Sappa Creek gage
+ % x Pn below Sappa Creek gage
+ 0.5 * M&In below Sappa Creek gage
+ EvNFRn below Sappa Creek gage

+ 0.6 x Dn below Prairie Dog Creek gage
+ % x Pn below Prairie Dog Creek gage
+ 0.5 * M&In below Prairie Dog Creek gage
+ EvNFRn below Prairie Dog Creek gage

+ Change in Storage Harlan County Lake
+ Change in Storage Swanson Lake

- Nebraska Haigler Canal RF
- 0.17 x Culbertson Canal RF
- Culbertson Canal Extension RF to Main Stem
+ 0.24 x Meeker Driftwood Canal RF which returns to Driftwood Creek
- 0.9 x Red Willow Canal RF

+ Courtland Canal at Kansas-Nebraska State Line Gage Stn No. 06852500
- Courtland Canal RF in Kansas above Lovewell Reservoir

-IWS

Notes:

	None of the Nebraska Haigler Canal RF returns to the North Fork of the Republican River 83% of the Culbertson Diversion RF and none of the Culbertson Extension RF return to Frenchman Creek 24 % of the Meeker Driftwood Canal RF returns to Driftwood Creek. 10% of the Red Willow Canal RF returns to Red Willow Creek Courtland Canal RF in Kansas above Lovewell Reservoir = 0.015 x (Courtland Canal at Kansas-Nebraska State Line Gage Stn No. 06852500)
CWS	= VWS - Change in Storage Harlan County Lake - Change in Storage Swanson Lake - FF
Allocation Kansas	= 0.511 x CWS
Allocation Nebraska	= 0.489 x CWS

V. Annual Data/ Information Requirements, Reporting, and Verification

The following information for the previous calendar year shall be provided to the members of the RRCA Engineering Committee by April 15th of each year, unless otherwise specified.

All information shall be provided in electronic format, if available.

Each State agrees to provide all information from their respective State that is needed for the RRCA Groundwater Model and RRCA Accounting Procedures and Reporting Requirements, including but not limited to the following:

A. Annual Reporting

1. Surface water diversions and irrigated acreage:

Each State will tabulate the canal, ditch, and other surface water diversions that are required by RRCA annual compact accounting and the RRCA Groundwater Model on a monthly format (or a procedure to distribute annual data to a monthly basis)

and will forward the surface water diversions to the other States. This will include available diversion, wasteway, and farm delivery data for canals diverting from the Platte River that contribute to Imported Water Supply into the Basin. Each State will provide the water right number, type of use, system type, location, diversion amount, and acres irrigated.

2. Groundwater pumping and irrigated acreage:

Each State will tabulate and provide all groundwater well pumping estimates that are required for the RRCA Groundwater Model to the other States.

Colorado – will provide an estimate of pumping based on a county format that is based upon system type, Crop Irrigation Requirement (CIR), irrigated acreage, crop distribution, and irrigation efficiencies. Colorado will require installation of a totalizing flow meter, installation of an hours meter with a measurement of the pumping rate, or determination of a power conversion coefficient for 10% of the active wells in the Basin by December 31, 2005. Colorado will also provide an annual tabulation for each groundwater well that measures groundwater pumping by a totalizing flow meter, hours meter or power conversion coefficient that includes: the groundwater well permit number, location, reported hours, use, and irrigated acreage.

Kansas - will provide an annual tabulation by each groundwater well that includes: water right number, groundwater pumping determined by a meter on each well (or group of wells in a manifold system) or by reported hours of use and rate; location; system type (gravity, sprinkler, LEPA, drip, etc.); and irrigated acreage. Crop distribution will be provided on a county basis.

Nebraska – will provide an annual tabulation through the representative Natural Resource District (NRD) in Nebraska that includes: the well registration number or other ID number; groundwater pumping determined by a meter on each well (or group of wells in a manifold system) or by reported hours of use and rate; wells will be identified by; location; system type (gravity, sprinkler, LEPA, drip, etc.); and irrigated acreage. Crop distribution will be provided on a county basis.

3. Climate information:

Each State will tabulate and provide precipitation, temperature, relative humidity or dew point, and solar radiation for the following climate stations:

State	Identification	Name
Colorado		
Colorado	C050109	Akron 4 E

Colorado	C051121	Burlington
Colorado	C054413	Julesburg
Colorado	C059243	Wray
Kansas	C140439	Atwood 2 SW
Kansas	C141699	Colby 1SW
Kansas	C143153	Goodland
Kansas	C143837	Hoxie
Kansas	C145856	Norton 9 SSE
Kansas	C145906	Oberlin1 E
Kansas	C147093	Saint Francis
Kansas	C148495	Wakeeny
Nebraska	C250640	Beaver City
Nebraska	C250810	Bertrand
Nebraska	C252065	Culbertson
Nebraska	C252690	Elwood 8 S
Nebraska	C253365	Gothenburg
Nebraska	C253735	Hebron
Nebraska	C253910	Holdredge
Nebraska	C254110	Imperial
Nebraska	C255090	Madrid
Nebraska	C255310	McCook
Nebraska	C255565	Minden
Nebraska	C256480	Palisade
Nebraska	C256585	Paxton
Nebraska	C257070	Red Cloud
Nebraska	C258255	Stratton
Nebraska	C258320	Superior
Nebraska	C258735	Upland
Nebraska	C259020	Wauneta 3 NW

4. Crop Irrigation Requirements:

Each State will tabulate and provide estimates of crop irrigation requirement information on a county format. Each State will provide the percentage of the crop irrigation requirement met by pumping; the percentage of groundwater irrigated lands served by sprinkler or flood irrigation systems, the crop irrigation requirement; crop distribution; crop coefficients; gain in soil moisture from winter and spring precipitation, net crop irrigation requirement; and/or other information necessary to compute a soil/water balance.

5. Streamflow Records from State-Maintained Gaging Records:

Streamflow gaging records from the following State maintained gages will be provided:

Station No.	Name
00126700	Republican River near Trenton
06831500	Frenchman Creek near Imperial
06832500	Frenchman Creek near Enders
06835000	Stinking Water Creek near Palisade
06837300	Red Willow Creek above Hugh Butler Lake
06837500	Red Willow Creek near McCook
06841000	Medicine Creek above Harry Strunk Lake
06842500	Medicine Creek below Harry Strunk Lake
06844000	Muddy Creek at Arapahoe
06844210	Turkey Creek at Edison
06847000	Beaver Creek near Beaver City
	Republican River at Riverton
06851500	Thompson Creek at Riverton
06852000	Elm Creek at Amboy
	Republican River at the Superior-Courtland Diversion Dam

6. Platte River Reservoirs:

The State of Nebraska will provide the end-of-month contents, inflow data, outflow data, area-capacity data, and monthly net evaporation, if available, from Johnson Lake; Elwood Reservoir; Sutherland Reservoir; Maloney Reservoir; and Jeffrey Lake.

7. Water Administration Notification:

The State of Nebraska will provide the following information that describes the protection of reservoir releases from Harlan County Lake and for the administration of water rights junior in priority to February 26, 1948:

Date of notification to Nebraska water right owners to curtail their diversions, the amount of curtailment, and length of time for curtailment.
The number of notices sent.
The number of diversions curtailed and amount of curtailment in the Harlan County Lake to Guide Rock reach of the Republican River.

8. Moratorium:

Each State will provide a description of all new Wells constructed in the Basin Upstream of Guide Rock including the owner, location (legal description), depth and diameter or dimension of the constructed water well, casing and screen information, static water level, yield of the water well in gallons per minute or gallons per hour, and intended use of the water well.

Designation whether the Well is a:

a. Test hole;

b. Dewatering Well with an intended use of one year or less;

c. Well designed and constructed to pump fifty gallons per minute or less;

d. Replacement Water Well, including a description of the Well that is replaced providing the information described above for new Wells and a description of the historic use of the Well that is replaced;

e. Well necessary to alleviate an emergency situation involving provision of water for human consumption, including a brief description of the nature of the emergency situation and the amount of water intended to be pumped by and the length of time of operation of the new Well;

f. Transfer Well, including a description of the Well that is transferred providing the information described above for new Wells and a description of the Historic Consumptive Use of the Well that is transferred;

g. Well for municipal and/or industrial expansion of use;

Wells in the Basin in Northwest Kansas or Colorado. Kansas and Colorado will provide the information described above for new Wells along with copies of any other information that is required to be filed with either State of local agencies under the laws, statutes, rules and regulations in existence as of April 30, 2002, and;

Any changes in State law in the previous year relating to existing Moratorium.

9. Non-Federal Reservoirs:

Each State will conduct an inventory of Non Federal Reservoirs by December 31, 2004, for inclusion in the annual Compact Accounting. The inventory shall include the following information: the location, capacity (in Acre-feet) and area (in acres)

at the principal spillway elevation of each Non-Federal Reservoir. The States will annually provide any updates to the initial inventory of Non-Federal Reservoirs, including enlargements that are constructed in the previous year.

Owners/operators of Non-Federal Reservoirs with 200 Acre-feet of storage capacity or greater at the principal spillway elevation will be required to provide an area-capacity survey from State-approved plans or prepared by a licensed professional engineer or land surveyor.

10. Augmentation Plan:

Each State will provide a description of the wells, measuring devices, conveyance structure(s), and other infrastructure to describe the physical characteristics, water diversions, and consumptive use associated with each augmentation plan. The States will provide any updates to the plan on an annual basis.

B. RRCA Groundwater Model Data Input Files

1. Monthly groundwater pumping, surface water recharge, groundwater recharge, and precipitation recharge provided by county and indexed to the one square mile cell size.

2. Potential Evapotranspiration rate is set as a uniform rate for all phreatophyte vegetative classes – the amount is X at Y climate stations and is interpolated spatially using kriging.

C. Inputs to RRCA Accounting

1. Surface Water Information

a. Streamflow gaging station records: obtained as preliminary USGS or Nebraska streamflow records, with adjustments to reflect a calendar year, at the following locations:

Arikaree River at Haigler, Nebraska
North Fork Republican River at Colorado-Nebraska state line
Buffalo Creek near Haigler, Nebraska
Rock Creek at Parks, Nebraska
South Fork Republican River near Benkelman, Nebraska
Frenchman Creek at Culbertson, Nebraska
Red Willow Creek near Red Willow, Nebraska

Medicine Creek below Harry Strunk Lake, Nebraska*
Beaver Creek near Beaver City, Nebraska*
Sappa Creek near Stamford, Nebraska
Prairie Dog Creek near Woodruff, Kansas
Courtland Canal at Nebraska-Kansas state line
Republican River near Hardy, Nebraska
Republican River at Superior-Courtland Diversion Dam near Guide Rock,
Nebraska (new)*

b. Federal reservoir information: obtained from the United States Bureau of Reclamation:

Daily free water surface evaporation, storage, precipitation, reservoir release information, and updated area-capacity tables.
Federal Reservoirs:
Bonny Reservoir
Swanson Lake
Harry Strunk Lake
Hugh Butler Lake
Enders Reservoir
Keith Sebelius Lake
Harlan County Lake
Lovewell Reservoir

c. Non-federal reservoirs obtained by each state: an updated inventory of reservoirs that includes the location, surface area (acres), and capacity (in Acre-feet), of each non-federal reservoir with storage capacity of fifteen (15) Acre-feet or greater at the principal spillway elevation. Supporting data to substantiate the average surface water areas that are different than the presumptive average annual surface area may be tendered by the offering State.

d. Diversions and related data from USBR

Irrigation diversions by canal, ditch, and pumping station that irrigate more than two (2) acres
Diversions for non-irrigation uses greater than 50 Acre-feet
Farm Deliveries
Wasteway measurements
Irrigated acres

e. Diversions and related data – from each respective State

Irrigation diversions by canal, ditch, and pumping station that irrigate more than two (2) acres
Diversions for non-irrigation uses greater than 50 Acre-feet
Wasteway measurements, if available

2. Groundwater Information

(From the RRCA Groundwater model as output files as needed for the accounting procedures)

a. Imported water - mound credits in amount and time that occur in defined streamflow points/reaches of measurement or compliance – ex: gaging stations near confluence or state lines

b. Groundwater depletions to streamflow (above points of measurement or compliance – ex: gaging stations near confluence or state lines)

3. Summary

The aforementioned data will be aggregated by Sub-basin as needed for RRCA accounting.

D. Verification

1. Documentation to be Available for Inspection Upon Request

a. Well permits/ registrations database
b. Copies of well permits/ registrations issued in calendar year
c. Copies of surface water right permits or decrees
d. Change in water right/ transfer historic use analyses
e. Canal, ditch, or other surface water diversion records
f. Canal, ditch, or other surface water measurements
g. Reservoir storage and release records
h. Irrigated acreage
i. CNF Augmentation Plan well pumping and augmentation delivery records

2. Site Inspection

a. Accompanied – reasonable and mutually acceptable schedule among representative state and/or federal officials.

b. Unaccompanied – inspection parties shall comply with all laws and regulations of the State in which the site inspection occurs.

Table 1: Annual Virgin and Computed Water Supply, Allocations and Computed Beneficial Consumptive Uses by State, Main Stem and Sub-basin

Designated Drainage Basin	Col. 1: Virgin Water Supply	Col. 2: Computed Water Supply	Col. 3: Allocations				Col. 4: Computed Beneficial Consumptive Use		
			Colorado	Nebraska	Kansas	Unallocated	Colorado	Nebraska	Kansas
North Fork in Colorado									
Arikaree									
Buffalo									
Rock									
South Fork of Republican River									
Frenchman									
Driftwood									
Red Willow									
Medicine									
Beaver									
Sappa									
Prairie Dog									
North Fork of Republican River in Nebraska and Main Stem									
Total All Basins									
North Fork Of Republican River in Nebraska and Mainstem Including Unallocated Water									
Total									

Table 2: Original Compact Virgin Water Supply and Allocations

Designated Drainage Basin	Virgin Water Supply	Colorado Allocation	% of Total Drainage Basin Supply	Kansas Allocation	% of Total Drainage Basin Supply	Nebraska Allocation	% of Total Drainage Basin Supply	Unallo-cated	% of Total Drainage Basin Supply
North Fork - CO	44,700	10,000	22.4			11,000	24.6	23,700	53.0
Arikaree River	19,610	15,400	78.5	1,000	5.1	3,300	16.8	-90	-0.4
Buffalo Creek	7,890					2,600	33.0	5,290	67.0
Rock Creek	11,000					4,400	40.0	6,600	60.0
South Fork	57,200	25,400	44.4	23,000	40.2	800	1.4	8,000	14.0
Frenchman Creek	98,500					52,800	53.6	45,700	46.4
Driftwood Creek	7,300			500	6.9	1,200	16.4	5,600	76.7
Red Willow Creek	21,900					4,200	19.2	17,700	80.8
Medicine Creek	50,800					4,600	9.1	46,200	90.9
Beaver Creek	16,500	3,300	20.0	6,400	38.8	6,700	40.6	100	0.6
Sappa Creek	21,400			8,800	41.1	8,800	41.1	3,800	17.8
Prairie Dog Creek	27,600			12,600	45.7	2,100	7.6	12,900	46.7
Sub-total Tributaries	384,400							175,500	
Main Stem + Blackwood Creek	94,500								
Main Stem + Unallocated	270,000			138,000	51.1	132,000	48.9		
Total	478,900	54,100		190,300		234,500			

Table 3A: Table to Be Used to Calculate Colorado's Five-Year Running Average Allocation and Computed Beneficial Consumptive Use for Determining Compact Compliance

Colorado				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive	Imported Water Supply Credit and/or ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credit	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit and/or ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credit Col 1 – (Col 2- Col 3)
Year t= -4				
Year t= -3				
Year t= -2				
Year t= -1				
Current Year t= 0				
Average				

Table 3B. Table to Be Used to Calculate Kansas's Five-Year Running Average Allocation and Computed Beneficial Consumptive Use for Determining Compact Compliance

Kansas				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive	Imported Water Supply Credit	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Col 1 – (Col 2- Col 3)
Year t= -4				
Year t= -3				
Year t= -2				
Year t= -1				

Current Year t= 0				
Average				

Table 3C. Table to Be Used to Calculate Nebraska's Five-Year Running Average Allocation and Computed Beneficial Consumptive Use for Determining Compact Compliance

Nebraska				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive	Imported Water Supply Credit	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Col 1 – (Col 2- Col 3)
Year T= -4				
Year T= -3				
Year T= -2				
Year T= -1				
Current Year T= 0				
Average				

Table 4A: Colorado Compliance with the Sub-basin Non-impairment Requirement

	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6
Sub-basin	Colorado Sub-basin Allocation (5-year running average)	Unallocated Supply (5-year running average)	Credits from Imported Water Supply and/or CNF Augmentation Water Supply (5-year running average)	Total Supply Available = Col 1+ Col 2 + Col 3 (5-year running average)	Colorado Computed Beneficial Consumptive Use (5-year running average)	Difference Between Available Supply and Computed Beneficial Consumptive Use = Col 4 – Col 5 (5-year running average)
North Fork Republican River Colorado						
Arikaree River						
South Fork Republican River						
Beaver Creek						

Table 4B: Kansas Compliance with the Sub-basin Non-impairment Requirement

	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7
Sub-basin	Kansas Sub-basin Allocation (5-year running average)	Unallocated Supply (5-year running average)	Unused Allocation from Colorado (5-year running average)	Credits from Imported Water Supply (5-year running average)	Total Supply Available = Col 1+ Col 2+ Col 3 + Col 4 (5-year running average)	Kansas Computed Beneficial Consumptive Use (5-year running average)	Difference Between Available Supply and Computed Beneficial Consumptive Use = Col 5 – Col 6 (5-year running average)
Arikaree River							
South Fork Republican River							
Driftwood Creek							
Beaver Creek							
Sappa Creek							
Prairie Dog Creek							

Table 5A: Colorado Compliance During Water-Short Year Administration

Colorado				
	Col. 1	Col. 2	Col. 3	Col 4
Year	Allocation minus Allocation for Beaver Creek	Computed Beneficial Consumptive minus Computed Beneficial Consumptive Use for Beaver Creek	Imported Water Supply Credit and/or ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credit excluding Beaver Creek	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit and/or ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credit for All Basins Except Beaver Creek Col 1 – (Col 2 – Col 3)
Year T= -4				
Year T= -3				
Year T= -2				
Year T= -1				
Current Year T= 0				
Average				

Table 5B: Kansas Compliance During Water-Short Year Administration

Kansas						
Year	Allocation			Computed Beneficial Consumptive Use`	Imported Water Supply Credit	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit
Column	1	2	3	4	5	6
	Sum Sub-basins	Kansas's Share of the Unallocated Supply	Total Col 1 + Col 2			Col 3 – (Col 4 – Col 5)
Previous Year						
Current Year						

Average						

Table 5C: Nebraska Compliance During Water-Short Year Administration

Nebraska								
Year	Allocation			Computed Beneficial Consumptive Use			Imported Water Supply Credit	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Above Guide Rock
Column	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
	State Wide Allocation	Allocation below Guide Rock	State Wide Allocation above Guide Rock	State Wide CBCU	CBCU below Guide Rock	State Wide CBCU above Guide Rock	Credits above Guide Rock	Col 3 – (Col 6 – Col 7)
Previous Year								
Current Year								
Average								

Table 5D: Nebraska Compliance Under a Alternative Water-Short Year Administration Plan

Year	Allocation			Computed Beneficial Consumptive Use			Imported Water Supply Credit	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Above Guide Rock
Column	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
	State Wide Allocation	Allocation below Guide Rock	State Wide Allocation above Guide Rock	State Wide CBCU	CBCU below Guide Rock	State Wide CBCU above Guide Rock	Credits above Guide Rock	Col 3 – (Col 6- Col 7)
Year = -2								
Year = -1								
Current Year								
Three-Year Average								
Sum of Previous Two-year Difference								
Expected Decrease in CBCU Under Plan								

Table 5E: Nebraska Tributary Compliance During Water-Short Year Administration

Year	Sum of Nebraska Sub-basin Allocations	Sum of Nebraska's Share of Sub-basin Unallocated Supplies	Total Available Water Supply for Nebraska	Computed Beneficial Consumptive Use	Imported Water Supply Credit	Difference between Allocation And the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit
	Col 1	Col 2	`Col 3	Col 4	Col 5	Col 6
Previous Year						Col 3 -(Col 4-Col 5)
Current Year						
Average						

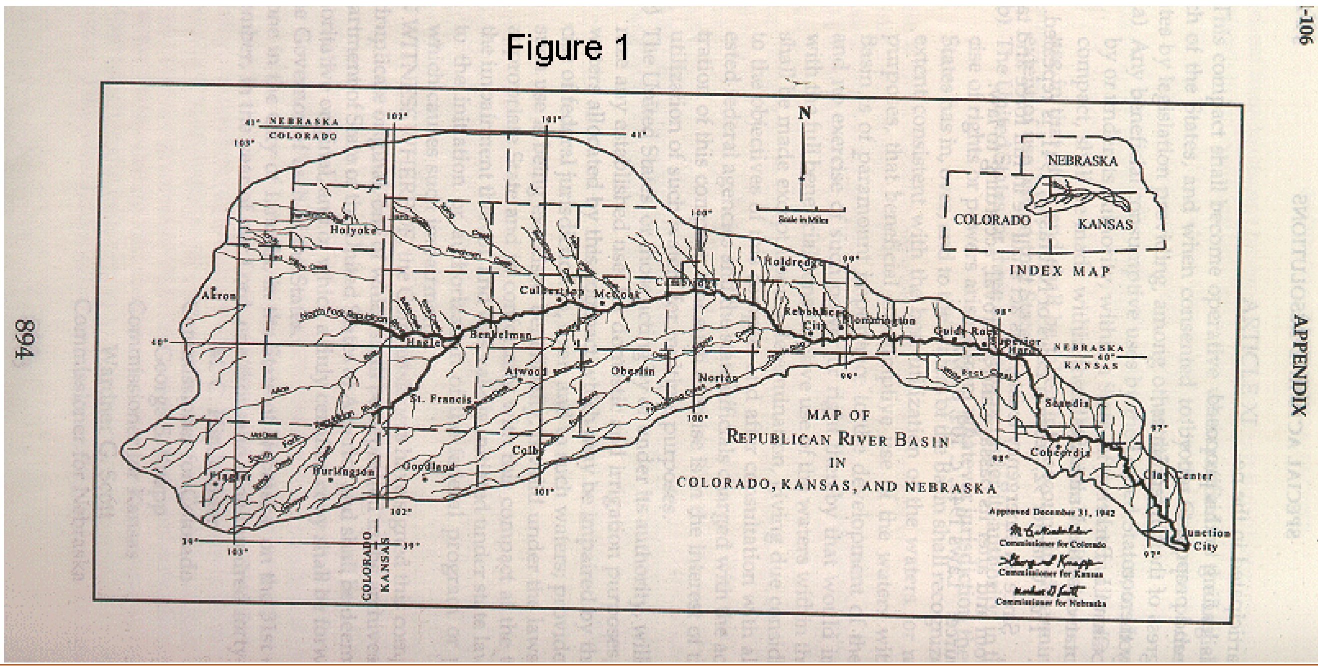
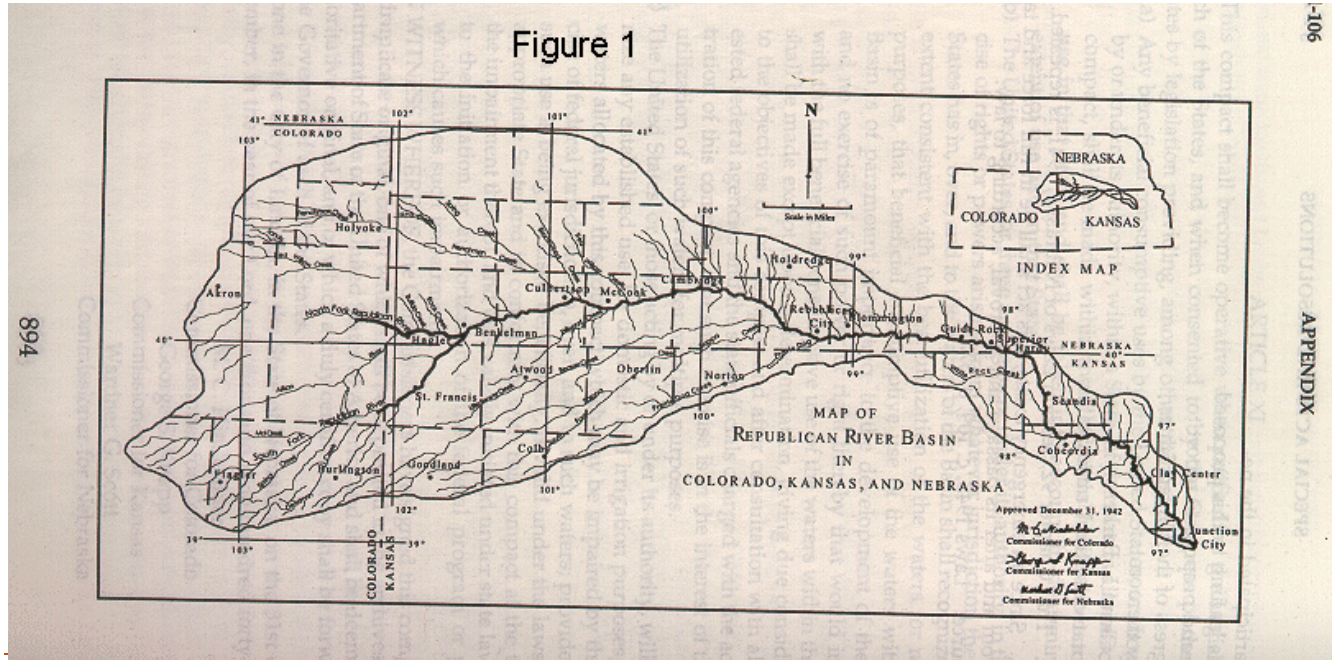
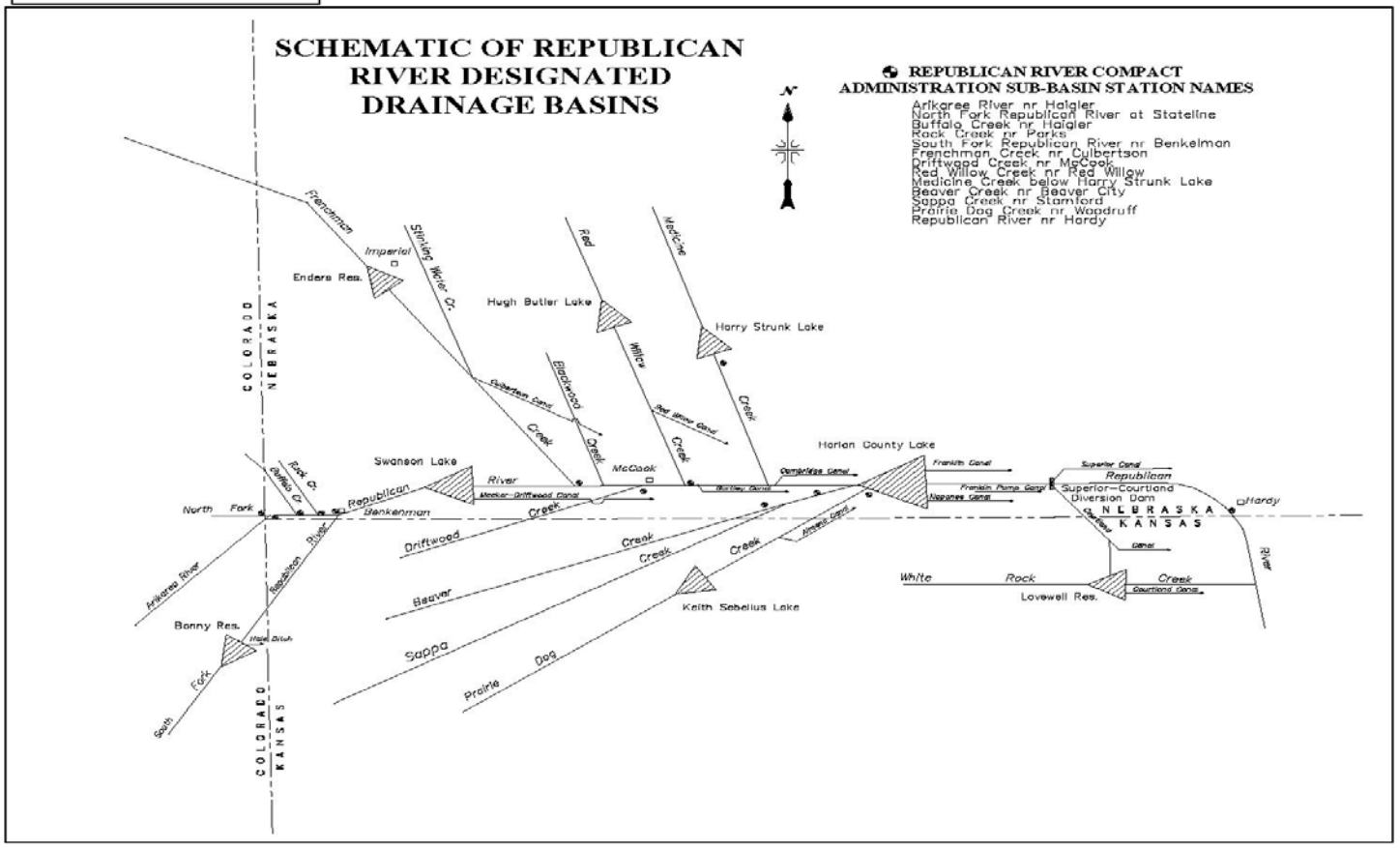


Figure 1
N
INDEX MAP
NEBRASKA
COLORADO
KANSAS
Holyoke
Akron
Haigler
Benkelman
Culbertson
McCook
Cambridge
Holdrege
Republican City
Bloomington
Guide Rock
Superior
Hardy
St. Francis
Atwood
Oberlin
Norton
Colby
Goodland
Burlington
Flagler
Scandia
Concordia
Clay Center
Junction City
MAP OF
REPUBLICAN RIVER BASIN
IN
COLORADO, KANSAS, AND NEBRASKA
Approved December 31, 1942
Commissioner for Colorado
Commissioner for Kansas
Commissioner for Nebraska

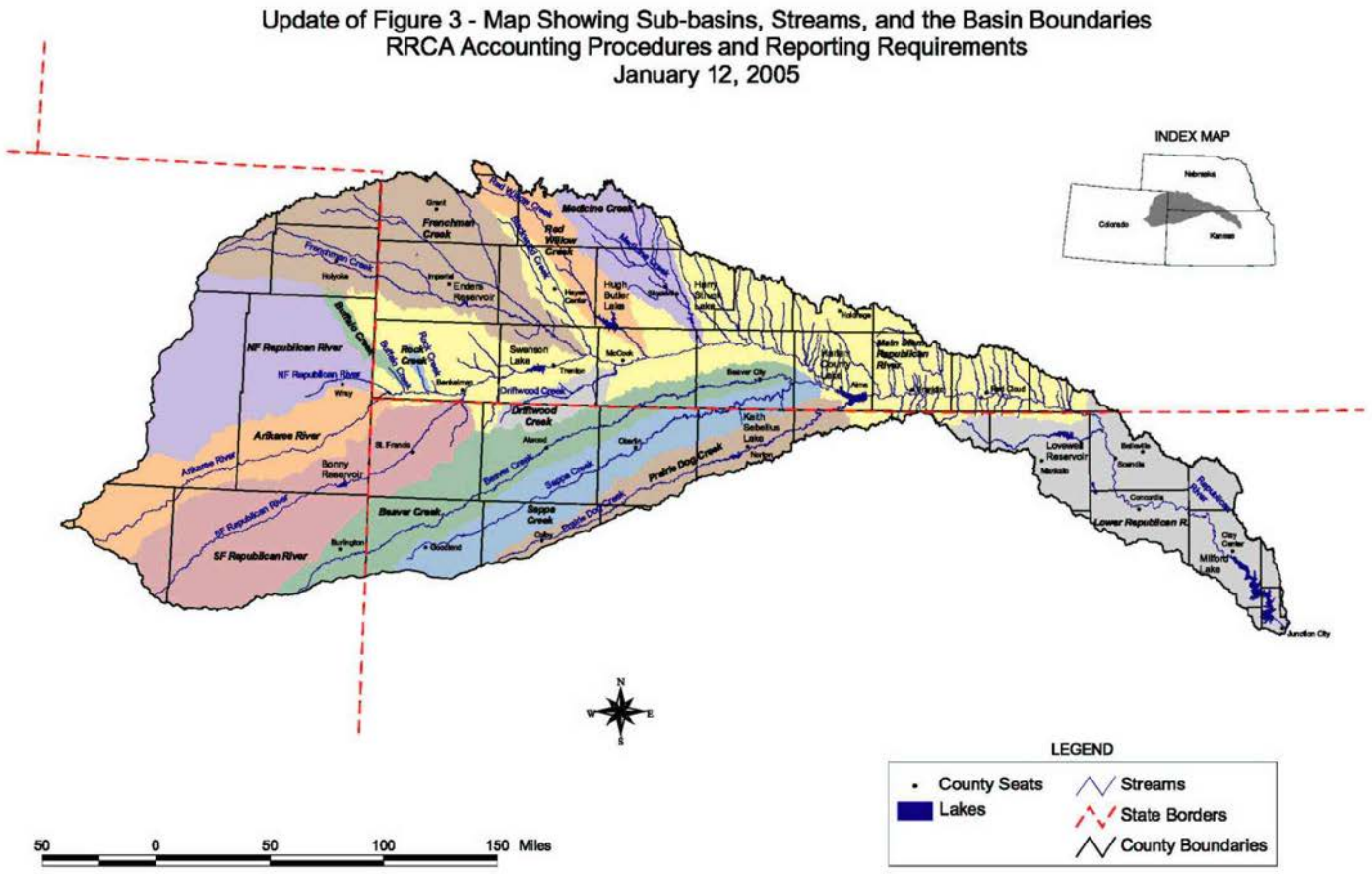


Basin Map Attached to Compact that Shows the Streams and the Basin Boundaries

Figure 2



Line Diagram of Designated Drainage Basins Showing Federal Reservoirs and Sub-basin Gaging Stations



Map Showing Sub-basins, Streams, and the Basin Boundaries

Attachment 1: Sub-basin Flood Flow Thresholds

Sub-basin	Sub-basin Flood Flow Threshold Acre-feet per Year[3]
Arikaree River	16,400
North Fork of Republican River	33,900
Buffalo Creek	4,800
Rock Creek	9,800
South Fork of Republican River	30,400
Frenchman Creek	51,900
Driftwood Creek	9,400
Red Willow Creek	15,100
Medicine Creek	55,100
Beaver Creek	13,900
Sappa Creek	26,900
Prairie Dog	15,700

[3] Flows considered to be Flood Flows are flows in excess of the 94% flow based on a flood frequency analysis for the years 1971-2000. The Gaged Flows are measured after depletions by Beneficial Consumptive Use and change in reservoir storage. For the purpose of compliance with III.B.1, the Gaged Flows shall not include ~~Augmentation Water Supply Credit~~CNF Augmentation Water Supply Credits delivered in any calendar year.

Attachment 2: Description of the Consensus Plan for Harlan County Lake

The Consensus Plan for operating Harlan County Lake was conceived after extended discussions and negotiations between Reclamation and the Corps. The agreement shaped at these meetings provides for sharing the decreasing water supply into Harlan County Lake. The agreement provides a consistent procedure for: updating the reservoir elevation/storage relationship, sharing the reduced inflow and summer evaporation, and providing a January forecast of irrigation water available for the following summer.

During the interagency discussions the two agencies found agreement in the following areas:

- The operating plan would be based on current sediment accumulation in the irrigation pool and other zones of the project.
- Evaporation from the lake affects all the various lake uses in proportion to the amount of water in storage for each use.
- During drought conditions, some water for irrigation could be withdrawn from the sediment pool.
- Water shortage would be shared between the different beneficial uses of the project, including fish, wildlife, recreation and irrigation.

To incorporate these areas of agreement into an operation plan for Harlan County Lake, a mutually acceptable procedure addressing each of these items was negotiated and accepted by both agencies.

1. Sediment Accumulation.

The most recent sedimentation survey for Harlan County project was conducted in 1988, 37 years after lake began operation. Surveys were also performed in 1962 and 1972; however, conclusions reached after the 1988 survey indicate that the previous calculations are unreliable. The 1988 survey indicates that, since closure of the dam in 1951, the accumulated sediment is distributed in each of the designated pools as follows:

Flood Pool	2,387 Acre-feet
Irrigation Pool	4,853 Acre-feet
Sedimentation Pool	33,527 Acre-feet

To insure that the irrigation pool retained 150,000 Acre-feet of storage, the bottom of the irrigation pool was lowered to 1,932.4 feet, msl, after the 1988 survey.

To estimate sediment accumulation in the lake since 1988, we assumed similar conditions have occurred at the project during the past 11 years. Assuming a consistent rate of deposition since 1988, the irrigation pool has trapped an additional 1,430 Acre-feet.

A similar calculation of the flood control pool indicates that the flood control pool has captured an additional 704 Acre-feet for a total of 3,090 Acre-feet since construction.

The lake elevations separating the different pools must be adjusted to maintain a 150,000-acre-foot irrigation pool and a 500,000-acre-foot flood control pool. Adjusting these elevations results in the following new elevations for the respective pools (using the 1988 capacity tables).

Top of Irrigation Pool	1,945.70 feet, msl
Top of Sediment Pool	1,931.75 feet, msl

Due to the variability of sediment deposition, we have determined that the elevation capacity relationship should be updated to reflect current conditions. We will complete a new sedimentation survey of Harlan County Lake this summer, and new area capacity tables should be available by early next year. The new tables may alter the pool elevations achieved in the Consensus Plan for Harlan County Lake.

2. Summer Evaporation.

Evaporation from a lake is affected by many factors including vapor pressure, wind, solar radiation, and salinity of the water. Total water loss from the lake through evaporation is also affected by the size of the lake. When the lake is lower, the surface area is smaller and less water loss occurs. Evaporation at Harlan County Lake has been estimated since the lake's construction using a Weather Service Class A pan which is 4 feet in diameter and 10 inches deep. We and Reclamation have jointly reviewed this information and assumed future conditions to determine an equitable method of distributing the evaporation loss from the project between irrigation and the other purposes.

During those years when the irrigation purpose expected a summer water yield of 119,000 Acre-feet or more, it was determined that an adequate water supply existed and no sharing of evaporation was necessary. Therefore, evaporation evaluation focused on the lower pool elevations when water was scarce. Times of water shortage would also generally be times of higher evaporation rates from the lake.

Reclamation and we agreed that evaporation from the lake during the summer (June through September) would be distributed between the irrigation and sediment pools based on their relative percentage of the total storage at the time of evaporation. If the sediment pool held 75 percent of the total storage, it would be charged 75 percent of the evaporation. If the sediment pool held 50 percent of the total storage, it would be charged 50 percent of the evaporation. At the bottom of the irrigation pool (1,931.75 feet, msl) all of the evaporation would be charged to the sediment pool.

Due to downstream water rights for summer inflow, neither the irrigation nor the sediment pool is credited with summer inflow to the lake. The summer inflows would be assumed passed through the lake to satisfy the water right holders. Therefore, Reclamation and we did not distribute the summer inflow between the project purposes.

As a result of numerous lake operation model computer runs by Reclamation, it became apparent that total evaporation from the project during the summer averaged about 25,000 Acre-feet during times of lower lake elevations. These same models showed that about 20 percent of the evaporation should be charged to the irrigation pool, based on percentage in storage during the summer months. About 20 percent of the total lake storage is in the irrigation pool when the lake is at elevation 1,935.0 feet, msl. As a result of the joint study, Reclamation and we agreed that the irrigation pool would be credited with 20,000 Acre-feet of water during times of drought to share the summer evaporation loss.

Reclamation and we further agreed that the sediment pool would be assumed full each year. In essence, if the actual pool elevation were below 1,931.75 feet, msl, in January, the irrigation pool would contain a negative storage for the purpose of calculating available water for irrigation, regardless of the prior year's summer evaporation from sediment storage.

3. Irrigation withdrawal from sediment storage.

During drought conditions, occasional withdrawal of water from the sediment pool for irrigation is necessary. Such action is contemplated in the Field Working Agreement and the Harlan County Lake Regulation Manual: "Until such time as sediment fully occupies the allocated reserve capacity, it will be used for irrigation and various conservation purposes, including public health, recreation, and fish and wildlife preservation."

To implement this concept into an operation plan for Harlan County Lake, Reclamation and we agreed to estimate the net spring inflow to Harlan County Lake. The estimated inflow would be used by the Reclamation to provide a firm projection of water available for irrigation during the next season.

Since the construction of Harlan County Lake, inflows to the lake have been depleted by upstream irrigation wells and farming practices. Reclamation has recently completed an in-depth study of these depleted flows as a part of their contract renewal process. The study concluded that if the current conditions had existed in the basin since 1931, the average spring inflow to the project would have been 57,600 Acre-feet of water. The study further concluded that the evaporation would have been 8,800 Acre-feet of water during the same period. Reclamation and we agreed to use these values to calculate the net inflow to the project under the current conditions.

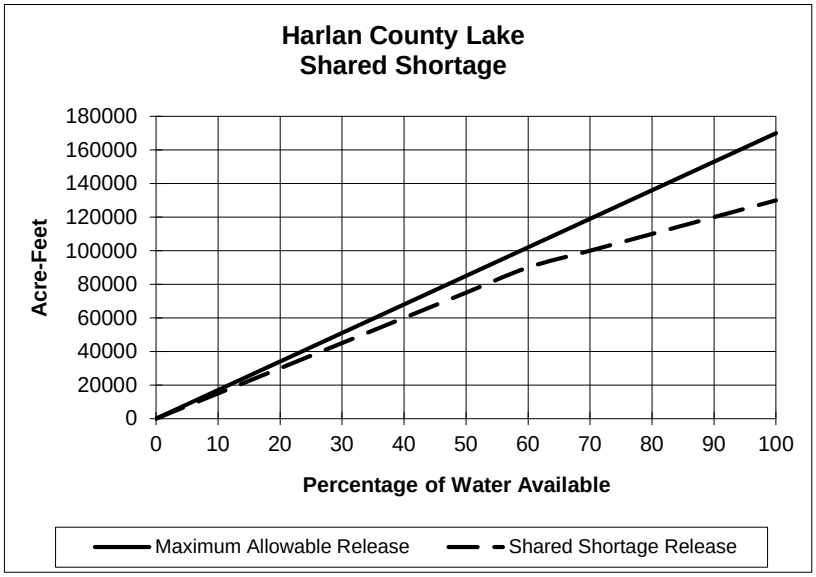
In addition, both agencies also recognized that the inflow to the project could continue to decrease with further upstream well development and water conservation farming. Due to these

concerns, Reclamation and we determined that the previous 5-year inflow values would be averaged each year and compared to 57,600 Acre-feet. The inflow estimate for Harlan County Lake would be the smaller of these two values.

The estimated inflow amount would be used in January of each year to forecast the amount of water stored in the lake at the beginning of the irrigation season. Based on this forecast, the irrigation districts would be provided a firm estimate of the amount of water available for the next season. The actual storage in the lake on May 31 would be reviewed each year. When the actual water in storage is less than the January forecast, Reclamation may draw water from sediment storage to make up the difference.

4. Water Shortage Sharing.

A final component of the agreement involves a procedure for sharing the water available during times of shortage. Under the shared shortage procedure, the irrigation purpose of the project would remove less water then otherwise allowed and alleviate some of the adverse effects to the other purposes. The procedure would also extend the water supply during times of drought by "banking" some water for the next irrigation season. The following graph illustrates the shared shortage releases.



5. Calculation of Irrigation Water Available

Each January, the Reclamation would provide the Bostwick irrigation districts a firm estimate of the quantity of water available for the following season. The firm estimate of water available for irrigation would be calculated by using the following equation and shared shortage adjustment:

Storage + Summer Sediment Pool Evaporation + Inflow – Spring Evaporation=Maximum Irrigation Water Available

The variables in the equation are defined as:

- Maximum Irrigation Water Available. Maximum irrigation supply from Harlan County Lake for that irrigation season.
- Storage. Actual storage in the irrigation pool at the end of December. The sediment pool is assumed full. If the pool elevation is below the top of the sediment pool, a negative irrigation storage value would be used.
- Inflow. The inflow would be the smaller of the past 5-year average inflow to the project from January through May, or 57,600 Acre-feet.
- Spring Evaporation. Evaporation from the project would be 8,800 Acre-feet which is the average January through May evaporation.
- Summer Sediment Pool Evaporation. Summer evaporation from the sediment pool during June through September would be 20,000 Acre-feet. This is an estimate based on lower pool elevations, which characterize the times when it would be critical to the computations.

6. Shared Shortage Adjustment

To ensure that an equitable distribution of the available water occurs during short-term drought conditions, and provide for a "banking" procedure to increase the water stored for subsequent years, a shared shortage plan would be implemented. The maximum water available for irrigation according to the above equation would be reduced according to the following table. Linear interpolation of values will occur between table values.

Shared Shortage Adjustment Table

Irrigation Water Available (Acre-feet)	Irrigation Water Released (Acre-feet)
0	0
17,000	15,000
34,000	30,000
51,000	45,000
68,000	60,000

85,000	75,000
102,000	90,000
119,000	100,000
136,000	110,000
153,000	120,000
170,000	130,000

7. Annual Shutoff Elevation for Harlan County Lake

The annual shutoff elevation for Harlan County Lake would be estimated each January and finally established each June.

The annual shutoff elevation for irrigation releases will be estimated by Reclamation each January in the following manner:

1. Estimate the May 31 Irrigation Water Storage (IWS) (Maximum 150,000 Acre-feet) by taking the December 31 irrigation pool storage plus the January-May inflow estimate (57,600 Acre-feet or the average inflow for the last 5-year period, whichever is less) minus the January-May evaporation estimate (8,800 Acre-feet).
2. Calculate the estimated Irrigation Water Available, including all summer evaporation, by adding the Estimated Irrigation Water Storage (from item 1) to the estimated sediment pool summer evaporation (20,000 AF).
3. Use the above Shared Shortage Adjustment Table to determine the acceptable Irrigation Water Release from the Irrigation Water Available.
4. Subtract the Irrigation Water Release (from item 3) from the Estimated IWS (from item 1). The elevation of the lake corresponding to the resulting irrigation storage is the Estimated Shutoff Elevation. The shutoff elevation will not be below the bottom of the irrigation pool if over 119,000 AF of water is supplied to the districts, nor below 1,927.0 feet, msl. If the shutoff elevation is below the irrigation pool, the maximum irrigation release is 119,000 AF.

The annual shutoff elevation for irrigation releases would be finalized each June in accordance with the following procedure:

1. Compare the estimated May 31 IWS with the actual May 31 IWS.
2. If the actual end of May IWS is less than the estimated May IWS, lower the shutoff elevation to account for the reduced storage.
3. If the actual end of May IWS is equal to or greater than the estimated end of May IWS, the estimated shutoff elevation is the annual shutoff elevation.
4. The shutoff elevation will never be below elevation1,927.0 feet, msl, and will not be below the bottom of the irrigation pool if more than 119,000 Acre-feet of water is supplied to the districts.

Attachment 3: Inflows to Harlan County Lake 1993 Level of Development

BASELINE RUN - 1993 LEVEL INFLOW TO HARLAN COUNTY RESERVOIR

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1931	10.2	10.8	13.4	5.0	18.8	15.8	4.3	1.8	1.8	0.0	0.1	0.1	82.1
1932	6.8	16.6	18.5	4.6	3.8	47.6	3.8	2.8	4.8	0.0	0.0	0.4	109.7
1933	0.4	0.0	3.9	30.2	31.0	5.4	1.8	0.0	10.4	0.0	2.6	5.5	91.2
1934	2.1	0.0	3.2	1.8	0.7	7.3	0.8	0.0	1.3	0.0	2.2	0.0	19.4
1935	0.3	0.1	0.7	4.2	0.8	389.3	6.1	19.1	26.1	2.4	5.2	0.9	455.2
1936	0.3	0.0	11.9	0.0	35.9	4.7	0.4	0.0	1.8	0.0	1.6	3.8	60.4
1937	4.8	12.9	6.0	2.5	0.0	12.6	6.3	6.9	2.4	0.0	0.0	12.4	66.8
1938	9.9	7.8	8.7	10.4	18.7	8.6	7.3	7.8	4.9	0.2	0.0	4.7	89.0
1939	2.7	7.5	9.6	12.2	6.6	13.3	5.0	4.1	0.0	0.0	0.0	0.0	61.0
1940	0.0	0.0	12.2	5.2	4.6	23.7	2.8	3.2	0.0	3.6	0.0	1.4	56.7
1941	0.0	10.6	10.6	7.7	17.2	67.1	28.9	19.7	14.9	8.3	6.7	7.1	198.8
1942	3.3	10.6	0.5	34.1	30.8	83.9	11.7	10.9	36.5	3.1	8.7	0.3	234.4
1943	1.2	11.2	14.6	31.4	4.7	28.3	4.8	0.3	0.9	0.0	0.0	11.8	109.2
1944	0.1	4.3	9.0	43.1	31.9	63.9	26.6	15.4	0.5	0.3	3.0	4.5	202.6
1945	4.3	7.8	5.7	9.5	4.1	53.5	5.0	0.9	1.5	5.0	6.0	6.3	109.6
1946	5.9	11.2	9.3	4.9	7.0	3.1	1.6	11.4	28.1	129.9	25.0	12.1	249.5
1947	1.1	3.2	10.4	8.2	11.9	195.4	22.3	5.9	2.9	0.2	0.3	0.3	262.1
1948	6.2	9.8	24.1	5.4	0.2	39.8	13.5	6.8	4.2	0.0	0.1	0.1	110.2
1949	2.0	1.5	25.2	16.3	49.0	57.4	9.2	5.5	2.1	3.0	2.8	0.3	174.3
1950	0.3	5.7	10.8	10.9	28.9	10.1	12.7	9.3	7.8	7.2	3.8	3.1	110.6
1951	3.8	3.4	7.1	5.3	42.0	39.9	42.1	10.1	36.0	15.5	14.8	8.9	228.9
1952	16.4	21.4	26.3	23.8	34.6	4.0	9.3	3.1	1.5	11.7	4.3	0.1	156.5
1953	1.8	4.6	5.3	3.3	15.1	9.5	1.8	0.2	0.0	0.0	2.8	0.1	44.5
1954	1.0	6.8	1.9	3.2	7.1	2.4	0.0	1.2	0.0	0.0	0.0	0.0	23.6
1955	0.0	4.0	6.3	4.8	2.9	6.4	2.7	0.0	1.4	0.0	0.0	0.0	28.5
1956	1.6	3.4	2.9	2.4	1.3	1.5	0.0	0.6	0.0	0.0	0.0	0.0	13.7
1957	0.0	4.1	6.2	12.8	3.5	62.4	21.3	1.2	2.0	3.4	4.5	4.7	126.1
1958	0.8	3.0	14.2	14.0	18.7	1.3	3.4	2.2	0.0	0.4	0.0	0.6	58.6
1959	1.9	15.4	16.4	8.5	13.6	4.2	1.4	1.2	0.0	4.3	1.0	4.5	72.4
1960	1.4	12.3	71.4	23.9	21.7	53.7	14.1	3.2	0.0	0.0	0.2	2.8	204.7
1961	2.3	6.4	7.7	7.4	26.5	24.0	7.2	4.9	0.0	2.3	4.8	1.7	95.2

Attachment 3: Inflows to Harlan County Lake 1993 Level of Development

BASELINE RUN - 1993 LEVEL INFLOW TO HARLAN COUNTY RESERVOIR

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1962	4.5	9.1	16.2	9.9	14.4	42.6	41.6	21.1	2.3	8.7	8.3	5.7	184.4
1963	3.4	18.2	18.2	15.0	12.7	14.7	3.4	6.1	8.7	0.8	5.3	1.8	108.3
1964	5.4	7.6	8.3	8.4	9.9	11.9	7.2	6.5	2.4	1.9	1.4	2.3	73.2
1965	6.0	8.1	11.1	12.8	32.8	40.0	22.9	6.5	37.2	53.7	19.5	11.0	261.6
1966	8.9	21.4	15.7	11.4	12.0	34.7	12.4	2.5	3.5	5.4	6.8	5.7	140.4
1967	7.2	11.5	11.5	12.9	9.1	75.3	43.7	15.3	4.4	7.3	6.9	5.4	210.5
1968	3.9	10.2	8.5	11.6	10.8	12.5	3.1	2.7	1.6	2.0	4.3	3.4	74.6
1969	4.2	10.8	24.5	15.1	18.9	17.5	17.0	12.6	16.6	9.2	11.8	9.9	168.1
1970	3.5	8.7	8.5	10.5	11.1	7.7	4.6	3.2	0.5	3.3	4.7	4.5	70.8
1971	4.1	10.3	12.4	12.8	18.3	7.2	8.4	6.2	1.9	4.2	7.3	7.1	100.2
1972	5.5	8.1	9.2	8.3	14.8	8.5	6.5	4.4	0.1	2.9	7.6	4.1	80.0
1973	11.4	14.2	19.0	16.2	17.4	20.9	9.1	1.9	8.4	19.6	11.9	13.2	163.2
1974	13.2	13.4	12.0	14.3	15.4	17.2	5.5	0.0	0.0	0.0	4.9	5.5	101.4
1975	7.2	8.2	13.6	14.8	12.0	48.1	11.6	7.4	0.1	3.0	6.2	7.3	139.5
1976	7.0	10.2	10.1	16.0	12.1	3.5	2.2	1.8	0.9	1.0	3.2	3.1	71.1
1977	4.4	9.6	12.9	21.2	31.5	12.1	5.9	1.9	10.6	4.1	5.5	5.3	125.0
1978	5.0	6.5	20.6	12.9	11.8	3.8	0.0	1.0	0.0	0.0	0.3	1.6	63.5
1979	1.3	7.6	21.5	18.8	15.9	5.4	10.4	10.6	1.6	0.9	3.6	6.2	103.8
1980	5.7	9.3	11.6	15.2	10.4	2.1	2.5	0.0	0.0	0.0	2.5	2.2	61.5
1981	5.5	6.0	11.6	14.9	22.5	6.4	11.5	16.3	4.3	2.5	6.7	6.2	114.4
1982	5.3	12.5	17.9	14.3	26.8	27.1	8.9	2.7	0.0	6.5	6.3	15.5	143.8
1983	6.5	9.7	27.2	16.4	41.4	74.2	10.7	7.6	3.8	3.1	6.7	5.2	212.5
1984	6.8	14.6	17.2	32.9	40.6	15.5	8.1	4.5	0.0	5.5	4.8	6.2	156.7
1985	6.9	14.1	13.6	11.9	27.4	9.9	10.0	2.0	6.0	8.5	5.6	5.8	121.7
1986	9.1	9.4	12.2	11.7	34.3	13.0	13.5	4.6	3.3	5.9	5.4	7.1	129.5
1987	5.9	9.2	19.7	24.1	24.3	11.7	19.0	5.7	2.3	2.7	8.2	7.0	139.8
1988	6.2	13.7	11.6	15.2	15.2	7.0	17.9	10.4	0.6	2.0	5.9	5.4	111.1
1989	5.4	5.9	10.5	9.1	11.4	11.8	14.0	6.2	0.2	3.1	3.1	3.5	84.2
1990	6.6	7.7	13.2	9.7	15.5	1.4	4.3	10.7	0.6	3.2	2.0	2.7	77.6
1991	2.4	8.0	9.0	10.6	15.2	3.9	1.9	0.5	0.0	0.0	2.7	4.8	59.0
1992	8.0	8.8	12.7	8.5	4.5	6.1	6.5	9.4	2.4	6.9	6.7	5.2	85.7
1993	5.2	14.4	71.6	22.7	21.0	17.0	68.0	37.5	23.3	16.8	30.1	17.7	345.3

Avg	4.5	8.8	14.1	13.0	17.2	30.6	11.0	6.2	5.4	6.3	5.0	4.7	126.8

Attachment 4: Evaporation Loss Harlan County Lake 1993 Level of Development

BASELINE - 1993 LEVEL FLOWS - HARLAN COUNTY EVAPORATION

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1931	0.7	0.9	1.6	2.9	4.2	7.4	6.9	5.2	2.7	2.1	1.2	0.4	36.2
1932	0.6	0.8	1.5	2.7	4.1	5.0	6.8	5.0	2.7	2.1	1.2	0.4	32.9
1933	0.6	0.8	1.4	2.5	3.8	7.8	6.1	4.2	2.7	2.1	1.2	0.4	33.6
1934	0.6	0.8	1.4	2.4	4.5	6.5	8.0	6.2	2.7	2.0	1.2	0.4	36.7
1935	0.6	0.8	1.3	2.3	2.2	3.6	9.7	6.2	3.1	2.5	1.4	0.5	34.2
1936	0.7	0.9	1.6	2.9	5.5	6.8	8.7	6.5	2.7	2.1	1.2	0.4	40.0
1937	0.6	0.8	1.4	2.5	3.6	4.0	6.2	6.5	2.7	2.1	1.2	0.4	32.0
1938	0.6	0.9	1.5	2.7	3.4	4.9	6.5	5.7	2.7	2.1	1.2	0.4	32.6
1939	0.6	0.8	1.4	2.6	4.3	4.9	6.8	4.6	2.7	2.1	1.2	0.4	32.4
1940	0.6	0.8	1.4	2.4	3.5	5.0	6.5	4.6	2.7	2.1	1.2	0.4	31.2
1941	0.6	0.8	1.4	2.5	3.9	4.2	6.7	5.3	2.8	2.1	1.3	0.5	32.1
1942	0.6	0.9	1.5	2.8	4.0	5.2	8.3	5.1	3.2	2.5	1.5	0.5	36.1
1943	0.7	1.0	1.8	3.2	4.3	5.7	7.9	6.3	2.7	2.1	1.2	0.4	37.3
1944	0.6	0.8	1.4	2.7	4.2	5.3	7.0	5.8	3.5	2.6	1.5	0.5	35.9
1945	0.7	1.0	1.8	3.1	3.8	3.0	6.7	5.7	2.9	2.2	1.3	0.5	32.7
1946	0.6	0.9	1.6	2.8	3.5	5.1	5.6	4.4	2.9	2.7	1.8	0.6	32.5
1947	1.0	1.5	2.9	3.2	3.4	-1.2	5.8	5.3	3.7	1.7	0.5	0.1	27.9
1948	0.8	0.7	1.5	3.6	3.1	2.4	4.2	4.7	3.0	2.7	0.8	0.3	27.8
1949	0.1	0.9	0.7	1.8	1.1	0.7	6.5	4.1	3.1	1.7	1.5	0.4	22.6
1950	0.7	0.1	0.8	2.8	2.0	5.6	0.8	2.8	4.5	2.3	1.6	0.6	24.6
1951	0.5	0.2	2.1	0.7	-0.1	1.9	3.5	4.1	0.4	3.1	2.2	0.9	19.5
1952	1.1	1.2	1.9	2.5	5.2	6.2	1.5	3.4	3.6	2.9	1.1	-0.1	30.5
1953	0.5	1.0	1.5	2.9	4.7	4.5	4.6	6.6	5.3	3.3	0.1	0.0	35.0
1954	0.7	0.6	2.2	3.6	0.3	4.9	6.7	1.6	3.6	1.6	1.5	0.6	27.9
1955	0.5	1.0	2.1	4.6	3.4	-0.5	7.3	6.9	2.7	2.6	1.4	0.4	32.4
1956	0.6	1.1	1.9	2.8	3.9	4.5	5.0	3.7	4.7	3.7	1.3	0.5	33.7
1957	0.7	1.0	1.3	0.5	-0.6	-1.1	6.1	3.7	2.3	1.7	1.2	0.4	17.2
1958	0.7	0.1	1.0	0.6	2.3	4.4	1.0	1.9	3.3	3.3	1.0	0.6	20.2
1959	0.4	1.0	1.1	2.1	1.0	3.5	5.0	4.8	2.3	0.7	1.5	0.6	24.0
1960	0.1	0.7	2.0	2.7	0.9	0.1	4.9	3.6	3.9	2.0	1.3	0.4	22.6
1961	0.9	1.0	1.4	2.7	-1.1	0.6	5.1	2.9	1.2	2.4	0.7	0.1	17.9

Attachment 4: Evaporation Loss Harlan County Lake 1993 Level of Development

BASELINE - 1993 LEVEL FLOWS - HARLAN COUNTY EVAPORATION

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1962	0.6	0.6	0.9	3.7	3.4	1.5	0.3	1.6	2.0	2.0	1.7	0.3	18.6
1963	0.7	1.4	1.3	4.5	4.6	6.3	6.1	3.1	-0.8	2.7	1.5	0.4	31.8
1964	0.8	0.8	1.7	3.2	5.6	1.2	6.9	3.0	3.0	3.3	1.2	0.6	31.3
1965	0.4	0.7	1.2	2.8	1.5	-0.5	2.0	2.8	-3.9	1.7	2.1	0.4	11.2
1966	0.9	0.8	2.9	2.7	7.5	2.8	5.8	3.7	2.7	2.8	1.5	0.4	34.5
1967	0.7	1.2	2.5	3.0	2.0	-2.9	1.6	4.5	3.5	2.0	1.6	0.4	20.1
1968	0.9	1.2	2.8	2.6	3.2	4.9	4.7	1.8	2.3	0.7	1.2	0.2	26.5
1969	0.4	0.6	2.4	3.3	0.1	3.8	-0.7	2.9	2.2	-1.0	1.5	0.4	15.9
1970	0.7	1.4	2.3	2.8	4.7	4.4	6.5	5.9	0.9	1.0	1.5	0.7	32.8
1971	0.7	0.2	2.0	2.9	0.7	5.1	3.4	4.5	1.4	1.5	0.2	0.5	23.1
1972	0.8	1.3	2.0	1.7	1.1	0.0	3.3	1.8	2.1	1.7	-0.4	0.1	15.5
1973	0.5	1.1	-0.7	2.5	3.4	6.7	-1.7	4.2	-3.0	0.2	0.2	0.2	13.6
1974	0.7	1.5	2.6	1.5	3.7	2.5	9.1	2.6	3.4	1.4	1.1	0.3	30.4
1975	0.7	0.7	2.0	2.1	0.8	1.1	4.3	2.7	3.0	3.4	0.7	0.6	22.1
1976	0.8	1.2	1.7	0.7	1.5	5.0	5.9	5.7	-0.2	1.4	1.4	0.7	25.8
1977	0.7	1.3	0.2	1.1	0.0	4.6	4.0	0.6	2.0	1.6	1.0	0.4	17.5
1978	0.5	0.7	1.2	3.4	3.9	6.2	7.1	4.5	4.5	3.0	1.1	0.5	36.6
1979	0.5	0.6	1.1	3.9	4.4	4.6	3.5	5.1	4.1	2.8	1.4	0.7	32.7
1980	0.5	0.6	1.2	3.4	3.7	4.7	6.8	6.0	3.9	2.7	1.3	0.6	35.4
1981	0.5	0.6	1.2	3.8	3.2	4.8	4.2	3.7	2.9	1.7	1.3	0.7	28.6
1982	0.5	0.7	1.2	3.9	3.8	3.9	5.1	3.8	2.9	2.2	1.4	0.8	30.2
1983	0.5	0.7	1.4	2.9	4.2	5.3	8.6	7.2	4.6	1.8	1.5	0.6	39.3
1984	0.6	0.8	1.4	2.9	4.2	5.8	7.2	5.7	4.7	1.4	1.4	0.7	36.8
1985	0.5	0.7	1.3	2.3	4.0	4.5	5.6	3.5	3.8	1.5	1.5	0.7	29.9
1986	0.6	0.7	1.3	2.8	4.4	5.8	6.7	4.0	2.7	1.3	1.4	0.7	32.4
1987	0.5	0.8	1.3	3.1	4.2	6.2	6.9	3.5	3.1	2.2	1.4	0.7	33.9
1988	0.5	0.7	1.3	3.5	4.9	6.6	4.6	4.8	3.5	2.2	1.4	0.7	34.7
1989	0.5	0.7	1.2	4.2	4.5	4.4	4.8	3.6	3.0	2.5	1.4	0.7	31.5
1990	0.5	0.7	1.2	3.0	3.5	5.6	6.4	4.0	5.0	3.4	1.4	0.6	35.3
1991	0.5	0.7	1.2	2.8	3.3	5.5	6.0	5.0	5.1	3.2	1.3	0.6	35.2
1992	0.6	0.7	1.2	1.8	3.2	2.2	4.1	3.5	4.2	2.9	1.9	1.0	27.3

1993	0.6	0.5	1.0	2.2	3.1	4.6	4.2	4.9	4.5	4.4	3.1	1.2	34.3
Avg	0.6	0.8	1.5	2.7	3.2	3.9	5.3	4.3	2.8	2.2	1.3	0.5	29.1

Trigger Calculations Based on Harlan County Lake Irrigation Supply	Units-1000 Acre-feet	Irrigation Trigger	119.0	Assume that during irrigation release season HCL Inflow = Evaporation Loss
		Total Irrigation Supply	130.0	
		Bottom Irrigation	164.1	
		Evaporation Adjust	20.0	

	Oct	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
1993 Level AVE inflow	6.3	5	4.7	4.5	8.8	14.1	13.0	17.2	30.6	11.0	6.2	5.4	126.8
1993 Level AVE evap	2.2	1.3	0.5	0.6	0.8	1.5	2.7	3.2	3.9	5.3	4.3	2.8	29.1
(1931-93)													
Avg. Inflow Last 5 Years	10.8	13.0	12.3	12.9	16.6	22.4	19.4	18.1	14.8	16.5	11.0	4.7	172.6

Attachment 5: Projected Water Supply Spread Sheet Calculations

Year 2001-2002 Oct - Jun Trigger and Irrigation Supply Calculation									
Calculation Month	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Previous EOM Content	236.5	235.9	238.6	242.9	248.1	255.1	263.8	269.6	276.2
Inflow to May 31	73.6	67.3	62.3	57.6	53.1	44.3	30.2	17.2	0.0
Last 5 Yrs Avg Inflow to May 31	125.6	114.8	101.7	89.5	76.6	59.9	37.5	18.1	0.0
Evap to May 31	12.8	10.6	9.3	8.8	8.2	7.4	5.9	3.2	0.0
Est. Cont May 31	297.3	292.6	291.6	291.7	293.0	292.0	288.1	283.6	276.2
Est. Elevation May 31	1944.44	1944.08	1944.00	1944.01	1944.11	1944.03	1943.72	1943.37	1942.77
Max. Irrigation Available	153.2	148.5	147.5	147.6	148.9	147.9	144.0	139.5	132.1
Irrigation Release Est.	120.1	117.4	116.8	116.8	118.1	117.1	116.8	116.8	116.8
Trigger - Yes/No	NO	YES	YES	YES	YES	YES	YES	YES	YES
130 kAF Irrigation Supply - Yes/No	NO	NO	NO	NO	NO	NO	NO	NO	NO

Attachment 5: Projected Water Supply Spread Sheet Calculations

Year 2002 Jul - Sep Final Trigger and Total Irrigation Supply Calculation				
Calculation Month		**Jul**	**Aug**	**Sep**
Previous EOM Irrigation Release Est.		116.8	116.0	109.7
Previous Month Inflow		5.5	0.5	1.3
Previous Month Evap		6.3	6.8	6.6
Irrigation Release Estimate		116.0	109.7	104.4
Final Trigger - Yes/No		YES		
130 kAF Irrigation Supply - Yes/No		NO	NO	NO

Attachment 6: Computing Water Supplies and Consumptive Use Above Guide Rock

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Total Main Stem VWS	Hardy gage	Superior-Courtland Diversion Dam Gage	Courtland Canal Diversions	Superior Canal Diversions	Courtland Canal Returns	Superior Canal Returns	Total Bostwick Returns Below Guide Rock	NE CBCU Below Guide Rock	KS CBCU Below Guide Rock	Total CBCU Below Guide Rock	Gain Guide Rock to Hardy	VWS Guide Rock to Hardy	Main Stem Virgin Water Supply Above Guide Rock	Nebraska Main Stem Allocation Above Hardy	Kansas Main Stem Allocation Above Hardy	Nebraska Guide Rock to Hardy Allocation	Kansas Guide Rock to Hardy Allocation
							Col F+ Col G			Col I + Col J	+ Col B - Col C+ Col K - Col H	+ Col L + Col K	Col A - Col M	.489 x Col N	.511 x Col N	.489 x Col M	.511 x Col M

Attachment 7: Calculations of Return Flows from Bureau of Reclamation Canals

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11
Canal	Canal Diversion	Spill to Waste-way	Field Deliveries	Canal Loss	Average Field Loss Factor	Field Loss	Total Loss from District	Percent Field and Canal Loss That Returns to the Stream	Total Return to Stream from Canal and Field Loss	Return as Percent of Canal Diversion
Name Canal	Headgate Diversion	Sum of measured spills to river	Sum of deliveries to the field	+Col 2 - Col 4	1 -Weighted Average Efficiency of Application System for the District*	Col 4 x Col 6	Col 5 + Col 7	Estimated Percent Loss*	Columns 8 x Col 9	Col 10/Col 2
Example	100	5	60	40	30%	18	58	82%	48	48%
Culbertson					30%					
Culbertson Extension					30%					
Meeker-Driftwood					30%					
Red Willow					30%					
Bartley					30%					
Cambridge					30%					
Naponne					35%					
Franklin					35%					
Franklin Pump					35%					
Almena					30%					
Superior					31%					
Nebraska Courtland					23%					
Courtland Canal Above Lovewell (KS)					23%					
Courtland Canal Below Lovewell					23%					

*The average field efficiencies for each district and percent loss that returns to the stream may be reviewed and, if necessary, changed by the RRCA to improve the accuracy of the estimates.

Exhibit 3

RRWCD Compact Compliance Wells						4-Jan-2013
Permit #		RRWCD submitted & GWC published (af/yr)	Corrected amount (af/yr)	Sand Hills approved for export (af/yr)	To be approved by GWC (af/yr)	Comments
		first publication				
12567-FP		201		N/A	0	Located in Central Yuma GWMD
12589-FP		376	297	372	297	Acres corrected from 309 ac to 200 ac
12967-FP	same well	345		333	333	
16920-FP		0			0	
13509-FP	same well	254		273	244	
16075-FP		30			29	
13511-FP		192		173	173	
13513-FP	same well	258		257	220	
16074-FP		44			37	
13522-FP		204		189	189	
13813-FP	same well	174		203	171	
16923-FP		32			32	
13814-FP		334		323	323	
13815-FP		291		311	291	Sand Hills approved more than hisorical amount
13856-FP	same well	241		249	241	
16067-FP		8			8	
13857-FP		229		217	217	
13858-FP		228		206	206	
13859-FP	same well	228		260	220	
16069-FP		42			40	
14018-FP		252		234	234	
14019-FP		217		206	206	
14022-FP		289		255	255	
14023-FP		219		197	197	
14024-FP		141		129	129	
14027-FP		251		237	237	
14028-FP		218		202	202	
14121-FP		437		420	420	
14122-FP		215		204	204	
14396-FP		192		180	180	
14397-FP		192		184	184	
14398-FP		240		230	230	
14600-FP		197		187	187	
14718-FP		526		526	526	
14719-FP		455		424	424	
14753-FP		310		267	267	
15285-FP		161		140	140	
18011-FP		431		421	421	
18012-FP	same well	221		317	218	
19000-FP		101			99	
18013-FP		350	291	350	291	Acres corrected from 250 ac to 228 ac
18014-FP		259		247	247	
18015-FP		549		497	497	
18017-FP	same well	180.5		353	177	
19001-FP		180.5			177	
18018-FP		230		218	218	
18019-FP		173		163	163	
18780-FP		192		192	192	
18781-FP		216		206	206	
18783-FP		273		273	273	
18966-FP		172		172	172	
19005-FP		178		174	174	
19372-FP		218		211	211	
20896-FP		169		168	168	
21476-FP		144		139	139	
subtotal		12,259	12,121	11,689	11,535	
		second publication				
14033-FP		279		279	279	
19004-FP		141		141	141	
23222-FP		230	168	230	168	Pumping corrected to permitted amount
4319-FP	same well	75		75	75	
4922-FP		0			0	
20198-FP		194		194	194	
20196-FP		249		249	249	
subtotal		1,168	1,106	1,168	1,106	
Total		13,427	13,227	12,857	12,641	

Exhibit 4

Modeling the Colorado Compliance Pipeline in the RRCA Groundwater Model

Modeling the Colorado Compliance Pipeline (the "CCP") in the RRCA Groundwater Model (the "Model") consists of two parts. The first involves fifteen wells that will be pumped via a collector system and storage tank into the pipeline (the "CCP Wells"). The water rights for these wells were changed from existing irrigation wells that will be retired. The historic consumptive use from those wells has been transferred to the CCP Wells. The second part involves the surface water outflow from the pipeline.

Modeling of Well Pumping

The irrigation wells that were acquired as part of the CCP will be removed from the irrigation well data set used to represent irrigation wells in the Republican River Basin in Colorado. Because the irrigation wells will no longer be pumped, they will not be included when calculating pumping and return flows from agricultural wells.

Instead, production for each CCP Well will be recorded and supplied as monthly input values by well based on actual production of each well. The pumping of each well will be considered to be fully consumptive and the appropriate volume added to the Republican River Pre-Processor ("rrpp") pumping input files (".pmp" files) for each month. Since there are no irrigation return flows associated with these wells, nothing will be added to the ".rcg" files.

Those pumping values for the CCP Wells will be ON in all of the model simulations except the simulation with pumping in Colorado turned OFF. Therefore, the impacts of the CCP Wells on baseflow will be evaluated as part of the evaluation of other Colorado pumping. No changes are required to "rrpp" to simulate the CCP Wells.

Only the consumptive use of the retired irrigation wells is transferred to the CCP Wells. It was previously demonstrated that due to the distance between the wells and the North Fork of the Republican River, the changes in the timing of the pumping results in no net increase in depletions of baseflow in the Republican River.

Modeling of Pipeline Outflow

The outflow of the CCP will be added to the stream network for all the Model simulations.

The MODFLOW stream package requires that the stream network be specified in such a way that the flows in the stream network can be solved from the top to the bottom of the system. The outflow from the CCP must be added to the stream network as a tributary to Segment 153. In order to do so, a new segment must be created in the stream network with a segment number less than 153. To avoid renumbering all of the segments in the stream network and the corresponding change required to the accounting that would occur as a result of renumbering all the segments, a change will be made to the stream network that avoids renumbering.

Muddy Creek in Nebraska is represented as Segments 122 and 125. The model cells representing Segment 122 will be added to Segment 125, and the routing updated so that the flow from Segments 33 and 66 that previously went to Segment 122 will go to Segment 125 instead.

Segment 122 will then be re-purposed to represent the outflow from the CCP. The new Segment 122 will have a single cell with a stream conductance of zero. The monthly CCP outflow volume will be set as the inflow to Segment 122. The stream routing will be updated so that the outflow from Segments 122 and 130 will go to Segment 153. The result will be that the inflow into Segment 153 will be the sum of the simulated baseflow in the North Fork of the Republican River at the Colorado-Nebraska State Line and the CCP outflow.

The monthly CCP outflow volume will be added to all simulations. The outflow will therefore cancel out in all the $CBCU_G$ terms it would potentially be included. Therefore no changes are required to the acct program used to summarize the groundwater model results for the accounting spreadsheets.

A change to the "mkstr" program will be required in order to add the CCP outflow to the stream package file for every month. The existing Model version 12s.str stream template file will be updated to reflect the change to Segments 122 and 125 and changes to the routing of segments 63, 66, 122 and 130. A new version of the "mkstr" program called "mkstr2" will be used to read monthly CPP volumes from the file "flow.dbf" and add it to Segment 122.

Changes to Procedures

The CCP Wells and CCP outflow will be processed along with the annual updates to the Model and the CCP data supplied along with the backup information for other components of the Colorado data.

The Model will be updated to Version 12s3 to reflect changes in the stream network required to add the outflow from the CCP to the stream network. Version 12s3 will use the updated "mkstr2" program that will require an additional "flow.dbf" input file to specify the monthly CCP outflow volume. No changes are required to the other programs used to run the Model.

The CCP will require no changes to the "acct" program that summarizes the Model results for incorporation into the accounting spreadsheets. Changes to the accounting spreadsheets to account for the Augmentation Water Supply resulting from the CCP are described elsewhere.

Exhibit B

Arbitration Time Frame Designation

Colorado v. Kansas & Nebraska

Colorado Compact Compliance Pipeline

Colorado Formally Submits Resolution to RRCA	4/5/2013
RRCA Special Meeting and Vote on Resolution	5/5/2013
If Necessary…	
Colorado Formally Submits the Issue to Arbitration	5/5/2013
Nebraska and Kansas May Amend the Scope of the Dispute	5/15/2013
States Submit Lists of Proposed Arbitrators	5/15/2013
States Meet and Confer Regarding Arbitrator Selection	5/25/2013
CDR Selects Arbitrator (*if necessary)*	5/25/2013
Initial Conference with Mediator; Set Schedule for Arbitration	6/1/2013
Final Day of Arbitration Hearings	9/29/2013
Arbitrator Issues Written Decision	11/28/2013

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WATER RESOURCES

John W. Hickenlooper
Governor

Mike King
Executive Director

Dick Wolfe, P.E.
Director/State Engineer

April 5, 2013

David Barfield
Kansas Commissioner, RRCA
Kansas Division of Water Resources
109 SW 9th Street, 2nd Floor
Topeka, KS 66612-1283

Brian Dunnigan
Nebraska Commissioner, RRCA
Nebraska Department of Natural Resources
301 Centennial Mall South
P.O. Box 94676
Lincoln, NE 68509-4676

Re: Colorado Compact Compliance Pipeline Proposal; Submittal to RRCA

Dear Commissioners Barfield and Dunnigan,

The State of Colorado hereby submits its Bonny Reservoir Accounting Proposal ("Bonny Proposal") to the RRCA pursuant to section VII.A of the Final Settlement Stipulation. A copy of the Bonny Proposal is attached hereto as Exhibit A.

Further pursuant to section VII.A.3, Colorado designates the Bonny Proposal as a "Fast Track" issue for action by the RRCA within the next 30 days. A schedule for resolution before the RRCA, and for non-binding arbitration, is attached hereto as Exhibit B. Colorado requests the Chairman schedule a special meeting of the RRCA on or before May 5, 2013.

Best Regards,

Dick Wolfe

Dick Wolfe, P.E.
Colorado Commissioner, RRCA
State Engineer
Colorado Division of Water Resources

RESOLUTION BY THE REPUBLICAN RIVER COMPACT ADMINISTRATION REGARDING MODIFICATIONS TO THE ACCOUNTING PROCEDURES TO REFLECT FUTURE OPERATIONS OF BONNY DAM AND RESERVOIR

May 5, 2013

Whereas, the active storage pool in Bonny Reservoir is empty and the outflow gates in Bonny Dam have been left open so as to pass all inflow reaching the gates;

Whereas, Bonny Reservoir has no dead pool and no water in storage;

Whereas, due to changing hydrologic conditions and other factors, Bonny Reservoir is planned to be operated as a "run of the river" dam without active storage and is unlikely to store significant water in the future;

Whereas, operating Bonny Dam as a run of the river dam will allow all baseflows and non-flood surface flows to pass through the former reservoir area and such water will continue to flow down the South Fork of the Republican River;

Whereas, Bonny Dam will continue to provide valuable flood control benefits and any temporarily stored flood flows will be released at the maximum rate and time that will avoid damage to the dam and downstream property;

Whereas, the area now comprising Bonny Dam and Reservoir was simulated in the RRCA Ground Water Model for the years 1918 to 1950 as a stream segment;

Whereas, The RRCA Ground Water Model simulates Bonny Dam and Reservoir as an active storage reservoir, rather than a run of the river dam. Specifically, the baseflow from the upstream portions of the South Fork and Landsman Creek are removed from the Model. This reservoir segment is essentially a specified head in the Model. The baseflow into the reservoir is not routed through the remainder of the stream network of the Model. Below the reservoir, outflow from the toe drain is simulated by setting the flow rate into that stream segment to a constant 10 cfs, regardless of reservoir stage;

Whereas, because Bonny Reservoir is not storing water, the current representation of Bonny Dam and Reservoir in the RRCA Groundwater Model no longer represents the physical and hydrogeological characteristics of the South Fork of the Republican River to a reasonable degree;

Now, therefore, it is hereby resolved that in order for the RRCA Groundwater Model to accurately represent the physical and hydrogeological characteristics of the South Fork of the Republican River to a reasonable degree the following conditions, which are described in detail in Exhibit 1, shall apply:

1. When this monthly average reservoir stage is less than 3638.5 feet, the reservoir will be modeled using the "Dry Bonny" condition. For any stage between 3638.5 and 3679.82 feet, the reservoir will be modeled using the "Small Bonny" condition. Once the stage reaches 3679.83 feet, the "Full Bonny" condition will be used.

2. The stage of the reservoir will be determined each month as the arithmetic average of the daily Reservoir Forebay Elevation reported by the United States Bureau of Reclamation (USBR).

3. The State of Colorado shall report to the RRCA when the stage is above 3638.5 feet, and shall further report when the outflow gates in Bonny Dam have been closed so as to store inflow reaching the gates;

4. During Small Bonny and Full Bonny conditions, calculation of evaporation from active storage or from temporary storage of flood flows, if any, shall be made in a manner similar to the other Federal Reservoirs, and;

5. The "mkstr" program used to prepare the stream package and the "mkres" program used to calculate the reservoir stage will be modified to reflect the different conditions for Bonny Reservoir.

6. The "acct" program used to summarize the groundwater model results for use in the Accounting Procedures will be updated to represent the fact that the simulated baseflow into the Bonny Reservoir reach and into the reach between Bonny Reservoir and the confluence of the South Fork and main stem of the Republican River will no longer be a constant. The $CBCU_G$ for these two reaches will be calculated as the change in baseflow out of the reach minus the change in baseflow into the reach.

Approved by the RRCA this ___ day of _____, 2013.

_____ _____

David Barfield, P.E. Date
Kansas Member
Chairman, RRCA

_____ _____

Brian Dunnigan, P.E. Date
Nebraska Member

_____ _____

Dick Wolfe, P.E. Date
Colorado Member

Exhibit 1

Modeling of Bonny Reservoir in the RRCA Groundwater Model

Current Modeling of Bonny Reservoir

The RRCA Groundwater Model (the "Model") was constructed in 2002 and 2003. Segment 150 of the Model represents the reach of the South Fork of the Republican River from about the Idalia gage to Bonny Dam. That is also the area that was inundated by Bonny Reservoir between 1950 and April 2012. The Model models two different time periods for Segment 150: (1) pre-1950 before construction of Bonny Dam; and (2) post-1950 after construction of Bonny Dam.

1. Pre-1950

The Model represents Segment 150 prior to 1950 as a stream. It uses six model cells to represent the stream course prior to construction of the Reservoir. Two additional model cells were assigned zero conductance values and were added to the original six cells in order to permit the HYDMOD package to be used to extract stream flows. The Model routes inflow into Segment 150 prior to July 1950 from Segments 140 and 141, representing the South Fork of the Republican River above Bonny Reservoir and Landsman Creek, respectively. Outflow from Segment 150 was routed to Segment 156 representing the South Fork below Bonny Reservoir.

2. Post-1950

The Model represents Segment 150 after July 1950 as a Reservoir. It uses eight model cells to represent the area of the reservoir. Those models cells correspond to about 60,000 acre-feet or more of storage. Also inflow from Segments 140 and 141 are no longer routed to Segment 150. Instead, inflow is represented as a constant 1,000,000 cfs, and the reservoir stage be set to the observed reservoir stage. Below Bonny Reservoir, the South Fork of the Republican River is modeled starting with 10 cfs below Bonny Dam to represent the outflow of the toe drain below Bonny Dam. The 10 cfs value was based on the observed outflow from that toe drain around the time the model was constructed.

Future Modeling of Bonny Reservoir

The Resolution by the Republican River Compact Administration Regarding Modification to the Accounting Procedures to Reflect Future Operations of Bonny Dam and Reservoir allow Bonny Reservoir to be modeled under three different conditions: (1) Dry Bonny; (2) Full Bonny; and (3) Small Bonny.

1. Dry Bonny

Bonny was drained in 2012. Bonny Dam still exists to provide flood protection for St Francis and other downstream communities, but the headgate at Bonny Reservoir is open and all inflow into the reservoir is flowing down a channel naturally cut by the Republican River to the outlet works. This will be referred to as the "Dry Bonny" condition.

During Dry Bonny conditions, the reservoir will be modeled as it was prior to July 1950. In other words, the model cells in Segment 150 will use the same settings as they do it the Pre-1950 condition described above. Outflow from Segments 140 and 141 will be routed to Segment 150, and the outflow from Segment 150 routed to Segment 156.

2. Full Bonny

In the event the Colorado State Engineer lifts the order to drain Bonny and Bonny stores water above 3679.83 feet, then the Model will represent the reservoir as described above in the Post-1950

condition. This will be referred to as the "Full Bonny" condition. Under these conditions, the eight cells in Segment 150 would revert to the values used from July 1950 until April 2012. The routing would be changed to remove the flow from Segments 140 and 141 from the model, and the inflow into Segment 150 would again be set to 1,000,000 cfs and the reservoir stage be set to the observed reservoir stage. Outflow from the toe drain will be set to the outflow from the toe drain observed at that time.

3. Small Bonny

It is also anticipated that there may be times in the future when a large thunderstorm or similar event would cause a large inflow into Bonny Reservoir that will exceed the ability of the outlet works, or may require controlling the rate of release of such inflow for flood protection of the downstream reach. Under such conditions, Bonny Reservoir may store water for a limited period of time. For ease of reference, we will refer to this as the "Small Bonny" condition. Under these conditions the number of active cells in Segment 150 will be set based on the volume of water in storage as determined by the observed stage.

Figure 1 shows the area-capacity curve for Bonny Reservoir based on the 2011 area-capacity survey. The horizontal axis represent the stage starting at an elevation of 3638 feet. The reservoir capacity is shown as a red line and is read on the left vertical axis. The reservoir area is represented using a blue line and is read on the right vertical axis. For modeling purposes, the area curve will be approximated using the black line. The black line is a piecewise linear approximation of the area curve to integer multiples of 640 acres, which correspond to the area of model cells. Figure 1 shows that this closely approximates the blue area curve from the survey. Green vertical lines mark the stage at which the area reaches integer multiples of 640 acres, and are labeled with the corresponding reservoir storage. Note that 640 acres correspond to 3189 acre-feet of storage, 1280 acres with 14,598 acre-feet of storage, and so on.

The stage of the reservoir will first be determined each month as the arithmetic average of the daily Reservoir Forebay Elevation reported by the United States Bureau of Reclamation (USBR). When this monthly average reservoir stage is less than 3638.5 feet, the reservoir will be modeled using the "Dry Bonny" condition. For any stage between 3638.5 and 3679.82 feet, the reservoir will be modeled using the "Small Bonny" condition. Once the stage reaches 3679.83 feet, the "Full Bonny" condition will be used.

Under Small Bonny conditions, the model will adjust the conductance values for up to four model cells depending on the stage of the reservoir. Figure 2 shows the area around Bonny Reservoir. The four model cells used to represent Bonny Reservoir during Small Bonny conditions are labeled 1-4. The four model cells shown labeled "*" are the four additional cells used to represent the Full Bonny condition. When the reservoir stage is between 3638.5 and 3679.83, Bonny Reservoir will be represented using those four model cells in sequence. For a stage from 3638.00 feet (0 acre-feet storage) to 3647.51 feet (3189 acre-feet storage), the conductance of cell 1 (106,91) will linearly increase from 0 ft^2/sec to 32.267 ft^2/sec. For a stage from 3647.51 feet (3189 acre-feet storage) to 3659.00 feet (14,598 acre-feet storage), the conductance of cell 1 (106,91) will be 32.267 ft^2/sec while the conductance of cell 2 (107,91) will linearly increase from 0 ft^2/sec to 32.267 ft^2/sec. For a stage from 3659.00 feet (14,598 acre-feet storage) to 3670.17 feet (32,881 acre-feet of storage), the conductance of cells 1 and 2 will be 32.267 ft^2/sec, and the conductance of cell 3 (107,90) will linearly increase from 0 ft^2/sec to 32.267 ft^2/sec. Finally, for a stage from 3670.17 feet (32,881 acre-feet of storage) to 3679.83 feet (54,526 acre-feet storage), the conductance of cells 1-3 will be 32.267 ft^2/sec, and the conductance of cell 4 (107,89) will linearly increase from 0 ft^2/sec to 32.267 ft^2/sec. For any higher stage, the "Full Bonny" representation will be used.

In order to represent the three conditions of Bonny Reservoir, the "mkstr" program, which generates

the stream package file for the Model, will be enhanced to be able to model any reservoir using the "Dry", "Small" or "Full" condition. The new "mkstr" program will be called "mkstr2". The behavior of the "mkstr2" program is controlled by the reservoir.dbf file. When the reservoir.dbf file contains a positive stage, the reservoir is modeled as storing using the "Full" condition, while a stage of 0 the reservoir is modeled as "Dry" and the baseflow is passed through the reservoir. This behavior is unaltered from how the stream network was generated during the V12p7 calibration run which simulated the reservoirs being built over time. However, when the reservoir stage is specified as a negative value, the reservoir will be modeled using the "Small" condition with a stage equal to the absolute value of the specified stage and the cell conductances will be set as described above.

The "mkstr2" has the relationship between the stage, cells, area and conductances defined for Bonny Reservoir in a data structure that is part of the "mkstr2" program. If the Bonny area-capacity curve were to change in the future, this data structure in "mkstr2" program would have to be changed to reflect the new area-capacity curve.

The "mkstr2" program also allows the user to set the outflow from the toe drain. When the reservoir is operated as storing water, the toe drain outflow will be used to set the inflow into the lower reach. How much that flow would be is difficult to anticipate. Therefor the observed monthly average outflow from the toe drain will be recorded and input to the "mkstr2" program using the flow.dbf file.

The "mkres" program is used to download the reservoir information from the USBR web site. The "mkres" program will be updated to automate the process of calculating the reservoir stage. Currently the "mkres" program simply extracts the end of month value for the reservoir stage. The program will be updated to also calculate the daily average reservoir stage for Bonny Reservoir and set the stage to 0 if the stage is below 3638.5 feet, the negative of the monthly average stage if it is between 3638.5 and 3679.83 feet, and the end of month stage if it is above 3679.83 feet.

Groundwater Model Accounting for Bonny Reservoir.

The groundwater model results are summarized using the "acct" program for inclusion into the accounting spreadsheets. On the South Fork of the Republican River, the "acct" program reports two values labeled "South Fork" and "Bonny". Both values represent the change in baseflow along the South Fork of the Republican River as a result of well pumping or Imported Water Supply. This quantity is called $CBCU_G$ in the RRCA Accounting Procedures.

The "acct" program operates on the simulated baseflow at appropriate locations in the stream network. The MODFLOW HYDMOD package is used to save these baseflows to a file for each simulation. The "acct" program then calculates the baseflow reach gain for the appropriate reaches by subtracting the inflow to the reach from the outflow of the reach. The "acct" program then calculates the $CBCU_G$ by calculating the change in the baseflow reach gain between, for example, simulations with pumping for each state off and on.

The reaches in the "acct" program are defined by a parameter file. In the current 12s2 stream network, the "South Fork" and "Bonny" terms are defined as

″ South Fork″ +SI185007acctSFRepublican +SI0970326825000 +SI141004LandsmanabvB
″ Bonny″ +SO150008Bonny

The +SI0970326825000 term represents the South Fork of the Republican River above the Idalia gage which is at the inflow to Bonny Reservoir and the +SI141004LandsmanabvB term represents Landsman Creek which flows into Bonny Reservoir. The +SI185007acctSFRepublican represents

the South Fork between Bonny Reservoir and the confluence of the South Fork of the Republican River with the main stem of the Republican River, and the +SO150008Bonny term represents Bonny Reservoir itself.

The parameter file contains some arithmetic simplifications. The "acct" program must calculate the outflow from the reach minus the inflow from the reach. However, for many reaches, the inflow into the reach is a constant for all simulations. For example, the inflow into the reach representing the South Fork of the Republican River above the Idalia gage is always zero because it is the beginning of the river as modeled. Similarly, in version 12s2 of the model, the inflow into the reach representing the South Fork between Bonny Reservoir and the confluence of the South Fork of the Republican River with the main stem of the Republican River is always 10 cfs. When the flow at the top of a reach is the same between simulations, the terms cancel in the $CBCU_G$ calculation.

For reaches where the inflow into the reach varies between simulations, the inflow into the reach must be subtracted. For example, on Sappa Creek the inflow from Beaver Creek is subtracted as

″ Sappa″ +SI201006acctSappa -SI195030acctBeaver

Similarly, the inflow into each reach is subtracted for the four main stem reaches.

When Bonny Reservoir may at different times of the simulation be operated as "Dry", "Small" or "Full", the "acct" program cannot assume that the inflow into the reaches representing Bonny Reservoir and the South Fork below Bonny reservoir will be a constant. Therefore the "acct" parameter file must explicitly subtract the inflow into that reach as follows:

```
″ South Fork″ +SI185007acctSFRepublican -SI176001SFbloBonny
              +SI0970326825000 +SI141004LandsmanabvB
″ Bonny″      +SO150008Bonny -SI150001Bonny
```

Here the -SI150001Bonny term explicitly subtracts the inflow into Segment 150 from the outflow from Segment 150. Whether this value is a constant 1,000,000 or the outflow from Segments 140 and 141 that would vary over time and vary between simulations does not matter because the "acct" program will no longer assume that it is constant.

Similarly, the -SI176001SFbloBonny term explicitly subtracts the inflow into Segment 176 which represent the start the South Fork of the Republican River below Bonny Reservoir. Once again, it does not matter whether this value is a constant 10 cfs or the outflow from Segment 156 above it that will vary between simulations or over time. The "acct" program would not make any assumptions regarding that flow and explicitly account for that inflow.

This change to the parameter file will allow the "acct" program to correctly calculate the baseflow gain for the three South Fork reaches. The South Fork above the Idalia gage reach, the Landsman Creek Reach and the South Fork between Bonny and the confluence with the main stem reaches will continue to be reported as the "South Fork" term, as it is currently. The reach across Bonny Reservoir will be also still reported as the "Bonny". In the accounting spreadsheet, these two terms are summed and used as the $CBCU_G$ term for the South Fork. Therefore, the "acct" program will calculate the total $CBCU_G$ for the South Fork regardless of whether Bonny is storing water or not.

No changes are required to the accounting spreadsheets to represent whether Bonny Reservoir is storing water or not. The evaporation from Bonny Reservoir will be calculated as it was done previously, but using the updated stage-area relationship. When the reservoir is dry, the evaporation will simply be zero based on an area of zero.

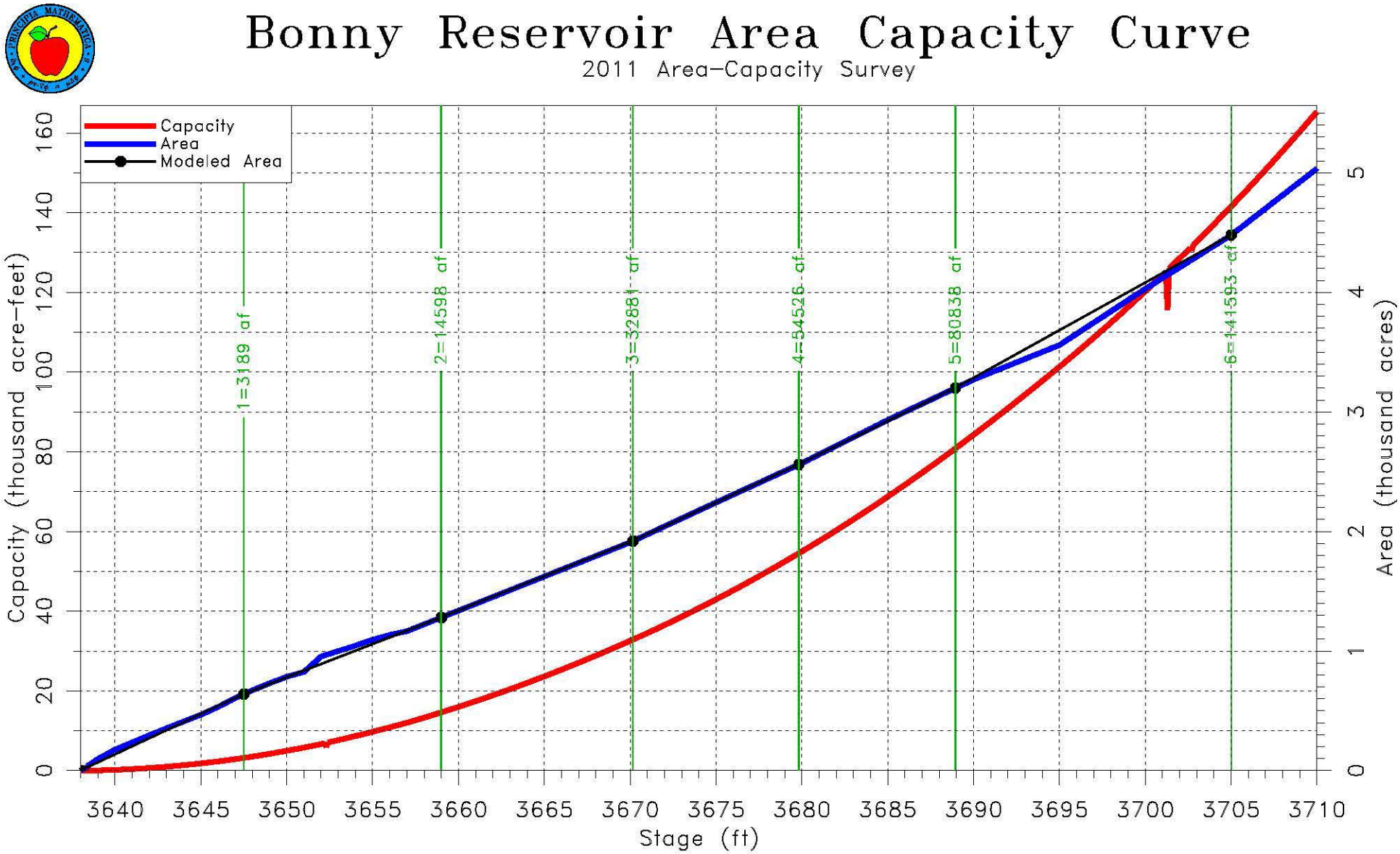

Bonny Reservoir Area Capacity Curve
2011 Area-Capacity Survey
Capacity
Area
Modeled Area
1=3189 af
2=14598 af
3=32881 af
4=54526 af
5=80838 af
6=141593 af
Capacity (thousand acre-feet)
Area (thousand acres)
Stage (ft)
0
20
40
60
80
100
120
140
160
1
2
3
4
5
3640
3645
3650
3655
3660
3665
3670
3675
3680
3685
3690
3695
3700
3705
3710

Figure 1.

Bonny Reservoir Modeled Cells

Republican River Compact Administration Groundwater Model

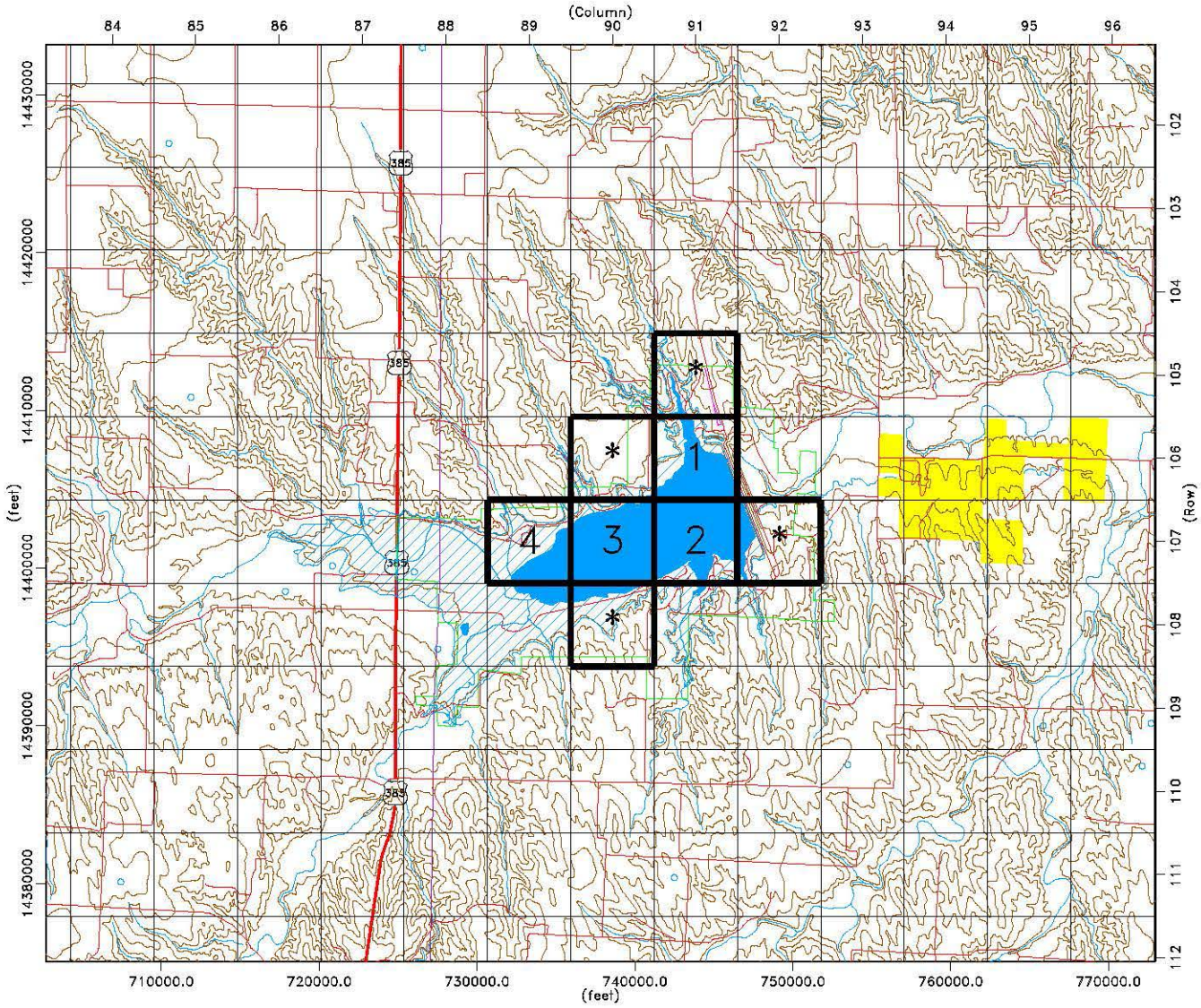


Figure 2.

Exhibit B

Arbitration Time Frame Designation

Colorado v. Kansas & Nebraska

Bonny Reservoir Accounting

Colorado Formally Submits Resolution to RRCA	4/5/2013
RRCA Special Meeting and Vote on Resolution	5/5/2013
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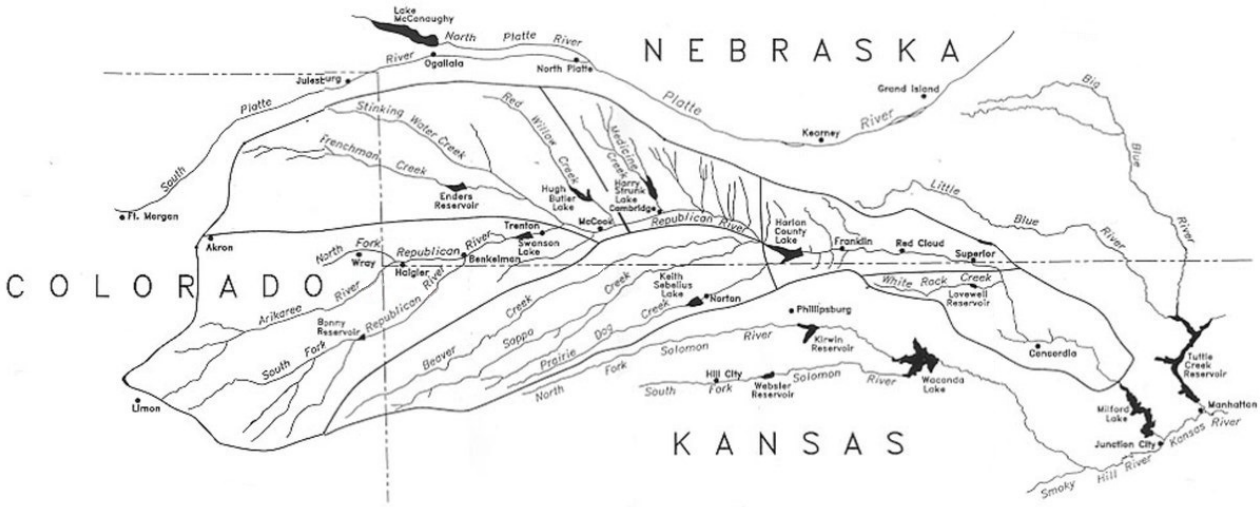
Nebraska and Kansas May Amend the Scope of the Dispute	5/15/2013
States Submit Lists of Proposed Arbitrators	5/15/2013
States Meet and Confer Regarding Arbitrator Selection	5/25/2013
CDR Selects Arbitrator (*if necessary)*	5/25/2013
Initial Conference with Mediator; Set Schedule for Arbitration	6/1/2013
Final Day of Arbitration Hearings	9/29/2013
Arbitrator Issues Written Decision	11/28/2013

Attachments



Special Meeting of the RRCA, July 9, 2013

Exhibit A – Transcript

Exhibit B – Attendance List

Exhibit C – Agenda

Exhibit D – Nebraska Cooperative Republican Platte Enhancement (N-CORPE) Augmentation Plan Proposal

Exhibit E – Nebraska N-CORPE Resolution Presented

Exhibit F - Kansas March 8, 2013 Letter Regarding Rock Creek Augmentation Proposal

SPECIAL MEETING OF THE

REPUBLICAN RIVER COMPACT ADMINISTRATION

July 9, 2013

10:04 a.m. Central Standard Time

Via Telephone

In Kansas:

Topeka location:
David Barfield, P.E., Commissioner & RRCA Chairman
Chris Beightel, Kansas DWR
Christopher M. Grunewald, KS Attorney Gen.'s office
Burke Griggs, Esquire, KS Attorney General's office

KBID listening location:
Kenneth Nelson

Stockton listening location:
Scott Ross, KS DWR water commissioner
Chelsea Erickson, KS DWR

In Colorado:

Denver location:
Dick Wolfe, P.E., Commissioner
Scott Steinbrecher, Esquire
Michael Sullivan, P.E., Deputy State Engineer
Ivan Franco

Wray RRWCD listening location:
Deb Daniel, RRWCD
Dawn Webster, RRWCD

In Nebraska:

Lincoln Listening location
Brian P. Dunnigan, P.E., Commissioner
Justin Lavene, Nebraska Attorney General's office
Jim Schneider, P.E., NDNR
Jesse Bradley, NDNR
Don Blankenau, Esquire, Blankenau & Wilmoth LLP
Tom Riley, TFG
Robert Swanson, U.S. Geological Survey

McCook listening location:
Aaron Thompson, USBR
Steve Cappel, MRNRD
Craig Scott, USBR
Don Felker, FV ID and H&RW
Bill Peck, USBR
Richard Neel, Nebraska Farm Bureau
Brad Edgerton, FCID

Red Cloud listening location:
Tracy Smith, NBID
Mike Delka, NBID

Curtis listening location:
Daniel L. Smith, MRNRD
Robert Merrigan, MRNRD

Imperial listening location:
Nate Jenkins, URNRD
Jasper Fanning, URNRD
Fred Knapp, Nebraska Public Radio

PROCEEDINGS

CHAIRMAN BARFIELD: Good morning. My name is David Barfield. I am Commissioner for Kansas and chairman for the Republican River Compact Administration this year. I would call us to order for this special meeting of the Republican River Compact Administration on this date of July 9, 2013. The time is approximately 12:04 -- 10:04 -- excuse me -- a.m. central time; 9:04 a.m. mountain time.

We're holding this special meeting via conference call. This meeting was requested by the State of Nebraska to consider its Nebraska

Cooperative Republican Platte Enhancement Augmentation Plan Proposal. So I guess let's start by going around the conference call and having introductions and ensure all of the listening stations are on.

We provided notice of this meeting, and the states have agreed to waive the 30-day meeting notice requirement. So let me make introductions for Kansas. First of all, with me here is Chris Beightel of DWR staff; and with the attorney general's office, Burke Griggs and Chris Grunewald. I would go to the Stockton -- our Stockton field office and ask that they introduce themselves and whoever may be with them.

MR. ROSS: Scott Ross and Chelsea Erickson are here.

CHAIRMAN BARFIELD: Okay. Is the Colby listening station on?

(Pause.)

CHAIRMAN BARFIELD: Okay. Apparently not. Is there anybody else on with Kansas? Anyone at Kansas Bostwick Irrigation District?

MR. NELSON: This is Kenny Nelson and I'm here from Kansas Bostwick.

CHAIRMAN BARFIELD: Okay. Anyone else on for

Kansas?

(Pause.)

CHAIRMAN BARFIELD: Okay. Thank you. Commissioner Dunnigan, for Nebraska?

CHAIRMAN DUNNIGAN: Thank you, Chairman Barfield. And I would first of all like to thank you for scheduling this special meeting. We'll go around to the Nebraska listening stations. I'll start off with Lincoln. And with me I have Robert Swanson from the U.S. Geological Survey; Jim Schneider and Jesse Bradley from DNR; Justin Lavene from the attorney general's office;Don Blankenau, outside counsel; and Tom Riley from the Flatwater Group. I'll move to the Lower Republican. Is there anybody on at the Lower Republican Natural Resources District?

(Pause.)

CHAIRMAN DUNNIGAN: Tri-Basin Natural Resources District?

(Pause.)

CHAIRMAN DUNNIGAN: Middle Republican Natural Resources District?

DAN SMITH: Dan Smith and Robert Merrigan with the Middle Republican NRD.

CHAIRMAN DUNNIGAN: Thank you, Dan. The

Upper Republican Natural Resources District?

MR. JENKINS: Nate Jenkins with the Upper Republican NRD, and Jasper Fanning, and Fred Knapp with Nebraska Public Radio.

CHAIRMAN DUNNIGAN: Thank you, Nate. With the Bostwick -- Bostwick Irrigation District in Red Cloud?

MR. SMITH: Yeah. This is Tracy Smith and Mike Delka with Bostwick Irrigation District.

CHAIRMAN DUNNIGAN: Thank you, Tracy. U.S. Bureau of Reclamation in McCook, Nebraska?

MR. THOMPSON: Good morning. It's Aaron Thompson with Reclamation; Craig Scott and Bill Peck also with Reclamation. We have Richard Neel with the Nebraska Farm Bureau; Brad Edgerton with the Frenchman-Cambridge Irrigation District; Don Felker with Frenchman Valley and H & RW Irrigation District; and Steve Cappel with Middle Republican NRD. That's all.

CHAIRMAN DUNNIGAN: Thank you, Aaron. That is it from the Nebraska listening stations. Thank you.

CHAIRMAN BARFIELD: Commissioner Wolfe?

CHAIRMAN WOLFE: Good morning, Chairman Barfield and Commissioner Dunnigan. This is Dick

Wolfe, Colorado State Engineer and Commissioner for Colorado on the Republican River Compact. Here with me in Denver is Deputy State Engineer Mike Sullivan, Scott Steinbrecher with the attorney general's office, and Ivan Franco, who is the engineer advisor on the Compact. And I think we have one other listening station, the Republican River Water Conservation District. And I will turn to Deb Daniel to introduce herself and whoever else may be there with her.

MS. DANIEL: Thank you, Dick. Again, my name is Debra Daniel, general manager of the Republican River Water Conservation District. And with me today is Dawn Webster, and she's the assistant general manager.

CHAIRMAN WOLFE: And I believe that's all from Colorado. Is there anybody else who joined on the line that I'm not aware?

(Pause.)

CHAIRMAN WOLFE: I'll turn it back to you, Chairman Barfield.

CHAIRMAN BARFIELD: Thank you, Commissioner Wolfe and Commissioner Dunnigan. I would ask each of the listening stations, if you could send your sign-in sheet to Chelsea Erickson of our Stockton

field office, that would help us make sure the record is complete of attendants. Again, since this is being recorded and we're on the telephone, if people could introduce themselves before making statements, they would be helpful.

I distributed a proposed agenda for the meeting. And now that introductions are complete, the next item would be to consider modifications to the agenda and to adopt the agenda. Are there any suggested modifications to the agenda that we should discuss?

CHAIRMAN WOLFE: None from Colorado. This is Dick Wolfe.

CHAIRMAN DUNNIGAN: This is Brian Dunnigan. None from Nebraska.

CHAIRMAN BARFIELD: Okay. Then I guess by virtue of that we'll consider the agenda adopted as proposed. The next item on the agenda then is discussion of potential action regarding the Nebraska Cooperative Republican Platte Enhancement Augmentation Plan Proposal. I guess I would turn it to you, Commissioner Dunnigan, to sort of lead us through this piece of the agenda.

CHAIRMAN DUNNIGAN: Thank you, Chairman Barfield. On June 27th we did have a workshop to

discuss the N-CORPE proposal, and subsequent to that workshop we did send out a draft resolution that we are going to take action on today. And at this time I would ask if there are any additions or clarifications to the draft resolution that was sent out and will be the resolution before us this morning.

(Pause.)

CHAIRMAN WOLFE: Commissioner Dunnigan, this is Commissioner Wolfe. I had one question regarding clarification on one of the whereases. And this is in regards to the eighth "whereas" that starts, "The measured pumping data collected in support of the N-CORPE plan will be input into the RRCA groundwater model in conformance with the current RRCA accounting procedures for determining groundwater computed beneficial consumptive use. And that same measured data will be utilized to represent the amount of discharge to Medicine Creek at the project outfall."

It's not clear to me in there to the extent how measurement devices will be utilized to represent, of the total pumping, how much of that will be discharged to Medicine Creek versus the amount that will be in the pipeline that will also

deliver water to the South Platte. Could you clarify that for me, please?

CHAIRMAN DUNNIGAN: Yes. Thank you, Commissioner Wolfe. I will ask Jim Schneider to clarify that point.

MR. SCHNEIDER: Okay. So this is Jim Schneider. Thanks for that question. I think it's a good clarification, and I think it's covered under -- in the modifications to the accounting procedures and reporting requirements on Page 42 of the red-line that we provided. It's Page 72 of 104 for the N-CORPE Augmentation Plan. We will provide, you know, a full description of all measuring devices, including the measuring devices that will be utilized to distinguish water deliveries that are sent to the Platte River versus water deliveries that are sent to Medicine Creek.

So that will be fully provided when that information is available and as any changes are made to that information. So the intent is certainly to obviously make it very clear that all of the groundwater pumping at the project, whether it's for the Republican or the Platte River water deliveries, will be represented in the model and will use -- those measuring devices and any other measuring

devices that are necessary to distinguish where the deliveries are made to provide that information in the annual reporting that we will be conducting as the project becomes operational.

CHAIRMAN WOLFE: Thank you for that clarification. That's all I had in regards to questions regarding the resolution.

CHAIRMAN DUNNIGAN: This is Commissioner Dunnigan. Is there any other questions regarding the resolution that was provided on July 3rd?

(Pause.)

CHAIRMAN BARFIELD: This is Commissioner Barfield. I don't have any specific questions on the resolution.

CHAIRMAN DUNNIGAN: This is Commissioner Dunnigan. At this point then I would move to approve the resolution that was provided on July 3rd. We'll provide that as part of the record for this meeting.

CHAIRMAN WOLFE: This is Commissioner Wolfe. I'll second that motion.

CHAIRMAN BARFIELD: Okay. So it's -- thank you. Dave Barfield here. It's been moved and seconded that the resolution be adopted. Any discussion?

(Pause.)

CHAIRMAN BARFIELD: Okay. So Nebraska has no further discussion on the matter?

CHAIRMAN DUNNIGAN: No further discussion.

CHAIRMAN BARFIELD: All right. And Colorado?

CHAIRMAN WOLFE: None from Colorado.

CHAIRMAN BARFIELD: Well, I guess I will make a statement then with -- regarding the proposal for the record. The concepts related Nebraska's N-CORPE proposal first came before the RRCA on the evening before the special meeting of December 11, 2012, per Nebraska's request at that special meeting. Kansas responded to those concepts with a statement on what it believes should be included in augmentation plans for consideration by the RRCA in our letter of January 14th, 2013.

Subsequently Nebraska provided an augmentation plan related to the Rock Creek Augmentation Project, which was subject to the RRCA's consideration at a special meeting on March 8th, 2013. The Rock Creek Augmentation Project failed to win Kansas' approval for reasons cited in my letter of March 8th, 2013, with it's attachments. The Rock Creek Augmentation Project is now in nonbinding arbitration. With minor exceptions,

Kansas' concern expressed in our correspondence on augmentation generally and on Nebraska's Rock Creek plan apply to the N-CORPE project as well.

Nebraska next approached the states about the project proposal via it's letter of June 11th, 2013, where Nebraska provided it's proposal and designated the issue as fast track, requiring RRCA action within 30 days. Again, for the record, the states are involved in five other Republican River disputes that require considerable attention from the state's technical staff and legal staff. The months and June and July have been particularly full.

First, there's the U.S. Supreme Court case pending that focuses on Nebraska's claim regarding the need to make changes to the accounting procedures. The states are preparing for trial in mid-August on that issue. There are also four pending, nonbinding arbitrations. Nebraska triggered arbitration of whether a plan it submitted entitled it to a three-year compliance test during water-short-year administrations. Kansas prepared an expert report on this for the July 1 deadline.

Second, as noted above, Nebraska triggered arbitration regarding its Rock Creek Augmentation Project. Kansas prepared multiple expert reports

for the July 1 deadline.

Third, Colorado triggered arbitration regarding his Colorado Compliance Pipeline Project. During June and July Colorado and Kansas have engaged in extensive technical legal -- technical discussions during the settlement period established in that arbitration schedule.

Fourth, Colorado triggered arbitration regarding its proposed changes for Bonny modeling. Again, in June and July Colorado and Kansas have been engaged in extensive technical discussions during the settlement period established in the arbitration schedule.

As I noted and at the Nebraska workshop on the N-CORPE proposal, Kansas' concerns about the substance of the N-CORPE proposal and the process Nebraska pursued in seeking approval are unchanged from our past statements on augmentation. Those technical concerns remain unaddressed in Nebraska's current proposal. The scope of the N-CORPE project heightens Kansas' concerns expressed -- expressed.

The pending Rock Creek arbitration seeks to resolve these disputed issues. And no state should be surprised that Kansas cannot agree to the N-CORPE proposal in its current form. Kansas has acted in

good faith regarding the N-CORPE proposal. Our substantive concerns with the augmentation plans are well-documented, and Kansas has offered and continues to be ready to work with the other states to reach a mutually agreeable solution on the issue.

Kansas continues to believe that the project can benefit both Kansas and Nebraska -- that a plan that benefits both Kansas and Nebraska can be approved, and this is best accomplished through discussion and negotiation. I would ask that my letter of March 8th and its attachments be made a part of this record as well. Okay. That concludes my remarks. Are we ready to take a vote on the motion?

CHAIRMAN WOLFE: Chairman Barfield, do we need to take any special action to agree to accept your May 8th letter into the record? This is Commissioner Wolfe.

CHAIRMAN BARFIELD: It's March 8th. Does anybody have any objections to that?

CHAIRMAN WOLFE: Colorado has no objection.

CHAIRMAN DUNNIGAN: Nebraska has no objections.

CHAIRMAN BARFIELD: All right. Thank you. Take a vote on the motion?

(Pause.)

CHAIRMAN BARFIELD: Okay. Hearing no response I'll presume we are. Nebraska?

CHAIRMAN DUNNIGAN: Yes.

CHAIRMAN BARFIELD: Colorado?

CHAIRMAN WOLFE: Yes.

(Pause.)

CHAIRMAN BARFIELD: Date that has not has been established at this juncture. And I would like to obtain some input from -- from you fellow commissioners on what would be a workable date. I believe we have approved a change to our bylaws that would allow us to have the meeting without -- without having to waive our regulations, through the end of September. As I think everyone will know, the month of August is when we --

CHAIRMAN DUNNIGAN: Chairman Barfield?

CHAIRMAN BARFIELD: Yes.

CHAIRMAN DUNNIGAN: If I may interrupt. This is Commissioner Dunnigan. We did not hear the end of that on Kansas' position on that vote.

CHAIRMAN WOLFE: Colorado --

CHAIRMAN DUNNIGAN: I don't know if the phone was on mute or what, but we did not hear the vote.

CHAIRMAN BARFIELD: Okay. I'm sorry. Kansas

voted no.

CHAIRMAN DUNNIGAN: Thank you.

CHAIRMAN BARFIELD: Okay. I think -- did you hear it or is there some problem with the phone?

CHAIRMAN WOLFE: Colorado did not hear that either. And I don't know, Chairman Barfield, that you had made any other remarks after your no decision or not that you wanted to be part of the record. But it did cut out for a period of time there. And we did not hear it as well.

CHAIRMAN BARFIELD: Okay. Thank you, Commissioner Dunnigan. And we'll -- I apologize for that. No. I made my statement before the vote and I voted no, and that was all that I said on that point. I guess then, having you not heard that, I'd invite -- if there's any additional remarks that you would like to put on the record, I certainly invite that.

CHAIRMAN DUNNIGAN: This is Commissioner Dunnigan. I would just like the record to reflect how important we think these projects are, not only for Nebraska, but for Kansas water-users also. And we feel that they are very important. And as part of our commitment to compliance with the Compact and to make waters available for Kansas use, we think

these are very important projects.

CHAIRMAN BARFIELD: Thank you, Commissioner Dunnigan. Again, Commissioner Wolfe, anything else?

CHAIRMAN WOLFE: No further comments.

CHAIRMAN BARFIELD: All right. Before I move then to Agenda Item No. 4, I'd ask the court reporter if you're having any difficulty with hearing what's going on.

COURT REPORTER: No. I had the same problem as the other two commissioners where there was a short time there where I didn't hear your vote. But since then everything has been fine.

CHAIRMAN BARFIELD: Very good. Thank you. Well, I think we've got a complete record now, so I will then move us to the discussion of the date for the 2013 annual meeting. And the month of August is -- has quite a number of commitments for all of us with respect to the preparations and participation in the segment of trial in Portland, Maine, and then an arbitration trial with respect to the two Nebraska issues.

And I guess I would like to suggest and poll the commissioners with respect to a couple dates in September -- in the middle of September for potential meeting of the RRCA to see if those -- one

of those might be acceptable to the commission to meet. And specifically I would offer -- traditionally we have a workshop the afternoon before the actual meeting, and then the annual meeting then the following morning.

We're proposing to host this meeting in Colby, Kansas. And I would tenure the options of either the afternoon of September 11th for the workshop and the morning of September 12th for the annual meeting, or September 12th afternoon for the workshop and September 13th for the annual meeting. Or the following week we could do September -- the afternoon of September 16th -- hold on just a second. I'm getting some signals here.

(Pause.)

CHAIRMAN BARFIELD: Okay. I'm back. The afternoon of Monday, September 16th, for the workshop and the -- the morning of September 17th for the annual meeting, or the following pair of days, the afternoon of the 17th for the workshop and the 18th for the annual meeting. I don't know if we have to -- to decide on this today, but I guess does the middle of September -- is that a workable time frame, do you believe, given the other commitments of the -- of all of us?

CHAIRMAN WOLFE: Chairman Barfield, this is Commissioner Wolfe. All of those dates work for Colorado. Our preference would be to have them either the 11th, 12th, or 13th, just to allow us ample opportunity for preparation for our arbitration that's set at the end of the month.

CHAIRMAN DUNNIGAN: Chairman Barfield, this is Commissioner Dunnigan. We are open on those dates and would prefer September 11th and 12th for the meeting.

CHAIRMAN BARFIELD: Very good. Well, why don't we just plan on September -- the afternoon of September 11th for the workshop working session and then the morning of September 12th for the annual meeting. Very good. We'll proceed along those lines. And I guess with that I would take a motion for adjournment.

CHAIRMAN WOLFE: So moved, Colorado.

CHAIRMAN DUNNIGAN: Second, Nebraska.

CHAIRMAN BARFIELD: All right. I'll take it with that and my concurrence that we are adjourned. Thank you very much.

CHAIRMAN DUNNIGAN: Thank you.

CHAIRMAN WOLFE: Thank you.

* * * CONCLUSION OF MEETING AT 10:28 A.M. * * *

C E R T I F I C A T E

I, Coleen F. Boxberger, Registered Professional Reporter, do hereby certify the above and foregoing teleconference was taken at the time and place as specified; that the same was taken before myself in shorthand and later transcribed and extended into typewritten form to the best of my ability, and is a true and correct extension hereof;

Coleen F. Boxberger, R.P.R.
P.O. Box 184
Russell, KS 67665-0184

Republican River Compact Special Meeting

July 9, 2013 – via Telephonic Conference

Attendance List by Location

Name	Representing
Topeka, Kansas – Division of Water Resources Headquarters	
David Barfield	Kansas Commissioner, Chair
Chris Grunewald	Kansas Attorney General's Office
Chris Beightel	Kansas Division of Water Resources
Burke Griggs	Kansas Attorney General's Office
Stockton, Kansas – Division of Water Resources Field Office	
Scott Ross	Kansas Division of Water Resources
Chelsea Erickson	Kansas Division of Water Resources
Courtland, Kansas – Kansas Bostwick Irrigation District Office	
Kenneth Nelson	Manager, Kansas Bostwick
Denver, Colorado – Colorado Division of Water Resources Headquarters	
Dick Wolfe	Colorado Commissioner
Mike Sullivan	Colorado Division of Water Resources
Ivan Franco	Colorado Division of Water Resources
Scott Steinbrecher	Colorado Attorney General's Office
Wray, Colorado – Republican River Water Conservation District Office	
Dawn Webster	Republican River Water Conservation District
Deb Daniel	Manager, Republican River Water Conservation District
Lincoln, Nebraska - Department of Natural Resources Headquarters	
Brian P. Dunnigan	Nebraska Commissioner
Jim Schneider	Nebraska Department of Natural Resources
Jesse Bradley	Nebraska Department of Natural Resources
Justin Lavene	Nebraska Attorney General's Office
Don Blankenau	Counsel for Nebraska
Tom Riley	The Flatwater Group
Robert Swanson	United States Geologic Survey
McCook, Nebraska - United States Bureau of Reclamation Office	
Aaron Thompson	Bureau of Reclamation
Bill Peck	Bureau of Reclamation
Craig Scott	Bureau of Reclamation
Brad Edgerton	Frenchman-Cambridge Irrigation District
Don Felker	Frenchman Valley and H&RW
Richard Neel	Nebraska Farm Bureau

Name	Representing	July 9, 2013

Red Cloud, Nebraska - Nebraska Bostwick Irrigation District Office

Mike Delka	Manager, Nebraska Bostwick Irrigation District
Tracy Smith	Nebraska Bostwick Irrigation District

Curtis, Nebraska - Middle Republican Natural Resource District Office

Dan Smith	Manager, Middle Republican Natural Resource District
Robert Merrigan	Middle Republican Natural Resource District

Imperial, Nebraska - Upper Republican Natural Resource District Office

Nate Jenkins	Assistant Manager, Upper Republican Natural Resource District
Jasper Fanning	Manager, Upper Republican Natural Resource District
Fred Knapp	Nebraska Public Radio

AGENDA FOR

SPECIAL MEETING OF THE
REPUBLICAN RIVER COMPACT ADMINISTRATION

July 9, 2013
9:00AM Mountain, 10:00 AM Central
Via Telephone

1. Introductions
2. Modification and adoption of agenda
3. Discussion and potential action regarding the Nebraska Cooperative Republican Platte Enhancement (N-CORPE) Augmentation Plan Proposal submitted on June 10, 2013
4. 2013 Annual Meeting Discussion
5. Adjournment

STATE OF NEBRASKA

Dave Heineman
Governor

DEPARTMENT OF NATURAL RESOURCES
Brian P. Dunnigan, P.E.
Director

June 10, 2013

IN REPLY TO:

David Barfield, P.E.
Kansas Commissioner, RRCA
Division of Water Resources
109 SW 9th Street, 2nd Floor
Topeka, KS 66612-1283

Dick Wolfe, P.E.
Colorado Commissioner, RRCA
Colorado Division of Water Resources
1313 Sherman Street, Room 818
Denver, CO 80203

RE: Nebraska Cooperative Republican Platte Enhancement (N-CORPE) Augmentation Plan Proposal; Submittal to Republican River Compact Administration (RRCA)

Dear Commissioners Barfield and Wolfe:

The State of Nebraska hereby submits its Nebraska Cooperative Republican Platte Enhancement (N-CORPE) Augmentation Plan Proposal (Proposal) to the RRCA pursuant to Subsection VII.A of the Final Settlement Stipulation (FSS). A complete description of the Proposal is set forth in the attached Exhibit A.

Pursuant to Subsection VII.A.3 of the FSS, Nebraska hereby designates this as a "Fast Track" issue and seeks its resolution within the next 30 days. A timeframe for resolution, including non-binding arbitration (if necessary), is included as Exhibit B. Nebraska proposes to hold a workshop on the Proposal. The workshop would be held via conference call and GoTo meeting. Nebraska proposes Friday, June 28, 2013, for the workshop with Thursday, June 27, 2013, as a backup date. Accordingly, Nebraska requests that the Chairman please schedule a Special Meeting of the RRCA on or before July 10, 2013.

Sincerely,

Brian P. Dunnigan

Brian P. Dunnigan, P.E.
Director

Enclosures

cc: John Chaffin, U.S. Department of the Interior
James J. DuBois, U.S. Department of Justice
Col. Anthony J. Hofmann, U.S. Army Corps of Engineers
Aaron M. Thompson, U.S. Bureau of Reclamation

Exhibit A

Nebraska Cooperative Republican Platte Enhancement (N-CORPE) Augmentation Project

Submitted to the Republican River Compact Administration

June 10, 2013

Nebraska
Department of Natural Resources

I. Project Background and FSS Requirements for Augmentation Projects

The Twin Platte Natural Resources District (TPNRD), Lower Republican Natural Resources District (LRNRD), Middle Republican Natural Resources District (MRNRD), and Upper Republican Natural Resources District (URNRD) are collaboratively developing the Nebraska Cooperative Republican Platte Enhancement (N-CORPE) Project, located in southwest Nebraska (Figure 1). The purpose of this project is to assist Nebraska in maintaining compliance with the Republican River Compact (Compact), and to enhance streamflow in the Platte River Basin.

The N-CORPE Project (Project) involves the retirement of the majority of the 114 existing irrigation wells and the 15,736 certified irrigated acres those wells irrigated. Approximately thirty augmentation wells will be utilized for the Project, providing an optimized capacity and spatial distribution to match the design capacity of the Project. The lands that were previously cropped are being seeded back to natural grasses. Groundwater pumped from the new augmentation wells will be delivered by means of two separate pipelines: one that spans the approximately six miles from the wells to the discharge location directly into Medicine Creek (a tributary of the Republican River), and the other designed to carry water north to the South Platte River.

The Final Settlement Stipulation (FSS) specifically recognizes augmentation as a management tool to facilitate Compact compliance. Augmentation is referenced in three locations throughout the FSS. The first occurs in Section III in the list of exceptions to the moratorium on new wells. Subsection III.B.1.k., states that the moratorium on new wells shall not apply to the following type of wells:

> *Wells acquired or constructed by a State for the sole purpose of offsetting stream depletions in order to comply with its Compact Allocations. Provided that, such Wells shall not cause any new net depletion to stream flow either annually or long-term. The determination of net depletions from these Wells will be computed by the RRCA Groundwater Model and included in the State's Computed Beneficial Consumptive Use.* ***Augmentation plans*** *and related accounting procedures submitted under this Subsection III.B.1.k. shall be approved by the RRCA prior to implementation* [emphasis added].

The second and third references to augmentation occur in Section IV, which lay out the provisions for Compact accounting under the FSS. Subsection IV.A., states the following:

> *The States will determine Virgin Water Supply, Computed Water Supply, Allocations, Imported Water Supply Credit, augmentation credit and Computed Beneficial Consumptive Use based on a methodology set forth in the RRCA Accounting Procedures, attached hereto as Appendix C.*

There presently are no "methodologies" set forth in the Republican River Compact Administration Accounting Procedures and Reporting Requirements (RRCA Accounting Procedures) to determine the augmentation credit referenced in Subsection IV.A. The only additional guidance in the FSS is found in Subsection IV.H.:

> ***Augmentation credit**, as further described in Subsection III.B.1.k., shall be calculated in accordance with the RRCA Accounting Procedures and by using the RRCA Groundwater Model* [emphasis added].

Finally, Subsection I.F. of the FSS provides the following:

> *The RRCA may modify the RRCA Accounting Procedures, or any portion thereof, in any manner consistent with the Compact and this Stipulation.*

Taken together, these references suggest the following:

1. If the Project involves the acquisition or construction of augmentation wells in the moratorium area, those wells may not cause a "new net depletion" either annually or over the "long-term."

2. The RRCA Groundwater Model (Model) will be used to determine the extent of any net depletion and whether such net depletion is "new."

3. The RRCA Accounting Procedures will be revised to reflect an appropriate methodology for calculating the augmentation credit.

4. The Model will be used in calculating the credit, assuming, of course, that the Project involves an activity that impacts groundwater Computed Beneficial Consumptive Use (CBCU).

5. The RRCA must approve any augmentation plan and related changes to the RRCA Accounting Procedures before a state may receive "augmentation credit" for the project, beyond the effect of simply increasing water supply, which will manifest itself in the current RRCA Accounting Procedures.

The States elaborated on these concepts before Special Master Vincent McKusick in 2003. (Transcript at 81-3; id. at 16-17.) Using the example there provided, a State would be entitled to claim as an "augmentation credit" all water pumped to the stream.

II. Baseline Conditions of the Project Area

This section describes the conditions of the project area prior to the acquisition of lands to implement the Project (Figure 2). Table 1 provides information on the certified irrigated acreage of the 114 irrigation wells which were acquired as part of the land purchase. The majority of the cropped lands (irrigated acres and dryland acres) that were acquired as part of this project will be seeded back to natural grasses, and irrigation that previously occurred will be retired permanently.

The portion of the Project area containing augmentation wells is located outside of the moratorium area (see Figures 2 and 3), as defined in the FSS (see Sections III.B.1.a.ii and III.B.1.b), and as a result is not subject to the additional requirements in Section III.B.1.k concerning new net depletions.

III. Operational Aspects of the Project

This section describes the operational conditions of the Project (see Figure 3). The new augmentation wells developed as part of the Project will be used to offset stream depletions to assist the State of Nebraska with Compact compliance efforts. The actual amount delivered in any one year will be subject to current conditions affecting Nebraska's Compact compliance outlook, and any additional State objectives. During years in which the State of Nebraska is operating the project to ensure Compact compliance (termed Compact Operation Years), groundwater pumping will likely exceed the average annual historical groundwater pumping for irrigation in the Project area. If the Project is operated in other intervening years to meet State objectives, groundwater pumping will be significantly less than the average annual historical groundwater pumping. Overall, average annual groundwater pumping under the Project may significantly exceed the average annual historical groundwater pumping (the moratorium in the FSS does not apply to this area as discussed above).

The Project is being designed with the capacity to provide an augmentation delivery of approximately 60,000 acre-feet in a given year. Nebraska will notify the states by April 1, prior to the initiation of Project operations in the upcoming year, to inform them of the volume of water that is intended to be pumped by the Project. The groundwater pumping associated with the new augmentation wells will be incorporated into the Model on an annual basis and any groundwater CBCU resulting from Project operations will be charged to the State of Nebraska. A detailed analysis of potential net depletions associated with Project operations relative to historical conditions is described in Section IV.

The augmentation water delivered to Medicine Creek via the Project pipeline will be measured and incorporated into the RRCA Accounting Procedures. Details of the RRCA Accounting Procedure modifications necessary to properly account for the Augmentation Water Supply (AWS) Credit are described in Section V and Appendix A.

IV. Groundwater Modeling Analysis of the Project

As noted above, Nebraska plans to operate the Project in a significantly different pattern of total annual pumping and with average annual groundwater pumping that may significantly exceed the historical average annual groundwater pumping for irrigation. While this type of operation is permissible under the FSS, Nebraska understands that the States may have questions about the overall effect that such a change may have with regard to CBCU. Therefore, this section describes two evaluations of any change in the groundwater CBCU with respect to potential augmentation deliveries to address questions or concerns that may be raised by the other States.

The change in groundwater CBCU, or new depletion, is determined by comparing the groundwater CBCU under the baseline (i.e., groundwater pumping for irrigation in the Project area) simulation of the Model to the groundwater CBCU that results from a Model simulation with the Project operating under this augmentation plan. Then, any new depletion is compared to the AWS Credit in that same year to determine the net streamflow accretion

benefit from Project operations. The analysis in this section evaluates operations under a historical period scenario and operations under a hypothetical future scenario.

A. Net Streamflow Accretion Benefits from Project Operations When Assessed Against Historical Baseline Conditions

This analysis evaluates hypothetical Project operations under historical circumstances that may have warranted operation of the Project. The 1985-2010 period was chosen for this historical scenario to represent a reasonably long historic period while capturing multiple cycles of Compact Operation Years. The historic groundwater CBCU under baseline Project conditions is represented by the Model simulations for the period 1985 through 2010 (26 years). The Model files used in this baseline simulation were intended to be consistent with the historical files developed for assisting with the RRCA annual accounting. These same Model simulations were then updated to reflect how Project operations may have functioned through this period. The key difference for the Model simulation of Project operations is that the historical recharge due to irrigation, and groundwater pumping, was modified for those Model cells which correspond to the Project area.

The recharge was modified to remove the additional recharge associated with irrigation for the entire simulation period, since irrigation would not occur on the majority of Project lands under augmentation operations. The baseline pumping conditions were modified to reflect a volume of 60,000 acre-feet during Compact Operation Years (Table 2). This is not intended to imply that Project pumping of 60,000 acre-feet per year would have been necessary for Compact compliance in all or any of these years; the single value was adopted in the scenario for simplicity and to demonstrate a likely potential maximum impact of Project operations. Documentation and model files for this simulation are contained in Appendix B.

The Compact Operation Years include 1988-1991 and 2002-2006. The Compact Operation Years were chosen from the historical record as they represent periods of lower water supplies when it is more likely that the Project would be operated to offset a projected shortfall in Nebraska's Compact balance. The results of the historical simulation under Project operations, as compared to historical operations, are summarized in Table 3 and Figure 4. Under the Project operations described in Table 2, these Project operations would result in large increases to streamflow (i.e., approximately 60,000 acre-feet) during years with Project pumping, and would potentially cause only very small (i.e., hundreds of acre-feet) additional depletions (i.e., negative accretion benefits) when Project pumping was not occurring.

B. Net Depletions of Project Operations When Assessed Against Future Baseline Conditions

The second analysis of Project operations was to evaluate Project operations under a hypothetical future scenario. The scenario employed was created by the State of Kansas for expert reports generated in 2011 for Kansas v. Nebraska and Colorado, Original No. 126. It is recognized that this scenario represents one of an infinite number of potential future scenarios and in no way serves as a barometer of what future conditions may be.

This analysis is simply presented to illustrate how Project operations will likely impact streamflow over the long-term.

This portion of the analysis was completed by comparing the results of a simulation of hypothetical future conditions for the period 2010-2069 for the following conditions:

1. The certified irrigated acres continue to be irrigated in a manner consistent with the historical hydrology, with some consideration for current regulations.
2. With the irrigation removed and the Project operated to provide augmentation deliveries during Compact Operation Years.

This hypothetical future scenario was developed by repeating the years 1995-2009 four times into the future. The key difference for the Model simulation of Project operations is that the recharge due to irrigation, and groundwater pumping, were modified for those Model cells which correspond to the Project area.

The recharge was modified to remove the additional recharge associated with irrigation for the entire simulation period, since irrigation would not occur on Project lands under augmentation operations. The baseline pumping conditions were modified to reflect a volume of 60,000 acre-feet during Compact Operation Years, and zero pumping during other years (Table 4). This is not intended to imply that Project pumping of 60,000 acre-feet per year will be necessary for Compact compliance in any particular year in the future; the single value was adopted in the scenario for simplicity and to demonstrate a likely potential maximum impact of Project operations. Documentation and model files for this simulation are contained in Appendix B.

The results of the future scenario under Project operations, as compared to historical operations, are summarized in Table 5 and Figure 5. Under the Project operations described in Table 4, these Project operations will result in large increases to streamflow (i.e., nearly 60,000 acre-feet) during years with Project pumping, and will potentially cause additional depletions (i.e., negative accretion benefits) that increase to only about 1,400 acre-feet per year after 60 years during years when Project pumping is not occurring.

V. RRCA Accounting Procedure Modifications for Augmentation Credit Calculations

The examples above demonstrate how the Model will determine any new depletion from the operation of the Project. Modifications to the RRCA Accounting Procedures are required to incorporate the AWS Credit to be provided in conjunction with the Project. The August 12, 2010, version of the RRCA Accounting Procedures is included as Appendix A, with the modifications required to implement this proposal indicated in red-line format. Below is an example of the current RRCA sub-basin calculations for determining the Virgin Water Supply (VWS) from the gaged streamflows (Gage), the CBCU, and the Imported Water Supply Credit (IWS). The VWS is used to determine the allocations for Kansas and Nebraska in the Medicine Creek subbasin. Nebraska's allocation is then used, in conjunction with Nebraska's CBCU and the IWS, to determine Nebraska's balance in the Medicine Creek subbasin.

This simple example is further expanded to illustrate how Nebraska's proposed modifications to the RRCA Accounting Procedures would incorporate the AWS. For the following examples it is assumed that all consumptive use in the Medicine Creek subbasin is derived from groundwater pumping. The amount of groundwater CBCU, as determined by the Model, is 1,000 acre-feet without the augmentation pumping and increases to 1,100 acre-feet with augmentation pumping. The subbasin gaged streamflow is assumed to be 1,000 acre-feet without augmentation. The streamflow increases to 60,900 acre-feet with 60,000 acre-feet of augmentation pumping. The 60,900 acre-feet value that represents subbasin gage flows with augmentation pumping is derived by taking the original 1,000 acre-feet gage value, subtracting 100 acre-feet based on the increase in CBCU from 1000 acre-feet to 1,100 acre-feet, and adding the 60,000 acre-feet of water delivered to the stream via the project pipeline. The magnitudes of all values used in these examples are for illustrative purposes, only.

Current RRCA Accounting Procedures for Medicine Creek Subbasin:

VWS = Gage + All CBCU – IWS

VWS = 1,000 + 1,000 – 400 = 1,600

Nebraska Allocation = 0.5355[1] * 1,600 = 857

Kansas Allocation = 0.4645 * 1,600 = 743

Nebraska Balance in Medicine Creek Subbasin = Nebraska Allocation – Nebraska CBCU + IWS = 857 – 1,000[2] + 400 = 257

Proposed RRCA Accounting Procedures that include Project Operations:

VWS = Gage + All CBCU – IWS – AWS Credit

VWS = [1,000 – 100 + 60,000] + 1,100 – 400 – 60,000 = 60,900 + 1,100 – 400 – 60,000 = 1,600

Nebraska Allocation = 0.5355 * 1,600 = 857

Kansas Allocation = 0.4645 * 1,600 = 743

Nebraska Balance in Medicine Creek Subbasin = Nebraska Allocation – Nebraska CBCU + IWS + AWS Credit = 857 – 1,100 + 400 + 60,000 = 60,157

As shown in the results above, the modified accounting procedures account for the project operations appropriately by increasing Nebraska's balance under Project operations by 59,900 acre-feet, the net impact of operating the Project under this example (60,000 acre-feet of pumping into the stream minus the increase of 100 acre-feet in CBCU). The Kansas (and Nebraska) allocation is unaffected because the VWS does not change.

[1] The allocation percentages for both Nebraska and Kansas include each state's share of the unallocated water supply and assume that the VWS is equivalent to the CWS (i.e., no flood flows included).
[2] Assumes all CBCU is assigned to Nebraska.

The Main Stem accounting procedures would remain unchanged as the necessary modifications are reflected in the Designated Drainage Basin[3] where the Augmentation Plan is being implemented. Examples of the impact of the AWS Credit on the final Compact Accounting Balance for Tables 3C and 5C are illustrated below (Tables 6 and 7)[4]. Similar modifications to those made to Tables 3C and 5C of the RRCA Accounting Procedures would also be made to Tables 5D and 5E.

VI. Alternative State-Based Operation

While not required by the FSS, as explained above, Nebraska presently contemplates additional pumping outside of Compact Operation Years designed to accomplish State-based objectives. This additional State-based pumping would be targeted at offsetting any new depletions that occur outside of Compact Operation Years. Therefore, the following examples build on the scenarios developed above to include additional State-based pumping, for both historical and future scenarios, respectively. The modifications to the RRCA Accounting Procedures for regular Project Operations, as shown in Section V, would also be used to assess the accounting impacts from State-based pumping. While Nebraska does not require, and does not seek, RRCA approval of these additional operations for State-based objectives, Nebraska is notifying the RRCA of this possibility in the spirit of transparency and providing the following examples to address questions or concerns that may be raised by the other States.

The first example demonstrates the effect of additional State-based pumping under the historical scenario. The years for the simulation when this additional pumping would occur include 1985-1987, 1992-2001, and 2007-2010. In this example, the baseline pumping conditions were modified in a manner that included groundwater pumping of 1,800 acre-feet during years with additional State-based pumping (17 of 26 years) and a volume of 60,000 acre-feet during Compact Operation Years (Table 8). The minimum pumping value of 1,800 acre-feet was adopted as the pumping volume for State-based pumping in this scenario because it was determined to be more than sufficient to offset any new depletion related to Compact Operation Years and it would be approximately representative of the magnitude of pumping during these years. The additional State-based pumping would result in accretion benefits in all of the historic years, as shown in Table 9. Furthermore, the increase in new depletions with the addition of the State-based pumping is very small. Documentation and model files for this simulation are also contained in Appendix B.

Under the future conditions scenario, for conditions with additional State-based pumping, the baseline pumping conditions were modified in a manner that reduced groundwater pumping to 1,800 acre-feet during years with additional State-based pumping (40 of 60 years) and modified groundwater pumping to reflect a volume of 60,000 acre-feet during Compact Operation Years (Table 10). This example would exceed Compact requirements, by ensuring accretion benefits in all years, should the State of Nebraska choose to adopt that objective. The minimum pumping value of 1,800 acre-feet was adopted as the pumping volume in this scenario because it was determined to be more than sufficient to offset any new depletion related to Compact Operation Years. The additional State-based pumping would result in

[3] As defined in the RRCA Accounting Procedures pg. 6.
[4] The values contained in Tables 6 and 7 are for illustrative purposes only.

accretion benefits in all of the future conditions years, as shown in Table 11. Again, the increase in new depletions with the addition of the State-based pumping is very small. Documentation and model files for this simulation are also contained in Appendix B.

VII. Summary

This report has described the required elements of an augmentation plan located outside of the moratorium area pursuant to the requirements set forth in the FSS. Nebraska has included additional elements within this plan, beyond those strictly required by the FSS, to accommodate previous comments provided by the other states, to address any concerns the states may have related to data sharing and future tracking of Project operations, and to demonstrate additional potential operations of the Project to meet State-based objectives. Nebraska submits this plan with time being of the essence and seeks the good faith efforts of the states in working to implement this plan in a timely fashion.

Well ID	2012 Certified Acres
38498	133.1
38610	126.4
53163	123.4
53164	136.6
53165	128.2
53166	131.1
53167	130.3
54001	133.2
54002	133.2
56570	130.9
57725	130.7
57726	132
57727	132.8
57728	134.7
57729	132.4
57730	133.9
64073	127.3
64074	133.3
64075	130.1
66054	131.4
66056	125.9
69199	135.8
69200	133
69426	135.3
69427	133.8
69428	137.6
69429	137
69430	138
69532	129.8
71281	196.6
72762	133.79
72763	116.02
72764	116.52
72765	139.84
72766	139.67
72767	114.9
72768	115.89
72769	135.42
72770	136.05
72771	139.72
72772	138.88
72773	136.33
72774	125.4
72775	124.4
72776	128.7
72777	131.2
72778	125.6
72779	125.6
72780	135
72781	132
72782	130.1
72783	131.1
72784	132.1
72785	128.4
72786	131.2
72787	133.2
72788	126.4
72789	130.1
72790	132.6
72791	127.7
72792	131.1
72793	129.3
72794	126.2
73823	129.2
73824	131.1

73825	133.3
73826	133.3
75381	132.59
75382	131.88
75383	130.95
75384	133.29
75385	140.72
75386	130.03
75387	138.59
75388	137.75
75389	142.06
75390	139.64
75391	139.09
75392	138.67
75393	141.36
75394	140.57
75395	136.96
75396	141.68
75397	135.2
75398	136.1
75399	133.3
75400	131.8
75401	134
75402	136.5
75403	133.4
75404	133.9
75405	134.7
75406	136.9
75407	132.3
75408	133.1
75409	134.7
75410	132.5
75411	132.7
75412	134.8
77643	140.02
77644	137.55
77645	136.38
77646	136.42
80952	365
80955	300
80956	290
114336	134.48
135853	127.42
135854	125.92
135869	132.5
135870	128.58
144226	136.56
144227	136.18
144337	132.57
TOTAL	15,736.44

Table 1: Historical Certified Acres.

Year	Groundwater Pumping under Project Operations
1985	0
1986	0
1987	0
1988	60,000
1989	60,000
1990	60,000
1991	60,000
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	0
1999	0
2000	0
2001	0
2002	60,000
2003	60,000
2004	60,000
2005	60,000
2006	60,000
2007	0
2008	0
2009	0
2010	0

Table 2. Groundwater pumping incorporated into the historical project operations simulation (ac-ft).

Year	New Depletion	AWS Credit	Accretion Benefit
1985	-2	0	2
1986	-26	0	26
1987	-62	0	62
1988	-99	60,000	60,099
1989	-134	60,000	60,134
1990	-156	60,000	60,156
1991	-151	60,000	60,151
1992	-102	0	102
1993	3	0	-3
1994	141	0	-141
1995	257	0	-257
1996	345	0	-345
1997	399	0	-399
1998	422	0	-422
1999	442	0	-442
2000	431	0	-431
2001	401	0	-401
2002	356	60,000	59,644
2003	327	60,000	59,673
2004	317	60,000	59,683
2005	344	60,000	59,656
2006	404	60,000	59,596
2007	526	0	-526
2008	655	0	-655
2009	795	0	-795
2010	918	0	-918

Table 3: Simulated new depletion under project operations groundwater pumping, AWS credit, and the accretion benefit of project operation to the stream (negative depletion values indicate an accretion to streamflow). Accretion Benefit = AWS credit - New Depletion. Values in ac-ft.

Year	Groundwater Pumping under Project Operations
2010	0
2011	0
2012	0
2013	0
2014	0
2015	0
2016	0
2017	60,000
2018	60,000
2019	60,000
2020	60,000
2021	60,000
2022	0
2023	0
2024	0
2025	0
2026	0
2027	0
2028	0
2029	0
2030	0
2031	0
2032	60,000
2033	60,000
2034	60,000
2035	60,000
2036	60,000
2037	0
2038	0
2039	0
2040	0
2041	0
2042	0
2043	0
2044	0
2045	0
2046	0
2047	60,000
2048	60,000
2049	60,000
2050	60,000
2051	60,000
2052	0
2053	0
2054	0
2055	0
2056	0
2057	0
2058	0
2059	0

2060	0
2061	0
2062	60,000
2063	60,000
2064	60,000
2065	60,000
2066	60,000
2067	0
2068	0
2069	0

Table 4. Groundwater pumping incorporated into the future project operations scenario. Values in ac-ft.

Year	New Depletion	AWS Credit	Accretion Benefit
2010	-1	0	1
2011	-14	0	14
2012	-31	0	31
2013	-63	0	63
2014	-103	0	103
2015	-138	0	138
2016	-181	0	181
2017	-215	60,000	60,215
2018	-273	60,000	60,273
2019	-312	60,000	60,312
2020	-306	60,000	60,306
2021	-251	60,000	60,251
2022	-170	0	170
2023	-38	0	38
2024	105	0	-105
2025	230	0	-230
2026	327	0	-327
2027	377	0	-377
2028	399	0	-399
2029	419	0	-419
2030	396	0	-396
2031	380	0	-380
2032	332	60,000	59,668
2033	304	60,000	59,696
2034	272	60,000	59,728
2035	275	60,000	59,725
2036	322	60,000	59,678
2037	423	0	-423
2038	546	0	-546
2039	685	0	-685
2040	797	0	-797
2041	893	0	-893
2042	924	0	-924
2043	924	0	-924
2044	952	0	-952
2045	895	0	-895
2046	875	0	-875
2047	790	60,000	59,210
2048	785	60,000	59,215
2049	740	60,000	59,260
2050	734	60,000	59,266
2051	756	60,000	59,244
2052	877	0	-877
2053	975	0	-975
2054	1103	0	-1,103
2055	1201	0	-1,201
2056	1298	0	-1,298
2057	1305	0	-1,305
2058	1291	0	-1,291
2059	1316	0	-1,316
2060	1243	0	-1,243
2061	1223	0	-1,223

2062	1102	60,000	58,898
2063	1110	60,000	58,890
2064	1064	60,000	58,936
2065	1045	60,000	58,955
2066	1054	60,000	58,946
2067	1184	0	-1,184
2068	1273	0	-1,273
2069	1389	0	-1,389

Table 5: Simulated future new depletion under project operations groundwater pumping, AWS credit, and the accretion benefit of project operations to the stream (negative depletion values indicate an accretion to streamflow). Accretion Benefit = AWS credit - New Depletion. Values in ac-ft.

Nebraska				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive Use	Imported Water Supply Credit **and/or Augmentation Water Supply Credit**	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit and/or Augmentation Water Supply Credit Col 1 - (Col 2 - Col 3)
Year 2002	236,550 236,550	265,910 265,910	13,996 13,996	-15,364 -15,364
Year 2003	227,580 227,580	262,780 262,780	9,782 9,782	-25,418 -25,418
Year 2004	205,630 205,630	252,650 252,650	10,386 10,386	-36,634 -36,634
Year 2005	199,450 199,450	**254,740** 253,740	**71,965** 11,965	**16,675** -42,325
Current Year 2006	187,090 187,090	**229,420** 228,420	**72,214** 12,214	**29,884** -29,116
Average	211,260 211,260	**253,100** 252,700	**35,670** 11,670	**-6,170** -29,770

Table 6. Example of RRCA Accounting Procedure Table 3C Results with the Augmentation Water Supply Credit (top values in each column) and without the Augmentation Water Supply Credit (bottom values in each column). The gray shaded years (2005-2006) represent Compact Operation Years in which hypothetical new depletions (1,000 acre-feet) and deliveries (60,000 acre-feet) of operating the project are superimposed on the historical accounting data. Bold values represent data values that differ from the historical values due to project operations.

Nebraska								
Year	Allocation			Computed Beneficial Consumptive Use			Imported Water Supply Credit **and/or Augmentation Water Supply Credit**	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit and/or Augmentation Water Supply Credit Above Guide Rock
Column	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
	State Wide Allocation	Allocation below Guide Rock	State Wide Allocation above Guide Rock	State Wide CBCU	CBCU below Guide Rock	State Wide CBCU above Guide Rock	Credits above Guide Rock	Col 3 - (Col 6 - Col 7)
Previous Year	199,450	4,586	194,864	**254,740**	4,052	**250,688**	**71,965**	**16,141**
(2005)	199,450	4,586	194,864	253,740	4,052	249,688	11,965	-42,859
Current Year	187,090	2,286	184,804	**229,420**	3,057	**226,363**	**72,214**	**30,655**
(2006)	187,090	2,286	184,804	228,420	3,057	225,363	12,214	-28,345
Average	193,270	3,440	189,830	**242,080**	3,550	**238,530**	**72,090**	**23,390**
	193,270	3,440	189,830	241,080	3,550	237,530	12,090	-35,610

Table 7. Example of RRCA Accounting Procedure Table 5C Results with the Augmentation Water Supply Credit (top values in each column) and without the Augmentation Water Supply Credit (bottom values in each column). The gray shaded years (2005-2006) represent Compact Operation Years in which hypothetical new depletions (1,000 acre-feet) and deliveries (60,000 acre-feet) of operating the project are superimposed on the historical accounting data. Bold values represent data values that differ from the historical values due to project operations.

Year	Groundwater Pumping under State-Based Operations
1985	1,800
1986	1,800
1987	1,800
1988	60,000
1989	60,000
1990	60,000
1991	60,000
1992	1,800
1993	1,800
1994	1,800
1995	1,800
1996	1,800
1997	1,800
1998	1,800
1999	1,800
2000	1,800
2001	1,800
2002	60,000
2003	60,000
2004	60,000
2005	60,000
2006	60,000
2007	1,800
2008	1,800
2009	1,800
2010	1,800

Table 8: Groundwater pumping incorporated into the historical project operations simulation, with State-Based Operations that include additional State-based Pumping. Values in ac-ft.

Year	Project Operations			State-Based Operations			Additional Depletion from Additional State-based Pumping
	New Depletion	AWS Credit	Accretion Benefit	New Depletion	AWS Credit	Accretion Benefit	
1985	-2	0	2	-2	1,800	1,802	0
1986	-26	0	26	-26	1,800	1,826	0
1987	-62	0	62	-62	1,800	1,862	1
1988	-99	60,000	60,099	-96	60,000	60,096	2
1989	-134	60,000	60,134	-129	60,000	60,129	5
1990	-156	60,000	60,156	-148	60,000	60,148	9
1991	-151	60,000	60,151	-139	60,000	60,139	12
1992	-102	0	102	-86	1,800	1,886	15
1993	3	0	-3	21	1,800	1,779	18
1994	141	0	-141	160	1,800	1,640	19
1995	257	0	-257	279	1,800	1,521	22
1996	345	0	-345	371	1,800	1,429	26
1997	399	0	-399	430	1,800	1,370	30
1998	422	0	-422	457	1,800	1,343	35
1999	442	0	-442	484	1,800	1,316	42
2000	431	0	-431	478	1,800	1,322	47
2001	401	0	-401	453	1,800	1,347	53
2002	356	60,000	59,644	413	60,000	59,587	57
2003	327	60,000	59,673	393	60,000	59,607	66
2004	317	60,000	59,683	389	60,000	59,611	73
2005	344	60,000	59,656	422	60,000	59,578	78
2006	404	60,000	59,596	484	60,000	59,516	80
2007	526	0	-526	612	1,800	1,188	86
2008	655	0	-655	742	1,800	1,058	87
2009	795	0	-795	883	1,800	917	88
2010	918	0	-918	1,008	1,800	792	89

Table 9: Comparison of Project Operations and State-Based Operations with simulated new depletion under groundwater pumping, AWS credit, and accretion benefit to the stream (negative depletion values indicate an accretion to streamflow). Accretion Benefit = AWS credit - New Depletion. Values in ac-ft.

Year	Groundwater Pumping with State-Based Operations
2010	1,800
2011	1,800
2012	1,800
2013	1,800
2014	1,800
2015	1,800
2016	1,800
2017	60,000
2018	60,000
2019	60,000
2020	60,000
2021	60,000
2022	1,800
2023	1,800
2024	1,800
2025	1,800
2026	1,800
2027	1,800
2028	1,800
2029	1,800
2030	1,800
2031	1,800
2032	60,000
2033	60,000
2034	60,000
2035	60,000
2036	60,000
2037	1,800
2038	1,800
2039	1,800
2040	1,800
2041	1,800
2042	1,800
2043	1,800
2044	1,800
2045	1,800
2046	1,800
2047	60,000
2048	60,000
2049	60,000
2050	60,000
2051	60,000
2052	1,800
2053	1,800
2054	1,800
2055	1,800
2056	1,800
2057	1,800
2058	1,800
2059	1,800

2060	1,800
2061	1,800
2062	60,000
2063	60,000
2064	60,000
2065	60,000
2066	60,000
2067	1,800
2068	1,800
2069	1,800

Table 10: Groundwater pumping incorporated into the future project operations simulation, with State-Based Operations that include additional State-based Pumping. Values in ac-ft.

	Project Operations			State-Based Operations			Additional Depletion from Additional State-based Pumping
Year	New Depletion	AWS Credit	Accretion Benefit	New Depletion	AWS Credit	Accretion Benefit	
2010	-1	0	1	-1	1,800	1,801	0
2011	-14	0	14	-14	1,800	1,814	0
2012	-31	0	31	-30	1,800	1,830	1
2013	-63	0	63	-61	1,800	1,861	2
2014	-103	0	103	-97	1,800	1,897	6
2015	-138	0	138	-128	1,800	1,928	10
2016	-181	0	181	-168	1,800	1,968	13
2017	-215	60,000	60,215	-198	60,000	60,198	17
2018	-273	60,000	60,273	-248	60,000	60,248	25
2019	-312	60,000	60,312	-281	60,000	60,281	31
2020	-306	60,000	60,306	-272	60,000	60,272	34
2021	-251	60,000	60,251	-212	60,000	60,212	39
2022	-170	0	170	-125	1,800	1,925	45
2023	-38	0	38	9	1,800	1,791	47
2024	105	0	-105	153	1,800	1,647	48
2025	230	0	-230	279	1,800	1,521	49
2026	327	0	-327	381	1,800	1,419	54
2027	377	0	-377	436	1,800	1,364	59
2028	399	0	-399	464	1,800	1,336	65
2029	419	0	-419	485	1,800	1,315	66
2030	396	0	-396	467	1,800	1,333	71
2031	380	0	-380	459	1,800	1,341	79
2032	332	60,000	59,668	411	60,000	59,589	79
2033	304	60,000	59,696	394	60,000	59,606	90
2034	272	60,000	59,728	369	60,000	59,631	97
2035	275	60,000	59,725	374	60,000	59,626	99
2036	322	60,000	59,678	420	60,000	59,580	98
2037	423	0	-423	531	1,800	1,269	108
2038	546	0	-546	652	1,800	1,148	106
2039	685	0	-685	791	1,800	1,009	106
2040	797	0	-797	904	1,800	896	107
2041	893	0	-893	1005	1,800	795	112
2042	924	0	-924	1037	1,800	763	113
2043	924	0	-924	1036	1,800	764	112
2044	952	0	-952	1072	1,800	728	120
2045	895	0	-895	1015	1,800	785	120
2046	875	0	-875	1003	1,800	797	128
2047	790	60,000	59,210	914	60,000	59,086	124
2048	785	60,000	59,215	918	60,000	59,082	133
2049	740	60,000	59,260	878	60,000	59,122	138
2050	734	60,000	59,266	878	60,000	59,122	144
2051	756	60,000	59,244	898	60,000	59,102	142
2052	877	0	-877	1029	1,800	771	152
2053	975	0	-975	1124	1,800	676	149
2054	1103	0	-1,103	1250	1,800	550	147
2055	1201	0	-1,201	1348	1,800	452	147
2056	1298	0	-1,298	1447	1,800	353	149
2057	1305	0	-1,305	1453	1,800	347	148
2058	1291	0	-1,291	1437	1,800	363	146

2059	1316	0	-1,316	1470	1,800	330	154
2060	1243	0	-1,243	1395	1,800	405	152
2061	1223	0	-1,223	1381	1,800	419	158
2062	1102	60,000	58,898	1253	60,000	58,747	151
2063	1110	60,000	58,890	1275	60,000	58,725	165
2064	1064	60,000	58,936	1233	60,000	58,767	169
2065	1045	60,000	58,955	1217	60,000	58,783	172
2066	1054	60,000	58,946	1225	60,000	58,775	171
2067	1184	0	-1,184	1363	1,800	437	179
2068	1273	0	-1,273	1451	1,800	349	178
2069	1389	0	-1,389	1564	1,800	236	175

Table 11: Comparison of Project Operations and State-Based Operations with simulated future new depletion under groundwater pumping, AWS credit, and accretion benefit to the stream (negative depletion values indicate an accretion to streamflow). Accretion Benefit = AWS credit - New Depletion. Values in ac-ft.

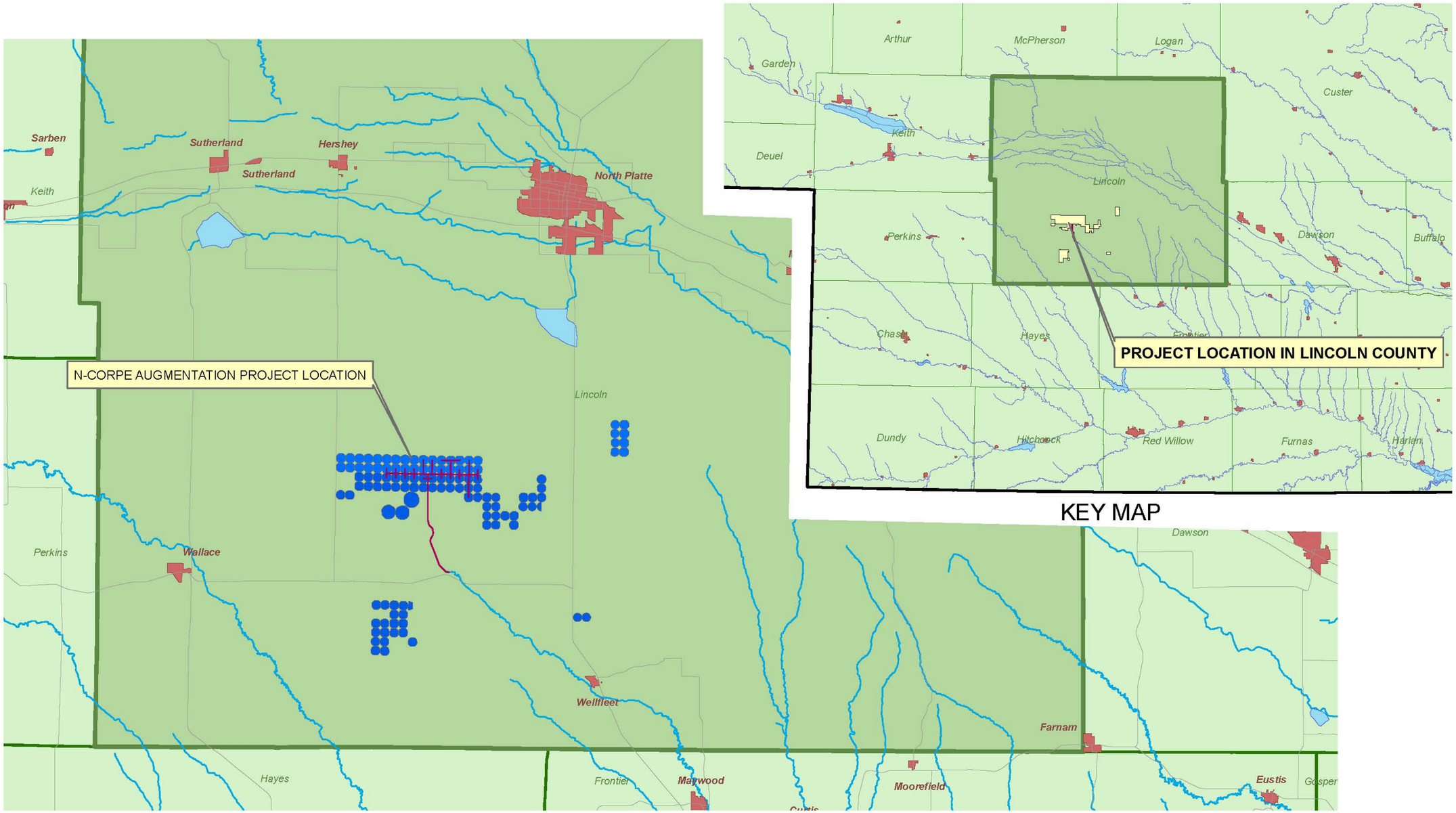


FIGURE 1: PROJECT LOCATION MAP

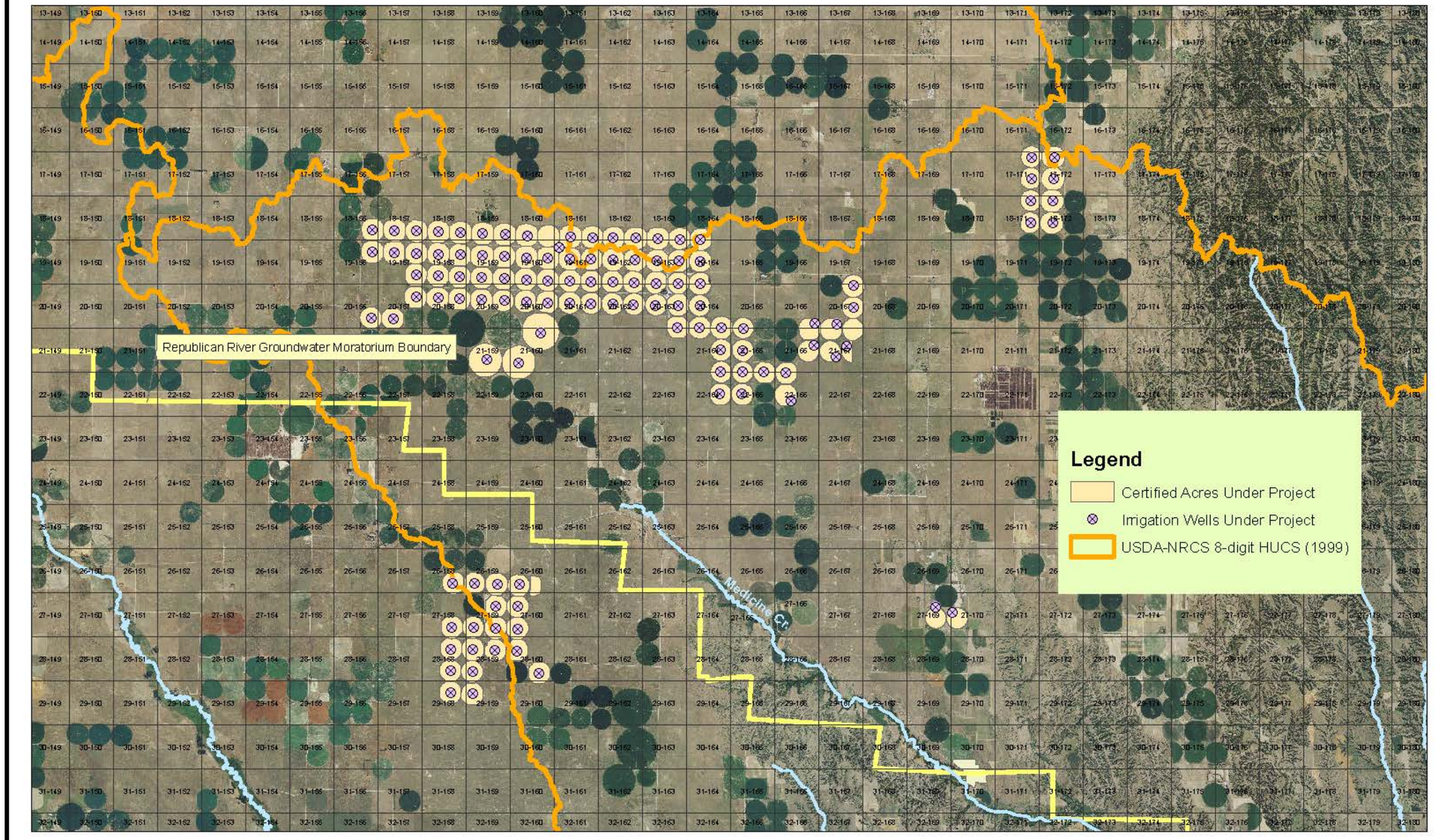


FIGURE 2: N-CORPE AUGMENTATION AREA PRIOR TO ACQUISITION

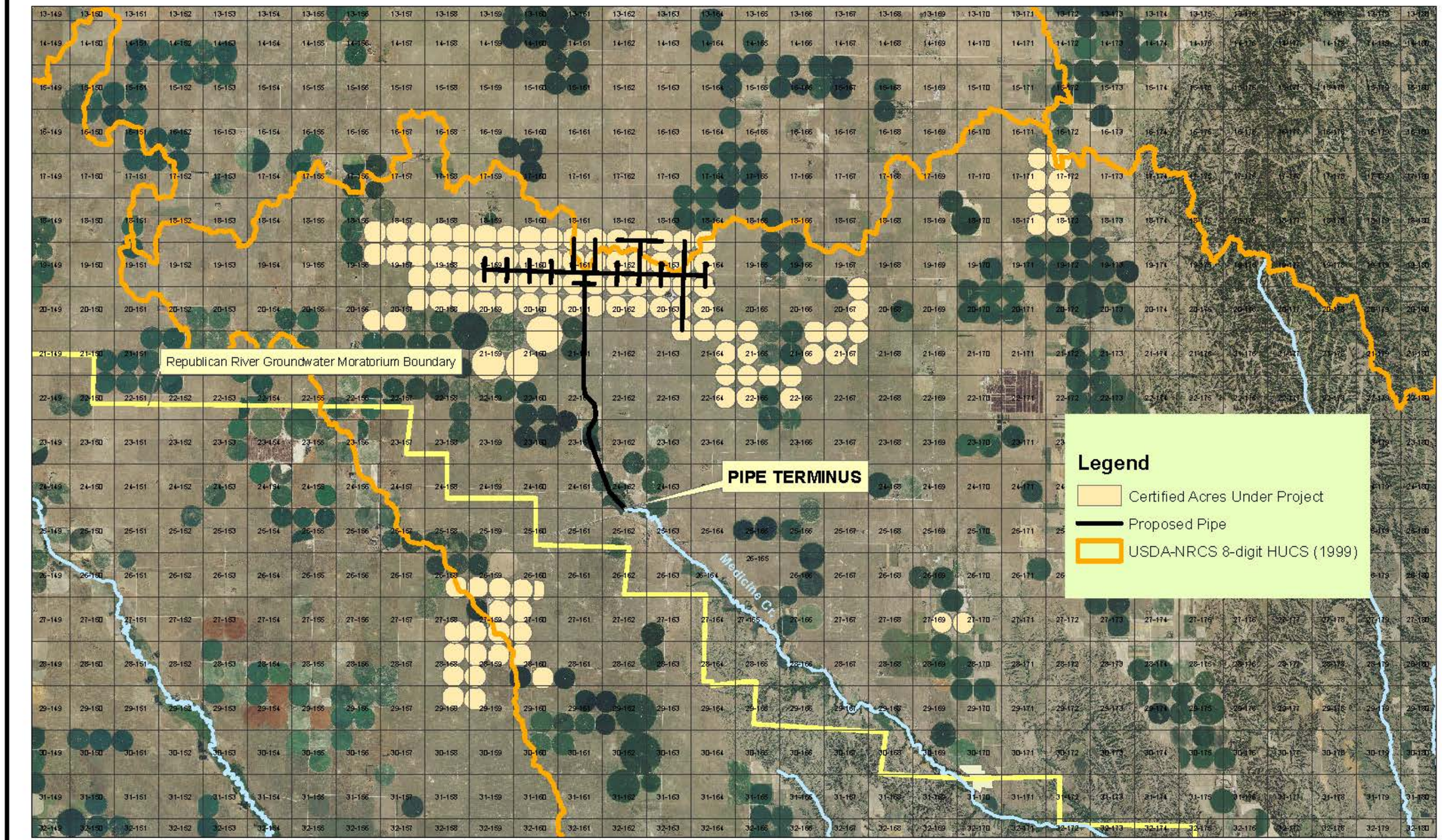


FIGURE 3: N-CORPE AUGMENTATION PROJECT PLAN

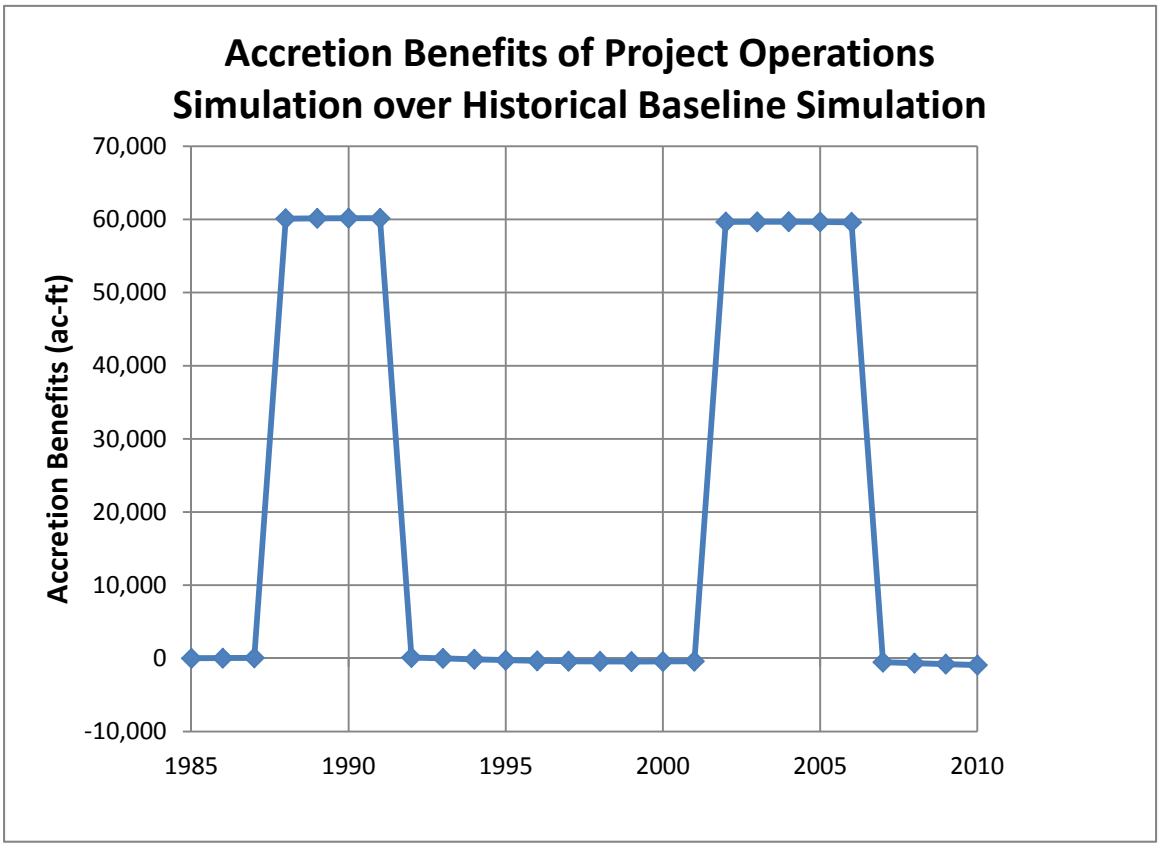


Figure 4. Accretion Benefits from Project Operations over Historical Baseline Simulation, considering Project Operations Pumping, AWS credit, and the net depletions **to the stream from** project operation**).**

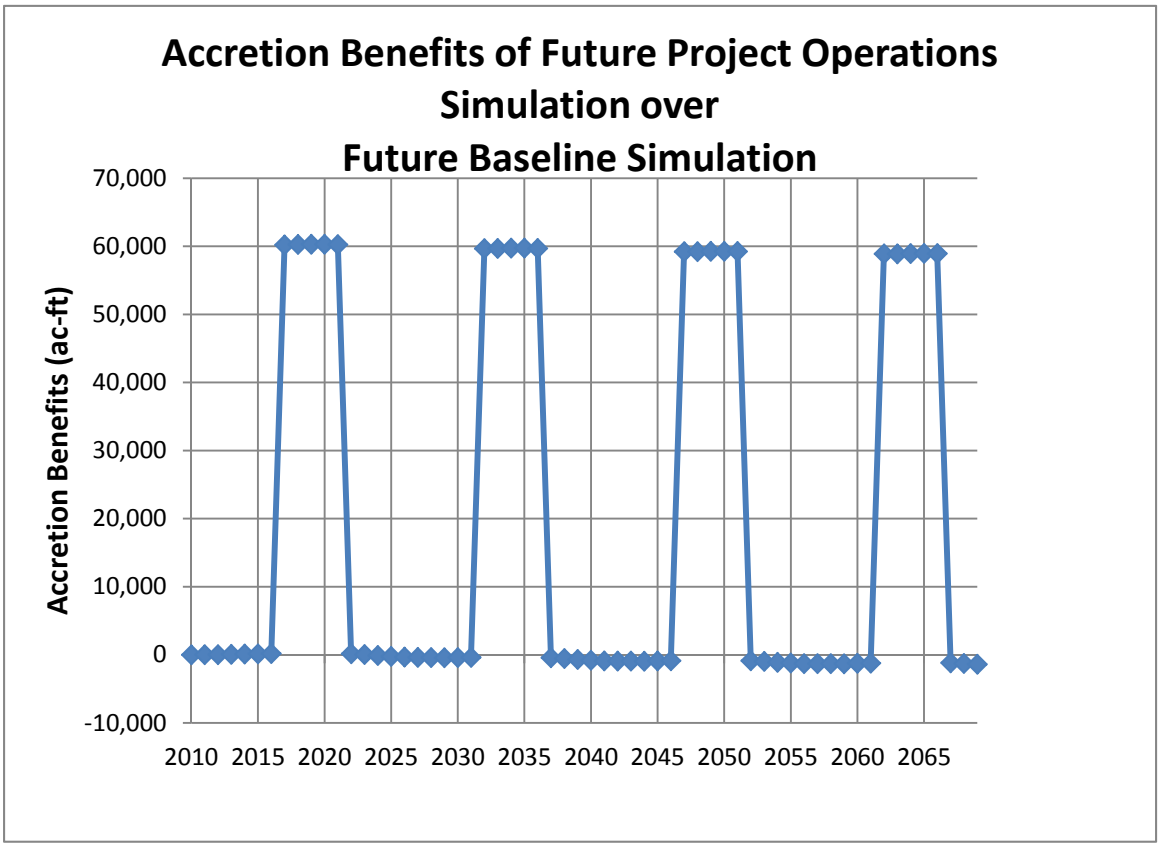


Figure 5. Accretion Benefits from Future Project Operations over Future Baseline Simulation, considering Project Operations Pumping, AWS credit, and the net depletions to the stream from project operation).

Appendix A

Republican River Compact Administration

ACCOUNTING PROCEDURES

AND

REPORTING REQUIREMENTS

Revised August 12, 2010

Comment [A1]: Update to new date

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I. Introduction

This document describes the definitions, procedures, basic formulas, specific formulas, and data requirements and reporting formats to be used by the RRCA to compute the Virgin Water Supply, Computed Water Supply, Allocations, Imported Water Supply Credit, Augmentation Water Supply Credit, and Computed Beneficial Consumptive Use. These computations shall be used to determine supply, allocations, use and compliance with the Compact according to the Stipulation. These definitions, procedures, basic and specific formulas, data requirements and attachments may be changed by consent of the RRCA consistent with Subsection I.F of the Stipulation. This document will be referred to as the RRCA Accounting Procedures. Attached to these RRCA Accounting Procedures as Figure 1 is the map attached to the Compact that shows the Basin, its streams and the Basin boundaries.

II. Definitions

The following words and phrases as used in these RRCA Accounting Procedures are defined as follows:

Additional Water Administration Year - a year when the projected or actual irrigation water supply is less than 130,000 Acre-feet of storage available for use from Harlan County Lake as determined by the Bureau of Reclamation using the methodology described in the Harlan County Lake Operation Consensus Plan attached as Appendix K to the Stipulation.

Allocation(s): the water supply allocated to each State from the Computed Water Supply;

Annual: yearly from January 1 through December 31;

Augmentation Plan: the detailed program used by a State to offset stream depletions in order to comply with its Compact Allocations. The Augmentation Plans shall be approved by the RRCA prior to implementation;

Augmentation Water Supply Credit: The amount of water measured and discharged under an approved Augmentation Plan to a Designated Drainage Basin for the purpose of offsetting stream depletions to comply with a States' Compact allocation. The Augmentation Water Supply Credit of a State shall not be included in the Virgin Water Supply in the aforementioned Designated Drainage Basin and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water allocated to that State;

Basin: the Republican River Basin as defined in Article II of the Compact;

Beneficial Consumptive Use: that use by which the Water Supply of the Basin is consumed through the activities of man, and shall include water consumed by evaporation from any reservoir, canal, ditch, or irrigated area;

Change in Federal Reservoir Storage: the difference between the amount of water in storage in the reservoir on December 31 of each year and the amount of water in storage on December 31 of the previous year. The current area capacity table supplied by the appropriate federal operating agency shall be used to determine the contents of the reservoir on each date;

Compact: the Republican River Compact, Act of February 22, 1943, 1943 Kan. Sess. Laws 612, codified at Kan. Stat. Ann. § 82a-518 (1997); Act of February 24, 1943, 1943 Neb. Laws 377, codified at 2A Neb. Rev. Stat. App. § 1-106 (1995), Act of March 15, 1943, 1943 Colo. Sess. Laws 362, codified at Colo. Rev. Stat. §§ 37-67-101 and 37-67-102 (2001); Republican River Compact, Act of May 26, 1943, ch. 104, 57 Stat. 86;

Computed Beneficial Consumptive Use: for purposes of Compact accounting, the stream flow depletion resulting from the following activities of man:

Irrigation of lands in excess of two acres;
Any non-irrigation diversion of more than 50 Acre-feet per year;
Multiple diversions of 50 Acre-feet or less that are connected or otherwise combined to serve a single project will be considered as a single diversion for accounting purposes if they total more than 50 Acre-feet;
Net evaporation from Federal Reservoirs;
Net evaporation from Non-federal Reservoirs within the surface boundaries of the Basin;
Any other activities that may be included by amendment of these formulas by the RRCA;

Computed Water Supply: the Virgin Water Supply less the Change in Federal Reservoir Storage in any Designated Drainage Basin, and less the Flood Flows;

Designated Drainage Basins: the drainage basins of the specific tributaries and the Main Stem of the Republican River as described in Article III of the Compact. Attached hereto as Figure 3 is a map of the Sub-basins and Main Stem;

Dewatering Well: a Well constructed solely for the purpose of lowering the groundwater elevation;

Federal Reservoirs:

Bonny Reservoir
Swanson Lake
Enders Reservoir
Hugh Butler Lake
Harry Strunk Lake

Keith Sebelius Lake
Harlan County Lake
Lovewell Reservoir

Flood Flows: the amount of water deducted from the Virgin Water Supply as part of the computation of the Computed Water Supply due to a flood event as determined by the methodology described in Subsection III.B.1.;

Gaged Flow: the measured flow at the designated stream gage;

Guide Rock: a point at the Superior-Courtland Diversion Dam on the Republican River near Guide Rock, Nebraska; the Superior-Courtland Diversion Dam gage plus any flows through the sluice gates of the dam, specifically excluding any diversions to the Superior and Courtland Canals, shall be the measure of flows at Guide Rock;

Historic Consumptive Use: that amount of water that has been consumed under appropriate and reasonably efficient practices to accomplish without waste the purposes for which the appropriation or other legally permitted use was lawfully made;

Imported Water Supply: the water supply imported by a State from outside the Basin resulting from the activities of man;

Imported Water Supply Credit: the accretions to stream flow due to water imports from outside of the Basin as computed by the RRCA Groundwater Model. The Imported Water Supply Credit of a State shall not be included in the Virgin Water Supply and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water allocated to that State, except as provided in Subsection V.B.2. of the Stipulation and Subsections III.I. – J. of these RRCA Accounting Procedures;

Main Stem: the Designated Drainage Basin identified in Article III of the Compact as the North Fork of the Republican River in Nebraska and the main stem of the Republican River between the junction of the North Fork and the Arikaree River and the lowest crossing of the river at the Nebraska-Kansas state line and the small tributaries thereof, and also including the drainage basin Blackwood Creek;

Main Stem Allocation: the portion of the Computed Water Supply derived from the Main Stem and the Unallocated Supply derived from the Sub-basins as shared by Kansas and Nebraska;

Meeting(s): a meeting of the RRCA, including any regularly scheduled annual meeting or any special meeting;

Modeling Committee: the modeling committee established in Subsection IV.C. of the Stipulation;

Moratorium: the prohibition and limitations on construction of new Wells in the geographic area described in Section III. of the Stipulation;

Non-federal Reservoirs: reservoirs other than Federal Reservoirs that have a storage capacity of 15 Acre-feet or greater at the principal spillway elevation;

Northwest Kansas: those portions of the Sub-basins within Kansas;

Replacement Well: a Well that replaces an existing Well that a) will not be used after construction of the new Well and b) will be abandoned within one year after such construction or is used in a manner that is excepted from the Moratorium pursuant to Subsections III.B.1.c.-f. of the Stipulation;

RRCA: Republican River Compact Administration, the administrative body composed of the State officials identified in Article IX of the Compact;

RRCA Accounting Procedures: this document and all attachments hereto;

RRCA Groundwater Model: the groundwater model developed under the provisions of Subsection IV.C. of the Stipulation and as subsequently adopted and revised through action of the RRCA;

State: any of the States of Colorado, Kansas, and Nebraska;

States: the States of Colorado, Kansas and Nebraska;

Stipulation: the Final Settlement Stipulation to be filed in *Kansas v. Nebraska and Colorado*, No. 126, Original, including all Appendices attached thereto;

Sub-basin: the Designated Drainage Basins, except for the Main Stem, identified in Article III of the Compact. For purposes of Compact accounting the following Sub-basins will be defined as described below:

North Fork of the Republican River in Colorado drainage basin is that drainage area above USGS gaging station number 06823000, North Fork Republican River at the Colorado-Nebraska State Line,

Arikaree River drainage basin is that drainage area above USGS gaging station number 06821500, Arikaree River at Haigler, Nebraska,

Buffalo Creek drainage basin is that drainage area above USGS gaging station number 06823500, Buffalo Creek near Haigler, Nebraska,

Rock Creek drainage basin is that drainage area above USGS gaging station number 06824000, Rock Creek at Parks, Nebraska,

South Fork of the Republican River drainage basin is that drainage area above USGS gaging station number 06827500, South Fork Republican River near Benkelman, Nebraska,

Frenchman Creek (River) drainage basin in Nebraska is that drainage area above USGS gaging station number 06835500, Frenchman Creek in Culbertson, Nebraska,

Driftwood Creek drainage basin is that drainage area above USGS gaging station number 06836500, Driftwood Creek near McCook, Nebraska,

Red Willow Creek drainage basin is that drainage area above USGS gaging station number 06838000, Red Willow Creek near Red Willow, Nebraska,

Medicine Creek drainage basin is that drainage area above the Medicine Creek below Harry Strunk Lake, State of Nebraska gaging station number 06842500; and the drainage area between the gage and the confluence with the Main Stem,

Sappa Creek drainage basin is that drainage area above USGS gaging station number 06847500, Sappa Creek near Stamford, Nebraska and the drainage area between the gage and the confluence with the Main Stem; and excluding the Beaver Creek drainage basin area downstream from the State of Nebraska gaging station number 06847000 Beaver Creek near Beaver City, Nebraska to the confluence with Sappa Creek,

Beaver Creek drainage basin is that drainage area above State of Nebraska gaging station number 06847000, Beaver Creek near Beaver City, Nebraska, and the drainage area between the gage and the confluence with Sappa Creek,

Prairie Dog Creek drainage basin is that drainage area above USGS gaging station number 06848500, Prairie Dog Creek near Woodruff, Kansas, and the drainage area between the gage and the confluence with the Main Stem;

Attached hereto as Figure 2 is a line diagram depicting the streams, Federal Reservoirs and gaging stations;

Test hole: a hole designed solely for the purpose of obtaining information on hydrologic and/or geologic conditions;

Trenton Dam: a dam located at 40 degrees, 10 minutes, 10 seconds latitude and 101 degrees, 3 minutes, 35 seconds longitude, approximately two and one-half miles west of the town of Trenton, Nebraska;

Unallocated Supply: the "water supplies of upstream basins otherwise unallocated" as set forth in Article IV of the Compact;

Upstream of Guide Rock, Nebraska: those areas within the Basin lying west of a line proceeding north from the Nebraska-Kansas state line and following the western edge of Webster County, Township 1, Range 9, Sections 34, 27, 22, 15, 10 and 3 through Webster County, Township 2, Range 9, Sections 34, 27 and 22; then proceeding west along the southern edge of Webster County, Township 2, Range 9, Sections 16, 17 and 18; then proceeding north following the western edge of Webster County, Township 2, Range 9, Sections 18, 7 and 6, through Webster County, Township 3, Range 9, Sections 31, 30, 19, 18, 7 and 6 to its intersection with the northern boundary of Webster County. Upstream of Guide Rock, Nebraska shall not include that area in Kansas east of the 99° meridian and south of the Kansas-Nebraska state line;

Virgin Water Supply: the Water Supply within the Basin undepleted by the activities of man;

Water Short Year Administration: administration in a year when the projected or actual irrigation water supply is less than 119,000 acre feet of storage available for use from Harlan County Lake as determined by the Bureau of Reclamation using the methodology described in the Harlan County Lake Operation Consensus Plan attached as Appendix K to the Stipulation.

Water Supply of the Basin or **Water Supply within the Basin:** the stream flows within the Basin, excluding Imported Water Supply;

Well: any structure, device or excavation for the purpose or with the effect of obtaining groundwater for beneficial use from an aquifer, including wells, water wells, or groundwater wells as further defined and used in each State's laws, rules, and regulations.

III. Basic Formulas

The basic formulas for calculating Virgin Water Supply, Computed Water Supply, Imported Water Supply, Allocations and Computed Beneficial Consumptive Use are set forth below. The results of these calculations shall be shown in a table format as shown in Table 1.

Basic Formulas for Calculating Virgin Water Supply, Computed Water Supply, Allocations and Computed Beneficial Consumptive Use		
Sub-basin VWS	=	Gage + All CBCU +ΔS – IWS – AWS
Main Stem VWS	=	Hardy Gage – Σ Sub-basin gages + All CBCU in the Main Stem +ΔS – IWS
CWS	=	VWS - Δ S – FF

Allocation for each State in each Sub-basin And Main Stem	=	CWS x %
State's Allocation	=	Σ Allocations for Each State
State's CBCU	=	Σ State's CBCUs in each Sub-basin and Main Stem

Abbreviations:

CBCU = Computed Beneficial Consumptive Use
FF = Flood Flows
Gage = Gaged Flow
IWS = Imported Water Supply Credit
AWS = Augmentation Water Supply Credit
CWS = Computed Water Supply
VWS = Virgin Water Supply
% = the ratio used to allocate the Computed Water Supply between the States. This ratio is based on the allocations in the Compact
Δ S = Change in Federal Reservoir Storage

A. Calculation of Annual Virgin Water Supply

1. Sub-basin calculation:

The annual Virgin Water Supply for each Sub-basin will be calculated by adding: a) the annual stream flow in that Sub-basin at the Sub-basin stream gage designated in Section II., b) the annual Computed Beneficial Consumptive Use above that gaging station, and c) the Change in Federal Reservoir Storage in that Sub-basin; and from that total subtract any Imported Water Supply Credit and any Augmentation Water Supply Credit. The Computed Beneficial Consumptive Use will be calculated as described in Subsection III. D. Adjustments for flows diverted around stream gages and for Computed Beneficial Consumptive Uses in the Sub-basin between the Sub-basin stream gage and the confluence of the Sub-basin tributary and the Main Stem shall be made as described in Subsections III. D. 1 and 2 and IV. B.

2. Main Stem Calculation:

The annual Virgin Water Supply for the Main Stem will be calculated by adding: a) the flow at the Hardy gage minus the flows from the Sub-basin gages listed in Section II, b) the annual Computed Beneficial Consumptive Use in the Main Stem, and c) the Change in Federal Reservoir Storage from Swanson Lake and Harlan

County Lake; and from that total subtract any Imported Water Supply Credit for the Main Stem. Adjustments for flows diverted around Sub-basin stream gages and for Computed Beneficial Consumptive Uses in a Sub-basin between the Sub-basin stream gage and the confluence of the Sub-basin tributary and the Mains Stem shall be made as described in Subsections III. D. 1 and 2 and IV.B.,

3. Imported Water Supply Credit Calculation:

The amount of Imported Water Supply Credit shall be determined by the RRCA Groundwater Model. The Imported Water Supply Credit of a State shall not be included in the Virgin Water Supply and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water allocated to that State. Currently, the Imported Water Supply Credits shall be determined using two runs of the RRCA Groundwater Model:

a. The "base" run shall be the run with all groundwater pumping, groundwater pumping recharge, and surface water recharge within the model study boundary for the current accounting year turned "on." This will be the same "base" run used to determine groundwater Computed Beneficial Consumptive Uses.

b. The "no NE import" run shall be the run with the same model inputs as the base run with the exception that surface water recharge associated with Nebraska's Imported Water Supply shall be turned "off."

The Imported Water Supply Credit shall be the difference in stream flows between these two model runs. Differences in stream flows shall be determined at the same locations as identified in Subsection III.D.1.for the "no pumping" runs. Should another State import water into the Basin in the future, the RRCA will develop a similar procedure to determine Imported Water Supply Credits.

4. Augmentation Water Supply Credit: The amount of water measured and discharged under an approved Augmentation Plan to a Designated Drainage Basin for the purpose of offsetting stream depletions to comply with a States' Compact allocation.

B. Calculation of Computed Water Supply

On any Designated Drainage Basin without a Federal Reservoir, the Computed Water Supply will be equal to the Virgin Water Supply of that Designated Drainage Basin minus Flood Flows.

On any Designated Drainage Basin with a Federal Reservoir, the Computed Water Supply will be equal to the Virgin Water Supply minus the Change in Federal Reservoir Storage in that Designated Drainage Basin and minus Flood Flows.

1. Flood Flows

If in any calendar year there are five consecutive months in which the total actual stream flow[1] at the Hardy gage is greater than 325,000 Acre-feet, or any two consecutive months in which the total actual stream flow is greater than 200,000 Acre-feet, the annual flow in excess of 400,000 Acre-feet at the Hardy gage will be considered to be Flood Flows that will be subtracted from the Virgin Water Supply to calculate the Computed Water Supply, and Allocations. The Flood Flow in excess of 400,000 Acre-feet at the Hardy gage will be subtracted from the Virgin Water Supply of the Main Stem to compute the Computed Water Supply unless the Annual Gaged Flows from a Sub-basin were in excess of the flows shown for that Sub-basin in Attachment 1. These excess Sub-basin flows shall be considered to be Sub-basin Flood Flows.

If there are Sub-basin Flood Flows, the total of all Sub-basin Flood Flows shall be compared to the amount of Flood Flows at the Hardy gage. If the sum of the Sub-basin Flood Flows are in excess of the Flood Flow at the Hardy gage, the flows to be deducted from each Sub-basin shall be the product of the Flood Flows for each Sub-basin times the ratio of the Flood Flows at the Hardy gage divided by the sum of the Flood Flows of the Sub-basin gages. If the sum of the Sub-basin Flood Flows is less than the Flood Flow at the Hardy gage, the entire amount of each Sub-basin Flood Flow shall be deducted from the Virgin Water Supply to compute the Computed Water Supply of that Sub-basin for that year. The remainder of the Flood Flows will be subtracted from the flows of the Main Stem.

C. Calculation of Annual Allocations

Article IV of the Compact allocates 54,100 Acre-feet for Beneficial Consumptive Use in Colorado, 190,300 Acre-feet for Beneficial Consumptive Use in Kansas and 234,500 Acre-feet for Beneficial Consumptive Use in Nebraska. The Compact provides that the Compact totals are to be derived from the sources and in the amounts specified in Table 2.

The Allocations derived from each Sub-basin to each State shall be the Computed Water Supply multiplied by the percentages set forth in Table 2. In addition, Kansas shall receive 51.1% of the Main Stem Allocation and the Unallocated

[1] These actual stream flows reflect Gaged Flows after depletions by Beneficial Consumptive Use and change in reservoir storage above the gage.

Supply and Nebraska shall receive 48.9% of the Main Stem Allocation and the Unallocated Supply.

D. Calculation of Annual Computed Beneficial Consumptive Use

1. Groundwater

Computed Beneficial Consumptive Use of groundwater shall be determined by use of the RRCA Groundwater Model. The Computed Beneficial Consumptive Use of groundwater for each State shall be determined as the difference in streamflows using two runs of the model:

The "base" run shall be the run with all groundwater pumping, groundwater pumping recharge, and surface water recharge within the model study boundary for the current accounting year "on".

The "no State pumping" run shall be the run with the same model inputs as the base run with the exception that all groundwater pumping and pumping recharge of that State shall be turned "off."

An output of the model is baseflows at selected stream cells. Changes in the baseflows predicted by the model between the "base" run and the "no-State-pumping" model run is assumed to be the depletions to streamflows. i.e., groundwater computed beneficial consumptive use, due to State groundwater pumping at that location. The values for each Sub-basin will include all depletions and accretions upstream of the confluence with the Main Stem. The values for the Main Stem will include all depletions and accretions in stream reaches not otherwise accounted for in a Sub-basin. The values for the Main Stem will be computed separately for the reach above Guide Rock, and the reach below Guide Rock.

2. Surface Water

The Computed Beneficial Consumptive Use of surface water for irrigation and non-irrigation uses shall be computed by taking the diversions from the river and subtracting the return flows to the river resulting from those diversions, as described in Subsections IV.A.2.a.-d. The Computed Beneficial Consumptive Use of surface water from Federal Reservoir and Non-Federal Reservoir evaporation shall be the net reservoir evaporation from the reservoirs, as described in Subsections IV.A.2.e.-f.

For Sub-basins where the gage designated in Section II. is near the confluence with the Main Stem, each State's Sub-basin Computed Beneficial Consumptive Use of surface water shall be the State's Computed Beneficial Consumptive Use of surface water above the Sub-basin gage. For Medicine Creek, Sappa Creek, Beaver Creek and Prairie Dog Creek, where the gage is not near the confluence with the Main Stem, each State's Computed Beneficial Consumptive Use of surface water shall be the sum of the State's Computed Beneficial Consumptive Use of surface water above the gage, and its Computed Beneficial Consumptive Use of surface water between the gage and the confluence with the Main Stem.

E. Calculation to Determine Compact Compliance Using Five-Year Running Averages

Each year, using the procedures described herein, the RRCA will calculate the Annual Allocations by Designated Drainage Basin and total for each State, the Computed Beneficial Consumptive Use by Designated Drainage Basin and total for each State and the Imported Water Supply Credit and the Augmentation Water Supply Credit that a State may use for the preceding year. These results for the current Compact accounting year as well as the results of the previous four accounting years and the five-year average of these results will be displayed in the format shown in Table 3.

F. Calculations To Determine Colorado's and Kansas's Compliance with the Sub-basin Non-Impairment Requirement

The data needed to determine Colorado's and Kansas's compliance with the Sub-basin non-impairment requirement in Subsection IV.B.2. of the Stipulation are shown in Tables 4.A. and B.

G. Calculations To Determine Projected Water Supply

1. Procedures to Determine Water Short Years

The Bureau of Reclamation will provide each of the States with a monthly or, if requested by any one of the States, a more frequent update of the projected or actual irrigation supply from Harlan County Lake for that irrigation season using the methodology described in the Harlan County Lake Operation Consensus Plan, attached as Appendix K to the Stipulation. The steps for the calculation are as follows:

Step 1. At the beginning of the calculation month (1) the total projected inflow for the calculation month and each succeeding month through the end of May shall be added to the previous end of month Harlan County Lake content and (2) the total projected 1993 level evaporation loss for the calculation month and each succeeding month through the end of May shall then be subtracted. The total projected inflow shall be the 1993 level average monthly inflow or the running average monthly inflow for the previous five years, whichever is less.

Step 2. Determine the maximum irrigation water available by subtracting the sediment pool storage (currently 164,111 Acre-feet) and adding the summer sediment pool evaporation (20,000 Acre-feet) to the result from Step 1.

Step 3. For October through January calculations, take the result from Step 2 and using the Shared Shortage Adjustment Table in Attachment 2 hereto, determine the preliminary irrigation water available for release. The calculation using the end of December content (January calculation month) indicates the minimum amount of irrigation water available for release at the end of May. For February through June calculations, subtract the maximum irrigation water available for the January calculation month from the maximum irrigation water available for the calculation month. If the result is negative, the irrigation water available for release (January calculation month) stays the same. If the result is positive the preliminary irrigation water available for release (January calculation month) is increased by the positive amount.

Step 4. Compare the result from Step 3 to 119,000 Acre-feet. If the result from Step 3 is less than 119,000 Acre-feet Water Short Year Administration is in effect.

Step 5. The final annual Water-Short Year Administration calculation determines the total estimated irrigation supply at the end of June (calculated in July). Use the result from Step 3 for the end of May irrigation release estimate, add the June computed inflow to Harlan County Lake and subtract the June computed gross evaporation loss from Harlan County Lake.

2. Procedures to Determine 130,000 Acre Feet Projected Water Supply

To determine the preliminary irrigation supply for the October through June calculation months, follow the procedure described in steps 1 through 4 of the "Procedures to determine Water Short Years" Subsection III. G. 1. The result from step 4 provides the forecasted water supply, which is compared to 130,000 Acre-feet. For the July through September calculation months, use the previous end of calculation month preliminary irrigation supply, add the previous month's Harlan County Lake computed inflow and subtract the previous month's computed gross

evaporation loss from Harlan County Lake to determine the current preliminary irrigation supply. The result is compared to 130,000 Acre-feet.

H. Calculation of Computed Water Supply, Allocations and Computed Beneficial Consumptive Use Above and Below Guide Rock During Water-Short Administration Years.

For Water-Short-Administration Years, in addition to the normal calculations, the Computed Water Supply, Allocations, Computed Beneficial Consumptive Use and Imported Water Supply Credits, and Augmentation Water Supply Credits shall also be calculated above Guide Rock as shown in Table 5C. These calculations shall be done in the same manner as in non-Water-Short Administration years except that water supplies originating below Guide Rock shall not be included in the calculations of water supplies originating above Guide Rock. The calculations of Computed Beneficial Consumptive Uses shall be also done in the same manner as in non-Water-Short Administration years except that Computed Beneficial Consumptive Uses from diversions below Guide Rock shall not be included. The depletions from the water diverted by the Superior and Courtland Canals at the Superior-Courtland Diversion Dam shall be included in the calculations of Computed Beneficial Consumptive Use above Guide Rock. Imported Water Supply Credits and Augmentation Water Supply Credits above Guide Rock, as described in Sub-section III.I., may be used as offsets against the Computed Beneficial Consumptive Use above Guide Rock by the State providing the Imported Water Supply Credits or Augmentation Water Supply Credits.

The Computed Water Supply of the Main Stem reach between Guide Rock and the Hardy gage shall be determined by taking the difference in stream flow at Hardy and Guide Rock, adding Computed Beneficial Consumptive Uses in the reach (this does not include the Computed Beneficial Consumptive Use from the Superior and Courtland Canal diversions), and subtracting return flows from the Superior and Courtland Canals in the reach. The Computed Water Supply above Guide Rock shall be determined by subtracting the Computed Water Supply of the Main Stem reach between Guide Rock and the Hardy gage from the total Computed Water Supply. Nebraska's Allocation above Guide Rock shall be determined by subtracting 48.9% of the Computed Water Supply of the Main Stem reach between Guide Rock and the Hardy gage from Nebraska's total Allocation. Nebraska's Computed Beneficial Consumptive Uses above Guide Rock shall be determined by subtracting Nebraska's Computed Beneficial Consumptive Uses below Guide Rock from Nebraska's total Computed Beneficial Consumptive Use.

I. Calculation of Imported Water Supply Credits During Water-Short Year Administration Years.

Imported Water Supply Credit during Water-Short Year Administration years shall be calculated consistent with Subsection V.B.2.b. of the Stipulation.

The following methodology shall be used to determine the extent to which Imported Water Supply Credit, as calculated by the RRCA Groundwater Model, can be credited to the State importing the water during Water-Short Year Administration years.

1. Monthly Imported Water Supply Credits

The RRCA Groundwater Model will be used to determine monthly Imported Water Supply Credits by State in each Sub-basin and for the Main Stem. The values for each Sub-basin will include all depletions and accretions upstream of the confluence with the Main Stem. The values for the Main Stem will include all depletions and accretions in stream reaches not otherwise accounted for in a Sub-basin. The values for the Main Stem will be computed separately for the reach 1) above Harlan County Dam, 2) between Harlan County Dam and Guide Rock, and 3) between Guide Rock and the Hardy gage. The Imported Water Supply Credit shall be the difference in stream flow for two runs of the model: a) the "base" run and b) the "no State import" run.

During Water-Short Year Administration years, Nebraska's credits in the Sub-basins shall be determined as described in Section III. A. 3.

2. Imported Water Supply Credits Above Harlan County Dam

Nebraska's Imported Water Supply Credits above Harlan County Dam shall be the sum of all the credits in the Sub-basins and the Main Stem above Harlan County Dam.

3. Imported Water Supply Credits Between Harlan County Dam and Guide Rock During the Irrigation Season

a. During Water-Short Year Administration years, monthly credits in the reach between Harlan County Dam and Guide Rock shall be determined as the differences in the stream flows between the two runs at Guide Rock.

b. The irrigation season shall be defined as starting on the first day of release of water from Harlan County Lake for irrigation use and ending on the last day of release of water from Harlan County Lake for irrigation use.

c. Credit as an offset for a State's Computed Beneficial Consumptive Use above Guide Rock will be given to all the Imported Water Supply accruing in the reach between Harlan County Dam and Guide Rock during the

irrigation season. If the period of the irrigation season does not coincide with the period of modeled flows, the amount of the Imported Water Supply credited during the irrigation season for that month shall be the total monthly modeled Imported Water Supply Credit times the number of days in the month occurring during the irrigation season divided by the total number of days in the month.

4. Imported Water Supply Credits Between Harlan County Dam and Guide Rock During the Non-Irrigation Season

a. Imported Water Supply Credit shall be given between Harlan County Dam and Guide Rock during the period that flows are diverted to fill Lovewell Reservoir to the extent that imported water was needed to meet Lovewell Reservoir target elevations.

b. Fall and spring fill periods shall be established during which credit shall be given for the Imported Water Supply Credit accruing in the reach. The fall period shall extend from the end of the irrigation season to December 1. The spring period shall extend from March 1 to May 31. The Lovewell target elevations for these fill periods are the projected end of November reservoir level and the projected end of May reservoir level for most probable inflow conditions as indicated in Table 4 in the current Annual Operating Plan prepared by the Bureau of Reclamation.

c. The amount of water needed to fill Lovewell Reservoir for each period shall be calculated as the storage content of the reservoir at its target elevation at the end of the fill period minus the reservoir content at the start of the fill period plus the amount of net evaporation during this period minus White Rock Creek inflows for the same period.

d. If the fill period as defined above does not coincide with the period of modeled flows, the amount of the Imported Water Supply Credit during the fill period for that month shall be the total monthly modeled Imported Water Supply Credit times the number of days in the month occurring during the fill season divided by the total number of days in the month.

e. The amount of non-imported water available to fill Lovewell Reservoir to the target elevation shall be the amount of water available at Guide Rock during the fill period minus the amount of the Imported Water Supply Credit accruing in the reach during the same period.

f. The amount of the Imported Water Supply Credit that shall be credited against a State's Consumptive Use shall be the amount of water imported by

that State that is available in the reach during the fill period or the amount of water needed to reach Lovewell Reservoir target elevations minus the amount of non-imported water available during the fill period, whichever is less.

5. Other Credits

Kansas and Nebraska will explore crediting Imported Water Supply that is otherwise useable by Kansas.

J. Calculations of Compact Compliance in Water-Short Year Administration Years

During Water-Short Year Administration, using the procedures described in Subsections III.A-D, the RRCA will calculate the Annual Allocations for each State, the Computed Beneficial Consumptive Use by each State, the ~~and~~ Imported Water Supply Credit, and the Augmentation Water Supply Credit that a State may use to offset Computed Beneficial Consumptive Use in that year. The resulting annual and average values will be calculated as displayed in Tables 5 A-C and E.

If Nebraska is implementing an Alternative Water-Short-Year Administration Plan, data to determine Compact compliance will be shown in Table 5D. Nebraska's compliance with the Compact will be determined in the same manner as Nebraska's Above Guide Rock compliance except that compliance will be based on a three-year running average of the current year and previous two year calculations. In addition, Table 5 D. will display the sum of the previous two-year difference in Allocations above Guide Rock and Computed Beneficial Consumptive Uses above Guide Rock minus any Imported Water Credits and compare the result with the Alternative Water-Short-Year Administration Plan's expected decrease in Computed Beneficial Consumptive Use above Guide Rock. Nebraska will be within compliance with the Compact as long as the three-year running average difference in Column 8 is positive and the sum of the previous year and current year deficits above Guide Rock are not greater than the expected decrease in Computed Beneficial Consumptive Use under the plan.

IV. Specific Formulas

A. Computed Beneficial Consumptive Use

1. Computed Beneficial Consumptive Use of Groundwater:

The Computed Beneficial Consumptive Use caused by groundwater diversion shall be determined by the RRCA Groundwater Model as described in Subsection III.D.1.

2. Computed Beneficial Consumptive Use of Surface Water:

The Computed Beneficial Consumptive Use of surface water shall be calculated as follows:

a) Non-Federal Canals

Computed Beneficial Consumptive Use from diversions by non- federal canals shall be 60 percent of the diversion; the return flow shall be 40 percent of the diversion

b) Individual Surface Water Pumps

Computed Beneficial Consumptive Use from small individual surface water pumps shall be 75 percent of the diversion; return flows will be 25 percent of the diversion unless a state provides data on the amount of different system types in a Sub-basin, in which case the following percentages will be used for each system type:

Gravity Flow.	30%
Center Pivot	17%
LEPA	10%

c) Federal Canals

Computed Beneficial Consumptive Use of diversions by Federal canals will be calculated as shown in Attachment 7. For each Bureau of Reclamation Canal the field deliveries shall be subtracted from the diversion from the river to determine the canal losses. The field delivery shall be multiplied by one minus an average system efficiency for the district to determine the loss of water from the field. Eighty-two percent of the sum of the field loss plus the canal loss shall be considered to be the return flow from the canal diversion. The assumed field efficiencies and the amount of the field and canal loss that reaches the stream may be reviewed by the RRCA and adjusted as appropriate to insure their accuracy.

d) Non-irrigation Uses

Any non-irrigation uses diverting or pumping more than 50 acre-feet per year will be required to measure diversions. Non-irrigation uses diverting more than 50 Acre-feet per year will be assessed a Computed Beneficial Consumptive Use of 50% of what is pumped or diverted, unless the entity presents evidence to the RRCA demonstrating a different percentage should be used.

e) Evaporation from Federal Reservoirs

Net Evaporation from Federal Reservoirs will be calculated as follows:

(1) Harlan County Lake, Evaporation Calculation

April 1 through October 31:

Evaporation from Harlan County Lake is calculated by the Corps of Engineers on a daily basis from April 1 through October 31. Daily readings are taken from a Class A evaporation pan maintained near the project office. Any precipitation recorded at the project office is added to the pan reading to obtain the actual evaporation amount. The pan value is multiplied by a pan coefficient that varies by month. These values are:

March	.56
April	.52
May	.53
June	.60
July	.68
August	.78
September	.91
October	1.01

The pan coefficients were determined by studies the Corps of Engineers conducted a number of years ago. The result is the evaporation in inches. It is divided by 12 and multiplied by the daily lake surface area in acres to obtain the evaporation in Acre-feet. The lake surface area is determined by the 8:00 a.m. elevation reading applied to the lake's area-capacity data. The area-capacity data is updated periodically through a sediment survey. The last survey was completed in December 2000.

November 1 through March 31

During the winter season, a monthly total evaporation in inches has been determined. The amount varies with the percent of ice cover. The values used are:

HARLAN COUNTY LAKE

Estimated Evaporation in Inches
Winter Season -- Monthly Total

PERCENTAGE OF ICE COVER

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
JAN	0.88	0.87	0.85	0.84	0.83	0.82	0.81	0.80	0.78	0.77	0.76
FEB	0.90	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.81	0.80	0.79
MAR	1.29	1.28	1.27	1.26	1.25	1.24	1.23	1.22	1.21	1.20	1.19
OCT	4.87			NO ICE							
NOV	2.81			NO ICE							
DEC	1.31	1.29	1.27	1.25	1.24	1.22	1.20	1.18	1.17	1.16	1.14

The monthly total is divided by the number of days in the month to obtain a daily evaporation value in inches. It is divided by 12 and multiplied by the daily lake surface area in acres to obtain the evaporation in Acre-feet. The lake surface area is determined by the 8:00 a.m. elevation reading applied to the lake's area-capacity data. The area-capacity data is updated periodically through a sediment survey. The last survey was completed in December 2000.

To obtain the net evaporation, the monthly precipitation on the lake is subtracted from the monthly gross evaporation. The monthly precipitation is calculated by multiplying the sum of the month's daily precipitation in inches by the average of the end of the month lake surface area for the previous month and the end of the month lake surface area for the current month in acres and dividing the result by 12 to obtain the precipitation for the month in acre feet.

The total annual net evaporation (Acre-feet) will be charged to Kansas and Nebraska in proportion to the annual diversions made by the Kansas Bostwick Irrigation District and the Nebraska Bostwick Irrigation District during the time period each year when irrigation

releases are being made from Harlan County Lake. For any year in which no irrigation releases were made from Harlan County Lake, the annual net evaporation charged to Kansas and Nebraska will be based on the average of the above calculation for the most recent three years in which irrigation releases from Harlan County Lake were made. In the event Nebraska chooses to substitute supply for the Superior Canal from Nebraska's allocation below Guide Rock in Water-Short Year Administration years, the amount of the substitute supply will be included in the calculation of the split as if it had been diverted to the Superior Canal at Guide Rock.

(2) Evaporation Computations for Bureau of Reclamation Reservoirs

The Bureau of Reclamation computes the amount of evaporation loss on a monthly basis at Reclamation reservoirs. The following procedure is utilized in calculating the loss in Acre-feet.

An evaporation pan reading is taken each day at the dam site. This measurement is the amount of water lost from the pan over a 24-hour period in inches. The evaporation pan reading is adjusted for any precipitation recorded during the 24-hour period. Instructions for determining the daily pan evaporation are found in the "National Weather Service Observing Handbook No. 2 – Substation Observations." All dams located in the Kansas River Basin with the exception of Bonny Dam are National Weather Service Cooperative Observers. The daily evaporation pan readings are totaled at the end of each month and converted to a "free water surface" (FWS) evaporation, also referred to as "lake" evaporation. The FWS evaporation is determined by multiplying the observed pan evaporation by a coefficient of .70 at each of the reservoirs. This coefficient can be affected by several factors including water and air temperatures. The National Oceanic and Atmospheric Administration (NOAA) has published technical reports describing the determination of pan coefficients. The coefficient used is taken from the "NOAA Technical Report NWS 33, Map of coefficients to convert class A pan evaporation to free water surface evaporation". This coefficient is used for the months of April through October when evaporation pan readings are recorded at the dams. The monthly FWS evaporation is then multiplied by the average surface area of the reservoir during the month in acres. Dividing this value by twelve will result in the amount of water lost to evaporation in Acre-feet during the month.

During the winter months when the evaporation pan readings are not taken, monthly evaporation tables based on the percent of ice cover are used. The tables used were developed by the Corps of Engineers and were based on historical average evaporation rates. A separate table was developed for each of the reservoirs. The monthly evaporation rates are multiplied by the .70 coefficient for pan to free water surface adjustment, divided by twelve to convert inches to feet and multiplied by the average reservoir surface area during the month in acres to obtain the total monthly evaporation loss in Acre-feet.

To obtain the net evaporation, the monthly precipitation on the lake is subtracted from the monthly gross evaporation. The monthly precipitation is calculated by multiplying the sum of the month's daily precipitation in inches by the average of the end of the month lake surface area for the previous month and the end of the month lake surface area for the current month in acres and dividing the result by 12 to obtain the precipitation for the month in acre feet.

f) Non-Federal Reservoir Evaporation:

For Non-Federal Reservoirs with a storage capacity less than 200 Acre-feet, the presumptive average annual surface area is 25% of the area at the principal spillway elevation. Net evaporation for each such Non-Federal Reservoir will be calculated by multiplying the presumptive average annual surface area by the net evaporation from the nearest climate and evaporation station to the Non-Federal Reservoir. A State may provide actual data in lieu of the presumptive criteria.

Net evaporation from Non-Federal Reservoirs with 200 Acre-feet of storage or greater will be calculated by multiplying the average annual surface area (obtained from the area-capacity survey) and the net evaporation from the nearest evaporation and climate station to the reservoir. If the average annual surface area is not available, the Non-Federal Reservoirs with 200 Acre-feet of storage or greater will be presumed to be full at the principal spillway elevation.

B. Specific Formulas for Each Sub-basin and the Main Stem

All calculations shall be based on the calendar year and shall be rounded to the nearest 10 Acre-feet using the conventional rounding formula of rounding up for all numbers equal to five or higher and otherwise rounding down.

Abbreviations:

AWS = Augmentation Water Supply Credit
CBCU = Computed Beneficial Consumptive Use
CWS = Computed Water Supply
D = Non-Federal Canal Diversions for Irrigation
Ev = Evaporation from Federal Reservoirs
EvNFR = Evaporation from Non-Federal Reservoirs
FF = Flood Flow
GW = Groundwater Computed Beneficial Consumptive Use (includes irrigation and non-irrigation uses)
IWS = Imported Water Supply Credit from Nebraska
M&I = Non-Irrigation Surface Water Diversions (Municipal and Industrial)
P = Small Individual Surface Water Pump Diversions for Irrigation
RF = Return Flow
VWS = Virgin Water Supply
c = Colorado
k = Kansas
n = Nebraska
ΔS = Change in Federal Reservoir Storage
% = Average system efficiency for individual pumps in the Sub-basin
% BRF = Percent of Diversion from Bureau Canals that returns to the stream
= Value expected to be zero

3. North Fork of Republican River in Colorado [2]

CBCU Colorado	= 0.6 x Haigler Canal Diversion Colorado + 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.6 x Haigler Canal Diversion Nebraska + GWn Note: The diversion for Haigler Canal is split between Colorado and Nebraska based on the percentage of land irrigated in each state
VWS	= North Fork of the Republican River at the State Line, Stn.

[2] The RRCA will investigate whether return flows from the Haigler Canal diversion in Colorado may return to the Arikaree River, not the North Fork of the Republican River, as indicated in the formulas. If there are return flows from the Haigler Canal to the Arikaree River, these formulas will be changed to recognize those returns.

	No. 06823000 + CBCUc + CBCUk + CBCUn + Nebraska Haigler Canal RF– IWS
	Note: The Nebraska Haigler Canal RF returns to the Main Stem
CWS	= VWS - FF
Allocation Colorado	= 0.224 x CWS
Allocation Nebraska	= 0.246 x CWS
Unallocated	= 0.53 x CWS

4. Arikaree River [2]

CBCU Colorado	= 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Arikaree Gage at Haigler Stn. No. 06821500 + CBCUc + CBCUk + CBCUn – IWS
CWS	= VWS - FF
Allocation Colorado	= 0.785 x CWS
Allocation Kansas	= 0.051 x CWS
Allocation Nebraska	= 0.168 x CWS
Unallocated	=-0.004 x CWS

5. Buffalo Creek

CBCU Colorado	= 0.6 x Dc + % x Pc + 0.5 x M&In + EvNFRc + GWc
CBCU Kansas	= GWk

CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Buffalo Creek near Haigler Gage Stn. No. 06823500 + CBCUc + CBCUk + CBCUn – IWS
CWS	= VWS - FF
Allocation Nebraska	= 0.330 x CWS
Unallocated	= 0.670 x CWS

6. Rock Creek

CBCU Colorado	= GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Rock Creek at Parks Gage Stn. No. 06824000 + CBCUc + CBCUk + CBCUn – IWS
CWS	= VWS - FF
Allocation Nebraska	= 0.400 x CWS
Unallocated	= 0.600 x CWS

7. South Fork Republican River

CBCU Colorado	= 0.6 x Hale Ditch Diversion + 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + Bonny Reservoir Ev + GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= South Fork Republican River near Benkelman Gage Stn. No. 06827500 + CBCUc + CBCUk + CBCUn + ΔS Bonny Reservoir – IWS

CWS	= VWS - ΔS Bonny Reservoir - FF
Allocation Colorado	= 0.444 x CWS
Allocation Kansas	= 0.402 x CWS
Allocation Nebraska	= 0.014 x CWS
Unallocated	= 0.140 x CWS

8. Frenchman Creek in Nebraska

CBCU Colorado	= GWc
CBCU Kansas	= GWk
CBCU Nebraska	= Culbertson Canal Diversions x (1-%BRF) + Culbertson Extension x (1-%BRF) + 0.6 x Champion Canal Diversion + 0.6 x Riverside Canal Diversion + 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + Enders Reservoir Ev + GWn
VWS	= Frenchman Creek in Culbertson, Nebraska Gage Stn. No. 06835500 + CBCUc + CBCUk + CBCUn + 0.17 x Culbertson Diversion RF + Culbertson Extension RF + 0.78 x Riverside Diversion RF + ΔS Enders Reservoir – IWS Note: 17% of the Culbertson Diversion RF and 100% of the Culbertson Extension RF return to the Main Stem
CWS	= VWS - ΔS Enders Reservoir – FF
Allocation Nebraska	= 0.536 x CWS
Unallocated	= 0.464 x CWS

9. Driftwood Creek

CBCU Colorado	= GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk

CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Driftwood Creek near McCook Gage Stn. No. 06836500 + CBCUc + CBCUk + CBCUn – 0.24 x Meeker Driftwood Canal RF - IWS Note: 24 % of the Meeker Driftwood Canal RF returns to Driftwood Creek
CWS	= VWS – FF
Allocation Kansas	= 0.069 x CWS
Allocation Nebraska	= 0.164 x CWS
Unallocated	= 0.767 x CWS

10. Red Willow Creek in Nebraska

CBCU Colorado	= GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.1 x Red Willow Canal CBCU + 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + 0.1 x Hugh Butler Lake Ev + GWn Note: Red Willow Canal CBCU = Red Willow Canal Diversion x (1- % BRF) 90% of the Red Willow Canal CBCU and 90% of Hugh Butler Lake Ev charged to Nebraska's CBCU in the Main Stem
VWS	= Red Willow Creek near Red Willow Gage Stn. No. 06838000 + CBCUc + CBCUk + CBCUn + 0.9 x Red Willow Canal CBCU + 0.9 x Hugh Butler Lake Ev + 0.9 xRed Willow Canal RF + ΔS Hugh Butler Lake – IWS Note: 90% of the Red Willow Canal RF returns to the Main Stem

CWS	= VWS - ΔS Hugh Butler Lake - FF
Allocation Nebraska	= 0.192 x CWS
Unallocated	= 0.808 x CWS

11. Medicine Creek

CBCU Colorado	= GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.6 x Dn above and below gage + % x Pn above and below gage + 0.5 x M&In above and below gage + EvNFRn above and below gage + GWn Note: Harry Strunk Lake Ev charged to Nebraska's CBCU in the Main Stem. CU from Harry Strunk releases in the Cambridge Canal is charged to the Main stem (no adjustment to the VWS formula is needed as this water shows up in the Medicine Creek gage).
VWS	= Medicine Creek below Harry Strunk Lake Gage Stn. No. 06842500 + CBCUc + CBCUk + CBCUn – 0.6 x Dn below gage - % x Pn below gage – 0.5 * M&In below gage - EvNFRn below gage + Harry Strunk Lake Ev + ΔS Harry Strunk Lake– IWS – AWS Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem
CWS	= VWS - ΔS Harry Strunk Lake - FF
Allocation Nebraska	= 0.091 x CWS
Unallocated	= 0.909 x CWS

12. Beaver Creek

CBCU Colorado	= 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn above and below gage + % x Pn above and below gage + 0.5 x M&In above and below gage + EvNFRn above and below gage + GWn
VWS	= Beaver Creek near Beaver City gage Stn. No. 06847000 + BCUc + CBCUk + CBCUn – 0.6 x Dn below gage - % x Pn below gage – 0.5 * M&In below gage - EvNFRn below gage – IWS Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem
CWS	= VWS – FF
Allocation Colorado	= 0.200 x CWS
Allocation Kansas	= 0.388 x CWS
Allocation Nebraska	= 0.406 x CWS
Unallocated	= 0.006 x CWS

13. Sappa Creek

CBCU Colorado	= GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn above and below gage + % x Pn above and below gage + 0.5 x M&In above and below gage + EvNFRn above and below gage + GWn
VWS	= Sappa Creek near Stamford gage Stn. No. 06847500 – Beaver Creek near Beaver City gage Stn. No. 06847000 + CBCUc + CBCUk + CBCUn – 0.6 x Dn below gage - % x

	Pn below gage – 0.5 * M&In below gage - EvNFRn below gage – IWS Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem
CWS	= VWS - FF
Allocation Kansas	= 0.411 x CWS
Allocation Nebraska	= 0.411 x CWS
Unallocated	= 0.178 x CWS

14. Prairie Dog Creek

CBCU Colorado	= GWc
CBCU Kansas	= Almena Canal Diversion x (1-%BRF) + 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + Keith Sebelius Lake Ev + GWk
CBCU Nebraska	= 0.6 x Dn below gage + % x Pn below gage + 0.5 x M&In below gage + EvNFRn + GWn below gage
VWS	= Prairie Dog Creek near Woodruff, Kansas USGS Stn. No. 06848500 + CBCUc + CBCUk + CBCUn - 0.6 x Dn below gage - % x Pn below gage - 0.5 x M&In below gage - EvNFRn below gage + ΔS Keith Sebelius Lake – IWS Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem
CWS	= VWS- ΔS Keith Sebelius Lake - FF
Allocation Kansas	= 0.457 x CSW
Allocation Nebraska	= 0.076 x CWS
Unallocated	= 0.467 x CWS

15. The North Fork of the Republican River in Nebraska and the Main Stem of the Republican River between the junction of the North Fork and the Arikaree River and the Republican River near Hardy

CBCU Colorado = GWc

CBCU Kansas =
(Deliveries from the Courtland Canal to Kansas above Lovewell) x (1-%BRF)
+ Amount of transportation loss of Courtland Canal deliveries to Lovewell that does not return to the river, charged to Kansas
+ (Diversions of Republican River water from Lovewell Reservoir by the Courtland Canal below Lovewell) x (1-%BRF)
+ 0.6 x Dk
+ % x Pk
+ 0.5 x M&Ik
+ EvNFRk
+ Harlan County Lake Ev charged to Kansas
+ Lovewell Reservoir Ev charged to the Republican River
+ GWk

CBCU Nebraska =
Deliveries from Courtland Canal to Nebraska lands x (1-%BRF)
+ Superior Canal x (1- %BRF)
+ Franklin Pump Canal x (1- %BRF)
+ Franklin Canal x (1- %BRF)
+ Naponee Canal x (1- %BRF)
+ Cambridge Canal x (1- %BRF)
+ Bartley Canal x (1- %BRF)
+ Meeker-Driftwood Canal x (1- %BRF)
+ 0.9 x Red Willow Canal CBCU
+ 0.6 x Dn
+ % x Pn
+ 0.5 x M&In
+ EvNFRn
+ 0.9 x Hugh Butler Lake Ev
+ Harry Strunk Lake Ev
+ Swanson Lake Ev
+ Harlan County Lake Ev charged to Nebraska
+ GWn

Notes:
The allocation of transportation losses in the Courtland Canal above Lovewell between Kansas and Nebraska shall be done by the Bureau of Reclamation and reported in their "Courtland Canal Above Lovewell" spreadsheet. Deliveries and losses associated with deliveries to both Nebraska and Kansas above Lovewell shall be reflected in the Bureau's Monthly Water District reports. Losses associated with delivering water to Lovewell shall be separately computed.

Amount of transportation loss of the Courtland Canal deliveries to Lovewell that does not return to the river, charged to Kansas shall be 18% of the Bureau's estimate of losses associated with these deliveries.

Red Willow Canal CBCU = Red Willow Canal Diversion x (1- % BRF)

10% of the Red Willow Canal CBCU is charged to Nebraska's CBCU in Red Willow Creek sub-basin

10% of Hugh Butler Lake Ev is charged to Nebraska's CBCU in the Red Willow Creek sub-basin

None of the Harry Strunk Lake EV is charged to Nebraska's CBCU in the Medicine Creek sub-basin

VWS =

Republican River near Hardy Gage Stn. No. 06853500
- North Fork of the Republican River at the State Line, Stn. No. 06823000
- Arikaree Gage at Haigler Stn. No. 06821500
- Buffalo Creek near Haigler Gage Stn. No. 06823500
- Rock Creek at Parks Gage Stn. No. 06824000
-South Fork Republican River near Benkelman Gage Stn. No. 06827500
- Frenchman Creek in Culbertson Stn. No. 06835500
- Driftwood Creek near McCook Gage Stn. No. 06836500
- Red Willow Creek near Red Willow Gage Stn. No. 06838000
- Medicine Creek below Harry Strunk Lake Gage Stn. No. 06842500

- Sappa Creek near Stamford Gage Stn. No. 06847500
- Prairie Dog Creek near Woodruff, Kansas Stn. No. 68-485000

+ CBCUc
+ CBCUn

+GWk
+ 0.6 x Dk
+ % x Pk
+ 0.5 x M&Ik
+ EvNFRk
+ Harlan County Lake Ev charged to Kansas
+Amount of transportation loss of the Courtland Canal above the Stateline that does not return to the river, charged to Kansas

- 0.9 x Red Willow Canal CBCU
- 0.9 x Hugh Butler Ev
- Harry Strunk Ev

+ 0.6 x Dn below Medicine Creek gage
+ % x Pn below Medicine Creek gage
+ 0.5 * M&In below Medicine Creek gage
+ EvNFRn below Medicine Creek gage

+ 0.6 x Dn below Beaver Creek gage
+ % x Pn below Beaver Creek gage
+ 0.5 * M&In below Beaver Creek gage
+ EvNFRn below Beaver Creek gage

+ 0.6 x Dn below Sappa Creek gage
+ % x Pn below Sappa Creek gage
+ 0.5 * M&In below Sappa Creek gage
+ EvNFRn below Sappa Creek gage

+ 0.6 x Dn below Prairie Dog Creek gage
+ % x Pn below Prairie Dog Creek gage
+ 0.5 * M&In below Prairie Dog Creek gage
+ EvNFRn below Prairie Dog Creek gage

+ Change in Storage Harlan County Lake
+ Change in Storage Swanson Lake

- Nebraska Haigler Canal RF
- 0.78 x Riverside Canal RF
- 0.17 x Culbertson Canal RF
- Culbertson Canal Extension RF to Main Stem
+ 0.24 x Meeker Driftwood Canal RF which returns to Driftwood Creek
- 0.9 x Red Willow Canal RF

+ Courtland Canal at Kansas-Nebraska State Line Gage Stn No. 06852500
- Courtland Canal RF in Kansas above Lovewell Reservoir

-IWS

Notes:
None of the Nebraska Haigler Canal RF returns to the North Fork of the Republican River

83% of the Culbertson Diversion RF and none of the Culbertson Extension RF return to Frenchman Creek

24 % of the Meeker Driftwood Canal RF returns to Driftwood Creek.

10% of the Red Willow Canal RF returns to Red Willow Creek

Courtland Canal RF in Kansas above Lovewell Reservoir = 0.015 x (Courtland Canal at Kansas-Nebraska State Line Gage Stn No. 06852500)

CWS	= VWS - Change in Storage Harlan County Lake - Change in Storage Swanson Lake - FF
Allocation Kansas	= 0.511 x CWS
Allocation Nebraska	= 0.489 x CWS

V. Annual Data/ Information Requirements, Reporting, and Verification

The following information for the previous calendar year shall be provided to the members of the RRCA Engineering Committee by April 15th of each year, unless otherwise specified.

All information shall be provided in electronic format, if available.

Each State agrees to provide all information from their respective State that is needed for the RRCA Groundwater Model and RRCA Accounting Procedures and Reporting Requirements, including but not limited to the following:

A. Annual Reporting

1. Surface water diversions and irrigated acreage:

Each State will tabulate the canal, ditch, and other surface water diversions that are required by RRCA annual compact accounting and the RRCA Groundwater Model on a monthly format (or a procedure to distribute annual data to a monthly basis) and will forward the surface water diversions to the other States. This will include available diversion, wasteway, and farm delivery data for canals diverting from the Platte River that contribute to Imported Water Supply into the Basin. Each State will provide the water right number, type of use, system type, location, diversion amount, and acres irrigated.

2. Groundwater pumping and irrigated acreage:

Each State will tabulate and provide all groundwater well pumping estimates that are required for the RRCA Groundwater Model to the other States.

Colorado – will provide an estimate of pumping based on a county format that is based upon system type, Crop Irrigation Requirement (CIR), irrigated acreage, crop distribution, and irrigation efficiencies. Colorado will require installation of a totalizing flow meter, installation of an hours meter with a measurement of the pumping rate, or determination of a power conversion coefficient for 10% of the active wells in the Basin by December 31, 2005. Colorado will also provide an annual tabulation for each groundwater well that measures groundwater pumping by a totalizing flow meter, hours meter or power conversion coefficient that includes: the groundwater well permit number, location, reported hours, use, and irrigated acreage.

Kansas - will provide an annual tabulation by each groundwater well that includes: water right number, groundwater pumping determined by a meter on each well (or group of wells in a manifold system) or by reported hours of use and rate; location; system type (gravity, sprinkler, LEPA, drip, etc.); and irrigated acreage. Crop distribution will be provided on a county basis.

Nebraska – will provide an annual tabulation through the representative Natural Resource District (NRD) in Nebraska that includes: the well registration number or other ID number; groundwater pumping determined by a meter on each well (or group of wells in a manifold system) or by reported hours of use and rate; wells will be identified by; location; system type (gravity, sprinkler, LEPA, drip, etc.); and irrigated acreage. Crop distribution will be provided on a county basis.

3. Climate information:

Each State will tabulate and provide precipitation, temperature, relative humidity or dew point, and solar radiation for the following climate stations:

State	Identification	Name
Colorado		
Colorado	C050109	Akron 4 E
Colorado	C051121	Burlington
Colorado	C054413	Julesburg
Colorado	C059243	Wray
Kansas	C140439	Atwood 2 SW
Kansas	C141699	Colby 1SW
Kansas	C143153	Goodland
Kansas	C143837	Hoxie
Kansas	C145856	Norton 9 SSE
Kansas	C145906	Oberlin1 E
Kansas	C147093	Saint Francis
Kansas	C148495	Wakeeny
Nebraska	C250640	Beaver City
Nebraska	C250810	Bertrand
Nebraska	C252065	Culbertson
Nebraska	C252690	Elwood 8 S
Nebraska	C253365	Gothenburg
Nebraska	C253735	Hebron
Nebraska	C253910	Holdredge
Nebraska	C254110	Imperial
Nebraska	C255090	Madrid
Nebraska	C255310	McCook
Nebraska	C255565	Minden
Nebraska	C256480	Palisade
Nebraska	C256585	Paxton
Nebraska	C257070	Red Cloud
Nebraska	C258255	Stratton
Nebraska	C258320	Superior
Nebraska	C258735	Upland
Nebraska	C259020	Wauneta 3 NW

4. Crop Irrigation Requirements:

Each State will tabulate and provide estimates of crop irrigation requirement information on a county format. Each State will provide the percentage of the crop irrigation requirement met by pumping; the percentage of groundwater irrigated lands served by sprinkler or flood irrigation systems, the crop irrigation requirement; crop distribution; crop coefficients; gain in soil moisture from winter and spring precipitation, net crop irrigation requirement; and/or other information necessary to compute a soil/water balance.

5. Streamflow Records from State-Maintained Gaging Records:

Streamflow gaging records from the following State maintained gages will be provided:

Station No.	Name
00126700	Republican River near Trenton
06831500	Frenchman Creek near Imperial
06832500	Frenchman Creek near Enders
06835000	Stinking Water Creek near Palisade
06837300	Red Willow Creek above Hugh Butler Lake
06837500	Red Willow Creek near McCook
06841000	Medicine Creek above Harry Strunk Lake
06842500	Medicine Creek below Harry Strunk Lake
06844000	Muddy Creek at Arapahoe
06844210	Turkey Creek at Edison
06847000	Beaver Creek near Beaver City
	Republican River at Riverton
06851500	Thompson Creek at Riverton
06852000	Elm Creek at Amboy
	Republican River at the Superior-Courtland Diversion Dam

6. Platte River Reservoirs:

The State of Nebraska will provide the end-of-month contents, inflow data, outflow data, area-capacity data, and monthly net evaporation, if available, from Johnson Lake; Elwood Reservoir; Sutherland Reservoir; Maloney Reservoir; and Jeffrey Lake.

7. Water Administration Notification:

The State of Nebraska will provide the following information that describes the protection of reservoir releases from Harlan County Lake and for the administration of water rights junior in priority to February 26, 1948:

Date of notification to Nebraska water right owners to curtail their diversions, the amount of curtailment, and length of time for curtailment.
The number of notices sent.
The number of diversions curtailed and amount of curtailment in the Harlan County Lake to Guide Rock reach of the Republican River.

8. Moratorium:

Each State will provide a description of all new Wells constructed in the Basin Upstream of Guide Rock including the owner, location (legal description), depth and diameter or dimension of the constructed water well, casing and screen information, static water level, yield of the water well in gallons per minute or gallons per hour, and intended use of the water well.

Designation whether the Well is a:

a. Test hole;

b. Dewatering Well with an intended use of one year or less;

c. Well designed and constructed to pump fifty gallons per minute or less;

d. Replacement Water Well, including a description of the Well that is replaced providing the information described above for new Wells and a description of the historic use of the Well that is replaced;

e. Well necessary to alleviate an emergency situation involving provision of water for human consumption, including a brief description of the nature of the emergency situation and the amount of water intended to be pumped by and the length of time of operation of the new Well;

f. Transfer Well, including a description of the Well that is transferred providing the information described above for new Wells and a description of the Historic Consumptive Use of the Well that is transferred;

g. Well for municipal and/or industrial expansion of use;

Wells in the Basin in Northwest Kansas or Colorado. Kansas and Colorado will provide the information described above for new Wells along with copies of any other information that is required to be filed with either State of local agencies under the laws, statutes, rules and regulations in existence as of April 30, 2002, and;

Any changes in State law in the previous year relating to existing Moratorium.

9. Non-Federal Reservoirs:

Each State will conduct an inventory of Non Federal Reservoirs by December 31, 2004, for inclusion in the annual Compact Accounting. The inventory shall include the following information: the location, capacity (in Acre-feet) and area (in acres) at the principal spillway elevation of each Non-Federal Reservoir. The States will annually provide any updates to the initial inventory of Non-Federal Reservoirs, including enlargements that are constructed in the previous year.

Owners/operators of Non-Federal Reservoirs with 200 Acre-feet of storage capacity or greater at the principal spillway elevation will be required to provide an area-capacity survey from State-approved plans or prepared by a licensed professional engineer or land surveyor.

10. Augmentation Plan:

Each State will provide a description of the wells, measuring devices, conveyance structure(s), and other infrastructure to describe the physical characteristics of each augmentation plan. The States will provide necessary updates to the plan on an annual basis.

B. RRCA Groundwater Model Data Input Files

1. Monthly groundwater pumping, surface water recharge, groundwater recharge, and precipitation recharge provided by county and indexed to the one square mile cell size.

2. Potential Evapotranspiration rate is set as a uniform rate for all phreatophyte vegetative classes – the amount is X at Y climate stations and is interpolated spatially using kriging.

C. Inputs to RRCA Accounting

1. Surface Water Information

a. Streamflow gaging station records: obtained as preliminary USGS or Nebraska streamflow records, with adjustments to reflect a calendar year, at the following locations:

Arikaree River at Haigler, Nebraska
North Fork Republican River at Colorado-Nebraska state line
Buffalo Creek near Haigler, Nebraska
Rock Creek at Parks, Nebraska
South Fork Republican River near Benkelman, Nebraska
Frenchman Creek at Culbertson, Nebraska
Red Willow Creek near Red Willow, Nebraska
Medicine Creek below Harry Strunk Lake, Nebraska*
Beaver Creek near Beaver City, Nebraska*
Sappa Creek near Stamford, Nebraska
Prairie Dog Creek near Woodruff, Kansas
Courtland Canal at Nebraska-Kansas state line
Republican River near Hardy, Nebraska
Republican River at Superior-Courtland Diversion Dam near Guide Rock,
Nebraska (new)*

b. Federal reservoir information: obtained from the United States Bureau of Reclamation:

Daily free water surface evaporation, storage, precipitation, reservoir release information, and updated area-capacity tables.
Federal Reservoirs:
Bonny Reservoir
Swanson Lake
Harry Strunk Lake
Hugh Butler Lake
Enders Reservoir
Keith Sebelius Lake
Harlan County Lake
Lovewell Reservoir

c. Non-federal reservoirs obtained by each state: an updated inventory of reservoirs that includes the location, surface area (acres), and capacity (in Acre-feet), of each non-federal reservoir with storage capacity of fifteen (15) Acre-feet or greater at the principal spillway

elevation. Supporting data to substantiate the average surface water areas that are different than the presumptive average annual surface area may be tendered by the offering State.

d. Diversions and related data from USBR

Irrigation diversions by canal, ditch, and pumping station that irrigate more than two (2) acres
Diversions for non-irrigation uses greater than 50 Acre-feet
Farm Deliveries
Wasteway measurements
Irrigated acres

e. Diversions and related data – from each respective State

Irrigation diversions by canal, ditch, and pumping station that irrigate more than two (2) acres
Diversions for non-irrigation uses greater than 50 Acre-feet
Wasteway measurements, if available

2. Groundwater Information

(From the RRCA Groundwater model as output files as needed for the accounting procedures)

a. Imported water - mound credits in amount and time that occur in defined streamflow points/reaches of measurement or compliance – ex: gaging stations near confluence or state lines

b. Groundwater depletions to streamflow (above points of measurement or compliance – ex: gaging stations near confluence or state lines)

3. Summary

The aforementioned data will be aggregated by Sub-basin as needed for RRCA accounting.

D. Verification

1. Documentation to be Available for Inspection Upon Request

a. Well permits/ registrations database
b. Copies of well permits/ registrations issued in calendar year
c. Copies of surface water right permits or decrees
d. Change in water right/ transfer historic use analyses
e. Canal, ditch, or other surface water diversion records
f. Canal, ditch, or other surface water measurements
g. Reservoir storage and release records
h. Irrigated acreage
i. Augmentation Plan well pumping and augmentation delivery records

2. Site Inspection

a. Accompanied – reasonable and mutually acceptable schedule among representative state and/or federal officials.

b. Unaccompanied – inspection parties shall comply with all laws and regulations of the State in which the site inspection occurs.

Table 1: Annual Virgin and Computed Water Supply, Allocations and Computed Beneficial Consumptive Uses by State, Main Stem and Sub-basin

Designated Drainage Basin	Col. 1: Virgin Water Supply	Col. 2: Computed Water Supply	Col. 3: Allocations				Col. 4: Computed Beneficial Consumptive Use		
			Colorado	Nebraska	Kansas	Unallocated	Colorado	Nebraska	Kansas
North Fork in Colorado									
Arikaree									
Buffalo									
Rock									
South Fork of Republican River									
Frenchman									
Driftwood									
Red Willow									
Medicine									
Beaver									
Sappa									
Prairie Dog									
North Fork of Republican River in Nebraska and Main Stem									
Total All Basins									
North Fork Of Republican River in Nebraska and Mainstem Including Unallocated Water									
Total									

Table 2: Original Compact Virgin Water Supply and Allocations

Designated Drainage Basin	Virgin Water Supply	Colorado Allocation	% of Total Drainage Basin Supply	Kansas Allocation	% of Total Drainage Basin Supply	Nebraska Allocation	% of Total Drainage Basin Supply	Unallo-cated	% of Total Drainage Basin Supply
North Fork - CO	44,700	10,000	22.4			11,000	24.6	23,700	53.0
Arikaree River	19,610	15,400	78.5	1,000	5.1	3,300	16.8	-90	-0.4
Buffalo Creek	7,890					2,600	33.0	5,290	67.0
Rock Creek	11,000					4,400	40.0	6,600	60.0
South Fork	57,200	25,400	44.4	23,000	40.2	800	1.4	8,000	14.0
Frenchman Creek	98,500					52,800	53.6	45,700	46.4
Driftwood Creek	7,300			500	6.9	1,200	16.4	5,600	76.7
Red Willow Creek	21,900					4,200	19.2	17,700	80.8
Medicine Creek	50,800					4,600	9.1	46,200	90.9
Beaver Creek	16,500	3,300	20.0	6,400	38.8	6,700	40.6	100	0.6
Sappa Creek	21,400			8,800	41.1	8,800	41.1	3,800	17.8
Prairie Dog Creek	27,600			12,600	45.7	2,100	7.6	12,900	46.7
Sub-total Tributaries	384,400							175,500	
Main Stem + Blackwood Creek	94,500								
Main Stem + Unallocated	270,000			138,000	51.1	132,000	48.9		
Total	478,900	54,100		190,300		234,500			

Table 3A: Table to Be Used to Calculate Colorado's Five-Year Running Average Allocation and Computed Beneficial Consumptive Use for Determining Compact Compliance

Colorado				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive	Imported Water Supply Credit	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Col 1 – (Col 2- Col 3)
Year t= -4				
Year t= -3				
Year t= -2				
Year t= -1				
Current Year t= 0				
Average				

Table 3B. Table to Be Used to Calculate Kansas's Five-Year Running Average Allocation and Computed Beneficial Consumptive Use for Determining Compact Compliance

Kansas				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive	Imported Water Supply Credit	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Col 1 – (Col 2- Col 3)
Year t= -4				
Year t= -3				
Year t= -2				
Year t= -1				
Current Year t= 0				
Average				

Table 3C. Table to Be Used to Calculate Nebraska's Five-Year Running Average Allocation and Computed Beneficial Consumptive Use for Determining Compact Compliance

Formatted: Normal

Nebraska				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive	Imported Water Supply Credit and/or Augmentation Water Supply Credit	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Col 1 – (Col 2- Col 3)
Year T= -4				
Year T= -3				
Year T= -2				
Year T= -1				
Current Year T= 0				
Average				

Table 4A: Colorado Compliance with the Sub-basin Non-impairment Requirement

	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6
Sub-basin	Colorado Sub-basin Allocation (5-year running average)	Unallocated Supply (5-year running average)	Credits from Imported Water Supply (5-year running average)	Total Supply Available = Col 1+ Col 2 + Col 3 (5-year running average)	Colorado Computed Beneficial Consumptive Use (5-year running average)	Difference Between Available Supply and Computed Beneficial Consumptive Use = Col 4 – Col 5 (5-year running average)
North Fork Republican River Colorado						
Arikaree River						
South Fork Republican River						
Beaver Creek						

Table 4B: Kansas Compliance with the Sub-basin Non-impairment Requirement

	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7
Sub-basin	Kansas Sub-basin Allocation (5-year running average)	Unallocated Supply (5-year running average)	Unused Allocation from Colorado (5-year running average)	Credits from Imported Water Supply (5-year running average)	Total Supply Available = Col 1+ Col 2+ Col 3 + Col 4 (5-year running average)	Kansas Computed Beneficial Consumptive Use (5-year running average)	Difference Between Available Supply and Computed Beneficial Consumptive Use = Col 5 – Col 6 (5-year running average)
Arikaree River							
South Fork Republican River							
Driftwood Creek							
Beaver Creek							
Sappa Creek							
Prairie Dog Creek							

Table 5A: Colorado Compliance During Water-Short Year Administration

Colorado				
	Col. 1	Col. 2	Col. 3	Col 4
Year	Allocation minus Allocation for Beaver Creek	Computed Beneficial Consumptive minus Computed Beneficial Consumptive Use for Beaver Creek	Imported Water Supply Credit excluding Beaver Creek	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit for All Basins Except Beaver Creek Col 1 – (Col 2 – Col 3)
Year T= -4				
Year T= -3				
Year T= -2				
Year T= -1				
Current Year T= 0				
Average				

Table 5B: Kansas Compliance During Water-Short Year Administration

Kansas						
Year	Allocation			Computed Beneficial Consumptive Use`	Imported Water Supply Credit	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit
Column	1	2	3	4	5	6
	Sum Sub-basins	Kansas's Share of the Unallocated Supply	Total Col 1 + Col 2			Col 3 – (Col 4 – Col 5)
Previous Year						
Current Year						
Average						

Table 5C: Nebraska Compliance During Water-Short Year Administration

Nebraska								
Year	Allocation			Computed Beneficial Consumptive Use			Imported Water Supply Credit and/or Augmentation Water Supply Credit	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit and/or Augmentation Water Supply Credit Above Guide Rock
Column	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
	State Wide Allocation	Allocation below Guide Rock	State Wide Allocation above Guide Rock	State Wide CBCU	CBCU below Guide Rock	State Wide CBCU above Guide Rock	Credits above Guide Rock	Col 3 – (Col 6 – Col 7)
Previous Year								
Current Year								
Average								

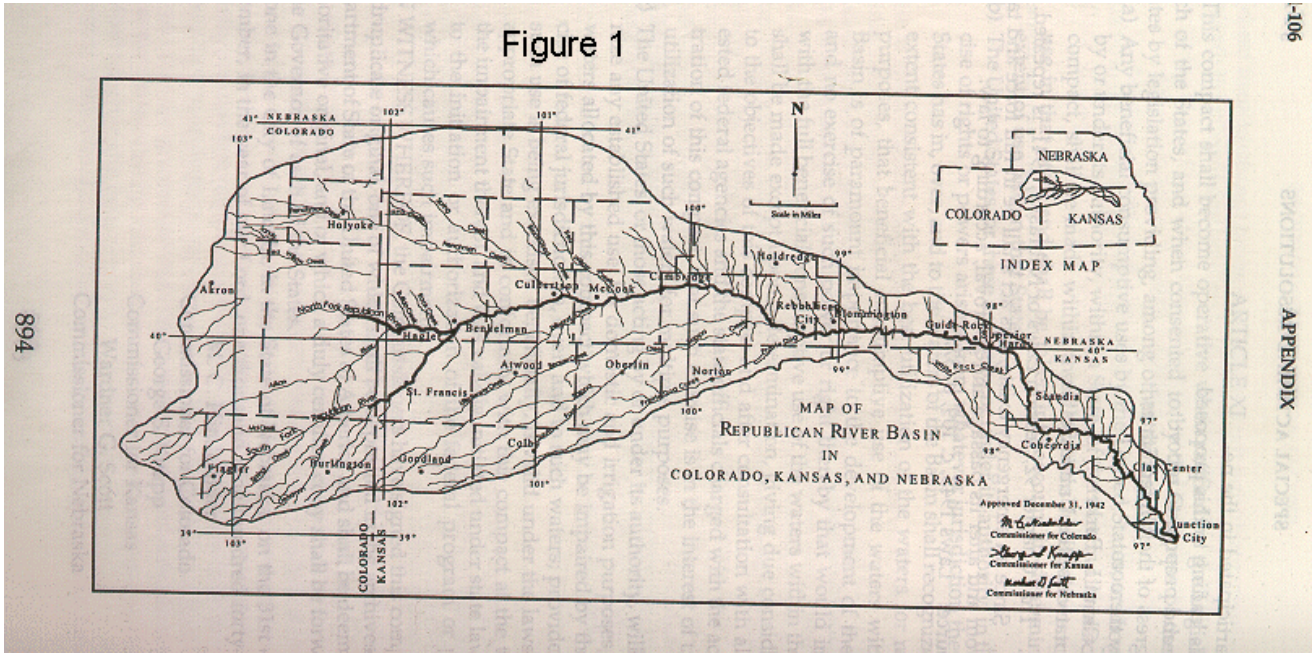
Table 5D: Nebraska Compliance Under a Alternative Water-Short Year Administration Plan

Year	Allocation			Computed Beneficial Consumptive Use			Imported Water Supply Credit and/or Augmentation Water Supply Credit	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit and/or Augmentation Water Supply Credit Above Guide Rock
Column	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
	State Wide Allocation	Allocation below Guide Rock	State Wide Allocation above Guide Rock	State Wide CBCU	CBCU below Guide Rock	State Wide CBCU above Guide Rock	Credits above Guide Rock	Col 3 – (Col 6- Col 7)
Year = -2								
Year = -1								
Current Year								
Three-Year Average								
Sum of Previous Two-year Difference								
Expected Decrease in CBCU Under Plan								

Table 5E: Nebraska Tributary Compliance During Water-Short Year Administration

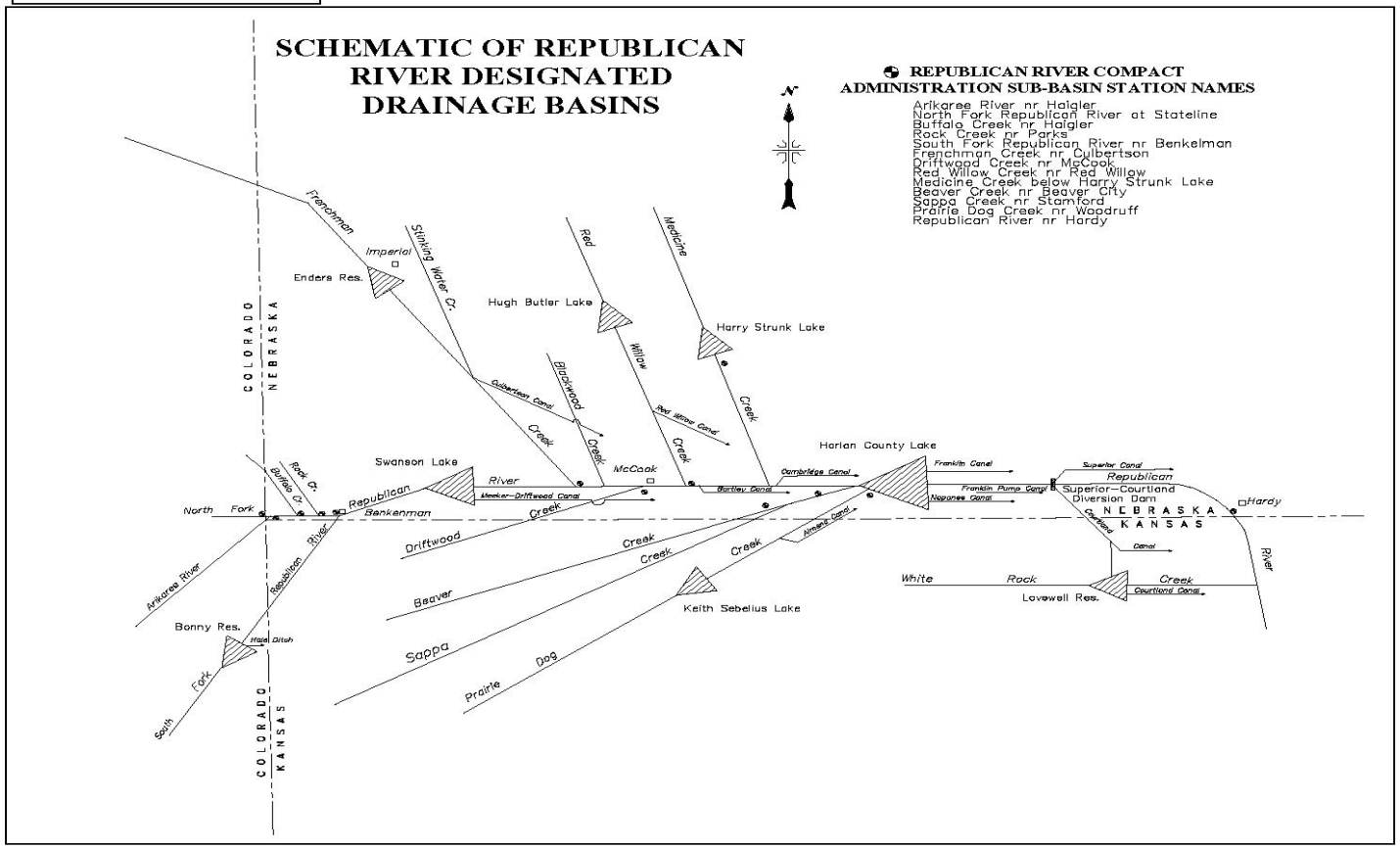
Year	Sum of Nebraska Sub-basin Allocations	Sum of Nebraska's Share of Sub-basin Unallocated Supplies	Total Available Water Supply for Nebraska	Computed Beneficial Consumptive Use	Imported Water Supply Credit and/or Augmentation Water Supply Credit	Difference between Allocation And the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit and/or Augmentation Water Supply Credit
	Col 1	Col 2	`Col 3	Col 4	Col 5	Col 6
Previous Year						Col 3 -(Col 4-Col 5)

Current Year						
Average						

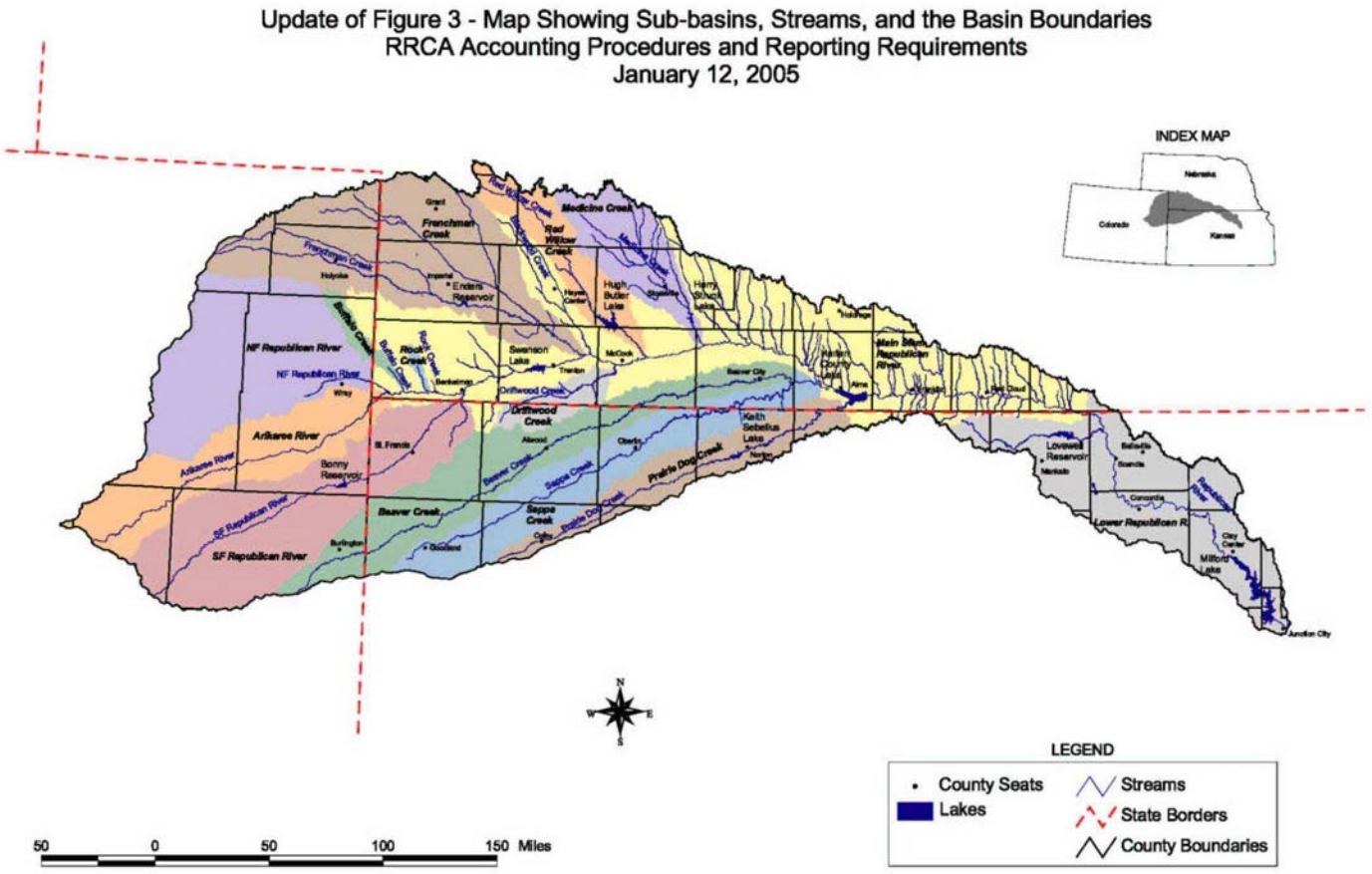


Basin Map Attached to Compact that Shows the Streams and the Basin Boundaries

Figure 2



Line Diagram of Designated Drainage Basins Showing Federal Reservoirs and Sub-basin Gaging Stations



Map Showing Sub-basins, Streams, and the Basin Boundaries

Attachment 1: Sub-basin Flood Flow Thresholds

Sub-basin	Sub-basin Flood Flow Threshold Acre-feet per Year[3]
Arikaree River	16,400
North Fork of Republican River	33,900
Buffalo Creek	4,800
Rock Creek	9,800
South Fork of Republican River	30,400
Frenchman Creek	51,900
Driftwood Creek	9,400
Red Willow Creek	15,100
Medicine Creek	55,100
Beaver Creek	13,900
Sappa Creek	26,900
Prairie Dog	15,700

[3] Flows considered to be Flood Flows are flows in excess of the 94% flow based on a flood frequency analysis for the years 1971-2000. The Gaged Flows are measured after depletions by Beneficial Consumptive Use and change in reservoir storage. For the purpose of compliance with III.B.1, the Gaged Flows shall not include Augmentation Water Supply Credits delivered in any calendar year.

Attachment 2: Description of the Consensus Plan for Harlan County Lake

The Consensus Plan for operating Harlan County Lake was conceived after extended discussions and negotiations between Reclamation and the Corps. The agreement shaped at these meetings provides for sharing the decreasing water supply into Harlan County Lake. The agreement provides a consistent procedure for: updating the reservoir elevation/storage relationship, sharing the reduced inflow and summer evaporation, and providing a January forecast of irrigation water available for the following summer.

During the interagency discussions the two agencies found agreement in the following areas:

- The operating plan would be based on current sediment accumulation in the irrigation pool and other zones of the project.
- Evaporation from the lake affects all the various lake uses in proportion to the amount of water in storage for each use.
- During drought conditions, some water for irrigation could be withdrawn from the sediment pool.
- Water shortage would be shared between the different beneficial uses of the project, including fish, wildlife, recreation and irrigation.

To incorporate these areas of agreement into an operation plan for Harlan County Lake, a mutually acceptable procedure addressing each of these items was negotiated and accepted by both agencies.

1. Sediment Accumulation.

The most recent sedimentation survey for Harlan County project was conducted in 1988, 37 years after lake began operation. Surveys were also performed in 1962 and 1972; however, conclusions reached after the 1988 survey indicate that the previous calculations are unreliable. The 1988 survey indicates that, since closure of the dam in 1951, the accumulated sediment is distributed in each of the designated pools as follows:

Flood Pool	2,387 Acre-feet
Irrigation Pool	4,853 Acre-feet
Sedimentation Pool	33,527 Acre-feet

To insure that the irrigation pool retained 150,000 Acre-feet of storage, the bottom of the irrigation pool was lowered to 1,932.4 feet, msl, after the 1988 survey.

To estimate sediment accumulation in the lake since 1988, we assumed similar conditions have occurred at the project during the past 11 years. Assuming a consistent rate of deposition since 1988, the irrigation pool has trapped an additional 1,430 Acre-feet.

A similar calculation of the flood control pool indicates that the flood control pool has captured an additional 704 Acre-feet for a total of 3,090 Acre-feet since construction.

The lake elevations separating the different pools must be adjusted to maintain a 150,000-acre-foot irrigation pool and a 500,000-acre-foot flood control pool. Adjusting these elevations results in the following new elevations for the respective pools (using the 1988 capacity tables).

Top of Irrigation Pool	1,945.70 feet, msl
Top of Sediment Pool	1,931.75 feet, msl

Due to the variability of sediment deposition, we have determined that the elevation capacity relationship should be updated to reflect current conditions. We will complete a new sedimentation survey of Harlan County Lake this summer, and new area capacity tables should be available by early next year. The new tables may alter the pool elevations achieved in the Consensus Plan for Harlan County Lake.

2. Summer Evaporation.

Evaporation from a lake is affected by many factors including vapor pressure, wind, solar radiation, and salinity of the water. Total water loss from the lake through evaporation is also affected by the size of the lake. When the lake is lower, the surface area is smaller and less water loss occurs. Evaporation at Harlan County Lake has been estimated since the lake's construction using a Weather Service Class A pan which is 4 feet in diameter and 10 inches deep. We and Reclamation have jointly reviewed this information and assumed future conditions to determine an equitable method of distributing the evaporation loss from the project between irrigation and the other purposes.

During those years when the irrigation purpose expected a summer water yield of 119,000 Acre-feet or more, it was determined that an adequate water supply existed and no sharing of evaporation was necessary. Therefore, evaporation evaluation focused on the lower pool elevations when water was scarce. Times of water shortage would also generally be times of higher evaporation rates from the lake.

Reclamation and we agreed that evaporation from the lake during the summer (June through September) would be distributed between the irrigation and sediment pools based on their relative percentage of the total storage at the time of evaporation. If the sediment pool held 75 percent of the total storage, it would be charged 75 percent of the evaporation. If the sediment pool held 50 percent of the total storage, it would be charged 50 percent of the evaporation. At the bottom of the irrigation pool (1,931.75 feet, msl) all of the evaporation would be charged to the sediment pool.

Due to downstream water rights for summer inflow, neither the irrigation nor the sediment pool is credited with summer inflow to the lake. The summer inflows would be

assumed passed through the lake to satisfy the water right holders. Therefore, Reclamation and we did not distribute the summer inflow between the project purposes.

As a result of numerous lake operation model computer runs by Reclamation, it became apparent that total evaporation from the project during the summer averaged about 25,000 Acre-feet during times of lower lake elevations. These same models showed that about 20 percent of the evaporation should be charged to the irrigation pool, based on percentage in storage during the summer months. About 20 percent of the total lake storage is in the irrigation pool when the lake is at elevation 1,935.0 feet, msl. As a result of the joint study, Reclamation and we agreed that the irrigation pool would be credited with 20,000 Acre-feet of water during times of drought to share the summer evaporation loss.

Reclamation and we further agreed that the sediment pool would be assumed full each year. In essence, if the actual pool elevation were below 1,931.75 feet, msl, in January, the irrigation pool would contain a negative storage for the purpose of calculating available water for irrigation, regardless of the prior year's summer evaporation from sediment storage.

3. Irrigation withdrawal from sediment storage.

During drought conditions, occasional withdrawal of water from the sediment pool for irrigation is necessary. Such action is contemplated in the Field Working Agreement and the Harlan County Lake Regulation Manual: "Until such time as sediment fully occupies the allocated reserve capacity, it will be used for irrigation and various conservation purposes, including public health, recreation, and fish and wildlife preservation."

To implement this concept into an operation plan for Harlan County Lake, Reclamation and we agreed to estimate the net spring inflow to Harlan County Lake. The estimated inflow would be used by the Reclamation to provide a firm projection of water available for irrigation during the next season.

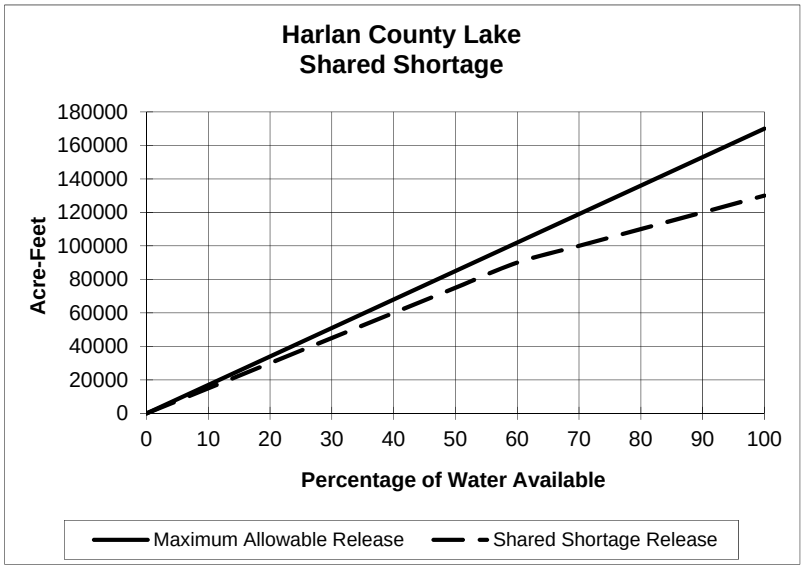
Since the construction of Harlan County Lake, inflows to the lake have been depleted by upstream irrigation wells and farming practices. Reclamation has recently completed an in-depth study of these depleted flows as a part of their contract renewal process. The study concluded that if the current conditions had existed in the basin since 1931, the average spring inflow to the project would have been 57,600 Acre-feet of water. The study further concluded that the evaporation would have been 8,800 Acre-feet of water during the same period. Reclamation and we agreed to use these values to calculate the net inflow to the project under the current conditions.

In addition, both agencies also recognized that the inflow to the project could continue to decrease with further upstream well development and water conservation farming. Due to these concerns, Reclamation and we determined that the previous 5-year inflow values would be averaged each year and compared to 57,600 Acre-feet. The inflow estimate for Harlan County Lake would be the smaller of these two values.

The estimated inflow amount would be used in January of each year to forecast the amount of water stored in the lake at the beginning of the irrigation season. Based on this forecast, the irrigation districts would be provided a firm estimate of the amount of water available for the next season. The actual storage in the lake on May 31 would be reviewed each year. When the actual water in storage is less than the January forecast, Reclamation may draw water from sediment storage to make up the difference.

4. Water Shortage Sharing.

A final component of the agreement involves a procedure for sharing the water available during times of shortage. Under the shared shortage procedure, the irrigation purpose of the project would remove less water then otherwise allowed and alleviate some of the adverse effects to the other purposes. The procedure would also extend the water supply during times of drought by "banking" some water for the next irrigation season. The following graph illustrates the shared shortage releases.



5. Calculation of Irrigation Water Available

Each January, the Reclamation would provide the Bostwick irrigation districts a firm estimate of the quantity of water available for the following season. The firm estimate of water available for irrigation would be calculated by using the following equation and shared shortage adjustment:

Storage + Summer Sediment Pool Evaporation + Inflow – Spring Evaporation=Maximum Irrigation Water Available

The variables in the equation are defined as:

- Maximum Irrigation Water Available. Maximum irrigation supply from Harlan County Lake for that irrigation season.
- Storage. Actual storage in the irrigation pool at the end of December. The sediment pool is assumed full. If the pool elevation is below the top of the sediment pool, a negative irrigation storage value would be used.
- Inflow. The inflow would be the smaller of the past 5-year average inflow to the project from January through May, or 57,600 Acre-feet.
- Spring Evaporation. Evaporation from the project would be 8,800 Acre-feet which is the average January through May evaporation.
- Summer Sediment Pool Evaporation. Summer evaporation from the sediment pool during June through September would be 20,000 Acre-feet. This is an estimate based on lower pool elevations, which characterize the times when it would be critical to the computations.

6. Shared Shortage Adjustment

To ensure that an equitable distribution of the available water occurs during short-term drought conditions, and provide for a "banking" procedure to increase the water stored for subsequent years, a shared shortage plan would be implemented. The maximum water available for irrigation according to the above equation would be reduced according to the following table. Linear interpolation of values will occur between table values.

Shared Shortage Adjustment Table

Irrigation Water Available (Acre-feet)	Irrigation Water Released (Acre-feet)
0	0
17,000	15,000
34,000	30,000
51,000	45,000
68,000	60,000
85,000	75,000
102,000	90,000
119,000	100,000
136,000	110,000
153,000	120,000
170,000	130,000

7. Annual Shutoff Elevation for Harlan County Lake

The annual shutoff elevation for Harlan County Lake would be estimated each January and finally established each June.

The annual shutoff elevation for irrigation releases will be estimated by Reclamation each January in the following manner:

1. Estimate the May 31 Irrigation Water Storage (IWS) (Maximum 150,000 Acre-feet) by taking the December 31 irrigation pool storage plus the January-May inflow estimate (57,600 Acre-feet or the average inflow for the last 5-year period, whichever is less) minus the January-May evaporation estimate (8,800 Acre-feet).
2. Calculate the estimated Irrigation Water Available, including all summer evaporation, by adding the Estimated Irrigation Water Storage (from item 1) to the estimated sediment pool summer evaporation (20,000 AF).
3. Use the above Shared Shortage Adjustment Table to determine the acceptable Irrigation Water Release from the Irrigation Water Available.
4. Subtract the Irrigation Water Release (from item 3) from the Estimated IWS (from item 1). The elevation of the lake corresponding to the resulting irrigation storage is the Estimated Shutoff Elevation. The shutoff elevation will not be below the bottom of the irrigation pool if over 119,000 AF of water is supplied to the districts, nor below 1,927.0 feet, msl. If the shutoff elevation is below the irrigation pool, the maximum irrigation release is 119,000 AF.

The annual shutoff elevation for irrigation releases would be finalized each June in accordance with the following procedure:

1. Compare the estimated May 31 IWS with the actual May 31 IWS.
2. If the actual end of May IWS is less than the estimated May IWS, lower the shutoff elevation to account for the reduced storage.
3. If the actual end of May IWS is equal to or greater than the estimated end of May IWS, the estimated shutoff elevation is the annual shutoff elevation.
4. The shutoff elevation will never be below elevation1,927.0 feet, msl, and will not be below the bottom of the irrigation pool if more than 119,000 Acre-feet of water is supplied to the districts.

Attachment 3: Inflows to Harlan County Lake 1993 Level of Development

BASELINE RUN - 1993 LEVEL INFLOW TO HARLAN COUNTY RESERVOIR

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1931	10.2	10.8	13.4	5.0	18.8	15.8	4.3	1.8	1.8	0.0	0.1	0.1	82.1
1932	6.8	16.6	18.5	4.6	3.8	47.6	3.8	2.8	4.8	0.0	0.0	0.4	109.7
1933	0.4	0.0	3.9	30.2	31.0	5.4	1.8	0.0	10.4	0.0	2.6	5.5	91.2
1934	2.1	0.0	3.2	1.8	0.7	7.3	0.8	0.0	1.3	0.0	2.2	0.0	19.4
1935	0.3	0.1	0.7	4.2	0.8	389.3	6.1	19.1	26.1	2.4	5.2	0.9	455.2
1936	0.3	0.0	11.9	0.0	35.9	4.7	0.4	0.0	1.8	0.0	1.6	3.8	60.4
1937	4.8	12.9	6.0	2.5	0.0	12.6	6.3	6.9	2.4	0.0	0.0	12.4	66.8
1938	9.9	7.8	8.7	10.4	18.7	8.6	7.3	7.8	4.9	0.2	0.0	4.7	89.0
1939	2.7	7.5	9.6	12.2	6.6	13.3	5.0	4.1	0.0	0.0	0.0	0.0	61.0
1940	0.0	0.0	12.2	5.2	4.6	23.7	2.8	3.2	0.0	3.6	0.0	1.4	56.7
1941	0.0	10.6	10.6	7.7	17.2	67.1	28.9	19.7	14.9	8.3	6.7	7.1	198.8
1942	3.3	10.6	0.5	34.1	30.8	83.9	11.7	10.9	36.5	3.1	8.7	0.3	234.4
1943	1.2	11.2	14.6	31.4	4.7	28.3	4.8	0.3	0.9	0.0	0.0	11.8	109.2
1944	0.1	4.3	9.0	43.1	31.9	63.9	26.6	15.4	0.5	0.3	3.0	4.5	202.6
1945	4.3	7.8	5.7	9.5	4.1	53.5	5.0	0.9	1.5	5.0	6.0	6.3	109.6
1946	5.9	11.2	9.3	4.9	7.0	3.1	1.6	11.4	28.1	129.9	25.0	12.1	249.5
1947	1.1	3.2	10.4	8.2	11.9	195.4	22.3	5.9	2.9	0.2	0.3	0.3	262.1
1948	6.2	9.8	24.1	5.4	0.2	39.8	13.5	6.8	4.2	0.0	0.1	0.1	110.2
1949	2.0	1.5	25.2	16.3	49.0	57.4	9.2	5.5	2.1	3.0	2.8	0.3	174.3
1950	0.3	5.7	10.8	10.9	28.9	10.1	12.7	9.3	7.8	7.2	3.8	3.1	110.6
1951	3.8	3.4	7.1	5.3	42.0	39.9	42.1	10.1	36.0	15.5	14.8	8.9	228.9
1952	16.4	21.4	26.3	23.8	34.6	4.0	9.3	3.1	1.5	11.7	4.3	0.1	156.5
1953	1.8	4.6	5.3	3.3	15.1	9.5	1.8	0.2	0.0	0.0	2.8	0.1	44.5
1954	1.0	6.8	1.9	3.2	7.1	2.4	0.0	1.2	0.0	0.0	0.0	0.0	23.6
1955	0.0	4.0	6.3	4.8	2.9	6.4	2.7	0.0	1.4	0.0	0.0	0.0	28.5
1956	1.6	3.4	2.9	2.4	1.3	1.5	0.0	0.6	0.0	0.0	0.0	0.0	13.7
1957	0.0	4.1	6.2	12.8	3.5	62.4	21.3	1.2	2.0	3.4	4.5	4.7	126.1
1958	0.8	3.0	14.2	14.0	18.7	1.3	3.4	2.2	0.0	0.4	0.0	0.6	58.6
1959	1.9	15.4	16.4	8.5	13.6	4.2	1.4	1.2	0.0	4.3	1.0	4.5	72.4
1960	1.4	12.3	71.4	23.9	21.7	53.7	14.1	3.2	0.0	0.0	0.2	2.8	204.7
1961	2.3	6.4	7.7	7.4	26.5	24.0	7.2	4.9	0.0	2.3	4.8	1.7	95.2

Attachment 3: Inflows to Harlan County Lake 1993 Level of Development

BASELINE RUN - 1993 LEVEL INFLOW TO HARLAN COUNTY RESERVOIR

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1962	4.5	9.1	16.2	9.9	14.4	42.6	41.6	21.1	2.3	8.7	8.3	5.7	184.4
1963	3.4	18.2	18.2	15.0	12.7	14.7	3.4	6.1	8.7	0.8	5.3	1.8	108.3
1964	5.4	7.6	8.3	8.4	9.9	11.9	7.2	6.5	2.4	1.9	1.4	2.3	73.2
1965	6.0	8.1	11.1	12.8	32.8	40.0	22.9	6.5	37.2	53.7	19.5	11.0	261.6
1966	8.9	21.4	15.7	11.4	12.0	34.7	12.4	2.5	3.5	5.4	6.8	5.7	140.4
1967	7.2	11.5	11.5	12.9	9.1	75.3	43.7	15.3	4.4	7.3	6.9	5.4	210.5
1968	3.9	10.2	8.5	11.6	10.8	12.5	3.1	2.7	1.6	2.0	4.3	3.4	74.6
1969	4.2	10.8	24.5	15.1	18.9	17.5	17.0	12.6	16.6	9.2	11.8	9.9	168.1
1970	3.5	8.7	8.5	10.5	11.1	7.7	4.6	3.2	0.5	3.3	4.7	4.5	70.8
1971	4.1	10.3	12.4	12.8	18.3	7.2	8.4	6.2	1.9	4.2	7.3	7.1	100.2
1972	5.5	8.1	9.2	8.3	14.8	8.5	6.5	4.4	0.1	2.9	7.6	4.1	80.0
1973	11.4	14.2	19.0	16.2	17.4	20.9	9.1	1.9	8.4	19.6	11.9	13.2	163.2
1974	13.2	13.4	12.0	14.3	15.4	17.2	5.5	0.0	0.0	0.0	4.9	5.5	101.4
1975	7.2	8.2	13.6	14.8	12.0	48.1	11.6	7.4	0.1	3.0	6.2	7.3	139.5
1976	7.0	10.2	10.1	16.0	12.1	3.5	2.2	1.8	0.9	1.0	3.2	3.1	71.1
1977	4.4	9.6	12.9	21.2	31.5	12.1	5.9	1.9	10.6	4.1	5.5	5.3	125.0
1978	5.0	6.5	20.6	12.9	11.8	3.8	0.0	1.0	0.0	0.0	0.3	1.6	63.5
1979	1.3	7.6	21.5	18.8	15.9	5.4	10.4	10.6	1.6	0.9	3.6	6.2	103.8
1980	5.7	9.3	11.6	15.2	10.4	2.1	2.5	0.0	0.0	0.0	2.5	2.2	61.5
1981	5.5	6.0	11.6	14.9	22.5	6.4	11.5	16.3	4.3	2.5	6.7	6.2	114.4
1982	5.3	12.5	17.9	14.3	26.8	27.1	8.9	2.7	0.0	6.5	6.3	15.5	143.8
1983	6.5	9.7	27.2	16.4	41.4	74.2	10.7	7.6	3.8	3.1	6.7	5.2	212.5
1984	6.8	14.6	17.2	32.9	40.6	15.5	8.1	4.5	0.0	5.5	4.8	6.2	156.7
1985	6.9	14.1	13.6	11.9	27.4	9.9	10.0	2.0	6.0	8.5	5.6	5.8	121.7
1986	9.1	9.4	12.2	11.7	34.3	13.0	13.5	4.6	3.3	5.9	5.4	7.1	129.5
1987	5.9	9.2	19.7	24.1	24.3	11.7	19.0	5.7	2.3	2.7	8.2	7.0	139.8
1988	6.2	13.7	11.6	15.2	15.2	7.0	17.9	10.4	0.6	2.0	5.9	5.4	111.1
1989	5.4	5.9	10.5	9.1	11.4	11.8	14.0	6.2	0.2	3.1	3.1	3.5	84.2
1990	6.6	7.7	13.2	9.7	15.5	1.4	4.3	10.7	0.6	3.2	2.0	2.7	77.6
1991	2.4	8.0	9.0	10.6	15.2	3.9	1.9	0.5	0.0	0.0	2.7	4.8	59.0
1992	8.0	8.8	12.7	8.5	4.5	6.1	6.5	9.4	2.4	6.9	6.7	5.2	85.7
1993	5.2	14.4	71.6	22.7	21.0	17.0	68.0	37.5	23.3	16.8	30.1	17.7	345.3
Avg	4.5	8.8	14.1	13.0	17.2	30.6	11.0	6.2	5.4	6.3	5.0	4.7	126.8

Attachment 4: Evaporation Loss Harlan County Lake 1993 Level of Development

BASELINE - 1993 LEVEL FLOWS - HARLAN COUNTY EVAPORATION

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1931	0.7	0.9	1.6	2.9	4.2	7.4	6.9	5.2	2.7	2.1	1.2	0.4	36.2
1932	0.6	0.8	1.5	2.7	4.1	5.0	6.8	5.0	2.7	2.1	1.2	0.4	32.9
1933	0.6	0.8	1.4	2.5	3.8	7.8	6.1	4.2	2.7	2.1	1.2	0.4	33.6
1934	0.6	0.8	1.4	2.4	4.5	6.5	8.0	6.2	2.7	2.0	1.2	0.4	36.7
1935	0.6	0.8	1.3	2.3	2.2	3.6	9.7	6.2	3.1	2.5	1.4	0.5	34.2
1936	0.7	0.9	1.6	2.9	5.5	6.8	8.7	6.5	2.7	2.1	1.2	0.4	40.0
1937	0.6	0.8	1.4	2.5	3.6	4.0	6.2	6.5	2.7	2.1	1.2	0.4	32.0
1938	0.6	0.9	1.5	2.7	3.4	4.9	6.5	5.7	2.7	2.1	1.2	0.4	32.6
1939	0.6	0.8	1.4	2.6	4.3	4.9	6.8	4.6	2.7	2.1	1.2	0.4	32.4
1940	0.6	0.8	1.4	2.4	3.5	5.0	6.5	4.6	2.7	2.1	1.2	0.4	31.2
1941	0.6	0.8	1.4	2.5	3.9	4.2	6.7	5.3	2.8	2.1	1.3	0.5	32.1
1942	0.6	0.9	1.5	2.8	4.0	5.2	8.3	5.1	3.2	2.5	1.5	0.5	36.1
1943	0.7	1.0	1.8	3.2	4.3	5.7	7.9	6.3	2.7	2.1	1.2	0.4	37.3
1944	0.6	0.8	1.4	2.7	4.2	5.3	7.0	5.8	3.5	2.6	1.5	0.5	35.9
1945	0.7	1.0	1.8	3.1	3.8	3.0	6.7	5.7	2.9	2.2	1.3	0.5	32.7
1946	0.6	0.9	1.6	2.8	3.5	5.1	5.6	4.4	2.9	2.7	1.8	0.6	32.5
1947	1.0	1.5	2.9	3.2	3.4	-1.2	5.8	5.3	3.7	1.7	0.5	0.1	27.9
1948	0.8	0.7	1.5	3.6	3.1	2.4	4.2	4.7	3.0	2.7	0.8	0.3	27.8
1949	0.1	0.9	0.7	1.8	1.1	0.7	6.5	4.1	3.1	1.7	1.5	0.4	22.6
1950	0.7	0.1	0.8	2.8	2.0	5.6	0.8	2.8	4.5	2.3	1.6	0.6	24.6
1951	0.5	0.2	2.1	0.7	-0.1	1.9	3.5	4.1	0.4	3.1	2.2	0.9	19.5
1952	1.1	1.2	1.9	2.5	5.2	6.2	1.5	3.4	3.6	2.9	1.1	-0.1	30.5
1953	0.5	1.0	1.5	2.9	4.7	4.5	4.6	6.6	5.3	3.3	0.1	0.0	35.0
1954	0.7	0.6	2.2	3.6	0.3	4.9	6.7	1.6	3.6	1.6	1.5	0.6	27.9
1955	0.5	1.0	2.1	4.6	3.4	-0.5	7.3	6.9	2.7	2.6	1.4	0.4	32.4
1956	0.6	1.1	1.9	2.8	3.9	4.5	5.0	3.7	4.7	3.7	1.3	0.5	33.7
1957	0.7	1.0	1.3	0.5	-0.6	-1.1	6.1	3.7	2.3	1.7	1.2	0.4	17.2
1958	0.7	0.1	1.0	0.6	2.3	4.4	1.0	1.9	3.3	3.3	1.0	0.6	20.2
1959	0.4	1.0	1.1	2.1	1.0	3.5	5.0	4.8	2.3	0.7	1.5	0.6	24.0
1960	0.1	0.7	2.0	2.7	0.9	0.1	4.9	3.6	3.9	2.0	1.3	0.4	22.6
1961	0.9	1.0	1.4	2.7	-1.1	0.6	5.1	2.9	1.2	2.4	0.7	0.1	17.9

Attachment 4: Evaporation Loss Harlan County Lake 1993 Level of Development

BASELINE - 1993 LEVEL FLOWS - HARLAN COUNTY EVAPORATION

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1962	0.6	0.6	0.9	3.7	3.4	1.5	0.3	1.6	2.0	2.0	1.7	0.3	18.6
1963	0.7	1.4	1.3	4.5	4.6	6.3	6.1	3.1	-0.8	2.7	1.5	0.4	31.8
1964	0.8	0.8	1.7	3.2	5.6	1.2	6.9	3.0	3.0	3.3	1.2	0.6	31.3
1965	0.4	0.7	1.2	2.8	1.5	-0.5	2.0	2.8	-3.9	1.7	2.1	0.4	11.2
1966	0.9	0.8	2.9	2.7	7.5	2.8	5.8	3.7	2.7	2.8	1.5	0.4	34.5
1967	0.7	1.2	2.5	3.0	2.0	-2.9	1.6	4.5	3.5	2.0	1.6	0.4	20.1
1968	0.9	1.2	2.8	2.6	3.2	4.9	4.7	1.8	2.3	0.7	1.2	0.2	26.5
1969	0.4	0.6	2.4	3.3	0.1	3.8	-0.7	2.9	2.2	-1.0	1.5	0.4	15.9
1970	0.7	1.4	2.3	2.8	4.7	4.4	6.5	5.9	0.9	1.0	1.5	0.7	32.8
1971	0.7	0.2	2.0	2.9	0.7	5.1	3.4	4.5	1.4	1.5	0.2	0.5	23.1
1972	0.8	1.3	2.0	1.7	1.1	0.0	3.3	1.8	2.1	1.7	-0.4	0.1	15.5
1973	0.5	1.1	-0.7	2.5	3.4	6.7	-1.7	4.2	-3.0	0.2	0.2	0.2	13.6
1974	0.7	1.5	2.6	1.5	3.7	2.5	9.1	2.6	3.4	1.4	1.1	0.3	30.4
1975	0.7	0.7	2.0	2.1	0.8	1.1	4.3	2.7	3.0	3.4	0.7	0.6	22.1
1976	0.8	1.2	1.7	0.7	1.5	5.0	5.9	5.7	-0.2	1.4	1.4	0.7	25.8
1977	0.7	1.3	0.2	1.1	0.0	4.6	4.0	0.6	2.0	1.6	1.0	0.4	17.5
1978	0.5	0.7	1.2	3.4	3.9	6.2	7.1	4.5	4.5	3.0	1.1	0.5	36.6
1979	0.5	0.6	1.1	3.9	4.4	4.6	3.5	5.1	4.1	2.8	1.4	0.7	32.7
1980	0.5	0.6	1.2	3.4	3.7	4.7	6.8	6.0	3.9	2.7	1.3	0.6	35.4
1981	0.5	0.6	1.2	3.8	3.2	4.8	4.2	3.7	2.9	1.7	1.3	0.7	28.6
1982	0.5	0.7	1.2	3.9	3.8	3.9	5.1	3.8	2.9	2.2	1.4	0.8	30.2
1983	0.5	0.7	1.4	2.9	4.2	5.3	8.6	7.2	4.6	1.8	1.5	0.6	39.3
1984	0.6	0.8	1.4	2.9	4.2	5.8	7.2	5.7	4.7	1.4	1.4	0.7	36.8
1985	0.5	0.7	1.3	2.3	4.0	4.5	5.6	3.5	3.8	1.5	1.5	0.7	29.9
1986	0.6	0.7	1.3	2.8	4.4	5.8	6.7	4.0	2.7	1.3	1.4	0.7	32.4
1987	0.5	0.8	1.3	3.1	4.2	6.2	6.9	3.5	3.1	2.2	1.4	0.7	33.9
1988	0.5	0.7	1.3	3.5	4.9	6.6	4.6	4.8	3.5	2.2	1.4	0.7	34.7
1989	0.5	0.7	1.2	4.2	4.5	4.4	4.8	3.6	3.0	2.5	1.4	0.7	31.5
1990	0.5	0.7	1.2	3.0	3.5	5.6	6.4	4.0	5.0	3.4	1.4	0.6	35.3
1991	0.5	0.7	1.2	2.8	3.3	5.5	6.0	5.0	5.1	3.2	1.3	0.6	35.2
1992	0.6	0.7	1.2	1.8	3.2	2.2	4.1	3.5	4.2	2.9	1.9	1.0	27.3
1993	0.6	0.5	1.0	2.2	3.1	4.6	4.2	4.9	4.5	4.4	3.1	1.2	34.3
Avg	0.6	0.8	1.5	2.7	3.2	3.9	5.3	4.3	2.8	2.2	1.3	0.5	29.1

Attachment 5: Projected Water Supply Spread Sheet Calculations

Trigger Calculations Based on Harlan County Lake Irrigation Supply	Units-1000 Acre-feet	Irrigation Trigger	119.0	Assume that during irrigation release season HCL Inflow = Evaporation Loss
		Total Irrigation Supply	130.0	
		Bottom Irrigation	164.1	
		Evaporation Adjust	20.0	

	Oct	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
1993 Level AVE inflow	6.3	5	4.7	4.5	8.8	14.1	13.0	17.2	30.6	11.0	6.2	5.4	126.8
1993 Level AVE evap	2.2	1.3	0.5	0.6	0.8	1.5	2.7	3.2	3.9	5.3	4.3	2.8	29.1
(1931-93)													
Avg. Inflow Last 5 Years	10.8	13.0	12.3	12.9	16.6	22.4	19.4	18.1	14.8	16.5	11.0	4.7	172.6

Year 2001-2002 Oct - Jun Trigger and Irrigation Supply Calculation									
Calculation Month	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Previous EOM Content	236.5	235.9	238.6	242.9	248.1	255.1	263.8	269.6	276.2
Inflow to May 31	73.6	67.3	62.3	57.6	53.1	44.3	30.2	17.2	0.0
Last 5 Yrs Avg Inflow to May 31	125.6	114.8	101.7	89.5	76.6	59.9	37.5	18.1	0.0
Evap to May 31	12.8	10.6	9.3	8.8	8.2	7.4	5.9	3.2	0.0
Est. Cont May 31	297.3	292.6	291.6	291.7	293.0	292.0	288.1	283.6	276.2
Est. Elevation May 31	1944.44	1944.08	1944.00	1944.01	1944.11	1944.03	1943.72	1943.37	1942.77
Max. Irrigation Available	153.2	148.5	147.5	147.6	148.9	147.9	144.0	139.5	132.1
Irrigation Release Est.	120.1	117.4	116.8	116.8	118.1	117.1	116.8	116.8	116.8
Trigger - Yes/No	NO	YES	YES	YES	YES	YES	YES	YES	YES
130 kAF Irrigation Supply - Yes/No	NO	NO	NO	NO	NO	NO	NO	NO	NO

Attachment 5: Projected Water Supply Spread Sheet Calculations

Year 2002 **Jul - Sep** **Final Trigger and** **Total Irrigation Supply** **Calculation**				
Calculation Month		**Jul**	**Aug**	**Sep**
Previous EOM Irrigation Release Est.		116.8	116.0	109.7
Previous Month Inflow		5.5	0.5	1.3
Previous Month Evap		6.3	6.8	6.6
Irrigation Release Estimate		116.0	109.7	104.4
Final Trigger - Yes/No		YES		
130 kAF Irrigation Supply - Yes/No		NO	NO	NO

Attachment 6: Computing Water Supplies and Consumptive Use Above Guide Rock

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Total Main Stem VWS	Hardy gage	Superior-Courtland Diversion Dam Gage	Courtland Canal Diversions	Superior Canal Diversions	Courtland Canal Returns	Superior Canal Returns	Total Bostwick Returns Below Guide Rock	NE CBCU Below Guide Rock	KS CBCU Below Guide Rock	Total CBCU Below Guide Rock	Gain Guide Rock to Hardy	VWS Guide Rock to Hardy	Main Stem Virgin Water Supply Above Guide Rock	Nebraska Main Stem Allocation Above Hardy	Kansas Main Stem Allocation Above Hardy	Nebraska Guide Rock to Hardy Allocation	Kansas Guide Rock to Hardy Allocation
							Col F+ Col G			Col I + Col J	+ Col B - Col C+ Col K - Col H	+ Col L + Col K	Col A - Col M	.489 x Col N	.511 x Col N	.489 x Col M	.511 x Col M

Attachment 7: Calculations of Return Flows from Bureau of Reclamation Canals

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11
Canal	Canal Diversion	Spill to Waste-way	Field Deliveries	Canal Loss	Average Field Loss Factor	Field Loss	Total Loss from District	Percent Field and Canal Loss That Returns to the Stream	Total Return to Stream from Canal and Field Loss	Return as Percent of Canal Diversion
Name Canal	Headgate Diversion	Sum of measured spills to river	Sum of deliveries to the field	+Col 2 - Col 4	1 -Weighted Average Efficiency of Application System for the District*	Col 4 x Col 6	Col 5 + Col 7	Estimated Percent Loss*	Columns 8 x Col 9	Col 10/Col 2
Example	100	5	60	40	30%	18	58	82%	48	48%
Culbertson					30%					
Culbertson Extension					30%					
Meeker-Driftwood					30%					
Red Willow					30%					
Bartley					30%					
Cambridge					30%					
Naponne					35%					
Franklin					35%					
Franklin Pump					35%					
Almena					30%					
Superior					31%					
Nebraska Courtland					23%					
Courtland Canal Above Lovewell (KS)					23%					
Courtland Canal Below Lovewell					23%					

*The average field efficiencies for each district and percent loss that returns to the stream may be reviewed and, if necessary, changed by the RRCA to improve the accuracy of the estimates.

Appendix B

Model Documentation and Model Files

The contents of Appendix B can be found at:

ftp://ftp.dnr.ne.gov/

login: IWM
password Pa$$word123

Exhibit B

Arbitration Time Frame Designation

(N-CORPE Augmentation Plan)

Nebraska Formally Submits N-CORPE Proposal to RRCA for Resolution.....June 10, 2013

Special RRCA Meeting and Vote on Resolution ..... July 10, 2013

If arbitration is necessary…

Nebraska Formally Submits the Issue to Arbitration ..... July 10, 2013

Kansas and Colorado May Amend the Scope of the Dispute ..... July 24, 2013

States Exchange List of Proposed Arbitrators ..... July 24, 2013

States Meet and Confer on Arbitrator Selection .....August 2, 2013

If Necessary, CDR Selects Arbitrator .....August 2, 2013

Hold Initial Arbitrator Conference and Set Schedule .....August 12, 2013

Final Day of Arbitration Hearings .....December 13, 2013

Complete Arbitration / Issue Decision .....February 14, 2014

State Accept / Reject Decision.....March 14, 2013

RESOLUTION
OF
THE REPUBLICAN RIVER COMPACT ADMINISTRATION
REGARDING NEBRASKA'S N-CORPE AUGMENTATION PROJECT

Whereas, the States of Kansas, Nebraska and Colorado entered into a Final Settlement Stipulation (FSS) as of December 15, 2002, to resolve pending litigation in the United States Supreme Court regarding the Republican River Compact (Compact) in *Kansas v. Nebraska and Colorado*, No 126 Original;

Whereas, the FSS was approved by the United States Supreme Court on May 19, 2003;

Whereas, by letter dated June 10, 2013, the State of Nebraska submitted to the State of Kansas and the State of Colorado a copy of the "N-CORPE Augmentation Project" plan (N-CORPE Plan), a copy of which is attached hereto and incorporated by reference as Exhibit A;

Whereas, the States held a working session of the Republican River Compact Administration (RRCA) on June 27, 2013, concerning the N-CORPE Plan;

Whereas, Nebraska's N-CORPE Plan has been properly presented and submitted to the RRCA pursuant to the FSS;

Whereas, on June 10, 2013, the State of Nebraska provided the State of Kansas and the State of Colorado notice that it wished to pursue "fast track" resolution of the issue;

Whereas, the N-CORPE Plan involves a project located outside of the moratorium area as specified in Subsection III.B.1.a.ii and III.B.1.b, and is therefore not subject to the provisions of III.B.1.k; however the appropriate credit for the project has been incorporated into the RRCA Accounting Procedures as an "Augmentation Credit" as indicated in Exhibit A;

Whereas, the measured pumping data collected in support of the N-CORPE Plan will be input into the RRCA Groundwater Model in conformance with the current RRCA Accounting Procedures for determining groundwater computed beneficial consumptive use and that same measured data will be utilized to represent the amount of discharge to Medicine Creek at the project outfall;

Whereas, Nebraska has developed a methodology to provide the appropriate Augmentation Credit referenced in Subsection IV.A. of the FSS, and that methodology has been submitted to the RRCA as part of the N-CORPE Plan;

Whereas, Section I.F of the FSS allows the RRCA to modify the RRCA Accounting Procedures in any manner consistent with the Compact and the FSS;

Whereas, the States agree that Nebraska's proposed revisions to the RRCA Accounting Procedures outlined in the N-CORPE Plan are consistent with the Compact and the FSS and that the RRCA should adopt Nebraska's proposed revisions; and

Now, therefore, it is hereby resolved that the RRCA approves and adopts the changes to the RRCA Accounting Procedures as presented in the State of Nebraska's N-CORPE Plan attached as Exhibit A.

Approved by the Republican River Compact Administration this 9th day of July 2013.

_____ _____

David Barfield, P.E. Date
Kansas Commissioner
Chairman

_____ _____

Brian Dunnigan, P.E. Date
Nebraska Commissioner

_____ _____

Dick Wolfe, P.E. Date
Colorado Commissioner

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Dale A. Rodman, Secretary
David W. Barfield, Chief Engineer

Sam Brownback, Governor

March 8, 2013

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RE: Deficiencies of Rock Creek Augmentation Proposal and process

Dear Commissioner Dunnigan and Commissioner Wolfe,

This letter is in response to the letter I received from Commissioner Dunnigan dated March 5, 2013, that referred to Nebraska's Rock Creek Augmentation Proposal ("the Proposal") and provided a draft resolution for the Republican River Compact Administration (RRCA) that approves the Proposal without insufficient terms or conditions. Subject to any further discussion of the matter that occurs during this morning's Special Meeting of the RRCA, I anticipate that Kansas will be unable to approve the Proposal in its current form. As you know, Kansas has repeatedly explained that it is willing to discuss the matter to attempt to find a proposal that is mutually agreeable to all of the States. The purpose of this letter is to memorialize Kansas' concerns with Nebraska's approach to this matter and with the Proposal.

The Final Settlement Stipulation (FSS) requires that augmentation plans and their related accounting procedures be agreed upon by the States prior to implementation. This requirement is clearly reflected in the testimony of both former Nebraska Director Roger Patterson and former Colorado State Engineer Hal Simpson at the hearing before Special Master McKusick in January 2003. Both testified that the RRCA's review and approval of any plan and accounting procedures would be done before any project was developed. Augmentation plans are not a continuation of the existing flexibility regarding allocations and consumptive use that the States agreed to provide to each other under the Republican River Compact ("Compact") and FSS.

Instead, augmentation plans are a compliance tool of last resort directed at offsetting over-consumption, which sets them apart from any existing water management flexibility.

As we understand it, in Colorado, augmentation plans are intended to enable junior ground water users to pump in return for protecting senior water users from any injury that may result from such pumping. Such plans are carefully crafted with terms and conditions to ensure that the interests of other water users are not compromised. The plans also include provisions to resolve any future problems that may arise. These plans require Water Court approval and retained jurisdiction. Kansas agreed to the augmentation provisions of the FSS based on the assurances of the other States that unanimous agreement was required and that any plans and accounting procedures would be worked out well ahead of time, with terms and conditions protecting all of the States' interests.

This critical review has not occurred in this case. As early as the 2007 RRCA annual meeting, Kansas became aware that Nebraska was exploring options for augmentation. Since then, I have continued to encourage Nebraska to bring information and tentative plans to the RRCA for discussion. Yet it was not until February 8, 2013 that Nebraska provided its plan to seek augmentation credit for its Rock Creek Augmentation Project, even as the project was being completed and starting operations.

On the eve of the December 11, 2012 RRCA Special Meeting, Nebraska submitted a general outline of elements related to augmentation plans, but did not provide the Rock Creek Augmentation Proposal at that time. At the December 11 meeting, Nebraska requested feedback by the end of December from Colorado and Kansas. Kansas worked hard to review the submitted material during the holiday period, and provided initial comments on January 14, 2013. In that letter, Kansas explained that "any specific augmentation plan will need to include sufficient detail to allow identification of all relevant issues and concerns and a thorough review by the technical staff of each state." (*See* my letter of January 14, 2013 attached) Kansas also explained that the purpose of that request was to help Kansas "ensure that [the augmentation plan] will not reduce the usability of Kansas' allocation under the Compact in quantity, timing, or location." Another important consideration was that "given the lack of experience the states have with augmentation plans under the FSS and the complexity of operations, periodic review and a limited term of approval would be appropriate." Given those considerations, Kansas provided specific items that Kansas views as appropriate components of an augmentation plan. This listing included items provided by Colorado in its 2009 proposed augmentation plan and items determined to be reasonable requests by Arbitrator Martha Pagel, who issued a decision regarding Colorado's 2009 proposed augmentation plan.

The first time that Nebraska provided to Kansas a specific augmentation proposal was 28 days ago, on February 8, 2013. Nebraska failed to address many of the elements recommended by Kansas, and requested that a vote on the proposal be scheduled within 30 days. As chairman of the RRCA, I attempted to facilitate discussion of the matter by the states' technical representatives by scheduling a Work Session of the RRCA for March 1. I recommended that the Work Session include discussions of Kansas' concerns. (*See my letter of February 27, 2013 with draft work session agenda* attached) In advance of that Work Session, I received a letter dated February 28, 2013, from Commissioner Dunnigan explaining that while Nebraska was "willing to listen to Kansas' concerns . . . Nebraska does not believe that the 'requested items' form a legitimate foundation for 'continued discussions' or 'amendment to the [P]lan." (*See* Commissioner Dunnigan's Letter of February 28, 2013, attached) Based on this letter, it appears that Nebraska rejected outright the possibility of revising the proposal even before the Work Session occurred, which frustrates one of the main purposes of the RRCA, which is to facilitate productive dialogue among the States.

Based on Kansas' expedited review, the Proposal is materially deficient for at least six reasons. First, it allows for the expansion of use of existing wells, in contravention to the FSS' requirement for augmentation wells. Second, it makes no provision for transit losses below the project's outlet. Third, it ignores the effect of augmentation flows on Compact accounting (particularly groundwater consumptive beneficial use). Fourth, it has no stated operational limits or other terms and conditions that would ensure that Kansas would not be injured by the operation of the plan. Fifth, it makes no provision for periodic review and evaluation of the project. Finally, it suffers from a lack of specificity in many details of project operations. When combined with the Proposal's assumption that 100% of the pumped augmentation water be credited against Nebraska's depletions, the Proposal would inflate the appropriate augmentation credit and underestimate Nebraska's water use. Because of these concerns, and because Nebraska has deprived Kansas and the RRCA of a meaningful opportunity to address them, Kansas cannot be reasonably confident that the Proposal will not cause harm to Kansas. Consequently, Kansas cannot approve the Proposal in its current form.

I would also note that although the FSS requires prior approval by the RRCA for augmentation plans, Nebraska has already begun pumping from new wells and delivering water into Rock Creek.

Kansas is disappointed with this result but remains willing to engage in discussions over appropriate terms and conditions for an augmentation plan involving Rock Creek. In view of the current water-short conditions, the need for more time to address appropriate elements of a long-term plan, and to gain experience with the actual operation of the Proposal, with time and willing parties, one approach would have been a temporary plan to allow for Rock Creek deliveries and credit with the appropriate terms and conditions, such as those previously identified by Arbitrator Pagel. It is possible that discussions of the matter might have produced a mutually agreeable proposal that addressed the interests and concerns of all the States.

In sum, Nebraska's procedural approach to the Proposal has undermined both the letter and the intent of the FSS, and foreclosed any opportunity for constructive dialogue that might have resolved the dispute.

Attachments:

- Kansas January 14, 2013 letter
- my letter of February 27, 2013 with draft work session agenda
- Nebraska February 28, 2013 letter

Sincerely,

David W. Barfield, P.E.
Kansas Chief Engineer
Chairman, RRCA

Enclosures
DWB:spf

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Sam Brownback, Governor

February 27, 2013

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RE: Draft agenda RRCA work session, March 1 2013, regarding Nebraska's Rock Creek Augmentation Proposal

Dear Commissioner Dunnigan and Commissioner Wolfe,

To help us prepare for and organize Friday's RRCA work session regarding Nebraska's Rock Creek Augmentation Proposal provided to the states on February 8th, I would offer the draft agenda on page 2.

The draft agenda is organized around: 1) a review of the specifics of the proposal and the underlying technical work provided, and 2) discussing the elements Kansas requested be included in augmentation plans in its letter of January 14, 2013.

The draft agenda includes specifics under these general headings that Kansas would like to discuss. I invite your additions to the agenda at your earliest convenience

Per our agreement via email, we will meet starting at 11:00 a.m. We will meet in the Kansas Water Office's conference room, at 901 S. Kansas Avenue (KWO is in the same building as DWR, on the first floor; its entrance is on Kansas Avenue, rather than 9th Street).

Sincerely,

David W. Barfield, P.E.
Kansas Chief Engineer
Chairman, RRCA

DWB:spf

Draft agenda
RRCA work session, March 1, 2013, 11:00 a.m.
Regarding Nebraska's Rock Creek Augmentation Project of February 8, 2013

1. Review draft agenda
2. Discussion of Nebraska's proposal
    a. Section II, Baseline conditions
        i. Review and discuss wateruse data, consumptive use
    b. Section III, Operational aspects
        i. When will deliveries be determined?
        ii. When will deliveries typically be made, seasonal operations?
        iii. Flow rates
        iv. How will deliveries be administered, esp. with respect to Swanson Reservoir, the Frenchman Cambridge Irrigation District, and Harlan County Reservoir?
    c. Section IV, Groundwater modeling analysis
        i. Discuss runs completed, their inputs and results
        ii. Discuss Nebraska's method to demonstrate "No new net depletions" and results
    d. Section V, RRCA Accounting Procedures Modifications
        i. Example calculations and tables
        ii. Appendix A, Accounting Procedure markup
    e. Related matters:
        i. Is an RRCA Resolution and/or any type of stipulation planned? Any other documents?
3. Kansas requested items to be included in an augmentation plan (January 14, 2013 letter)
    a. Consumptive use of augmentation water.
        i. Kansas initial estimates of impacts of including augmentation flows in the model
    b. Location and extent of stream depletions being offset
    c. Potential effects to usability of Kansas' allocations
    d. Operational limits and accounting to ensure usability to Kansas not impaired by planned operations.
    e. Periodic review and term of approval
4. Next steps on the Rock Creek Proposal. Options:
    a. Move to a vote on the plan submitted on Feb 8 as soon as possible.
    b. Continued discussions on the plan
        i. Allow Kansas and Colorado a limited time to provide written comments
        ii. Nebraska amendment to the plan
        iii. Telephonic RRCA work session to discuss revised plan
        iv. RRCA consideration
    c. Other
5. RRCA special meeting arrangements

STATE OF NEBRASKA

Dave Heineman
Governor

DEPARTMENT OF NATURAL RESOURCES
Brian P. Dunnigan, P.E.
Director

February 28, 2013

IN REPLY TO:

David Barfield, P.E.
Kansas Commissioner, RRCA
Kansas State Engineer
Division of Water Resources
109 SW 9th Street, 2nd Floor
Topeka, KS 66612-1283

Dick Wolfe, P.E.
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Colorado State Engineer
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1313 Sherman Street, Room 818
Denver, CO 80203

RE: (Amended) Draft Agenda for RRCA Work Session, March 1, 2013

Dear Commissioners Barfield and Wolfe:

I am in receipt of the February 20, 2013, draft agenda for the upcoming RRCA work session, which was transmitted to us February 27, 2013, and which Commissioner Barfield further amended today. Certain portions of the Amended Draft Agenda imply that Kansas expects Nebraska to further modify its Rock Creek Augmentation Plan (Plan). See Amended Draft Agenda Item No. 4.b.ii. Nebraska has developed its Plan after careful consideration of the requirements specified in the Final Settlement Stipulation (FSS) and maintains that the Plan comports with all such requirements. Moreover, the Plan has been submitted in accordance with all requirements of the Dispute Resolution procedures under the FSS. Therefore, Nebraska is prepared to answer any questions the States pose concerning Amended Draft Agenda Item Nos. 2.a.; 2.c.; 2.d.; 2.e.; 4.a.; and 5.

It appears from Draft Agenda Item No. 3 that Kansas desires to discuss additional issues on which it would like to be heard. Nebraska is prepared to listen to Kansas' concerns. However, as previously stated, Nebraska has been unable to locate any foundation in the FSS for the "requested items" Kansas identifies there. Nebraska does not believe the "requested items" form a legitimate foundation for "continued discussions" or "amendment to the [P]lan" as contemplated in Amended Draft Agenda Item Nos. 4.b. and 4.b.ii.

Nebraska has identified this as a "Fast-Track Issue" in part because the Basin is presently forecast to be in a Water-Short Year, and we need to move forward with all available tools to ensure that Kansas water users receive the water to which they are entitled. Given the importance of this issue to Kansas water users, I want to ensure that our upcoming meeting is as productive as possible. We look forward to working through the issues identified in Amended Draft Agenda Item Nos. 2.a.; 2.c.; 2.d.; 2.e.; 4.a.; and 5.

As to the newly proposed agenda items, I do not believe additional discussions of the Integrated Management Plans will be fruitful. Kansas has been in possession of those plans since they were adopted, and we have recently completed a trial over those plans before the U.S. Supreme Court. Nebraska has nothing additional to explain in that regard.

Finally, as you are aware, there have been ongoing discussions among the U.S. Bureau of Reclamation and the U.S. Army Corps of Engineers concerning the manner in which Harlan County Lake will be operated for the benefit of the Kansas Bostwick Irrigation District (KBID) this year in the Republican River Basin. Given the importance of this issue also to Kansas water users, Nebraska agrees that the RRCA should be provided an update on the status of the federal discussions. If the federal parties are unable to agree on a plan, Nebraska will soon require the release of any water that has been temporarily held in Harlan County Lake this year in order to facilitate Nebraska's compliance with the Republican River Compact. It would be a shame if Kansas water users were unable to maximize the use of their water due to the federal parties' inaction. An update on the progress of the federal deliberations, along with a report on any perceived challenges and obstacles, would be most helpful. To the extent this is contemplated in Amended Draft Agenda Item No. 7, I agree it would be appropriate to address.

Sincerely,

Brian P. Dunnigan

Brian P. Dunnigan, P.E.
Director

Kansas
Department of Agriculture
Division of Water Resources

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Dale A. Rodman, Secretary
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January 14, 2013

Brian P. Dunnigan, P.E.
Nebraska Commissioner
Republican River Compact Administration
Nebraska Department of Natural Resources
301 Centennial Mall South
PO Box 94676
Lincoln NE 68509-4676

RE: Republican River Compact, Nebraska augmentation plans

Dear Commissioner Dunnigan:

On the evening before the December 11, 2012 Special Meeting of the Republican River Compact Administration (RRCA) requested by Nebraska, Nebraska provided to Colorado and Kansas, via email, three documents related to possible augmentation plans by Nebraska to offset consumptive use by Nebraska in excess of its allocation, that Nebraska wished to discuss. One of those documents is entitled "Inclusion of Imports of Platte River Basin Water Supplies into the RRCA Accounting," ("Imports Document") dated December 10, 2012. The Imports Document outlines a concept by Nebraska to "enhance" the "Imported Water Supply Credit" that is calculated under the current RRCA Accounting Procedures. The Imports document refers to a map, labeled "Project Area Map," which was also one of the three documents provided on December 10. The third document was entitled "Outline for Augmentation Plan to RRCA" ("Augmentation Outline") and offered Nebraska's vision of the topics and issues that need to be addressed in order for the RRCA to agree upon an augmentation plan.

At the special meeting of the RRCA, Nebraska asked that Kansas and Colorado evaluate the Imports Document and the Augmentation Outline and provide Nebraska with their initial responses. Kansas also asked that Nebraska provide the calculations and backup for Nebraska's preliminary and final Republican River Basin Forecast. Although Nebraska initially agreed to this request, I now understand from your letter of January 7, 2013, that Nebraska is declining to do so. Also, I note that no response to Nebraska's request has been forthcoming from Colorado. Nevertheless, Kansas is responding to Nebraska's request as fully as practicable given the shortness of time, the lack of specifics provided by Nebraska, and the fact that Nebraska's documents raise issues that are presently before the Special Master or likely to be affected by rulings of the Special Master and the Supreme Court in the pending litigation. With those substantial caveats, Kansas now provides an initial response to Nebraska in order to alert Nebraska to Kansas' initial reactions to Nebraska's submittals.

With regard to the Imports Document's new proposal to convert some 62 wells shown on the Project Area Map from irrigation to augmentation purposes, it may be helpful to note the following. The proposed pumping would be mostly from wells in the Republican River Basin, not the Platte River Basin (55 of the 62 wells shown on the Project Area Map are in the Republican River Basin). There is no evidence that these wells pump water that was recharged from the Platte River canals.

The Imported Water Supply Credit established in the Final Settlement Stipulation (FSS) was a result of negotiations regarding Nebraska's assertion that the irrigation projects in the Platte River Basin have artificially created additional water supplies within the Republican River Basin. This specific credit was designed to address the uncontrolled effects of these irrigation projects on the groundwater levels in the area straddling the two basins and on stream baseflows. The FSS contains no provisions addressing the artificial "enhancement" of these baseflows to produce an altered IWS credit.

The concept described by Nebraska's Imports document appears to be a proposal for an augmentation project, i.e., a plan to pump groundwater and deliver it as surface flow for the sole purpose of offsetting stream depletions in order to comply with the Compact. Based only on an initial review of the concept, it appears to Kansas that it would be a poor fit to combine the proposed augmentation pumping concept with the existing Imported Water Supply Credit calculation of uncontrolled irrigation effects. As an augmentation project that pumps groundwater, we believe that Nebraska must show that pumping from these wells will not cause any new net depletions to streamflow either annually or long-term. Kansas is interested in discussing further with Nebraska how best to accomplish Nebraska's desire to augment streamflow in a way that protects the interests of Kansas.

Nebraska's Augmentation Outline seems to be a general characterization of a generic proposal for an augmentation plan and includes many of the broad topics about which Kansas would be concerned.

Of course, any specific augmentation plan will need to include sufficient detail to allow identification of all relevant issues and concerns and a thorough review by the technical staff of each state. For example, an augmentation project downstream of the storage afforded by Harlan County Reservoir would have different considerations than projects above that storage.

Moreover, Kansas needs to see the specifics of each augmentation plan in order to ensure that it will not reduce the usability of Kansas' allocation under the Compact in quantity, timing, or location. In addition, given the lack of experience the states have with augmentation plans under the FSS and the complexity of operations, periodic review and a limited term of approval would be appropriate.

To begin addressing the issues identified above, the following topics should be included in the outline:

- Location and extent of the stream depletions that the project is intended to offset;
- Records and analysis of the historical use of the wells to be used for augmentation;
- Proposed operational limits and proposed project accounting to ensure that the usability to Kansas will not be impaired by planned operations. Supporting analysis should accompany the proposed limits and accounting;
- Other operational details should include but not be limited to: Seasonal operating plans, considerations for water short and normal years, flow rates, and location of discharge;
- Plan for periodic review and evaluation of the project; and
- Consumptive use of the augmentation water and how it will be modeled.

More meaningful comments by Kansas would be facilitated by a more detailed presentation by Nebraska of its specific plans, including operational aspects and proposed accounting changes.

Kansas recognizes Nebraska's efforts in these documents to raise issues that are important to all the states. Nebraska should recognize that this brief response was prepared in a compressed time frame to accommodate Nebraska's request.

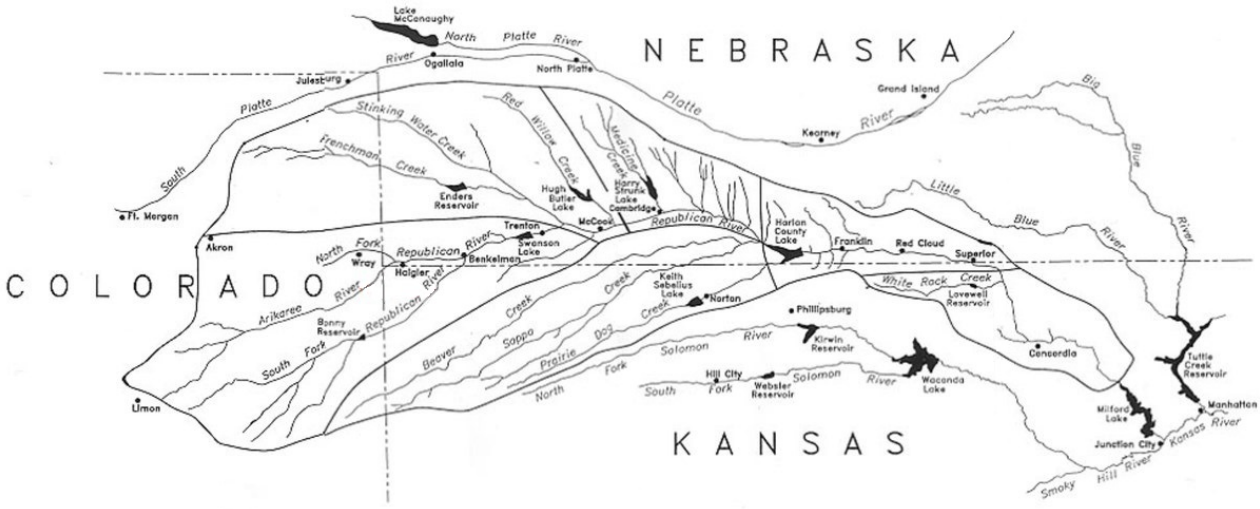
Sincerely,

David Barfield

David Barfield, P.E.
Kansas Chief Engineer

pc: Dick Wolfe

Attachments



Annual Meeting of the RRCA, September 12, 2013, Colby, Kansas

Exhibit A – Transcript

Exhibit B1 – Attendance List

Exhibit B2 – Signed Attendance Sheets

Exhibit C – Agenda

Exhibit D – Resolution to Approve the Backlog of RRCA Annual Reports (2007-2011)

Exhibit E – U.S. Bureau of Reclamation Report

Exhibit F – U.S. Geologic Survey Report

Exhibit G – U.S. Geologic Survey Summary Page

Exhibit H – Engineering Committee Report for 2011

Exhibit I – Resolution to Adopt Revised Bonny Area-Capacity Tables and Apply to RRCA Accounting (2007-2011)

Attachments continued

Exhibit J – Resolution Regarding Harlan County Lake Evaporation Split for 2013

Exhibit K – Engineering Committee Report for 2012

Exhibit L – Resolution Recognizing Mr. Scott Ross

53RD ANNUAL MEETING OF THE
REPUBLICAN RIVER COMPACT ADMINISTRATION

HELD September 12, 2013

BEGINNING at 9:00 a.m.

At the Colby Community Building Little Theatre Room, Colby, Kansas.

The above-entitled meeting was taken at the Colby Community Building, Little Theatre Room, 285 E. 5th, Colby, Kansas, before Marilyn F. Bailey, Registered Merit Reporter and Certified Court Reporter for the State of Kansas.

APPEARANCES NEXT PAGE:

REPUBLICAN RIVER COMPACT ADMINISTRATION APPEARANCES:

For Kansas:

David Barfield, Commissioner and Chair
Scott Ross, Water Commissioner
Chris Grunewald, Kansas Attorney General's Office

For Colorado:

Dick Wolfe, Commissioner
Scott Steinbrecher, Colorado Attorney General's Office
Ivan Franco, Engineer Adviser

For Nebraska:

Brian Dunnigan, Commissioner
Justin Lavene, Nebraska Attorney General's Office
Jim Schneider, Deputy Director

08:50 AM CHAIRMAN BARFIELD: Okay, I'd like to call this meeting to begin. My name is David Barfield. I am Kansas' Chief Engineer and Commissioner for Kansas and Republican Compact Administration for this year. Also Chairman of the Administration.

So welcome to the 53rd Annual Meeting of the Republican River Compact Administration here in Colby, Kansas.

We have an agenda that we'll consider here in a moment for adoption for the morning. But before that, I'd like to do introductions. And I think to do that, we're a small enough group, and I think the room's small enough that we'll just go around, first at the head table here, and then

09:03 AM just go around the room. And if you could just state your name, and sort of your association, and interest in the Republican River Basin, we would appreciate that.

Let's start with myself. I've already introduced myself. To my -- I'll introduce our Kansas delegation here at the table.

To my right is Scott Ross, Water Commissioner from the Stockton field office and our lead Engineering Committee Representative for one more day here. We'll speak later in the

morning about Scott's retirement that starts tomorrow.

And then on my left is Chris Grunewald from the Kansas Attorney General's office.

So Commissioner Wolfe, why don't we have you introduce the Colorado delegation?

COMMISSIONER WOLFE: Thank you, Chairman. Good morning. Dick Wolfe, Colorado State Engineer and Commissioner for Colorado on the Republican River Compact.

To my left is Scott Steinbrecher, who's Assistant Attorney General for Colorado. And to his left is Ivan Franco, who's the Engineer Adviser for Colorado.

09:04 AM CHAIRMAN BARFIELD: Commissioner Wolfe -- I'm sorry, Commissioner Dunnigan, if you'd introduce Nebraska's delegation?

COMMISSIONER DUNNIGAN: Thank you, Chairman Barfield. My name is Brian Dunnigan. I'm the Director for the Nebraska Department of Natural Resources and Commissioner for the Republican River Compact Administration.

To my immediate left is Justin Lavene from the Attorney General's Office. And to my right is Deputy Director, Jim Schneider.

09:05 AM

CHAIRMAN BARFIELD: Thank you, Mr. Dunnigan. Why don't we start over here, and if you could just, again, say your name and your association. This meeting is being recorded, we have a court reporter here, so to the extent you're making remarks, we will have a microphone available for those that make presentations. But if you could just speak slowly and plainly, that would be helpful.

MS. SCHELLPEPER: I'm Jennifer Schellpeper with the Nebraska Department of Natural Resources.

MR. KOESTER: Paul Koester with the Department of Natural Resources of Nebraska.

MR. RILEY: Tom Riley with the Flatwater Group.

MR. GROFF: Marc Groff, also with the Flatwater Group.

MR. WILMOTH: Tom Wilmoth, counsel for Nebraska.

MR. SULLIVAN: Mike Sullivan with Colorado.

MR. AMPE: Peter Ampe, Hill and Robbins, counsel for the Republican River Water Conservation District.

MR. ROBBINS: I'm David Robbins, also

09:06 AM counsel for the Republican River Water Conservation District in Colorado.

MS. WILKINS-WELLS: Kate Wilkins-Wells, GMD 4, Colby.

MR. FANNING: Jasper Fanning with the Upper Republican Natural Resources, District of Nebraska.

MR. STANTON: Shane Stanton with the Department of Natural Resources, Nebraska.

MR. O'CONNER: Tom O'Conner, Nebraska Department of Natural Resources.

MR. EDGERTON: Brad Edgerton of Frenchman-Cambridge Irrigation District.

MR. THOMPSON: Aaron Thompson with the
09:06 AM Bureau of Reclamation.

MR. SCOTT: Craig Scott with the Bureau of Reclamation.

MR. DOWELL: Jack Dowell with the Groundwater Management District in Yuma, Colorado.

MR. KEELER: Dave Keeler, Division of Water Resources, Colorado.

MR. MILLER: John Miller with the U.S. Geological Survey, North Platte Field Office.

MR. ERGER: Patrick Erger with the Bureau of Reclamation.

09:07 AM MR. CLEMENTS: Mike Clements, Lower Republican Natural Resources District in Alma.

MR. KOTSCHWAR: Jerry Kotschwar, Frenchman Valley Irrigation District. Nebraska.

MR. JANKOVITS: Clarence Jankovits from Frenchman Valley.

MR. ALBERT: Kenneth Albert, Frenchman Valley Irrigation District in Nebraska.

MR. FELKER: Don Felker, Frenchman Valley Manager, Nebraska.

MR. SMITH: Dan Smith, Middle Republican Natural Resources District in Nebraska.

MR. MERRIGAN: Bob Merrigan, Middle Republican Natural Resources District, Nebraska.

09:07 AM MR. CAO: Hongsheng Cao. Kansas District Water Resources.

MR. CORYELL: Dennis Coryell, Republican River Water Conservation District, Colorado.

MS. DANIEL: Deb Daniel, Manager of Republican River Water Conservation District, Colorado.

MR. STEPHENS: Dan Stephens, St. Francis, Kansas.

MR. DELKA: Mike Delka, Manager at Bostwick Irrigation District in Nebraska.

09:08 AM MR. WINZ: Ray Winz, Tri-Basin NRD in Holdredge, Nebraska.

MR. THORBURN: John Thorburn, Manager of Tri-Basin NRD in Holdredge, Nebraska.

MR. STREETER: Tracy Streeter, Kansas Water Office, Topeka.

MR. HELMS: Dale Helms, Nebraska Surface Water and groundwater irrigator.

MR. BOSSERT: Wayne Bossert, Groundwater District 4, here in Colby.

MR. PERKINS: Sam Perkins, Kansas Division of Water Resources.

MR. Schreuder: Willem Schreuder, Principia Mathematica.

09:09 AM CHAIRMAN BARFIELD: All right, thank you very much. The next item on the agenda is consideration of the adoption of the agenda. We distributed the proposed agenda as in its final form for our consideration this morning.

I guess I would ask if there are any changes to the agenda that has been proposed to the meeting.

I guess I'd accept a motion to adopt it.

COMMISSIONER WOLFE: So moved.

COMMISSIONER DUNNIGAN: Second.

09:09 AM CHAIRMAN BARFIELD: It's been moved and seconded. All in favor of adopting the agenda as proposed, signify by saying "Aye."

COMMISSIONER DUNNIGAN: Aye.

COMMISSIONER WOLFE: Aye.

CHAIRMAN BARFIELD: Aye.

Very good. The agenda is therefore adopted.

For everybody's information, the next two items deal with approval of reports and transcripts. Agenda item 3 is sort of a routine matter where we consider the report and transcript for the previous year's annual meeting, and we'll consider that first.

09:10 AM Item 4 is consideration of previous annual and special meeting reports and transcripts that have been backlogged. So we'll consider that subsequently.

So a transcript of the meeting, of last year's annual meeting, and a report that is a summary of the meeting has been distributed to the states, and there's been opportunity to review that, and edit it, and I believe we are ready to adopt the report and transcript for last year's meeting at this time. Is that correct? Okay. I

09:11 AM see both indicating so.

So I would, again, welcome a motion to do that.

COMMISSIONER WOLFE: Mr. Chairman, I move that we approve the annual report and transcripts for the 2012 annual meeting.

CHAIRMAN BARFIELD: Thank you, Mr. Wolfe.

COMMISSIONER DUNNIGAN: Second.

CHAIRMAN BARFIELD: All right, second from Mr. Dunnigan. All in favor, say "Aye."

COMMISSIONER WOLFE: Aye.

COMMISSIONER DUNNIGAN: Aye.

CHAIRMAN BARFIELD: I say Aye. Very good. That is done.

09:11 AM The agenda item also notes subsequent special meetings, and I'd like to, just for the benefit of those attending, note that since last year's annual meeting there have been four special meetings of the Compact Administration. And when we do the record for the year this annual meeting will be a part of that record, and as well as the four special meetings that we have had since our last annual meeting. Let me briefly summarize the dates and purposes of those meetings.

On December 11, 2012, the Republican River

09:12 AM Compact Administration, RRCA, held a special meeting to discuss an outline for augmentation developed by Nebraska. And at that meeting we also approved regulations -- revisions to our rules and regulations.

On March 8, 2013, the RRCA held a special meeting to consider Nebraska's Rock Creek Augmentation Plan and Resolution. That resolution was not approved. Nebraska initiated the Fast Track arbitration immediately thereafter, and an arbitration trial was held on that matter in Denver during late August.

That arbitration trial also dealt with Nebraska's Proposed Alternative Water Short Year 09:13 AM Administration Plan.

On October 2nd the RRCA held a special meeting to consider Colorado's Compact compliance Pipeline Proposal Resolution and Bonny Reservoir Proposal Resolution. These resolutions were not approved. Colorado initiated Fast Track arbitration on these matters immediately thereafter.

The arbitration trial on those two matters will be held in Denver during early October.

And finally on July 9, the RRCA held a

09:13 AM special meeting considering Nebraska's Cooperative Republican Platte Enhancement Augmentation Plan Proposal, and a resolution to adopt that proposal.

That resolution was not approved, and again, Nebraska initiated Fast Track arbitration on the matter shortly thereafter.

An arbitration trial on that matter has not yet been scheduled.

So I believe that --

COMMISSIONER WOLFE: Mr. Chairman, just a slight correction there. I think you indicated October 2nd. It should have been May 2nd for the special meeting for Colorado's proposed CCP and Bonny Resolutions.

09:14 AM CHAIRMAN BARFIELD: Thank you, Commissioner Wolfe, for that correction. Yes, the third of the meetings I mentioned was on May 2nd.

COMMISSIONER WOLFE: Thank you.

CHAIRMAN BARFIELD: Thank you.

I believe that concludes Agenda Item 3. Agenda Item 4 is the -- is discussing the status and acting on previous annual special meeting reports and transcripts.

We have developed a backlog of annual

09:14 AM reports, and transcripts of those reports, going back to the 2007 annual meeting for the year 2006. And so we have distributed those, and reviewed those, and I believe we are ready to approve a package that is for the five years, for the annual meetings for 2007, 2008, 2009, 2010 and 2011. So I guess if -- is there any discussion?

Okay. Again, I would entertain a motion to accept.

COMMISSIONER DUNNIGAN: So moved.

CHAIRMAN BARFIELD: All right.

COMMISSIONER WOLFE: Second.

CHAIRMAN BARFIELD: All right. It's been moved and seconded. Then I would ask those in
09:15 AM favor to indicate by saying "Aye."

COMMISSIONER WOLFE: Aye.

COMMISSIONER DUNNIGAN: Aye.

CHAIRMAN BARFIELD: Aye. Okay. So that packet of annual reports and transcripts are approved.

Yesterday we held a work session where we sort of prepare for this morning's meeting, as well as discuss other matters in a more informal setting. We have not published an annual report for some time, as you can gather. We discussed

09:16 AM the format of distributing the annual report. Our rules require annual reports to be developed, and there's some distribution of those reports that's required to the President of the United States, and others.

We've decided to publish them electronically, rather than in a booklet form, and distribute them via CDs. Each state will get a certain number of CDs, and the chair each year is required to distribute those to a fairly limited set of individuals. And so that distribution will happen in CD form, in electronic form, and those PDFs will also be, you know, maintained on our various web sites. So those should be available
09:17 AM very shortly.

So I believe that concludes Agenda Item 4.

So we will go on to Agenda Item 5, which is reports of the commissioners. As chairman, I will give those reports.

In terms of climate conditions in Kansas, I reported last year of drought conditions which started in Kansas, in southern Kansas, in 2011, which was among the most -- the least precipitation, and most significant heat in quite some time. Unfortunately, these conditions

09:17 AM continued in to 2012 and spread to a statewide status, rather than being confined to southern Kansas.

We saw a record number of files, water right files administered for minimum desirable streamflow, or MDS, as we call it across the state. We administered over 450 files in 2012, including 190 files on the Republican River Basin. And this administration in the Republican River began on August 9, 2012 and continued through August 15th, 2013, when it was lifted.

We also did a significant amount of general water administration throughout the state in 2012, and some in 2013 as well. Fortunately
09:18 AM drought conditions have eased over significant portions of Kansas, particularly south central Kansas and eastern Kansas, although much of western Kansas remains very dry.

In terms of legislation, the most significant legislation with respect to water passed in 2013 was House Bill 2363. I provided a copy of this bill to the other states yesterday in our work session. The bill has a number of sections on various matters. I'd like to highlight two of them here this morning.

09:19 AM First, the bill amended the Kansas Water Appropriation Act to set up a mechanism for a new type of permit, called a Limited Transfer Permit. The impetus for this section of the bill was a concern for an effective means to allow for water for, particularly, fracking activities in areas of limited water supply. The bill, in essence, allows for temporary leasing of a portion of a water right up to four million gallons in a year, for fracking or other purposes.

A second portion of the bill I'd like to highlight, it amended our Stream Obstruction Act that we use to regulate the construction of dams, and other types of stream obstructions, and the
09:20 AM bill significantly narrowed activities that are subject to regulation under that act. The bill changed jurisdictional definitions and expanded exemptions for permitting of dams and other stream obstructions, as well as allowing more projects under Streamline Permitting Process, called General Permits.

In response to a question of Commissioner Dunnigan, we'll talk about the bill's implications to monitoring non federal dams in Kansas under the Compact in a later agenda item.

09:20 AM While we crafted and supported a number of the changes to our jurisdiction on smaller stream obstructions and dams, the bill went much further that we believed prudent in the area of reducing the state's jurisdiction of dams.

Last year I reported on a bill of the 2012 legislature that enabled the creation of local enhanced areas, or LEMA's, as we call them. This legislation was championed by Northwest Kansas Groundwater Management District Number 4, and particularly its manager, Wayne Bossert, who is here with us this morning.

Immediately following the passage of this bill, GMD 4 initiated proceedings for the state's
09:21 AM first LEMA in portions of Sheridan county and the Republican River Basin, as well as a small piece of Thomas county. The proceeding required their ongoing leadership and work, vigorous stakeholder involvement, and two formal hearings. I was privileged to give final approval of this first LEMA early this year.

The LEMA implements an allocation of 55 inches over five years, and thereby reduces water use in that area by 20 percent.

In an effort to leverage and incentivize

09:22 AM the potential water savings that a LEMA could affect, the USDA RMA has implemented a pilot project for limited irrigation crop insurance within this LEMA. LEMA's been hailed as a very useful tool to give locals a way to determine their water management goal and outcome, and specific means to accomplish those outcomes.

LEMAs are being discussed in other areas in northwest Kansas, in west central Kansas, and to a lesser degree, southwest Kansas.

Kansas' Division of Water Resources has a vigorous compliance enforcement program that true water right holders are abiding by the terms and conditions of those permits. This program has had
09:22 AM widespread support for its fairness and effectiveness. Over this last year we were encouraged to strengthen this program further, to discourage overpumping, meter tampering and other such offenses. Effective this January we revised our penalty matrix to increase water penalties after the additional notice of noncompliance.

I'd like to move to talking about Kansas' activities with respect to the Republican River Compact. Kansas is fully in compliance with the Republican River Compact. This is true with

09:23 AM respect to all the tests of compliance under the final settlement stipulation. This is also true with respect to Kansas' additional duties with respect to participation in the Compact Administration and its business.

This last year has been an extremely busy period in this regard for all states, including Kansas.

As with all the states, Kansas has devoted significant legal and technical resources in the ongoing U.S. Supreme Court litigation regarding the Republican River Compact, which continues. This includes participation in the August, 2012 trial, and post-trial activities. It also
09:24 AM included preparing for this past month's trial on the final issue in that proceeding.

Second, Nebraska's Alternative Water Short Year Administration Plan. On July 31, 2012, just before last summer's trial, Nebraska submitted its first ever Alternative Water Short Year Administration Plan, pursuant to Appendix M by the final Settlement stipulation. Kansas took time to make the necessary review of the Nebraska plan, found it did not conform to Appendix M's requirements. Kansas offered a solution to the

09:24 AM plan's deficiencies. Nebraska triggered arbitration on March 21, 2013. Kansas has actively participated in that arbitration, meeting every arbitration deadline, and has committed sufficient resources to understand Nebraska's plan, and clarifying Kansas' case for the fact-finder in that arbitration proceeding.

With respect to augmentation plans, Nebraska requested Kansas' input on what it believed necessary for the augmentation plan. Kansas participated in the December, 2012, special meeting on the subject I mentioned previously. Provided written input on two occasions regarding augmentation plans.

09:25 AM With respect to the Rock Creek Augmentation Plan; on February 8, 2012, Nebraska submitted the proposal to the RRCA and requested a special meeting and vote on the matter within 30 days. Kansas found the Rock Creek Augmentation Plan deficient, and voted not to approve the plan at that special meeting. Nebraska triggered arbritration on the issue on March 21, 2013.

Kansas has met every arbitration deadline, and committed sufficient resources to understanding Nebraska's plan and clarifying

09:26 AM Kansas' case in front of the fact-finder in that arbitration proceeding.

With respect to Colorado's Compact Compliance Pipeline, and the Bonny Reservoir issues; on April 5, 2013, Colorado submitted a Revised Compact Compliance Pipeline Proposal, and a new proposal is Bonny Reservoir Proposal, the RRCA, again, requesting a meeting within 30 days to consider the matters.

The CCP, as it is called, has been arbitrated before, and although Colorado updated its plan in that regard, Kansas found it to still be deficient.

On May 2, 2013, Colorado initiated two
09:26 AM separate non-binding arbitrations concerning these two proposals. Again, Kansas has met every arbitration deadline and has committed sufficient resources to understand the proposals and clarifying -- and is working to clarify Kansas' case for the fact-finding and arbritration.

In addition, Kansas has devoted significant resources and additional time to settlement discussions with Colorado on these issues. Since May, Kansas has held many technical discussions with Colorado.

09:27 AM Kansas has completed a modeling and accounting analysis on both issues, and provided those to Colorado through this period. Eventually the states drafted -- created drafts of documents aiming to resolve, or at least significantly narrow, the issues in dispute on those matters. While we've not reached agreement on all issues, we have significantly narrowed the list of disputed matters.

With respect to operations in 2013, particularly with respect to Harlan County Reservoir; in light of the 2013 water short year, this spring Kansas worked with Nebraska and the Bureau of Reclamation, as well as our Kansas 09:28 AM Bostwick Irrigation District, regarding Harlan County Reservoir operations. Kansas sought to fully understand Nebraska's planned operation, offered a proposal, and then a counter proposal to reduce the negative impact of Nebraska's compliance plan on Kansas.

Eventually the state of Nebraska reached an agreement directly with the Kansas Bostwick Irrigation District to mitigate some of those effects.

Finally, Nebraska has submitted its

09:28 AM Cooperative Republican Platte Enhancement Augmentation Proposal, submitting that to the RRCA on June 10, 2013, hosting a workshop regarding that, and then we had the special meeting on the matter on July 9, 2013.

Again, Kansas is unable to approve the plan due to many of the same objections as the Rock Creek Augmentation Project. Nebraska has subsequently triggered arbitration on this issue, and Kansas will devote the necessary resources in those processes.

Each of these disputes has been very time and resource consuming. Kansas will continue to work with the states through these processes
09:29 AM towards resolving these concerns.

And finally just a few announcements. There's been a significant -- there is ongoing a significant changing of the guard with regard to water management of northwest Kansas.

First, I've mentioned Wayne Bossert's name as manager of the Northwest Kansas Groundwater Management District Number 4. Wayne has been manager for 36 years, this district, and will be retiring on October 1.

Thank you, Wayne, for your many years of

09:30 AM dedicated and excellent service to your district, and really to the citizens of Kansas through your leadership in the groundwater management district.

His replacement is here today, Kate Wilkins-Wells. We look forward to working with you in the future.

In addition, Scott Ross, our long-time water commissioner for the Stockton field office of the Division of Water Resources is retiring tomorrow. Scott has been with the division for 32 years, and has been water commissioner for the Stockton field office for 27 years.

So we'll have a few words to recognize his contributions to the RRCA at the end of our agenda
09:30 AM this morning. But I would like to acknowledge the excellent long-term leadership that he has provided to the division's field operations for northwest Kansas. He has done an outstanding job.

Again, I'm sure we're going to make it through this, but again, we have two giants of water management that we're going to see move on. So that concludes my report. I guess I would move to Colorado.

COMMISSIONER WOLFE: Thank you, Chairman Barfield. And thank you for your report, and the

09:31 AM details and the description of all the work that's been ongoing with the Compact Administration this past year, in light of the number of arbitrations, and the trial before Special Master Kayatta, in Portland, Maine. And because of that, I'd like to first take this opportunity to thank my staff, particularly those individuals here today, Scott Steinbrecher, and Ivan Franco, Mike Sullivan, Pete Ampe with the District, Dave Keeler, and for all of their help over this past year. It's been a tremendous amount of effort.

As Chairman Barfield has indicated, to dedicate the necessary resources that the Compact and FSS requires to take action on these matters
09:32 AM that come before the RRCA, and for better for worse, it's the timing of these things, the way they came out, and we've had several of them before us, as Chairman Barfield indicated.

So certainly I could not have done what I have done over this past year to address these in my capacity as commissioner and to take the necessary actions that we did without all the help and resources that these individuals have provided. And I know each of the states, likewise, probably have respective staff that have

09:32 AM assisted them in those efforts.

I'd also like to just thank all of the efforts, again, of the Republican River Water Conservation District. Mr. Ampe and Mr. Robbins, Deb Daniel. Their board have done over this past year, and frankly, over almost the past ten years since the creation of their district in 2004, to help Colorado in its efforts to achieve Compact compliance. We certainly could not have done it without them, and ultimately we could not have done it without the water users in the Basin. And as I've reported in the past, these individual irrigators in the Basin have committed somewhere around a hundred million dollars of their own
09:33 AM money in efforts to achieve Compact compliance in the Republican River Basin.

That's just a monumental effort. And when you compare that to some of the other efforts, and compliance efforts around the state that Colorado has dealt with, this is huge. It's amazing the resources that these individuals and efforts they've taken to solve the local problem without the state coming in and doing this. The state has provided a loan to the district to help in the construction of the Compact Compliance pipeline,

09:34 AM but they've committed over the next 20 or 30 years to pay that back to the state, with interest.

And so I've just got to commend them, again, for all of those efforts. They continue just tirelessly to work with the water users out there, and trying to take additional lands out of production through buyouts and through the CREP program. I know they're continuing to do that.

I know Mr. Robbins has spent many hours working back in DC, lobbying for efforts to get the actions approved under the farm bill for the CREP program, not only in the Republican River Basin, but in the Rio Grande Basin in Colorado. This has been a very effective means for Colorado
09:34 AM in its efforts to take land out of production in an effort to reduce its consumptive use in the basin, so that we're within our allocations that's afforded under the Compact.

I won't really provide really any more details than what Chairman Barfield indicated in terms of Colorado's efforts that it's undertaken, in regards to its efforts for Compact compliance specifically with the Compact Compliance Pipeline and the efforts with Bonny Reservoir.

As Chairman Barfield indicated, those are

currently under arbitration, and we have been and continue negotiations with Kansas, to try to seek ultimate approval of those two proposals. And we will -- it's Colorado's intent to achieve Compact compliance as soon as possible, and these two proposals that are before the Compact Administration are critical in terms of those last steps that Colorado has undertaken over the last several years to achieve Compact compliance. So we're going to continue to work very diligently, and dedicate all the necessary resources, to make sure that that happens in a very timely manner.

Unless there's any questions, that concludes my report.

09:36 AM CHAIRMAN BARFIELD: Thank you, Commissioner Wolfe. I have no questions.

Commissioner Dunnigan, Nebraska's report.

COMMISSIONER DUNNIGAN: Thank you, Chairman Barfield, for hosting this year's annual meeting. We really appreciate it. Once again I'm happy to report that the state of Nebraska is in compliance with the Republican River Compact.

Using accounting procedures, Nebraska has had a positive balance since 2007, which has led to compliance with the five year average. Based

09:36 AM on preliminary estimates, Nebraska will, again, be in compliance for the two year and five year period ending in 2013.

As I reported last year, 2012 saw drought conditions once again creep into the Basin. In fact, 2012 was the warmest and driest year in 118 years of record-keeping for the state of Nebraska.

However, Nebraska's compliance efforts through 2013 have been substantial, affording Kansas water users access to Kansas allocations.

This has occurred as prescribed through the implementation of the third generation integrated management plans which contain forecasting provisions and accompanying controls

09:37 AM that have ensured that Nebraska would take sufficent actions for Compact Compliance in 2013.

These forecasting procedures have proven to be a significant advancement over what was available to Nebraska during the previous drought.

While no actions were triggered for 2012, Nebraska, nevertheless, achieved a positive balance in the absence of additional actions.

For 2013, the conservative dry year projections proactively identified potential for noncompliance, thereby providing the necessary

09:37 AM information to proactively reduce and offset consumptive levels necessary to ensure Compact compliance.

The Basin NRDs continue to demonstrate an ongoing commitment for compliance through their significant investment in programs and projects that will reduce and/or offset depletions throughout the Basin.

These include the augmentation project in Rock Creek Sub-basin which provided water for compliance in 2013, and the augmentation project in Medicine Creek, which is planned to be operational in 2014, to assist Nebraska with compliance going forward.

09:38 AM Other provisions have included the permanent and temporary retirement of surface and groundwater irrigated lands throughout the Basin. Nebraska also continues to invest in the science necessary to support future sound management decisions.

The department is continuing to develop modeling tools and support evaluation and potential injunctive management options throughout the basin.

The department looks forward to working to

09:38 AM assess various water management alternatives through the WaterSMART Basin Studies Program and utilize the tools that have been developed as part of this study to evaluate system improvements and operational improvements that can be made throughout the Basin.

Nebraska has brought several time-critical issues before the RRCA to be addressed over the last year. Although Nebraska and Colorado have agreed on these issues, they remain unresolved by the RRCA.

The fundamental problem is that Kansas has repeatedly verified various legal and technical requirements for which Nebraska and Colorado find
09:39 AM no foundation. Therefore, Nebraska seeks from Kansas a clear and transparent process, the parameters of which are rooted in the four corners of the Compact and FSS, but can be utilized in working to resolve issues related to implementation of key components provided within the FSS. Short of such a clearly defined process, Kansas has forced Nebraska and Colorado to rely on the dispute resolution process laid out in the FSS, as it appears the only means to seek resolution of these issues.

09:39 AM In closing, I reiterate that Nebraska will continue to comply with the Republican River Compact. The State will continue to proactively evaluate the conditions within the Basin and make the necessary adjustments to remain in compliance. We will continue to work with all stakeholders in the Basin, including the other states, the NRDs, Bureau of Reclamation, and water users, as we look to enhance our management efforts in the future.

I will now have Tom O'Conner give a report on water administration in the Republican Basin for calendar year 2012. Tom.

TOM O'CONNER: Thank you. This is the report of the Water Administration activities for
09:40 AM the Republican River Basin in Nebraska for the calendar year 2012.

January 17th, letters were sent to irrigators reminding them that the 2011 Water Use Reports must be filed with the Cambridge Field Office, or they would be closed for irrigation in 2012.

On January 25th, 16 open notices were issued to storage permits that had been previously closed.

February 6th, 18 closing notices were

09:41 AM issued to water users that failed to submit their required annual Water Use Reports. These water users were not allowed to divert water during the 2011 calendar year.

July 24th, 13 closing notices were issued to water users and storage permit holders between A-3629 and Arapahoe, Nebraska, notifying them that they shall not divert water until further notice.

July 24th, one regulating notice was sent to an irrigator in the Republican River Basin notifying them of the legal amount they could pump.

August 31st, 13 closing notices were sent to storage permit holders in the Republican Basin.

09:41 AM October 24th, 13 opening notices were issued to permits that had been previously closed.

December 11th and 12th. Water Use Reports were mailed to all IR permits, that's irrigation from a natural stream; SI, which is irrigation from reservoirs on lands also covered by a natural flow appropriation; and SO, irrigation from reservoirs on lands not covered by natural flow appropriation, permits in the Republican Basin, with the exception of federally owned canals.

That concludes the Water Administration

report.

COMMISSIONER DUNNIGAN: Thank you, Tom.

I'd like to ask Dr. Jasper Fanning, manager of the Upper Republican NRD, to provide an update on augmentation projects within the Basin.

DR. JASPER FANNING: Thank you, Director Dunnigan. As you mentioned earlier, the Rock Creek project constructed by the Upper Republican Natural Resources District is operating this year. That project was constructed to offset depletions within the Rock Creek Sub-basin, is where it delivers water.

The capacity of that project is about 20,000 acre-feet on an annual basis. The district spent between 24 and 25 million dollars to construct that project, and it will cost the water users of the district approximately 42 and-a-half million dollars by the time everything's paid off.

At the same time that that project was being completed, we were working in conjunction with the Middle and Lower Republican Natural Resources Districts in the Republican Basin, along with the Twin Platte Natural Resources District in the Platte Basin, to construct the N-CORPE project that was discussed earlier. That project has

09:43 AM capacity of approximately three times that of Rock Creek to the Republican Basin in the Medicine Creek Watershed, it can deliver 60,000 acre-feet per year. The share of the costs attributable to the Republican Basin NRDs, the Upper, Middle and Lower, will be approximately 86 million dollars, and will cost about 150 million dollars by the time the project is completed.

At this time the N-CORPE board has issued and awarded contracts for construction of the well field and the pipeline to Medicine Creek at a cost of approximately 22 million dollars, with easements, pipeline, and well field. The land purchase up there, there was about 16,000 irrigated acres that were taken out of production, most of which was contiguous in southern Lincoln county. That project, according to the construction schedule, will be awarded a contract. The pipeline should be completed sometime December of this year. And the well field will be brought online shortly thereafter. That is the plan at this time. And that's all I have. Thank you.

COMMISSIONER DUNNIGAN: Thank you, Dr. Fanning. That concludes Nebraska's report.

CHAIRMAN BARFIELD: Thank you,

09:44 AM Commissioner Dunnigan.

COMMISSIONER WOLFE: Chairman Barfield?

CHAIRMAN BARFIELD: Yes.

COMMISSIONER WOLFE: Just quickly, before we conclude the reports, I was remiss in not mentioning someone else in our team who is critical, Dr. Willem Schreuder, who's in the back of the room. He's certainly a silent giant, certainly for us, and he's been very critical and instrumental, and I know he has not only assisted Colorado, but provides support to the RRCA, and the other two states as well for the model. So, thank you, and I apologize for not mentioning that in my report.

09:45 AM CHAIRMAN BARFIELD: All right, thank you, Commissioner Wolfe.

Okay, we'll move to the next agenda item, which is federal reports. Aaron Thompson, area manager, will give the report for the Bureau of Reclamation.

AARON THOMPSON: Good morning. I'm Aaron Thompson, representing Reclamation's Nebraska-Kansas area office. I've given a copy of our annual report to the RRCA commissioners. I think I gave a couple copies to each. We did have

09:45 AM some leftover copies, so for those of you in the audience, on the back table are some leftover copies of our annual report, if you're interested. I will not go through the report word by word, but just highlight a few things.

It contains the 2012 operations for our reservoirs, including precipitation data, end of month elevations for the federal reservoirs in the Basin.

One thing I would like to highlight is our Safety of Dams Project at Red Willow Dam. The reconstruction related to the safety of the dam's modifications at Red Willow Dam are, essentially, complete, including placement of the geonet sand
09:46 AM and gravel filtration system along the entire length of the dam.

And just to give you a few facts about that filtration system; it involved placing nearly 115,000 square yards of geonet and geotextile materials, 100,000 cubic yards of sand, 55,000 cubic yards of gravel. The system was overlaid with approximately 430,000 cubic yards of embankment material.

The construction is essentially complete. There was a contract modification to include

09:47 AM stabilization of the access road, and paving the crest of the dam, and those modifications are expected to be completed in early spring.

I would also like to highlight our WaterSMART Basin Study Program. The states of Colorado, Nebraska, and Kansas, and the U.S. Department of Interior Bureau of Reclamation are working together as study partners to conduct the Republican River Basin Study. This study is part of the U.S. Department of Interior WaterSMART Basin Study Program.

I would like to thank each one of the commissioners for the collaborative nature in which this study has moved forward. It's a 09:47 AM two-year study, and we are nearly ending our first year, and I think we're headed down a track of providing a basin study that will evaluate the viability and water management strategies to optimize surface and groundwater use, in consideration of the multiple demands and the potential effects of climate change and variability. And that concludes my comments this morning.

CHAIRMAN BARFIELD: Thank you. Any questions for Mr. Thompson? Commissioner Wolfe?

09:48 AM COMMISSIONER WOLFE: Thank you, Chairman. Aaron, I'd just like to thank you, again, for your efforts, and those of Craig Scott, as well, working with Colorado in the past year in regards to Bonny Reservoir, and since it has been drained, and the additional issues that have come up there regarding sedimentation, and weed issues around there. We appreciate your cooperation, working with us and the local people there, to address that issue, and hope we can continue working on that to ensure that those do not create an issue for us, nor you, in terms of operation of that dam. So thank you.

AARON THOMPSON: Thank you, Commissioner
09:49 AM Wolfe, for those comments. And Mr. Ross, it's been great working with you. We'll miss you.

CHAIRMAN BARFIELD: All right, thank you, Mr. Thompson. The next agenda item, we have an opportunity for a report by the U.S. Army Corps of Engineers. I do not believe anyone is present for the Corps of Engineers.

Very good. Then we will skip over that item.

Agenda Item 6 (c) then is a report from the U.S. Geological Survey. John Miller is here

09:49 AM to provide that report.

JOHN MILLER: Thank you for this opportunity to present the Republican River Streamflow-Gaging Collecting Data in Nebraska. I'd also like to thank the folks in Kansas on short notice of getting the projector set up. I probably should have given you some formal warning on my needs.

Well, the first -- this is just a copy of the -- of the sheet that's coming around. It's a summary chart of the 2012 water year mean discharges as compared to the period of record. I'll just jump right into the sites here.

09:50 AM The first set of sites we're going to go through are sites that are solely operated by the U.S. Geological Survey funded through the NSIP program, it's a National Streamflow Information Program. And we'll be going in downstream order.

Starting with the Arikaree River at Haigler. And just on all of these sites, I'm just going to point out the annual mean discharge for the 2012 water year, and as they compare to the period of record, and the corresponding ranking.

The mean discharge for the 2012 water year at Arikaree was .65 cfs, and that compares with a

09:51 AM running mean of 16.7. Its ranking is 77 out of 80 years of record.

Next site is the North Fork of the Republican River. No, I don't want to do that. There we go. The mean for the 2012 water year was 20.5 cfs as compared to a running mean of 41.6 cfs. And that is the lowest ranking in the period of 77 years of record.

The next site is the Buffalo Creek near Haigler. Its mean discharge was 2 cfs, again, with the lowest ranking of 72 out of the 72 years of record. And it compared with the running mean of 6.1 cfs.

The next site is the Rock Creek at Parks
09:52 AM site. 2012 mean was 5.86 compared to the running mean of 11.9 cfs. Again, that's the lowest ranking in 72 years of record.

The next site is the South Fork Republican River near Benkelman. 2012 mean was 13.0 cfs, compares to the running mean of 35.1. In 75 years of record, its ranking was 61.

The next site is Frenchman Creek at Culbertson. The mean for the 2012 water year was 30.1 cfs, compared to a running mean that is post Enders Reservoir development. That mean was 66.7.

09:53 AM And its ranking was 59 out of 62 years of record.

The next site is Driftwood Creek near McCook. The mean for 2012 was 6.79 cfs, compared to a running mean of 8.38. Over 66 years of record, and its ranking is 38.

The next site was Red Willow Creek near Red Willow. Had a mean of 15.7 cfs, compared to a running mean of 13.8. If I'm reading that right. Again, that was post Hugh Butler Reservoir development. And its ranking was 12 out of 51 years of record.

Sappa Creek near Stamford, had a mean for 2012 year of 17.5 cfs, compared to the running mean of 39.0. And its ranking was 33 out of 66

09:54 AM years of record.

The last site in this set is the Courtland Canal site. Courtland Canal diverts water from the Republican River to the Lovewell Reservoir in Kansas.

Mean for the 2012 year was 74.4 cfs compared to a running mean of 75.4, for a ranking 29 out of 58 years of record.

These next set of sites are operated by the U.S. Field -- field operations are by the U.S. Geological Survey, but its federal match, and

09:55 AM state and local match through the cooperative program by the USGS. The first site is the Republican River at Stratton. Had a mean for the 2012 water year of 32.4 compared to a running mean of 94.8. That ranking is 54 out of 62 years of record.

The next site is Republican River at McCook. Had a mean of 41.3 for the 2012 water year, compared to a running mean of 125.3 for 58 years of record. Gives it a ranking of 53.

The last site in this set is the Republican River near Orleans. Had a mean of 103 for the 2012 water year, compared to a running mean of 230. That gives it a ranking of 57 out of
09:56 AM 65 years of record.

The last couple of sites are sites where the field operations are conducted by the Nebraska Department of Resources, and the USGS and U.S. Army Corps of Engineers provides DCPs for web display and data review.

The first site is the Frenchman Creek at Palisade, had a mean of 18.5 cfs for the 2012 water year. Compared to a running mean of 60.8. And this, again, is post Enders Reservoir development. And the ranking is 60 out of 62

years of record.

And the final site is the Republican River at Cambridge. Had a mean of 105 cfs for the 2012 water year, compared to a running mean post Harry Strunk Reservoir of 212 cfs. Gives it a rank of 58 out of 63 years of record.

And that is my last slide. And here's some information on the senior staff in our Lincoln office. And that is my presentation.

CHAIRMAN BARFIELD: Okay, thank you, Mr. Miller. Any questions for Mr. Miller? All right, hearing none. Thank you very much.

The next item on the agenda is committee reports. And we'll hear the Engineering Committee Report from Scott Ross.

SCOTT ROSS: Okay. We've worked through the 2012 Engineering Report for the meeting that was conducted on October 16th. The assignments that were given, I'll briefly give you the assignments and the activities.

We were assigned to finalize work on the user's manual. We have considered that, and are recommending for the 2013 action that that task be removed from the list of assignments, and that each state produce, with their accounting, a

09:59 AM procedure upon which that data was being recorded.

States exchanged the required accounting data on April 15th, 2012. Kansas/Nebraska posted their online results on April 15th. Willem Schreuder, Principia Mathematica, completed the preliminary version, or preliminary run, and posted on April 27th, 2012. States exchanged final data on September 20th, 2012, and Principia Mathematica completed a final run of this data on October 4th, 2012.

The committee collected stream flow and climate data in cooperation with the Bureau of Reclamation, and Army Corps of Engineers, and the U.S. Geological Survey.

10:00 AM We were assigned to continue efforts to resolve concerns related to varying methods of estimating groundwater and surface water recharge. Kansas provided literature that we believe support a revisiting of that issue. And that was about all that happened. That issue is still under review.

We were assigned to perform an ongoing maintenance -- or retain Principia Mathematica. That's still under discussion. Billable costs to each state not to exceed $15,000. Each state is

10:00 AM separately contracted with Principia Mathematica for calendar year 2012.

Continue development of five year accounting spreadsheets. The Committee considered that. Each state is performing their own, and we are recommending that the administration remove those -- remove that assignment, as each state is doing fine on their own individual five year spreadsheet.

Continue to review Colorado's augmentation proposals as appropriate. That has been largely done through the administration and special meetings and arbitrations.

Continue efforts to finalize 2006 to 2010
10:01 AM accounting. Much of this is subject to the current Supreme Court case, and additional work pending arbitrations. No further efforts were made in regard to finalizing the accounting.

Continue discussion of issues preventing agreement on the final accounting. Again, those are primarily being held up by the Supreme Court case, and pending arbitrations.

We were assigned to develop a procedure to account for inflow of stream segment between Guide Rock diversion dam and the relocated stream flow

10:02 AM gauge. After some discussion and review, Nebraska decided to install a second, or an additional stream gauge. That seems to have resolved the issue, so we're recommending that that assignment be removed.

Discussed application of revised Bonny area capacity tables to the current past accounting. That proposal has been -- Kansas has agreed to apply the area capacity tables to the 2011 and '12 data. Colorado's asked to retroactively apply the area capacity table to 2007 through 2010.

I believe the committee has taken some action on -- or made some recommendations on that. 10:02 AM But Kansas agrees to include that information, and I believe a resolution will be forthcoming today.

Discuss any kind of changes that may be needed for surface water diversions for the purpose of recharging groundwater. We didn't continue any discussion with that. I am anticipating that that is something that may need to be retained as an assignment.

Discussed developing a framework for the application of approval process for future augmentation plans. The engineering committee

10:03 AM recommends that that be continued, but with the pending arbitrations, further direction may be available subsequent to those arbitrations.

Apply the procedure described in Exhibit A of the 2011 Engineering Committee Report, fill in any missing precipitation data for the Compact years of 2008, nine and ten, and for subsequent years. This task was completed on September 7th, 2011 with some minor modifications.

We believe we've attached the Exhibit A to the 2012 Engineering Committee Report, that should finalize that matter.

Discussed archiving the data and materials from the Conservation Committee's study. Final
10:04 AM recommendation will be made at the annual meeting. Several locations and web sites are certainly possible for that.

Amend the RRCA Rules and Regulations as discussed on page 76 out of the 2010 transcript. The draft rules were discussed and we'll be making a final draft. It's being prepared for a future RRCA meeting.

We recommend that the assignments be continued as to exchange information, continue efforts to resolve concerns relating to varying

10:04 AM methods of estimating groundwater recharge.

Retain Principia Mathematica in ongoing -- retain Principia Mathematica was an assignment for the 2012 -- excuse me, 2013 committee.

And continue efforts to finalize accounting for 2006 to '11.

Continue discussion of issues preventing agreement on final accounting.

Develop a procedure for accounting of inflows to the stream flow segments of Guide Rock.

Discuss any accounting changes that may be necessary to account for surface water diversions used for groundwater recharge.

I'm covering some of these issues in the
10:05 AM highlight of the 2011 report. From 2011.

And those assignments were acted upon in 2012.

Do you want the committee's report this morning? Or, are we ready for that?

CHAIRMAN BARFIELD: Yes.

SCOTT ROSS: Okay. We did exchange some data by April 15th. Willem Schreuder, Principia Mathematica, ran those numbers, April 15th, 2013.

Principia Mathematica ran the numbers for all three states, giving us preliminary data, and

10:06 AM posted that April 16th.

Kansas and Nebraska had their final data posted by August 30th. And as of August 30th, Colorado had posted the CIR data, but that does not include metered pumping data. Principia Mathematica posted a final run September 10th, 2013, and this model run utilized the no Bonny scenario, as proposed by Colorado, which is currently subject to arbitration.

The committee collected streamflow data, climate data, diversion records from the U.S. Geological Survey, Bureau of Reclamation Army Corps of Engineers for 2012.

Evaluate ways to standardize estimating
10:07 AM groundwater recharge. That was a continued assignment. The information is still under review.

Review the contract of Principia Mathematica. The committee recommends that assignment, to continue discussions on specific modeling and data tasks to be assigned to Principia Mathematica, and this assignment should be completed by December 15th, 2013. That's the committee's recommendation.

Continue efforts to finalize accounting

10:07 AM for 2006-2012, pending the Supreme Court decision and any issues related to the pending arbitration.

Continue to discuss issues preventing agreement on final accounting. Again, subsequent to any Supreme Court case decision and pending arbitration.

Develop a recommendation on whether or not to account for inflows to stream segment between Guide Rock and the relocated stream gauges. That's been resolved.

Discuss any changes in the surface water diversions, proposed groundwater. Nebraska anticipates those studies will be conducted during a wet year. We hope 2014 will be such a year. 10:08 AM And so that's recommended for continuation.

Discuss application approval for augmentation process. Augmentation plan process is subject to current arbitration. No progress was made on this task in 2013.

Finalize the proposal to describe Exhibit A of the 2012's Engineering Committee. That has been completed. It's signed and will be attached to this Engineering Committee Report.

Finalize work on the user manual. Again, we recommended that that be -- I believe that

10:09 AM matter can best be resolved by each state, and doesn't need to be continued.

Continue development of five year accounting spreadsheet. We believe that's another issue that could be removed from the Engineering Committee's accompanying task list.

Discuss the application of the revised Bonny Area Capacity Table. I believe there will be a resolution this morning related to that, and its retroactive application to the accounting.

We want to make a recommendation that the administration recognize that this does not in any way change any of the USBR technical -- or accounting for water year, and that it is

10:09 AM possible, because there were names unapproved RRCA accounting for those years, 2007 through 2012.

And our recommended assignments, the Engineering Committee is recommending assignments. The Engineering Committee had a quarterly review of these tasks and assignments.

Exchange data by April 15. The Engineering Committee recommends an assignment of continued discussion of modeling and data tasks with Principia Mathematica, again to be accomplished by December 15th, 2013.

10:10 AM

Continue efforts to resolve concerns related to estimates of groundwater recharge.

Continue efforts to finalize accounting for 2006 to 2012.

Continue discussion preventing agreement on final accounting.

Discuss any accounting changes that may be needed for surface water diversions for the purpose of groundwater recharge.

Discuss developing an application and approval process for future augmentation plans.

And the Engineering Committee will explore options for sharing evaporation charges for Harlan County Lake, when the accounts exist separate from

10:11 AM

project water supplies of Bostwick Irrigation District.

Further to explore potential means to adjust Compact accounting of Harlan County Lake for the mutual benefits of all the states.

The Committee will engage in discussions to establish a budget to accomplish such tasks as needed by the administration of the states to complete Compact orders.

And that concludes the Engineering Committee Report.

10:11 AM CHAIRMAN BARFIELD: Okay. So that was, just for the record, the first part of your report was a review of the 2012 Engineering Committee Report, and the second was highlighting your actions for 2013, correct?

SCOTT ROSS: Correct.

CHAIRMAN BARFIELD: Okay. And I think we need some additional discussion, maybe. You mentioned something about a resolution on this retroactive application of the Bonny area capacity table. Commissioner Wolfe, do you have something on that?

COMMISSIONER WOLFE: Yes, I do, Chairman Barfield. I appreciate your indulgence on this.
10:12 AM I think maybe we can try to take care of a couple of issues that are referenced in the committee reports and recommendations prior to taking action on the report recommendations, in case there's any need to modify these.

First, I'd like to suggest that the commissioners act on a resolution regarding Bonny Reservoir that's dealing with the activities that's referenced in item 12(a) of the -- well, 12(a) and 12(b) of the committee's report.

With the assistance of my attorney here

10:12 AM this morning, on the fly, we've come up with a proposed resolution to memorialize that aspect, just to make sure that it's not as a reference or activity that was done by an engineering committee, but based on our discussion yesterday, I'd like to have official action on that by the Compact Commissioners.

So if you'll indulge me, I'll read in for the record what I would propose as a resolution for us to act on.

WHEREAS, the RRCA accounting from 2007 to 2011 remains unapproved.

WHEREAS, the Bureau of Reclamation completed a revised area capacity table for Bonny

10:13 AM Reservoir in 2011.

WHEREAS, Colorado had been requesting the Bureau of Reclamation to revise the area capacity table for many years prior to 2011.

WHEREAS, the revised area capacity table more accurately reflects conditions in Bonny Reservoir, and the amount of water stored therein, as well as the surface area of that storage water.

NOW THEREFORE, the states of Colorado, Nebraska and Kansas agree to adopt the Revised Bonny Reservoir Area Capacity Table and apply it

10:14 AM to the 2007 accounting and forward. That change will be effective when the accounting for 2007 and afterwards is approved. The retroactive application of the 2011 survey to this particular RRCA accounting will have no effect on official Bureau of Reclamation records.

And I can certainly pass this to the other commissioners to review prior to taking action, if you're so inclined to do so at this time.

CHAIRMAN BARFIELD: I take that as a motion then?

COMMISSIONER WOLFE: That -- I would request that that be a motion to the commission.

CHAIRMAN BARFIELD: To adopt it? I can

10:14 AM second for discussion purposes here. Any discussion?

Certainly, I think, for my part, that's consistent with the discussion we had yesterday with respect to this issue. And again, as Commissioner Wolfe has indicated, the last area capacity table for Bonny Reservoir was prepared in 1950, and certainly the current table reflects a much better representation. And there haven't been any significant inflow events in the period you're requesting here. So, I think for the

10:15 AM reasons stated in your resolution, and pursuant to our discussion yesterday, we could support this resolution.

Any further discussion then? Okay. All in favor of the resolution, say "Aye."

COMMISSIONER WOLFE: Aye.

COMMISSIONER DUNNIGAN: Aye.

CHAIRMAN BARFIELD: Aye. Any opposed? Okay. The resolution then passes.

COMMISSIONER WOLFE: Thank you, Chairman.

The second issue I'd like to just continue in further discussion, clarification, is in regards to the Engineering Committee's activities and the discussion we had yesterday, and
10:16 AM recommendations that's highlighted in item 3 of the Recommendations on page 3, referring to the modeling and data tasks that are assigned to Principia Mathematica.

I appreciate the committee's efforts in that regard to address this issue in an ongoing fashion. Certainly, there was quite a bit of discussion on this yesterday. And I guess in light of that discussion yesterday, I guess I'd ask Chairman Barfield, if Kansas has had any further consideration, or has made any particular

10:16 AM decisions based on those discussions yesterday on this matter, and how you would view this going forward, in light of the proposed recommendation by the Engineering Committee?

CHAIRMAN BARFIELD: Well, we have not had further discussions since yesterday. I believe how we left the matter was that it is an Engineering Committee assignment to, basically, consider the various tasks that he has completed, and how they might work going forward. And I think we agreed in that context to provide some more definite feedback on our views in the near future.

COMMISSIONER WOLFE: Thank you. And I
10:17 AM guess in light of that, and the recommendation, what I think would probably be necessary is for the Compact Administration to consider a special meeting on or around December 15th to take action on any recommendations in regards to that effort. Principally, because Dr. Schreuder will be doing ongoing efforts in regards to these activities that he's been doing for the RRCA for many years now. I'd hate for us to get too far down the road again and for him to, as he said yesterday, to heap additional cost on these efforts, so I'd like

10:18 AM to make sure that we give him proper direction on that.

So I'd ask that, for your consideration, that we could take action on that. And I guess as part of that, from the discussion yesterday, some of the things that came to mind for me, and I'd like to reiterate the importance of the efforts that Dr. Schreuder's been doing on behalf of the commission, and creating a consistent method and results for compilation of this information, and posting the RRCA data and model results on a common web site, I think we've all seen great benefits from that.

Caution us against trying to create any
10:18 AM duplicate official models, transferring this obligation between the states every couple years. I know that that was talked about. I've just seen from my experience invariably that this method, by doing that, could change, the format could change, and it could lead to inconsistent results over time.

And I think what Willem's performance has been over the past several years has been very consistent. I don't think any of the states have questioned his activities, or his integrity of

providing that information and the results.

As he indicated, too, it's, I think, a very minimal cost to the states capped at $4,000 each year for those efforts.

So I'd recommend as consideration that this committee looks at this before we take action in December on to what extent we continue this, that all the states think of those activities and the benefits that it creates.

It, in my mind, creates kind of a difficult situation in this thing about, you know, you pay for the play of what you're getting out of this. And if you're going to play and having all the benefits of these efforts, we think all the states should share equally in those. And I think it would put us all in a very difficult situation if all three states aren't cooperating and collaborating on this effort. I think it puts those of us who are utilizing Dr. Schreuder for those services, and what information we would make available to each state if they're not collectively paying in that. And it creates issues of proprietary nature of the data, and how do we coordinate that.

And I think it's something that's

10:20 AM incumbent upon us, as commissioners, and all the Compacts that I serve on, one of the key components of that is creating comity between the states, and I think that taking this effort to share and working three states together in an effort like this, I think is one of those enduring activities that certainly demonstrates comity between the states.

So with that, certainly if there are any other questions or comments from the other two commissioners before we take action on that, I'd like to hear from you.

CHAIRMAN BARFIELD: Any comments?

COMMISSIONER DUNNIGAN: Yes. I'd just
10:21 AM like to state that Nebraska does support working with Principia Mathematica in the future as in the past, and that will be our position as we work forward on this assignment to the Engineering Committee.

CHAIRMAN BARFIELD: Very good. Well, I appreciate your comments and perspective stated here, and I certainly agree, we're willing to sort of work through the issue further, as we've talked about, and I do agree that, you know, we need to bring closure to this item rather than leave it

10:21 AM hanging. I certainly would be willing to act on this on a time basis of what you're suggesting here.

You know, the states have all used the model, we all run the model, we have a common model that we've approved and adopted. We've demonstrated in various forums that we're able to produce results that are consistent with one another.

So, again, we just need to talk through the issues and what makes sense that we can all do.

So, do you have a specific -- are you just looking for a commitment to work to resolve the
10:22 AM issue in the time frame you're talking about?

COMMISSIONER WOLFE: Yes, Chairman. And I think maybe one way to accomplish that, something in the form of a modification to Item 3 on the Recommendations, that the committee will accomplish their task by December 15th, and if the RRCA could convene a special meeting shortly thereafter to take action on that recommendation, that would be my recommendation to a modification to that recommendation for the Commission to act on for approval for the entirety of the report.

10:23 AM

CHAIRMAN BARFIELD: Well, Commissioner Dunnigan will be the chair, but again, I certainly support work in the time frames you're speaking about. I don't know if we need a resolution or just that the record we're creating here is sufficient.

COMMISSIONER DUNNIGAN: I would just add for the record that the Assignment 1, Engineering Committee will meet quarterly to review the tasks assigned to the committee. This can be a priority assignment and we can schedule that early after this meeting to address that issue.

COMMISSIONER WOLFE: That's acceptable.

CHAIRMAN BARFIELD: All right. Very good.

10:23 AM

That's acceptable to Kansas. Is there any other discussion regarding the Engineering Committee Report we need to have at this juncture? The report obviously summarizes their activities, and provides a list of recommended assignments for the coming year that we'll address in Agenda Item 9(b). But is there any other discussion?

There is an assignment specific for the Harlan County Reservoir, and we'll have a bit more discussion about that later. Any other discussion on the Engineering Committee Report?

10:24 AM

Very good. Well, I would like to suggest maybe a short break at this juncture, and then we could reconvene in ten minutes, and conclude the rest of the agenda, if that's okay?

COMMISSIONER WOLFE: Chairman Barfield, I'm not sure, did we actually take an action on approving Engineering Report and the recommendations? If not, I would move that we approve the Engineering Report and the recommendations that are stated.

CHAIRMAN BARFIELD: Mr. Wolfe, I believe we do that under Agenda Item 9(b). On the report and the assignment.

COMMISSIONER WOLFE: Okay, that will work.

10:25 AM

Thank you.

CHAIRMAN BARFIELD: Okay, we will take a ten minute break then.

(A recess was taken, after which the following proceedings were had:)

CHAIRMAN BARFIELD: Okay, we'll continue through our agenda then. We're ready for Agenda Item 8. Old business. The status of the previous accountings.

I believe this is a carry-over from previous agendas, and I believe the Engineering

10:40 AM Committee has provided the basic status of these accountings with respect to they have not been able to complete it due to issues that are pending in the litigation and in the arbitration. So I don't think there's anything more to add to that agenda item.

Very good. Then we will go to agenda item 9(a)(1). And Nebraska has some issues that it's asked to be put on your agenda. Mr. Dunnigan.

COMMISSIONER DUNNIGAN: Thank you, Chairman Barfield. On May 24th, I sent a letter to Commissioner Barfield stating that Kansas has failed to comply with its duties under Article IX of the Compact by failing to administer it, and

10:41 AM therefore, violating the Compact.

Article IX of the Compact reads in part. It shall be the duty of the three states to administer this Compact through the official in each state, who is now, or hereafter, may be charged with the duty of administering the public water supplies and to collect and correlate through such officials the data necessary for proper administration of the provisions of this Compact.

Kansas' unwillingness or inability to

10:41 AM resolve key elements of Compact implementation is harming Nebraska water users.

As I stated earlier this morning, Nebraska seeks from Kansas a clear and transparent process that can be utilized in working to resolve issues related to implementation of key components provided within the FSS. This process must be focused on resolving and narrowing the differences between the State's positions and not on delaying the implementation of these key components.

I asked in my May 24th letter that Commissioner Barfield, by September 1st, submit to the RRCA a plan for ensuring that Kansas complies with Article IX. Nebraska requested that this
10:42 AM agenda item be added so that Commissioner Barfield could discuss Kansas' plan to ensure compliance with Article IX.

Chairman Barfield.

CHAIRMAN BARFIELD: Okay. Well, on August 30, I did provide a response to your letter, and request. You know, Colorado and Nebraska are seeking to implement FSS provisions, which sort of changed the status quo of the accounting in some profound ways, and these changes must be done properly.

10:43 AM

You know, Kansas disagreed with Nebraska's assertions that Kansas' objections and concerns that have resulted in our disagreement with the proposals are -- are not founded on provisions of the FSS. So the FSS provides clear procedures for dealing with these matters.

It involves the administration, its Engineering Committee, as a first level of discussions of these matters in seeking to resolve them. It provides a dispute resolution process that's clearly laid out for working through these issues.

As I said in my report earlier, we are actively engaged in those processes, and as I've

10:44 AM

consistently communicated, we'll continue to be ready to work these issues out in -- in those venues. So that's my response.

COMMISSIONER WOLFE: Chairman Barfield.

CHAIRMAN BARFIELD: Yes, Commissioner Wolfe.

COMMISSIONER WOLFE: Yes, I'd like to just add a little bit to this discussion. I guess I share, echo, some of the concerns raised by Nebraska. And I think the big picture of this as we're working on these efforts, that there's just

10:44 AM too much time and effort and money that's being spent in litigation and arbitrations. And I know that's a process that's afforded under the FSS. But I think what Nebraska is trying to emphasize, that I think the efforts to address these issues when they come before the RRCA, we should commit the necessary resources to do that. We need to make the sacrifices then to commit the necessary resources to do that, then having as a default ending up spending considerable more sacrifices time, money, and effort in arbitration and litigation.

And I mean, just to highlight that, Colorado has been working almost six years on
10:45 AM getting the Compact Compliance Pipeline approved. And the district has, like I said, spent almost a hundred million dollars to try to come into compliance, and yet we have not achieved approval by the RRCA on that.

And so, again, it just highlights this thing of, we've got to find a way to work together, the three states, to put the necessary resources together at the very beginning and the best type of resources and sacrifices in to make this process work. And I know we've all got a lot

10:45 AM of things on our plate that we're working on, but we need to really dedicate those resources early on in the process.

And I think that's part of what Commissioner Dunnigan is trying to highlight in that. And really, if, you know, if we really want this process to work, I think that's where the investment and time and resources have got to be. I mean, we are where we are here today, but again, I implore the commissioners that we need to work in a cooperative and collaborative effort when these issues come to the states, and really dedicate the necessary resources.

As we heard in the meeting yesterday, I
10:46 AM think the Engineering Committee met maybe one time last year. If we're really going to make an attempt to address these issues, I think this is a great effort to recommendations that the committee work on a more frequent basis as these issues come up, and dedicating the necessary resources to do that.

We've certainly, I know Chairman Barfield, you and I, both, have been involved in other litigations between our states, and particularly in the Arkansas, and the lessons we've learned

10:46 AM from there, and the many years and many dollars that can be spent on these disputes.

So, again, I just want to emphasize, we need to figure out that there's additional steps or measures that this commission can take to ensure that we're dedicating the necessary resources.

And I think it starts with us to ensure that when these disputes come forward, or requests come forward from any of the states, that we develop a plan early on to timelines and everything that we can commit our staffs to work on these matters. Thank you.

CHAIRMAN BARFIELD: Well, thank you, 10:47 AM Commissioner Wolfe. I guess the only thing in response to that comment is, I believe Kansas has dedicated the resources necessary. Our failure to agree is not necessarily a failure to commit the resources necessary, but again, as I indicated, we -- we are -- we would like to work through these issues, and get to resolution. And we'll continue to work through them in a responsive way. Is there any further discussion?

COMMISSIONER DUNNIGAN: Yes, Chairman Barfield. I agree with you that the dispute

10:48 AM resolution process is clearly laid out. And my point is that, I'm asking if Kansas has a process that they'll share with the RRCA on how they will go through issues brought before the RRCA so we don't end up in the dispute resolution process.

I would ask if you would share with us, today, the staff and the resources that you dedicate to the Republican River Compact on an annual basis.

CHAIRMAN BARFIELD: Well, I don't have a tabulation prepared in any form in terms of the hours that we have dedicated. They have been profound in terms of my time, the time of our staff, as well as utilizing experts. So -- but I
10:49 AM don't have any specific tabulation of that for you.

Again, at the beginning of my report, I went through the very significant resources we have dedicated in terms of time.

COMMISSIONER DUNNIGAN: Chairman Barfield, do you recognize the time sensitive nature of some of the issues that have been brought before the RRCA, such as the alternative water short year plan that Nebraska proposed, and the augmentation plans that Nebraska proposed, given the fact that

10:50 AM we are in a water short year?

CHAIRMAN BARFIELD: Well, Kansas is responding to those initiatives, as they come with the necessary resources. Nebraska would have had the opportunity to develop an alternative water short plan dialogue of many years ago. It did it at a juncture that, and again, provided a plan that did not conform with Appendix M, and I can't change that. We've provided guidance as to what we think how that issue can be worked through, and again, Nebraska did not bring the augmentation plan to us until the thing was constructed.

My obligation, I believe, under the Compact is to respond. But these changes are, as
10:51 AM I said, quite profound, and must be done in an appropriate way.

COMMISSIONER DUNNIGAN: I would just note for the record that Colorado did find Nebraska's alternative water short year plan in conformance with Appendix M, and also found that the Rock Creek proposal in conformance with the final settlement stipulation.

CHAIRMAN BARFIELD: All right. Any further discussion? Would you like to proceed to the next agenda item?

10:52 AM Commissioner Dunnigan, are you ready to move on to the next item on the Harlan county?

COMMISSIONER DUNNIGAN: We are, and I'll turn it over to Dr. Schneider.

CHAIRMAN BARFIELD: Thank you.

DR. JIM SCHNEIDER: I'll just briefly summarize, or just mention that we had a discussion yesterday on the accounting that was done for Harlan County Lake regarding the evaporation for Compact water that was involved in Nebraska's Compact compliance efforts.

And we developed a resolution that essentially commits Kansas to assuming responsibility for the evaporation of that Compact
10:53 AM water, and then utilizes the, essentially, the same process of looking at the ratio of the diversions between the two districts for splitting the remainder of the evaporation from Harlan County Lake.

CHAIRMAN BARFIELD: Should I read this into the record, or have one of you, and then we'll act on it? Okay.

As Dr. Schneider indicated, we talked through this issue yesterday, and subsequent through the evening developed a resolution that

10:53 AM we'll consider today to memorialize that discussion and agreement.

It's a resolution concerning Harlan County Lake evaporation split for 2013. And it states:

Unless subsequently agreed to otherwise, the States agree to share the evaporation of Harlan County Lake for 2013 according to the following method:

1. Kansas will accept full responsibility for the evaporation that is charged to the "Compact Water" pool as determined by the U.S. Bureau of Reclamation.

2. The States will split the remainder of the evaporation for the year in proportion to the
10:54 AM annual diversions made by the Kansas Bostwick Irrigation District and the Nebraska Bostwick Irrigation District from the beginning of the irrigation releases from Harlan County Lake until September 1.

And so I guess I would entertain a motion to adopt this resolution.

COMMISSIONER WOLFE: Chairman Barfield, I just wanted, for clarification, it sounded like what you read was maybe an earlier version. In that second provision you said "the States," and I

10:54 AM think you had modified it to say, "Kansas and Nebraska," so I'm not sure you were reading from the last modified version. Am I correct?

CHAIRMAN BARFIELD: You are correct.

COMMISSIONER WOLFE: I just want to reflect for the record that Colorado's not part of this allocation of evaporation, so when the reference is made to "States" I wanted to make it clear that it was just "Nebraska and Kansas." So there were some revisions to this, so if you want to refer to maybe the most current one that you had finished with, that would be the -- probably the one we should act on.

CHAIRMAN BARFIELD: All right. Hold on

10:55 AM one moment.

Chelsea, do you have the most recent version?

CHELSEA ERICKSON: No.

CHAIRMAN BARFIELD: Okay. I e-mailed it to you last night. It's not here before me. If technology can allow me to pull it up on my Blackberry, if you'll just hold on for a moment.

(Pause in proceedings)

CHAIRMAN BARFIELD: I believe my recollection of the changes last night is you sent

10:56 AM an e-mail, and we substituted for the words "the States" the words, "Kansas and Nebraska." And we removed a duplication of the phrase, "and the" which was there twice. Which I didn't read twice.

So I guess I would entertain a motion to accept it as read, except correcting, "the States" to read, "Kansas and Nebraska." And with that, I entertain a motion.

COMMISSIONER WOLFE: So moved.

COMMISSIONER DUNNIGAN: Second.

CHAIRMAN BARFIELD: Very good. All in favor, say "Aye."

COMMISSIONER WOLFE: Aye.

COMMISSIONER DUNNIGAN: Aye.

10:56 AM CHAIRMAN BARFIELD: Aye.

Okay. I believe that addresses that issue.

Yes, we will print up a new one and sign a new version here momentarily. And we are also working to type up the Resolution concerning the application of Bonny's Area Capacity Table, and will sign that here at the conclusion of our meeting.

Commissioner Dunnigan, would you like to take the third item?

10:57 AM COMMISSIONER DUNNIGAN: Yes, please.

CHAIRMAN BARFIELD: All right. Very good. And just to provide a bit of background on this, Commissioner Dunnigan and I also represent our respective states on the Big Blue Compact meeting. I had at that meeting, similar to here, reported on some of the significant legislation that was enacted by our legislature, and noted the significant change in terms of regulation from a dam safety standpoint of what we call in the Compact, non federal reservoirs, narrowing the scope of what dams are regulated from a water structure standpoint.

He wondered, or asked, basically, for a
10:58 AM report here as to how that would impact our obligations to report non federal reservoir evaporation. And basically, at the work session last night I provided a response that said that the dam made two changes in dams. One is a change in definition, and the second is an expansion of the exemptions. And the more profound change was the expansion of the exemptions, but exempt dams have to be registered and have to be low hazard. So we'll still have a way to monitor new dams that are built, for the majority of dams.

10:58 AM And then I explained in addition to our regulatory responsibilities with respect to dam construction and dam safety, we have to permit water use from dams. And that between the two, we have sufficient opportunity to monitor new dams, and we would continue to carry all dams that meet the existing definition. So that -- that's my report on that item.

COMMISSIONER DUNNIGAN: Thank you for that explanation.

CHAIRMAN BARFIELD: Okay. With that, I think we're ready then to act on the Engineering Committee Report. Okay. Very good. Let me back up. Kansas has no additional items under 9, under
10:59 AM Item 9. I guess, Commissioner Wolfe, I would ask if you have any additional new items of business to consider?

COMMISSIONER WOLFE: Colorado has no additions.

CHAIRMAN BARFIELD: Thank you. All right. With that then I would move us to Agenda Item 9(b) where we act on the Engineering Committee Report, and its recommendations for assignments for the coming year.

COMMISSIONER WOLFE: I move that we

11:00 AM approve the Engineering Committee's Report, and the associated assignments.

COMMISSIONER DUNNIGAN: Second.

CHAIRMAN BARFIELD: All right. It's been moved and seconded, is there any discussion? If not, I would ask for a vote. All in favor, say "Aye."

COMMISSIONER DUNNIGAN: Aye.

COMMISSIONER WOLFE: Aye.

CHAIRMAN BARFIELD: Aye. The motion passes.

Okay. Agenda Item 9(c) is a resolution honoring Scott Ross, and I would just like to read the resolution in the record.

11:00 AM This is a resolution that we have offered.

WHEREAS, Scott E. Ross of Stockton, Kansas is retiring tomorrow from his long-held position of Water Commissioner for the Division of Water Resources, Kansas Department of Agriculture, after faithfully serving in the Department for over thirty-two years; and,

WHEREAS, acting as the Kansas Representative to the Republican River Compact Administration Hearing Committee, Scott has diligently represented the Compact interests of

11:01 AM the State of Kansas and its residents of the Republican River Valley and its tributaries, as well as addressing the State of Kansas to maintain its fulfillment of its obligations under the Compact; and,

WHEREAS, while diligently representing the State of Kansas and its constituents, Scott has kept open lines of communication with representatives of the States of Colorado and Nebraska, assisted in compiling Compact data, and assisted several Kansas Chief Engineers to reach fair and reasonable solutions to the many issues associated with the Republican River Compact; and,

WHEREAS, Scott's professionalism,
11:01 AM straight-forward personality, and "Git' R'Done" attitude have been an asset to the RRCA and the State of Kansas

NOW THEREFORE, be it hereby resolved that the Republican River Compact Administration does hereby express its sincerest gratitude and appreciation to Scott E. Ross for his service to RRCA in his position of Kansas representative on the Engineering Committee.

Be it further resolved that RRCA honor Mr. Ross' service by including this resolution and

11:02 AM
appropriate dedicatory remarks in RRCA's annual report for the Compact year 2013 and hereby instructs the Kansas Commissioner to send copies of this resolution to the Ross family and Governor of the State of Kansas.

Entered this 12th day of September, 2013, at the annual meeting of the RRCA in October, held in Colby, Kansas.

I guess I would move adoption of the resolution.

COMMISSIONER WOLFE: Second.

CHAIRMAN BARFIELD: Any discussion?

COMMISSIONER WOLFE: Mr. Chairman, on Colorado's behalf, Mr. Ross, we'd like to thank you for all your dedicated years to the commission, and wish you the best in your retirement, and hope all goes well.

SCOTT ROSS: Thank you.

COMMISSIONER DUNNIGAN: And that's echoed by Nebraska.

CHAIRMAN BARFIELD: All right, very good. Thank you very much. I guess I'd ask for a vote. All in favor say, "Aye."

COMMISSIONER WOLFE: Aye.

COMMISSIONER DUNNIGAN: Aye.

11:03 AM

CHAIRMAN BARFIELD: Aye.

(applause)

CHAIRMAN BARFIELD: Very good. This is an opportunity then for any remarks from the public. We have a microphone here. Come forward.

DAVID ROBBINS: Chairman Barfield and members of the Commission, my name is David Robbins. I represent the Republican River Water Conservation District. And my remarks are, in part, a follow-up on the remarks made earlier by Commissioner Dunnigan and Commissioner Wolfe. And that has to do with the question of solving problems cooperatively.

11:04 AM

Based upon remarks that Commissioner Barfield made at the meeting last year, and what I understand to be the discussion that occurred yesterday, and that I observed, apparently Kansas is considering whether or not to continue funding a third of a common effort to develop data sets each year representing the Basin, and then including them in preliminary and final runs of a model that is required by the final settlement stipulation.

It's very troubling to the water users in Colorado that that sort of a consideration would

11:04 AM

be occurring, particularly in light of the concerns that Nebraska and Colorado have already stated about the need to move toward cooperation. And so my request is that if it is Kansas' determination, which it is free to make as a single state, not to participate cooperatively, that the states of Nebraska and Colorado promptly instruct Mr. Schreuder of Principia Mathematica to establish separate proprietary web sites so that all of the work information developed, and the model activity that is being handled by that firm, is available only to the people who are paying for it.

I believe strongly in the principle of pay

11:05 AM

to play, and if Kansas doesn't want to participate in a cooperative effort, then I think they should be free to do whatever they wish in terms of developing data, recording data into the model, operating the model. But at the end of the day, the sharing of information between that, the state of Kansas and the other two states, are to occur at a common time, and only that information shared by Kansas with the other two states should be shared the other way.

I think it's a mistake. I think the

11:06 AM moving away from a common set of data, a common operation of the model, will ultimately result in a tremendous waste of money and time, for both sides, whether it's in an arbitration proceeding, in the Engineering Committee or in litigation. So I'm hoping that that isn't the ultimate decision.

But I want to make it very clear that on behalf of the water users, we strongly request that if it is going to be state by state, that you handle it in that way in the future.

Obviously, Kansas has participated up to this time, and everything that's been done up to this time should be shared among the three states. But going forward, please take that into account.

11:07 AM Thank you very much for the time to comment.

CHAIRMAN BARFIELD: Thank you. Any other remarks from the public?

DENNIS CORYELL: Yes. Commissioners, I commend you for the work that you do and the efforts that you put forth to deal with Compact issues.

But from my perspective, I believe that there is a bit of a disconnect in what is going on on the ground, and what happens in meetings.

Five and-a-half years ago, I stood before

11:07 AM this Commission and presented a plan for Colorado to achieve compliance. In that time period, my farm alone, we've spent $70,000 to achieve compliance. In January, it will jump to $85,000.

You know, if -- if $15,000 was deducted from your salaries every year that a settlement is not reached, I contend that this would long have been settled.

My first inclination would be to lock the three states in a room, let me have the key, and I'm not going to let you out until you get it settled.

You know, I wouldn't buy a piece of machinery and leave it set in my field and not use
11:09 AM it for five and-a-half years. And that's where we're at in the Republican Basin in Colorado. So actions speaks louder than words.

Please get together. I don't know what -- what process has not been working. But it needs to change. That's clearly a -- a farmer's perspective. I'm not a lawyer. I'm not an engineer. I wish I weren't a chairman of a board. We need to get this done. And we need to have a process in the future, when issues like this come up, they get settled, and not talked about. Thank

11:10 AM you.

CHAIRMAN BARFIELD: And for the record, that's Dennis Coryell.

Thank you for your remarks.

Any further remarks from the public?

Very good. We'll move on to the next agenda item, which is future meeting arrangements. I would turn to Commissioner Dunnigan, soon to be Chairman Dunnigan, for your pleasure there.

COMMISSIONER DUNNIGAN: We will work with the commissioners on suitable dates for next year's annual meeting, but we would like to put a date out there right now. We would plan on August 27th and 28th, a Wednesday and a Thursday, and 11:10 AM that meeting would be in Lincoln. And of course if that doesn't work, we'll work on a schedule for that meeting. But I did want to put that out while people's schedules may be more available now.

CHAIRMAN BARFIELD: Very good. We'll proceed along that basis, and we'll consult our calendars, and let you know if there's anything that, at this juncture, appears to conflict.

COMMISSIONER WOLFE: At this time for Colorado, those dates work.

11:11 AM

CHAIRMAN BARFIELD: Very good. Okay. Well, if there's nothing else to discuss, I would move to, I guess I'd entertain a motion to adjourn.

COMMISSIONER WOLFE: So move.

COMMISSIONER DUNNIGAN: Second.

CHAIRMAN BARFIELD: All right. All in favor say, "Aye."

COMMISSIONER WOLFE: Aye.

COMMISSIONER DUNNIGAN: Aye.

CHAIRMAN BARFIELD: Aye. We're adjourned.

Proceedings concluded at 11:11 A.M.

STATE OF KANSAS,

THOMAS COUNTY, SS

C E R T I F I C A T E

I, Marilyn F. Bailey, Registered Merit Reporter, do hereby certify the above and foregoing proceeding was taken at the time and place as specified; that the same was taken before myself in shorthand and later transcribed and extended into typewritten form to the best of my ability, and is a true and correct extension hereof.

That I am not counsel nor relative of any of the parties or otherwise interested in the event or outcome of this matter.

IN WITNESS WHEREOF, I have set my hand and official seal at Colby, Kansas, this 15th day of November, 2013.

_____

MARILYN F. BAILEY, RMR-CRR

Republican River Compact Administration

Annual Meeting – Colby, Kansas

September 12, 2013

Attendance List

Name	Representing
David W. Barfield	Kansas Commissioner, Chair
Dick Wolfe	Colorado Commissioner
Brian P. Dunnigan	Nebraska Commissioner
Chris Grunewald	Kansas Attorney General's Office
Scott Ross	Kansas Division of Water Resources
Chris Beightel	Kansas Division of Water Resources
Chelsea Erickson	Kansas Division of Water Resources
Hongsheng Cao	Kansas Division of Water Resources
Sam Perkins	Kansas Division of Water Resources
Wayne Bossert	Groundwater Management District #4
Katherine Wilkins-Wells	Groundwater Management District #4
Tracy Streeter	Kansas Water Office
Mike Sullivan	Colorado Division of Water Resources
Ivan Franco	Colorado Division of Water Resources
Dave Keeler	Colorado Division of Water Resources
Scott Steinbrecher	Colorado Attorney General's Office
Willem Schreüder	Principia Mathematica
David Robbins	Republican River Water Conservation District
Peter Ampe	Republican River Water Conservation District
Dennis Coryell	Republican River Water Conservation District
Deb Daniel	Republican River Water Conservation District
Jim Schneider	Nebraska Department of Natural Resources
Jennifer Schellpeper	Nebraska Department of Natural Resources
Tom O'Connor	Nebraska Department of Natural Resources
Paul Koester	Nebraska Department of Natural Resources
Shane Stanton	Nebraska Department of Natural Resources
Justin Lavene	Nebraska Attorney General's Office
Tom Wilmoth	Council for Nebraska
Tom Riley	Flatwater Group
Mark Groff	Flatwater Group
Jasper Fanning	Upper Republican Natural Resource District
Dan Smith	Middle Republican Natural Resource District
Bob Merrigan	Middle Republican Natural Resource District

Colby, Kansas September 12, 2013

Name	Representing
Mike Clements	Lower Republican Natural Resource District
John Thorburn	Tri-Basin Natural Resource District
Ray Winz	Tri-Basin Natural Resource District
Don Felker	Frenchman Valley Irrigation District
Jerry Kotschwar	Frenchman Valley Irrigation District
Clarence Jankovits Jr	Frenchman Valley Irrigation District
Kenneth Albert	Frenchman Valley Irrigation District
Mike Delka	Nebraska Bostwick Irrigation District
Brad Edgerton	Frenchman-Cambridge Irrigation District
Aaron Thompson	United States Bureau of Reclamation
Patrick Erger	United States Bureau of Reclamation
Craig Scott	United States Bureau of Reclamation
John Miller	United States Geological Survey
Ronald Chose	Kansas landowner
Dan Stephens	Kansas landowner
Dale Helms	Nebraska landowner
Jack Dowell	Colorado landowner

Republican River Compact Administration – Annual Meeting Attendance

NAME – please print legibly	Affiliation/Group
Tom Riley	Flatwater Group
Jaggar Fanning	Upper Republican NRD
Aaron Thompson	Reclamation
Scott Ross	KS DWR
Dan Smith	MRNRD
[signature]	BHJ LLP
Tracy Streeter	KS Water Office
Willem Schreuder	Principia
[signature]	KANSAS KDA-DWR
Lee Laird	BRWCD
Ronald L Chase	Colby, KS - Farmer
Scott Steinbrecher	Colorado Attorney General
Chris Grunewald	Kansas Attorney General
Chelsea Erickson	KS DWR
Hongsheng Cao	KS DWR

Not Signed: Katherine Wilkins Wells, GMD4

John Miller USGS ~~Nebraska~~

Republican River Compact Administration – Annual Meeting Attendance

NAME – please print legibly	Affiliation/Group
Patrick Evger	Reclamation
Dale Helms	NE Irrigator
Brad Edgerton	Frenchman Cambridge ID
Shane Stanton	NDNR
Tom O'Connor	NDNR
MIKE DEKA	Bostwick I.D. in Nebr.
Peter Anyon	HH + Robbins
David Robbins	"
Ivan Franco	Colorado DWR
Dave Keeler	Colo. DWR
JACK Dowell	W-Y
Mike Sullivan	Colo DWR
Jim Schneider	Nebraska
Brian Dunnigan	"
Dan Stephens	St. Francis, KS

Not signed: Justin Lavene, NE AG Office
Dick Wolfe, CO Commissioner
David Barfield, KS Commissioner

Republican River Compact Administration – Annual Meeting Attendance

NAME – please print legibly	Affiliation/Group
Craig Scott	U.S.B.R.
Mike Clements	LRNRD
Bob Merrigan	MRNRD
Don Fuer	Fr Valley
Jerry Kotschwar	Fr. Valley
Clarence Sankovits Jr	Fr. Valley
Marc Groff	TFG
Kenneth Allport	Fr Valley
John Thorburn	Tri-Basin NRD, Holdrege NE
Ray De Wang	" "
Jennifer Schellpeper	NE-DNR
Chris Beightel	KS-DWR
Dennis Campbell	RRWCD
WAYNE BOSSERT	NW KS GMD 4 COLBY
Paul Koester	NE DNR

FINAL AGENDA FOR

53rd ANNUAL MEETING OF THE

REPUBLICAN RIVER COMPACT ADMINISTRATION

September 12, 2013, 9:00 AM Central

Colby Community Center

Activity Room

285 East 5th Street

Colby, Kansas

1. Introductions
2. Adoption of the Agenda
3. Status of Report and Transcripts for 2012 Annual Meeting and subsequent Special Meetings
4. Status of Previous Annual and Special Meetings Reports and Transcripts
5. Report of Chairman and Commissioners' Reports
    a. Kansas
    b. Colorado
    c. Nebraska
6. Federal Reports
    a. Bureau of Reclamation
    b. U.S. Army Corps of Engineers
    c. U.S. Geological Survey
7. Committee Reports
    a. Engineering Committee
        i. Assignments from 2012 Annual Meeting
        ii. Committee Recommendations to RRCA
        iii. Recommended assignments for Engineering Committee
8. Old Business
    a. Status of unapproved previous accounting
9. New Business and Assignments to Compact Committees
    a. Issues raised by the States
        i. Nebraska
            1. Article IX of the Compact
            2. Harlan County Lake evaporation accounting for Compact year 2013
            3. Monitoring of non-federal reservoirs
        ii. Kansas
        iii. Colorado
    b. Action on Engineering Committee Report and assignments
    c. Resolution honoring Scott Ross
10. Remarks from the Public
11. Future Meeting Arrangements
12. Adjournment

2013-03 RESOLUTION TO APPROVE THE BACKLOG OF RRCA ANNUAL REPORTS FROM 2007 TO 2011

WHEREAS, the annual reports for years 2007 through 2011 have not been approved by the Compact Administration; and

WHEREAS, the annual reports for years 2007 through 2011 were reviewed by all staff in Colorado, Nebraska, and Kansas; and

NOW THEREFORE, be it hereby resolved that the annual reports for years 2007 through 2011 are approved by the Compact Administration. The approved reports are memorialized on compact disc provided to each state. The signature pages will be inserted into those reports and a final compact disc will be circulated to each state and any other entity required by the RRCA Rules and Regulations.

Be it further resolved that each state will be responsible for printing their respective reports.

Entered this 12th day of September, 2013, at the annual meeting of RRCA held in Colby, Kansas.

David W. Barfield, Chief Engineer,
Kansas Commissioner (Chairman)

Brian P. Dunnigan,
Nebraska Commissioner

Dick Wolfe, State Engineer,
Colorado Commissioner

RECLAMATION

Managing Water in the West

Nebraska-Kansas Area Office

Report

To The

Republican River

Compact Administration

Colby, KS

U.S. Department of the Interior
Bureau of Reclamation
Great Plains Region
Nebraska-Kansas Area Office

September 12, 2013

REPUBLICAN RIVER COMPACT MEETING

September 12, 2013
Colby, Kansas

2012 Operations

As shown on the attached Table 1, precipitation in the Republican River Basin varied from 82 percent of normal at Lovewell Reservoir to 49 percent of normal at Hugh Butler Lake. Total precipitation at Reclamation project dams ranged from 9.09 inches at Bonny Dam to 22.54 inches at Lovewell Dam.

Inflows varied from 25 percent of the most probable forecast at Bonny Reservoir to 80 percent of the most probable forecast at Harry Strunk Lake. Inflows into Bonny Reservoir totaled 2,824 AF while inflows at Harlan County Lake totaled 78,581 AF.

Average farm delivery values for total irrigable acres were as follows:

District	Farm Delivery
Frenchman Valley	0.7 inches
H&RW	0.0 inches
Frenchman-Cambridge	7.6 inches
Almena	3.8 inches
Bostwick in NE	11.6 inches
Kansas-Bostwick	11.9 inches

2012 Operation Notes

Bonny Reservoir – Started the year at elevation 3639.70 feet, 32.3 feet below the top of conservation. This would be the peak reservoir level recorded during the year. The annual computed inflow totaled 2,824 AF and was the lowest ever recorded at this site. River releases were made from January 1st through May 17th as ordered by the State of Colorado. A total of 2,108 AF was released to the river during this time. Another 18 AF was released into Hale Ditch from May 19th through May 22nd. The reservoir was drained by the end of May and remained empty for the remainder of the year at approximately 34 feet below the top of conservation (3638.00 feet).

Enders Reservoir – Started the year at elevation 3093.27 feet, 19.0 feet below the top of conservation. The 2012 computed inflow totaled 4,509 AF. The reservoir level increased slightly during the spring to a peak elevation of 3094.42 feet on May 1st. The conservation pool has not filled since 1968. Due to the extremely low available water supply, no water was released from Enders Reservoir. This was the eleventh consecutive year that H&RW Irrigation District did not divert water. It was also the ninth consecutive year that storage releases were not made for Frenchman Valley Irrigation District. The end of the year

reservoir level was 21.6 feet (3090.71 feet) below the top of conservation.

Swanson Lake – Started the year at elevation 2740.20 feet, 11.8 feet below the top of conservation. The annual computed inflow totaled 23,105 AF. The lake level gradually increased to a peak elevation of 2744.03 feet (8.0 feet below the top of conservation) on May 5th. The reservoir level decreased during the irrigation season reaching elevation 2733.24 feet on September 1st. The district diverted 32,955 AF into Meeker-Driftwood Canal from June 11th through August 31st. At the end of the year the reservoir level was 19.6 feet below the top of conservation at 2732.41 feet.

Hugh Butler Lake – Started the year at elevation 2553.45 feet, 28.4 feet below the top of conservation. The 2012 computed inflow was 10,905 AF. The annual precipitation total of 9.65 inches was the lowest ever recorded at the site. Due to dam safety concerns, releases were made throughout the year to maintain the reservoir elevation between 2552.00 and 2554.00 feet. No irrigation releases were made from Hugh Butler Lake in 2012. The elevation at the end of the year was 2553.63 feet, 28.2 feet below the top of conservation.

Harry Strunk Lake – Started the year at elevation 2365.29 feet, only .8 foot below the top of conservation. The annual computed inflow totaled 31,018 AF. Releases were made during the first four months of the year to maintain the pool level. The reservoir was allowed to fill on April 21st, and the reservoir level gradually increased to elevation 2366.65 feet on May 5th. Irrigation releases dropped the reservoir level to elevation 2349.37 feet on August 28th. The district diverted 27,618 AF into Cambridge Canal. Late fall and early winter inflows increased the level of Harry Strunk Lake to 10.1 feet below the top of conservation at the end of the year (2356.0 feet).

Keith Sebelius Lake – Started the year at elevation 2298.44 feet, 5.9 feet below the top of conservation. The total 2012 computed inflow was 5,177 AF. The reservoir level slowly increased to elevation 2299.32 feet on May 2nd. Irrigation releases were made during June and July reducing the lake level by over 3 feet. The reservoir level continued to gradually decrease the remainder of the year and ended at an elevation of 2293.97 feet (10.3 feet below the top of conservation). A total of 3,172 AF was diverted into Almena Canal.

Harlan County Lake – Started the year at elevation 1946.42 feet, .7 foot into the flood pool. The 2012 computed inflow totaled 78,581 AF. River releases varied from 10 to 300 cfs during the first two months of the year and the lake level gradually increased to elevation 1947.20 feet by March 1st. The release was staged up to 1,000 cfs on March 5th for approximately four days and then staged back down. The elevated release was made to help prevent the Republican River channel from developing areas of vegetation and to re-establish channel capacity. The lake level was maintained near elevation 1946.5 feet through mid May. Irrigation releases started May 21st and continued through August 30th. The pool level dropped to elevation 1936.38 feet by September 1st. Bostwick in Nebraska Irrigation District diverted 45,131 AF in 2012. The reservoir elevation was 1935.28 feet (10.5 feet below the top of conservation) on December 31, 2012. A ten year summary of Harlan County Lake operations is shown on Table 3.

Lovewell Reservoir – Started the year at elevation 1581.36 feet, 1.2 feet below the top of

conservation. The pool level gradually increased to elevation 1583.96 feet on May 6th. Spring diversions via Courtland Canal into Lovewell Reservoir were not required in 2012. Releases to the canal began on April 27th and continued through August 30th. The reservoir elevation at the end of the irrigation season was 1572.83 feet. Republican River flow was diverted via Courtland Canal into Lovewell Reservoir through the end of December. The Kansas Bostwick Irrigation District diverted a total of 76,855 AF in 2012. A total of 50,078 AF was diverted into Courtland Canal from Lovewell Reservoir. The reservoir level at the end of the year was 1577.60 feet (5.0 feet below top of conservation).

Current Operations (As of 7/31/13)

Bonny Reservoir – The reservoir is currently empty. Inflows continue to be bypassed through the reservoir as ordered by the State of Colorado. Approximately 1,474 AF has been bypassed through the reservoir in 2013. Bonny Dam has recorded only 8.58 inches of precipitation during the first seven months of the year (74% of average).

Note - The Nebraska Department of Natural Resources declared a Compact Call Year on the Republican River Basin on January 1, 2013 and issued storage closing notices on Reclamation reservoirs in the Basin. All water impounded in Swanson Lake, Enders Reservoir, Hugh Butler Lake and Harry Strunk Lake from January 1st through April 30th was released by May 15, 2013. The compact call remains in place.

Swanson Lake – The lake level is 20.8 feet from full and is 6.3 feet below last year at this time. Precipitation for the year is at 84% of normal (11.28 inches). Irrigation releases made in 2013 have been significantly reduced as a result of the compact call placed on the Republican River by the Nebraska Department of Natural Resources.

Enders Reservoir - The reservoir level is 22.6 feet below full and 2.7 feet below last year at this time. Enders Dam recorded 10.02 inches of precipitation during the first seven months of the year. Due to the water supply shortage, H&RW Irrigation District is not irrigating for the twelfth year in a row. This is also the tenth consecutive year that Frenchman Valley Irrigation District has not received storage water for irrigation.

Hugh Butler Lake – The lake level is currently 27.9 feet below full. The precipitation total so far this year is 8.28 inches (65% of normal). The lake level is 2.0 feet above last year at this time. Irrigation releases are not being made from Hugh Butler Lake this season. Repairs to the dam embankment were completed in 2013 and the reservoir level restrictions have been removed.

Harry Strunk Lake – The lake level is currently 11.6 feet below the top of conservation. Precipitation at the dam during the first seven months of the year was 9.37 inches (68% of normal). Irrigation releases were limited during 2013 due to the compact call. The lake level is currently 1.3 feet below last year at this time.

Keith Sebelius Lake – Currently 12.8 feet below full. Lake level is 3.7 feet below last year at this time. Irrigation releases were limited during 2013 due to a short water supply.

Precipitation at the dam during the first seven months of the year was 10.86 inches (67% of normal).

Harlan County Lake – The current water surface level is approximately 12.5 feet below full. The lake level is 6.7 feet below last year at this time. Harlan County Dam has recorded 10.46 inches of precipitation so far this year (70% of normal). The available irrigation supply from Harlan County Lake on June 30, 2013 was 54,400 AF, indicating that "Water-Short Year Administration" would be in effect. Irrigation releases were impacted by the compact call on the Republican River in 2013.

Lovewell Reservoir – The reservoir level is currently 4.8 feet below the top of conservation and 2.5 feet above last year's elevation at this time. Lovewell Dam recorded 18.36 inches of precipitation during the first seven months of the year (107% of average). Irrigation demands were low in late July and early August due to the wet and cool conditions in the district.

A summary of data for the first seven months of 2013 is shown on Table 2.

Other Items

Inspections – Comprehensive Facility Reviews were held at Red Willow and Medicine Creek Dams in July 2012.

Safety of Dams – Red Willow Dam – Reconstruction related to the Safety of Dams Modification at Red Willow Dam is essentially complete including placement of a geonet/sand and gravel filtration system along the entire length of the dam.

The filtration system involved placing nearly 115,000 square yards of geonet and geotextile materials, 100,000 cubic yards of sand, and 55,000 cubic yards of gravel. This system was overlain with approximately 431,000 cubic yards of embankment material.

Intersecting the filter at the downstream toe of the dam, a horizontal drain consisting of a layer of gravel and a layer of sand has been constructed. The original pipe drain at the toe of the dam has also been replaced. This filter and drainage system provides valuable protection against internal erosion of the dam embankment.

The contract was modified to include stabilizing the access road, paving the dam crest and repaving the access road. Due to these modifications, the current contract completion date is March 1, 2014; however, SEMA and Reclamation are doing everything possible to complete the contract at an earlier date. Onsite construction is currently scheduled to be completed by the end of October 2013.

WaterSMART Basin Study Program - The States of Colorado, Nebraska, and Kansas and the U.S. Department of the Interior, Bureau of Reclamation are working together as study partners to conduct the Republican River Basin Study. This study is part of the U.S. Department of the Interior WaterSMART Basin Study Program. The Republican River Basin

Study area covers the entire Republican River Basin in eastern Colorado, southern Nebraska, and northern Kansas down to the Clay Center gauging station in Kansas.

This two-year Study will evaluate the viability of water management strategies to optimize surface and groundwater use in consideration of meeting multiple demands and the potential effects of climate change/variability. It will:

- Project future supply and demand in the Republican River Basin.
- Analyze how existing water operations and infrastructure will perform in the face of uncertain or variable water supply and/or demands.
- Identify and evaluate options to improve operations and infrastructure to address future water supply needs.
- Recommend options (operations and infrastructure) to supply adequate water in the future.

TABLE 1
NEBRASKA-KANSAS PROJECTS
Summary of Precipitation, Reservoir Storage and Inflows
CALENDAR YEAR 2012

Reservoir	Total Precip. Inches	Percent Of Average %	Storage 12-31-11 AF	Storage 12-31-12 AF	Gain or Loss AF	Maximum Content AF	Storage Date	Minimum Content AF	Storage Date	Total Inflow AF	Percent Of Most Probable %
Box Butte	7.53	44	15,464	8,308	-7,156	20,318	MAY 5	5,895	AUG 10	9,464	60
Merritt	10.26	50	61,370	61,370	0	67,602	MAY 27	28,186	AUG 26	180,654	98
Calamus	11.78	49	105,099	87,136	-17,963	128,067	APR 28	41,366	OCT 1	268,633	98
Davis Creek	13.78	56	9,280	18,954	9,674	24,455	JUN 15	6,003	SEP 16	63,860	130
Bonny	9.09	53	135	0	-135	135	JAN 1	0	MAY 31	2,824	25
Enders	12.29	65	17,484	15,122	-2,362	18,649	MAY 1	14,956	NOV 26	4,509	43
Swanson	12.94	65	62,156	37,797	-24,359	75,222	MAY 5	36,440	DEC 13	23,105	70
Hugh Butler	9.65	49	5,993	6,098	105	6,097	DEC 31	4,915	SEP 29	10,905	74
Harry Strunk	12.00	58	33,098	19,939	-13,159	35,670	MAY 5	12,977	AUG 28	31,018	80
Keith Sebelius	15.29	62	23,218	16,462	-6,756	24,737	MAY 2	16,259	DEC 12	5,177	56
Harlan County	18.14	80	322,964	191,125	-131,839	335,503	FEB 29	190,305	DEC 12	78,581	55
Lovewell	22.54	82	31,938	22,585	-9,353	39,868	MAY 6	12,249	AUG 24	50,040	77
Kirwin	11.96	51	99,989	66,348	-33,641	99,989	JAN 1	65,713	NOV 13	21,535	65
Webster	16.92	72	58,196	36,167	-22,029	65,230	MAY 5	36,095	DEC 13	11,090	42
Waconda	19.99	78	211,190	184,545	-26,645	224,622	MAY 1	181,996	OCT 12	109,096	60
Cedar Bluff	14.97	71	79,365	66,233	-13,132	79,365	JAN 6	66,233	DEC 29	5,247	27

TABLE 2
NEBRASKA-KANSAS AREA OFFICE
Summary of Precipitation, Reservoir Storage and Inflows

JANUARY - JULY 2013

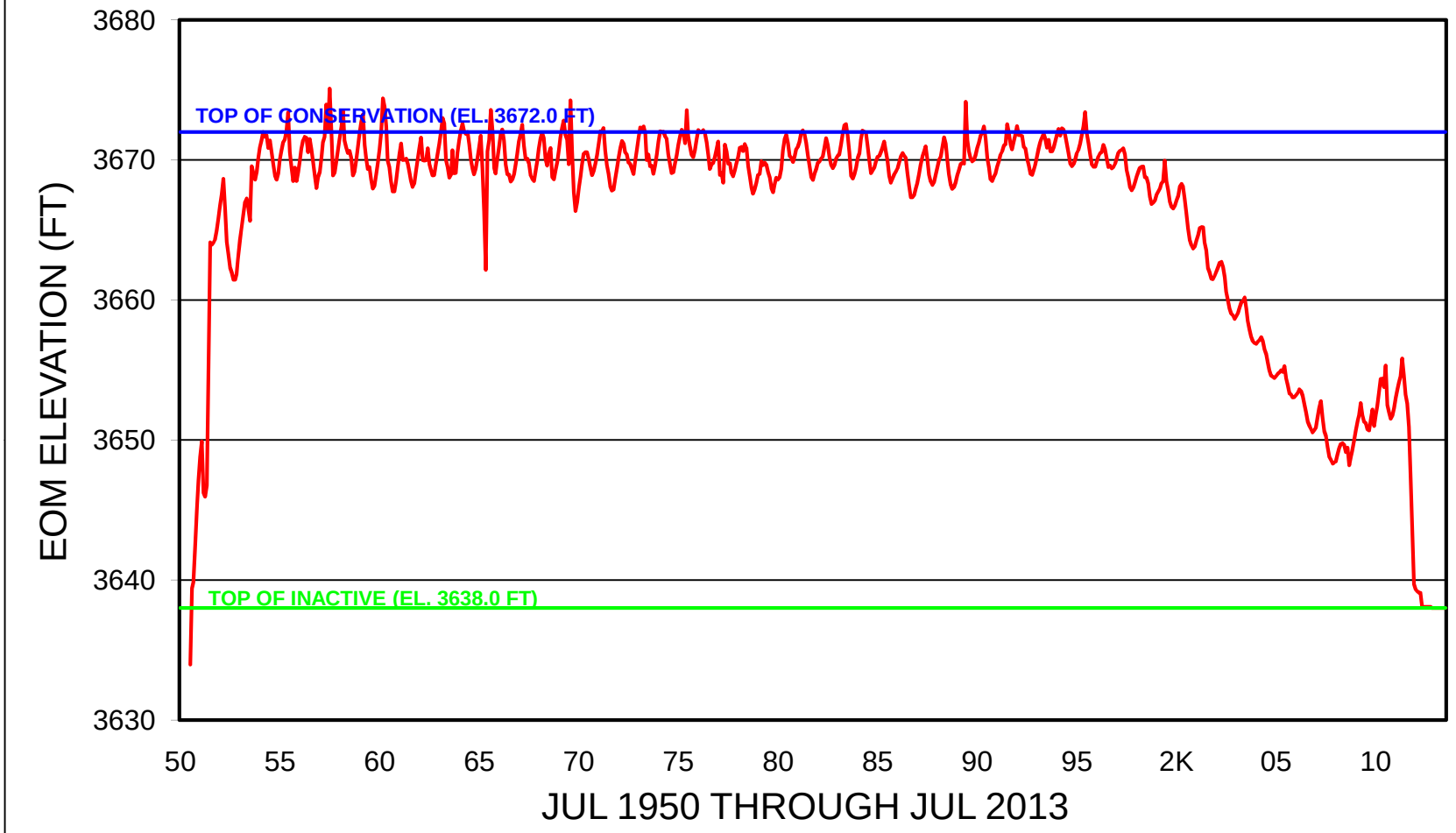
Reservoir	Precip. Inches	Percent Of Average %	Storage 7/31/2012 AF	Storage 7/31/2013 AF	Gain or Loss AF	Inflow AF	Percent Of Most Probable %
Bonny	8.58	74	0	0	0	1,474	19
Enders	10.02	78	16,705	14,283	(2,422)	3,040	53
Swanson	11.28	84	52,999	33,333	(19,666)	16,389	67
Hugh Butler	8.28	65	5,142	6,274	1,132	6,569	71
Harry Strunk	9.37	68	19,737	18,240	(1,497)	20,859	81
Keith Sebelius	10.86	67	18,270	13,379	(4,891)	3,405	53
Harlan County	10.46	70	241,599	170,539	(71,060)	44,387	44
Lovewell	18.36	107	17,768	23,062	5,294	39,272	92

TABLE 3
HARLAN COUNTY LAKE

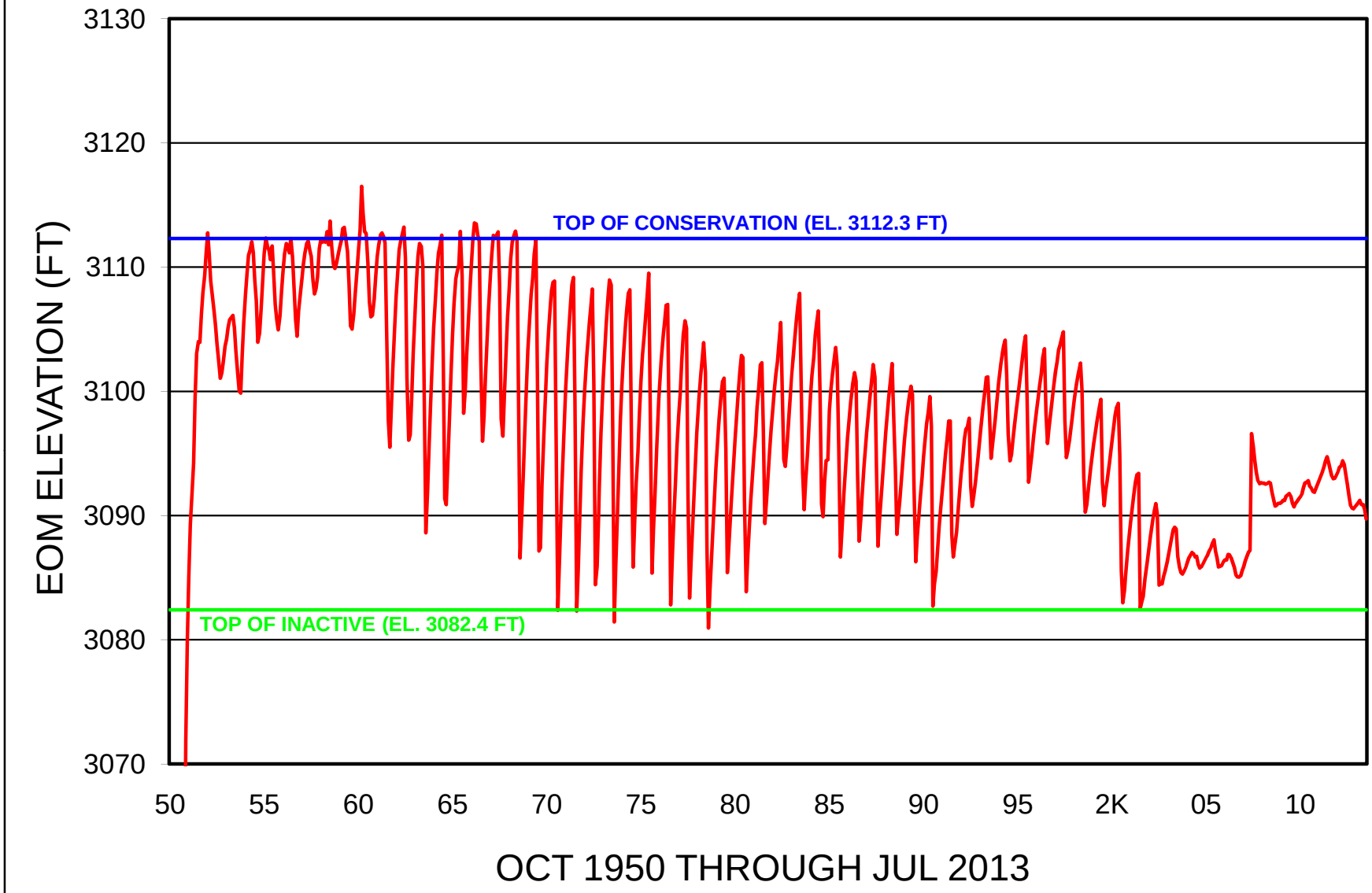
Year	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	Precip. (% of Average) (22.76 inches)	Rep. Basin Reclamation Dams (% of Average)	End of Year Content (AF)	**Projected Irrig. Water Supply On June 30th (AF)**
2003	48,430	51,237	34,307	16.70	73%	93%	113,346	**62,000**
2004	25,099	0	30,601	22.83	100%	111%	107,050	**0**
2005	53,682	0	32,620	22.51	99%	107%	128,111	**14,100**
2006	30,077	12,280	29,609	20.62	91%	101%	116,299	**14,400**
2007	198,528	21,237	38,197	26.92	118%	114%	255,393	**111,700**
2008	224,841	114,938	45,985	30.31	133%	131%	319,311	**175,900**
2009	136,747	94,079	41,721	24.50	108%	128%	320,258	**156,000**
2010	239,054	194,055	46,893	31.66	139%	119%	318,364	**147,800**
2011	174,830	120,989	49,241	30.69	135%	115%	322,964	**157,700**
2012	78,581	160,221	50,199	18.14	80%	64%	191,125	**132,900**

*NOTE: On June 30, 2013 Projected Irrig. Water Supply was 54,391 AF.

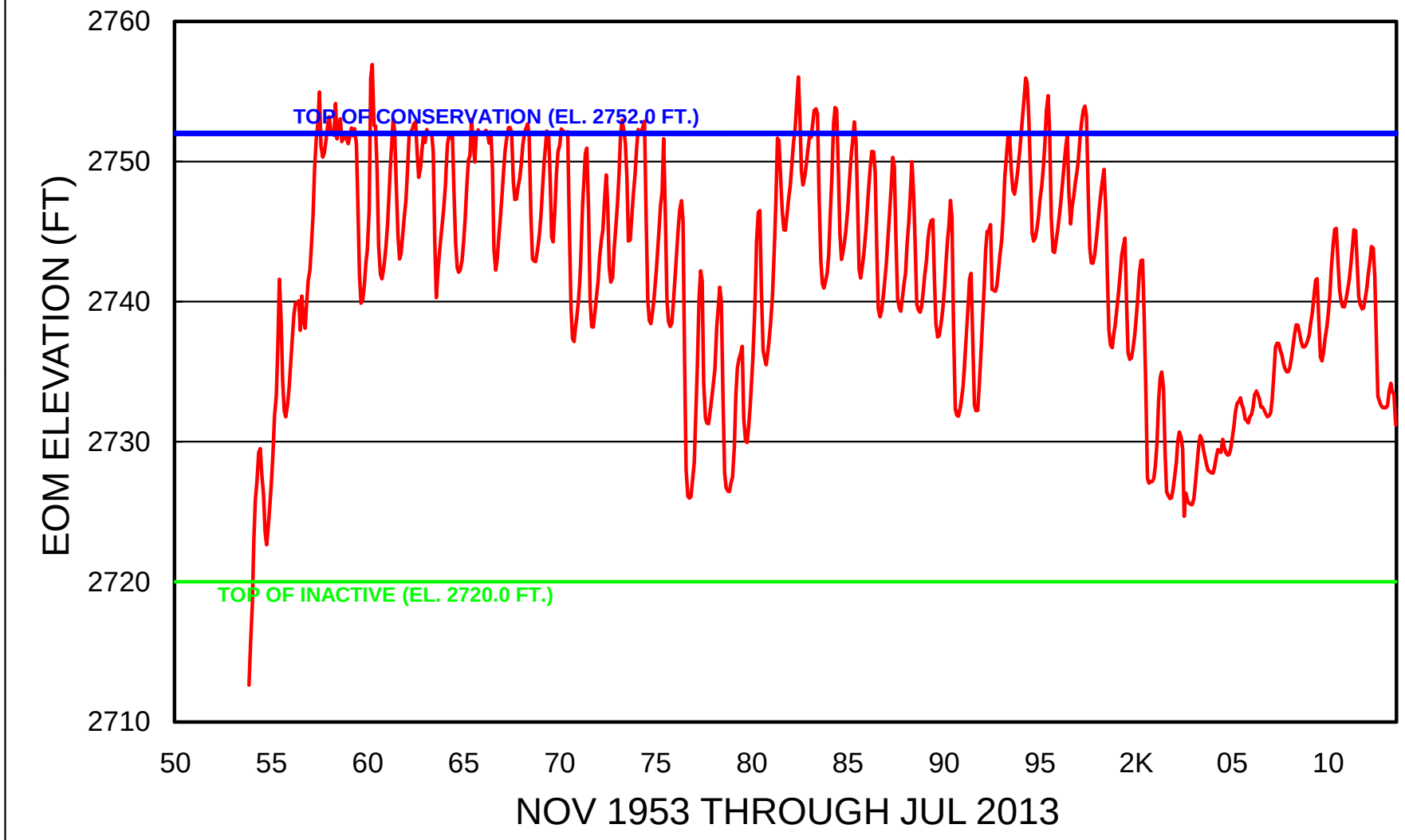
BONNY RESERVOIR
END OF MONTH ELEVATION



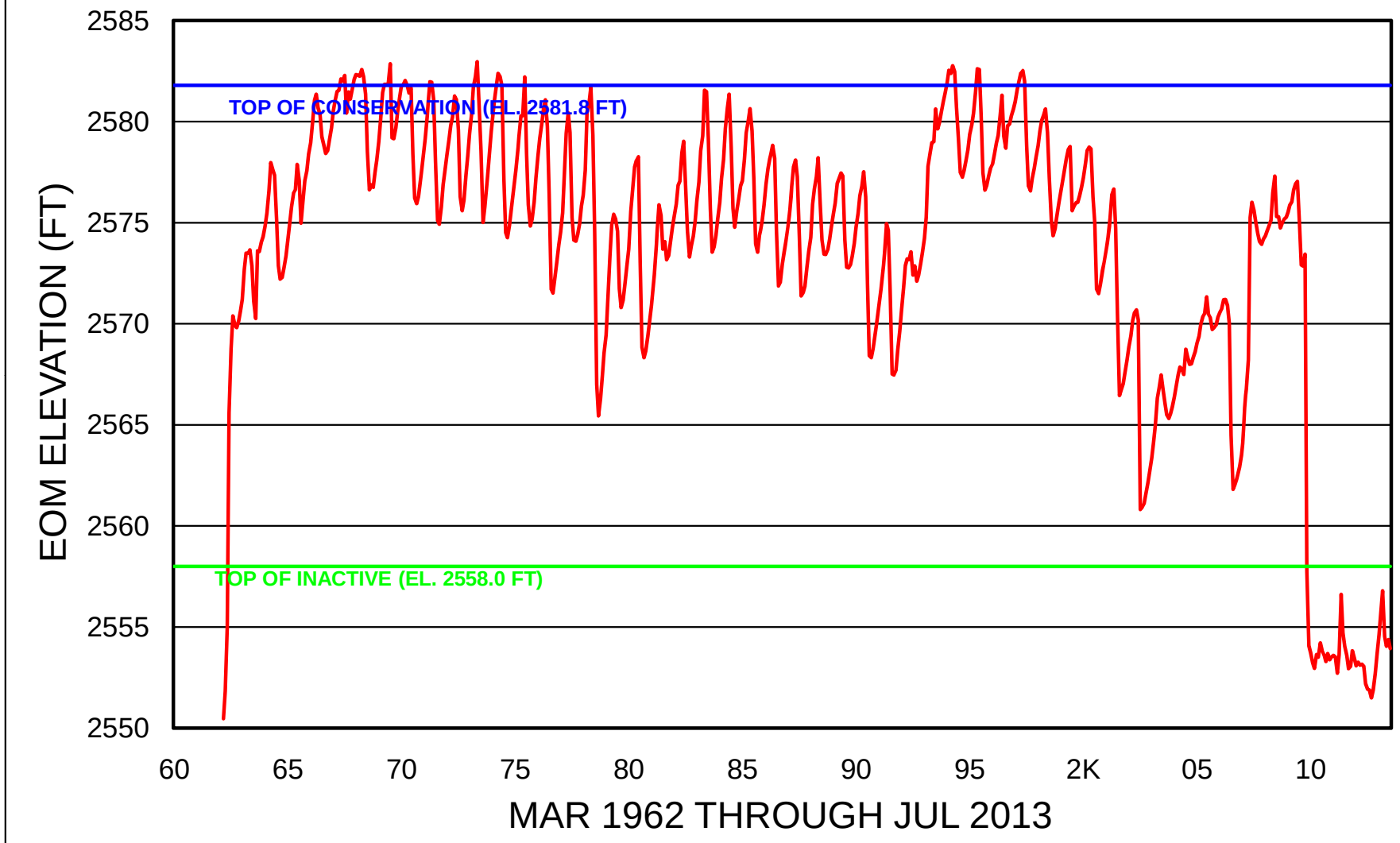
ENDERS RESERVOIR
END OF MONTH ELEVATION



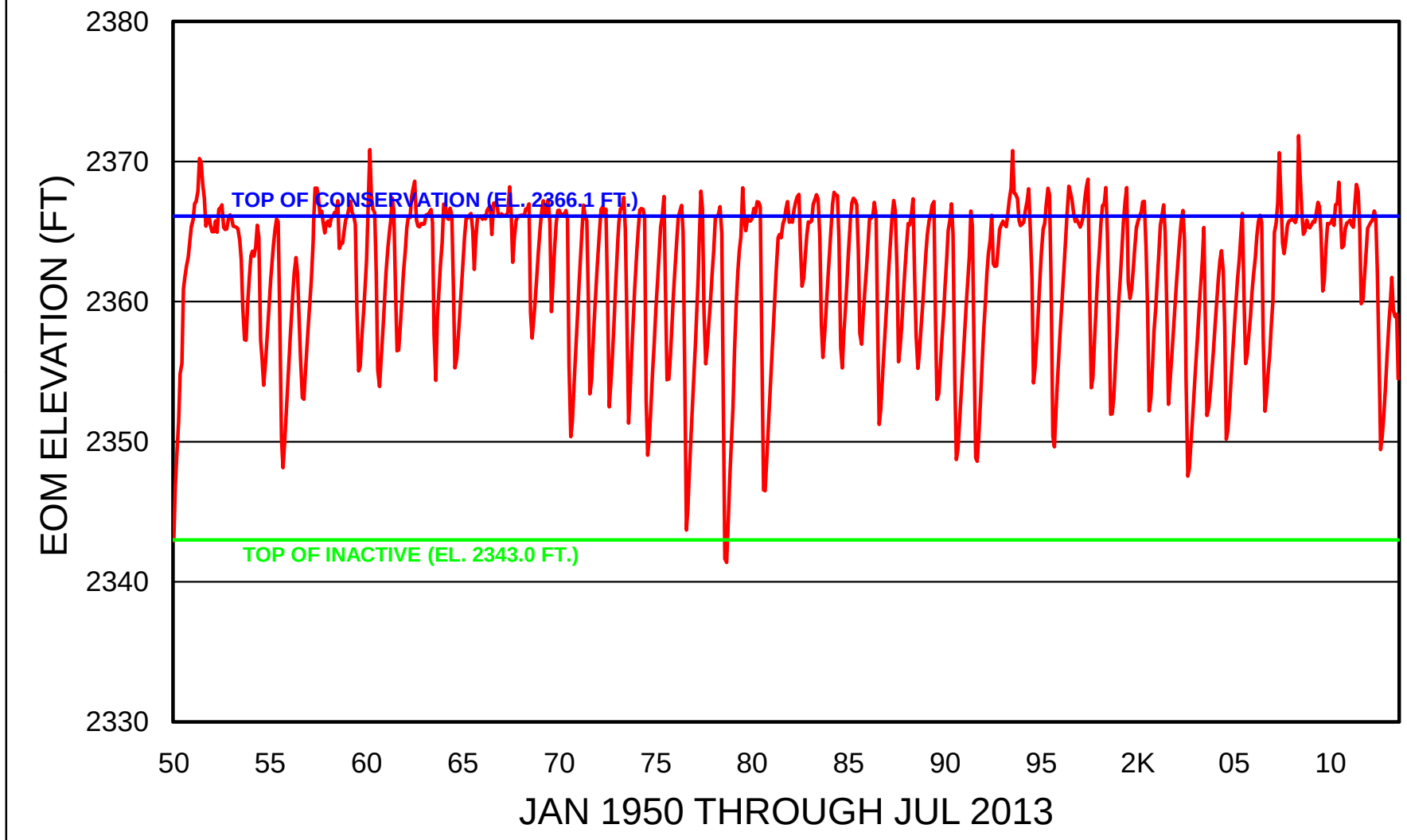
SWANSON LAKE
END OF MONTH ELEVATION



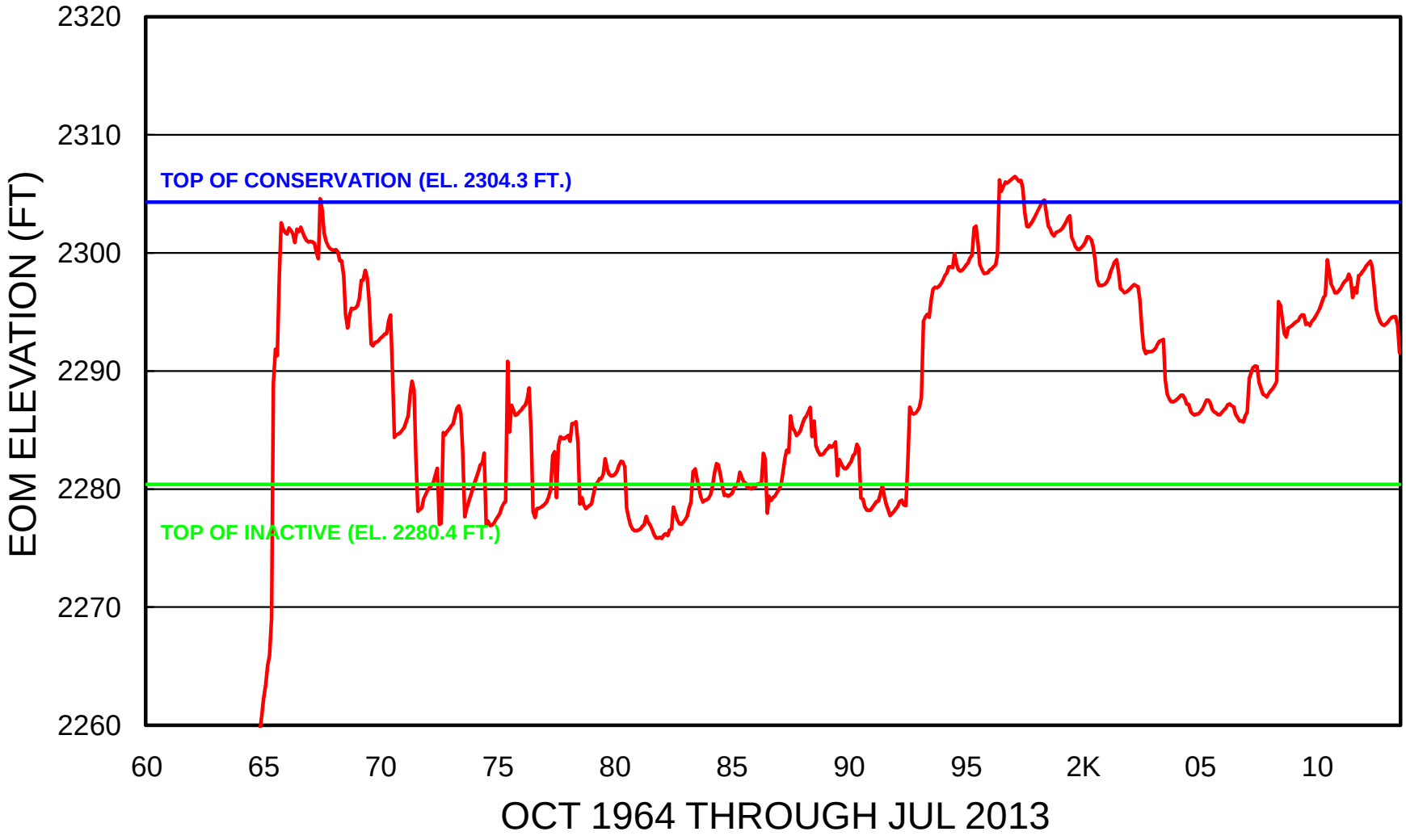
HUGH BUTLER LAKE
END OF MONTH ELEVATION



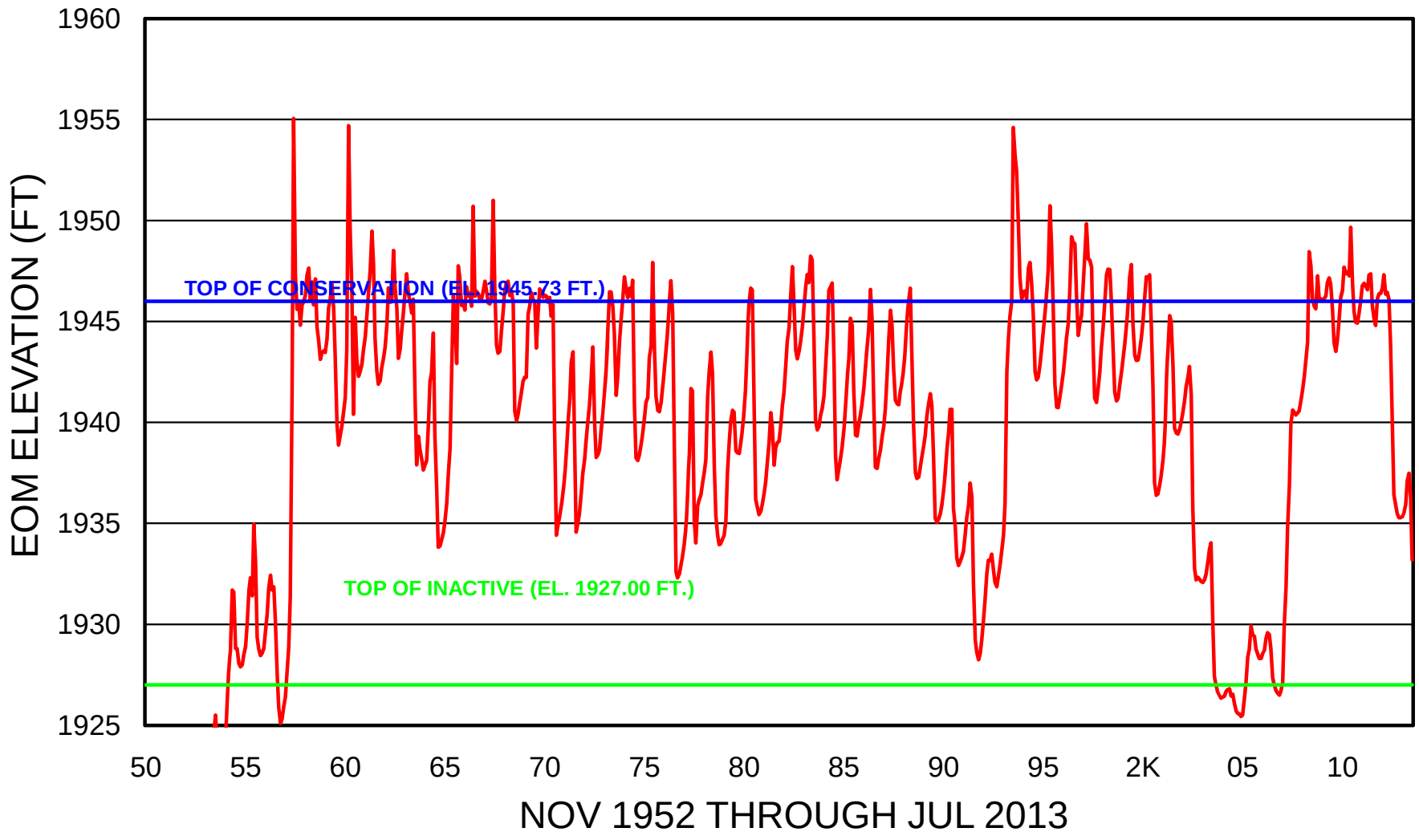
HARRY STRUNK LAKE
END OF MONTH ELEVATION



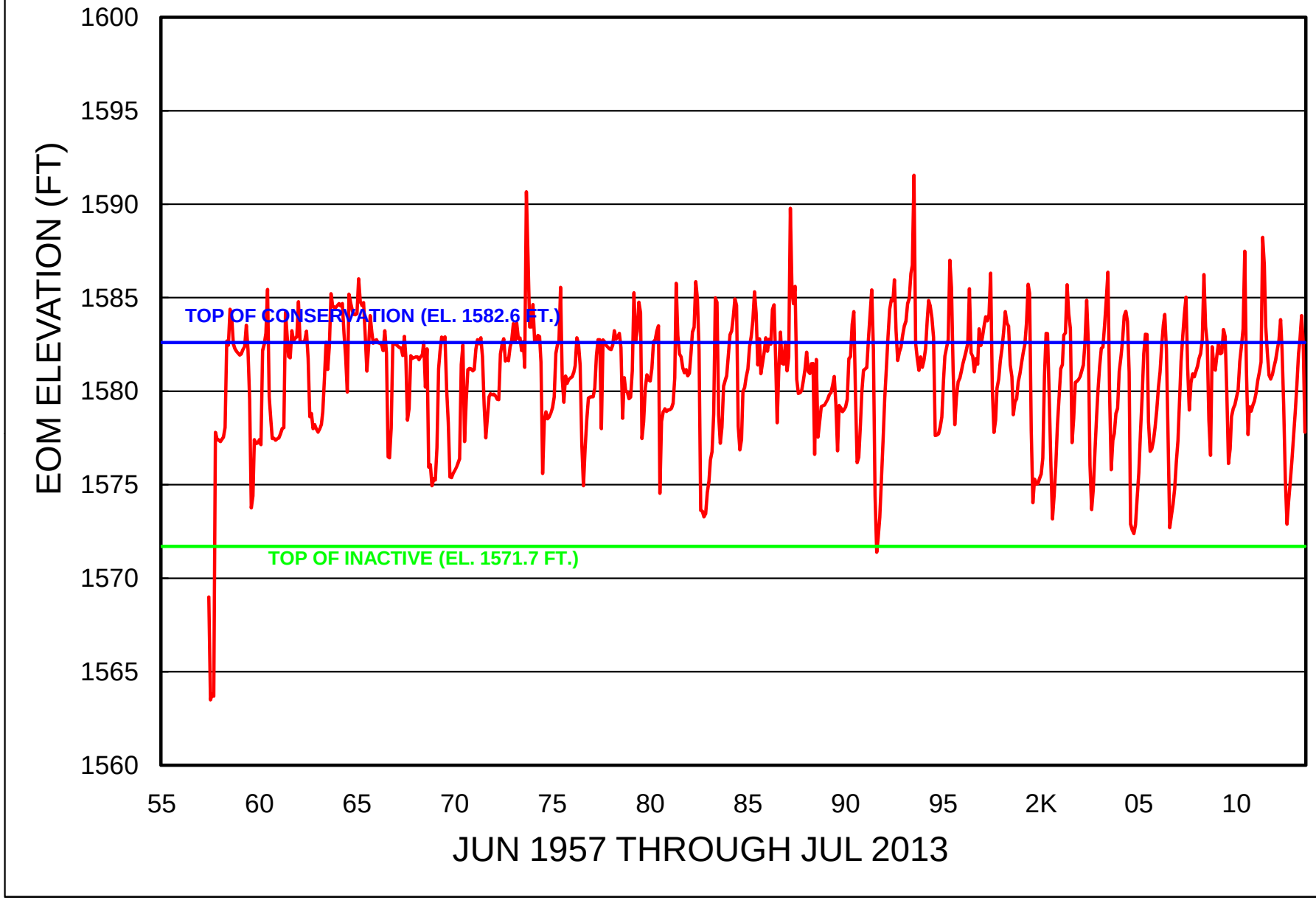
KEITH SEBELIUS LAKE
END OF MONTH ELEVATION



HARLAN COUNTY LAKE
END OF MONTH ELEVATION



LOVEWELL RESERVOIR
END OF MONTH ELEVATION



Republican River Compact Nebraska Stream-Gaging Data Water Year 2012

Presented to
Republican River Compact Administration

By John Miller, North Platte Field Office Chief
Nebraska Water Science Center

September 12, 2013
Colby, KS

USGS
science for a changing world

Summary handout – stations published by U.S. Geological Survey (USGS)

Republican River Basin streamflow-gaging stations with records published by USGS for water year (WY) 2012

[DCP, data-collection platform; NDNR, Nebraska Department of Natural Resources; USACE, U.S. Army Corps of Engineers; USBR, U.S. Bureau of Reclamation; USGS, U.S. Geological Survey]

Station number	Station name	Mean discharge (ft^3/s) WY 2012	Mean discharge (ft^3/s) Long-term	WY 2012 as percentage of long-term mean	WY 2012 as rank/years (1 highest)	WYs used for long-term mean	Remarks
USGS Compact stations supported by the National Streamflow Information Program (NSIP)							
06821500	Arikaree River at Haigler, Nebr	0.65	16.7	3.9%	77/80	1933 - 2012	
06823000	North Fork Republican River at Colo-Nebr State Line	20.5	41.6	49.3%	77/77	1935 - 2012	
06823500	Buffalo Creek near Haigler, Nebr	2.00	6.10	32.8%	72/72	1941 - 2012	
06824000	Rock Creek at Parks, Nebr	5.86	11.9	49.2%	72/72	1941 - 2012	
06827500	South Fork Republican River near Benkelman, Nebr	13.00	35.6	36.5%	61/75	1938 - 2012	
06835500	Frenchman Creek at Culbertson, Nebr	30.1	66.7	45.1%	59/62	1951 - 2012	Since Enders Reservoir
06836500	Driftwood Creek near McCook, Nebr	6.79	8.38	81.0%	38/66	1946 - 2012	
06838000	Red Willow Creek near Red Willow, Nebr	15.7	13.8	113.8%	12/51	1962 - 2012	Since Hugh Butler Lake
06847500	Sappa Creek near Stamford, Nebr (USACE funds DCP)	17.5	39.0	44.9%	33/66	1946 - 2012	
06852500	Courtland Canal at Nebr-Kans State Line (USBR DCP)	74.4	75.4	98.7%	29/58	1955 - 2012	
USGS stations supported by USGS and/or other Federal or State agencies							
06828500	Republican River at Stratton, Nebr	32.4	94.8	34.2%	54/62	1951 - 2012	Funded by USACE and NSIP
06837000	Republican River at McCook, Nebr	41.3	125	33.0%	53/58	1955 - 2012	Funded by USBR, NDNR, and NSIP
06844500	Republican River near Orleans, Nebr	103	230	44.8%	57/65	1948 - 2012	Funded by USACE
NDNR stations with USGS/USACE support for DCP, Web display, review, and publishing							
06834000	Frenchman Creek at Palisade, Nebr	18.5	60.8	30.4%	60/62	1951 - 2012	
06843500	Republican River at Cambridge, Nebr	105	212	49.5%	58/63	1950 - 2012	Since Harry Strunk Lake

Online Annual Water Data Reports available at or through

http://wdr.water.usgs.gov
http://ne.water.usgs.gov

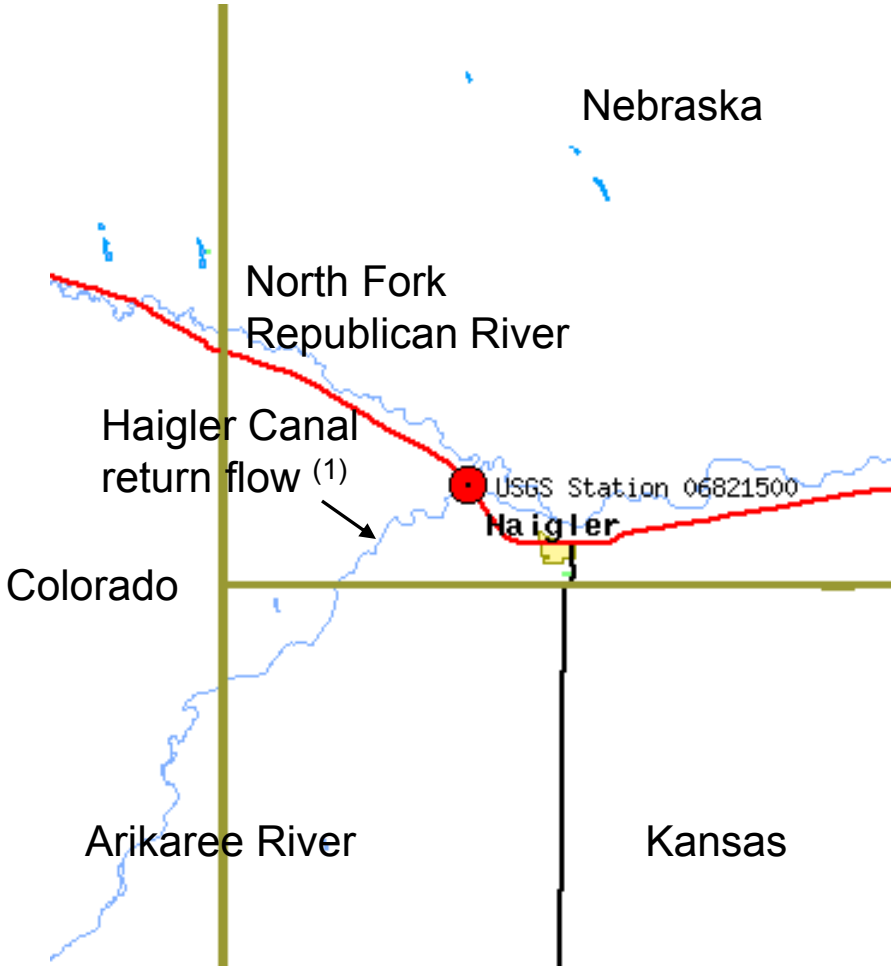
USGS science for a changing world

Summary Charts – Compact Stations

- Published data for Water Year (WY) 2012
- Operated by the USGS Nebraska Water Science Center (NE WSC)
- Stations funded by the USGS National Streamflow Information Program (NSIP)

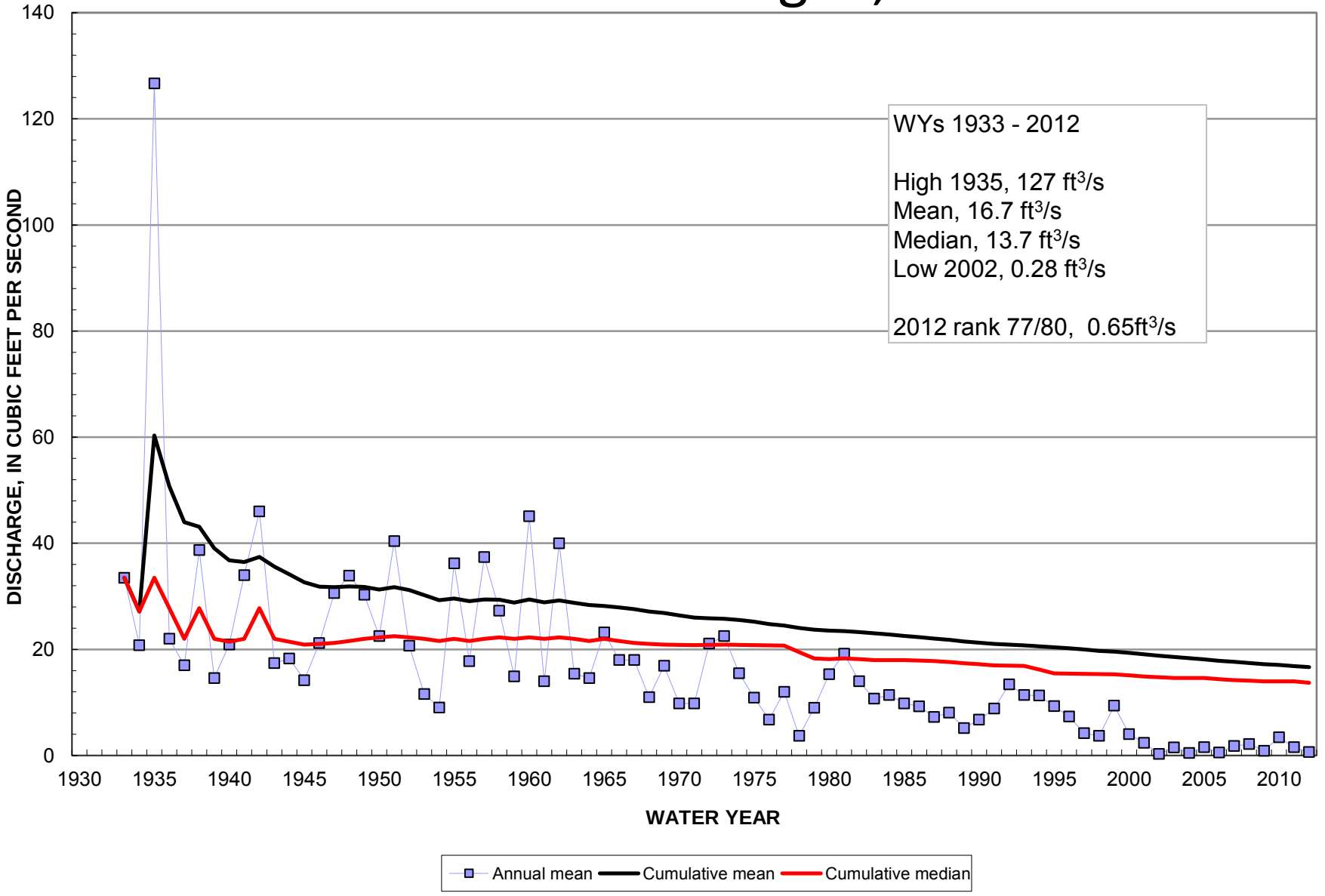
USGS
science for a changing world

Arikaree River at Haigler, NE



(1) Haigler Canal diverts from North Fork Republican River above CO-NE Stateline: return flows enter Arikaree River

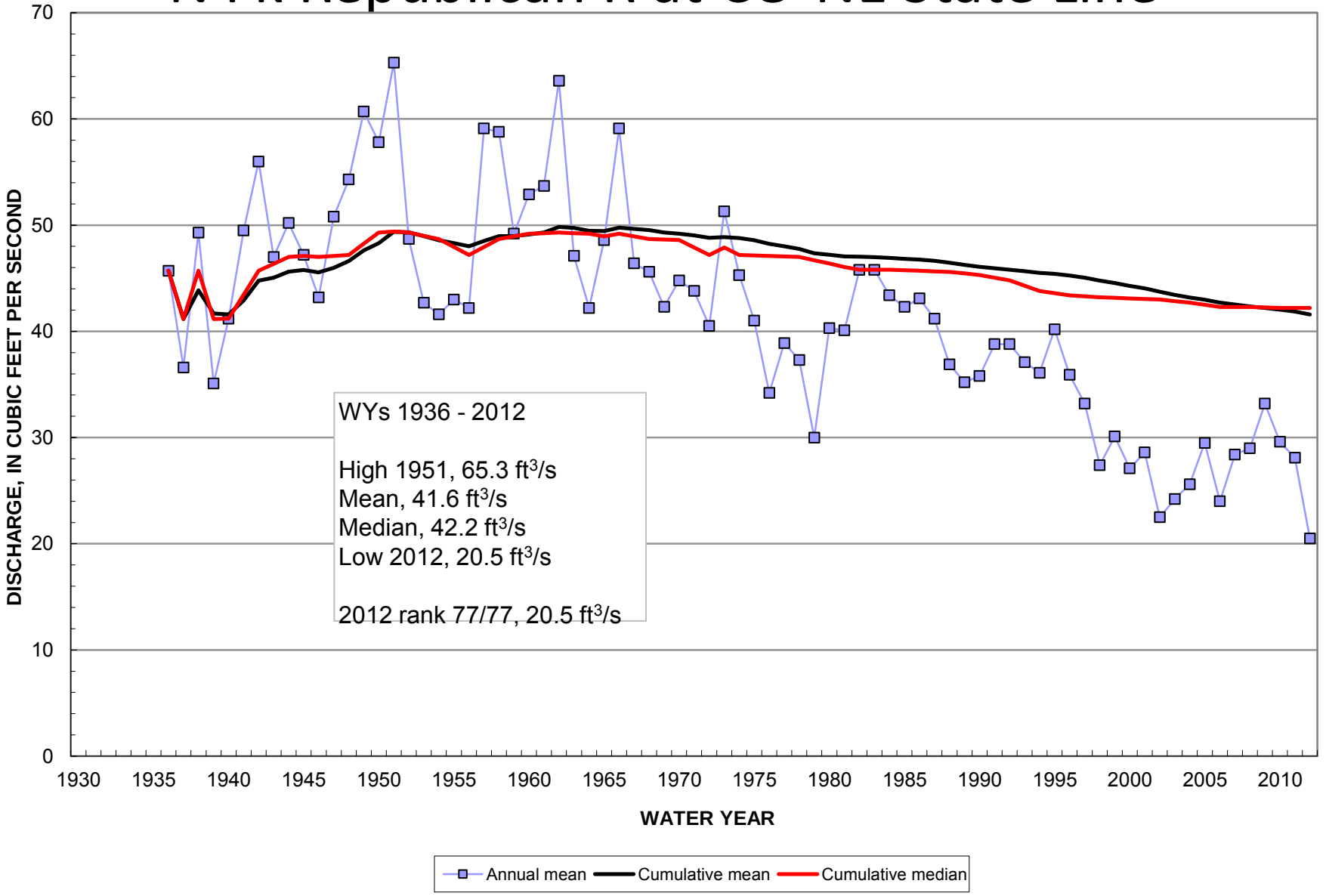
Arikaree River at Haigler, NE



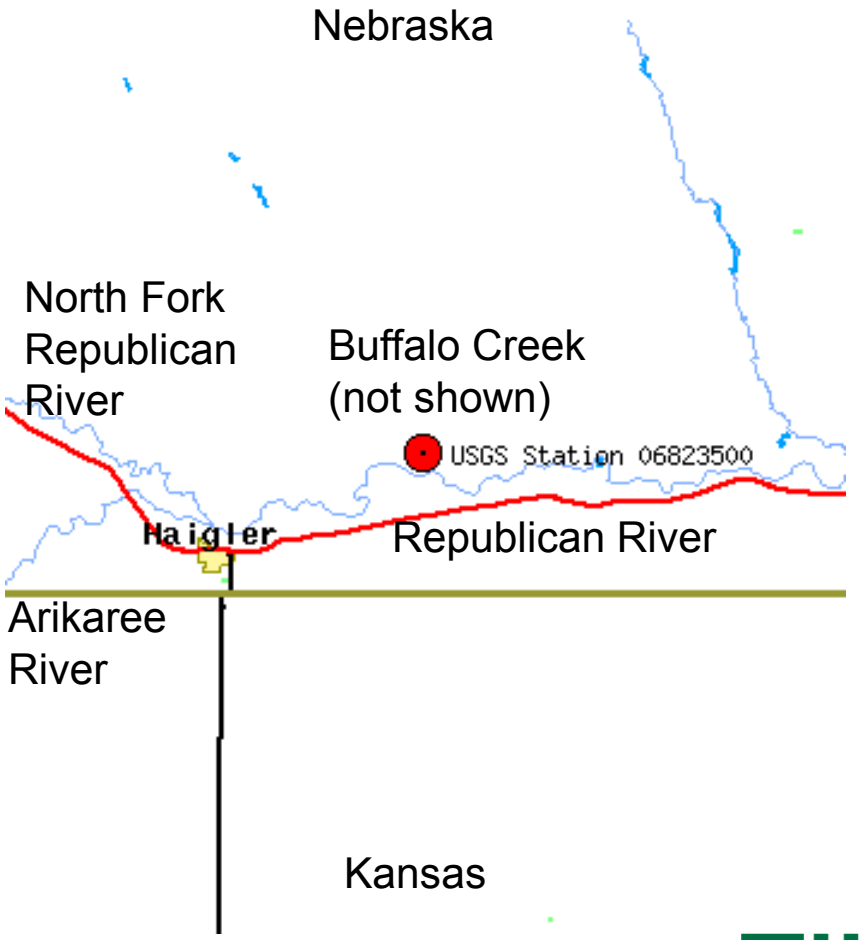
N Fk Republican River at CO-NE State Line

(1) Haigler Canal diverts flow upstream of station in Colorado; return flows enter Arikaree River in Nebraska

N Fk Republican R at CO-NE State Line



Buffalo Creek near Haigler, NE



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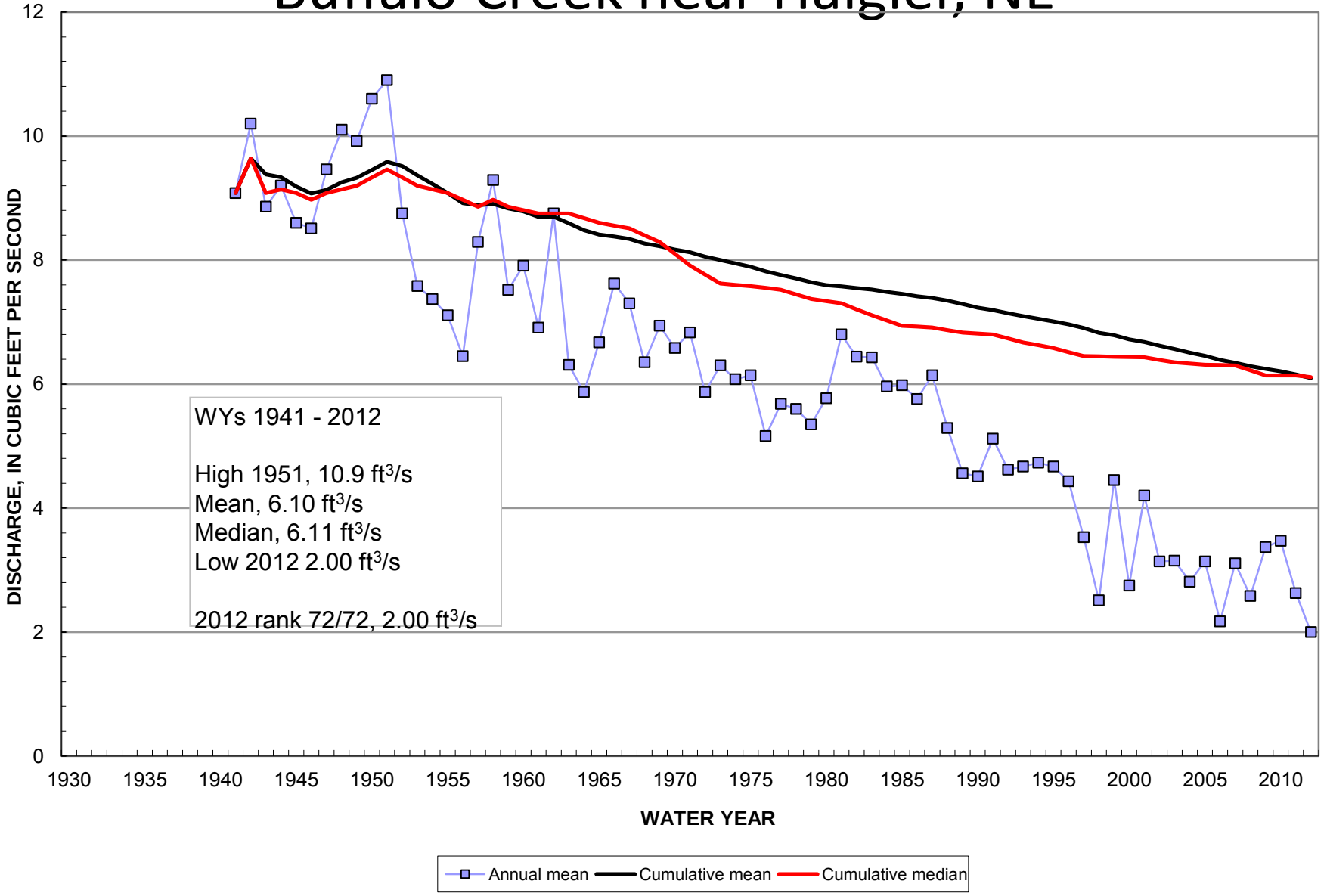
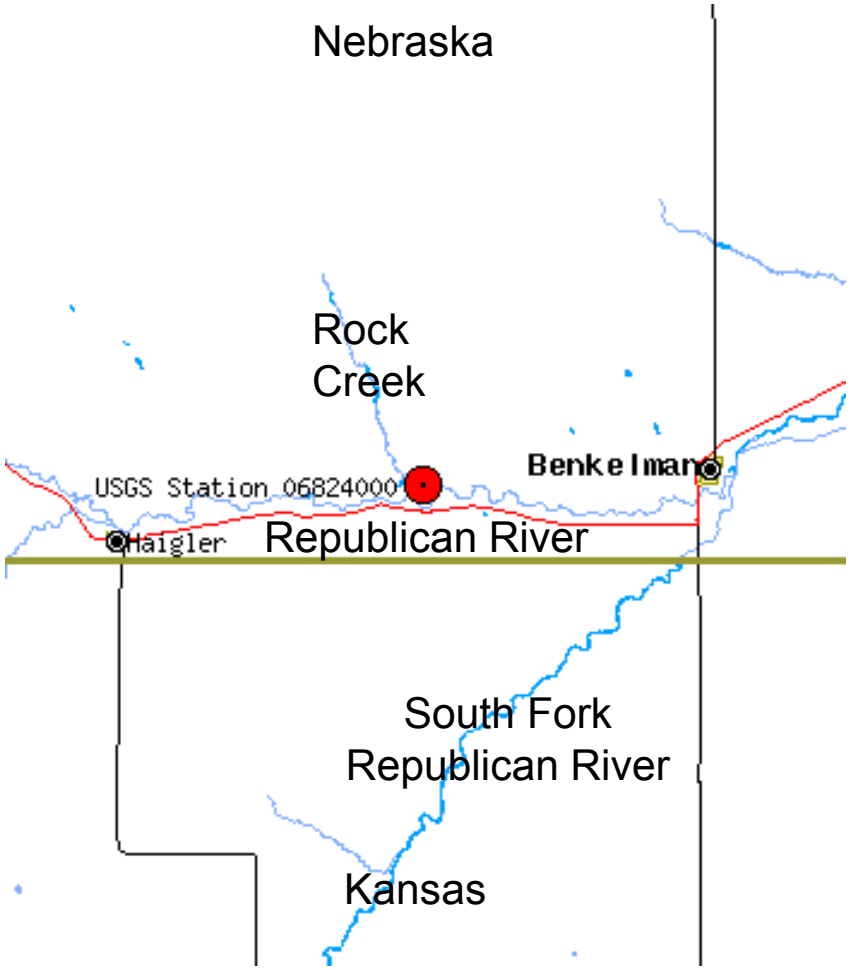
Buffalo Creek near Haigler, NE



Rock Creek at Parks, NE



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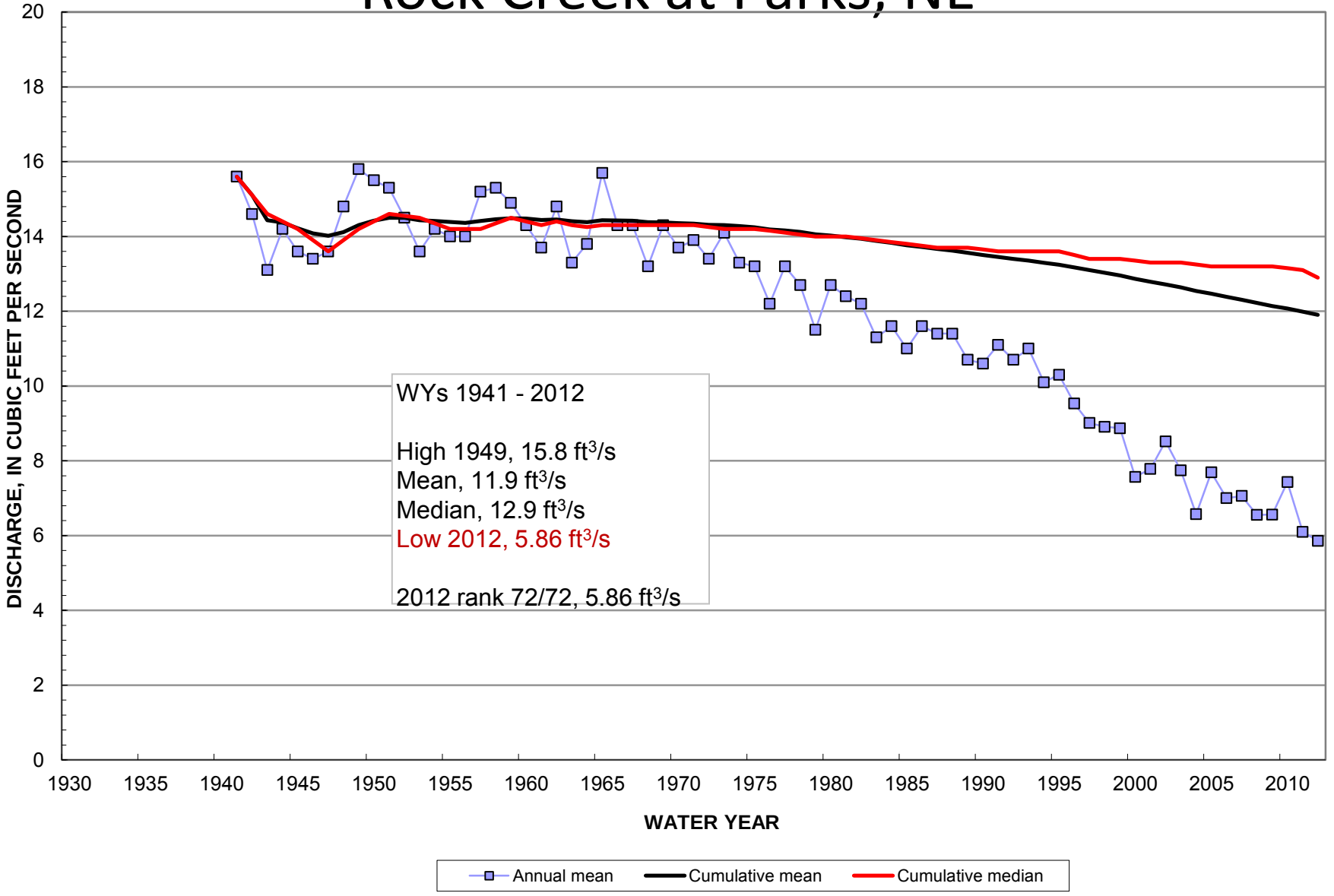
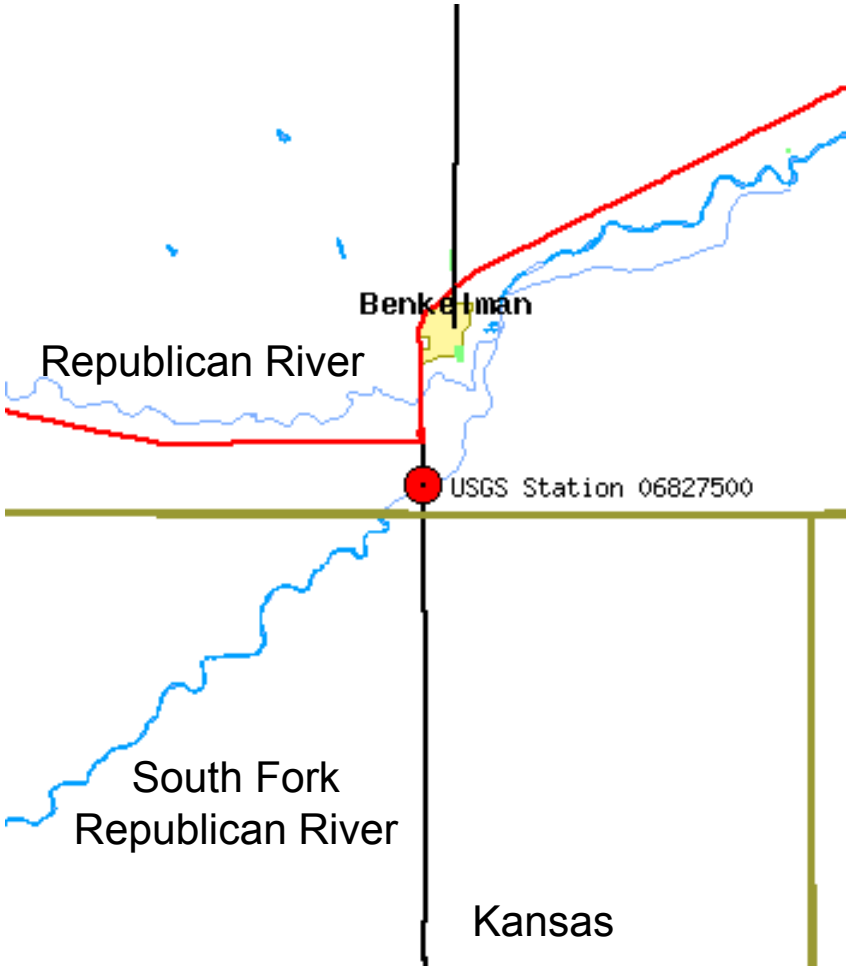
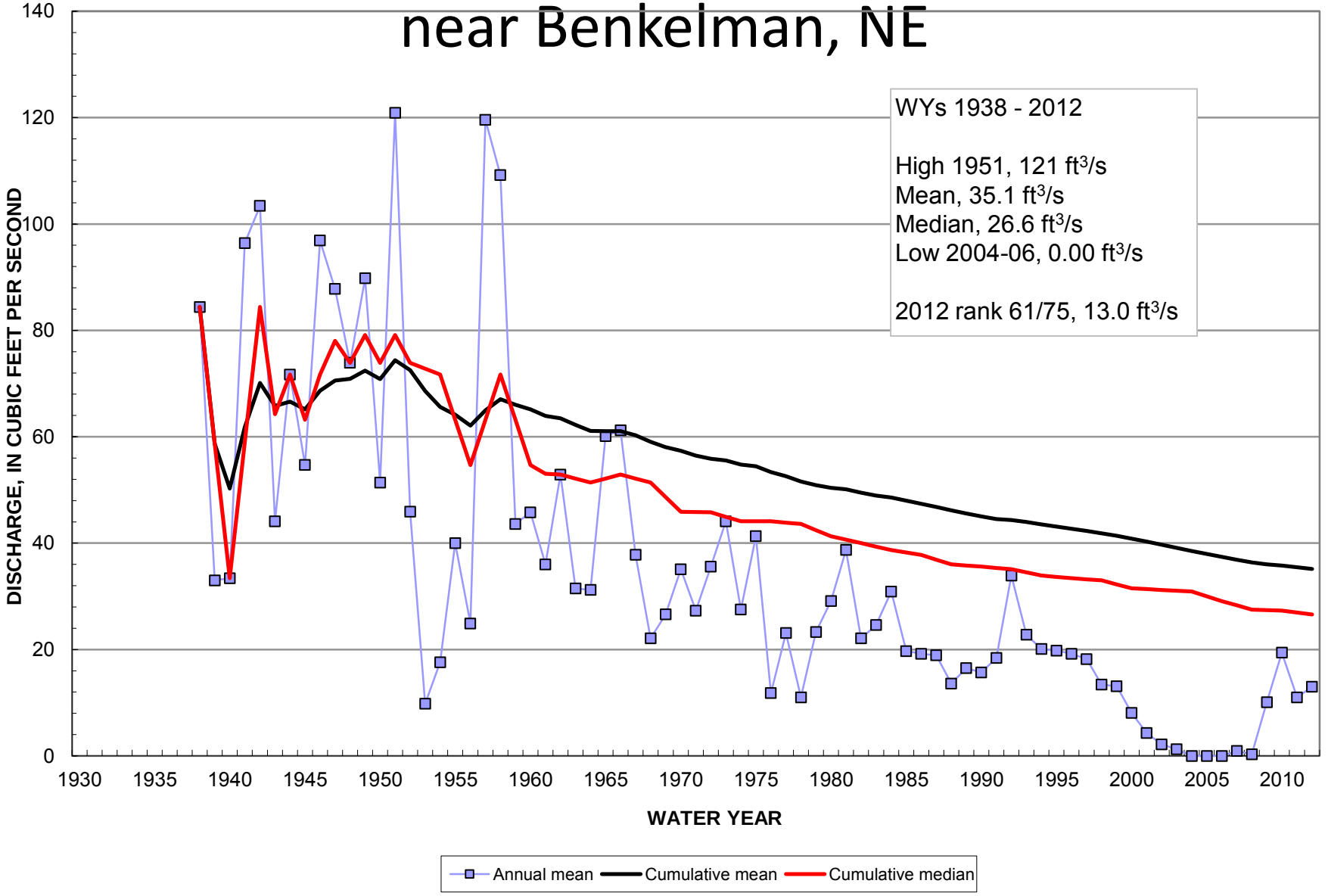
Rock Creek at Parks, NE



South Fork Republican River near Benkelman, NE



South Fork Republican River near Benkelman, NE



Frenchman Creek at Culbertson. NE

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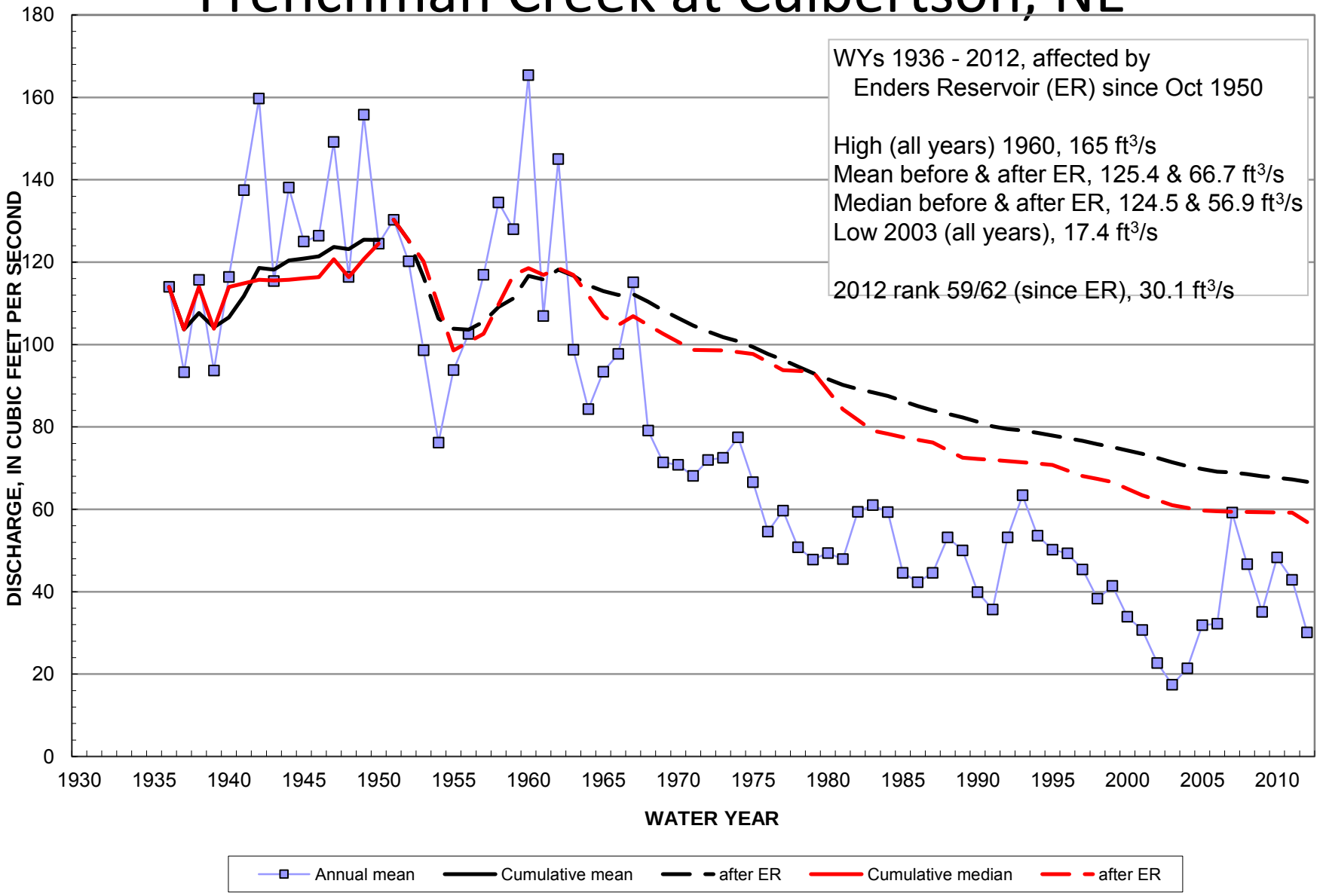
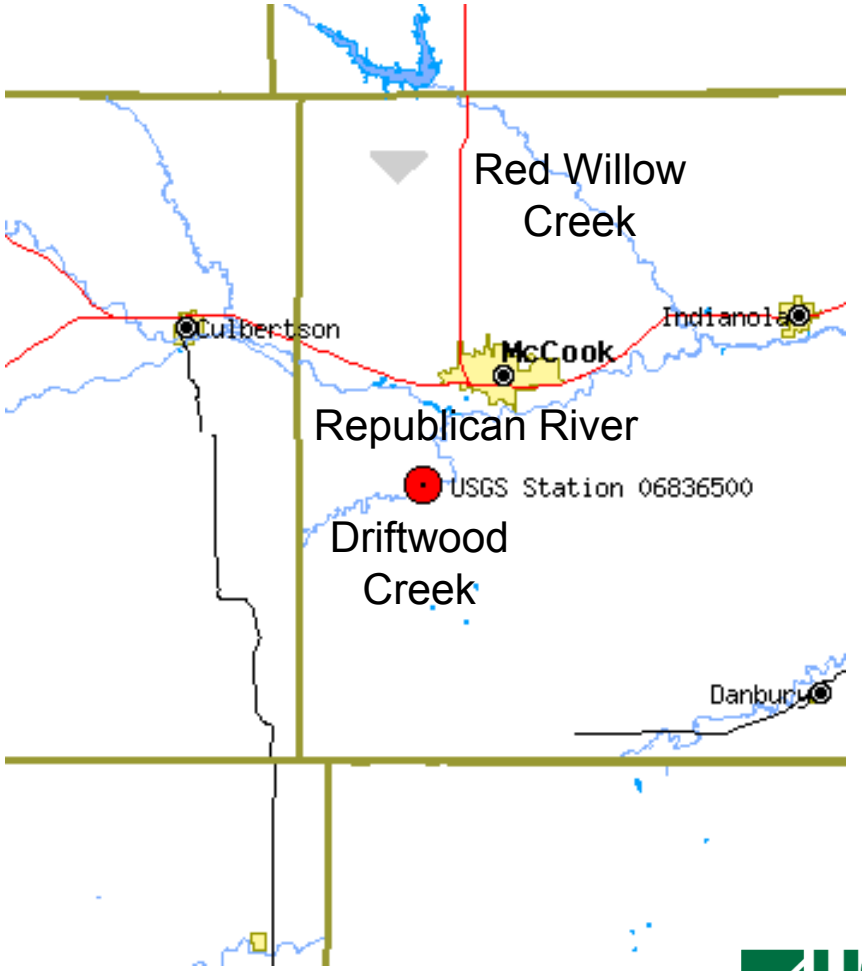
Frenchman Creek at Culbertson, NE



Driftwood Creek near McCook, NE



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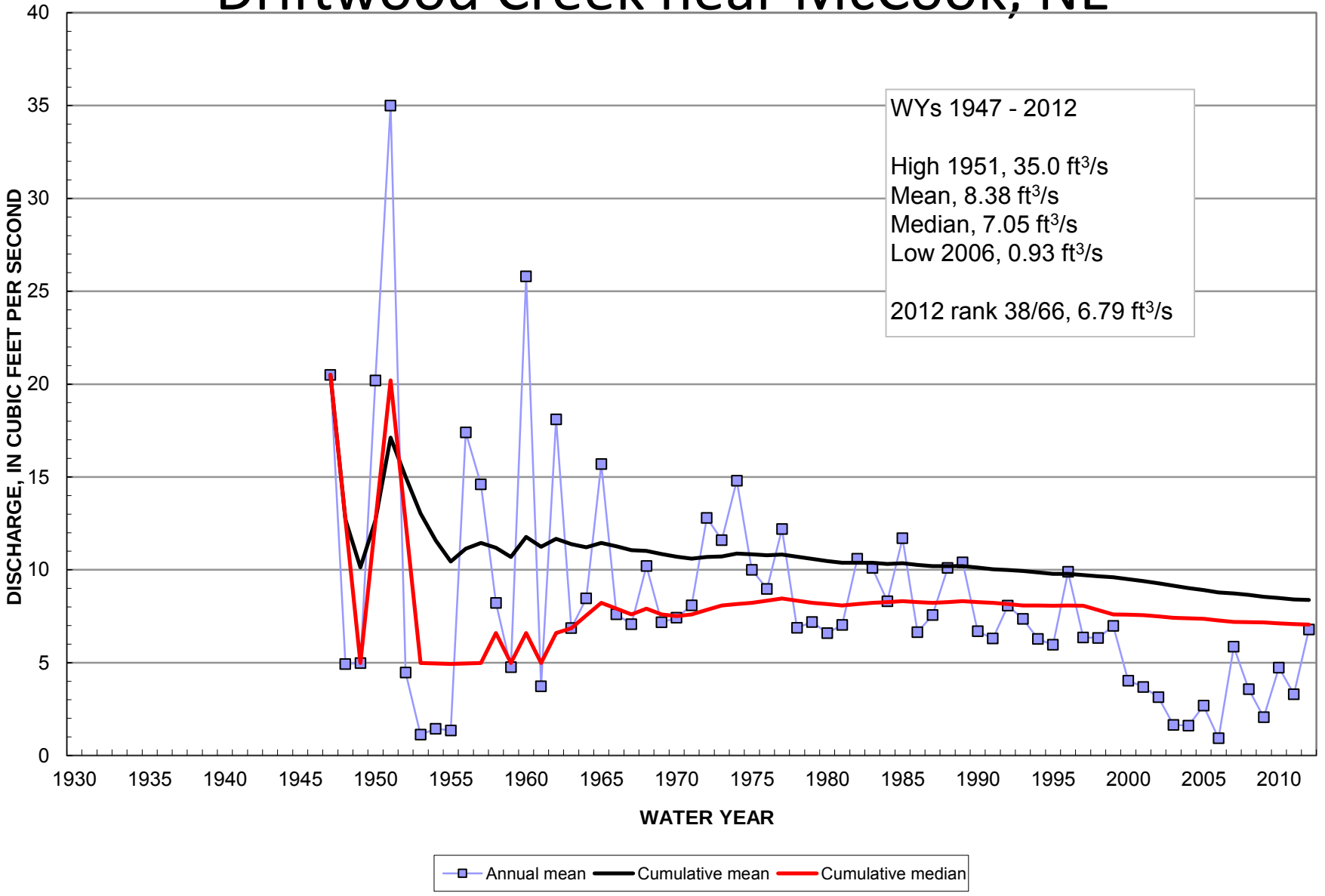
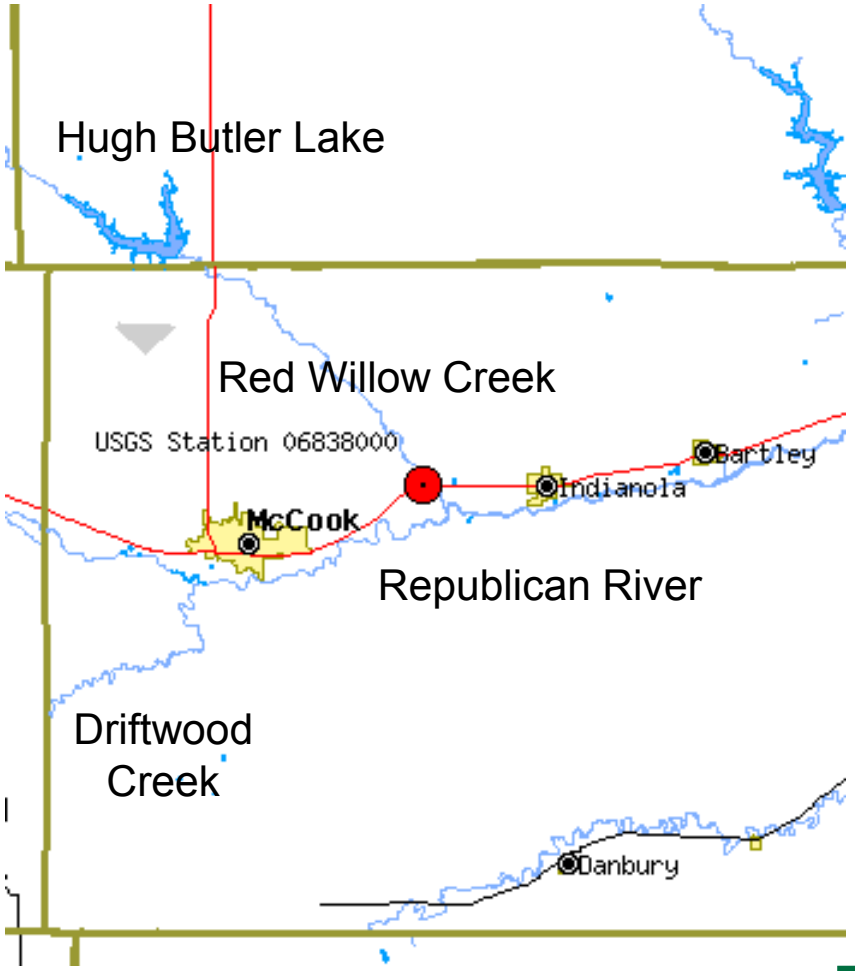
Driftwood Creek near McCook, NE



Red Willow Creek near Red Willow, NE



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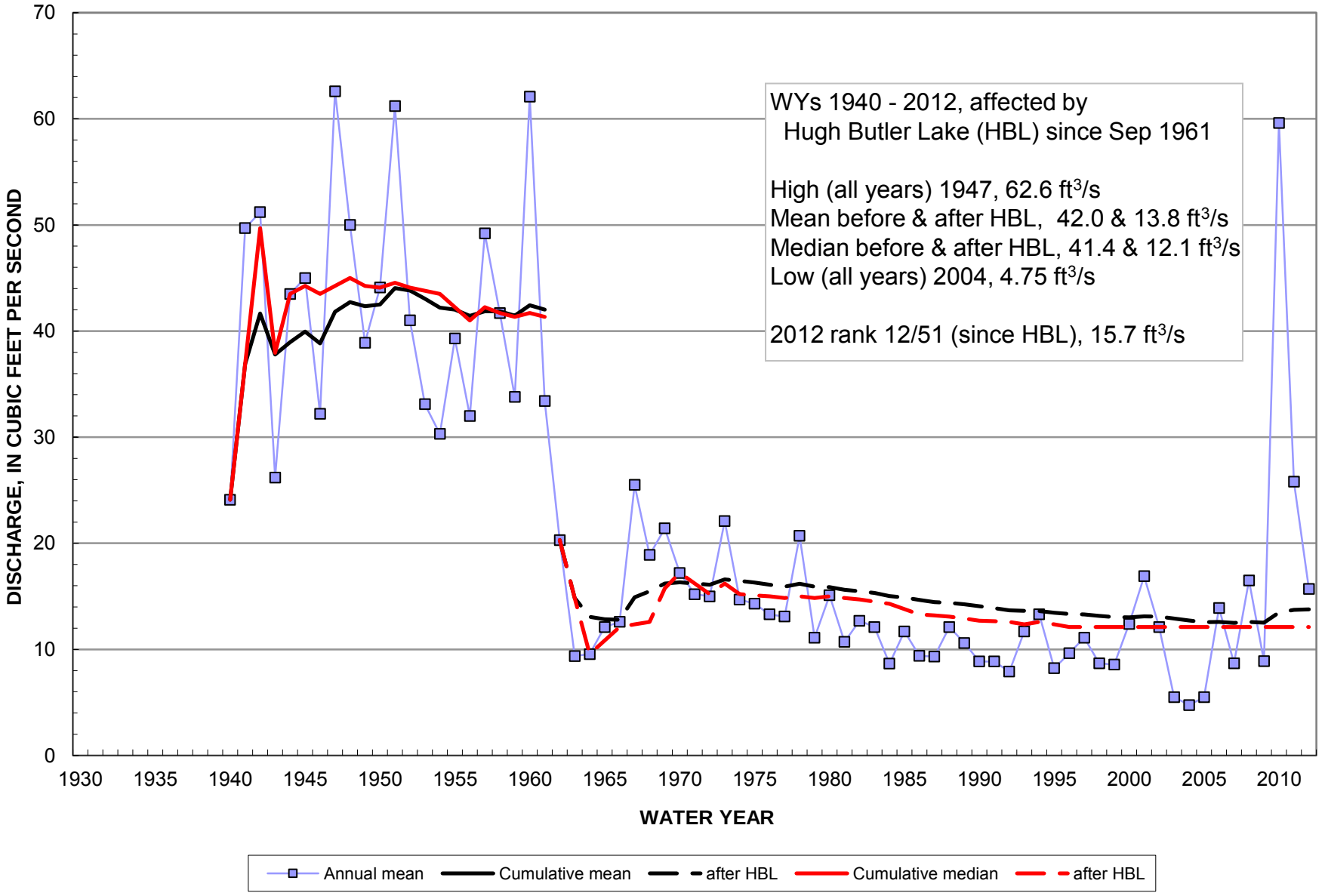
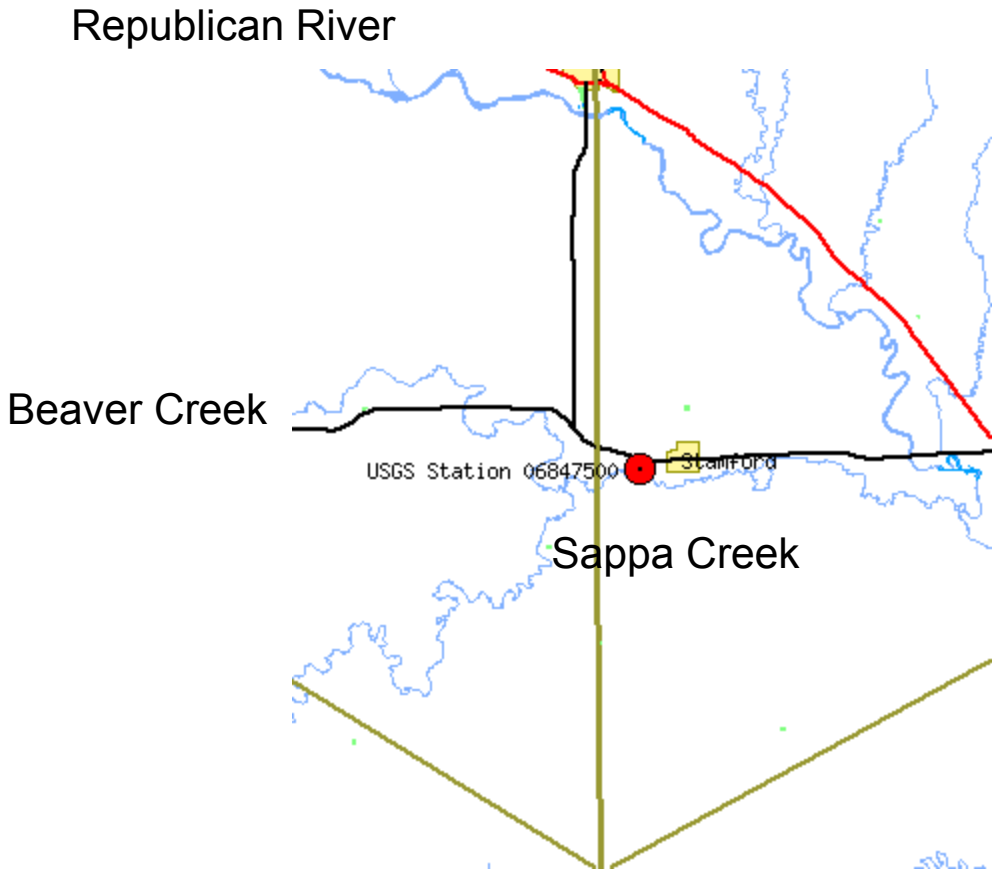
Red Willow Creek near Red Willow, NE



Sappa Creek near Stamford, NE



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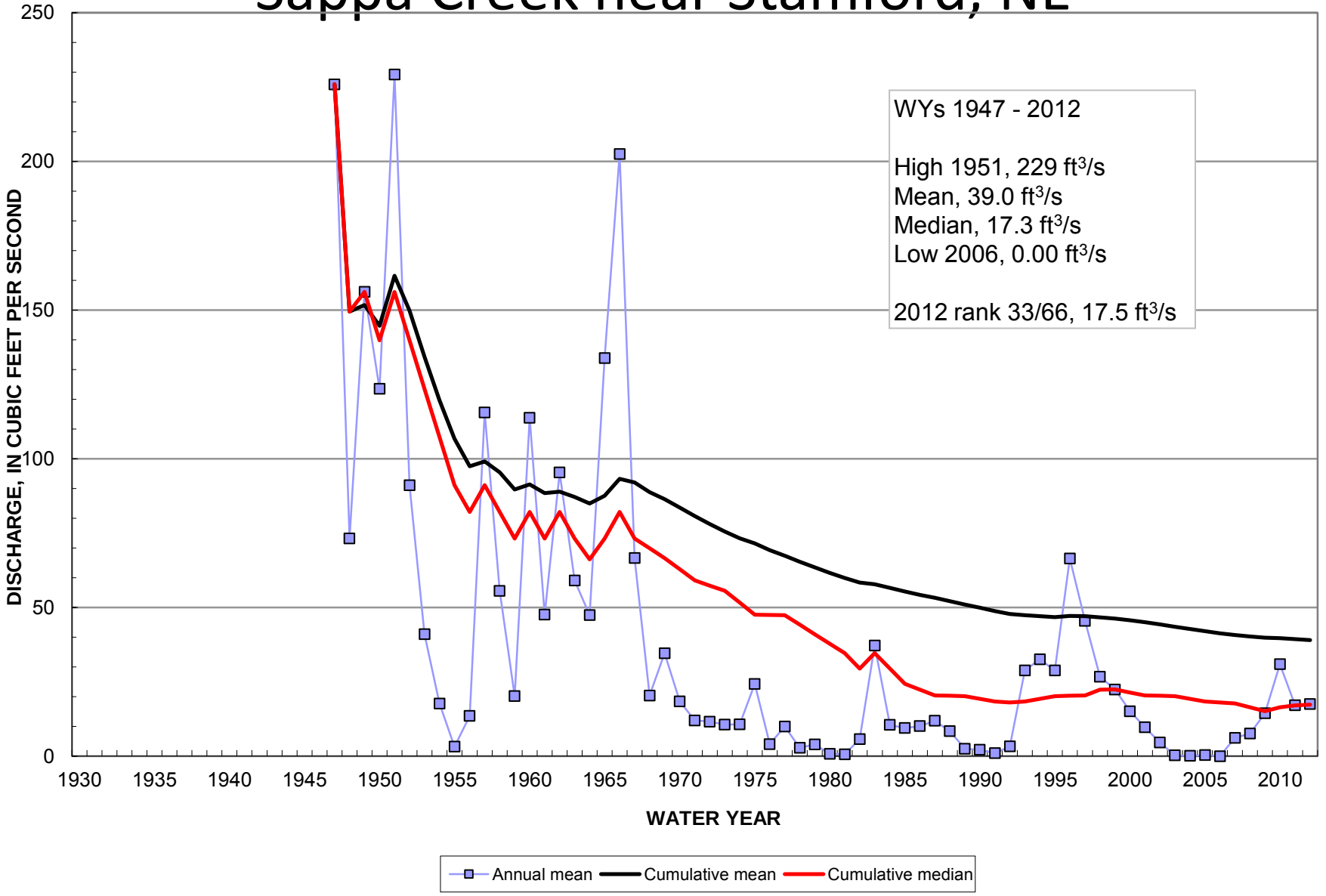
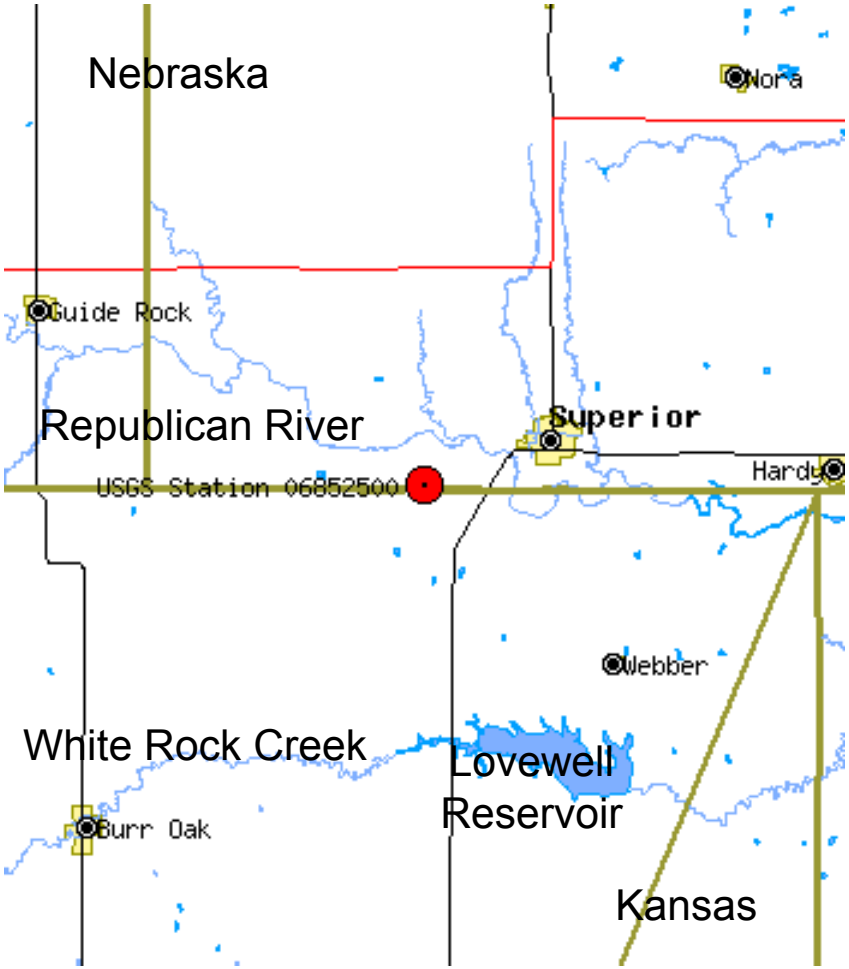
Sappa Creek near Stamford, NE



Courtland Canal at NE-KS Stateline



Courtland Canal: diverts flow from Republican River; and connects to and extends beyond Lovewell Reservoir in Kansas

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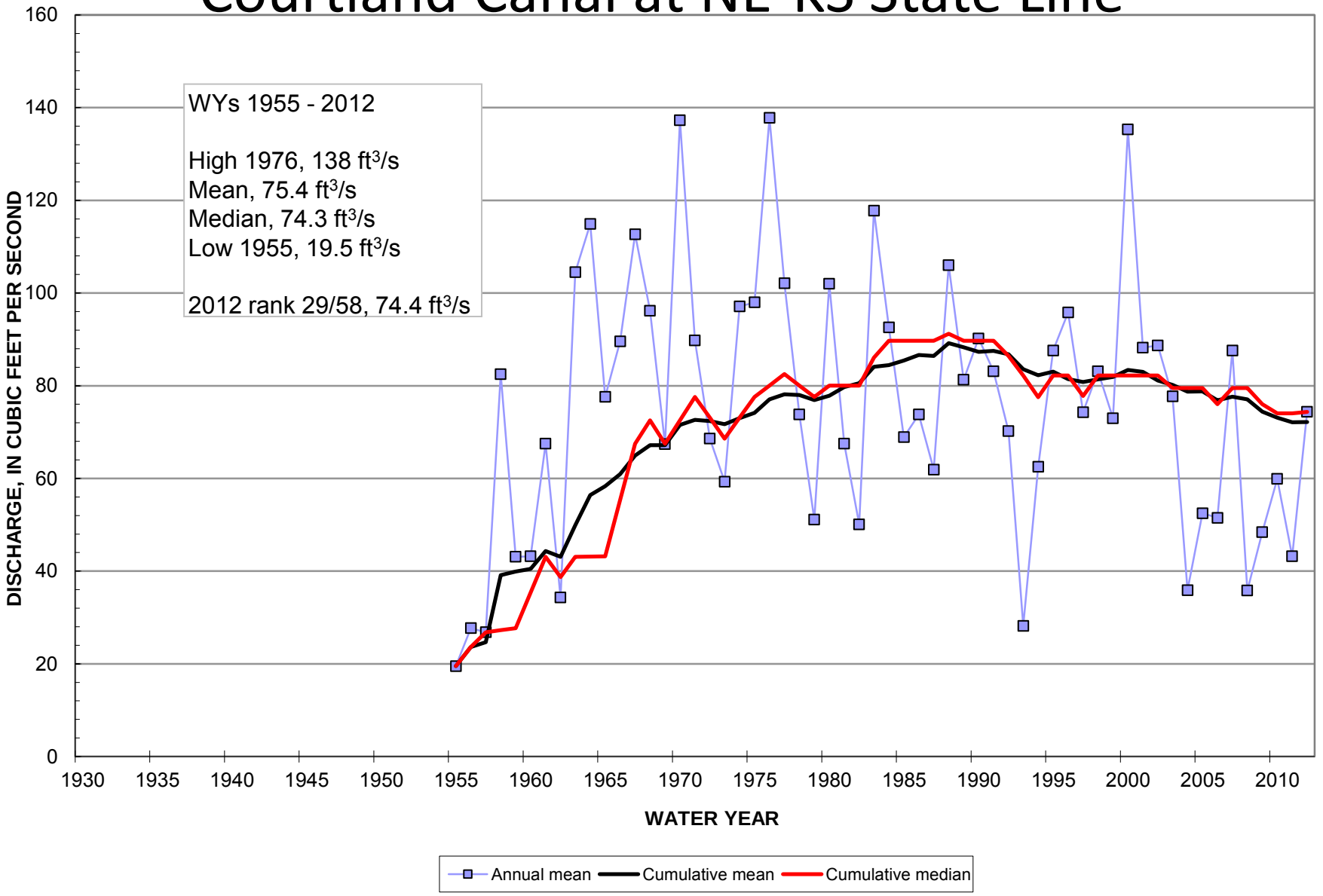
Courtland Canal at NE-KS State Line



Summary Charts – Other USGS Stations

- Published data for Water Year 2012
- Operated by the USGS Nebraska Water Science Center
- Stations funded by:
  - other Federal agencies
  - State and local agencies with USGS match from the Cooperative Water Program

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Republican River at Stratton, NE

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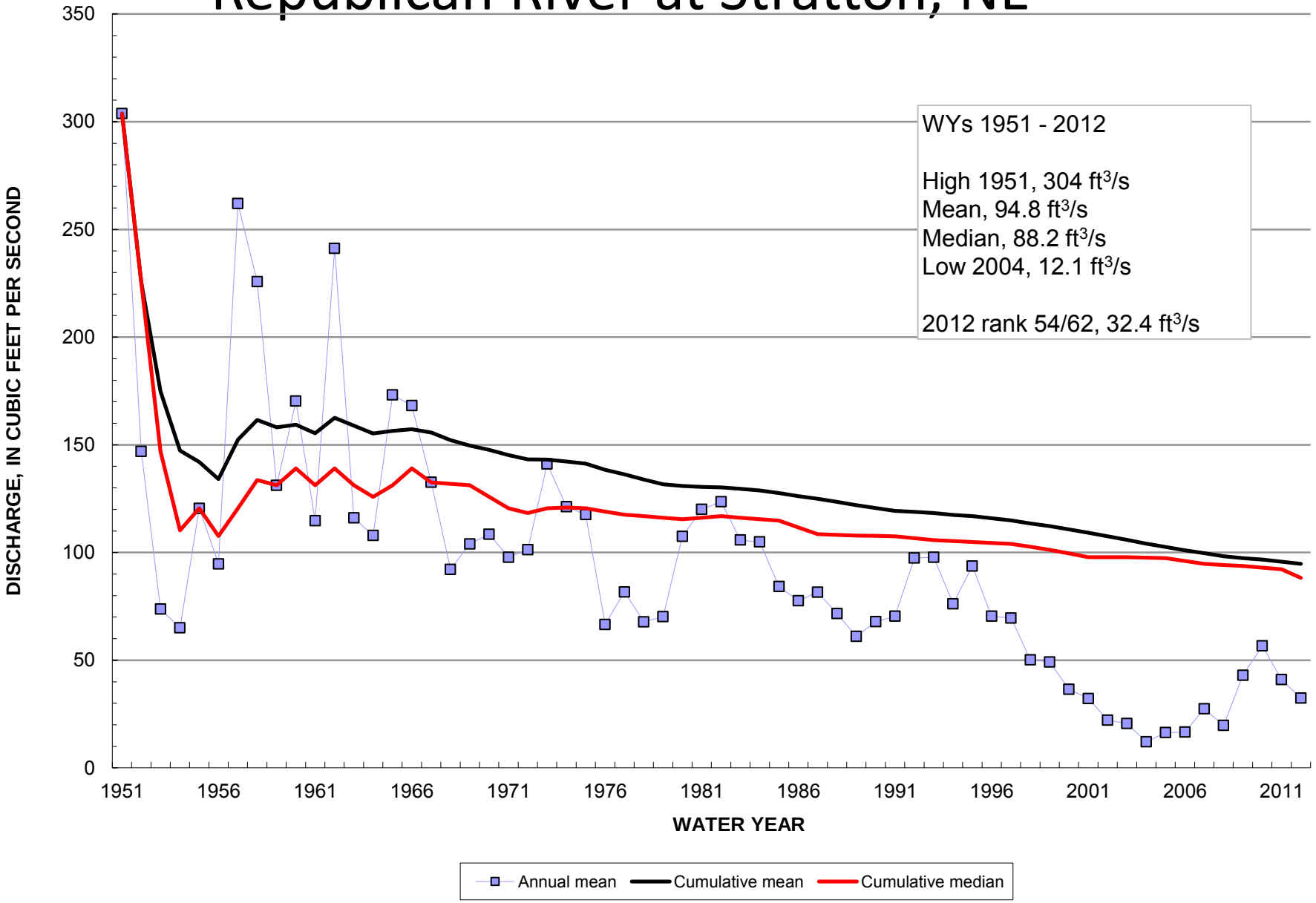
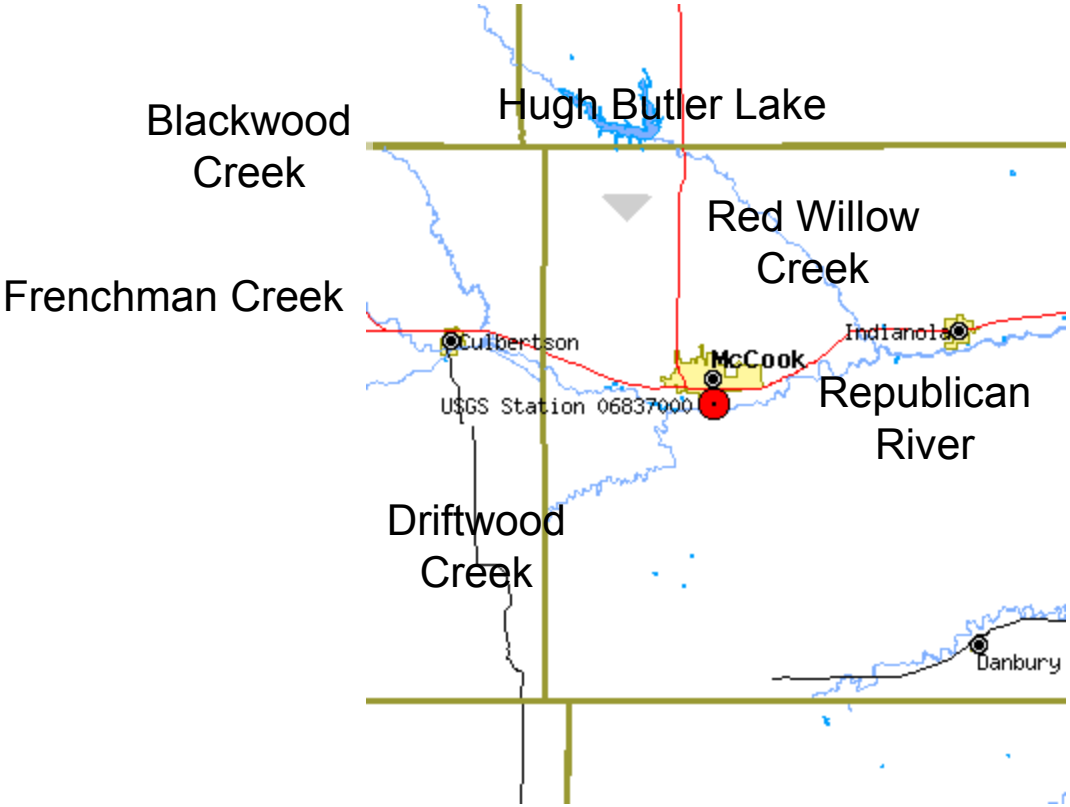
Republican River at Stratton, NE



Republican River at McCook, NE



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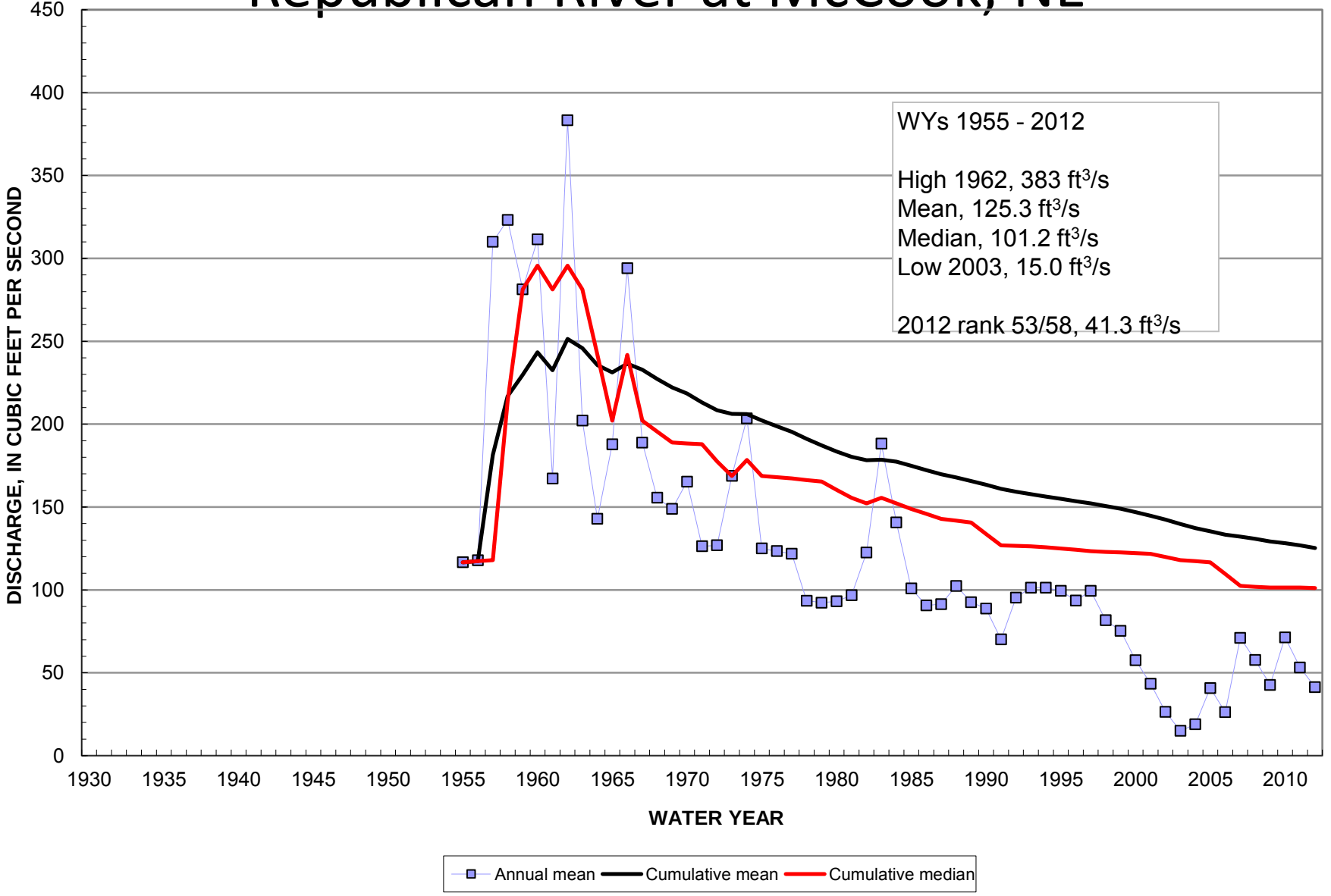
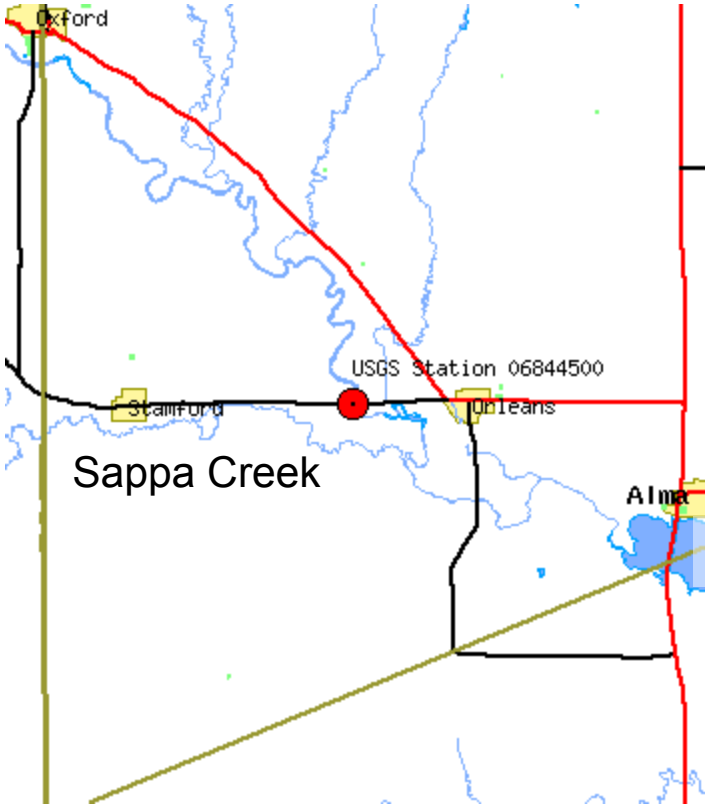
Republican River at McCook, NE



Republican River near Orleans, NE

Republican River



Harlan County Lake

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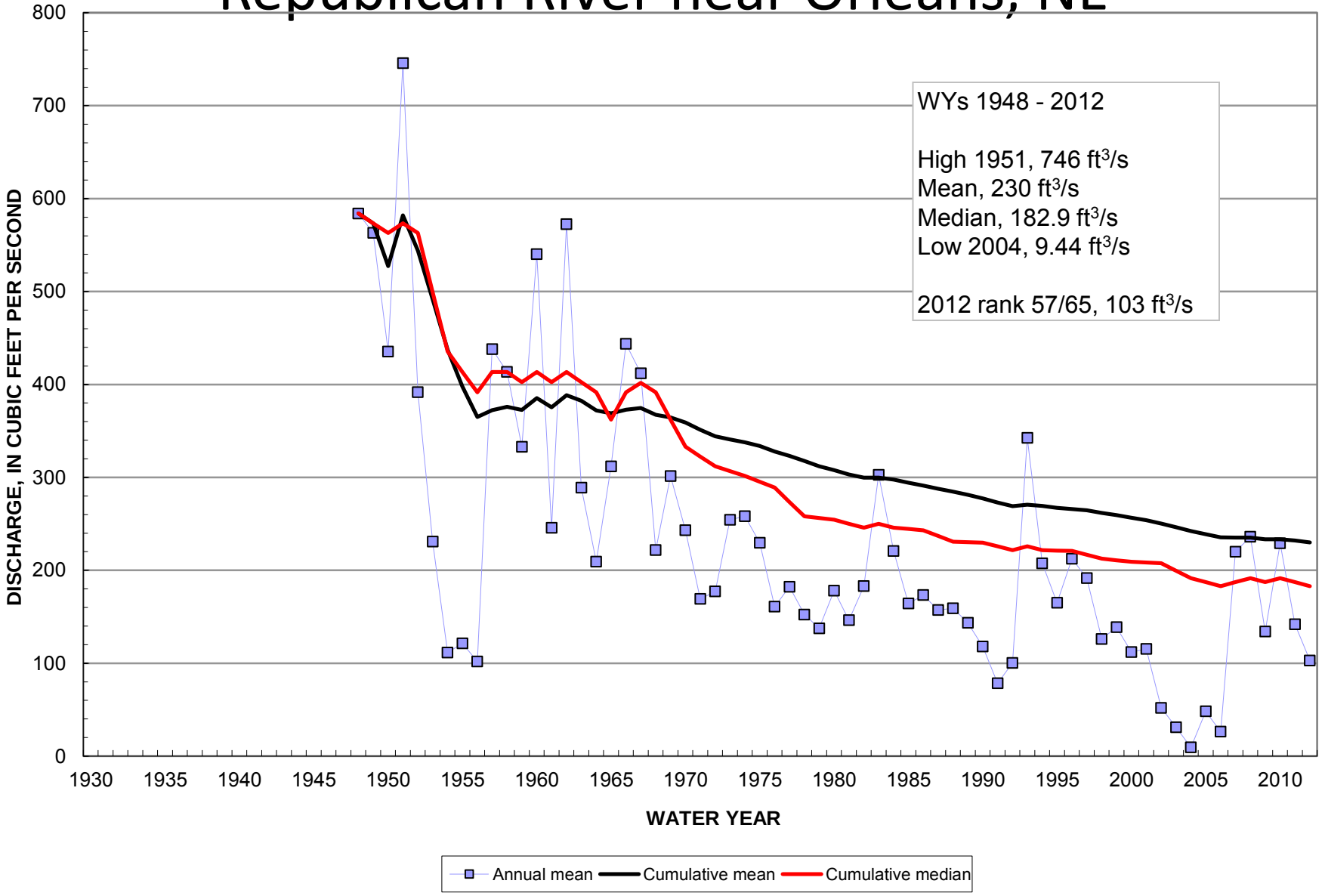
Republican River near Orleans, NE



Summary Charts – NDNR Stations

- Published data for Water Year 2012
- Operated by Nebraska Department of Natural Resources (NDNR)
- Stations funded by:
  - NDNR – Field operation
  - USGS, USACE, and NDNR – DCP support, Web display, data review, and publication by USGS

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Frenchman Creek at Palisade, NE

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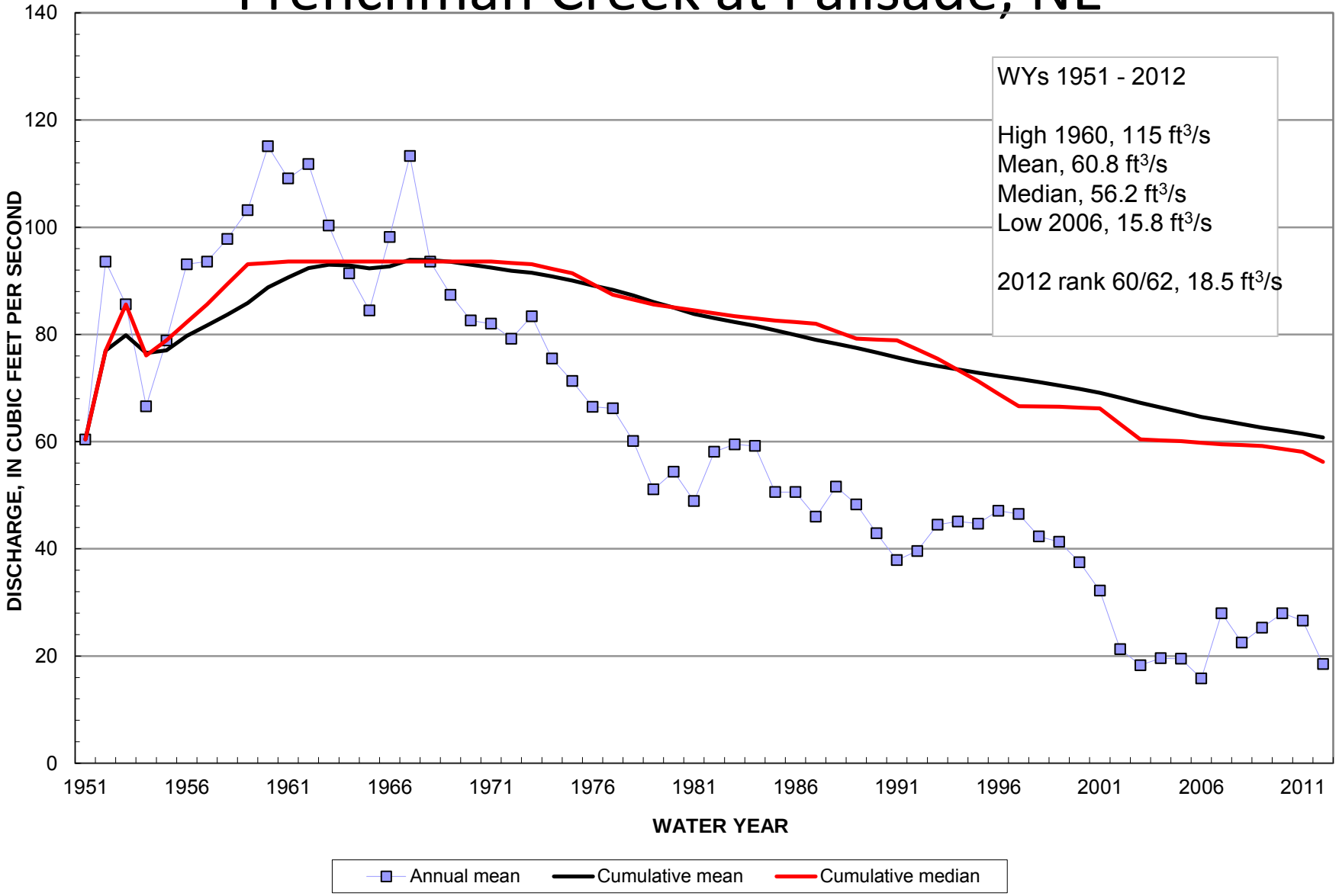
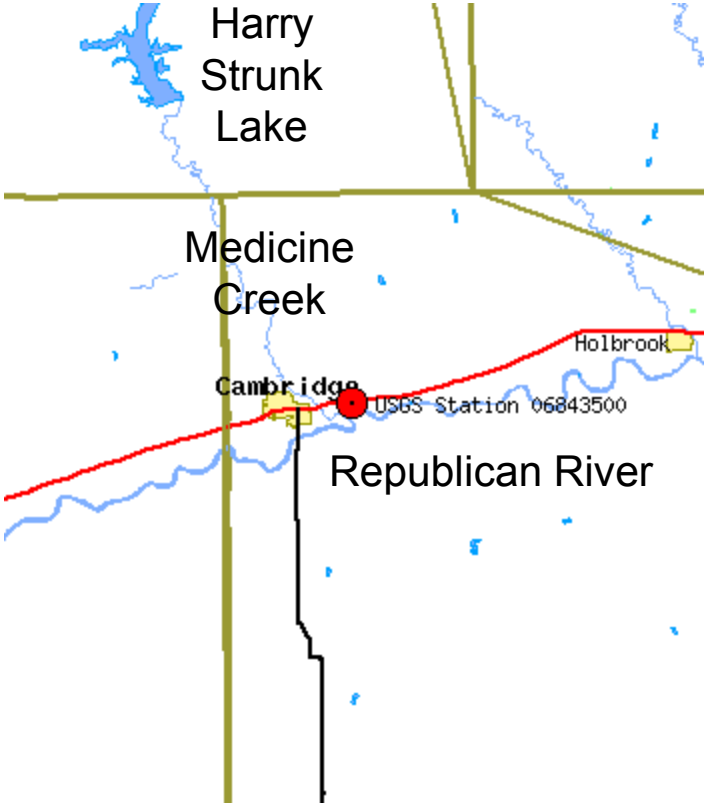
Frenchman Creek at Palisade, NE



Republican River at Cambridge, NE



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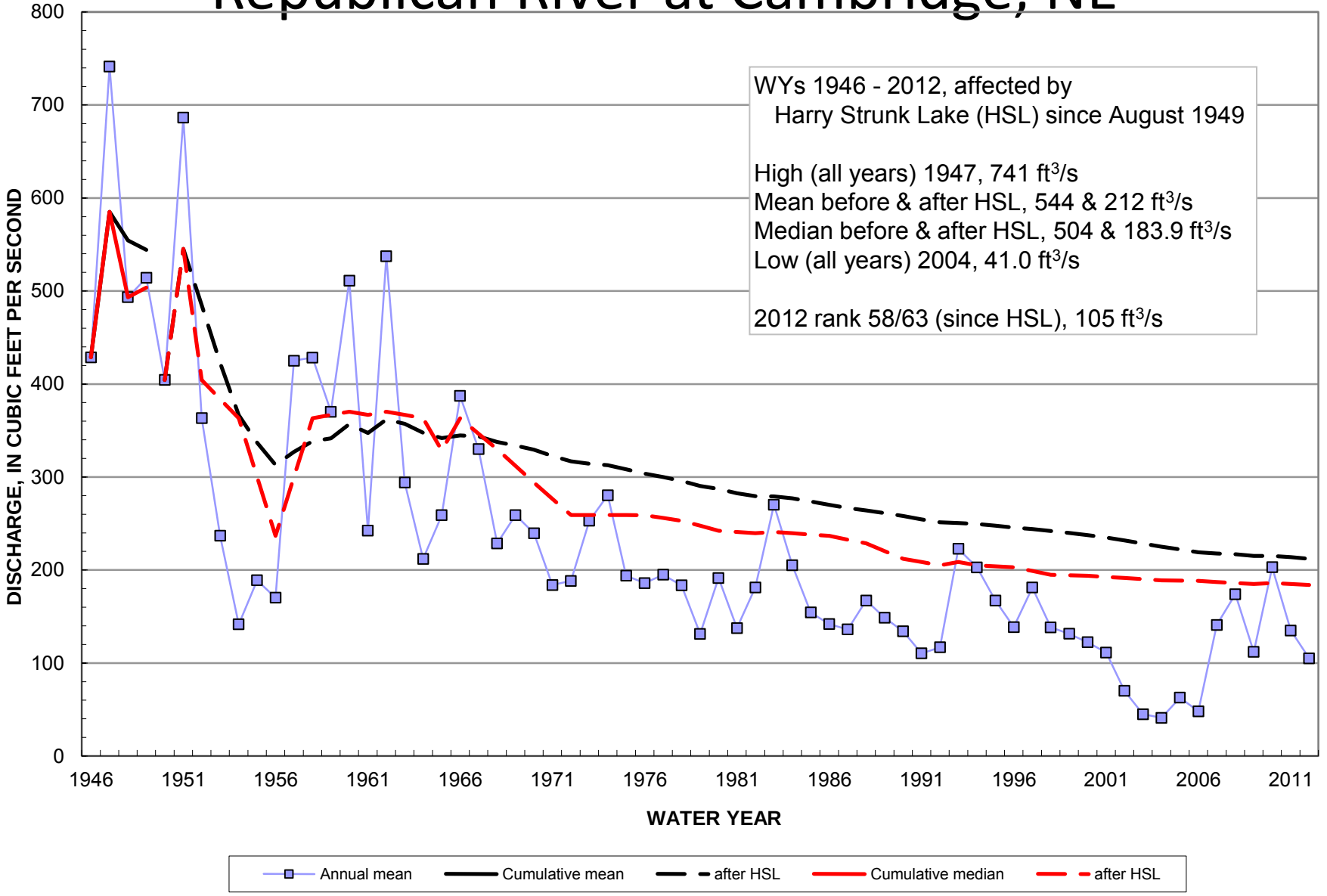
Republican River at Cambridge, NE



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Summary handout – stations published by U.S. Geological Survey (USGS)

Republican River Basin streamflow-gaging stations with records published by USGS for water year (WY) 2012

[DCP, data-collection platform; NDNR, Nebraska Department of Natural Resources; USACE, U.S. Army Corps of Engineers; USBR, U.S. Bureau of Reclamation; USGS, U.S. Geological Survey]

Station number	Station name	Mean discharge (ft^3/s) WY 2012	Long-term	WY 2012 as percentage of long-term mean	WY 2012 as rank/years (1 highest)	WYs used for long-term mean	Remarks
USGS Compact stations supported by the National Streamflow Information Program (NSIP)							
06821500	Arikaree River at Haigler, Nebr	0.65	16.7	3.9%	77/80	1933 - 2012	
06823000	North Fork Republican River at Colo-Nebr State Line	20.5	41.6	49.3%	77/77	1935 - 2012	
06823500	Buffalo Creek near Haigler, Nebr	2.00	6.10	32.8%	72/72	1941 - 2012	
06824000	Rock Creek at Parks, Nebr	5.86	11.9	49.2%	72/72	1941 - 2012	
06827500	South Fork Republican River near Benkelman, Nebr	13.00	35.6	36.5%	61/75	1938 - 2012	
06835500	Frenchman Creek at Culbertson, Nebr	30.1	66.7	45.1%	59/62	1951 - 2012	Since Enders Reservoir
06836500	Driftwood Creek near McCook, Nebr	6.79	8.38	81.0%	38/66	1946 - 2012	
06838000	Red Willow Creek near Red Willow, Nebr	15.7	13.8	113.8%	12/51	1962 - 2012	Since Hugh Butler Lake
06847500	Sappa Creek near Stamford, Nebr (USACE funds DCP)	17.5	39.0	44.9%	33/66	1946 - 2012	
06852500	Courtland Canal at Nebr-Kans State Line (USBR DCP)	74.4	75.4	98.7%	29/58	1955 - 2012	
USGS stations supported by USGS and/or other Federal or State agencies							
06828500	Republican River at Stratton, Nebr	32.4	94.8	34.2%	54/62	1951 - 2012	Funded by USACE and NSIP
06837000	Republican River at McCook, Nebr	41.3	125	33.0%	53/58	1955 - 2012	Funded by USBR, NDNR, and NSIP
06844500	Republican River near Orleans, Nebr	103	230	44.8%	57/65	1948 - 2012	Funded by USACE
NDNR stations with USGS/USACE support for DCP, Web display, review, and publishing							
06834000	Frenchman Creek at Palisade, Nebr	18.5	60.8	30.4%	60/62	1951 - 2012	
06843500	Republican River at Cambridge, Nebr	105	212	49.5%	58/63	1950 - 2012	Since Harry Strunk Lake

Online Annual Water Data Reports available at or through

http://wdr.water.usgs.gov
http://ne.water.usgs.gov

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Engineering Committee Report

Republican River Compact Administration

October 16, 2012

COMMITTEE ASSIGNMENTS AND WORK ACTIVITIES RELATED TO THESE ASSIGNMENTS

The Engineering Committee and technical representatives from the States of Colorado, Kansas, and Nebraska participated in several collaborative work activities and phone conferences and the following assignments and work activities were completed:

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 or earlier.
    a. The status of this assignment is that Kansas provided their initial thoughts on the user's manual to Colorado and Nebraska for review. No progress was made on this assignment. The assignment was tabled by the Committee this year, but should be continued for next year.
2. Exchange by April 15, 2012 the information listed in Section V of the RRCA Accounting Procedures and Reporting Requirements, and other data required by that document. By July 15, 2012 the states will exchange any updates to these data.
    a. Kansas and Nebraska posted their model data sets prior to April 15, 2012. Colorado provided preliminary pumping data on April 26 to Willem Schreüder of Principia Mathematica, who ran a preliminary version of the RRCA groundwater model and posted it April 27, 2012 on the RRCA website republicanrivercompact.org.
    b. The States exchanged their available final data by September 20, 2012. Willem Schreüder of Principia Mathematica completed a run based on this data on October 4, 2012.
    c. The committee collected 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 2011.
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.
    a. The status of this assignment is that Kansas provided literature regarding irrigation efficiency to Colorado and Nebraska for their review at the 2011 annual meeting. Aside from that initial review and comments by Colorado and Nebraska, no additional progress has been made on this assignment. Kansas has indicated its intent to propose a study to resolve the problems of differing

groundwater irrigation recharge methods. The assignment should be continued for next year.

4. Retain Principia Mathematica to perform on-going maintenance of the ground water model and periodic updates requested by the Engineering Committee for calendar year 2012. 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.
    a. Each state separately contracted with Principia Mathematica for calendar year 2012.
5. Continue development of a five-year accounting spreadsheet/database for adoption at the 2012 annual meeting or earlier.
    a. Nebraska offered a spreadsheet for consideration. Kansas reviewed that document and offered suggestions in a new spreadsheet for the states to discuss. No progress was made on this assignment. The assignment was tabled by the Committee this year, but should be continued for next year.
6. Continue to review Colorado's augmentation proposal, as appropriate.
    a. This assignment was not discussed by the Engineering Committee because the topic has been under discussion by a separate negotiating group.
7. Continue efforts to finalize accounting for 2006-2010.
    a. The issues preventing the states from agreeing on the accounting are pending in the current Supreme Court case.
8. Continue discussion of issues preventing agreement on final accounting for 2006-2010.
    a. The issues preventing the states from agreeing on the accounting are pending in the current Supreme Court case.
9. Develop a procedure to account for inflows to the stream segment between Guide Rock diversion dam and the relocated stream flow gage.
    a. Nebraska investigated several methods of measurement and provided the alternatives and approximate cost to the other states. With input from the Commissioners at the work session, a formal proposal can be prepared. The assignment should continue for next year.
10. Discuss the application of the revised Bonny Reservoir area-capacity tables to current and past accounting data.
    a. Kansas agrees to adopt the revised Bonny Reservoir area-capacity tables and apply it to 2011 data and into the future.
    b. Colorado wants the area-capacity tables retroactively applied for 2007 to 2010.
    c. The committee would appreciate direction from the Commissioners.
11. Discuss any accounting changes that may be needed for surface water diversions for the purpose of recharging groundwater.

a. The committee discussed the topic on several occasions, but no formal action was taken on the assignment at this time. The assignment should be continued.

12. Discuss developing a framework for an application and approval process for future augmentation plans.

    a. Kansas provided the committee with its initial thoughts on the type of information that should be provided with a plan and a list of questions for discussion in an email (September 27, 2012). The committee would appreciate discussion by the Commissioners. The assignment should be continued.

13. Apply the procedure described in Exhibit A of the 2011 Engineering Committee report to fill in missing precipitation data in the groundwater model for compact years 2008, 2009 and 2010 and for subsequent years.

    a. This was completed on Sept 7, 2011 by Willem Schreüder of Principia Mathematica.

    b. An additional issue surfaced with the 2011 data set such that a refined proposal is required for approval by the Administration. This task was not completed at the time of this annual meeting and should be included in a future Engineering Committee report.

14. Discuss archiving the data and materials from the Conservation Committee study.

    a. The Committee discussed options for archiving the data and materials from the Conservation Committee study. Several locations (websites) have been identified as possible sites for archiving the data and materials. A final recommendation will be made to the Administration at the annual meeting.

15. Amend the RRCA Rules and Regulations, as discussed on page 76 of the 2010 transcript.

    a. The draft Rules and Regulations were discussed at the annual meeting and a final draft will be prepared for approval at a future RRCA meeting.

RECOMMENDED ASSIGNMENTS FOR THE COMING YEAR

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

1. Exchange by April 15, 2013 the information listed in Section V of the RRCA Accounting Procedures and Reporting Requirements, and other data required by that document. By July 15, 2013 the states will exchange any updates to these data.

2. 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.

3. Retain Principia Mathematica to perform on-going maintenance of the ground water model and periodic updates requested by the Engineering Committee for calendar year 2012. 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.

a. Kansas Proposal - As the RRCA chair, Kansas will coordinate the work of the committee to collect all needed data (April 15th) and based on this, will develop a preliminary model run and necessary updates based on improved data and post the model input data and output results for review by the other states. The state will also archive the resulting accounting.

4. Continue efforts to finalize accounting for 2006-2011.
5. Continue discussion of issues preventing agreement on final accounting for 2006-2011.
6. Develop a procedure to account for inflows to the stream segment between Guide Rock diversion dam and the relocated stream flow gage.
7. Discuss any accounting changes that may be needed for surface water diversions for the purpose of recharging groundwater.
8. Discuss developing a framework for an application and approval process for future augmentation plans.
9. Finalize the procedure described in Exhibit A of this report to apply to 2011 and subsequent years with missing precipitation data.
10. Finalize work on a user's manual for the RRCA Accounting Procedures and provide a recommendation to the Administration for adoption.
11. Continue development of a five-year accounting spreadsheet/database for adoption.
12. Discuss the application of the revised Bonny Reservoir area-capacity tables to past accounting data.

ATTACHMENTS

Exhibit A - Precipitation procedure

The Engineering Committee Report and the exchanged data will be posted on the web at www.republicanrivercompact.org.

SIGNED BY

Scott E. Ross
Chair, Engineering Committee Member for Kansas

Ivan Franco
Engineering Committee Member for Colorado

James Schneider
Engineering Committee Member for Nebraska

Exhibit A.

Missing Precipitation Data for RRCA Groundwater Model 2008-Onward

Willem Schreuder, Paul Koester and Sam Perkins

August 30, 2011

The Problem Beginning in 2008, monthly precipitation data become unavailable for several of the 34 National Weather Service (NWS) weather stations used in the RRCA groundwater model. The problem was first noted in year 2008 of the preprocessor RRPP precipitation input file "ppt.dat," with the Madrid NWS station having only 3.99 inches of annual precipitation; nearby stations were reported at 20+ inches. Some research indicated that there are other stations with missing monthly data in 2008. Monthly Data also became somewhat sparse for several stations in 2009 and 2010. Table 1 is an annual list of those stations with missing monthly data.

No remedies have been performed on the 2008 RRPP preprocessor precipitation data. However, the 2008 data could still be corrected if the groundwater model update has not yet been approved, as stated on the RRCA website at www.republicanrivercompact.org.

For years 2009 and 2010, Willem Schreuder used monthly PRISM (Parameter-elevation Regressions on Independent Slopes Model) data as a substitute for missing months used to calculate the annual sums. After comparing this method of filling missing months with alternatives, we have agreed to recommend this method as a means of filling missing data in the future. This method is discussed in *Potential Solutions, Section 5*.

Current procedures

Data for the 34 NWS stations used in the groundwater model are downloaded by Willem Schreuder annually, as TD3220 monthly data sets from the National Climatic Data Center (NCDC). These monthly data sets are summed and the annual sums placed into the RRPP preprocessor input file, "ppt.dat". National Climatic Center data originate as data collected by the High Plains Regional Climate Center (HPRCC) at www.hprcc.unl.edu .These data go through a quality control (QC) process at the HPRCC, which often involves estimation of missing data. The NCDC performs their own quality control process on the data received by the HPRCC, and post these data once they finish making any adjustments or estimates, and have validated the data according to their standards. In general, the NCDC posts their data about three months after the fact.

It is not readily apparent why some of the HPRCC daily data (which have gone through the HPRCC quality control process) are not used in the final monthly total precipitation reported by the NCDC. However, the NCDC TD3220 datasets are the result of extensive editing, quality control and automated as well as manual checks including comparison of surrounding station values and climatological limits. Regardless, this problem must be resolved, and fortunately, there are some viable solutions.

Definition of missing data

The issue of whether monthly precipitation data are considered missing is quantified in terms of the number of missing days in a month. The HPRCC allows a maximum number of five days of missing precipitation data, above which individual months are excluded from annual and monthly statistics, as stated for their Historical Climate Data Summaries (see Appendix A). We concur that this is a good working definition for missing monthly data that closely approximates past designations.

2008:	
Station	**Missing Months**
Madrid	March, May through December
Burlington	March through July
Paxton	February
Wauneta	November
Norton	October
McCook	April, May
2009:	
Station	**Missing Months**
Julesburg	May
Colby	June through August
Norton	May, July
Bertrand	December
Imperial	April, June, July
Madrid	March, April, June, July
Stratton	January
Wauneta	March, April, July through December
2010:	
Station	**Missing Months**
Julesburg	Oct
Hoxie	Jan through April, July through December
Phillipsburg #2	August through December
Bertrand	December
Wauneta	March, August, September, November, December

Table 1. A list of RRCA weather stations with missing NCDC monthly data for years 2008-2010. These are stations for which alternate methods of monthly precipitation quantification will be necessary for calculation of annual precipitation.

Potential Solutions

Groundwater modelers from the three RRCA Compact states (Willem Schreuder, Sam Perkins, Paul Koester) met on three occasions via conference call to discuss the issues and possible solutions to problem.

All the solutions require the following two questions to be answered:

1) At what time scale do data filling occur? The RRCA model required annual totals at each station. However, data can be filled at a daily, monthly or annual basis, and summed as required. The probability of data gaps increase for longer time scales, making it more difficult to find appropriate data to use for filling. Also, the correlation between stations decreases with a decrease in the filling period. Due to convection driven precipitation, daily precipitation between stations is typically poorly correlated. The goal is therefore to find a period that is sufficiently long to represent a meaningful correlation between stations, but short enough that data at surrounding stations are readily available.

2) How should the filling occur? Traditionally, climatologists have used correlation with surrounding stations as a (somewhat subjective) technique to fill missing data based on professional experience. Alternatively, there are numerous techniques available for interpolating spatial data. Kriging can be shown to be optimal under many conditions. However, more sophisticated algorithms such as the Parameter-elevation Regressions on Independent Slopes Model (PRISM) technique claims to consider more factors, and seeks to combine traditional climatological techniques with spatial interpolation.

Five potential solutions were reviewed and discussed:

1) Substitute precipitation data from a nearby station to represent precipitation at the station of interest. Ideally, just the missing month's data would be substituted from the nearby station and used in the calculation of the sum annual precipitation. Data could be obtained from Automated Weather Data Network (AWDN) stations, or any NWS stations that aren't already part of the weather station network used in the model.

This method is the simplest of all proposed methods, which would be the main advantage. However, the nearest station might not have data available for the month of interest, or, the nearest station could be a significant distance away.

2) Contract a climatologist to QC annual data and perform interpolation or other methods using professional judgment to provide the RRCA with a high-confidence data set for the 34 weather stations on an annual basis.

Hiring a consultant would be very simple and not require additional labor. However, this would be an additional cost for the three states. In addition, the data would essentially be from a "black box," where an important process and decisions would be put into the hands of a contracted individual.

3) Download HPRCC or NCDC daily data and use the monthly sums to replace missing monthly NCDC data. This option was researched by Paul Koester, who had phone conversations with Dr. Ken Hubbard of the HPRCC to obtain information. The HPRCC has always posted real-time data to their website with quality control flags; these are data that are later delivered to the NCDC, where the data go through the NCDC quality control process before being posted on the NCDC website. The HPRCC is now offering their new CLIMOD service, which has the finalized NCDC data. However, the data processed by the HPRCC (before being sent to the NCDC) are still available through their "Classic" Online services, although these services will be terminated in the future, according to Dr. Hubbard. In the future, the only data that will be available on the HPRCC website will be the finalized NCDC data through their CLIMOD weather data service.

In spreadsheet "ppt_AnalysisFor2008ModelUpdate.xls" (created by Paul Koester), data for the stations having missing NCDC monthly data were downloaded and listed, along with their quality control flags. Daily data (with QC flags) were available for all the stations with missing data in 2008. There are three fields for flags: 1) Data Measurement flag, 2) Data Quality flag, and 3) Data Source Flag. For the Madrid Station, for example, Flag 1 is usually not listed for any months, but where it is listed, it is an "E", which means data are estimated by the HPRCC quality control program based on distance weighting of nearby stations. No data are listed for the second flag in missing months. However, there is always a third flag listed. For the missing months, the third flag is a "R" most of the time. The "R" indicates that the data are "decoded from SHEF Reports and delivered by Internet". These data originate from reports generated by NWS stations, so the data have been generated and reported by the NWS. The other flag 3 encountered is "Q," which means the data are from the HPRCC quality control program. The flags listed for the other stations with missing data are basically the same as listed in this Madrid example; the data are either downloaded directly from NWS stations, or are from the HPRCC quality control program. Table 2 is a comparison of 2008 uncorrected annual sum data (sums calculated with missing months) and annual sums calculated using monthly HPRCC data for those stations with incomplete NCDC monthly data sets. Chart 1 is a comparison of this method to two other methods being considered here.

Daily 2009 data for stations with missing monthly data from NCDC are also listed, along with their flags, in "PrecipHPCC_ForProblematicAnnualNCDC_Stations_Update09.xls;" the flags follow the same pattern seen in the 2008 spreadsheet, with most of the daily data for months missing from NCDC reports qualified as data downloaded from NWS stations (SHEF Reports), or estimated by the HPRCC QC program. Also, worksheet "MonthlyDAT" of this spreadsheet contains a comparison of monthly HPRCC data and PRISM data (see Section 5) for those months with missing NCDC data.

Dr. Hubbard has informed that the original HPRCC data can be made available (through request) for download. This is a potential option for the RRCA, to download these data at least every two months ,

before they are overwritten with final NCDC data. Then, when there are monthly NCDC data missing, the missing gaps can be filled in with these data.

These data are readily available upon request and these complete daily datasets have been available for the last three years (this is the number of years that have been observed), indicating that this is a viable option. There is no interpolation involved and the data are for the weather stations of interest. Therefore, there is no doubt as to whether the data are representative of the specific location. The drawback to obtaining data in this fashion is that although quality control flags indicate that data not being accepted by the NCDC are either downloaded from NWS stations via the internet, or estimated using the HPRCC quality control program, NCDC is not satisfied with the data. Otherwise they would give the data final approval. This in itself gives a lower confidence level to the data.

Station	ID	Missing Months	08Update	HPRCC
Madrid	C255090	9	3.99	29.26
Paxton	C256585	1	25.33	25.32
Wauneta 3 NW	C259020	1	21.9	22.51
Burlington	C051121	5	11.19	17.59
McCook	C255310	2	15.34	25.79
Norton 9 SSE	C145856	1	22.39	31.17

Table 2. A comparison, for 2008, between the annual sum of monthly data downloaded from the NCDC ("08Update"), and data downloaded from the HPRCC before being overwritten with NCDC data (HPRCC). No filling in for missing monthly has been performed for the "08Update" field, which currently represents the RRCA 2008 data for these stations.

4) Krige-filling: Use kriging to interpolate monthly data from a larger set of NWS stations in the model domain to the locations of stations with missing data, and use the interpolated precipitation to fill for the missing monthly data. This method was presented by Sam Perkins of Kansas. Weather stations used in the monthly kriging would be stations having no more than five days of missing data, consistent with HPRCC criteria for inclusion in monthly and annual statistics; stations would otherwise be excluded from the kriging process.

The krige-filling procedure was initially based on an extended set of 95 stations, including the 34 RRCA stations. The extended set was increased to 100 stations earlier this year. Monthly data and codes indicating the number of missing days were downloaded from HPRCC into Excel and condensed into two monthly data files and a location data file. A modified version of the RRCA preprocessor named rrppFill used these data to apply the krige-filling process and produce a file of annual krige-filled precipitation for the 34 RRCA stations. This output can be substituted for the RRCA input file ppt.dat for the original preprocessor rrpp. Appendix A contains a more detailed description and documentation of this method.

The spreadsheet "1918-2010_Kriged_precip_data.xls," produced by Sam, contains comparisons of 2008 annual sums of monthly data downloaded by Willem Schreuder and yearly sums calculated using Sam's methodology to fill in for those stations having months with missing data (worksheet "2008_Compare_pptFilled.dat"). Worksheet "2009Compare_PRISM_pptFilled.dat" of this workbook contains a comparison between annual weather station data calculated using Sam's methodology, HPRCC data downloaded by Paul Koester, and data put together by Willem Schreuder that was used in ppt.dat using PRISM data (See Section 5, *Potential Solutions*) to fill in for missing monthly data. The spreadsheet "PRISM_pcp_to_HPCC_Compare_2009_c2.xls," worksheet "AnnualCompare" contains a comparison of annual precipitation in 2009 based on the krige-filling vs. PRISM-filling procedures. Table 3 contains a comparison, restricted to stations with missing data, between the krige-filling procedure (column "pptFill_09") and PRISM-supplied data filling (column "ppt.dat09"), described in the next section.

Chart 1 is a comparison of this method to annual sums of 2009 monthly data downloaded from the HPRCC, and annual sums using PRISM data to fill in for missing months.

This method is a good option in that data for a large number of stations are available, in addition to the 34 NWS stations used in the model, with which to estimate precipitation. However, it is still possible that data could be missing for nearby stations, resulting in a less realistic interpolation. Another potential drawback is that, given the often erratic distribution of precipitation in the Midwest, kriged values from nearby stations might not be truly representative of the location of interest. However, the fact that only missing months would be filled in for summing monthly values to annual precipitation sums minimizes these potential errors.

Station	ID	ppt.dat09	pptFill_09	DIFFERENCE	Missing Months
Julesburg	**C054413**	27.52	27.62	**-0.096**	**1**
Colby 1SW	**C141699**	26.23	27.32	**-1.086**	**3**
Norton 9 SSE	**C145856**	27.23	26.59	**0.642**	**2**
Bertrand	**C250810**	21.79	22.14	**-0.348**	**1**
Imperial	**C254110**	24.73	18.90	**5.829**	**3**
Madrid	**C255090**	24.62	22.91	**1.707**	**4**
Stratton	**C258255**	25.64	25.63	**0.011**	**1**
Wauneta 3 NW	**C259020**	25.25	23.23	**2.025**	**8**

Table 3. A comparison of data extracted from "PRISM_pcp_to_HPCC_Compare_2009_c2.xls," worksheet "AnnualCompare," revised to show krige-filled values based on an extended dataset of 100 stations. Only weather stations with at least one month of missing NCDC data are listed; the "Missing Months" field is a list of the number of missing months. Field "ppt.dat09" contains 2009 annual precipitation sums from RRPP preprocessor file "ppt.dat," which were created by filling in missing monthly NCDC data using PRISM data. The "pptFill_09" field contains data estimated using the kriging procedure developed by Sam Perkins.

5) Use PRISM (http://www.prism.oregonstate.edu/) monthly data as a substitute for missing monthly NCDC data, then sum the monthly NCDC and PRISM values of to estimate annual precipitation for each weather station. Willem Schreuder presented this idea and has used this methodology in putting together RRCA groundwater model preprocessor precipitation data sets (ppt.dat) for years 2009 and 2010.

PRISM data sets have been developed through cooperation with the USDA Natural Resources Conservation Service, the NOAA Office of Global Programs, and the USDA Forest Service. According to the PRISM website, "PRISM data sets are recognized world-wide as the highest-quality spatial climate data sets currently available. PRISM is the USDA's official climatological data."
With the PRISM methodology, precipitation data from many weather stations are kriged on a monthly basis to a 4 km resolution grid. The algorithms used for computing the interpolated precipitation grid also take into consideration land surface elevation and slopes. The network of stations used by PRISM is quite large, and involves the use of SNOTEL (http://www.wcc.nrcs.usda.gov/snow/) and three private networks. Also, the PRISM methodology involves a procedure for the elimination of outliers. Basically, the data for all stations except the station of interest are kriged, then the kriged value at the station-of-interest location compared to the actual station value; if that kriged value is significantly different from the station value, that station is removed from the kriging station network for that time step. PRISM Documentation is at http://www.prism.oregonstate.edu/docs/meta/ppt_realtime_monthly.htm .

A comparison of annual data summations for the 34 stations was performed between monthly downloaded PRISM data extracted using 2-significant-digit latitude-longitude locations and 2009 RRPP preprocessor input file ppt.dat (using PRISM data to fill in missing monthly data) in "PRISM_pcp_to_HPCC_Compare_2009_c2.xls." Table 4 is a summary of annual precipitation data compared in that spreadsheet. Sheet "MonthlyDAT" of workbook "PrecipHPCC_ForProblematicAnnualNCDC_Stations_Update09.xls" contains a comparison between 2009 monthly and sum annual data downloaded from the HPRCC website, and annual sum precipitation using PRISM to fill in for missing months. Chart 1 is a comparison 2009 annual precipitation calculated using PRISM data to substitute for missing monthly NCDC data, to annual sums of 2009 monthly data downloaded from the HPRCC, and annual sums calculated using a kriged network (As presented by Sam Perkins, Section 3, *Potential Solutions*) to fill in for missing months.

Monthly PRISM precipitation estimations should be available as a substitute for missing NCDC data by the time of the annual RRCA Compact meeting in August each year. These data sets are from a reputable source by professional climatologists and are created for the purpose of regional modeling.A large number of stations are used in the creation of PRISM data sets, which add to the confidence level. PRISM data are available for free and would require no labor in developing. However, PRISM data are essentially a "black box;" the RRCA would essentially be trusting that the data are the best possible estimates. Another potential drawback is that as of now there is little funding for the PRISM project. On the PRISM website it is stated that the data are being provided as a public service for a limited time. Therefore, it is possible that these data will become unavailable in the future.

Station	ID	PRISM_09	ppt.dat09	DIFFERENCE	Missing Months
Akron 4 E	C050109	21.44	19.46	1.98	0
Burlington	C051121	23.24	30.85	-7.61	0
Cheyenne Wells	C051564	20.15	20.96	-0.81	0
Holyoke	C054082	26.26	27.15	-0.89	0
Julesburg	C054413	26.1	27.52	-1.42	**1**
Wray	C059243	25.27	28.22	-2.95	0
Burr Oak 1 N	C141179	22.25	20.01	2.24	0
Colby 1SW	C141699	26.66	26.23	0.43	**3**
Hays 1 S	C143527	21.53	21.72	-0.19	0
Hoxie	C143837	26.64	24.94	1.7	0
Minneapolis	C145363	28.92	33.44	-4.52	0
Norton 9 SSE	C145856	26.77	27.23	-0.46	**2**
Oberlin1 E	C145906	28.05	28.55	-0.5	0
Phillipsburg 1 SSE	C146374	26.98	30.29	-3.31	0
Saint Francis	C147093	24.11	22.71	1.4	0
Wakeeny	C148495	24.41	25.1	-0.69	0
Beaver City	C250640	26.93	27.49	-0.56	0
Bertrand	C250810	24.28	21.79	2.49	**1**
Culbertson	C252065	28.49	33.73	-5.24	0
Elwood 8 S	C252690	26.19	25.26	0.93	0
Gothenburg	C253365	27.66	31.42	-3.76	0
Hebron	C253735	23.29	24.36	-1.07	0
Holdredge	C253910	24.65	29.56	-4.91	0
Imperial	C254110	25.67	24.73	0.94	**3**
Madrid	C255090	24.88	24.62	0.26	**4**
McCook	C255310	28.29	28.3	-0.01	0
Minden	C255565	22.74	23.46	-0.72	0
Palisade	C256480	27.71	28.34	-0.63	0
Paxton	C256585	22.75	22.8	-0.05	0
Red Cloud	C257070	19.54	15.41	4.13	0
Stratton	C258255	26.79	25.64	1.15	**1**
Superior	C258320	21.68	23.6	-1.92	0
Upland	C258735	21.87	21.98	-0.11	0
Wauneta 3 NW	C259020	25.78	25.25	0.53	**8**

Table 4. 2009 annual precipitation based on PRISM monthly data (PRISM_09) compared with NCDC monthly data in which missing months are supplied by PRISM data (ppt.dat09). The "Missing Months" field is a list of the number of missing months in the NCDC dataset. File "ppt.dat" contains the precipitation data used by the preprocessor rrpp to calculate precipitation recharge for the model. Monthly PRISM data locations were specified by (latitude, longitude) coordinates with two significant digits. Data are from Excel file "PRISM_pcp_to_HPCC_Compare_2009.xls", sheet "AnnualCompare."

Recommendation

Based on our review of data in the Republican River Basin, it appears that filling of data at the monthly time scale provides a good compromise between a time scale that is long enough to show reasonable correlation between stations and having sufficient stations with valid data to perform the data filling. The PRISM data are available at a monthly time scale and can therefore be used.

The technique agreed upon by the States performs kriging to spatially distribute annual precipitation between the 34 stations in the basin. It was implicitly assumed that the precipitation values at each station would be derived from the best available data. It is our judgment that the PRISM group's estimates of precipitation at individual locations represent a reasonable, reliable and timely data set that combines expert climatological knowledge and data quality control for providing estimates of monthly precipitation at locations with missing data.

The PRISM algorithms have been published and reviewed in the scientific literature. We therefore defer to the expert knowledge encapsulated by the techniques used to generate these data sets over a technique that performs a more straight forward spatial interpolation.

Should the PRISM data not be available in the future, we would recommend using a spatial interpolation technique to do data filling. Such a technique would be based on the kriging approach described above to interpolate monthly values.

In instances where the distance to the nearest precipitation station would make an interpolated estimate unreliable, the historical average precipitation for that month could be used to fill the missing value.

Finally, as climate research is ongoing and may produce more sophisticated methods of analysis in the future, we would recommend that the RRCA Engineering Committee review new techniques to fill missing data as they may become available.

Signed,

Willem A. Schreuder
Engineer Committee Member for Colorado

Paul Koester
Engineer Committee Member for Nebraska

Samuel P. Perkins
Engineer Committee Member for Kansas

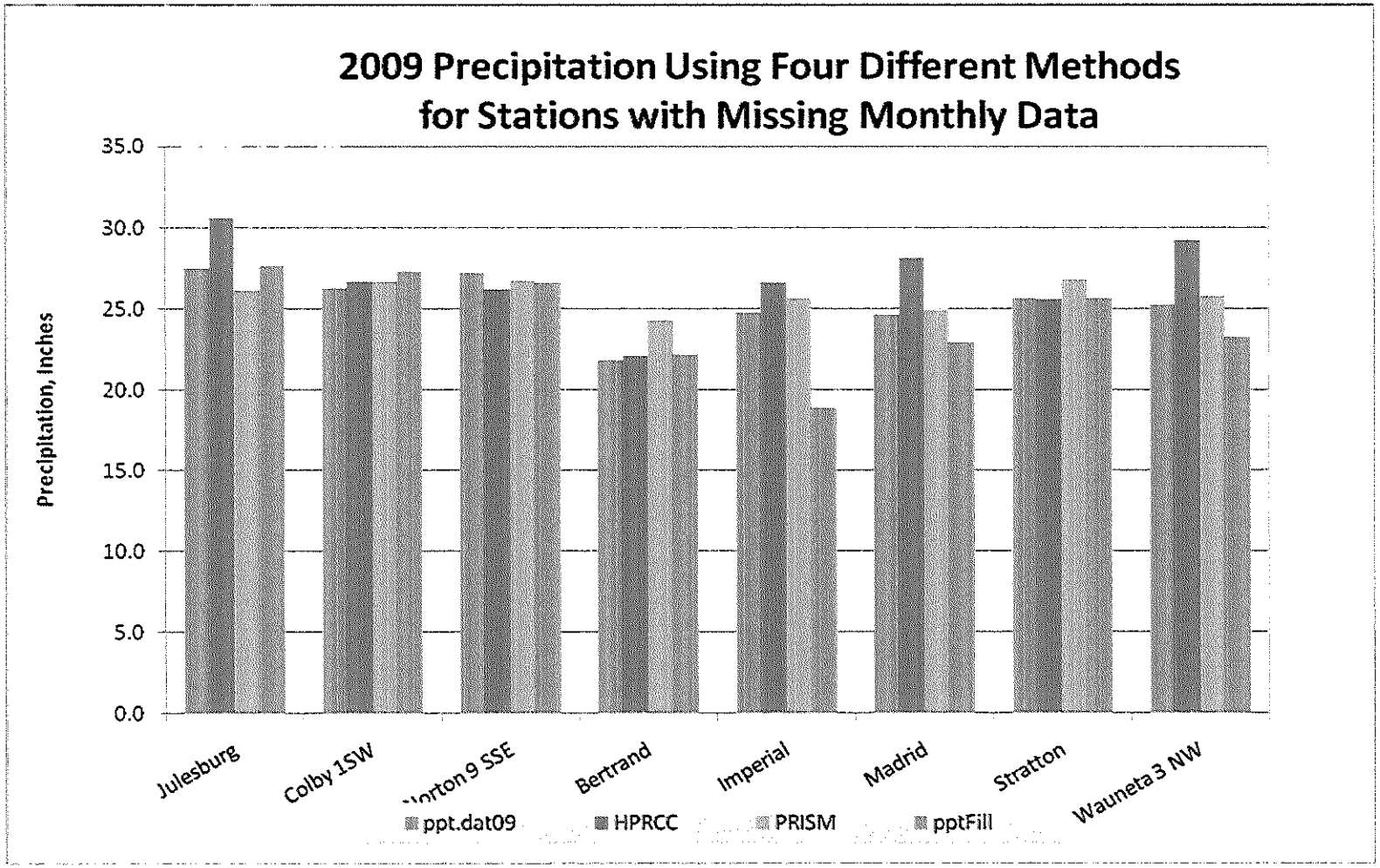

Chart 1: A comparison of precipitation determined using four different methods for stations having missing NCDC data in 2009. Data in the current "ppt.dat" file, which are the result of downloading NCDC data and filling in missing months with PRISM data, are the "ppt.dat09" category. The "HPRCC" data are sums of monthly data downloaded directly from the HPRCC before being overwritten with NCDC data. The "PRISM" category are annual sums calculated with PRISM interpolated for *all* months. The "pptFill" category are annual sums created with NCDC data, with kriged data used to fill in for missing months as presented by Sam Perkins.

Appendix A. Description of the krige-filling process

Sam Perkins
Kansas Department of Agriculture, Division of Water Resources

The proposed method applies kriging with linear drift to interpolate monthly precipitation data from an extended set of stations to the locations of stations with missing data. The method was originally suggested by Steve Larson, SSPA, Inc., and is summarized as follows.

In each month the procedure selects those stations with five or fewer days of missing data and uses that subset of stations to krige precipitation to locations of RRCA stations with missing data. The krige-filled version of annual precipitation data for the 34 RRCA stations is then interpolated to each model grid cell by kriging. An advantage of this approach is its reproducibility by being dependent only on final NCDC data.

The procedure was originally demonstrated in October, 2010 with an extended set of 95 precipitation stations to produce krige-filled precipitation data for the original 34 RRCA stations for the period of simulation 1918-2009. The procedure was updated in May, 2011 using an extended set of 100 stations for krige-filling through 2010. Fig. A1 is a map showing locations of the 34 RRCA stations and the additional 66 stations of the extended dataset.

Missing months' definition

A station's month of precipitation data is considered to be missing if more than five days of daily precipitation data are missing. This is the criterion used by HPRCC to include monthly precipitation data in compiling monthly and annual statistics for its historical summaries.

From the map at HPRCC Historical Climate Data Summaries, http://www.hprcc.unl.edu/data/historical/: Select a station on the; then in the station's frame at the left, scroll down to the Monthly Totals under Monthly Precipitation Listings. The following quote appears above the table of monthly precipitation and missing data codes for the period of record:

"MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5
Individual Months not used for annual or monthly statistics if more than 5 days are missing.
Individual Years not used for annual statistics if any month in that year has more than 5 days missing."

Monthly precipitation data

The extended dataset was initially based on 95 stations, later expanded to 100 stations (listed below in Table A1), and obtained through the High Plains Regional Climate Center (HPRCC) page for Historical

Climate Data Summaries at http://www.hprcc.unl.edu/data/historical/ . This page shows a map of station locations, shown as little red squares. Putting the cursor on a square reveals the associated station name and type of station (e.g. "Burlington (COOP)"). A bar at the bottom of the page shows a related address for a query of the station data; e.g. for the Burlington station, it shows the address http://www.hprcc.unl.edu/cgi-bin/cli_perl_lib/cliMAIN.pl?co1121 . Scroll down the bar on the left to the link "Monthly Totals" under "Precipitation". This link produces a text page of monthly precipitation and codes (along with a key to the codes) that were copied and pasted into Excel.

The extended dataset resides in an Excel file named rrppFill_assemble_HPRCC_precip_data_test.xls, with one sheet per station that have been updated through 2010 with data from HPRCC. The Excel file includes two summary pages, one with monthly precipitation for all stations 1918-2010, and one with corresponding monthly codes for all stations 1918-2010. These summary files were exported to comma-delimited text files **pptmon.csv** and **pptmonCode.csv** that are used for input to a version of rrpp as described below; input and output files associated with this procedure are also described.

Implementation: program rrppFill

This procedure was implemented in a modified version of the RRCA preprocessor named rrppfill. The program builds a revised set of annual station precipitation data as a sum over monthly values for each station. In months when no more than five days of observations are missing, precipitation is given by observations for the station. Otherwise, monthly values are given by kriging to the location of the station with the missing data, based on the extended dataset of stations, the first 34 of which are those adopted for the RRCA data. Only those stations without missing data are included in the extended dataset.

The modified program rrppFill includes the added command STATIONSMON, a variation on the original STATIONS command, to specify input and output files, a linear drift and the original 34 stations. The input and output files associated with this command are described below, and are included in the Excel file 1918-2010_Kriged_precip_data.xls; a supplemental file includes Phillipsburg#2 station data, which was obtained through NCDC. Additional documentation is provided below.

Input data files:

locmon.prn is a list of the 100 station id's, projected coordinates and names; the first 34 stations correspond to the RRCA stations in file loc.dat.

pptmon.csv and **pptmonCode.csv** are the monthly precipitation (inches) and codes identifying the number of days of missing data in each month; rows correspond to months, and columns correspond to stations, with cols. 2-35 corresponding to the RRCA stations. [Data column O corresponding to the Phillipsburg station refer to a separate file, pptmon_Phillipsburg#2, which was compiled in a separate Excel file, based on a text file with daily data from NCDC.]

Output and comparisons:

pptFilled.dat is the annual krige-filled precipitation for each station 1918-2010 in the same format as ppt.dat; it could be substituted for the original ppt.dat file and run with the original rrpp program. For each station, each year's sum is taken over the station's monthly data, where missing months are given by kriging the extended dataset. The sheet pptFilled.dat also contains a graph at cell ak3 that plots average precipitation over the period of record, for nonzero years, given by the original version in ppt.dat and the krige-filled version in pptFilled.dat. The graph shows good agreement, and identifies three stations that show discrepancies on the order of an inch.

pptmonFilled.dat is the monthly krige-filled precipitation for each station 1918-2010 in the same format as ppt.dat, but with twelve records of monthly data for each year.

pptKrige_1918-2010.dat is a list of 2,902 kriged station values for years 1918-2010. For each kriged value, cols. b:d show year, month and station id; col. e is the kriged precipitation value; col. f is the kriged value limited to nonnegative values. Cols. g:j show how the kriged value compares to the nearest station in the kriging dataset. Col. g shows the nearest station's id, col. h its distance, col. i. its precip and col. j the difference between the kriged value and the nearest station's precip.

Comparisons for 2008 and 2009 (also in the Excel file):

2008_Compare_pptFilled.dat compares the krige-filled version against ppt.dat and lists discrepancies.

2009Compare_PRISM_pptFilled.dat: this is an extended version of the sheet Paul compiled to compare the PRISM and ppt.dat values for 2009 (cols. a:e). I added cols. F:K to compare the krige-filled version (col. I) with ppt.dat (col. j). It shows the number of months of missing data in col. h. Column L shows previously calculated krige-filled values based on the earlier set of 95 stations. Column M lists the discrepancy between the results of krige-filling based on the extended set of 95 stations in October, 2010 and the revised set of 100 stations in May, 2011. The discrepancies are mostly negligible, less than 0.1 inches; larger discrepancies such as for Colby (1.7 inches) may be due in part to revised data.

Documentation of krige-filling procedure: program rrppFill

Program rrppFill is a version of Willem's rrpp program that is used to krige monthly precipitation data from an expanded set of 100 stations in order to fill months that are missing from the original 34 stations. Source of the precipitation data is the High Plains Regional Climate Center (HPRCC) website, http://www.hprcc.unl.edu. Fig. A1 shows the locations of the 34 original stations and the 66 supplemental stations that were used in the filling. Table A1 lists the 100 stations used in the krige-filling process, beginning with the original 34 RRCA stations in their original order.

The command STATIONSMON was added to rrpp's vocabulary to specify the necessary data to apply the krige-filling of missing monthly station data. The command is used in the input parameter file 1918-2010Fill.par.

Three input files are specified as arguments to cmd STATIONSMON; these correspond to station site locations, monthly precipitation, and codes for missing monthly data. These are assembled in file rrppFill_assemble_HPRCC_precip_data.xls and exported: locmon.prn as a space-delimited text file, pptmon.csv and pptmonCode.csv as comma-delimited text files. Sheet 'documentation' in the Excel file summarizes its content.

Data assembly and export

Monthly precipitation and the annual sum for individual stations' periods of record were copied from the HPRCC Historical Climate Data Summaries in text format and pasted into corresponding sheets in Excel file rrppFill_assemble_HPRCC_precip_data.xls. Fig. A2 shows locations of the 34 RRCA stations on the HPRCC interactive map centered on Nebraska.

Sheets pptmon.csv and pptmonCode.csv assemble data from sheets corresponding to individual stations. Columns d:cy of row 4 in sheets pptmon.csv and pptmonCode.csv give the name of the sheet corresponding to each of 100 stations. Indirect addressing is used in sheets pptmon.csv and pptmonCode.csv to look up each station's monthly precipitation and code in a given month and year.

Station spatial coordinates are specified in file Locmon.prn. Coordinates for the original 34 RRCA stations are taken to be the same as in Loc.dat. Otherwise, coordinates are based on station metadata. Sheet st_meta lists lat,long coordinates (DMS in cols. d:e, decimal deg in cols. y:z). These were assumed to be based on NAD 1927 and were projected to UTM-14 NAD27 ft. [This may have introduced an error if the lat,long coordinates were NAD 1983.] Sheet st_coords calculates the discrepancy between these projected coordinates and those given by Loc.dat for the first 34 stations; col. L shows the discrepancy in miles.

Sheets exported for input to program rrppFill include:

Sheet	exported file
Locmon.prn	Locmon.prn
Pptmon.csv	pptmon.dat
pptmonCode.csv	pptmonCode.dat

Source files:

rrppFill.f	5/13/2011
krige.f	10/10/2003
utl.f	10/10/2003
rrpp.ins	12/4/2006

Input files

1918-2010Fill.par	input parameter file, specified on command line

Data files associated with cmd STATIONSMON

Input:

Locmon.prn	(arg.1) coordinates for extended list of 100 stations, beginning with 34 RRCA stations
Pptmon.csv	(arg.2) monthly precipitation for 100 stations, 1918-2010
pptmonCode.csv	(arg.3) monthly precipitation code for 100 stations, 1918-2010

Output:

pptKrige_1918-2010Fill.dat	(arg.6) diagnostic output file
pptmonFilled_1918-2010Fill.dat	(arg.7) kriged-filled version of monthly precipitation data
pptFilled_1918-2010Fill.dat	(arg.8) kriged-filled version of annual precipitation data

Program execution command line from \gw\RRCA\bgn2001>

```
..\bin\rrppFill rrpp\1918-2010Fill.par > rrpp\1918-2010Fill.log
```

Output files with monthly and annual krige-filled precipitation data (named by args. 7 and 8, above) are shown as sheets pptmonFilled and pptannFilled in the Excel file. Sheet pptAnnFilled_vs_ppt.dat shows the discrepancy compared to ppt.dat for years 1918-2010.

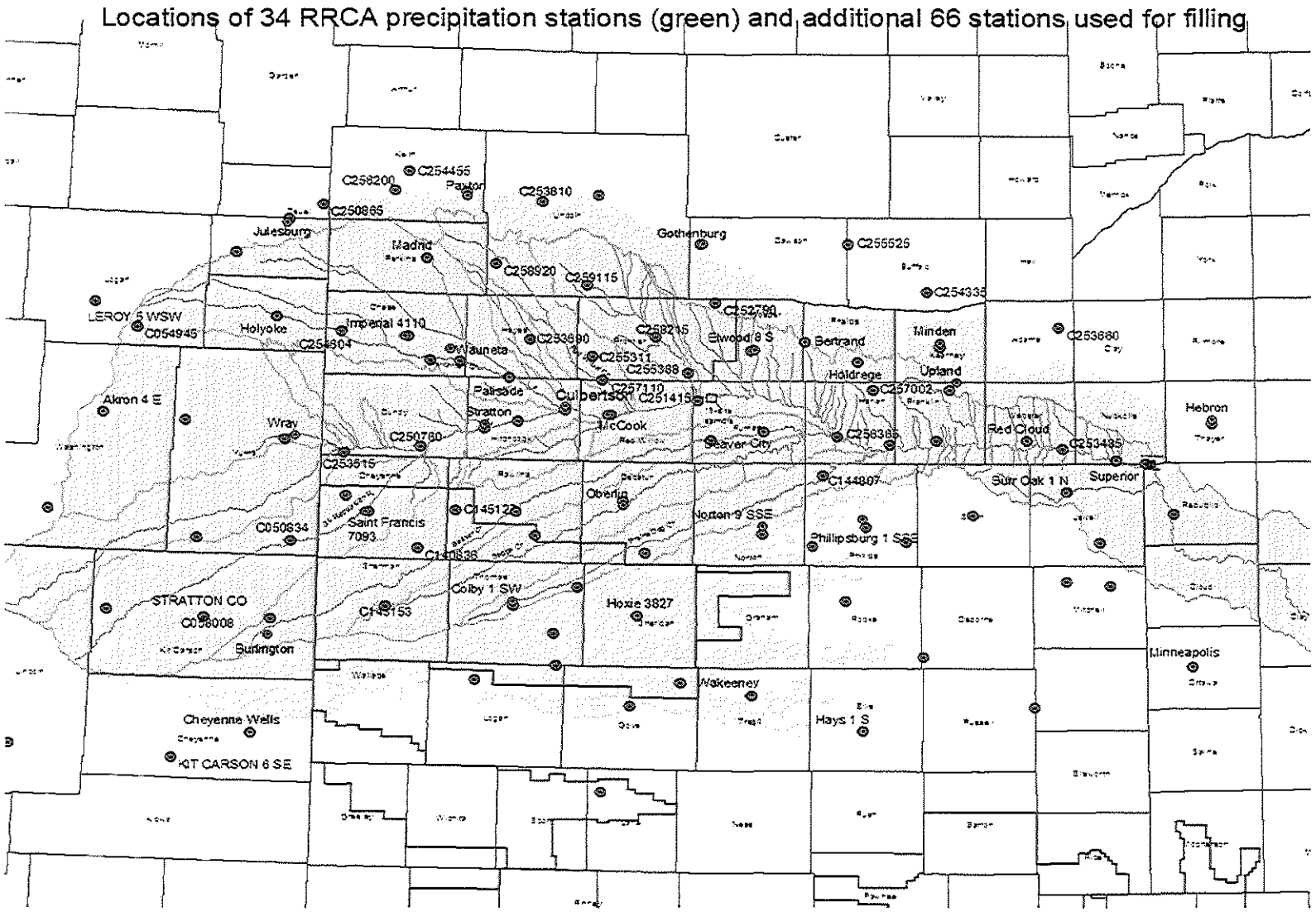

Fig. 1. Map showing locations of 34 RRCA precipitation stations and 66 additional stations used to krige-fill missing months for the original stations.

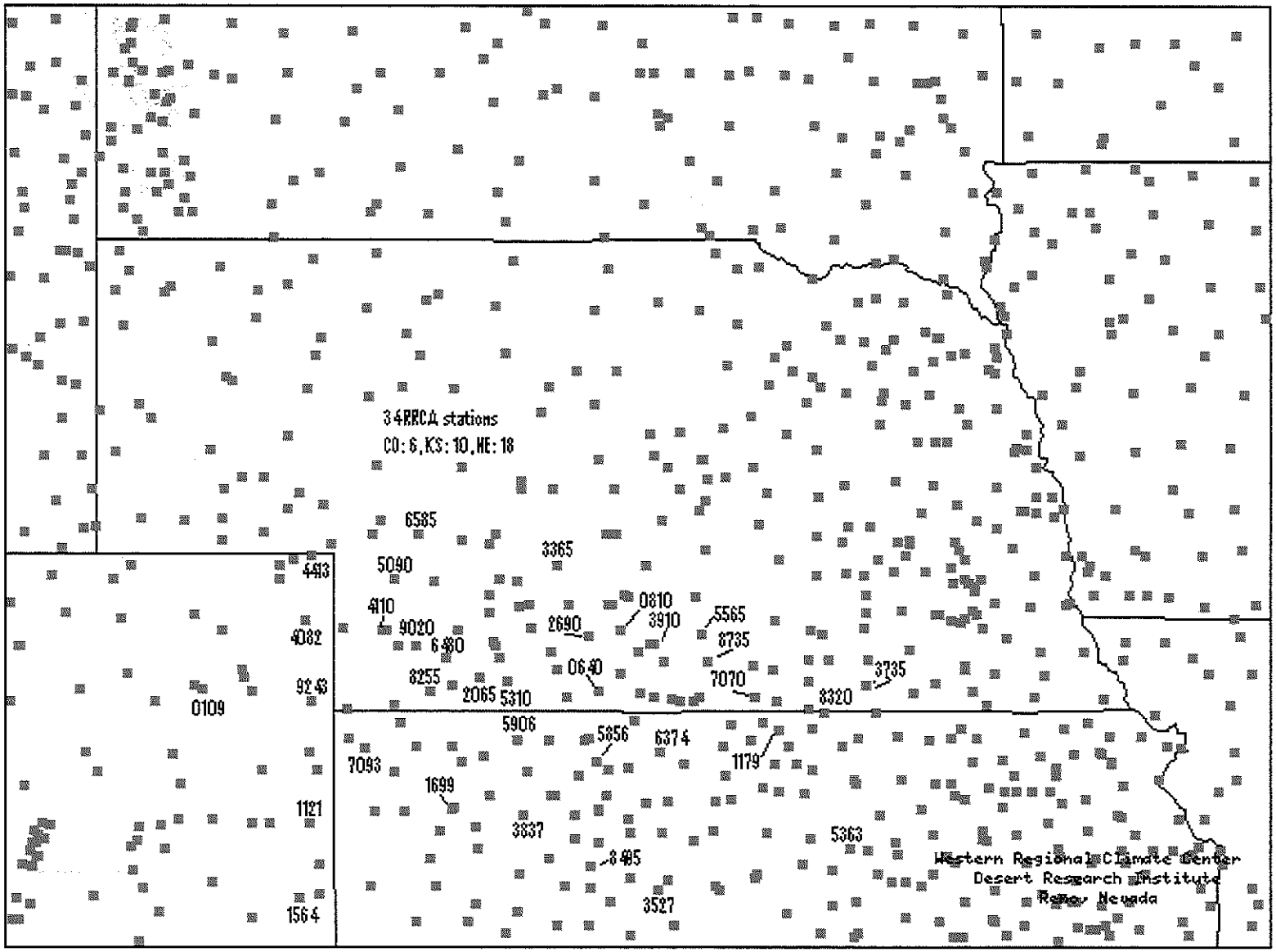

Fig. 2. Locations of the 34 RRCA stations in the HPRCC map centered on Nebraska.

Table A1. Listing of 100 stations used in krige-filling process, beginning with the original 34 RRCA stations in their original order.

SID	XMOD	YMOD		NAME	idrec		ST
C050109	480549	14607776		"AKRON 4 E"	1		CO
C051121	710588	14263754		"BURLINGTON"	2		CO
C051564	686112	14112695		"CHEYENNE WELLS"	3		CO
C054082	724056	14755644		"HOLYOKE"	4		CO
C054413	738747	14901009		"JULESBURG"	5		CO
C059243	749903	14572326		"WRAY"	6		CO
C141179	1831189	14483074		"BURR OAK 1 N"	7		KS
C141699	1055629	14314282		"COLBY 1 SW"	8		KS
C143527	1545538	14113573		"HAYS 1 S"	9		KS
C143837	1230500	14292659		"HOXIE"	10		KS
C145363	2009059	14213125		"MINNEAPOLIS"	11		KS
C145856	1406128	14430033		"NORTON 9 SSE"	12		KS
C145906	1209838	14462978		"OBERLIN"	13		KS
C146374	1546746	14441255		"PHILLIPSBURG 1 SSE"	14		KS
C147093	848848	14453532		"SAINT FRANCIS"	15		KS
C148495	1390477	14170432		"WAKEENEY"	16		KS
C250640	1407487	14575688		"BEAVER CITY"	17		NE
C250810	1464389	14714821		"BERTRAND"	18		NE
C252065	1128713	14616300		"CULBERTSON"	19		NE
C252690	1394783	14703279		"ELWOOD 8 S"	20		NE
C253365	1322774	14868020		"GOTHENBURG"	21		NE
C253735	2036109	14595960		"HEBRON"	22		NE
C253910	1538380	14684054		"HOLDREGE"	23		NE
C254110	903844	14725259		"IMPERIAL"	24		NE
C255090	935167	14845850		"MADRID"	25		NE
C255310	1188038	14603001		"MCCOOK"	26		NE
C255565	1654313	14714193		"MINDEN"	27		NE
C256480	1050642	14660550		"PALISADE"	28		NE
C256585	993099	14941433		"PAXTON"	29		NE
C257070	1775580	14562825		"RED CLOUD"	30		NE
C258255	1016296	14588511		"STRATTON"	31		NE
C258320	1901742	14533481		"SUPERIOR"	32		NE
C258735	1677566	14653524		"UPLAND"	33		NE
C259020	968206	14705184		"WAUNETA"	34		NE
C140439	1059781	14453852		"ATWOOD 2 SW"	35		KS
C140441	1087079	14416804		"ATWOOD 10 SSE"	36		KS
C140693	1894360	14339185		"BELOIT"	37		KS
C250760	926748	14554474		"BENKELMAN"	38		NE
C250865	790432	14929523		"BIG SPRINGS"	39		NE
C140836	922246	14396659		"BIRD CITY 10 S"	40		KS
C050834	744061	14408425		"BONNY LAKE"	41		CO
C251415	1314953	14625291		"CAMBRIDGE"	42		NE
C142213	1241450	14389610		"DRESDEN"	43		KS
C252741	939869	14687751		"ENDERS LAKE"	44		NE
C252790	1340063	14776735		"EUSTIS 2 NW"	45		NE

C052932	485334	14303338		"FLAGLER 2 NW"	46		CO
C253035	1649738	14562460		"FRANKLIN"	47		NE
C143100	1833179	14344717		"GLEN ELDER LAKE"	48		KS
C143153	877264	14306849		"GOODLAND WSO"	49		KS
C143175	1218794	14153239		"GOVE"	50		KS
C253485	1826941	14551019		"GUIDE ROCK"	51		NE
C253515	819049	14545639		"HAIGLER"	52		NE
C253589	1943816	14527888		"HARDY"	53		NE
C253595	1584473	14556452		"HARLAN COUNTY LAKE"	54		NE
C253660	1820897	14739133		"HASTINGS"	55		NE
C253690	1079894	14720599		"HAYES CENTER"	56		NE
C143554	1178533	14020385		"HEALY"	57		KS
C253810	1098560	14932745		"HERSHEY 5 SSE"	58		NE
C144089	1879621	14405803		"JEWELL"	59		KS
C054380	612627	14413431		"JOES 2 SE"	60		CO
C054444	347380	14096903		"KARVAL"	61		CO
C254335	1635799	14793093		"KEARNEY 4 NE"	62		NE
C254455	911566	14980232		"KINGSLEY DAM"	63		NE
C144357	1607585	14404691		"KIRWIN"	64		KS
C054603	575145	14074441		"KIT CARSON 6 SE"	65		CO
C254604	816019	14734135		"LAMAR 3 SSE"	66		NE
C054945	528529	14739426		"LEROY 5 WSW"	67		CO
C055017	314593	14293368		"LIMON"	68		CO
C055025	403156	14459344		"LINDON 4 S"	69		CO
C144775	1476218	14399135		"LOGAN"	70		KS
C144807	1490943	14508284		"LONG ISLAND"	71		KS
C255311	1167446	14694464		"MC COOK 17 NNW"	72		NE
C145127	975487	14455940		"MC DONALD"	73		KS
C255388	1301588	14667965		"MEDICINE CREEK DAM"	74		NE
C255525	1525330	14866205		"MILLER"	75		NE
C145355	1112073	14264478		"MINGO 5 E"	76		KS
C145628	1630971	14228691		"NATOMA"	77		KS
C256065	1176862	14943251		"NORTH PLATTE WSO ARPT"	78		NE
C145888	1115800	14215832		"OAKLEY"	79		KS
C256200	892280	14950442		"OGALLALA"	80		NE
C256365	1509945	14568870		"ORLEANS 2 W"	81		NE
C146637	1290350	14188589		"QUINTER"	82		KS
C257002	1561435	14641483		"RAGAN"	83		NE
C257110	1180678	14657782		"RED WILLOW DAM"	84		NE
C146787	1146508	14336644		"REXFORD 1 SW"	85		KS
C147248	1982234	14449473		"SCANDIA"	86		KS
C057515	667775	14855118		"SEDGWICK 5 S"	87		CO
C147542	1701287	14447224		"SMITH CENTER"	88		KS
C057950	470032	14778670		"STERLING"	89		CO
C147095	821533	14478713		"ST FRANCIS 8 NW"	90		KS
C258215	1256028	14723274		"STOCKVILLE"	91		NE
C058008	621854	14291449		"STRATTON CO"	92		CO
C258628	1063018	14593453		"TRENTON DAM"	93		NE

C258920	1031821	14837153		"WALLACE 2 W"	94		NE
C148648	1522739	14313916		"WEBSTER DAM"	95		KS
C259115	1160324	14803904		"WELLFLEET"	96		NE
C148946	1787271	14150223		"WILSON LAKE"	97		KS
C259325	1332799	14564360		"WILSONVILLE"	98		NE
C148988	1001757	14194119		"WINONA"	99		KS
C059295	596776	14596529		"YUMA"	100		CO

2013-02 RESOLUTION TO ADOPT REVISED BONNY AREA-CAPACITY TABLES AND APPLY TO THE 2007 TO 2010 RRCA ACCOUNTING

WHEREAS, the annual reports for years 2007 through 2011 have not been approved by the Compact Administration; and

WHEREAS, the United States Bureau of Reclamation (USBR) completed a revised area-capacity table for Bonny Reservoir in 2011; and

WHEREAS, Colorado has been requesting USBR to revise the area-capacity table for many years prior to 2011; and

WHEREAS, the revised area-capacity table more accurately reflects conditions in Bonny Reservoir and the amount of water stored therein as well as the surface area of that stored water.

NOW THEREFORE, be it hereby resolved that the States of Colorado, Nebraska, and Kansas agree to adopt the revised Bonny Reservoir area-capacity table and apply it to 2007 accounting and forward. That change will be effective when the accounting for 2007 and afterwards is approved. The retroactive application of the 2011 survey to this particular RRCA accounting will have no effect on official USBR records

Entered this 12th day of September, 2013, at the annual meeting of RRCA held in Colby, Kansas.

David W. Barfield, Chief Engineer,
Kansas Commissioner (Chairman)

Brian P. Dunnigan,
Nebraska Commissioner

Dick Wolfe, State Engineer,
Colorado Commissioner

2013-01 RESOLUTION OF THE REPUBLICAN RIVER COMPACT ADMINISTRATION
HARLAN COUNTY LAKE EVAPORTION SPLIT FOR 2013

Unless subsequently agreed to otherwise, the States agree to share the evaporation of Harlan County Lake for 2013 according to the following method:

1. Kansas will accept full responsibility for the evaporation that is charged to the "Compact Water" pool as determined by the U.S. Bureau of Reclamation.

2. Kansas and Nebraska will split the remainder of the evaporation for the year in proportion to the annual diversions made by the Kansas Bostwick Irrigation District and the Nebraska Bostwick Irrigation District from the beginning of irrigation releases from Harlan County Lake until September 1.

Entered this 12th day of September, 2013, at the annual meeting of RRCA held in Colby, Kansas.

David W. Barfield, Chief Engineer,
Kansas Commissioner (Chairman)

Brian P. Dunnigan,
Nebraska Commissioner

Dick Wolfe, State Engineer,
Colorado Commissioner

Engineering Committee Report

Republican River Compact Administration

September 12, 2013

COMMITTEE ASSIGNMENTS AND WORK ACTIVITIES RELATED TO THESE ASSIGNMENTS

1. Exchange by April 15, 2013 the information listed in Section V of the RRCA Accounting Procedures and Reporting Requirements, and other data required by that document. By July 15, 2013 the states will exchange any updates to these data.
    a. Willlem Schreüder of Principia Mathematica ran a preliminary version of the RRCA groundwater model including all 3 states preliminary data and posted it April 16, 2013 on the website www.republicanrivercompact.org.
    b. Kansas posted final data on August 30; Nebraska's April 15 posting is their final data; and as of August 30, Colorado posted CIR data, which does not include metered pumping data.
    c. Principia Mathematica posted a final run September 10th, 2013. This final model run utilized the No-Bonny scenario proposed by Colorado, which is currently the subject of arbitration.
    d. The Committee collected stream flow data, 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 2012.
2. Evaluate ways to standardize methods of estimating ground and surface water irrigation recharge and return flows within the Republican River Basin and related issues.
    a. The status of this assignment is that Kansas provided literature regarding irrigation efficiency to Colorado and Nebraska for their review at the 2011 annual meeting. Aside from that initial review and comments by Colorado and Nebraska, no additional progress has been made on this assignment. Kansas has indicated its intent to propose a study to resolve the problems of differing groundwater irrigation recharge methods. No additional progress was made in 2013. The assignment should be continued for next year.
3. Review the contract for Principia Mathematica to perform on-going maintenance of the ground water model and periodic updates requested by the Engineering Committee for calendar year 2013.
    a. The Engineering Committee recommends an assignment of continued discussion of specific modeling and data tasks to be assigned to Principia Mathematica, to be accomplished by December 15th, 2013.
4. Continue efforts to finalize accounting for 2006-2012.
    a. The issues preventing the states from agreeing on the accounting are pending in the current Supreme Court case and pending arbitration.

5. Continue discussion of issues preventing agreement on final accounting for 2006-2012.
    a. The issues preventing the states from agreeing on the accounting are pending in the current Supreme Court case and pending arbitration.
6. Develop a recommendation on whether or not to account for inflows to the stream segment between Guide Rock diversion dam and the relocated stream flow gage.
    a. Nebraska has installed an additional gage at the location. The committee recommends removing the task from the committee list due to the presence of an additional gage below Guide Rock diversion dam.
7. Discuss any accounting changes that may be needed for surface water diversions for the purpose of recharging groundwater.
    a. Nebraska anticipates studies will be conducted during a wet year. The committee recommends this task remain on the Engineering Committee list for future investigation as data becomes available.
8. Discuss developing an application and approval process for future augmentation plans.
    a. The augmentation plan process is subject of current arbitration. No progress was made on this task in 2013.
9. Finalize the procedure described in Exhibit A of the 2012 Engineering Committee report to apply to 2011 and subsequent years with missing precipitation data.
    a. Exhibit A is attached to Engineering Committee report in 2012.
10. Finalize work on a user's manual for the RRCA Accounting Procedures and provide a recommendation to the Administration for adoption.
    a. The committee recommends that each state identify the procedures used to account and process data. This documentation will be shared among the states and updated as the need arises.
11. Continue development of a five-year accounting spreadsheet/database for adoption.
    a. Each state currently uses its own version of a five-year accounting spreadsheet. At this time the committee does not see the need for a single five-year accounting spreadsheet and recommends this task be removed until a future issue arises with the spreadsheets.
12. Discuss the application of the revised Bonny Reservoir area-capacity tables to past accounting data.
    a. Kansas agrees to adopt the revised Bonny Reservoir area-capacity tables and apply it to 2007 accounting and forward. That change will be effective when the accounting for 2007 and afterwards is approved. The retroactive application of the 2011 survey to this particular RRCA accounting will have no effect on official Bureau records.
    b. This retroactive application is recommended in this special case due to the recent technical surveys made by the USBR for Bonny Reservoir and the existence of unapproved RRCA accounting.

RECOMMENDED ASSIGNMENTS FOR THE COMING YEAR

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

1. The Engineering Committee will meet quarterly to review the tasks assigned to the committee.
2. Exchange by April 15, 2014 the information listed in Section V of the RRCA Accounting Procedures and Reporting Requirements, and other data required by that document, including all necessary documentation. By July 15, 2014 the states will exchange any updates to these data.
3. The Engineering Committee recommends an assignment of continued discussion of specific modeling and data tasks to be assigned to Principia Mathematica, to be accomplished by December 15th, 2013.
    a. The committee recommends calling a special meeting of the RRCA shortly after December 15th to finalize this issue.
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.
5. Continue efforts to finalize accounting for 2006-2012.
6. Continue discussion of issues preventing agreement on final accounting for 2006-2012.
7. Discuss any accounting changes that may be needed for surface water diversions for the purpose of recharging groundwater, as data becomes available from Nebraska projects.
8. Discuss developing an application and approval process for future augmentation plans.
9. The Engineering Committee will explore options for sharing evaporation charges for Harlan County Lake when accounts exist separate from the project water supplies of Bostwick Irrigation District and explore potential means to adjust the compact accounting of Harland County Lake for the mutual benefit of the States.
10. The committee will engage in discussions to establish a budget to accomplish tasks needed by the Administration and States for Compact goals.

The Engineering Committee Report and the exchanged data will be posted on the web at www.republicanrivercompact.org.

SIGNED BY

Scott Ross
Chair, Engineering Committee Member for Kansas

Ivan Franco
Engineering Committee Member for Colorado

James Schneider
Engineering Committee Member for Nebraska

2013-04 RESOLUTION OF THE REPUBLICAN RIVER COMPACT ADMINISTRATION
HONORING
Mr. Scott E. Ross

WHEREAS, Scott E. Ross of Stockton, Kansas, is retiring tomorrow from his long held position as Water Commissioner for the Division of Water Resources, Kansas Department of Agriculture, after having served faithfully in the Department for over thirty-two years; and

WHEREAS, acting as the Kansas representative to the Republican River Compact Administration's Engineering Committee, Scott has diligently represented the Compact interests of the State of Kansas and its residents of the Republican River valley and its tributaries, as well as assisted the State of Kansas to maintain its fulfill its obligations under the Compact; and

WHEREAS, while diligently representing the State of Kansas and its constituents, Scott has kept open lines of communication with representatives of the States of Colorado and Nebraska, assisted in compiling compact data, and assisted several Kansas Chief Engineers to reach fair and reasonable solutions to the many issues associated with the Republican River Compact; and

WHEREAS, Scott's professionalism, straight forward personality, and "Git' R'Done" attitude have been an asset to RRCA and the State of Kansas; and

NOW THEREFORE, be it hereby resolved that the Republican River Compact Administration does hereby express its sincerest gratitude and appreciation to Scott E. Ross for his service to RRCA in his position of Kansas representative on the Engineering Committee.

Be it further resolved that RRCA honor Mr. Ross' service by including this resolution and appropriate dedicatory remarks in RRCA's annual report for Compact year 2012 and hereby instructs the Kansas Commissioner to send copies of this resolution to the Ross family and the Governor of the State of Kansas.

Entered this 12th day of September, 2013, at the annual meeting of RRCA held in Colby, Kansas.

David W. Barfield, Chief Engineer,
Kansas Commissioner (Chairman)

Brian P. Dunnigan,
Nebraska Commissioner

Dick Wolfe, State Engineer,
Colorado Commissioner

The 2013 annual report of the Republican River Compact Administration is hereby approved by unanimous vote on this 27th day of August, 2015.

Gordon W. Fassett, Chair, Nebraska Commissioner

Dick Wolfe, Colorado Commissioner

David W. Barfield, Kansas Commissioner