Thirty-second Annual Report

Arkansas River Compact Administration

(1980)

For the Report-Year

November 1, 1979 to October 31, 1980

LAMAR, COLORADO

December 9, 1981

THE ADMINISTRATION

FRANK G. COOLEY
Chairman and Representative of the United States

LEO IDLER, KENT REYHER, and J. WILLIAM McDONALD
for Colorado

CARL E. BENTRUP, GUY E. GIBSON, and W. F. STOECKLY
for Kansas

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1000 South Main Street
Lamar, Colorado 81052

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Annual Report Of

ARKANSAS RIVER COMPACT ADMINISTRATION

1980

Report-Year November 1, 1979 to October 31, 1980

TO: THE PRESIDENT OF THE UNITED STATES AND THE GOVERNORS OF THE STATES OF COLORADO AND KANSAS

Sirs:

Pursuant to Article VII of the Arkansas River Compact, the Arkansas River Compact Administration submits its report for the Report-year November 1, 1979 through October 31, 1980, as follows:

1. Members of the Administraton

Representative of the United States:

Frank G. Cooley

Colorado Representatives:

Leo Idler, Lamar, Colorado
Kent Reyher, Las Animas, Colorado
J. William McDonald, Denver, Colorado

Kansas Representatives:

Carl E. Bentrup, Deerfield, Kansas
Guy E. Gibson, Topeka, Kansas
W. F. Stoeckly, Garden City, Kansas

2. Officers of the Administration

Chairman:

Frank G. Cooley

Vice Chairman:

Carl E. Bentrup

Secretary:

Leo Idler

Treasurer:

Leo Idler

3. Standing Committees:

Administrative and Legal Committee:

J. William McDonald (Chairman)
Carl E. Bentrup

Engineering Committee:

Kent Reyher (Chairman)
Guy E. Gibson

Operations Committee:

Leo Idler (Chairman)
W. F. Stoeckly

The Representative of the United States is an ex-officio member of all standing committees.

4. Meetings:

December 11, 1979	Annual Meeting, Lamar, Colorado
March 21, 1980	Special Meeting, Garden City, Kansas
April 15, 1980	Special Telephonic Meeting
April 24, 1980	Special Telephonic Meeting
June 16, 1980	Special Telephonic Meeting
June 30, 1980	Special Meeting, Lamar, Colorado
September 25, 1980	Special Meeting, Lamar, Colorado

5. Fiscal:

TREASURER'S REPORT
July 1, 1979 through June 30, 1980

Cash on hand July 1, 1979		$12,157.58
Receipts:		
Revenue from Assessments:		
Colorado	$14,203.50	
Kansas	8,058.00	
Interest	543.42	
Stanford University (Annual Report)	2.00	
Total Receipts	$22,806.92	
Total Funds Available		$34,964.50
Disbursements:		
Geological Survey	$ 4,900.00	
Professional Fees	539.50	
Office Expense	491.64	
Printing	233.45	
Secretary's Salary	3,126.31	
Payroll Taxes	331.02	
Telephone	1,437.63	

Office Equipment	627.12	
Travel and Meetings	825.54	
Total Disbursements:	12,512.21	12,512.21
Excess of Receipts over Disbursements		10,294.71
Cash Balance June 30, 1980		$22,452.29

BALANCE SHEET
July 1, 1980 through December 9, 1980

Balance on hand July 1, 1980		$22,452.29
Receipts:		
Colorado		
Kansas	8,158.00	
Interest	822.35	
Total Funds Available	8,980.35	31,432.64
Disbursements:		
Personal Services:		
Secretary's Salary	1,408.05	
Social Security	257.46	
Professional Services	315.00	
U.S. Geological Survey:		
Cooperative Agreement	4,900.00	
Telemark John Martin	814.00	
Data Acquistion Plan:		
Maintenance and Operation:		
Treasurer's Bond	100.00	
Printing	679.60	
Telephone	848.48	
Office Expense	167.27	
Travel and Meetings	194.10	
Contingency:		
Total Disbursements	9,683.96	9,683.96
Balance on Hand December 9, 1980		$21,748.68
Checking Account	1,378.30	
Savings Account	20,370.38	
	$21,748.68	

(g) Pursuant to provisions of the Compact (Article VIII-E(3)) and of the By-Laws of the Administration (Article VII (5)), the receipts and disbursements of the Administration during the compact year have been audited, and the report of the audit is hereto attached as Appendix "A."

PROPOSED BUDGET
BUDGET ADOPTED
Fiscal Year July 1, 1981 through June 30, 1982

Personal Services		$ 4,750.00
Secretary's Salary	$ 3,600.00	
Social Security	230.00	
Professional Services	920.00	
U.S. Geological Survey		$ 5,750.00
Cooperative Agreement	$ 4,900.00	
Telemark	850.00	
Data Acquisition Improvement Plan		$ 5,000.00
Maintenance and Operation		$ 5,190.00
Treasurer's Bond	$ 90.00	
Printing	1,250.00	
Telephone	2,000.00	
Office Expense	500.00	
Travel and Meetings	1,350.00	
Contingency		$ 2,000.00
TOTAL BUDGET 1980-1981		$22,690.00
To be appropriated		$22,690.00
Colorado (60%)	$13,614.00	
Kansas (40%)	$ 9,076.00	

6. Facts about John Martin Project:

The John Martin Reservoir Project was built by the Corps of Engineers, United States Army. The project was authorized by Congress in the Flood Control Act of June 22, 1936, when the federal responsibility for flood control throughout the country was assigned to the Corps of Engineers. It is located on the Arkansas River, 58 miles upstream from the Colorado-Kansas stateline and 18 miles upstream from the city of Lamar, Colorado. Construction of the project began in the fall of 1939, but work was suspended by World War II from the spring of 1943 to the spring of 1946. The project was completed in October 1948 at a cost of about $15 million. The War Department Civil Appropriation Act of June 24, 1940, changed the name of the project from Caddoa Reservoir Project to John Martin Reservoir Project, in honor of the late Congressman John A. Martin of Colorado. It is operated by the United States Army Engineer District, Albuquerque, New Mexico. Mr. Russell Smith has been the resident superintendent of the project since October, 1976.

The John Martin Reservoir Project is part of the comprehensive plan for the control of floods and the development of the water resources of the entire Arkansas River basin. The reservoir provides 270,375 acre-feet of storage capacity for flood control. It protects the fertile Arkansas River Valley below the dam from floods originating in the 18,915 square miles of the Arkansas River basin above the dam. It provides 350,951 acre-feet of storage space for conservation and

recreation. John Martin Reservoir supplies water to the irrigated lands below the dam as far as Garden City, Kansas. The top of the conservation pool is 3,851 feet above mean sea level, which provides 350,951 acre-feet of storage for irrigation. The release of stored flood waters in excess of the conservation and recreation pools and above elevation 3,851 feet is planned so that, when combined with flows originating downstream from the dam, the capacity of the channel will not be exceeded. Upon request of the Arkansas River Compact Administration, irrigation water for downstream water users is released through the outlet works in the base of the dam. Downstream flood damages prevented by John Martin dam already exceed the cost of the project. Benefits have already passed the $92 million mark.

Recreation and favorable fish and wildlife habitats are derived from this project. With reservoir lands open to all, there are many attractive public use areas for outdoor recreation, water sports, fishing and boating, or just relaxed living. During construction some embankment material was obtained from a 75-acre tract of land immediately downstream of the dam. This excavated area, averaging 12 feet deep, filled with water and formed Lake Hasty, the center of year-round recreation.

John Martin Dam consists of a concrete gravity structure 1,644 feet long and 120 feet high, and an earthfill structure 2,600 feet long. The concrete gravity structure contains a gated spillway provided with sixteen 30 feet by 64 feet tainter gates with their operating machinery. There are earthen wing dams on either side of the main dam. The north wing dam is 3,880 feet long, connecting to the earthfill structure of the main dam at the north abutment. The south wing dam is 5,807 feet long and connects to the south end of the concrete structure of the main dam. A bituminous-surfaced roadway, 21 feet wide, extends along the crest of the north wing dam, main dam, and south wing dam. The overall length of the structure is 2.6 miles. Detailed project data are shown below.

DAM	
Total length, feet	13,945
Maximum height above streambed, feet	118
Width of roadway on dam, feet	21
SPILLWAY	
Total length, including piers, feet	1,174
Crest gates, 30' x 64'	16
Discharge capacity, cubic feet per second	639,200
OUTLET WORKS	
Sluicing conduits, 6' x 7½'	4
Regulating conduits, 4' x 4'	2
RESERVOIR	
Capacity, acre-feet	621,326
Flood control storage, acre-feet	270,375
Conservation (irrigation) and recreation, storage, acre-feet	350,951
Water surface at spillway crest, acres	8,960
Water surface at top of conservation pool, acres	11,655
Water surface at top of flood control pool, acres	17,630
Drainage area, square miles	18,915

A ½-mile of the historic Santa Fe Trail north of the reservoir has

been enclosed by a fence. An appropriate sign perpetuates this bit of Americana for posterity.

7. Cooperative Studies and Activities:

(a) Article VIII G (1) of Arkansas River Compact requires the Administration to cooperate with the Chief Official of each of the states of Colorado and Kansas charged with the administration of water rights in their respective States, and with the Federal agencies in systematically determining and correlating the facts pertaining to the flow and diversion of the water of the Arkansas River and to the operation and siltation of John Martin Reservoir and other related structure. Article VIII G (2) requests the Director of the United States Geological Survey, the Commissioner of the United States Bureau of Reclamation, and the Chief of the Engineers, United States Army, to cooperate and collaborate with the Administration and with appropriate State officials in such determinations and correlations of stream flow and related data. Under the By-Laws of the Administration, these cooperative studies and activities are assigned to the Engineering Committee of the Administration.

(b) During the year covered by this report the Administration has received excellent cooperation from all agencies referred to in the foregoing provisions of the Compact. The United States Geological Survey has continued the operation of the compact gaging stations and the analysis and compilation of the hydrologic data presented in this report and used in the administration of the Compact. The Corps of Engineers continued to operate the conservation pool of John Martin Reservoir in accordance with the terms of the Compact and the orders of the Administration.

8. Water Supply, Reservoir Operation, and Hydrologic Data:

The winter storage season for John Martin Reservoir began at 0001 hours November 1, 1979 with an empty Conservation Pool and 5040 acre-feet stored in the accounts for Colorado and Kansas pursuant to the **March, 1979 Colorado-Kansas Storage Resolution**. When the winter storage period ended at 2400 hours March 31, 1980, there were 41,496 acre-feet in the reservoir with 19,162.27 A.F. allocated to the conservation pool, 4,676.97 A.F. allocated to the various accounts (agreement water) and 17,656.76 allocated to the Amity-Great Plains winter storage account. The Amity winter water was transferred into the Amity account on April 7, 1980, pursuant to the new storage resolution agreed upon by the states.

An **Interim Operating Plan for John Martin Reservoir** was adopted March 21, 1980 as the 1979 resolution was about to expire. This gave the Arkansas River Compact Administration time to finalize a new and more comprehensive storage resolution, which resolution was adopted on April 24, 1980.

This new resolution, herein referred to as the **1980 Colorado-Kansas Storage Resolution**, continued the Colorado water district 67 and Kansas accounts which receive water transferred from conservation storage. In addition, it established accounts for the Fort Lyon and Las Animas Consolidated Canal Companies which allow use by way of exchange, and a transit loss account to assist delivery to Kansas.

Provisions were also made for repayment of new transit loss deficits to Kansas. The April 24, 1980 Storage Resolution remains in full force and effect from year to year or until either Colorado or Kansas terminates it through its compact delegation.

During the Summer Storage Season, inflow to the conservation pool totalled 242,338.33 A.F. with storage events as follows:

TABLE I
Conservation Events of John Martin Reservoir
Water Year 1980

Beginning of Storage		Ending of Storage		Beginning of Transfer Release		Ending of Transfer Release		Amount Stored
Hour	Day	Hour	Day	Hour	Day	Hour	Day	A.F.
0001	April 1	0223	April 19	0800	April 7	0223	April 19	4,563
0223	April 19	2104	Aug. 5	0223	April 17	2104	Aug. 5	233,790
0900	Aug. 16	1559	Aug. 17	0900	Aug. 16	1559	Aug. 17	2,088
1700	Sept. 10	2400	Sept. 11	1700	Sept. 10	2400	Sept. 11	1,442
1000	Oct. 29	2400	Oct. 31	1308	Oct. 31	2400	Oct. 31	906

During April, 1980, 9,944.00 A.F. of Colorado River Trans-Mountain was purchased for storage in space for Permanent Pool as authorized by Resolution of the Administration on August 14, 1976 and special telephonic meeting on April 15, 1980. On April 27, 52.74 A.F. of storage was credited to the Permanent Pool under the Muddy Creek Transfer Decree.

TABLE II
Operation of Permanent Pool

	Contents Beginning of Month, A. Ft.	Inflow, A. Ft.	Evaporation A. Ft.	Release, A. Ft.	Contents End of Month, A. Ft.
April	0	5,258.28	7.67	0	5,150.61
May	5,150.61	4,838.46	219.45	0	9,769.62
June	9,769.62	0	265.96	0	9,503.66
July	9,503.66	0	338.50	0	9,165.16
Aug.	9,165.16	0	400.08	0	8,765.08
Sept.	8,865.08	400.00	293.33	0	8,871.75
Oct.	8,871.75	0	242.68	394.41	8,234.66
Totals		10,396.74	1,767.67	394.41	

At the end of the compact year, 2400 hours October 31, 1980, the reservoir contained 35,395 AF, the Conservation Pool was empty and Agreement accounts contained 27,160 acre feet.

The 1980 Water Year produced well above-average stream flows. Storage in John Martin Reservoir was greater than any year since 1965. The reservoir was in a storage situation continually from November 1, 1979 until August 5, 1980. The Conservation Pool was emptied for the first time on April 19, but storage was immediately declared again. Water was stored and released into accounts at the inflow rate from April 22 until May 2, when inflow exceeded the allowable release rate. Release rate from May 2 through August 5 was determined by the **1980 Colorado-Kansas Storage Resolution**. Three short storage periods occurred, one each in August, September, and October. Water from the Kansas transit loss account and the Sisson ditch account was released concurrent to Kansas' demands for account water.

Stateline flows were computed following an analysis of the days

immediately preceeding and following reservoir releases to Kansas. The day when the average flow increased dramatically (approximately 36 hours after the John Martin Reservoir release) was used as the first arrival of the water. To determine the end of the release, a procedure developed by the Water Resources Division of the U.S. Geological Survey was used. The following publications are referenced:

1. USGS Water Resources Investigations 78-75: **Transit Losses and Traveltimes of Reservoir Releases Along the Arkansas River from Pueblo Reservoir to John Martin Reservoir, Southeastern Colorado**, by Russell K. Livingston, 1978.
2. Colorado Water Resources Circular No. 20: **Transit Losses and Travel Times for Reservoir Releases, Upper Arkansas River Basin, Colorado** by Russel K. Livingston, 1973.
3. Colorado Water Resources Circular No. 27: **Reservoir Release Routing Model for the Upper Arkansas River Basin of Colorado** by Luckey and Livingston 1975.
4. USGS Water Resources Investigations 78-122: **Traveltime, Unit Concentration, Longitudinal-Dispersion, and Reaeration Characteristics of Upstream Reaches of the Yampa and Little Snake Rivers, Colorado and Wyoming** by Daniel P. Baner et al, 1979.

This procedure is premised on the observation that the downstream hydrograph of a reservoir release increases sharply when the leading edge of the release arrives, until a peak is reached, then the hydrograph decreases gradually until the antecedent streamflow is again reached. This skewed hydrograph indicates a longitudinal dispersion of the reservoir release or floodwave, and is caused by natural features in the stream, bank storage, diversions, distance of travel and return flows. The average daily flows or the instantaneous flows can be plotted to observe this fact.

The arrival of the end of a release from John Martin Reservoir was computed by adding the antecedent streamflow to 5% of the peak stateline flow. The antecedent streamflow was computed by averaging the flows of the two days preceding the arrival of the release. This sum was taken to be the last day of the arrival of the reservoir release, minus transit losses. The release is considered to be volumetrically complete when 95% of the peak stateline discharge has arrived at the state line.

For the release request from April 21 to the 24, the antecedent streamflow at the stateline was 50 cfs; 5 percent of a 742 cfs peak is 37 cfs. The end of the tail is 50 cfs plus 37 cfs, or 87 cfs, which was not reached because of the arrival of the next reservoir release. For the April 28 through May 1 releases, the antecedent streamflow was assumed to be 87 cfs; 5 percent of a 716 cfs peak is 36 cfs. The end of the tail is 36 cfs plus 87 cfs, or 123 cfs, which occurred on May 13. For the June 9 through August 10 release requests, the antecedent flow was 51 cfs; 5 percent of the 820 cfs peak is 41 cfs. The end of the tail is 92 cfs (51 cfs + 41 cfs), which occurred on August 24. It should be noted that "the travel time of the release increases as the antecedent streamflow diminishes." (Russell K. Livingston, U.S. Geological Survey, Water Resources Investigation No. 78-75).

9. GAGING STATIONS

In general, streamflow records of satisfactory accuracy were obtained at the compact stations. Emphasis was continued on performing additional field work to increase the accuracy of the records and on providing current streamflow data to the Administration and State officials, as required.

The control section for the Purgatoire River near Las Animas continues to be a problem, but the expense of a permanent control is probably not justified. The changing of the stage-discharge relationship by beavers building brush dams just downstream from several of the gages is the source of the problem.

The administration approved a cooperative agreement with the U.S. Geological Survey for the fiscal year October 1, 1979, to September 30, 1980, in the amount of $9,800 — $4,900 for each party. These funds are for the operation of the compact stations, the providing of current streamflow data, maintenance of radio equipment, and the preparation of records for the Annual Report.

10. FINDINGS OF FACT BY THE ADMINISTRATION SPECIAL TELEPHONIC MEETINGS

March 21, 1980

A special meeting was held in Garden City, Kansas on March 21, 1980. The annual report was accepted. Mr. Jerry Hughes of the U.S. Geological Survey presented two proposals for a Transit-Loss-Travel time study between John Martin Dam, the stateline and Garden City, Kansas, and discussed the telemark metering station which was approved. Mr. Jesse discussed Amity's transit losses. Mr. Jesse was appointed assistant secretary. The Muddy Creek transfer issue was briefly discussed and tabled. Finally, an Interim Operating Plan for John Martin Reservoir was adopted (Storage Account Resolution). This interim plan was superceded on April 24, 1980, by a final operating plan which is attached as Appendix C-1.

April 15, 1980

A special telephonic meeting was held April 15, 1980 in accordance with Article V-f of the Arkansas River Compact for the purpose of discussing Colorado's purchase of transmountain water from the Colorado River Basin for the permanent pool in John Martin Reservoir. A resolution was passed approving water imported into the Arkansas River basin from the Colorado River basin as an additional source of water supply for the permanent pool (see Appendix "C-2"). Said water is subject to the August 14, 1980 resolution of the Compact Administration and transit losses incurred during delivery.

Participating members:

Chairman, Mr. Cooley
For Colorado: Mr. McDonald, Mr. Reyher,
Mr. Idler, Mr. Jesse.
For Kansas: Mr. Gibson, Mr. Bentrup, Mr. Stoeckly.

April 24, 1980

A special telephonic meeting was held April 24, 1980 in accordance with Article V-f of the Compact for the purpose of discussing a Storage

Resolution Concerning an Operating Plan for John Martin Reservoir. The Resolution as approved is attached as Appendix C-1.

Participating Members:
Chairman, Mr. Cooley
For Colorado: Mr. McDonald, Mr. Reyher, Mr. Idler, Mr. Jesse.
For Kansas: Mr. Gibson, Mr. Bentrup, Mr. Stoeckly.

June 16, 1980

A special telephonic meeting was held on June 16, 1980 in accordance with Article V-f of the Arkansas River Compact for the purpose of discussing the effect of storage in Trinidad Reservoir on the flows of the Arkansas River. A special meeting was arranged to further discuss and resolve the issue.

Participating members:
Chairman, Mr. Cooley
For Colorado: Mr. McDonald, Mr. Reyher, Mr. Idler, Mr. Jesse.
For Kansas: Mr. Gibson, Mr. Bentrup, Mr. Stoeckly.

June 30, 1980

A special meeting was held in Lamar, Colorado on June 30, 1980 to discuss the budget, the Model Reservoir storage right at Trinidad, Colorado, the operating principles of Trinidad Dam and Reservoir Project, and the diversion of transmountain water in Colorado. A resolution concerning an investigation of Trinidad Reservoir operations was passed, and is attached as Appendix C-3.

September 25,1980

A special meeting was held in Lamar, Colorado on September 25, 1980 to discuss findings of fact regarding Trinidad Reservoir (whether the waters of the Arkansas River had been materially depleted in usable quantity or availability for use to the water users in Colorado and Kansas). It was resolved (see Appendix C-4) that the Kansas and Colorado State Engineers confer to make further inquiries into this question. The findings of fact are as follows:

FINDINGS OF FACT
RELATIVE TO TRINIDAD RESERVOIR

WHEREAS, at a special meeting of the Arkansas River Compact Administration (hereinafter referred to as the "Administration") in Lamar, Colorado, on June 30, 1980, the Administration passed a resolution instructing the staff of the Kansas Division of Water Resources and the staff of the Colorado Water Conservation Board to investigate the storage of 18,290 acre-feet of water under the Model Reservoir water right in Trinidad Reservoir during Compact year 1979 and the storage of an additional 20,000 acre-feet of water in Trinidad Reservoir under the Model Reservoir right during Compact year 1980 without physically removing the water stored under the Model right during 1979 from behind Trinidad Dam and to promptly report their determinations to the Administration (said resolution is marked Exhibit A, and a copy is attached hereto and made a part hereof);

NOW, THEREFORE, in accordance with this resolution, the staffs of the Kansas Division of Water Resources and the Colorado Water

Conservation Board submit the following recommended findings of fact to the Administration.:

1. That on December 14, 1948, commissioners for the State of Kansas and the State of Colorado executed the Arkansas River Compact (hereinafter referred to as the "Compact"), which Compact was subsequently ratified by the legislature of each State and by the United States Congress (said Document is marked Exhibit B, and a copy is attached hereto and made a part hereof).
2. That Article VIII H of the Compact provides that:
   "Violation of any of the provisions of this Compact or other actions prejudicial thereto which come to the attention of the Administration shall be promptly investigated by it. When deemed advisable as the result of such investigation, the Administration may report its findings and recommendations to the State official who is charged with the administration of water rights for appropriate action, it being the intent of this Compact that enforcement of its terms shall be accomplished in general through the State agencies and officials charged with the administration of water rights."
3. That Article IV D of the Compact also provides that:
   "This Compact is not intended to impede or prevent future beneficial development of the Arkansas River basin in Colorado and Kansas by Federal or State agencies, by private enterprise, or by combinations thereof, which may involve construction of dams, reservoirs and other works for the purposes of water utilization and control, as well as the improved or prolonged functioning of existing works: **Provided, that the waters of the Arkansas River, as defined in Article III, shall not be materially depleted in usable quantity or availability for use to the water users in Colorado and Kansas under this compact by such future development or construction.**" (Emphasis supplied)
4. That Article II of the Compact provides in part that the provisions of this Compact are based on:
   "(2) the opinion of the United States Supreme Court entered December 6, 1943, in the case of **Colorado v. Kansas** (320 U.S. 383) concerning the relative rights of the respective States in and to the use of waters of the Arkansas River;...."
5. That the U.S. Supreme Court in **Kansas v. Colorado**, 206 U.S. 46, 117 (1970) (said Decision is marked Exhibit C, and a copy is attached hereto and made a part hereof), cited in **Colorado v. Kansas**, 320 U.S. at 386 (said decision is marked Exhibit D, and a copy is attached hereto and made a part hereof), stated that:
   "... it is obvious that if the depletion of the waters of the river by Colorado continues to increase there will come a time when Kansas may justly say that there is no longer an equitable division of benefits, and may rightfully call for relief against the action of Colorado, its corporations and citizens, in appropriating the waters of the Arkansas for irrigation purposes."

   That the U.S. Supreme Court in 1943 ruled that "Kansas has not sustained her allegations that Colorado's use has materially increased, and that the increase has worked a serious detriment to the substantial interest of Kansas." (320 U.S. at 400)
6. That Trinidad Dam and Reservoir in Colorado became operational in January, 1977. That Trinidad Reservoir is located on the

Purgatoire River, a tributary of the Arkansas River, entering the main stem of the Arkansas River above John Martin Reservoir.

7. That the District Court of Colorado, Las Animas County, decree in Civil Action No. 19793, dated April 15, 1965 (said decree is marked Exhibit E, and a copy is attached hereto and made a part hereof), states:

"5. That the Petitioners' storage of water in the Trinidad Reservoir under the Model Reservoir Right shall be regulated in such a manner that the quantity of water occurring in the Las Animas or Purgatoire River at a gauging station on said River below Von Bremmer Arroya shall remain and be the same, as determined by the State Engineer, during any period of ten consecutive years reckoned in continuing progressive series beginning with January 1, 1954 as it would have been had the Model Reservoir Right not been transferred to the Trinidad Reservoir....

6. That the storage of water in Trinidad Reservoir under the transferred Model Reservoir Right shall at all times be conducted in accordance with, subject to, and governed by:

(a) The Constitution, laws and policies of the United States of America;

(c) **The Arkansas River Compact**;

(d) This Decree;

(e) The conditions of operation of the Trinidad Dam and Reservoir Project prescribed by House Document 325, 84th Congress, Second Session, January 30, 1956, as implemented by Article IV of the 'Operating Principles — Trinidad Dam and Reservoir Project' which is appended to Volume 1 of the United States Bureau of Reclamation Irrigation report on said project (Revised September, 1964), subject to such future modifications, deletions or additions consistent with said House Document as may be authorized by this Court...." (Emphasis supplied)

8. That the minutes of the special meeting of the Administration held on June 6, 1967, in Lamar, Colorado, state that Mr. Felix Sparks:

"Moved that the document of March 20, 1967, submitted to Governor Docking and signed by H.P. Dugan and countersigned by Dr. Donnelly be approved by the Arkansas River Compact Administration. Mr. Green seconded the motion and after some discussion the motion was carried by vote of the states."... (Said document is marked Exhibit F, and a copy is attached hereto and made a part hereof.)

9. That the document attached hereto as Exhibit F contained "Five Conditions — State of Kansas" which read in part as follows:

"3. Assurances that there will be **no significant increase in water use** which would result in a depletion of water yield to other Colorado and Kansas water users.

4. That 5 years after beginning operation of the Trinidad Reservoir for irrigation purposes, the operating principles be reviewed to determine the effect, if any, the operation has had on other Colorado and Kansas water users and the principles amended as necessary. Each 10 years thereafter, reviews should be provided with amendments as needed." (Emphasis supplied)

10. That based on the records of Mr. Robert Jesse, Division Engineer for Water Division No. 2 of the State of Colorado, it has been determined:

A. That 18,290 acre-feet of water was stored by the Purgatoire River Water Conservancy District under the Model Storage Right in Trinidad Reservoir in priority between April 15, 1979, and September 28, 1979; that the Purgatoire River Water Conservancy District Board transferred this amount of water into the joint use pool of Trinidad Reservoir by resolution on September 28, 1979, thereby leaving the Model storage account empty; and that this water was still physically located behind Trinidad Dam on June 30, 1980.

B. That 20,000 acre-feet of water was stored by the District under the Model Storage Right in Trinidad Reservoir in priority during the period April 16, 1980, through May 17, 1980. This water was physically stored behind Trinidad Dam and in the Model Storage account as of June 30, 1980.

Respectfully submitted this 25th day of September, 1980.

/s/ Guy E. Gibson, P.E.
Chief Engineer-Director
Division of Water Resources
Kansas State Board of Agriculture
/s/ J. William McDonald, Director
Colorado Water Conservation Board

FELIX L. SPARKS

After 22 years in state government, Mr. Felix L. Sparks retired on May 31, 1979, as Director of the Colorado Water Conservation Board, thus relinquishing his duties as a Colorado representative to the Arkansas River Compact Administration. His many years of service and his contributions to the Compact Administration are deeply appreciated by members of both states. Their gratitude has been expressed in a Resolution passed at the December 9, 1980 Annual Meeting of the Arkansas River Compact Administration.

APPENDICES FOR ANNUAL REPORT OF THE ARKANSAS RIVER COMPACT ADMINISTRATION

For the Report-Year
November 1, 1979, to October 31, 1980

APPENDIX "A-1"

Auditor's Report

Crimond, Schemahorn & Co.

CERTIFIED PUBLIC ACCOUNTANTS
203 East Oak
Lamar, Colorado 81052
Richard P. Crimond, C.P.A.
Robert G. Schemahorn, Jr., C.P.A.
Ronny R. Farmer, C.P.A.

To the Representatives
Arkansas River Compact Administration
Lamar, Colorado 81052

We have examined the Statement of Assets and Liabilities Arising from Cash Transactions of the Arkansas River Compact Administration as of June 30, 1980, and the Statement of Cash Receipts and Disbursements, Changes in Cash Balance and the Statement of Cash Receipts and Disbursements with Budget Comparison for the year ended June 30, 1980. Our examination was conducted in accordance with generally accepted auditing standards, and accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

As described in Note 1 of the Notes to Financial Statements, the accompanying statements are prepared on the cash basis of accounting and accordingly they are not intended to be presented in conformity with generally accepted accounting principles.

In our opinion, Exhibits A, B and C present fairly the Assets and Liabilities Arising from Cash Transactions of the Arkansas River Compact Administration as of June 30, 1980, and the results of Cash Transactions for the year then ended on a basis consistent with the previous year.

Crimond, Schemahorn & Co.
Certified Public Accountants

July 25, 1980
Lamar, Colorado

EXHIBIT A

ARKANSAS RIVER COMPACT ADMINISTRATION
STATEMENT OF ASSETS AND LIABILITIES
ARISING FROM CASH TRANSACTIONS
JUNE 30, 1980

ASSETS:	
Cash and Savings	$22,760
Equipment	2,407
Concrete Control	8,000
TOTAL ASSETS	$33,167

LIABILITIES:	
CASH BASIS EQUITY:	
Expended:	
Equipment	$ 2,407
Concrete Control	8,000
Unexpended	$22,760
TOTAL CASH BASIS EQUITY — NOTE 1a	$33,167
TOTAL LIABILITIES AND CASH BASIS EQUITY	$33,167

The accompanying notes are an integral part of the financial statements.

EXHIBIT B

ARKANSAS RIVER COMPACT ADMINISTRATION
STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS
AND CHANGES IN CASH BALANCE
FOR YEAR ENDED JUNE 30, 1980

CASH IN BANK, JULY 1, 1979		$12,157
RECEIPTS:		
Revenue from Assessments:		
Colorado	$14,204	
Kansas	8,058	
Interest	851	
Miscellaneous Income	2	
TOTAL RECEIPTS		$23,115
DISBURSEMENTS:		
Geological Survey	4,900	
Equipment	692	
Professional Fees	200	
Office Supplies	657	
Printing	26	
Secretary's Salary—Net	3,127	
Payroll Taxes	331	
Telephone	1,438	
Typing and Mailing	352	
Travel and Meetings	789	
TOTAL DISBURSEMENTS		$12,512
EXCESS OF RECEIPTS OVER DISBURSEMENTS		10,603
CASH BALANCE, JUNE 30, 1980		$22,760

The accompanying notes are an integral part of the financial statements.

EXHIBIT C

ARKANSAS RIVER COMPACT ADMINISTRATION
STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS
WITH BUDGET COMPARISON FOR THE BUDGET YEAR
JULY 1, 1979 TO JUNE 30, 1980

	BUDGET	ACTUAL	ACTUAL OVER (UNDER)
CASH IN BANK, JULY 1, 1979	$	$12,157	$12,157
RECEIPTS:			
Revenue from Assessments:			
Colorado — 60%	12,087	14,204	2,117
Kansas — 40%	8,058	8,058	
Interest		851	851
Miscellaneous Income		2	2
TOTAL RECEIPTS	20,145	23,115	2,970
TOTAL TO ACCOUNT FOR	20,145	35,272	15,127
DISBURSEMENTS:			
U.S. Geological Survey	4,800	4,900	100
Secretary's Salary—Net	3,600	3,127	(473)
Bond and Insurance	75		(75)
Telephone	1,000	1,438	438
Payroll Taxes	220	331	111
Typing and Mailing		352	352
Travel and Meetings	1,350	789	(561)
Professional Fees	1,000	200	(800)
Office Supplies	500	657	157
Printing	1,000	26	(974)
Contingency	1,500		(1,500)
Office Equipment	100	692	592
Data Acquisition Improvement Plan	5,000		(5,000)
TOTAL DISBURSEMENTS	$20,145	$12,512	(7,633)
CASH IN BANK, JUNE 30, 1980	$	$22,760	$22,760

The accompanying notes are an integral part of the financial statements.

ARKANSAS RIVER COMPACT ADMINISTRATION
NOTES TO CASH BASIS STATEMENTS
JUNE 30, 1980

Note 1 — Summary of significant accounting policies:

a. The Administration maintains financial records using the cash basis of accounting. By using the cash basis of accounting certain key accounts needed to present financial position and results of operations are omitted; examples of these accounts are accounts receivable and accounts payable.

APPENDIX "A-2"

Letter from Auditor

CRIMOND, SCHEMAHORN & CO.
CERTIFIED PUBLIC ACCOUNTANTS
Richard P. Crimond, C.P.A.
Robert G. Schemahorn, Jr., C.P.A.
Ronny R. Farmer, C.P.A.
203 East Oak
Lamar, Colorado 81052

April 29, 1981

Arkansas River Compact Administration
Lamar, Colorado 81052

Gentlemen:

We have been asked to determine the difference between the cash balance at June 30, 1980 shown by our audit report and by the secretary to your compact.

In reviewing the treasurer's report we note that our audited cash balances at June 30, 1980 was $308 higher than the cash balance shown by the treasurer's report. This was the result of our including a July 1980 interest posting on the savings account at First National Bank as income for the fiscal year ended June 30, 1980 in that it was available as of that date. The treasurer on a strict cash basis, included this $308 as interest after July 1, 1980 and it is included in the $822.35 interest shown on his report.

The net result of this is that the $308 difference is only a timing difference and is properly now reflected in the treasurer's report for the period ended December 9, 1980. We trust this information will suffice to explain the differences brought to our attention.

Yours very truly,
Crimond, Schemahorn & Co.
/s/ Richard P. Crimond

RPC/lk
NOTE — This is an exact duplicate of a letter originally written December 10, 1980.

APPENDIX "B-1"

Daily Discharges

Arkansas River near Pueblo, Colorado

Report-Year ending October 31, 1980
USGS Records—Provisional; Subject to Revision

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	254	335	55	55	66	97	257	2420	2220	3130	1140	646
2	250	254	55	55	66	97	306	2770	2130	2790	1180	440
3	238	274	55	56	66	97	271	2170	2130	2610	1250	440
4	238	274	57	57	66	97	260	1300	2250	2710	1170	328
5	223	293	57	57	66	97	271	1960	2460	2720	1120	266
6	215	330	56	56	66	97	266	1440	3190	2130	1170	257
7	212	334	56	56	66	97	332	2790	3720	2170	1180	232
8	220	330	56	56	66	97	300	1860	3830	2260	1140	262
9	220	289	56	56	66	97	306	1960	4570	2190	1110	306
10	260	265	56	56	66	97	271	3450	4780	2130	1040	490
11	260	265	56	56	66	97	271	3460	5340	1960	1050	535
12	302	265	56	56	66	97	264	2960	5890	1790	1220	590
13	302	296	56	56	66	97	266	1960	5880	1720	1560	575
14	288	316	56	56	66	97	254	2110	5580	1720	1490	533
15	282	306	56	56	66	97	235	1880	5360	1750	1060	505
16	254	298	60	56	66	97	271	655	5250	1760	1570	418
17	238	298	60	54	66	97	280	2470	5250	1490	1390	328
18	264	302	60	54	66	97	278	3350	5250	1180	1350	336
19	306	302	61	55	66	97	322	3960	5250	1060	1360	432
20	338	306	62	55	66	97	315	4560	5250	1060	1250	432
21	344	306	62	56	66	97	260	4560	4750	1110	1170	400
22	344	306	62	57	66	97	260	4560	5340	1210	1160	472
23	356	306	62	58	66	97	433	2570	5360	1330	1160	530
24	396	278	60	55	66	97	349	1920	4560	1270	1160	440
25	409	368	60	56	66	97	1250	2540	4160	1200	1160	388
26	390	409	61	50	66	97	2550	2880	4040	1200	1160	422
27	344	409	61	52	66	97	3070	2850	4160	1160	1260	468
28	344	364	65	60	66	97	1440	2880	4270	1160	1250	481
29	360	346	57	61	66	97	1460	1860	3900	1160	1290	450
30	368	157	55	62	66	97	1490	1820	3880	1150	1010	374
31	368		55	62	97	278	1660	2660	3740	1150	756	
31	376		55	63		258		2660		1150	756	
TOTAL sec.ft.	9439	9132	1824	1724	3017	8213	19317	77805	126980	39680	36682	12790
ac.ft.	18720	18110	3620	3420	7770	16290	38320	154300	251100	106500	72760	25370

THE YEAR 716,250 acre-ft.

APPENDIX "B-2"
Daily Discharges
Arkansas River at
Las Animas, Colorado

Report-Year ending October 31, 1980
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	58	22	118	120	100	65	691	861	331	23	143	71
2	43	28	173	130	105	66	2310	615	476	22	112	88
3	26	28	194	130	112	48	1810	522	340	22	85	123
4	27	29	243	130	110	80	1690	312	536	22	61	105
5	27	27	261	129	121	45	514	178	703	20	40	74
6	26	25	260	117	125	57	624	97	597	18	37	67
7	33	25	194	121	119	57	533	80	390	18	36	71
8	23	23	194	121	125	33	919	277	214	17	33	57
9	21	19	190	127	131	30	3050	859	103	19	57	50
10	22	19	185	116	127	37	2530	1060	88	18	61	40
11	19	19	230	132	115	26	3140	1370	72	19	127	33
12	19	15	230	121	111	30	3160	2130	67	57	101	33
13	18	22	235	121	109	33	2560	2210	93	46	57	33
14	21	25	235	115	131	31	1160	2560	83	33	207	32
15	19	41	233	113	141	42	1140	2220	63	36	333	39
16	16	103	226	108	110	42	1450	2070	59	1020	324	32
17	15	106	198	105	83	42	2880	1880	58	214	259	36
18	15	139	190	102	70	42	2280	1950	67	386	210	33
19	19	139	160	101	63	40	2960	3510	47	270	180	33
20	18	139	139	97	72	38	2750	4420	40	203	128	36
21	28	139	123	112	69	34	3450	4940	116	194	97	47
22	33	145	114	118	60	32	3460	5340	80	118	87	54
23	29	151	114	118	62	34	2910	4130	45	84	80	56
24	32	153	115	115	65	45	1720	2860	44	60	71	59
25	35	144	127	105	69	682	1710	1610	42	106	72	72
26	23	146	125	109	63	714	1800	1070	40	114	101	91
27	23	157	107	109	54	617	1690	983	39	131	101	102
28	22	157	100	111	48	370	1390	830	38	138	86	110
29	22	223	100	100	45	469	1360	569	37	182	78	89
30	19	204	100		45	576	836	444	33	241	82	47
31		95	110		46		651		25	177		52
TOTAL	752	2769	5192	3353	2811	4439	59037	52137	4966	4030	3426	1963
sec.ft.	1490	5490	10300	6650	5580	8800	117100	103400	9850	7990	6800	3890

THE YEAR 287,100 acre-ft.

APPENDIX "B-3"

Daily Discharges

Purgatoire River near Las Animas, Colorado

Report-Year ending October 31, 1980
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	61	41	14	24	16	40	817	58	12	2.3	3.1	6.9
2	59	27	16	24	16	95	1350	56	15	2.2	3.1	9.5
3	73	34	18	25	24	88	1010	41	19	2.2	2.7	7.2
4	67	36	21	30	22	72	746	35	47	2.1	2.7	4.2
5	63	33	20	38	18	64	449	28	63	2.1	2.7	4.6
6	47	28	21	32	17	75	351	30	24	2.0	2.7	5.7
7	29	21	29	28	17	80	382	71	20	2.0	2.7	4.9
8	47	18	26	26	16	63	449	58	16	2.0	2.7	5.3
9	48	19	29	25	16	50	339	54	8.9	2.0	4.2	5.4
10	52	20	15	21	12	41	440	53	7.3	8.0	335	5.8
11	51	18	17	25	5.0	41	352	51	6.3	17	338	5.7
12	51	17	22	26	5.4	35	261	46	8.9	21	150	5.5
13	51	13	27	27	4.3	37	253	79	5.7	6.0	128	5.5
14	58	12	33	30	4.6	33	199	123	5.1	4.2	101	6.0
15	55	8.9	38	25	13	28	201	72	5.6	3.8	62	5.3
16	55	8.9	34	19	13	29	205	90	5.2	3.2	40	7.5
17	54	6.3	43	18	11	33	814	52	4.8	3.2	38	9.0
18	61	5.7	44	27	6.9	27	646	47	4.5	3.2	41	7.1
19	63	10	39	33	5.9	28	457	36	4.0	3.2	38	6.0
20	61	12	38	27	5.6	21	359	35	4.0	2.7	21	12
21	45	8.3	36	22	5.1	18	313	46	9.0	2.7	20	13
22	12	8.4	32	22	4.0	19	359	62	9.0	2.7	14	13
23	11	8.0	30	24	5.8	23	227	60	5.0	2.2	14	9.3
24	17	7.3	30	25	6.4	25	182	51	3.7	1.7	7.9	12
25	20	7.2	30	24	7.8	54	174	41	3.2	1.2	6.3	8.3
26	53	6.2	28	23	8.3	101	146	40	3.0	1.2	17	14
27	60	6.9	22	21	22	166	115	39	2.8	1.7	7.3	25
28	58	8.7	19	20	37	322	115	34	2.7	1.7	7.2	21
29	43	8.5	21	23	36	556	91	25	2.6	2.2	9.7	13
30	38	8.4	24		49	822	61	21	2.5	2.2	8.3	19
31		13	26		42		54		2.4	2.7		13
TOTAL sec.ft.	1463	460.7	831	734	471.1	3086	11862	1529	332.2	116.6	1420.3	288.4
ac.ft.	2900	953	1650	1460	934	6120	23530	3030	659	231	2820	574

THE YEAR 44,880 acre-ft.

APPENDIX "B-4"

River Flow into

John Martin Reservoir

Report-Year ending October 31,1980
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	119	63	132	144	116	105	1510	899	343	25	146	76
2	103	55	180	154	121	161	3660	671	491	24	115	86
3	101	62	212	155	136	136	2830	563	359	24	88	130
4	94	65	264	160	132	152	2380	338	573	23	64	107
5	98	59	221	167	139	109	963	206	766	20	49	79
6	73	54	221	149	142	112	975	127	631	20	39	73
7	82	54	223	149	136	117	914	151	490	19	36	76
8	70	41	230	147	141	96	1570	335	230	21	41	62
9	68	40	210	152	147	80	3390	913	112	26	398	55
10	74	42	200	157	130	78	2960	1130	95	36	465	47
11	70	37	227	157	126	69	3470	1420	78	78	251	39
12	70	36	243	147	116	65	3420	2190	78	52	195	38
13	69	31	262	146	113	70	2790	2250	99	57	308	39
14	79	33	268	145	136	64	1960	2660	96	40	395	38
15	74	50	270	157	154	70	1340	2290	88	1020	364	44
16	71	113	260	127	125	71	1630	2160	64	217	297	40
17	69	114	241	123	94	75	3700	1930	63	389	251	45
18	76	145	234	129	77	69	2850	2040	72	273	206	40
19	79	149	199	134	69	68	2390	3550	51	295	149	39
20	73	151	177	134	76	59	3060	4460	44	197	117	48
21	44	147	159	140	74	52	3740	4950	125	121	101	60
22	49	153	146	142	64	51	3820	5300	97	86	94	67
23	49	159	144	140	68	57	3140	4190	50	62	79	65
24	49	160	145	139	74	70	1910	2610	48	109	78	70
25	55	151	157	139	77	736	1580	1650	45	115	118	80
26	76	152	161	132	71	815	1950	1110	43	133	106	105
27	83	154	139	130	76	783	1800	1020	42	140	93	127
28	80	156	119	131	85	692	1500	864	42	184	88	131
29	65	223	121	123	81	1040	1480	594	40	243	90	102
30	57	212	124		93	1400	857	485	36	190		66
31		106	136		90		705		27			65
TOTAL sec.ft.	2224	3257	6023	4085	3282	7522	70894	53656	5299	4143	4947	2153
ac.ft.	4410	6460	11950	8100	6510	14920	140600	106500	10510	8220	9810	4270

THE YEAR 332,000 acre-ft.

APPENDIX "B-5"

Contents

John Martin Reservoir

Report-Year ending October 31, 1980
Corps of Engineers Records—Provisional; Subject to Revision
Midnight contents in acre-feet from capacity table dated Nov. 1, 1972

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	5309	9350	15324	26044	34377	41758	49969	166446	167810	67670	53691	45570
2	5444	9400	16176	26329	35085	42154	55375	166733	166251	85014	53365	45230
3	5603	9611	16550	26669	35333	42461	62430	167020	164023	82365	52859	44858
4	5773	9793	16964	27145	35612	42749	67478	166805	161905	79537	52426	44386
5	5989	9942	17202	27522	35861	43061	69964	166160	160494	78918	51924	44050
6	6014	10059	17605	27877	36174	43348	72113	165516	158419	77826	51494	43546
7	6138	10144	17987	28236	36445	43662	74399	164662	156348	71076	50889	43048
8	6231	10279	18103	28468	36707	43949	76306	163952	153951	68848	50428	43451
9	6405	10394	18289	28741	36990	44117	81273	163598	151185	66471	50428	41791
10	6541	10494	18517	29025	37148	44352	87216	162930	148810	65031	49863	41385
11	6705	10552	18780	29370	37432	44554	93223	162327	146884	63488	50463	40909
12	6844	10656	19156	29860	37718	44723	99099	162538	147870	62196	50605	40288
13	6956	10725	19579	29951	37945	44824	103297	163264	146277	61303	50428	39770
14	7094	10859	20073	30214	38068	44988	106822	164530	138361	60578	50180	39253
15	7265	10983	20618	30536	38323	45095	107961	165689	133301	59636	50286	38579
16	7361	11022	21147	30772	38611	45264	110897	166068	132213	59612	50257	38195
17	7501	11316	21688	31007	38771	45384	116704	166876	129457	58945	50263	37632
18	7662	11411	22344	31274	38900	45400	121771	167235	126741	59003	50251	37343
19	7751	11699	22870	31540	39092	45482	127532	168004	122767	58775	50180	36801
20	8061	12044	23075	31927	39157	45604	133832	169473	120839	58435	49899	36236
21	8158	12376	23434	32196	39295	44757	138552	169473	118358	57945	49547	35983
22	8172	12769	23774	32466	39414	43414	144045	169545	115572	57457	49195	35395
23	8295	13146	24089	32827	39602	42088	150827	173491	113677	56970	48845	35240
24	8447	13513	24498	33096	39834	41038	153357	179662	110185	56411	48461	35054
25	8540	13962	24778	33340	40061	41880	157730	178397	107816	55855	48069	35054
26	8695	14176	25083	33583	40125	43862	158419	177349	104449	55496	47490	34900
27	8857	14651	25078	33918	40613	45162	161274	175562	101794	55117	47317	34638
28	9027	15132	25229	34132	40642	46218	163033	175414	98988	54677	46835	34900
29	9123	15415	25380	34561	40897	46904	165069	175286	96039	54421	46475	35054
30	9220	15578	25567		40972	48566	165731	169980	93175	54301	46013	35209
31		15681	25798		41496		165945		90433	53909		35396

APPENDIX "B-5a"
Contents
John Martin Reservoir
Conservation Pool

Report-Year ending October 31, 1980
Contents of John Martin Reservoir Conservation Pool
(rounded to nearest acre-foot)

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	179	4464			14333	19443	0	62907	65061	6576	0	0
2	423					19867	2461	61751	64014	4943	0	0
3	595					20172	6521	60663	62307	3295	0	0
4	751					20498	8550	59162	60698	1470	0	0
5	878					20837	8420	57178	59742	empty at 2104 hours on		0
6	1011		8059				8617	55235	58256	5 Aug. 1980		0
7	1134			11761		21122	8810	53090	56852	0	0	0
8	1226				15162	20140	8946	51047	55302	0	0	0
9	1404	5498				19425	11835	49857	53139	0	0	0
10	1545					18611	15873	49382	51330	0	0	0
11	1716					14673	19014	49135	49855	0	0	0
12	1859		9444			13063	24213	49634	47096	0	0	0
13	1976					11252	27060	50806	45239	0	0	0
14	2109			12493		9353	28249	52362	44000	0	0	0
15	2285	6035				7393	28095	53342	41553	0	0	0
16	2420					5729	30560	54655	39259	677	0	0
17	2541				16030	3965	34896	56838	37213	empty at 1559 hours on		0
18	2706					2011	38679	58726	35486	17 Aug. 1980		0
19	2862					189	43047	58731	32565	0	0	0
20	3107		9565	13013	16562	92	46887	60175	30062	0	0	0
21	3317				16644	321	46887	60810	28047	0	0	0
22	3238	6606			16786	378	51401	61512	25785	0	0	0
23	3363				16934	0	55558	61053	23319	0	0	0
24	3522			13716	17339	0	61053	64061	21401	0	0	0
25	3620				17387	0	62274	71818	20004	0	0	0
26	3779				17650	0	63392	72235	17359	0	0	0
27	3926		10431		17710	0	64277	71816	15697	0	0	0
28	4130				18215	0	65448	70630	13873	0	0	0
29	4221	7865		14333	18460	0	65584	71012	11961	0	0	394
30	4322				18541	0	66101	69661	10128	0	0	634
31			10546		18622	0	65183	66686	8363	0		
					19162		63957					

APPENDIX "B-6"

Outflow from
John Martin Reservoir

Report-Year ending October 31, 1980
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	9.1	2.4	0.36	1.0	1.4	1.1	436	444	1440	1440	306	273
2	18	2.5	.36	.96	1.4	1.1	3.0	471	1430	1430	292	289
3	14	2.5	.36	.96	1.2	1.1	2.3	507	1440	1410	285	305
4	16	3.1	4.3	.96	1.2	1.1	2.2	525	1430	1410	282	305
5	17	3.5	1.7	.96	1.4	1.1	2.2	534	1440	1400	277	305
6	18	4.3	1.2	.96	1.2	1.2	4.1	543	1440	1430	263	341
7	18	4.0	1.0	.96	1.2	.96	3.2	552	1420	1430	254	341
8	18	4.0	1.0	.96	1.2	1.2	3.2	552	1470	1450	250	321
9	18	4.0	1.0	.96	1.2	1.2	3.1	641	1540	1240	263	321
10	18	4.0	1.0	.96	.95	1.4	2.7	1280	1510	715	266	321
11	18	4.0	1.0	.96	.95	1.0	2.4	1290	1500	709	250	305
12	18	4.0	1.0	.96	.95	1.2	205	1330	1490	600	301	283
13	13	4.0	1.0	.96	.95	1.1	329	1410	1470	461	318	289
14	10	4.0	1.0	.96	.73	.95	326	1460	1490	446	306	273
15	10	4.0	1.0	.96	.73	.95	317	1470	1490	479	300	265
16	10	4.0	1.0	.96	.73	.95	311	1450	1480	479	313	265
17	10	2.4	1.0	.96	1.2	.95	307	1470	1530	464	311	273
18	10	.54	1.0	.96	.96	1.1	306	1510	1530	446	332	265
19	10	.53	1.0	.96	1.2	.53	305	1530	1450	406	320	269
20	10	.53	1.0	.96	1.2	.96	305	1480	1420	397	297	261
21	10	.53	1.0	.96	.73	476	307	1470	1440	404	297	265
22	10	.53	1.0	.96	.53	702	309	1480	1460	369	285	253
23	10	.53	1.0	.96	.96	940	314	1480	1450	320	284	260
24	10	.53	1.0	.96	1.2	772	316	1530	1470	317	286	155
25	10	.36	1.0	.96	.73	3.3	323	1480	1500	348	306	146
26	10	.36	1.0	.96	.75	2.5	328	1490	1490	369	306	146
27	10	.36	1.0	.96	.98	2.3	349	1470	1480	332	296	112
28	6.0	.36	1.0	.96	1.4	304	394	1470	1480	307	306	109
29	3.6	.36	1.0	.96	1.5	664	403	1460	1440	306	310	61
30	2.6	.36	1.0	.95	1.2	639	430	1440	1490	305	298	31
31		.36	1.0		1.1		444		1450	303		20
TOTAL sec.ft.	305.3	66.94	33.28	27.60	33.01	4534.64	7062.4	35439	45550	21933	8770	7398
ac.ft.	725	133	66	55	65	8990	14070	70290	90350	43500	17400	14670

THE YEAR 260,300 acre-ft.

APPENDIX "B-7"

Daily Discharges

Arkansas River at Lamar, Colorado

Report Year ending October 31, 1960
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	11	15	18	11	12	40	650	69	930	935	57	38
2	8.2	16	20	13	17	45	40	65	900	904	70	38
3	9.0	16	20	16	14	40	40	71	880	880	59	38
4	11	16	18	18	13	33	48	67	880	863	60	40
5	15	14	18	20	11	32	48	67	900	857	58	43
6	20	13	18	20	11	27	48	76	900	850	53	43
7	26	17	17	19	9.8	24	40	78	900	867	49	47
8	29	19	15	17	9.4	27	37	88	900	865	48	49
9	29	17	15	17	7.8	26	38	116	950	796	49	49
10	33	22	15	19	7.8	18	25	642	1000	392	51	46
11	36	20	16	19	7.4	19	36	710	1000	354	49	44
12	30	18	17	19	7.4	16	30	714	1000	245	47	40
13	20	16	17	16	8.2	17	51	770	1000	143	46	40
14	7.7	16	17	16	8.0	19	49	782	980	88	47	38
15	12	16	17	15	8.0	14	48	795	960	83	47	38
16	15	17	17	15	8.0	12	59	785	960	80	47	38
17	18	17	18	17	8.0	12	48	727	960	78	47	36
18	19	17	19	17	8.0	11	45	841	957	78	47	36
19	16	16	19	17	7.8	11	41	879	964	77	47	36
20	31	20	19	15	7.4	14	34	859	931	63	45	36
21	17	20	19	15	8.2	89	26	849	945	62	45	38
22	17	20	19	13	7.8	520	26	891	932	62	43	38
23	17	20	19	12	10	596	19	841	926	63	43	34
24	17	20	19	12	17	796	12	875	947	62	44	34
25	18	19	19	11	20	300	8.3	897	967	61	43	53
26	18	17	16	12	18	138	8.2	946	989	63	42	42
27	17	17	13	11	17	99	8.4	886	979	62	39	36
28	15	16	9.0	11	17	81	35	928	976	61	37	35
29	15	15	8.0	10	18	250	36	950	962	61	37	36
30	15	15	8.0		25	700	33	950	989	60	38	30
31		15	10		35		65		974	58		28
TOTAL												
sec.ft.	561.9	534	509.0	443	394.0	4026	1731.9	18214	29458	10193	1434	1217
ac.ft.	1110	1060	1010	879	782	7980	3440	36130	58430	20220	2840	2410

THE YEAR 136,300 acre-ft.

APPENDIX "B-8"

Daily Discharges

Arkansas River at Colorado-Kansas Stateline

Report-Year ending October 31, 1960
USGS Records—Provisional; Subject to Revision

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	8.7	6.3	5.0	15	23	70	622	59	731	809	66	33
2	7.2	6.6	4.9	17	23	74	716	61	727	808	65	37
3	5.8	7.0	4.8	22	40	86	449	52	781	796	58	35
4	5.0	6.5	5.2	28	39	83	307	50	775	788	54	32
5	5.6	5.9	5.2	40	39	87	259	46	777	733	47	28
6	3.7	5.9	5.0	38	39	87	210	57	751	746	49	26
7	3.4	5.9	4.6	37	35	84	203	54	765	723	43	25
8	3.9	4.9	4.2	28	36	80	190	49	774	715	40	32
9	5.8	5.4	15	21	35	77	178	52	791	733	36	33
10	4.7	5.1	47	20	34	74	169	76	782	664	38	39
11	7.8	5.1	17	18	35	75	154	252	766	495	39	38
12	8.4	5.2	15	19	36	71	135	332	737	380	35	38
13	8.4	5.2	11	18	35	63	119	416	728	312	32	40
14	9.1	6.2	14	18	34	62	116	446	726	250	32	40
15	9.1	5.2	12	18	34	66	130	516	747	233	47	46
16	5.9	5.3	22	18	33	67	157	547	757	497	36	53
17	5.9	5.3	21	18	32	64	146	562	752	216	35	48
18	6.5	9.8	27	20	31	60	132	554	735	177	41	50
19	6.8	7.1	30	25	30	58	122	621	761	152	39	43
20	7.1	5.4	28	25	27	56	118	728	796	139	38	42
21	7.1	5.9	28	25	25	47	105	741	806	128	33	43
22	8.4	4.9	28	25	25	54	101	759	783	126	31	49
23	8.4	4.9	28	25	26	226	98	749	772	122	30	39
24	5.4	4.9	29	25	30	467	96	768	779	100	27	73
25	4.1	4.5	30	25	30	742	88	757	788	85	32	60
26	5.4	4.9	22	30	32	491	80	761	788	99	36	48
27	5.4	6.2	15	35	41	262	74	767	806	103	44	48
28	5.6	6.0	15	35	40	202	82	729	812	106	41	44
29	5.8	5.4	15	30	41	165	63	726	820	94	36	43
30	6.0	5.4	15		44	451	64	741	776	83	37	44
31		5.2	15		49		57		789	73		44
TOTAL												
sec.ft.	190.1	176.3	538.9	717	1055	4601	5519	13072	23882	11468	1221	1307
ac.ft.	377	350	1070	1420	2090	9130	10950	25930	47370	22750	2420	2590

THE YEAR 136,500 acre-ft.

APPENDIX "B-9"

Transfer of Water from the John Martin Reservoir Conservation Pool into Agreement Accounts

Daily transfer of Conservation Pool water into Agreements Accounts 1)
Report Year Ending October 31, 1980
(acre-feet)

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	0	0	0	0	0	0	1128	2500	2500	2000	0	0
2						0	2000	2500	2500	2000		
3						0	2000	2500	2500	2000		
4						0	2000	2500	2500	2000		
5						0	2000	2500	2500	1756		
6						0	2000	2500	2500	0		
7						2) 17571	2000	2500	2500			
8						3) 1800	2000	2500	2500			
9							2000	2500	2500			
10							2000	2500	2500		0	
11							2000	2500	2500		295	
12							2000	2500	2500		1147	
13							2000	2500	2500		0	
14							2000	2500	2500			
15							2000	2500	2500	0		
16							2000	2500	2500	735		
17							2000	2500	2500	1332		
18							2000	2500	2500	0		
19							2000	2500	2500			
20							2000	2500	2500			
21							2000	2500	2500			
22							2000	2500	2500			
23							2000	2500	2500			
24							2000	2500	2500			
25							2000	2500	2295			
26							2500	2500	2000			
27							2500	2500	2000			
28							2500	2500	2000			
29							2500	2500	2000			
30							2500	2500	2000			905
31							2500		2000	0		905
Totals	0	0	0	0	0	45729	64128	75000	74295	11843	1442	905

1) All conservation pool water was apportioned as follows into Colorado and Kansas Accounts: 35% of all water deliveries to John Martin Reservoir or up to 1700 acre-feet to the Kansas transit loss account, then 40% to Kansas and 60% to Colorado, as described in the 1969 Colorado-Kansas Storage Resolution.

2) Amity Winter Water

3) 200 A.F. into Transit Account

APPENDIX "B-10"

Demands by Colorado for Account Water

Requests by Colorado Ditches for Account Water in John Martin Reservoir
Report-Year ending October 31, 1980
(acre feet)

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	0	0	0	0	0	0	0	892	1313	1292	147	444
2							0	946	1316	1299	304	354
3							0	1023	1310	1284	399	300
4							0	1045	1306	1284	399	300
5							0	1074	1306	1284	412	300
6							0	1099	1306	1265	406	394
7							0	1106	1429	1253	399	450
8							0	1106	1515	1278	399	450
9							0	1158	1523	1256	399	450
10							0	1273	1523	1233	429	450
11							0	1299	1523	1113	504	450
12							375	1336	1523	888	0	450
13							600	1414	1523	885	0	461
14							600	1525	1513	967	0	500
15							600	1606	1507	1021	0	500
16							600	1539	1494	1021	0	500
17							600	1413	1497	946	0	500
18							600	1404	1380	346	0	469
19							600	1459	1266	158	0	450
20							600	1414	1248	136	100	419
21							600	1430	1291	337	300	363
22							600	1449	1306	442	300	340
23						510	600	1422	1295	494	300	253
24						457	600	1421	1288	512	331	134
25						0	600	1430	1288	315	350	69
26						0	600	1413	1288	291	409	50
27						0	713	1349	1288	348	444	19
28						0	822	1338	1288	348	444	0
29						0	841	1338	1304	222	444	35
30						0	677	1319	1304	147	444	61
31						0	802		1264	147		61
Totals	0	0	0	0	0	947	12920	39011	42525	23712	8065	9986

APPENDIX "B-11"

Demands by Kansas for Account Water

Requests by Kansas for Account Water in John Martin Reservoir
not including transit loss releases
Report-Year ending October 31, 1980
(acre feet)

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	0	0	0	0	0	0	750	0	1600	1600	0	
2							0		1600	1600		
3									1600	1600		
4									1600	1600		
5									1600	1600		
6									1600	1600		
7									1600	1600		
8									1600	1600		
9								500	1600	611		
10								1200	1600			
11								1200	1600			
12								1200	1600			
13								1200	1600			
14								1200	1600			
15								1200	1600			
16								1200	1600			
17								1367	1600			
18								1600	1600			
19								1600	1600			
20						0		1600	1600			
21						667		1600	1600			
22						1000		1600	1600			
23						1000		1600	1600			
24						708		1600	1600			
25						0		1600	1600			
26						0		1600	1600			
27						0		1600	1600			
28						375		1600	1600			
29						1000		1600	1600			
30						1000		1600	1600			
31									1600			
Totals	0	0	0	0	0	5750	750	31067	49600	13411	0	0

APPENDIX "B-12"

Stateline Flows on Days of Kansas Demands

Stateline Flow on Days following Kansas Demands
Report-Year ending October 31, 1980
(cubic feet per second)

DAY	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
1	0	0	0	0	-0	0	622	0	731	809	0	
2							716		727	808		
3							449		781	798		
4							307		775	798		
5							259		777	773		
6							210		751	746		
7							203		765	723		
8							180		774	715		
9							178		791	733		
10							169		782	664		
11							154	252	786	435		
12							135	352	737	390		
13								416	728	312		
14								446	728	250		
15								516	747	233		
16								547	757	497		
17								582	752	216		
18								554	735	177		
19								621	761	132		
20								728	786	139		
21								741	806	128		
22								759	783	128		
23						286		749	772	122		
24						467		768	779	100		
25						742		757	788			
26						491		761	788			
27						262		767	806			
28						202		729	812			
29						165		726	820			
30						431		741	776			
31									789			
Totals (cfs)	0	0	0	0	0	3046	3582	12514	23882	10836	0	0
(A.F.)						6042	7105	24822	47370	21493		

APPENDIX "B-13"
Diversions by Ditches in Colorado Water Districts 14 and 17

Diversions by Ditches in Colorado
Water Districts 14 & 17

NAME OF CANAL	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	YEAR
Bessemer (Riv.)	4,270	0	0	0	2,220	4,310	8,310	13,850	11,940	4,360	4,310	4,390	57,970
Res. or Imported	0	0	0	0	0	0	0	0	2,880	4,960			7,870
Total: Bessemer	4,270	0	0	0	2,220	4,310	8,310	13,850	14,820	9,320	4,310	4,390	65,840
Minnequa Ft. Union	7,390	7,630	7,530	7,150	7,600	4,840	662	*3,920	10,540	9,700	7,480	8,090	82,522
West Pueblo (Riv.)	80	0	0	0	0	51	55	356	246	168	162	172	1,290
Excelsior (Riv.)	0	0	0	0	0	57	1,200	2,350	674	100	0	0	4,380
Res. or Imported	0	0	0	0	0	0	0	0	100	430	0	0	530
Total: Excelsior	0	0	0	0	0	57	1,200	2,350	774	530	0	0	4,910
Collier	0	0	0	0	0	0	60	695	95	0	0	0	850
Colorado Canal (Riv.)	0	0	0	0	0	5,490	30,080	30,400	7,640	0	0	0	73,610
Res. or Imported	0	0	0	6,430	0	0	0	0	15,000	14,430	390	0	36,240
Total: Colo. Canal	0	0	0	6,430	0	5,490	30,080	30,400	22,640	12,430	390	0	109,850
Highline (Riv.)	3,840	0	0	0	2,560	5,820	12,340	21,770	10,910	4,980	4,010	4,550	70,730
Res. or Imported	0	0	0	0	1,060	1,430	0	0	5,230	8,120	2,950	2,080	20,810
Total: Highline	3,840	0	0	0	3,620	7,250	12,340	21,770	16,140	13,050	6,960	6,570	91,540
Oxford Farmers (Riv.)	1,760	0	0	0	776	1,220	2,090	5,430	7,060	1,980	850	960	22,140
Res. or Imported	0	0	0	0	0	0	0	0	0	1,100	1,220	0	2,320
Total: Oxford Farmers	1,760	0	0	0	776	1,220	2,090	5,430	7,060	3,080	2,070	960	24,456

Total: District #14 313,492 not subtracting import water on Minnequa = 9050

Import District #14 67,770 not adding import water on Minnequa = 9050

TOTAL 381,262

*Minnequa imported water

APPENDIX "B-13"

Diversions by Ditches in Colorado Water Districts 14 and 17

Diversions by Ditches in Colorado
Water Districts 14 & 17

NAME OF CANAL	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	YEAR
Otero	0	0	0	0	0	640	1,740	2,800	850	0	0	0	6,030
Res. or Imported	0	0	0	0	0	0	0	0	0	672	0	326	998
Total: Otero	0	0	0	0	0	640	1,740	2,800	850	672	0	326	7,028
Catlin Canal (Riv.)	4,600	0	0	0	4,010	4,980	7,920	16,530	15,040	14,170	7,360	8,310	82,920
Res. or Imported	0	0	0	0	0	0	0	0	1,500	5,350	1,240	1,400	9,490
Total: Catlin	4,600	0	0	0	4,010	4,980	7,920	16,530	16,540	19,520	8,600	9,710	92,410
Holbrook (Riv.)	0	0	1,790	5,450	1,100	0	0	0	0	0	0	0	8,340
Res. or Imported	0	0	0	0	6,470	3,990	8,640	16,530	11,270	11,520	6,880	0	65,280
Total: Holbrook	0	0	1,790	5,450	7,570	3,990	8,640	16,530	11,270	11,520	6,880	0	73,620
Rocky Ford	2,720	1,470	0	660	1,220	1,780	2,420	5,940	5,730	5,730	5,340	4,740	36,250
Ft. Lyon Storage	0	12,210	13,160	10,340	5,380	0	30,170	41,120	8,380	0	0	0	120,760
Ft.Lyon (Riv.)	26,380	4,800	0	0	9,280	28,460	53,630	53,080	45,080	14,800	11,340	11,650	257,570
Res. or Imported	0	0	0	0	0	0	0	0	0	15,440		0	15,440
Kicking Bird*	0	0	0	0	0	540	4,120	7,730	2,830	0	0	0	15,210
Total: Ft. Lyon K.B.	26,380	17,110	13,160	10,340	14,660	29,000	87,910	100,930	56,290	30,240	11,340	11,650	408,980
Las Animas Consol.	2,230	0	0	0	490	2,300	3,560	5,860	5,400	3,330	2,880	3,060	29,100
Res. or Imported										1,000	1,290		2,290
													31,390

Total: Dist. #17 838,180
Total: Dist. #14-#17 871,672 not subtracting import water on Minnequa = 9050
Res. or Imp. #14-#17 161,268 not adding import water on Minnequa = 9060

Grand Total 1,032,940

APPENDIX "B-14"
Diversions by Ditches in Colorado Water District 67

Diversion in Ditches for District 67, Division 2
Report-Year ending October 31, 1980
Source: Water Commissioners Monthly Reports
(Acre-Feet)

NAME OF CANAL	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	YEAR
Fort Bent	248	0	0	0	0	20	71	4321	4461	3810	1742	1669	16202
Keesee Ditch	495	162	0	0	0	0	111	943	1069	1059	927	840	5504
Amity	0	0	0	0	0	552	9831	18206	24570	24122	14020	13490	104392
Lamar	911	689	697	717	673	1160	3548	7310	6303	4726	3643	4154	33432
Hyde Ditch	0	0	0	0	0	0	0	0	54	394	162	123	723
Manvel	0	0	0	0	0	0	0	103	737	236	0	0	1077
X, Y, & Graham	0	0	0	0	0	0	107	1913	2394	2138	1636	1325	9512
Buffalo	733	212	0	0	0	148	1286	4506	5823	4307	3067	2822	22513
Total: District	2386	1063	697	717	673	1881	13854	37101	44569	40794	25198	24421	193355
Trans. Mtn. Diversions	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2386	1063	697	717	673	1881	13854	37101	44569	40794	25198	24421	193355

APPENDIX "B-15"

Diversion by Ditches in Kansas, Stateline to Garden City

Report Year Ending October 31, 1980
(Acre-Feet)
Frontier Ditch, USGS Records
Other Ditches, Kansas Division of Water Resources Records

	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	YEAR
Frontier Ditch	39	0	0	0	0	0	824	2069	2650	2191	1660	434	9,857
Ft. Aubrey Canal	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Stateline To Syracuse	39	0	0	0	0	0	824	2069	2650	2191	1660	434	9,857
Amazon Canal	0	0	0	0	0	0	3364	3017	3637	3138	0	0	12,556
Great Eastern Canal	0	0	0	0	0	0	2644	4516	8247	5871	1267	0	22,345
South Side Ditch	0	0	0	0	0	0	0	0	5476	3923	0	0	9,399
Farmers Ditch	0	0	0	0	0	910	1632	1749	5957	4017	0	0	14,245
Garden City Canal	0	0	0	0	0	0	0	39	1060	412	0	0	1,531
Total Syracuse To Garden City	0	0	0	0	0	910	7640	9321	23,777	17,161	1267	0	60,076
Total Stateline To Garden City	39	0	0	0	0	910	9464	11,390	26,427	19,352	2927	434	69,933

APPENDIX "B-16"

Summary Tabulation

Summary Tabulation
(acre-feet)

	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	YEAR
Arkansas River at Las Animas, Colorado	1490	5460	10500	6650	5580	6900	117100	103400	9850	7990	6800	3690	287,000
Purgatoire River near Las Animas, Colorado	2800	953	1650	1460	934	6120	23330	3050	669	231	2820	574	44,860
Inflow to John Martin Reservoir	4410	6460	11950	8100	6510	14920	140800	106500	10510	8220	9610	4270	332,000
Reservoir Contents at end of Month	9220	15680	25730	34580	41500	48570	165650	166980	90450	53910	46010	35400	
Net Change in Reservoir Contents	+4180	+6460	+10110	+8770	+6940	+7070	+117380	+4040	-79550	-36520	-7900	-10170	
Outflow from John Martin Reservoir	725	133	66	55	65	8900	14070	70290	93150	43500	17400	14670	263,100
Diversion in District 67, Colorado	2396	1063	697	717	673	1881	13894	37101	44599	40784	25198	24421	193,355
Flow at Colorado-Kansas Stateline	377	350	1070	1420	2080	9130	10950	25930	47370	22750	2420	2590	126,500
Diversion in Kansas (from Stateline to Garden City)	39	0	0	0	0	910	6464	11,380	26,427	19,352	2927	434	69,933

APPENDIX "C-1"

Resolution

CONCERNING
AN OPERATING PLAN FOR
JOHN MARTIN RESERVOIR

WHEREAS, the Arkansas River Compact Administration, hereinafter referred to as the Administration, recognizes that, because of changes in the regime of the Arkansas River, the present operation of the conservation features of John Martin Reservoir does not result in the most efficient utilization possible of the water under its control;

WHEREAS, the Administration finds that adoption of an operating plan that establishes storage accounts for Kansas, for the ditches of Colorado Water District 67, and for other Colorado ditches as provided herein may result in more efficient utilization of the water under its control; and

WHEREAS, the Administration finds that provisions of the operating plan contained herein are permitted by and in compliance with the Arkansas River Compact, hereinafter referred to as the Compact; and the Rules and Regulations; and the Bylaws adopted by the Administration;

NOW THEREFORE, BE IT RESOLVED that the Administration approves and adopts the following operating plan:

I. Definitions:

A. "Periods of winter storage" consists of the period of time commencing on November 1 of each year and continuing to the first exhaustion of conservation storage during the compact year.

B. "Summer storage season" shall be the period of time commencing at the first exhaustion of conservation storage and continuing to and including the next succeeding October 31.

C. "Inflows" include all the normal accretions into John Martin Reservoir, measured or otherwise, including river flow but not including deliveries into the permanent pool or deliveries of other water as subsequently defined herein.

D. "Conservation storage" is water stored in the conservation pool that, but for the adoption of this resolution, would have comprised of the benefits arising from the construction of John Martin Reservoir.

E. "Other water" for regulation by John Martin Reservoir is water delivered into the accounts established in Section III, herein, and delivered under the authority of pre-Compact Colorado water rights. Deliveries of other water are permitted to gain increased utilization and greater beneficial use.

F. "Compact year" is the water accounting year of the Administration; it commences on November 1 of each year and extends to and includes the next succeeding October 31.

G. Except as provided herein, all words and terms used in this resolution have the meaning prescribed in Compact Article III.

II. Operating Principles:

A. Period of Winter Storage—

All inflows into John Martin Reservoir during a period of

winter storage shall accrue to conservation storage. Conservation storage shall be released into the accounts specified in Subsection II D beginning at the first request for release after March 31 of account water by a Colorado Water District 67 ditch or by Kansas or beginning at 8:00 a.m. on April 7, whichever occurs first.

B. Summer Storage Season—

(1) When a runoff event occurs during the summer storage season, such that inflows into John Martin Reservoir are expected to exceed then existing irrigation requirements of the ditches in Colorado Water District 67 by at least 1,000 acre-feet, then the gates on John Martin Reservoir shall be closed commencing conservation storage except for releases of account water pursuant to Subsection II E, herein.

(2) The ditches in Colorado Water District 67 will be removed from the Colorado priority system when the sum of the flows of the Arkansas River at the Las Animas gaging station and the Purgatoire River at the Las Animas gaging station, exclusive of separate deliveries of other water under Section III, herein, indicates that conservation storage will occur.

(3) All inflows entering said reservoir during a period of conservation storage in the summer storage season shall accrue to conservation storage. Conservation storage shall be released into the accounts specified in Section II D beginning at the first request for release of account water by a Colorado Water District 67 ditch or by Kansas or beginning 48 hours after commencement of conservation storage, whichever occurs first.

C. Exhaustion of Conservation Storage—

(1) For the purposes of Compact Article V F, the conservation pool shall be deemed exhausted whenever conservation storage has been completely released into the accounts. When this occurs, Colorado shall administer the decreed rights of water users in Colorado Water District 67 as against each other and as against all rights now or hereafter decreed to water users diverting upstream from John Martin Dam on the basis of relative priorities in the same manner in which their respective priority rights were administered before John Martin Reservoir began to operate and as though John Martin Dam had not been constructed. However, during these times, inflows shall, to the extent practical, be measured and released from the reservoir without temporary storage or averaging flows, and conservation storage may not be accumulated nor may storage in the accounts be increased except by deliveries of other water under Section III, herein.

(2) Administration in Colorado under decreed priorities shall be initiated so that ditches upstream from John Martin Reservoir shall deliver to the priorities of Colorado Water District 67 ditches water at the Arkansas River at the Las Animas gaging station coincident with the exhaustion of the conservation storage when taking the flow of all waters, including that of the Purgatoire River, into appropriate consideration.

D. Release into the Accounts—

(1) When conservation storage is being released into the accounts according to the provisions of Subsections II A or II B, herein, it shall be released at the total rate of 1,000 cfs. However, when conservation storage exceeds 20,000 acre-feet, it shall be released at the total rate of 1,250 cfs.

(2) Releases of conservation storage shall be into accounts and said releases shall be apportioned 60 percent for the accounts of the Colorado Water District 67 ditches and 40 percent for the Kansas account.

(3) The releases for the Colorado Water District 67 ditches shall be distributed into individual accounts according to the following percentages:

Fort Bent	9.90 percent
Keesee	2.30 percent
Amity	49.50 percent
Lamar	19.80 percent
Hyde	1.30 percent
Manvel	2.40
X-Y & Graham	5.10 percent
Buffalo	8.50 percent
Sisson-Stubbs	1.20 percent

E. Releases Out of Accounts—

(1) Kansas and the various Colorado ditches may demand the release of water contained in their respective accounts, including those established in Section III herein, at any time at whatever rates they desire.

(2) Releases of water from the accounts, including those established in Section III herein, may be made simultaneously with releases from conservation storage into the accounts. However, such simultaneous releases cannot create deficits in those accounts.

(3) All such releases of account water from John Martin Reservoir to Colorado water users are subject to transit losses between John Martin Dam and the point of diversion from the Arkansas River, as determined by the Colorado Division Engineer, and the transit losses shall be borne by such releases.

(4) Releases of Kansas account water shall be measured at the Stateline as provided in Compact Article V E (3) allowing appropriate arrival times. If transit losses occur, those losses shall be determined by the Colorado Division Engineer and a representative of the Kansas Division of Water Resources and shall be replenished from the Kansas transit loss account. In the event that such losses at the end of the delivery are greater than the total in the Kansas transit loss account, then the deficit shall be made up from the next available transfers of other water under Subsection III D.

(5) The water users and the responsible officials of both Colorado and Kansas shall do their utmost to achieve maximum beneficial use including calling for deliveries of Kansas account water during reasonable and favorable river conditions. When transit losses are deemed by the Colorado Division engineer to be excessive, he shall so advise the receiving entity. Conversely, when river conditions are favorable for a delivery to Kansas, he

shall so advise the Kansas Water Commissioner.

F. Evaporation charges shall be made against water stored in the accounts, including those established in Section III, herein, and the Kansas transit loss account, using formulas and procedures approved by the Colorado Division Engineer and a representative of the Kansas Division of Water Resources and using, when available, pan evaporation data provided by the Corps of Engineers. The evaporation charges shall be prorated amongst conservation storage and the accounts according to the amounts in them.

G. In the event that runoff conditions occur in the Arkansas River basin upstream from John Martin Reservoir that cause water to spill physically over the project's spillway, then water stored in the accounts granted in Section III shall spill before the accounts granted in Section II, both of which shall spill before conservation pool water. The amount of spill from the accounts shall be prorated amongst them according to the amounts in them at the beginning of spill. During times of spill, the permanent pool shall occupy flood control space as provided in the Administration's Resolution of August 14, 1976, and Public Law 89-298.

III. Other Water for Regulation by John Martin Reservoir:

A. The Amity may store such water as it could otherwise divert from the Arkansas River for storage in the Great Plains Reservoir system in its account granted in Section II, herein. This water will be in addition to water released into the Amity account under Section II, herein.

B. An account for the Fort Lyon Canal is hereby granted in John Martin Reservoir for agricultural purposes only. The Fort Lyon Canal may deliver water into said account under an approved Pueblo winter storage plan subject to the limitations that total quantity in the account at any time cannot exceed 20,000 acre-feet and that the delivery cannot include water that otherwise would have accumulated in conservation storage. The Fort Lyon may use water in this account for exchange with existing priorities. However, this account shall not be used in any manner to increase the permanent recreation pool, either by exchange, transfer, change of use, or otherwise. In the event that water accumulated in this account has not been completely released by the end of the compact year, then that water shall become conservation storage controlled by Subsection II A, herein.

C. An account for the Las Animas Consolidated Canal Company is hereby granted in John Martin Reservoir for agricultural purposes only. The Las Animas Consolidated Canal Company may deliver water into said account under an approved Pueblo winter storage plan subject to the limitations that total quantity in the account at any time cannot exceed 5,000 acre-feet and that the delivery cannot include water that otherwise would have accumulated in conservation storage. The Las Animas Consolidated may use water in this account for exchange with existing priorities. However, this account shall not be used in any manner to increase the permanent recreation pool, either by exchange, transfer, change of use, or otherwise. In the event

that water accumulated in this account has not been completely released by the end of the compact year, then that water shall become conservation storage controlled by Subsection II A.

D. Thirty-five percent of all water deliveries to John Martin Reservoir, under Subsections III A, III B, and III C, herein, during any compact year shall be transferred into the accounts for Kansas transit losses, for Kansas, and for Colorado Water District 67 ditches at the time of delivery in the following manner: First, transfers from deliveries shall make up deficits, if any, in the Kansas transit loss account which result from Subsection II E (4), herein, and shall then also fill the said Kansas transit loss account to the amount of 1,700 acre-feet. Then, of all such water delivered in excess of this specified amount, 11 percent of those deliveries shall be transferred to the Kansas account and 24 percent of those deliveries shall be transferred to the account of the Colorado Water District 67 ditches. Transfers into the accounts for Colorado Water District 67 ditches shall be distributed according to the percentages in Subsection II D (3), herein; except the Amity shall not share in distributions of deliveries under Subsection III A, herein.

IV. A permanent recreation pool has been authorized by the August 14, 1976, Resolution of the Administration. For purposes of the Resolution, this permanent recreation pool shall be considered a separate account and deliveries made to it are not subject to the transfers provided in Subsection III D, herein. The permanent recreation pool will, however, stand its pro rata share of evaporation as provided in the administration's Resolution of August 14, 1976.

V. In the event of injury either to entities in Colorado or to Kansas, there shall be restitution from the first account water thereafter available from the entity receiving improper benefits. The engineering committee shall quantify such injury, subject to the approval of the Administration.

VI. Adoption of this resolution does not prejudice the ability of Kansas or of any Colorado ditch to object or to otherwise represent its interest in present or future cases or controversies before the Administration or in a court of competent jurisdiction.

VII. This agreement shall be, and continue to be, in full force and effect from and after the date of execution of this resolution until March 31, 1981, and year to year thereafter subject to the following provisions:

A. Not later than November 15 of each year, the Colorado Division Engineer shall make an accounting of the operation under this resolution for the previous compact year available to the Operations Committee of the Administration and to interested parties. Either Colorado or Kansas, through its compact delegation, may then terminate this resolution on the next succeeding March 31 by giving written notice to the administration by February 1 of the same compact year.

B. In the event this resolution is so terminated, then entities storing water in accounts prior to such termination may utilize such water during the next irrigation season under the provisions of this resolution. Water not utilized by the following November 1 shall revert to conservation storage.

VIII. This resolution supersedes in its entirety the agreement of December 12, 1978, concerning Amity-Great Plains water and the Resolution concerning an Interim Operating Plan for John Martin Reservoir entered into on March 21, 1980. All water delivered into the accounts established under the authorities of these two resolutions shall be forwarded and credited, without deductions, to the accounts for the same entities that are established in this operating plan.

Entered this 24th day of April, 1980, by special telephonic meeting.

/s/ Frank G. Cooley
Chairman
Arkansas River Compact
Administration

/s/ Leo Idler
Secretary
Arkansas River Compact
Administration

(SEAL)

APPENDIX "C-2"

Resolution

CONCERNING
WATER FOR THE JOHN MARTIN
RESERVOIR PERMANENT POOL

Be it resolved by the Arkansas River Compact Administration that water imported into the Arkansas River basin from the Colorado River basin in western Colorado is hereby approved as an additional source of water supply, subject to the August 14, 1976, resolution of the Compact Administration, for the permanent recreation pool in John Martin Reservoir provided that adequate transit losses are charged during its delivery, which losses shall be determined by the Division Engineer for Division 2, Colorado Division of Water Resources.

Entered this 15th day of April, 1980, during a special telephonic meeting.

/s/ Frank G. Cooley
Chairman

/s/ Leo Idler
Secretary

APPENDIX "C-3"

Resolution

CONCERNING
AN INVESTIGATION OF
TRINIDAD RESERVOIR OPERATIONS

WHEREAS, it has come to the attention of the Arkansas River Compact Administration that 18,290 acre-feet of water stored under the Model Reservoir water right in Trinidad Reservoir during compact year 1979 was transferred to the joint use pool on September 28, 1979 by action of the Board of Directors of the Purgatoire River Water Conservancy District without objection from the Divison Engineer for Division 2, Colorado Division of Water Resources; and

WHEREAS, an additional 20,000 acre-feet was stored in Trinidad Reservoir under the Model Reservoir right during compact year 1980; and

WHEREAS, the State of Kansas has questioned whether these actions are in conformity with the operating principles for Trinidad Reservoir;

NOW, THEREFORE, BE IT RESOLVED that pursuant to Article VIII, paragraph H of the Arkansas River Compact, the Compact Administration shall cause an investigation to be made of these circumstances; and

BE IT FURTHER RESOLVED that this investigation shall be accomplished on behalf of the Compact Administration by the Colorado Water Conservation Board and the Kansas Division of Water Resources, which entities shall conduct said investigation as promptly as possible and report their determinations to the Compact Administration as soon as possible after the adoption of this resolution.

Entered this 30th day of June, 1980, at a special meeting of the Compact Administration held in Lamar, Colorado.

/s/ Frank G. Cooley, Chairman
Arkansas River Compact
Administration

/s/ Leo Idler, Secretary
Arkansas River Compact
Administration

APPENDIX "C-4"

Resolution

CONCERNING
TRINIDAD RESERVOIR

WHEREAS, the Arkansas River Compact Administration has made findings of fact relative to Trinidad Reservoir in Colorado, which findings were made at the special meeting of the Administration held in Lamar, Colorado, on September 25, 1980 (copy attached);

NOW THEREFORE, BE IT RESOLVED that the Administration goes on record as recognizing that the findings of fact made by the Administration have raised a question as to whether the waters of the Arkansas River have been materially depleted in usable quantity or availability for use to the water users in Colorado and Kansas; and

BE IT FURTHER RESOLVED that the Administration recommends that the Kansas State Engineer confer with the Colorado State Engineer to make further inquiries into this question as expeditiously as possible.

Entered this 25th day of September, 1980, at a special meeting of the Administration held in Lamar, Colorado.

/s/ Frank G. Cooley, Chairman
Arkanssas River Compact
Administration

/s/ Leo Idler, Secretary
Arkansas River Compact
Administration

APPENDIX "D-1"

Approved Amendments to the Bylaws of the Arkansas River Compact Administration

(Approved Amendments in bold face)

ARTICLE II, PARAGRAPH 1

1. The officers of the Administration shall be:

Chairman
Vice Chairman
Secretary
Assistant Secretary
Treasurer

ARTICLE II, PARAGRAPH 4

4a. The Secretary may or may not be a member of the Administration. He shall be elected by the Administration at its annual meeting and shall serve until the next annual meeting and until his successor is elected, except that he may be elected at any meeting of the Administration prior to the holding of the first annual meeting, and in such case shall hold office until such annual meeting. In the case of a vacancy in the office of Secretary, the Administration shall, at its next meeting, whether regular or special, elect a Secretary to serve for the unexpired term. The Secretary shall perform such duties, **except for those specified in paragrah 4[b] [i], [ii], and [iii],** as are usually imposed on such an officer and such as may be assigned to him by these by-laws or by the Administration from time to time. He shall furnish a bond for the faithful performance of his duties if the Administration so directs. The cost of such bond shall be paid by the Administration.

b. The Assistant Secretary may be the Division Engineer for Division 2, Colorado Division of Water Resources. His particular duties shall be as follows:

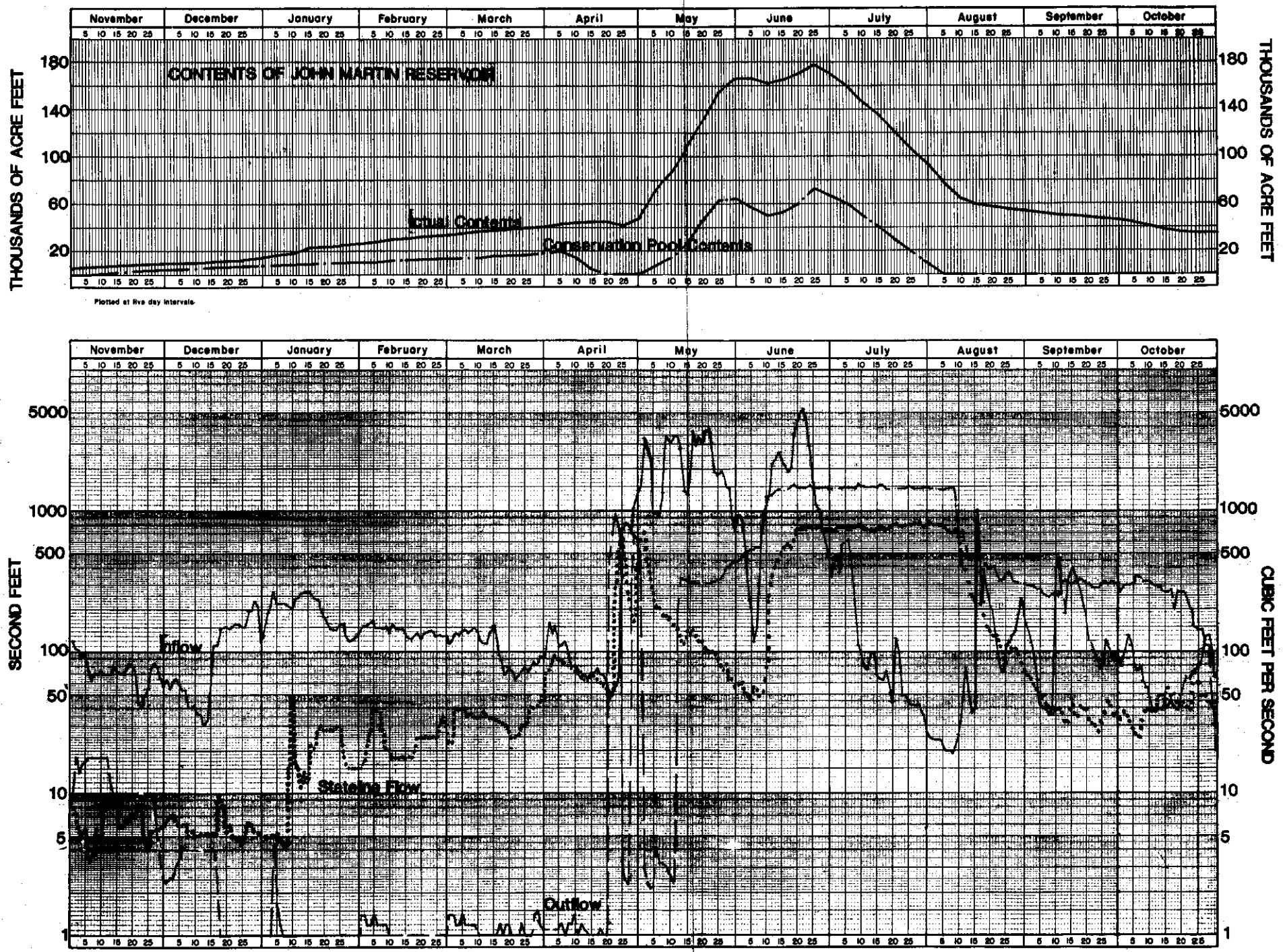
[i] To regulate the gates of John Martin Reservoir in accordance with the Compact and any operating plans or procedures adopted thereunder and to keep the Secretary fully informed of the actions which he has taken in this regard.

[ii] To keep accurate daily records on the water stored in John Martin Reservoir including all matters appurtenant thereto such as the amount of water residing in or being tansferred to special reservoir accounts, evaporation of water from the reservoir which is to be prorated among such accounts and the determination of transit losses and the procedures for computing such in all matters regarding water being transferred to or from said reservoir and accounts therein.

[iii] To prepare an accurate annual report of the deliveries of

water to entities in Colorado and Kansas as are required by the Secretary in the compilation and preparation of the annual report of the Administration.

[iv] Further, the Assistant Secretary shall perform such other duties as are usually imposed on such an officer and such as may be assigned to him by the Secretary, these by-laws or the Administration from time to time. These duties shall be limited to those which are required for the expedient operation of John Martin Reservoir and the delivery of water in the Arkansas basin as is required by the authorities of this Administration.



INFLOW, OUTFLOW AND CONTENTS OF JOHN MARTIN RESERVOIR AND STATELINE FLOW

Report Year, November 1, 19[illegible] – October 31, 1980

PLATE I