



NINETEENTH ANNUAL REPORT

REPUBLICAN RIVER

COMPACT

ADMINISTRATION

FOR THE YEAR 1978

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DENVER, COLORADO

JULY 13, 1979

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REPUBLICAN RIVER COMPACT ADMINISTRATION

In conformity with the Rules and Regulations of the Republican River Compact Administration, the Nineteenth Annual Report is submitted as follows:

1. Pursuant to Rule 12, as amended, this report covers the period from July 7, 1978, to July 13, 1979.
2. Members of the Republican River Compact Administration are the officials of each of the states who are charged with the duty of administering the public water supplies, and are as follows:  

John W. Neuberger, Director, Department of Water Resources, Nebraska

Guy E. Gibson, Chief Engineer, Division of Water Resources, State Board of Agriculture, Kansas

William R. Smith, Acting Colorado State Engineer.
3. The Twentieth Annual Meeting of the Administration was held on July 13, 1979, in the Water Conservation Board Library, 1313 Sherman Street, Denver, Colorado. Minutes of the meeting are included with this report.
4. During the period covered by this report, one meeting of the Engineering Committee was held. A report from that committee together with summary tabulations of the computed annual virgin water supply and the consumptive use for the 1978 water year in the Republican River Basin was presented and accepted by the Administration.
5. The special engineering committee, appointed at the Nineteenth Annual Meeting to make recommendations for the development of administrative procedure for equitably dividing water within the Compact Basin in the event water shortages should occur, met once. They posed several questions to the Administration and a meeting of the Administration has been set for December, 1979, to resolve these questions.
6. Reports were received from the U. S. Bureau of Reclamation on operation and administration of reclamation projects and on their Republican River Water Management Study.
7. William R. Smith, Colorado Member of the Administration, was elected Chairman to serve until Colorado has selected a permanent State Engineer.

Minutes of the  
Twentieth Annual Meeting  
Republican River Compact Administration  
Colorado Centennial Building  
1313 Sherman Street  
Denver, Colorado July 13, 1979

The meeting was called to order by William R. Smith who stated that the first order of business, according to Rule VI of the Compact, was to elect a chairman. It was moved by Guy W. Gibson that William R. Smith, Acting State Engineer for the State of Colorado, be appointed temporary chairman of the Administration and that the State Engineer for the State of Colorado be appointed as Chairman for the Compact for Calendar year 1979 and 1980. John Neuberger, official member for Nebraska, seconded the motion, which passed. Those present were asked to introduce themselves and a list of those in attendance and their organization follows:

<u>Name</u>	<u>Organization</u>
Commissioner Guy Gibson	Kansas Board of Agriculture
Gerald Hilmes	Engineer Advisor - Kansas
Leland Rolfs	Kansas Division of Water Resources
Commissioner John Neuberger	Director, Nebraska Dept. of Water Res.
Robert Bishop	Engineer Advisor - Nebraska
Fred Zabel	Nebraska Dept. of Water Resources
Keith Paulsen	Nebraska Dept. of Water Resources
Commissioner William R. Smith	Acting Colorado State Engineer
Jeris Danielson	Engineer Advisor - Colorado
Glen Brees	Colorado Water Resources
Larry Morrill	Colorado Water Conservation Board
Duane Helton	Colorado Water Conservation Board
Fred Daubert	Colorado Water Conservation Board
Robert Kutz	U.S.B.R. - McCook, Nebraska
Dennis Allacher	U.S.B.R. - McCook, Nebraska
Fred Krauss	U.S.B.R. - Denver, Colorado
Steve Vandas	U.S.B.R. - Denver, Colorado
Eldon Johns	U.S.B.R. -
Charles Calhoun	U.S.B.R. -
Ben Saunders	Colorado Ground Water Management Dist.

#### Approval of Minutes of last Annual Meeting

The Chairman asked for changes or corrections in the Minutes of the last annual meeting. Mr. Gibson moved the Minutes of the 19th Annual meeting, as published in the 18th Annual Report, be approved. Mr. Neuberger seconded the motion, which passed.

#### Report of Chairman

The Chairman noted that notices of the meeting had been mailed on June 28, 1979, and according to the rules and regulations, the meeting was to be held before August 1.

#### Report of Official Member from Colorado

Mr. Smith presented the report from Colorado. He reported that C. J. Kuiper, former State Engineer for Colorado, had retired June 9, 1979. He indicated his

appointment as Acting State Engineer and noted that there would probably be a permanent appointment by the middle of October. Mr. Smith stated that the thing of most concern to Colorado water users at the present time was a number of applications for decrees on ground water in aquifers currently defined as "confined" and other applications for ground water contained in terminal moraines. He noted these applications were massive, involving several thousand acre-feet, and challenged some basic laws. The filings were made by more than one applicant in several different water divisions in the state. In order to answer several legal questions involving all of the applications, the Supreme Court appointed a special water judge. The outcome of this case could have a significant impact on future development of all ground water in Colorado.

#### Report of Official Member from Kansas

Mr. Gibson reported that Kansas was able to work a stopgap procedure with the Bureau of Reclamation for selling water under the Warren Act. He noted sales were being made from Glen Elder, a reservoir on the Salmon River, to irrigators downstream. He advised that the number of applications for appropriation of water had declined considerably, partly as a result of ground water management district rules and regulations. Mr. Gibson advised that, under their current statutes, owners of vested rights prior to June 28, 1945, had until July 1, 1980, in which to file and he noted that they were anticipating some problems.

#### Report of Official Member from Nebraska

Mr. Neuberger reported that Nebraska's Unicameral Legislature passed 13 different bills relating to water. He said that none had a direct impact on the Republican River Compact. Mr. Neuberger then advised that Governor Thorne had established a new water committee called the Interagency Water Coordinating Committee. The committee, which is made up of ten department heads as members with the Governor as Chairman, has the primary responsibility to approve coordination and keep the Governor's Office more informed on water issues and water policy matters in the state. A new state planning and review process has been instigated which, among other things, calls for a Citizens and Public Input Committee. Mr. Neuberger reported further on the progress of the ground water control areas and noted that rules and regulations for the Upper Republican Natural Resources District (NRD) area had been adopted. Mr. Neuberger advised that personnel of his department had administered storage rights above four of the Bureau reservoirs for the first time during the past year and were concentrating efforts on adjudication of water rights.

#### Report of Engineering Committee

The Engineering Committee Report was distributed by the Chairman, Robert F. Bishop, and is included as a part of this report. The Engineering Committee held one meeting during the year, April 25-26, 1979. Mr. Bishop noted that the format of the report had been changed to reflect in Table I a comparison of the original Compact allocations for each state and the adjusted Compact allocations for each state. He reported that the committee had also made a more detailed breakdown of Table 2, which shows consumptive use. Following the discussion of the new considerations, Commissioner Gibson moved that the Administration accept the report of the Engineering Committee. Commissioner Neuberger seconded the motion, which passed unanimously.

### Report of the Special Engineering Committee

Mr. Gerald Hilmes reported as Chairman of the Special Engineering Committee formed to review and update the report of July 30, 1975, with additional recommendations on administrative procedures. Mr. Hilmes advised that after reviewing the 1975 report and in consideration of the desires of the Administration it was the committee's opinion to seek additional guidance from the Administration and request interpretation of some of the questions asked.

Commissioner Smith pointed out that it would be unfair to the new State Engineer of Colorado to respond at this time since some legal opinions would be needed and his input would be necessary for direction from Colorado. Mr. Smith suggested a meeting later in the year.

Commissioner Gibson moved the Compact Administration hold a special meeting in Denver with a tentative date of December 20-21, 1979, to be able to respond to the report of the Special Engineering Committee. Mr. Neuberger seconded the motion which passed unanimously.

### Report of the Bureau of Reclamation

Mr. Robert D. Kutz, Project Manager with the U. S. Bureau of Reclamation, first advised of the Bureau's position on the request to the State of Nebraska for administration of storage rights. Mr. Kutz then reported on operation and administration of Bureau projects and stated that there were shortages in all areas in the basin with the worst shortages in the upper areas ranging from the Almena Irrigation District, where there was no water available for irrigation, and all project allocations were down. Mr. Kutz then explained the Kansas-Nebraska Bostwick Operation plan in which in years of shortage the states agree to share shortages. Mr. Kutz completed his report by noting some operational difficulties during the past year and advised the Administration of the negotiations on Bonnie Reservoir between the Bureau and the Colorado Division of Wildlife.

Mr. Fred Krauss then reported on the Bureau's Republican River Water Management Study. He advised that a preliminary plan of study had been developed and would be distributed to the federal group for review in July. He indicated the Bureau's intention to meet with the States of Colorado, Kansas and Nebraska to review the plan of study and the study goals. Mr. Krauss reported several areas of interest to be considered in the course of study. He reported on some declines in stream flows during the past few years as indicated from studies to date. For additional information review the report which is made a part of this 19th Annual Report.

### High Plains - Ogallala Study

Bill Smith reported on the High Plains-Ogallala Study, authorized by the Congress and involving a socio-economic study of those portions of Colorado, Nebraska, Kansas, Oklahoma, Texas and New Mexico underlain by the Ogallala aquifer. He advised that six million dollars had been appropriated to the Department of Commerce, Economic Development Administration. The general contractor had been selected and consisted of Camp Dresser & McKee Inc. as prime contractor in association with Black and Veatch as joint venturers and Arthur D. Little Inc. as subcontractor. Mr. Smith noted that a study plan had been drafted by the general contractor with each state developing their study plan at the present time. The study is to coordinate with the other studies currently underway by the U. S. Geological Survey and the Bureau of Reclamation as nearly as possible with the differing time frames. He anticipated the state plans would be completed with contracts complete and work commenced before October 1, 1979.

Unfinished Business

Mr. Neuberger moved that the Administration direct the Engineering Committee to evaluate the three identified possible factors affecting virgin flow computation of climatic factors, operational factors and storage effects of the ground water storage aquifers and that they report back making recommendations to change the procedures of computing the virgin flow if they feel changes should be made.

Mr. Gibson seconded the motion which passed.

There followed a discussion of legal issues and it was decided by members of the Administration that each refer the questions to their respective legal representatives.

New Business

Mr. Neuberger advised that Mike Jess of his department had been appointed State Hydrologist and Nebraska would like him appointed to the Engineering Committee. The Administration agreed that with this change the Engineering Committee would remain the same.

Mr. Gibson noted that, due to staff changes, Kansas might have a change on the Special Engineering Committee. He said he would advise the other members of the Administration regarding this as soon as a determination had been made by Kansas.

Mr. Smith introduced Mr. David Brown who represented Mr. Ashton Wilson, an irrigator, who owns a conditional decree to divert water out of the North Fork of the Republican for use in Colorado. Mr. Brown advised that Mr. Wilson wishes to use part of the water in Nebraska and under a recent statute passed by the Colorado Legislature he must obtain approval of the Compact Administration and the Colorado Legislature and the water must be credited to Colorado's allocation under the Compact before it can be accomplished. Mr. Smith recommended that Mr. Brown furnish the specifics to the Administration prior to its December meeting and it would be considered at that time.

Commissioner John Neuberger moved that a resolution be drafted recognizing Clarence Kuiper's service to the Compact over the years, that the resolution be signed by the members of the Compact, transmitted to him and be included in the Minutes of the 20th Annual meeting. Bill Smith seconded the motion, which passed unanimously.

Adjournment

There being no further business, the meeting was adjourned at 11:11 a.m.

Respectfully submitted:

*William B. Smith*  
Colorado Member (Chairman)

*John W. Neuberger*  
Nebraska Member

*Lucy E. Gibson*  
Kansas Member



RESOLUTION

WHEREAS, Clarence J. Kuiper, State Engineer for the State of Colorado, has been the Official Member for Colorado on the Republican River Compact Administration since January 1969; and

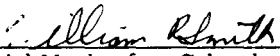
WHEREAS, Kuiper served as Chairman of the Administration during the years of 1972-1973, 1978 and in 1979 until his retirement on June 9, 1979; and

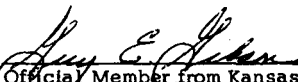
WHEREAS, Mr. Kuiper contributed his knowledge and professional skills to the fulfillment of the purposes of the Compact during a period of unprecedented ground water development;


NOW, THEREFORE, BE IT RESOLVED, that the Republican River Compact Administration does hereby acknowledge the outstanding contributions of C. J. Kuiper to the States of Colorado, Kansas and Nebraska and does express on behalf of the people of these states their sincere appreciation and commendation for his services and extend to him best wishes for the future.

BE IT FURTHER RESOLVED, that this resolution be entered into the records of this Administration and that the Chairman be instructed to send a copy to Mr. Kuiper.

Adopted at the Twentieth Annual Meeting of the Republican River Compact, at Denver, Colorado on July 13, 1979.

  
\_\_\_\_\_  
Official Member from Colorado

  
\_\_\_\_\_  
Official Member from Kansas

  
\_\_\_\_\_  
Official Member from Nebraska

Report of Engineering Committee  
Republican River Compact Administration  
For the 1978 Water Year

The meeting of the Engineering Committee was held in the office of the Colorado Division of Water Resources on April 25 and 26, 1979.

Committee Members present were:

Robert F. Bishop, Nebraska Department of Water Resources  
J. A. Danielson, Colorado State Engineer's Office  
Gerald E. Hilmes, Kansas Division of Water Resources

Others in attendance were:

Glen E. Brees, Colorado State Engineer's Office  
Guy E. Ellis, Kansas Division of Water Resources  
Michael Jess, Nebraska Department of Water Resources

The Committee completed its annual assignment of computing the virgin water supply and consumptive uses by states. The procedures utilized were those used and discussed previously and are explained in detail in the tenth Annual Report of the Compact Administration.

This year's Engineering Committee report is somewhat different than reports of previous years. The report eliminates a detailed explanation of computations in the narrative. Instead additional information within the tables of the report have been added for the convenience and ready reference of the Compact officials. Table 1 in previous years showed only the computed annual virgin water supply by ground water and surface water in sub-basins. It now portrays the original Compact allocations along with the annual adjusted allocations. Table 2 previously showed only the total consumptive use from sub-basins by each state. It now additionally shows a break down of the surface and ground water uses.

Municipal and industrial uses are not included in the computations, but for the record, those available to the Committee for the 1978 calendar year are given below:

City of Norton	820 Ac. Ft.
Amoco Production Company	351 Ac. Ft.
Rex Monahan	8 Ac. Ft.

The computed annual virgin water supply (summarized in Table 1) was determined from stream flow and reservoir data and from an inventory of recorded and estimated water use and return flows from irrigation activities utilizing both surface and ground water sources. The Committee discussed its usual approach and questions the notion that it truly provides an estimate of the virgin water supply "defined to be the water supply within the Basin undepleted by the activities of man." For example only irrigation wells pumping from valley alluvial

deposits are considered in making the computations. An estimate of ground water in storage is not included in the formulas. It can reasonably be assumed that a large portion of the ground water component (particularly storage in the Ogallala formation) is ignored. Also, annual precipitation is not utilized in the analysis.

Shown in Table 1 are the original allocations to each state by sub-basin along with the 1978 adjusted allocations. Adjusted allocations for each state were computed for each sub-basin. Briefly, a state's allocation is adjusted when the computed annual virgin water supply varies "more than ten per cent from the virgin water supply" as set forth originally in the Compact. The allocations made from such a source are "increased or decreased in the relative proportions that the future computed virgin water supply of such source bears to the computed virgin water supply" as set forth originally in the Compact.

Annual consumptive use estimates were prepared for each state and for each sub-basin. Table 2 summarizes those quantities. Annual consumptive use was computed for diversions from surface and ground water sources. Both measured and estimated data were utilized. Allowance was made for reservoir evaporation, return flow and other losses.

Other exhibits not included in this report, however, available to the administration on request are:

- 10c. Average annual virgin water supply for five year running averages for 1974-1978 and ten year running averages for 1969-1978.
- 10d. Adjusted allocations by five year and ten year running averages for same years as 10c.

The Committee recommends that the results of its computations contained in Tables 1 and 2 be published in the Annual Report of the Compact Administration.

Lastly, Mr. Brees advised that evaporation data for Bonny Reservoir was now being submitted to him by the Bureau of Reclamation. It had previously been sent by the Corps of Engineers. He indicated that he believes procedures used in preparing these data may have changed and would check into the matter and report his findings to the Committee. He also questioned whether the estimated evaporation quantity as shown on Corps monthly data should be used directly in computing evaporation. A decision will be made concerning this matter prior to making the 1979 computations.

The next annual meeting of the Committee will be held in Denver, Colorado.

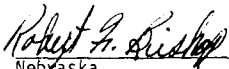

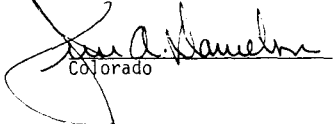
 _____ Nebraska	<u>6-4-79</u> Date
 _____ Kansas	<u>6-14-79</u> Date
 _____ Colorado	<u>6-11-79</u> Date

Table 1

1978 Computed Annual Virgin Water Supply and  
Original and Annual Adjusted Allocations

Sub-basin	Computed Annual Virgin Water Supply 1978 Republican River Basin (Ac. Ft.)			Comparison of Original Compact Allocations and 1978 Adjusted Allocations (Acre Feet)							
	Ground Water	Surface Water	Total Basin	Colorado		Kansas		Nebraska		Total Basin	
				Compact Alloc.	Adj. Alloc.	Compact Alloc.	Adj. Alloc.	Compact Alloc.	Adj. Alloc.	Compact Alloc.	Adj. Alloc.
Prairie Dog Creek	15,450	8,800	24,250			12,600	11,080	2,100	1,850	27,600	12,930
Sappa Creek	25,400	2,610	28,010			8,800	11,520	8,800	11,520	21,400	23,040
Beaver Creek	33,370	960	34,350	3,300	6,870	6,400	13,320	6,700	13,950	16,500	34,140
Medicine Creek	13,250	45,520	58,770					4,600	5,320	50,800	5,320
Red Willow Creek	5,380	20,000	25,380					4,200	4,870	21,900	4,870
Driftwood Creek	1,980	1,720	3,600			500	250	1,200	590	7,300	840
Frenchman River	54,090	71,220	125,310					52,800	73,520	98,500	73,520
South Fork of the Republican River	14,660	16,160	30,820	25,400	13,690	23,000	12,400	800	430	57,200	25,520
Rock Creek	0	9,180	9,180					4,400	3,670	11,000	3,670
Buffalo Creek	430	4,650	5,080					2,600	1,670	7,890	1,670
Arikaree River	4,570	2,670	7,240	15,400	5,680	1,000	370	3,300	1,220	19,610	7,270
North Fork of the Republican River	380	40,850	41,230	10,000	10,000			11,000	11,000	44,700	21,000
Main Stem of the Republican plus Blackwood Creek	136,100	107,050	243,150			138,000	215,010	132,000	206,570	94,500*	421,580
TOTALS	304,960	331,410	636,370	54,100	36,240	190,300	263,950	234,500	336,180	478,900	636,370

\* Main Stem  
Blackwood Creek

87,700  
6,800

Table 2.

Computed Consumptive Water Use for 1978 within the  
Republican River Basin (Acre feet)

Sub-basin	Colorado			Kansas			Nebraska			Total Basin		
	Ground Water	Surface Water	Total	Ground Water	Surface Water	Total	Ground Water	Surface Water	Total	Ground Water	Surface Water	Total
Prairie Dog Creek				15,450	5,540	20,990	1,460	0	1,460	16,910	5,540	22,450
Sappa Creek				12,530	240	12,770	10,100	450	10,550	22,630	690	23,320
Beaver Creek			0	11,340	290	11,630	6,250	22,360	28,610	17,590	22,650	40,240
Medicine Creek							13,250	4,810	18,060	13,250	4,810	18,060
Red Willow Creek							5,380	11,370	16,750	5,380	11,370	16,750
Driftwood Creek						0	1,880	0	1,880	1,880	0	1,880
Frenchman River							54,090	24,130	78,220	54,090	24,130	78,220
South Fork of the Republican River	1,900	9,870	11,770	11,770	320	12,090	990	0	990	14,660	10,190	24,850
Rock Creek												0
Buffalo Creek							430	600	1,030	430	600	1,030
Arikaree River	4,180	0	4,180	390	0	390			0	4,570	0	4,570
North Fork of the Republican River	380	5,750	6,130				0	5,030	5,030	380	10,780	11,160
Main Stem of the Republican River				90	48,800	48,890	135,990	96,350	232,340	136,080	145,150	281,230
TOTALS	6,460	15,620	22,080	51,570	55,190	106,760	229,820	165,100	394,920	287,850	235,910	523,760

REPORT OF SPECIAL ENGINEERING COMMITTEE  
REPUBLICAN RIVER COMPACT ADMINISTRATION

June 14, 1979

On July 7, 1978, the Republican River Compact Administration agreed to appoint a special committee to make recommendations for the development of an administrative procedure for equitably dividing water within the compact basin in the event water shortages should occur. The Administration further instructed that the committee review and update a Report of the Special Engineering Committee of July 30, 1975 (see attached copy).

The Special Engineering Committee was appointed during 1978-79 and the members are as follow:

Gerald E. Hilmes, Chairman . . . . .	Kansas
Wayne Haas . . . . .	Kansas
David Pope . . . . .	Kansas
Robert F. Bishop . . . . .	Nebraska
Michael Jess . . . . .	Nebraska
Jeris Danielson . . . . .	Colorado
Glen Brees . . . . .	Colorado

On April 26, 1979, the Special Engineering Committee met in Denver, Colorado to consider the above-noted assignments.

Review was made of the report dated July 30, 1975 and consensus of the Committee was that the report was outdated, would need major revisions and therefore should not be resubmitted to the Administration in its present form.

The Committee continued with a lengthy discussion concerning interpretation of Articles and definitions contained in the Compact. A number of questions were raised concerning these items which were not resolved.


It was agreed that prior to the Committee's formulation of an administrative procedure for equitable division of water in the Republican Basin during water shortages, guidance, and resolution of the following matters will be needed from the Administration:

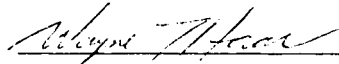
- I. Interpretation of the term "Virgin Water Supply".
  1. Should the definition that virgin flows are "undepleted by the activities of man" be taken literally?
  2. Does the present procedure of determining virgin water supply comply with the compact definition?
  3. Is the compact administerable under current procedures of determining virgin water supply?
- II. Interpretation of the last paragraph, Article II of the compact which states "Beneficial consumptive use is the basis and principle upon which allocations of water hereinafter made are predicated".
  1. Is the compact administrable under current procedures of determining consumptive use?
  2. Does the present procedure of determining consumptive use comply with the compact definition?
- III. Interpretation of the last paragraph, Article III of the compact which states "Should the future computed virgin water supply of any source vary more than ten (10) per cent from the virgin water supply as hereinabove set forth, the allocations hereinafter made from such source shall be increased or decreased in the relative proportions that the future computed virgin water supply of such source bears to the computed virgin water supply used herein".
  1. Should specific allocations be revised on the basis of future computed virgin water supply? If so, what future computed virgin water supply?
- IV. Interpretation of allocations in Article IV of the compact.
  1. Should individual state allocations be fixed quantities, apportioned according to priority and allocated on the basis of available supply?
  2. Are the figures intended to reflect flow rights available to each state every year?
  3. Should each state consider and be bound by the compact prior to allowing additional water right permits?

V. Interpretation of Article IX of the compact in terms of administration.

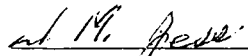
1. Do all compact Administrators want a working administrative mechanism for allocating supplies in the Republican River Basin?
2. Should such a procedure apply to year round or seasonal operations.
3. Should such procedure be financed equally or proportionally?

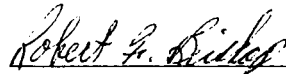
Respectfully Submitted,  
Special Engineering Committee

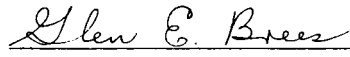
  
Kansas Member

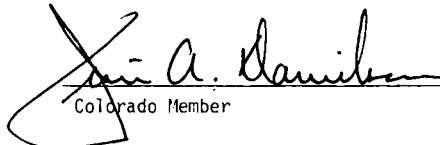
  
Kansas Member

  
Kansas Member

  
Nebraska Member

  
Nebraska Member

  
Colorado Member

  
Colorado Member