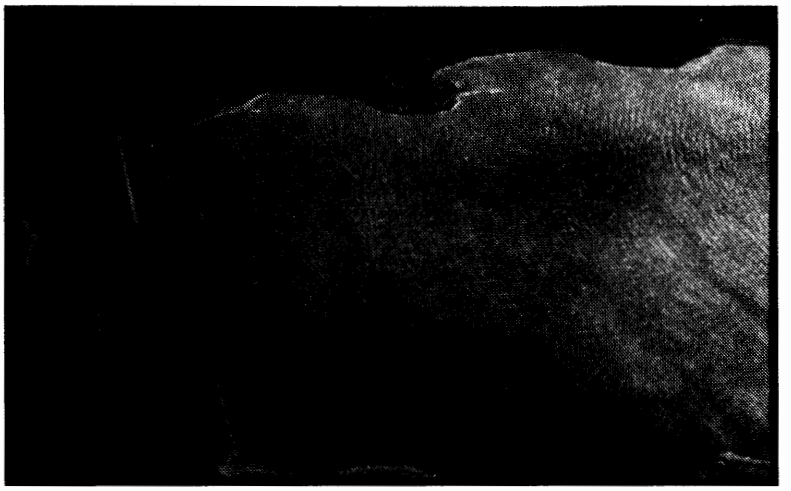
FORTY-FIRST ANNUAL REPORT OF THE

ARKANSAS RIVER COMPACT ADMINISTRATION

1989 COMPACT YEAR

November 1, 1988 to October 31, 1989



307 South Fifth Street
Lamar, Colorado 81052

FORTY-FIRST ANNUAL REPORT OF THE ARKANSAS RIVER COMPACT ADMINISTRATION

1989 Compact Year
November 1, 1988 to October 31, 1989

****

THE ADMINISTRATION

FRANK G. COOLEY
Chairman and Representative of the United States

J. WILLIAM McDONALD,
CARL G. GENOVA and JAMES G. ROGERS
for Colorado

DAVID L. POPE,
CARL E. BENTRUP, and RONALD OLOMON
for Kansas

****

307 South Fifth Street
Lamar, Colorado 81052

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FORTY-FIRST ANNUAL REPORT OF THE ARKANSAS RIVER COMPACT ADMINISTRATION 1989

(Report-Year November 1, 1988 to October 31, 1989)

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

Pursuant to Article VIII of the Arkansas River Compact, the Arkansas River Compact Administration submits its report for the 1989 Report-Year, November 1, 1988 through October 31, 1989, as follows:

1. MEMBERS of the ADMINISTRATION

- Representative of the United States:
  Frank G. Cooley; Meeker, Colorado

- Colorado Representatives:
  J. William McDonald; Denver, Colorado
  Carl G. Genova; Pueblo, Colorado
  James G. Rogers; Lamar, Colorado

- Kansas Representatives:
  David L. Pope; Topeka, Kansas
  Carl E. Bentrup; Deerfield, Kansas
  Ronald Olomon; Garden City, Kansas

2. OFFICERS of the ADMINISTRATION (as elected Dec. 13, 1988)

- Chairman: Frank G. Cooley

- Vice Chairman: Carl E. Bentrup

- Recording Secretary: Bernice Carr

- Treasurer: James G. Rogers

- Operations Secretary: William Howland (acting, Nov. 1, '88 - Dec. 13, '88)
  Steven J. Witte (Dec. 13, '88 - Oct. 31, '89)

3. STANDING COMMITTEES (as appointed Dec. 13, 1988)

- Administrative and Legal Committee:
  Carl E. Bentrup (Chairman), J. William McDonald

- Engineering Committee:
  Carl G. Genova (Chairman), David L. Pope

- Operations Committee:
  James G. Rogers (Chairman), Ronald Olomon

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

4. MEETINGS

- Administrative & Legal Committee: did not meet
- Engineering Committee: met Dec. 12, 1988
- Operations Committee: met Dec. 12, 1988 & Dec. 11, 1989
- Annual Meeting, Lamar, Colorado: Dec. 13, 1988 & Dec. 12, 1989

The minutes of the December Annual Meetings are not included in this annual report. Transcripts of the meeting minutes were provided to the Compact Administration and to each state previously. Copies of the minutes are also available upon request from the Administration office in Lamar. The minutes of the Annual Meeting contain a record of both the Engineering and Operations Committees' discussions.

At its December 12, 1988 meeting the Engineering Committee considered a request to transfer the Keesee Ditch water rights from Colorado Water District 67 and to create a new storage account for those rights at John Martin Reservoir. A number of issues were identified and discussed, but no final action was taken.

At its December 11, 1989 meeting the Operations Committee reviewed the "Annual Report of the Operations Secretary Concerning the Operation of John Martin, 1989" (hereinafter "Oper. Sec. 89 Report") and recommended its acceptance and approval by the full Administration. Much of the data contained in this annual report is derived from that report. The Operations Committee also adopted and recommended to the Administration procedures to be used for temporary storage at John Martin Reservoir by the City of Lamar of transmountain water obtained for well recharge purposes.

5. FISCAL

The Administration's Fiscal Year (FY) runs from July 1 to June 30. The fiscal affairs of the Administration for Compact Year 1989 involve portions of the Administration's FY 1988-89 and FY 1989-90. The Treasurer reported on the financial status of the Administration for the applicable portions of those fiscal years at the Annual Meetings held on December 13, 1988 and December 12, 1989.

At the December 13, 1988 Annual Meeting the Administration took the following budget actions:

- reviewed and left unchanged the previously adopted budget for the remainder of FY 1988-89 with expenditures of $38,395;
- revised the budget for FY 1989-90 to reflect anticipated expenses of $38,525;
- for planning purposes adopted a FY 1990-91 budget with anticipated expenditures through June 30, 1991 of $35,980.

Copies of these budgets are included in this report as Appendix A-1.

At the close of the fiscal year on June 30, 1989 the Administration had a cash balance of $46,685 as shown in the FY 1988-89 Auditor's Report accepted at the December 12, 1989 Annual Meeting. The Auditor's Report is included herein as Appendix A-2. On December 11, 1989 the Administration had a cash balance of $53,216 as reported by the Treasurer and shown on Appendix A-3.

6. FACTS ABOUT THE JOHN MARTIN RESERVOIR PROJECT

The John Martin Reservoir ("JMR") Project was built by the United States Army Corps of Engineers ("Corps of Engineers"). 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 due to 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 JMR Project is a part of the comprehensive plan for the control of floods and the development of water resources in the Arkansas River Basin. A 1986 survey of the reservoir in official use since February 1, 1988 shows 259,562 acre-feet of storage capacity above elevation 3851.87 for flood control protection of the fertile Arkansas River Valley downstream of the dam. The release of stored flood waters is planned so that, when combined with flows originating downstream from the dam, the capacity of the river channel will not be exceeded. Downstream flood damages prevented by JMR already exceed the cost of the project, and total project benefits to date have surpassed the $115 million mark.

The reservoir also provides 348,683 acre-feet of storage space for conservation and recreation purposes below elevation 3851.87. JMR supplies water to irrigated lands as far downstream as Garden City, Kansas. The conservation pool can store up to 338,639 acre-feet of water for irrigation. Upon request of the Arkansas River Compact Administration, irrigation water for downstream water users is released by the Corps of Engineers through outlet works in the base of the dam.

Recreation and favorable fish and wildlife habitats are provided by a 10,000 acre-foot permanent pool authorized by Congress in 1965. With reservoir lands open to all, there are many attractive public use areas for outdoor recreation, water sports, fishing and boating, and camping. During project 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, now used for year-round recreation. A half-mile segment of the historic Santa Fe Trail north of the reservoir has been enclosed by a fence and marked with an appropriate sign.

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 spillway controlled by sixteen 30 foot by 64 foot tainter gates and 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 is 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 7.5'	4
Regulating conduits, 4' x 4	2

RESERVOIR

Capacity, acre-feet at elevation 3,870.00	608,245
Flood control storage, acre-feet	259,562
Conservation (irrigation) and recreation storage, acre-feet below elevation 3,851.87	348,683
Water surface at spillway crest, acres	8,975
Water surface at top of conservation pool, acres	11,645
Water surface at top of flood control pool, acres	17,151
Drainage areas, square miles	18,915

7. COOPERATIVE STUDIES and ACTIVITIES

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 structures. 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 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.

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 ("USGS") has continued the operation of the compact gaging stations and the analysis of 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 resolutions and orders of the Administration.

8. WATER SUPPLY, RESERVOIR OPERATION, and HYDROLOGIC DATA

Reservoir operations at John Martin follow the operating plan adopted by the Compact Administration on April 24, 1980. This operating plan was revised on May 10, 1984, and December 11, 1984, but has not been revised since that time. Accordingly, a system of water storage accounts exists at JMR into which reservoir inflows are distributed for release at a later date. While these accounts have often been referred to as "Article II" and "Article III" accounts, the correct designation based on the organization of the operating plan resolution is "Section II" and "Section III" accounts. This report uses the term "Section" whenever referring to the accounts established pursuant to the operating plan.

General reservoir operations throughout Compact Year 1989 are described in Table 1, below.

The 1989 Arkansas River Compact Year and the winter season for JMR began at 0001 hour November 1, 1988 with 78,983.57 acre-feet in the reservoir distributed as shown in Table 2, below. Winter storage officially ended at 2400 hours on March 31, 1989 with a total inflow to the reservoir of 53,504.93 acre-feet. Inflow was distributed to the agreement accounts pursuant to the operating plan as shown in Table 3, below.

Releases of 3,950.50 acre-feet of agreement account water to various Colorado District 67 ditches occurred during the period March 15-31. Other than during this period, no water was physically released from the reservoir during the winter season. Following the transfer of other winter water stored at John Martin Reservoir into the appropriate agreement accounts the allocation of the reservoir contents on March 31, 1989 was as shown in Table 4, below. Total contents according to the Corps of Engineers was 124,289 acre-feet which agrees closely with the 124,290 acre-feet reported by the Operations Secretary for this date.

With moderate runoff there was no need for flood control operations during Compact Year 1989, as reflected in Table 5, below.

TABLE 1
JOHN MARTIN RESERVOIR
OPERATION
COMPACT YEAR 1989 [AF]

Month	Contents Begin Month	Inflow to Storage	Evaporation	Storage Release	Contents End Month
Nov.'88	78,983.57	9,272.43	988.00	0.00	87,268.00
Dec.	87,268.00	11,401.00	622.00	0.00	98,047.00
Jan.'89	98,047.00	11,502.00	175.00	0.00	109,374.00
Feb.	109,374.00	10,669.00	181.00	0.00	119,862.00
Mar.	119,862.00	10,660.50	2,282.00	3,950.50	124,290.00
Winter Subtotal		53,504.93	4,248.00	3,950.50	
Apr.	124,290.00	1,870.02	2,875.00	27,927.34	95,357.68
May	95,357.68	10,221.18	2,851.00	18,638.09	84,089.77
June	84,089.77	2,739.81	2,656.00	6,088.06	78,085.52
July	78,085.52	2,633.95	3,616.00	24,728.12	52,375.35
Aug.	52,375.35	0.00	2,047.00	13,379.83	36,948.52
Sept.	36,948.52	0.00	1,506.00	811.99	34,630.53
Oct.'89	34,630.53	0.00	934.00	6,289.75	27,406.78
Summer Subtotal		17,464.96	16,485.00	97,863.18	
Year		70,969.89	20,733.00	101,813.00	

NOTES

[1] Inflows per Oper. Sec. 89 Report (Tables I and II) plus storage under Amity Great Plains decree in May and July (Table VI) of 2456.12 AF, and storage of 1805.40 AF of City of Lamar Fry-Ark water in July and August.

[2] Evaporation per Oper. Sec. 89 Report (Tables I,II,VI,VIII) plus City of Lamar temporary operation in the amount of 36.09 AF.

[3] Releases per Oper. Sec. 89 Report (Table VI) plus City of Lamar at 1769.31 AF.

[4] Peak contents, 125,349 AF, at elevation 3826.59, reached on March 16, 1989.

[5] Conservation storage first exhausted April 16, 1989. District 67 water rights thereafter administered in priority and all inflow to JMR passed through pursuant to Section II.C of the Operating Plan, except for two periods of summer storage (May 16-29, June 4-15).

TABLE 2
JOHN MARTIN RESERVOIR
CONTENTS DISTRIBUTION [AF]
NOVEMBER 1,1988

Storage Component	Subtotal	Contents
Section II Agreement Accounts		
Kansas Account	26,230.93	
Dist. 67 Accounts	30,213.02	
Transit Loss Account	6,263.11	
Subtotal Section II	62,707.06	62,707.07
Section III Agreement Accounts [2]		
Amity	8,843.54	
Ft. Lyon	0.00	
Las Animas Cons.	0.00	
Subtotal Section III	8,843.54	8,843.54
Flood Pool		0.00
Permanent Pool		7,432.97
Total Reservoir Contents		78,983.57

NOTES

[1] Source: Oper. Sec. 89 Report, November accounting sheets.

TABLE 3
JOHN MARTIN RESERVOIR
WINTER INFLOW DISTRIBUTION [AF]
COMPACT YEAR 1989

Storage Component	Subtotal	Inflow
Winter Compact Water		27,371.15
Other Winter Water [1]		
Amity Canal, Section III	21,976.53	
Ft Lyon Canal,Section III	0.00	
Las Animas Cons.,Section III	3,607.32	
Other Winter Evap.	549.93	
Subtotal Other Winter Water	26,133.78	26,133.78
Total Winter Inflow		53,504.93

NOTES

[1] Allocated to Section III accounts as shown at conclusion of winter water program March 16,1989. Evaporation of winter water subtracted prior to transfer, transit loss account credited after transfer by release from individual Section III accounts.
[2] Source: Oper. Sec. 89 Report, Tables I, II, III, IV, and V.

TABLE 4
JOHN MARTIN RESERVOIR
CONTENTS DISTRIBUTION [AF]
MARCH 31,1989

Storage Component	Subtotal	Contents
1989 Winter Compact Water		26,793.62
Section II Agreements Accounts		
Kansas Account	27,078.47	
Dist. 67 Accounts	29,204.56	
Transit Loss Account	8,954.35	
Subtotal Section II	65,237.38	65,237.38
Section III Agreements Accounts		
Amity	22,776.73	
Ft. Lyon	0.00	
Las Animas Cons.	2,344.76	
Subtotal Section III	25,121.49	25,121.49
Flood Pool		0.00
Permanent Pool		7,137.51
Total Contents		124,290.00

NOTES

[1] Source: Oper. Sec. 89 Report, March accounting sheets.

TABLE 5
JOHN MARTIN RESERVOIR
FLOOD POOL OPERATION (AF)
COMPACT YEAR 1989

Month	Contents Begin Month	Inflow to Storage	Evaporation	Storage Release	Contents End Month
Nov.'88	0.00	0.00	0.00	0.00	0.00
Dec.	0.00	0.00	0.00	0.00	0.00
Jan.'89	0.00	0.00	0.00	0.00	0.00
Feb.	0.00	0.00	0.00	0.00	0.00
Mar	0.00	0.00	0.00	0.00	0.00
Winter subtotal		0.00	0.00	0.00	
Apr.	0.00	0.00	0.00	0.00	0.00
May	0.00	0.00	0.00	0.00	0.00
June	0.00	0.00	0.00	0.00	0.00
July	0.00	0.00	0.00	0.00	0.00
Aug.	0.00	0.00	0.00	0.00	0.00
Sept.	0.00	0.00	0.00	0.00	0.00
Oct.'89	0.00	0.00	0.00	0.00	0.00
Summer subtotal		0.00	0.00	0.00	
Year Total		0.00	0.00	0.00	

NOTES

[1] No flood pool operations in CY 1989.

[2] Source: Oper. Sec. 89 Report, Table IX.

The summer storage season began at 0001 April 1, 1989. Transfer of winter conservation storage into the agreement accounts began immediately. Three Colorado ditches began requesting water on April 1. All winter compact water was released into agreement accounts by April 14, 1989. Thereafter, pursuant to Section II.C of the "Resolution Concerning an Operating Plan for John Martin Reservoir," all inflows passed directly through John Martin until May 16, 1989. From May 16 to May 29 and again from June 4 to June 15 short periods of summer conservation storage occurred. No other conservation storage inflows occurred during the remainder of Compact Year 1989. Summer conservation storage operations are shown in Table 6, below.

Pursuant to the operating plan, water released from conservation storage was placed in the agreement accounts and subsequently accounted for as shown in Table 7, below.

Summer operations of the Section III accounts during Compact Year 1989 are summarized in Table 8, below. Pursuant to the operating plan the Amity Canal is the only entity currently entitled to store Section III water during the summer storage season. The Fort Lyon Canal and Las Animas Consolidated Canal may however request releases of any accumulated Section III water during the summer season.

TABLE 6
JOHN MARTIN RESERVOIR
CONSERVATION STORAGE SUMMER OPERATION [AF]
COMPACT YEAR 1989

Month	Contents Begin Month	Inflow to Storage	Evaporation	Storage Release	Contents End Month
Apr.'89	26,793.62	1,735.26	138.47	28,390.41	0.00
May	0.00	8,593.61	7.71	8,585.90	0.00
June	0.00	2,739.81	1.36	2,738.45	0.00
July	0.00	0.00	0.00	0.00	0.00
Aug.	0.00	0.00	0.00	0.00	0.00
Sept.	0.00	0.00	0.00	0.00	0.00
Oct.'89	0.00	0.00	0.00	0.00	0.00
Total		13,068.68	147.54	39,714.76	

NOTES

[1] April inflow does not include additional 134.76 AF of water delivered directly from Pueblo Reservoir to Section III accounts to balance winter water program accounting.

[2] Not physically released from reservoir, transferred to operating plan accounts.

[3] Source: Oper. Sec. 89 Report, Table I.

TABLE 7
JOHN MARTIN RESERVOR
AGREEMENT ACCOUNTS SUMMER OPERATION [AF]
COMPACT YEAR 1989

Month	Contents Begin Month	Inflow to Storage	Evaporation	Storage Release	Contents End Month
Apr.'89	90,358.87	28,525.17	2,550.39	27,927.34	88,406.30
May	88,406.31	10,213.47	2,616.63	18,638.09	77,365.00
June	77,365.06	2,738.45	2,440.33	6,088.06	71,575.10
July	71,575.12	828.55	3,251.81	23,845.36	45,306.50
Aug.	45,306.50	0.00	1,736.05	12,493.28	31,077.10
Sept.	31,077.17	0.00	1,263.09	811.99	29,002.00
Oct.'89	29,002.09	0.00	758.52	6,289.75	21,953.80
Total		42,305.64	14,616.82	96,093.87	

NOTES

[1] Agreement accounts include the sum of accounts established in Section II.D and III. A,B and C of the Operating Plan Resolution, i.e. Colorado District 67 ditches, Kansas, transit loss, and the Amity, Ft. Lyon, and Las Animas Consolidated.

[2] Does not include City of Lamar operartions with Fry-Ark water as follows: inflow 1805.40 AF, evaporation 36.09 AF, release 1769.31 AF.

[3] Source: Oper. Sec. 89 Report, Table VI.

TABLE 8
JOHN MARTIN RESERVOIR
SECTION III ACCOUNTS SUMMER OPERATION [AF]
COMPACT YEAR 1989

Month	Contents Begin Month	Inflow to Storage	Evaporation	Storage Release	Contents End Month
Apr.'89	25,121.49	134.76	551.00	12,245.59	12,459.66
May	12,459.66	1,627.57	231.41	7,827.10	6,028.72
June	6,028.72	0.00	186.36	640.72	5,201.64
July	5,201.64	828.55	233.21	3,059.02	2,737.96
Aug.	2,737.96	0.00	121.08	825.95	1,790.93
Sept.	1,790.93	0.00	74.08	0.00	1,716.85
Oct.'89	1,716.85	0.00	53.53	0.00	1,663.32
Total		2,590.88	1,450.67	24,598.38	

NOTES

[1] April inflow was adjustment to winter water program accounting distributed between all Section III accounts. Other inflows were to Amity account per Great Plains Res. decree.

[2] Source: Oper. Sec. 89 Report, Tables III, IV, V.

Kansas called for releases of 32,000.52 acre-feet from its account in Compact Year 1989. Operations of the Kansas account including the demands for releases made by Kansas are summarized in Tables 9 and 10. These operations are also detailed in Appendices B-12 and B-13.

By annual agreement between the states the Stateline flow attributed to Kansas demands for releases from JMR is calculated using a rundown period to account for the transit time between JMR and the Stateline. To determine whether the requested delivery has been met, the states further agree that no part of the daily Stateline flow exceeding 105% of Kansas' demand will be credited toward those deliveries. The total Stateline flow on days of Kansas demands, calculated pursuant to this method was 53,144 acre-feet using provisional data, subsequently adjusted to 53,122 acre-feet when USGS discharge records were finalized. The differences between quantities in Table 10 in this report and Table XI in the Oper. Sec. 89 Report reflect the fact that Table 10 reports final, corrected USGS gaged flows, while Table XI was prepared by the Operations Secretary immediately following the Compact Year when only provisional flow data was available. From this Stateline flow 44,308 acre-feet was credited as a delivery against the releases from the Kansas account.

TABLE 9
JOHN MARTIN RESERVOIR
KANSAS ACCOUNT OPERATION [AF]
COMPACT YEAR 1989

Month	Contents Begin Month	Inflow to Storage	Evaporation	Storage Release	Contents End Month
Nov.'88	26,230.93	0.00	315.97	0.00	25,914.96
Dec.	25,914.96	1,944.21	186.94	0.00	27,672.23
Jan.'89	27,672.23	0.00	47.77	0.00	27,624.46
Feb.	27,624.46	0.00	42.75	0.00	27,581.71
Mar.	27,581.71	0.00	503.24	0.00	27,078.47
Winter subtotal		1,944.21	1,096.67	0.00	
Apr.	27,078.47	11,356.16	944.95	0.00	37,489.68
May	37,489.68	3,434.37	1,146.75	5,702.57	34,074.73
June	34,074.73	1,095.39	1,113.93	0.00	34,056.19
July	34,056.19	0.00	1,558.13	11,520.83	20,977.23
Aug.	20,977.23	0.00	640.11	9,818.33	10,518.79
Sept.	10,518.79	0.00	435.13	0.00	10,083.66
Oct.'89	10,083.66	0.00	200.72	4,958.79	4,924.15
Summer subtotal		15,885.92	6,039.72	32,000.52	
Year Total		17,830.13	7,136.39	32,000.52	

NOTES
[1] Source: Oper. Sec. 89 Report, Table XI (revised), monthly accounting sheets.

TABLE 10
JOHN MARTIN RESERVOIR
KANSAS DEMANDS and RELEASES [AF]
COMPACT YEAR 1989

Month	Demand/ Release	Transit Loss Acct. Release	Stateline Flow	Credited Delivery
Nov. '88	0.00	0.00	0	0
Dec.	0.00	0.00	0	0
Jan. '89	0.00	0.00	0	0
Feb.	0.00	0.00	0	0
Mar.	0.00	0.00	0	0
Winter subtotal	0.00	0.00	0	0
Apr.	0.00	0.00	0	0
May	5,702.57	842.98	13,551	9,981
June	0.00	0.00	0	0
July	11,520.83	1,475.24	14,363	12,905
Aug.	9,818.33	0.00	19,069	15,299
Sept.	0.00	0.00	0	0
Oct. '89	4,958.79	842.99	6,139	6,123
Summer	32,000.52	3,161.21	53,122	44,308
Year Total	32,000.52	3,161.21	53,122	44,308

NOTES

[1] Stateline flow equals sum of gaged flows (as published by USGS) at Frontier Ditch and Arkansas River at Coolidge, Kansas on days of Kansas demands, adjusted for transit times and an appropriate "rundown" period. Generally, deliveries begin 2 days after the release from JMR commences and continue for up to 7 days following the end of the release.

[2] The annual operating agreement for 1989 (dated Dec. 3, 1988) states in part:

"3. Credit for delivery to Kansas will stop at the Stateline 7 days after the end of the run at JMR. No credit for over delivery will be carried forward to any subsequent run.

4. When the daily average flow at the Stateline exceeds the demand, delivery will be credited at not to exceed 105% of the demand."

[3] Demands at the end of month are partially satisfied by deliveries in the following month due to rundown period and transit time between JMR and the Kansas-Colorado Stateline.

[4] Source: Oper. Sec. 89 Report, Table XI.

A transit loss account release of 3,161.21 acre-feet was made to support deliveries of Kansas account water to the Stateline. Operation of the transit loss account in Compact Year 1989 is shown in Table 11, below.

TABLE 11
JOHN MARTIN RESERVOIR
TRANSIT LOSS ACCOUNT SUMMARY [AF]
COMPACT YEAR 1989

Month	Contents Begin Month	Inflow to Storage	Evaporation	Storage Release	Contents End Month
Nov.'88	6,263.11	0.00	75.43	0.00	6,187.68
Dec.	6,187.68	0.00	1.56	6,186.12	0.00
Jan.'89	0.00	0.00	0.00	0.00	0.00
Feb.	0.00	0.00	0.00	0.00	0.00
Mar.	0.00	8,954.35	0.00	0.00	8,954.35
Winter subtotal		8,954.35	76.99	6,186.12	
Apr.	8,954.35	46.13	234.63	0.00	8,765.85
May	8,765.85	569.65	275.80	842.98	8,216.72
June	8,216.72	0.00	261.88	0.00	7,954.84
July	7,954.84	289.99	397.84	1,475.24	6,371.75
Aug.	6,371.75	0.00	309.74	0.00	6,062.01
Sept.	6,062.01	0.00	250.78	0.00	5,811.23
Oct.'89	5,811.23	0.00	159.40	842.99	4,808.84
Summer subtotal		905.77	1,890.07	3,161.21	
Year Total		9,860.12	1,967.06	9,347.33	

NOTES

[1] Dec. 1988 not a physical release from storage; transferred 1,944.21AF (11/35) to Kansas account and 4,241.91 AF (24/35) to Colorado ditch accounts pursuant to Section III of the 1980 Operating Plan and the annual operating agreement for 1989.

[2] Source: Oper. Sec. 89 Report, Table VII.

Releases from agreement accounts to Colorado ditches during the 1989 Compact Year are summarized in Table 12, below.

The permanent pool at JMR received no inflow in Compact Year 1989. The pool contents declined 1,980.01 acre-feet due to evaporation. At the close of Compact Year 1989 the permanent pool contained 5,452.96 acre-feet as shown in Table 13, below.

At the close of the Compact Year on October 31, 1989 at 2400 hours the John Martin Reservoir contained 27,406.78 acre-feet, allocated as shown on Table 14, below.

TABLE 12
JOHN MARTIN RESERVOIR
SUMMARY OF RELEASES TO COLORADO DITCHES [AF]
COMPACT YEAR 1989

Month	Release
Nov.'88	0.00
Dec.	0.00
Jan.'89	0.00
Feb.	0.00
Mar.	3,950.50
Apr.	27,927.34
May	12,092.54
June	6,088.06
July	11,732.05
Aug.	3,561.50
Sept.	811.99
Oct.'89	487.97
Totals	66,651.95

NOTES

[1] Total includes release of City of Lamar's transmountain Fry-Ark water at 1769.31 AF.
[2] Source: Oper. Sec. 89 Report, Table X.

TABLE 13
JOHN MARTIN RESERVOIR
PERMANENT POOL OPERATION [AF]
COMPACT YEAR 1989

Month	Contents Begin Month	Inflow to Storage	Evaporation	Storage Release	Contents End Month
Nov.'88	7,432.97	0.00	89.53	0.00	7,343.44
Dec.	7,343.44	0.00	49.41	0.00	7,294.03
Jan.'89	7,294.03	0.00	12.61	0.00	7,281.42
Feb.	7,281.42	0.00	11.26	0.00	7,270.16
Mar.	7,270.16	0.00	132.65	0.00	7,137.51
Winter Subtotal		0.00	295.46	0.00	
Apr.	7,137.51	0.00	186.14	0.00	6,951.37
May	6,951.37	0.00	226.66	0.00	6,724.71
June	6,724.71	0.00	214.31	0.00	6,510.40
July	6,510.40	0.00	339.02	0.00	6,171.38
Aug.	6,171.38	0.00	300.03	0.00	5,871.35
Sept.	5,871.35	0.00	242.91	0.00	5,628.44
Oct.'89	5,628.44	0.00	175.48	0.00	5,452.96
Summer Subtotal		0.00	1,684.55	0.00	
Year Total		0.00	1,980.01	0.00	

NOTES

[1] Source: Oper. Sec. 89 Report, Table VIII

TABLE 14
JOHN MARTIN RESERVOIR
CONTENTS DISTRIBUTION [AF]
OCTOBER 31,1989

Storage Component	Subtotal	Contents
Compact Water		0.00
Section II Agreement Accounts		
Kansas	4,924.15	
District 67	10,557.51	
Transit Loss	4,808.84	
subtotal Section II	20,290.50	20,290.50
Section III Agreement Accounts		
Amity	1,663.32	
Ft. Lyon	0.00	
Las Animas Cons.	0.00	
subtotal Section III	1,663.32	1,663.32
Flood Pool		0.00
Permanent Pool		5,452.96
Total Content		27,406.78

NOTES
[1] Source: Oper. Sec. 89 Report, Table XIII.

The final contents as determined by the Corps of Engineers was 28,283 acre-feet, rounded and reported by the USGS as 28,300 acre-feet. The difference between the volume reported by the Operations Secretary accounting and the actual measured contents, 876.22 acre-feet, was credited to the reservoir accounting as an additional inflow to conservation storage on November 1, 1989. This was the first opportunity under the Compact to add to reservoir storage and resulted in a balancing of reservoir accounting and actual contents for the beginning of Compact Year 1990.

The technical data for this section were compiled by the Colorado Water Conservation Board staff using data from the Annual Report of the Operations Secretary, the USGS, the Colorado Division of Water Resources, the Kansas Division of Water Resources, and the minutes and correspondence of the Arkansas River Compact Administration.

9. GAGING STATIONS

The U.S. Geological Survey operates eight gaging stations, included in Appendix B, under their "Collection of Basic Records" program and through funding agreements with the Corps of Engineers and the Administration. For the federal fiscal year October 1, 1988 to September 30, 1989 the Administration approved a cooperative agreement with the USGS in the amount of $22,750. The Administration contributed half of this total, an amount of $11,375 which was used for supplemental measurements at seven gaging sites, the operation of one station (Arkansas River near Granada, Colorado), operation of a telemark gage at John Martin Dam, maintenance of radio equipment, and the preparation of records for this annual report.

In general, streamflow records of satisfactory accuracy were obtained at the Compact stations. Emphasis was again placed on obtaining more field data, particularly in the form of discharge measurements at various stages of flow. Several more measurements were made at each site than are required under the USGS' agreement with the Administration. Measurements were also made by personnel of the Colorado State Engineer which were also incorporated into the records. There were no critical problems at the stations during the year, with the exception of the continuing unstable channels and controls.

On June 30, 1970 the USGS complete record gage, Arkansas River at Garden City, Kansas, was converted to a high-flow, partial record gaging station. Until that time flow data at Garden City had been included in the Administration's annual reports. On October 1, 1986 the gage was restored to service as a complete record gaging station. The practice of reporting these flows is being resumed with this annual report and gage records for Compact Years 1987, 1988, and 1989 are included as appendices B-8a, B-8b, and B-8c in this report for completeness.

10. FINDINGS of FACT by the ADMINISTRATION

There were no findings of fact made by the Administration during Compact Year 1989.

11. INVESTIGATIONS

There were no investigations undertaken by the Administration during Compact Year 1989.

12. CHRONOLOGY of EVENTS in KANSAS v. COLORADO LITIGATION

The following is a partial list of significant events in the ongoing lawsuit during Compact Year 1989:

DATE	PARTY	ITEM
Nov. 26, '88	Colorado	Motion re Winter Water Storage Program
Jan. 27, '89	Kansas	Response re Winter Water
Jan. 30, '89	USA	Motion to Intervene
Feb. 9, '89	Special Master	Order Granting Intervention to USA
Feb. 14, '89	USA	Response to Colorado Motions
Feb. 21, '89	U.S. Supreme Court	Order re Kansas Motion for Leave to File Amended Complaint
Feb. 22, '89	Kansas	Brief and Motion for Leave to File Amended Complaint
Mar. 15, '89	USA	Response to Kansas Motion for Leave to File Amended Complaint
May 18, '89	Kansas	Motion to Amend and Bifurcate Proceedings
June 2, '89	Colorado	Response to Kansas Motion
June 8, '89	USA	Response to Kansas Motion
July 12, '89	Special Master	Order re Pretrial Conference
Sep. 15, '89	Special Master	Report re Winter Water Storage Motions
Sep. 19, '89	Special Master	Order Setting Trial Date
Oct. 12, '89	Special Master	Order re Amended Complaint

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Appendix A-1

REVISED FY 1988-89 BUDGET
(July 1, 1988 - June 30, 1989)

EXPENDITURES		
A. SALARIES AND CONTRACTUAL SERVICES		
1. Treasurer	$ 1,000	
2. Recording Secretary	1,000	
3. Operations Secretary	6,100	
4. Auditor's Fees	450	
5. Court Reporter's Fees	1,500	
6. Payroll Taxes	350	
		$10,400
B. GAGING STATIONS		
1. U.S. Geological Survey Cooperative Agreements for federal FY 1988	$10,695	
2. St. of Colorado Satellite System	7,000	
		$17,695
C. OPERATING EXPENSES		
1. Treasurer's Bond	$ 100	
2. 1986/87 Annual Reports (Printing)	6,500	
3. Telephone	2,000	
4. Office Supplies/Postage	300	
5. Printing/Copying	300	
6. Meetings	150	
7. Travel	0	
		$ 9,300
D. EQUIPMENT		0
E. CONTINGENCY		1,000
F. TOTAL		$38,395
INCOME		
A. ASSESSMENTS		
1. Colorado (60%)	$12,000	
2. Kansas (40%)	8,000	
		$20,000
B. INTEREST EARNINGS		3,000
C. MISCELLANEOUS		0
		$23,000
EXPENDITURES FROM SURPLUS		$15,395

Adopted by the Arkansas River Compact Administration at its December 8, 1987 Annual Meeting.

/s/
Treasurer

Appendix A-1

REVISED FY 1989-90 BUDGET
(July 1, 1989 - June 30, 1990)

EXPENDITURES		
A. SALARIES AND CONTRACTUAL SERVICES		
1. Treasurer	$ 1,000	
2. Recording Secretary	1,000	
3. Operations Secretary	6,100	
4. Auditor's Fees	500	
5. Court Reporter's Fees	500	
6. Payroll Taxes	0	
		$ 9,100
B. GAGING STATIONS		
1. U.S. Geological Survey Cooperative Agreements for federal FY 1989	$11,375	
2. St. of Colorado Satellite System	8,000	
		$19,375
C. OPERATING EXPENSES		
1. Treasurer's Bond	$ 100	
2. 1987/88 Annual Reports (Printing)	6,500	
3. Telephone	1,000	
4. Office Supplies/Postage	400	
5. Printing/Copying	300	
6. Meetings	150	
7. Travel	0	
8. Rent	600	
		$ 9,050
D. EQUIPMENT		0
E. CONTINGENCY		1,000
F. TOTAL		$38,525
INCOME		
A. ASSESSMENTS		
1. Colorado (60%)	$12,000	
2. Kansas (40%)	8,000	
		$20,000
B. INTEREST EARNINGS		2,000
C. MISCELLANEOUS		0
		$22,000
EXPENDITURES FROM SURPLUS		$16,525

First adopted by the Arkansas River Compact Administration at its December 8, 1987 Annual Meeting and revised at its December 13, 1988 Annual Meeting.

/s/
Treasurer

Appendix A-1

FY 1990-91 BUDGET
(July 1, 1990 - June 30, 1991)

EXPENDITURES		
A. SALARIES AND CONTRACTUAL SERVICES		
1. Treasurer	$ 1,000	
2. Recording Secretary	1,000	
3. Operations Secretary	6,100	
4. Auditor's Fees	500	
5. Court Reporter's Fees	500	
6. Payroll Taxes	0	
		$ 9,100
B. GAGING STATIONS		
1. U.S. Geological Survey Cooperative Agreements for federal FY 1990	$11,830	
2. St. of Colorado Satellite System	8,000	
		$19,830
C. OPERATING EXPENSES		
1. Treasurer's Bond	$ 100	
2. 1989 Annual Reports (Printing)	3,500	
3. Telephone	1,000	
4. Office Supplies/Postage	400	
5. Printing/Copying	300	
6. Meetings	150	
7. Travel	0	
8. Rent	600	
		$ 6,050
D. EQUIPMENT		0
E. CONTINGENCY		1,000
F. TOTAL		$35,980
INCOME		
A. ASSESSMENTS		
1. Colorado (60%)	$15,000	
2. Kansas (40%)	10,000	
		$25,000
B. INTEREST EARNINGS		1,500
C. MISCELLANEOUS		0
		$26,500
EXPENDITURES FROM SURPLUS		$11,230

Adopted by the Arkansas River Compact Administration at its December 13, 1988 Annual Meeting.

/s/
Treasurer

Appendix A-2
AUDITORS REPORT

Certified Public Accountants and Management Consultants

Independent Auditor's Report

We have audited the accompanying statements of assets and liabilities - cash basis of the Arkansas River Compact Administration as of June 30, 1989, and the related statements of revenue collected and expenses paid for the year then ended. These financial statements are the responsibility of the Administration's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

As described in Note 1a, these financial statements were prepared on the basis of cash receipts and disbursements, which is a comprehensive basis of accounting other than generally accepted accounting principles.

In our opinion, the financial statements referred to above present fairly, in all material respects, the assets and liabilities - cash basis of the Arkansas River Compact Administration as of June 30, 1989, and its revenue collected and expenses paid during the year then ended, on the basis of accounting described in Note 1a.

Farmer & Renken

October 13, 1989

203 East Oak • P.O. Box 1173 • Lamar, Colorado 81052 • (719) 336-7428

Appendix A-2
AUDITORS REPORT

ARKANSAS RIVER COMPACT ADMINISTRATION
STATEMENT OF ASSETS & LIABILITIES - CASH BASIS
JUNE 30, 1989

ASSETS:	
Cash & Cash Equivalents	$46,685
Equipment	29,811
Concrete Control	8,000
TOTAL ASSETS	84,496
LIABILITIES:	
Liabilities	0
CASH BASIS EQUITY:	
Expended:	
Equipment	29,811
Concrete Control	8,000
Unexpended:	46,685
TOTAL CASH BASIS EQUITY - NOTE 1a	84,496
TOTAL LIABILITIES & CASH BASIS EQUITY	$84,496

The accompanying notes are an integral part of the statements.

ARKANSAS RIVER COMPACT ADMINISTRATION
NOTES TO CASH BASIS STATEMENTS
JUNE 30, 1989

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-3
CASH BALANCE STATEMENT

ARKANSAS RIVER COMPACT ADMINISTRATION
307 South Fifth Street
LAMAR, COLORADO 81052

COLORADO
J. WILLIAM McDONALD, Denver
CARL GENOVA, Pueblo
JAMES G. ROGERS, Lamar
Treasurer

FRANK G. COOLEY
Chairman and Federal Representative
P.O. Box 98
Meeker, Colorado 81641

KANSAS
DAVID L. POPE, Topeka
CARL E. BENTRUP, Deerfield
Vice Chairman
RON OLOMON, Garden City

ARKANSAS RIVER COMPACT ADMINISTRATION

STATEMENT OF CASH RECEIPTS & DISBURSEMENTS & CHANGE IN CASH BALANCE

FROM JULY 1, 1989 thru DECEMBER 11, 1989

CASH BALANCE: July 1, 1989			$46,685.08
RECEIPTS:			
Colorado	$12,000.00		
Kansas	8,000.00		
Interest Earned since July	1,605.92		
TOTAL RECEIPTS		$21,605.92	
DISBURSEMENTS:			
Treasurer's Bond	$ 100.00		
U. S. Geological Survey	6,990.00		
Printing 1986 Annual Report	3,678.28		
Salaries	1,000.00		
Telephone	303.99		
Office Rent	300.00		
Postage & Supplies	80.00		
Operations Secretary Account	2,589.24		
Bank Charge-Checks	33.04		
TOTAL DISBURSEMENTS		$15,074.55	
EXCESS RECEIPTS OVER DISBURSEMENTS			6,531.37
CASH BALANCE: DECEMBER 11,1989			$53,216.45

FUNDS ON HAND:	
Checking Account	$ 210.08
Money Market Account	53,006.37
TOTAL	$53,216.45

B-1 1989

DISCHARGE: ARKANSAS RIVER ABOVE PUEBLO, COLORADO

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7099400
DAILY MEAN DISCHARGE,CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1989

B-1 1989

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	220	110	110	118	290	578	430	1,450	1,410	1,820	332	208	1
2	212	110	110	225	291	576	408	1,290	1,440	1,740	326	179	2
3	219	110	111	260	339	511	379	1,130	1,610	1,770	331	160	3
4	243	110	111	260	365	469	377	1,140	1,740	1,770	325	167	4
5	253	110	111	260	365	499	392	1,070	2,020	1,780	321	173	5
6	253	110	112	260	302	587	346	904	2,020	1,720	275	179	6
7	271	111	112	256	283	605	311	742	2,030	1,680	236	184	7
8	309	111	112	191	343	645	306	720	2,030	1,560	224	184	8
9	329	111	112	122	424	599	264	871	1,970	1,380	213	268	9
10	313	111	112	200	569	658	286	1,050	1,960	1,350	188	299	10
11	301	111	112	329	627	679	479	1,030	1,890	1,380	153	291	11
12	301	112	112	329	627	674	659	938	1,770	1,350	199	291	12
13	302	111	112	356	598	724	806	973	1,970	1,180	225	291	13
14	267	112	112	356	605	791	904	1,150	1,910	1,130	268	290	14
15	100	112	112	344	652	860	880	1,100	1,670	1,190	306	291	15
16	99	112	112	345	561	826	698	874	1,620	1,170	315	304	16
17	99	112	112	345	730	813	656	1,070	1,460	1,070	280	293	17
18	100	112	114	345	930	880	595	1,400	1,370	956	237	246	18
19	100	112	114	345	921	860	427	1,510	1,180	866	203	219	19
20	100	110	114	345	599	794	332	1,530	995	782	200	223	20
21	100	109	114	345	432	762	414	1,440	992	751	241	225	21
22	100	108	114	297	485	733	559	1,340	1,260	695	292	225	22
23	100	110	114	268	469	767	730	1,310	1,410	553	308	226	23
24	100	110	116	281	503	783	925	1,210	1,820	514	307	226	24
25	100	110	116	288	613	784	1,110	990	2,060	536	282	226	25
26	100	110	116	289	656	774	1,130	861	2,130	478	239	225	26
27	101	110	117	290	551	772	926	806	2,190	438	222	227	27
28	100	110	118	289	377	740	701	1,160	2,180	469	215	228	28
29	100	110	118	---	458	641	657	1,390	2,150	492	209	228	29
30	109	110	118	---	533	432	970	1,400	2,030	466	208	258	30
31	---	110	118	---	578	---	1,310	---	1,960	392	---	275	31
TOTAL CFS	5,401	3,427	3,518	7,938	16,076	20,816	19,367	33,849	54,247	33,428	7,680	7,309	TOTAL CFS
TOTAL AF	10,710	6,800	6,980	15,750	31,890	41,290	38,410	67,140	107,600	66,300	15,230	14,500	TOTAL AF
THE YEAR	422,600	ACRE FEET											

B-2a [PREVIOUSLY B-2] **1989**

DISCHARGE: ARKANSAS RIVER AT LAS ANIMAS, COLORADO

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7124000
DAILY MEAN DISCHARGE,CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1989

B-2a [PREV. B-2] **1989**

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	74	135	140	120	108	46	148	41	297	411	55	27	1
2	32	134	138	115	124	39	156	41	269	404	47	26	2
3	27	133	144	100	118	34	128	57	293	345	40	24	3
4	25	134	142	90	104	29	113	103	273	308	35	25	4
5	24	132	141	90	100	27	100	86	306	308	34	25	5
6	24	131	140	110	104	27	68	56	314	309	33	25	6
7	25	131	130	120	107	28	50	45	301	385	34	25	7
8	25	133	119	150	107	30	44	43	303	444	33	23	8
9	26	132	117	200	118	28	38	48	264	416	33	22	9
10	27	133	151	240	128	27	35	39	287	432	32	22	10
11	29	136	200	280	130	28	34	41	291	319	32	22	11
12	30	132	172	280	131	28	35	84	243	245	35	22	12
13	31	126	132	250	143	28	36	124	235	281	60	22	13
14	33	124	128	225	209	27	48	74	208	91	80	23	14
15	64	122	127	310	195	25	215	44	1,060	293	94	25	15
16	89	123	128	298	69	37	583	39	988	365	105	29	16
17	143	124	127	283	49	50	797	36	332	393	97	38	17
18	245	151	126	267	44	44	326	35	480	273	90	45	18
19	251	245	125	215	42	37	149	33	480	376	90	56	19
20	224	192	123	199	57	39	126	36	336	432	74	74	20
21	158	140	127	155	78	67	99	46	214	359	62	84	21
22	156	133	131	139	131	66	83	47	90	250	45	87	22
23	156	128	128	132	191	66	74	73	47	160	34	77	23
24	148	127	122	130	107	90	61	135	39	107	32	77	24
25	139	127	121	128	54	104	59	379	41	84	34	75	25
26	134	125	120	123	44	90	54	487	43	66	41	67	26
27	131	125	121	119	35	77	48	419	157	65	47	62	27
28	126	119	124	113	32	91	44	397	290	64	42	77	28
29	135	122	120	---	31	109	41	284	361	62	33	72	29
30	133	155	118	---	51	122	46	255	381	58	28	65	30
31	---	143	120	---	71	---	45	---	383	69	---	75	31
TOTAL CFS	2,864	4,247	4,102	4,981	3,012	1,540	3,883	3,627	9,606	8,174	1,531	1,418	TOTAL CFS
TOTAL AF	5,680	8,420	8,140	9,880	5,970	3,050	7,700	7,190	19,050	16,210	3,040	2,810	TOTAL AF
THE YEAR	97,140	ACRE FEET											

B-2b [PREVIOUSLY B-3] **1989**

DISCHARGE: PURGATOIRE RIVER NEAR LAS ANIMAS, COLORADO

U.S.G.S PUBLISHED RECORDS, GAGING STATION # 7128500
DAILY MEAN DISCHARGE,CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1989

B-2b [PREV. B-3] **1989**

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	19.0	43.0	30.0	33.0	60.0	10.0	6.1	3.5	15.0	17.0	2.6	2.6	1
2	28.0	43.0	32.0	25.0	77.0	9.4	6.2	3.5	7.2	157.0	2.3	2.5	2
3	23.0	41.0	33.0	15.0	57.0	7.8	5.9	17.0	5.4	70.0	1.9	2.9	3
4	38.0	36.0	37.0	10.0	38.0	8.8	5.4	18.0	4.9	9.3	1.9	3.7	4
5	26.0	39.0	43.0	10.0	32.0	9.0	5.3	11.0	5.4	4.6	2.5	4.1	5
6	26.0	39.0	42.0	10.0	47.0	8.4	5.4	7.6	3.5	4.0	1.8	7.0	6
7	21.0	39.0	34.0	12.0	57.0	6.7	5.3	4.0	4.9	4.3	1.9	3.8	7
8	18.0	36.0	19.0	15.0	41.0	5.8	4.8	3.8	4.1	4.0	2.6	3.2	8
9	18.0	25.0	20.0	25.0	35.0	6.3	5.0	6.9	3.5	4.6	2.8	2.9	9
10	26.0	27.0	27.0	30.0	34.0	7.5	6.2	8.8	3.0	4.4	2.6	2.9	10
11	37.0	30.0	25.0	34.0	35.0	7.6	5.9	3.9	2.7	3.7	3.5	2.6	11
12	37.0	32.0	20.0	35.0	31.0	6.7	6.6	5.4	3.1	4.0	3.9	2.3	12
13	34.0	40.0	16.0	35.0	32.0	6.8	6.7	12.0	3.3	212.0	7.2	2.5	13
14	23.0	48.0	23.0	30.0	32.0	6.7	8.3	7.9	177.0	263.0	4.1	5.0	14
15	24.0	35.0	25.0	33.0	47.0	6.0	16.0	5.6	147.0	69.0	4.0	9.0	15
16	35.0	30.0	30.0	40.0	65.0	6.2	122.0	5.3	15.0	19.0	5.8	16.0	16
17	29.0	33.0	30.0	32.0	37.0	5.7	339.0	5.1	7.3	13.0	2.7	18.0	17
18	30.0	42.0	30.0	30.0	29.0	5.7	93.0	6.7	7.4	45.0	2.0	20.0	18
19	36.0	37.0	30.0	32.0	17.0	5.8	62.0	3.0	5.6	9.6	2.0	21.0	19
20	36.0	44.0	32.0	35.0	18.0	6.1	29.0	2.6	4.2	13.0	3.8	22.0	20
21	39.0	43.0	33.0	40.0	14.0	5.7	12.0	2.9	3.9	7.1	3.4	25.0	21
22	50.0	37.0	33.0	42.0	8.3	5.0	13.0	11.0	3.4	3.8	15.0	27.0	22
23	49.0	24.0	32.0	44.0	9.8	5.0	7.4	8.5	3.4	3.4	5.6	22.0	23
24	43.0	24.0	31.0	47.0	8.3	4.8	4.4	3.9	3.4	3.3	2.9	21.0	24
25	41.0	22.0	32.0	46.0	8.6	4.5	3.9	9.2	3.4	3.2	5.3	16.0	25
26	41.0	20.0	31.0	43.0	7.4	5.1	4.4	98.0	5.3	2.9	3.7	20.0	26
27	46.0	22.0	27.0	45.0	7.7	5.8	4.6	15.0	3.4	2.4	2.6	18.0	27
28	48.0	16.0	31.0	50.0	8.3	5.7	4.2	8.5	2.7	3.2	2.7	18.0	28
29	49.0	17.0	33.0	---	9.4	6.8	3.8	8.4	2.5	4.4	3.0	19.0	29
30	50.0	20.0	35.0	---	12.0	6.0	3.5	9.4	2.8	4.0	2.9	24.0	30
31	---	23.0	38.0	---	13.0	---	3.5	---	12.0	2.9	---	17.0	31
TOTAL CFS	1,020.0	1,007.0	934.0	878.0	927.8	197.4	808.8	316.4	475.7	971.1	109.0	381.0	TOTAL CFS
TOTAL AF	2,020	2,000	1,850	1,740	1,840	392	1,600	628	944	1,930	216	756	TOTAL AF
THE YEAR	15,916	ACRE FEET											

B-2c
[PREVIOUSLY B-4]
1989

RIVER FLOW INTO JOHN MARTIN RESERVOIR

SUMMATION OF U.S.G.S. PUBLISHED RECORDS, [1]
DAILY MEAN DISCHARGE,CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1989

B-2c
[PREV. B-4]
1984

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	93	178	170	153	168	56	154	45	312	428	58	30	1
2	60	177	170	140	201	48	162	45	276	561	49	29	2
3	50	174	177	115	175	42	134	74	298	415	42	27	3
4	63	170	179	100	142	38	118	121	278	317	37	29	4
5	50	171	184	100	132	36	105	97	311	313	37	29	5
6	50	170	182	120	151	35	73	64	318	313	35	32	6
7	46	170	164	132	164	35	55	49	306	389	36	29	7
8	43	169	138	165	148	36	49	47	307	448	36	26	8
9	44	157	137	225	153	34	43	55	268	421	36	25	9
10	53	160	178	270	162	35	41	48	290	436	35	25	10
11	66	166	225	314	165	36	40	45	294	323	36	25	11
12	67	164	192	315	162	35	42	89	246	249	39	24	12
13	65	166	148	285	175	35	43	136	238	493	67	25	13
14	56	172	151	255	241	34	56	82	385	354	84	28	14
15	88	157	152	343	242	31	231	50	1,207	362	98	34	15
16	124	153	158	338	134	43	705	44	1,003	384	111	45	16
17	172	157	157	315	86	56	1,136	41	339	406	100	56	17
18	275	193	156	297	73	50	419	42	487	318	92	65	18
19	287	282	155	247	59	43	211	36	486	386	92	77	19
20	260	236	155	234	75	45	155	39	340	445	78	96	20
21	197	183	160	195	92	73	111	49	218	366	65	109	21
22	206	170	164	181	139	71	96	58	93	254	60	114	22
23	205	152	160	176	201	71	81	82	50	163	40	99	23
24	191	151	153	177	115	95	65	139	42	110	35	98	24
25	180	149	153	174	63	109	63	388	44	87	39	91	25
26	175	145	151	166	51	95	58	585	48	69	45	87	26
27	177	147	148	164	43	83	53	434	160	67	50	80	27
28	174	135	155	163	40	97	48	406	293	67	45	95	28
29	184	139	153	---	40	116	45	292	364	66	36	91	29
30	183	175	153	---	63	128	50	264	384	62	31	89	30
31	---	166	158	---	84	---	49	---	395	72	---	92	31
TOTAL CFS	3,884	5,254	5,036	5,859	3,940	1,737	4,692	3,943	10,082	9,145	1,640	1,799	TOTAL CFS
TOTAL AF	7,700	10,420	9,990	11,620	7,810	3,442	9,300	7,818	19,994	18,140	3,256	3,566	TOTAL AF
THE YEAR	113,056	ACRE FEET											

NOTES: [1] River flow into John Martin is the combined flow of the Arkansas at Las Animas[B-2a] and the Purgatoire near Las Animas [B-2b], rounded to the nearest CFS.

B-3 [PREVIOUSLY B-5] **1989**

CONTENTS JOHN MARTIN RESERVOIR

U.S.G.S. PRIMARY DATA, GAGING STATION # 7130000
MIDNIGHT CONTENTS TO NEAREST ACRE FOOT [1]
REPORT YEAR ENDING OCTOBER 31, 1989

B-3 [PREV. B-5] **1989**

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	79,301	87,604	98,150	109,602	120,288	123,731	94,513	83,866	78,141	51,422	37,310	34,600	1
2	79,435	87,941	98,514	109,715	120,776	122,927	94,160	83,541	77,874	50,402	37,182	34,000	2
3	79,660	88,328	99,088	109,772	121,205	122,064	93,405	83,078	77,432	49,356	37,150	33,300	3
4	79,840	88,715	99,403	110,000	121,327	121,695	92,754	83,170	76,858	48,286	36,991	32,700	4
5	79,885	88,957	100,033	110,229	121,511	119,984	92,055	83,309	76,332	47,228	37,150	31,900	5
6	80,020	89,347	100,560	110,515	121,941	119,012	91,361	83,448	75,982	46,181	36,895	32,100	6
7	80,110	89,689	100,931	110,630	122,310	117,804	90,572	83,541	75,068	44,526	36,641	30,600	7
8	80,200	90,130	101,143	110,859	122,618	116,724	89,103	83,680	73,730	43,570	36,325	30,079	8
9	80,336	90,474	101,356	111,032	122,989	115,473	87,172	83,773	72,194	42,586	36,011	29,463	9
10	80,426	90,720	101,621	111,262	123,360	114,173	85,225	83,866	70,507	41,610	35,948	28,883	10
11	80,834	91,114	102,209	111,435	123,793	113,118	83,309	84,006	68,963	40,608	35,729	28,337	11
12	80,834	91,460	102,532	111,839	124,041	112,128	81,471	84,006	67,600	39,780	35,666	28,013	12
13	80,924	91,807	102,693	112,128	124,538	111,089	79,975	84,239	65,921	39,418	35,604	28,013	13
14	81,015	92,205	102,962	112,477	124,849	110,114	78,541	84,146	64,582	39,287	35,479	28,013	14
15	81,243	92,704	103,231	112,767	125,161	109,148	78,141	84,006	64,299	38,960	35,448	27,959	15
16	81,334	92,904	103,556	113,527	125,349	108,076	79,705	83,959	64,461	38,796	35,448	27,959	16
17	81,744	93,254	103,935	114,408	125,161	107,125	82,157	83,773	64,703	38,699	35,417	27,959	17
18	82,617	93,656	104,370	115,058	125,037	106,347	83,727	83,680	64,582	38,601	35,385	28,040	18
19	82,940	94,311	104,752	115,829	125,099	105,081	84,473	83,263	64,501	38,633	35,417	28,067	19
20	83,356	94,817	105,410	116,425	124,974	104,044	84,801	82,709	64,380	38,666	35,448	28,175	20
21	83,727	95,478	105,850	116,844	124,974	103,177	85,178	81,882	64,179	38,666	35,354	28,229	21
22	84,099	95,682	106,071	117,203	124,849	102,263	85,272	81,015	63,696	38,568	35,107	28,337	22
23	84,708	96,039	106,292	117,804	125,161	101,249	85,414	80,110	63,135	38,276	34,859	28,364	23
24	84,989	96,244	106,680	118,286	125,286	100,349	85,603	79,435	62,457	37,985	34,736	28,419	24
25	85,414	96,551	106,957	118,769	125,224	99,507	85,508	79,301	61,350	37,663	34,582	28,364	25
26	85,839	96,859	107,292	119,254	125,161	98,670	85,508	79,435	59,629	37,566	34,490	28,364	26
27	86,123	97,116	108,020	119,497	125,037	97,633	85,650	79,122	57,896	37,502	34,582	28,310	27
28	86,599	97,271	108,414	119,862	124,787	96,910	85,603	78,764	56,451	37,470	34,613	28,364	28
29	86,933	97,322	108,695	---	124,849	96,039	85,508	78,764	55,100	37,500	34,582	28,283	29
30	87,220	97,529	108,921	---	124,663	95,173	84,942	78,408	53,711	34,582	34,582	28,229	30
31	---	97,839	109,375	---	124,289	---	84,427	---	52,635	37,406	---	28,283	31
USGS PUBLISHED END OF MONTH CONTENTS [2]:													
	87,300	97,800	109,000	120,000	124,000	95,300	84,400	78,500	52,800	37,400	34,600	28,300	

NOTES: [1] Determined from elevation-capacity table placed in use Feb. 1, 1988.
[2] Final published record rounded per USGS procedures.

B-4 [PREVIOUSLY B-6] **1989**

OUTFLOW: ARKANSAS RIVER BELOW JOHN MARTIN RESERVOIR

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7130500
DAILY MEAN DISCHARGE,CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1989

B-4 [PREV. B-6] **1989**

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	6.2	2.8	2.8	3.6	3.2	412.0	526.0	286.0	404.0	956.0	87.0	42.0	1
2	7.3	2.8	2.8	3.6	3.2	412.0	476.0	286.0	407.0	947.0	86.0	236.0	2
3	7.3	2.8	2.8	3.6	3.2	467.0	457.0	286.0	443.0	945.0	84.0	356.0	3
4	7.3	2.8	2.8	3.6	3.2	532.0	453.0	121.0	460.0	911.0	83.0	352.0	4
5	7.3	2.8	2.7	3.6	3.2	554.0	453.0	3.7	478.0	857.0	112.0	358.0	5
6	7.3	2.8	2.8	3.6	3.2	554.0	457.0	3.2	441.0	853.0	142.0	354.0	6
7	7.3	2.8	2.5	3.6	3.2	584.0	457.0	3.2	661.0	850.0	150.0	311.0	7
8	6.9	2.8	2.8	3.6	3.2	616.0	764.0	3.9	934.0	843.0	147.0	312.0	8
9	6.8	2.8	2.5	3.6	3.6	611.0	1,030.0	3.0	925.0	837.0	143.0	311.0	9
10	6.8	2.8	2.5	3.6	3.6	610.0	1,000.0	2.4	1,020.0	854.0	145.0	323.0	10
11	6.8	2.8	2.5	3.6	3.6	595.0	960.0	2.2	1,050.0	834.0	143.0	326.0	11
12	6.8	2.8	2.5	3.6	3.6	569.0	915.0	29.0	1,010.0	792.0	107.0	152.0	12
13	6.8	2.8	2.5	3.6	3.6	538.0	897.0	83.0	1,010.0	613.0	107.0	48.0	13
14	6.8	2.8	2.5	3.6	3.6	532.0	893.0	94.0	976.0	473.0	123.0	49.0	14
15	6.4	2.8	2.5	3.6	64.0	534.0	666.0	85.0	784.0	435.0	111.0	49.0	15
16	6.3	2.6	2.5	3.6	121.0	547.0	268.0	92.0	661.0	410.0	102.0	49.0	16
17	6.3	2.5	2.5	3.6	134.0	553.0	189.0	102.0	509.0	410.0	103.0	49.0	17
18	6.3	2.5	2.5	3.2	134.0	560.0	95.0	102.0	448.0	381.0	102.0	54.0	18
19	6.3	2.6	2.5	3.2	134.0	560.0	4.6	192.0	489.0	367.0	102.0	65.0	19
20	6.3	2.8	2.5	3.2	119.0	560.0	4.4	289.0	425.0	369.0	102.0	80.0	20
21	6.3	2.8	2.5	3.2	113.0	560.0	4.4	386.0	342.0	371.0	121.0	87.0	21
22	6.3	2.5	2.5	3.2	113.0	542.0	4.4	450.0	342.0	367.0	136.0	87.0	22
23	5.1	2.5	2.5	3.2	113.0	529.0	3.7	448.0	340.0	337.0	137.0	103.0	23
24	3.2	2.5	3.5	3.2	110.0	540.0	4.0	443.0	340.0	306.0	137.0	113.0	24
25	3.2	2.5	4.4	3.2	105.0	547.0	4.2	444.0	630.0	260.0	99.0	110.0	25
26	3.2	2.7	4.4	3.2	105.0	544.0	3.9	498.0	864.0	140.0	54.0	110.0	26
27	3.2	2.8	3.6	3.2	108.0	542.0	3.4	327.0	878.0	69.0	42.0	110.0	27
28	8.9	2.8	3.6	3.2	134.0	540.0	3.3	252.0	927.0	69.0	42.0	110.0	28
29	8.1	2.8	3.6	---	139.0	542.0	65.0	449.0	954.0	69.0	42.0	110.0	29
30	2.9	2.8	3.6	---	129.0	542.0	276.0	403.0	945.0	69.0	42.0	110.0	30
31	---	2.8	3.6	---	258.0	---	328.0	---	955.0	79.0	---	75.0	31
TOTAL CFS	186.0	84.5	89.8	96.4	2,180.2	16,328.0	11,665.3	6,168.6	21,052.0	16,073.0	3,133.0	5,001.0	TOTAL CFS
TOTAL AF	369	168	178	191	4,320	32,390	23,140	12,240	41,760	31,880	6,210	9,920	TOTAL AF
THE YEAR	162,766	ACRE FEET											

B-5 [PREVIOUSLY B-7] **1989**

DISCHARGE: ARKANSAS RIVER AT LAMAR, COLORADO

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7133000
DAILY MEAN DISCHARGE,CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1989

B-5 [PREV B-7] **1989**

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	13.0	33.0	26.0	30.0	25.0	39.0	57.0	40.0	36.0	865.0	8.0	11.0	1
2	13.0	33.0	26.0	21.0	25.0	11.0	56.0	51.0	22.0	571.0	7.9	10.0	2
3	13.0	33.0	26.0	16.0	25.0	21.0	48.0	59.0	17.0	491.0	7.8	220.0	3
4	13.0	32.0	26.0	15.0	28.0	15.0	48.0	164.0	23.0	455.0	7.9	282.0	4
5	13.0	32.0	28.0	15.0	29.0	32.0	49.0	88.0	50.0	437.0	8.5	295.0	5
6	13.0	31.0	28.0	15.0	26.0	55.0	55.0	18.0	97.0	459.0	21.0	306.0	6
7	13.0	30.0	27.0	17.0	24.0	45.0	65.0	16.0	124.0	457.0	34.0	254.0	7
8	13.0	30.0	25.0	20.0	23.0	31.0	129.0	15.0	511.0	445.0	36.0	248.0	8
9	13.0	30.0	25.0	24.0	24.0	33.0	580.0	14.0	552.0	424.0	36.0	245.0	9
10	13.0	31.0	27.0	26.0	27.0	36.0	648.0	15.0	580.0	388.0	39.0	244.0	10
11	13.0	31.0	26.0	31.0	22.0	33.0	671.0	16.0	694.0	423.0	110.0	251.0	11
12	13.0	31.0	22.0	35.0	21.0	37.0	674.0	14.0	637.0	408.0	72.0	228.0	12
13	13.0	30.0	20.0	33.0	22.0	26.0	642.0	14.0	606.0	369.0	38.0	47.0	13
14	13.0	30.0	20.0	31.0	21.0	17.0	644.0	17.0	499.0	77.0	20.0	16.0	14
15	21.0	27.0	22.0	30.0	13.0	14.0	637.0	19.0	734.0	43.0	13.0	10.0	15
16	34.0	26.0	24.0	28.0	21.0	17.0	269.0	17.0	120.0	27.0	12.0	8.9	16
17	33.0	27.0	25.0	27.0	37.0	28.0	303.0	17.0	81.0	14.0	11.0	8.0	17
18	33.0	30.0	25.0	26.0	28.0	36.0	104.0	17.0	141.0	12.0	10.0	7.4	18
19	33.0	31.0	29.0	26.0	28.0	40.0	55.0	18.0	82.0	11.0	12.0	7.0	19
20	33.0	31.0	30.0	26.0	8.5	38.0	23.0	18.0	53.0	12.0	12.0	6.4	20
21	33.0	30.0	31.0	26.0	7.4	42.0	21.0	16.0	41.0	11.0	17.0	5.9	21
22	33.0	29.0	33.0	26.0	7.5	41.0	19.0	32.0	62.0	11.0	12.0	6.0	22
23	33.0	29.0	34.0	25.0	7.9	33.0	18.0	55.0	49.0	11.0	11.0	6.5	23
24	33.0	29.0	32.0	25.0	7.9	31.0	17.0	57.0	47.0	11.0	10.0	6.6	24
25	33.0	29.0	32.0	24.0	7.8	42.0	17.0	56.0	111.0	11.0	9.7	6.9	25
26	33.0	28.0	33.0	24.0	7.8	49.0	16.0	57.0	505.0	10.0	9.8	6.5	26
27	33.0	26.0	33.0	24.0	8.0	54.0	16.0	132.0	579.0	11.0	9.9	7.1	27
28	32.0	25.0	34.0	24.0	8.2	57.0	15.0	77.0	604.0	9.6	12.0	8.3	28
29	34.0	25.0	33.0	---	31.0	57.0	15.0	54.0	577.0	9.2	11.0	8.9	29
30	36.0	25.0	32.0	---	34.0	54.0	18.0	107.0	553.0	8.6	11.0	9.7	30
31	---	26.0	32.0	---	31.0	---	21.0	---	532.0	8.1	---	8.1	31
TOTAL CFS	702.0	910.0	866.0	690.0	636.0	1,064.0	5,950.0	1,290.0	9,319.0	6,499.5	629.5	2,785.2	TOTAL CFS
TOTAL AF	1,390	1,800	1,720	1,370	1,260	2,110	11,800	2,560	18,480	12,890	1,250	5,520	TOTAL AF
THE YEAR	62,150	ACRE FEET											

B-6 [PREVIOUSLY B-8] **1989**

DISCHARGE: ARKANSAS RIVER NEAR GRANADA, COLORADO

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7134180
DAILY MEAN DISCHARGE,CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1989

B-6 [PREV. B-8] **1989**

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	42.0	113.0	107.0	102.0	98.0	13.0	58.0	7.1	34.0	543.0	3.6	4.8	1
2	40.0	118.0	106.0	88.0	99.0	11.0	59.0	8.6	11.0	487.0	3.2	4.4	2
3	39.0	117.0	106.0	61.0	99.0	9.0	55.0	14.0	8.2	411.0	3.2	14.0	3
4	35.0	115.0	107.0	58.0	88.0	9.2	50.0	92.0	7.0	373.0	3.2	148.0	4
5	31.0	115.0	110.0	55.0	89.0	8.8	49.0	180.0	6.6	352.0	3.8	201.0	5
6	28.0	112.0	109.0	55.0	91.0	9.6	22.0	116.0	7.9	361.0	3.7	224.0	6
7	32.0	109.0	108.0	55.0	96.0	15.0	7.1	83.0	23.0	383.0	4.5	227.0	7
8	36.0	112.0	103.0	58.0	99.0	13.0	4.5	68.0	120.0	390.0	6.2	218.0	8
9	38.0	111.0	98.0	65.0	74.0	13.0	112.0	64.0	295.0	390.0	6.9	224.0	9
10	37.0	111.0	103.0	80.0	38.0	19.0	336.0	62.0	351.0	362.0	9.4	222.0	10
11	40.0	113.0	105.0	107.0	40.0	10.0	405.0	59.0	452.0	344.0	25.0	224.0	11
12	39.0	112.0	104.0	108.0	39.0	8.8	442.0	54.0	495.0	360.0	83.0	225.0	12
13	38.0	113.0	99.0	110.0	48.0	7.1	443.0	55.0	525.0	387.0	86.0	175.0	13
14	36.0	115.0	100.0	108.0	71.0	5.8	496.0	58.0	454.0	288.0	60.0	105.0	14
15	66.0	112.0	100.0	106.0	72.0	6.8	530.0	59.0	513.0	158.0	41.0	77.0	15
16	97.0	111.0	101.0	103.0	77.0	7.9	494.0	56.0	407.0	105.0	34.0	52.0	16
17	114.0	109.0	103.0	101.0	90.0	6.9	438.0	56.0	173.0	83.0	28.0	45.0	17
18	117.0	109.0	102.0	99.0	88.0	6.6	347.0	42.0	142.0	57.0	21.0	39.0	18
19	118.0	118.0	101.0	100.0	87.0	6.9	212.0	9.6	122.0	39.0	6.6	38.0	19
20	120.0	119.0	100.0	101.0	87.0	8.1	149.0	8.1	84.0	39.0	6.2	41.0	20
21	119.0	115.0	101.0	101.0	83.0	8.1	117.0	7.1	51.0	33.0	6.2	39.0	21
22	118.0	113.0	101.0	100.0	75.0	9.1	100.0	6.9	38.0	32.0	6.5	39.0	22
23	118.0	110.0	99.0	100.0	69.0	7.4	88.0	7.3	36.0	34.0	6.5	40.0	23
24	118.0	109.0	97.0	100.0	57.0	6.0	77.0	11.0	28.0	32.0	7.7	43.0	24
25	117.0	108.0	96.0	99.0	26.0	5.7	70.0	14.0	20.0	32.0	6.7	47.0	25
26	120.0	111.0	96.0	98.0	17.0	20.0	68.0	13.0	120.0	29.0	6.8	32.0	26
27	119.0	107.0	97.0	98.0	16.0	29.0	64.0	16.0	310.0	27.0	5.5	32.0	27
28	120.0	102.0	108.0	99.0	13.0	29.0	64.0	51.0	378.0	19.0	5.2	35.0	28
29	120.0	103.0	108.0	---	12.0	36.0	59.0	27.0	395.0	5.0	4.7	32.0	29
30	121.0	103.0	106.0	---	14.0	46.0	30.0	37.0	390.0	4.5	4.1	30.0	30
31	---	105.0	106.0	---	15.0	---	12.0	---	380.0	3.9	---	27.0	31
TOTAL CFS	2,333.0	3,450.0	3,187.0	2,515.0	1,967.0	391.8	5,457.6	1,341.7	6,376.7	6,163.4	498.4	2,904.2	TOTAL CFS
TOTAL AF	4,630	6,840	6,320	4,990	3,900	777	10,830	2,660	12,650	12,230	989	5,760	TOTAL AF
THE YEAR	72,576	ACRE FEET											

B-7a [PREVIOUSLY B-9a] **1989**

DISCHARGE: ARKANSAS RIVER NEAR COOLIDGE, KANSAS

U.S.G.S PUBLISHED RECORDS, GAGING STATION # 7137500
DAILY MEAN DISCHARGE,CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1989

B-7a [PREV.B-9a] **1989**

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	171	193	191	163	181	112	135	112	137	450	103	70	1
2	168	193	191	147	184	104	154	131	103	586	97	64	2
3	162	193	190	95	189	146	133	114	85	511	98	63	3
4	157	193	190	75	168	139	118	250	79	471	93	83	4
5	161	195	194	68	162	118	131	441	72	447	90	143	5
6	159	201	190	78	169	116	142	360	76	439	64	181	6
7	161	199	189	107	179	95	144	235	82	464	49	217	7
8	156	197	177	124	180	87	133	175	82	466	44	223	8
9	160	201	171	146	184	78	126	153	183	463	48	233	9
10	161	203	172	156	176	110	268	138	312	441	44	238	10
11	165	203	176	171	174	92	420	130	372	423	74	238	11
12	168	203	169	193	177	76	478	118	455	559	160	233	12
13	168	205	165	212	177	68	501	112	497	965	182	235	13
14	169	211	166	205	180	61	708	115	513	568	159	198	14
15	177	209	163	187	169	51	762	104	486	384	142	164	15
16	185	207	158	181	164	55	833	106	561	301	131	143	16
17	188	211	164	179	156	54	680	98	338	348	130	131	17
18	201	211	165	177	170	70	714	91	260	245	116	119	18
19	203	215	166	182	183	64	484	86	228	211	108	115	19
20	204	211	157	183	194	63	371	72	178	209	106	111	20
21	206	207	159	184	194	68	323	70	160	205	100	109	21
22	206	207	160	178	187	70	290	63	145	196	102	106	22
23	209	201	160	177	173	71	250	66	135	166	108	106	23
24	210	195	153	184	161	72	219	76	128	157	107	107	24
25	210	195	150	186	152	65	196	81	111	153	94	105	25
26	210	193	147	181	126	64	176	73	93	147	79	105	26
27	207	192	148	183	111	63	166	74	217	147	84	108	27
28	205	184	160	188	95	63	162	76	323	142	86	111	28
29	209	182	163	---	91	97	151	88	374	135	77	111	29
30	207	179	166	---	103	121	132	105	407	120	72	109	30
31	---	181	167	---	108	---	114	---	429	109	---	114	31
TOTAL CFS	5,523	6,170	5,237	4,490	5,017	2,513	9,614	3,913	7,621	10,628	2,947	4,393	TOTAL CFS
TOTAL AF	10,950	12,240	10,390	8,910	9,950	4,980	19,070	7,760	15,120	21,080	5,850	8,710	TOTAL AF
THE YEAR	135,010	ACRE FEET											

B-7b [PREVIOUSLY B-9b] **1989**

DISCHARGE: FRONTIER DITCH NEAR COOLIDGE, KANSAS

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7137000
DAILY MEAN DISCHARGE,CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1989

B-7b [PREV.B-9b] **1989**

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	33.0	0.0	0.0	0.0	0.0	0.0	41.0	13.0	34.0	34.0	15.0	24.0	1
2	36.0	0.0	0.0	0.0	0.0	0.0	36.0	34.0	26.0	42.0	15.0	19.0	2
3	28.0	0.0	0.0	0.0	0.0	0.0	34.0	21.0	21.0	37.0	14.0	19.0	3
4	26.0	0.0	0.0	0.0	0.0	0.0	30.0	28.0	19.0	33.0	13.0	24.0	4
5	14.0	0.0	0.0	0.0	0.0	0.0	11.0	7.8	15.0	32.0	23.0	27.0	5
6	7.5	0.0	0.0	0.0	0.0	24.0	0.1	8.5	21.0	34.0	41.0	30.0	6
7	11.0	0.0	0.0	0.0	0.0	33.0	0.0	13.0	18.0	38.0	45.0	32.0	7
8	23.0	0.0	0.0	0.0	0.0	35.0	0.0	20.0	17.0	36.0	49.0	29.0	8
9	28.0	0.0	0.0	0.0	0.0	48.0	0.0	22.0	40.0	36.0	50.0	31.0	9
10	26.0	0.0	0.0	0.0	0.0	52.0	0.0	20.0	41.0	37.0	48.0	25.0	10
11	27.0	0.0	0.0	0.0	0.0	51.0	0.0	20.0	41.0	46.0	44.0	22.0	11
12	27.0	0.0	0.0	0.0	0.0	50.0	0.0	18.0	48.0	50.0	26.0	22.0	12
13	25.0	0.0	0.0	0.0	0.0	50.0	0.0	17.0	49.0	28.0	0.0	21.0	13
14	24.0	0.0	0.0	0.0	0.0	53.0	0.0	18.0	49.0	0.9	0.0	10.0	14
15	15.0	0.0	0.0	0.0	0.0	58.0	0.3	25.0	55.0	0.6	0.0	11.0	15
16	0.6	0.0	0.0	0.0	0.0	60.0	0.4	28.0	53.0	0.4	0.0	13.0	16
17	0.4	0.0	0.0	0.0	0.0	55.0	0.2	30.0	48.0	0.3	0.0	14.0	17
18	0.2	0.0	0.0	0.0	0.0	48.0	0.0	24.0	48.0	0.2	0.0	18.0	18
19	0.0	0.0	0.0	0.0	0.0	46.0	0.0	18.0	47.0	0.0	0.0	18.0	19
20	0.0	0.0	0.0	0.0	0.0	48.0	0.0	13.0	43.0	0.0	0.0	17.0	20
21	0.0	0.0	0.0	0.0	0.0	47.0	0.0	12.0	36.0	0.0	0.0	17.0	21
22	0.0	0.0	0.0	0.0	0.0	45.0	0.0	23.0	28.0	0.0	0.0	16.0	22
23	0.0	0.0	0.0	0.0	0.0	47.0	8.5	17.0	24.0	0.0	0.0	16.0	23
24	0.0	0.0	0.0	0.0	0.0	47.0	18.0	18.0	22.0	0.0	0.0	16.0	24
25	0.0	0.0	0.0	0.0	0.0	45.0	17.0	15.0	32.0	0.0	9.0	15.0	25
26	0.0	0.0	0.0	0.0	0.0	47.0	17.0	14.0	46.0	0.0	24.0	14.0	26
27	0.0	0.0	0.0	0.0	0.0	50.0	16.0	13.0	51.0	0.0	21.0	13.0	27
28	0.0	0.0	0.0	0.0	0.0	49.0	13.0	15.0	42.0	4.3	18.0	14.0	28
29	0.0	0.0	0.0	---	0.0	52.0	14.0	21.0	39.0	11.0	22.0	15.0	29
30	0.0	0.0	0.0	---	0.0	47.0	16.0	30.0	36.0	14.0	24.0	15.0	30
31		0.0	0.0	---	0.0	---	13.0	---	33.0	16.0	---	16.0	31
TOTAL CFS	351.6	0.0	0.0	0.0	0.0	1,187.0	285.5	576.3	1,122.0	530.6	501.0	593.0	TOTAL CFS
TOTAL AF	697	0	0	0	0	2,350	566	1,140	2,230	1,050	994	1,180	TOTAL AF
THE YEAR	10,207	ACRE FEET											

B-7c
[PREVIOUSLY B-9c]
1989

STATELINE FLOW

SUMMATION OF U.S.G.S. PUBLISHED RECORDS, [1]
DAILY MEAN DISCHARGE,CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1989

B-7c
[PREV.B-9c]
1989

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	204	193	191	163	181	112	176	125	171	484	118	94	1
2	204	193	191	147	184	104	190	165	129	628	112	83	2
3	190	193	190	95	189	146	167	135	106	548	112	82	3
4	183	193	190	75	168	139	148	278	98	504	106	107	4
5	175	195	194	68	162	118	142	449	87	479	113	170	5
6	167	201	190	78	169	140	142	369	97	473	105	211	6
7	172	199	189	107	179	128	144	248	100	502	94	249	7
8	179	197	177	124	180	122	133	195	99	502	93	252	8
9	188	201	171	146	184	126	126	175	223	499	98	264	9
10	187	203	172	156	176	162	268	158	353	478	92	263	10
11	192	203	176	171	174	143	420	150	413	469	118	260	11
12	195	203	169	193	177	126	478	136	503	609	186	255	12
13	193	205	165	212	177	118	501	129	546	993	182	256	13
14	193	211	166	205	180	114	708	133	562	569	159	208	14
15	192	209	163	187	169	109	762	129	541	385	142	175	15
16	186	207	158	181	164	115	833	134	614	301	131	156	16
17	188	211	164	179	156	109	680	128	386	348	130	145	17
18	201	211	165	177	170	118	714	115	308	245	116	137	18
19	203	215	166	182	183	110	484	104	275	211	108	133	19
20	204	211	157	183	194	111	371	85	221	209	106	128	20
21	206	207	159	184	194	115	323	82	196	205	100	126	21
22	206	207	160	178	187	115	290	86	173	196	102	122	22
23	209	201	160	177	173	118	259	83	159	166	108	122	23
24	210	195	153	184	161	119	237	94	150	157	107	123	24
25	210	195	150	186	152	110	213	96	143	153	103	120	25
26	210	193	147	181	126	111	193	87	139	147	103	119	26
27	207	192	148	183	111	113	182	87	268	147	105	121	27
28	205	184	160	188	95	112	175	91	365	146	104	125	28
29	209	182	163	---	91	149	165	109	413	146	99	126	29
30	207	179	166	---	103	168	148	135	443	134	96	124	30
31	---	181	167	---	108	---	127	---	462	125	---	130	31
TOTAL CFS	5,875	6,170	5,237	4,490	5,017	3,700	9,899	4,489	8,743	11,159	3,448	4,986	TOTAL CFS
TOTAL AF	11,647	12,240	10,390	8,910	9,950	7,330	19,636	8,900	17,350	22,130	6,844	9,890	TOTAL AF
THE YEAR	145,217	ACRE FEET											

NOTES [1] The daily stateline flow is the sum of the flow of the Arkansas near Coolidge, Kansas [B-7a] and flow in the Frontier Ditch near Coolidge [B-7b], rounded to the nearest CFS.

B-8a **1987** [IN 89 REPORT]

DISCHARGE: ARKANSAS RIVER AT GARDEN CITY, KANSAS

B-8a **1987** [89 REPORT]

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7139000 [1]
DAILY MEAN DISCHARGE,CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1987

COMPACT YEAR 1987

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	204.0	164.0	121.0	91.0	103.0	404.0	249.0	1,850.0	1,600.0	1.1	67.0	63.0	1
2	222.0	160.0	121.0	90.0	106.0	510.0	116.0	1,380.0	1,790.0	1.1	72.0	49.0	2
3	229.0	155.0	115.0	89.0	103.0	679.0	37.0	1,580.0	1,380.0	6.7	85.0	43.0	3
4	227.0	153.0	116.0	88.0	102.0	1,050.0	21.0	1,920.0	1,280.0	19.0	121.0	41.0	4
5	227.0	157.0	118.0	88.0	102.0	966.0	17.0	2,080.0	1,290.0	89.0	119.0	33.0	5
6	229.0	159.0	121.0	87.0	102.0	880.0	17.0	2,100.0	1,030.0	72.0	92.0	24.0	6
7	222.0	157.0	115.0	87.0	103.0	800.0	37.0	2,040.0	809.0	47.0	59.0	12.0	7
8	218.0	159.0	113.0	83.0	103.0	783.0	64.0	1,940.0	656.0	40.0	37.0	4.7	8
9	206.0	157.0	113.0	86.0	98.0	694.0	116.0	1,750.0	592.0	21.0	24.0	1.0	9
10	198.0	155.0	115.0	94.0	91.0	800.0	287.0	1,740.0	505.0	11.0	11.0	6.6	10
11	192.0	155.0	132.0	90.0	66.0	853.0	609.0	1,030.0	439.0	10.0	55.0	21.0	11
12	190.0	153.0	113.0	88.0	63.0	853.0	1,050.0	633.0	464.0	11.0	64.0	35.0	12
13	189.0	143.0	110.0	88.0	60.0	694.0	1,750.0	861.0	497.0	2.5	82.0	51.0	13
14	187.0	148.0	110.0	91.0	54.0	573.0	1,800.0	1,100.0	498.0	0.0	147.0	64.0	14
15	182.0	144.0	104.0	94.0	54.0	541.0	1,800.0	1,220.0	502.0	0.0	74.0	61.0	15
16	182.0	144.0	100.0	91.0	64.0	492.0	1,820.0	1,260.0	404.0	0.0	66.0	64.0	16
17	178.0	149.0	95.0	91.0	64.0	547.0	1,860.0	1,310.0	306.0	0.0	50.0	83.0	17
18	178.0	148.0	92.0	92.0	63.0	628.0	1,970.0	1,370.0	252.0	0.0	46.0	101.0	18
19	184.0	146.0	90.0	94.0	62.0	718.0	1,950.0	1,650.0	212.0	0.0	59.0	110.0	19
20	184.0	142.0	88.0	94.0	82.0	871.0	1,950.0	1,950.0	187.0	0.0	78.0	119.0	20
21	182.0	139.0	86.0	96.0	82.0	946.0	1,910.0	2,130.0	157.0	1.3	82.0	137.0	21
22	178.0	137.0	85.0	95.0	94.0	791.0	2,160.0	2,400.0	101.0	1.3	68.0	153.0	22
23	173.0	137.0	83.0	92.0	95.0	718.0	2,170.0	2,290.0	68.0	0.0	61.0	170.0	23
24	168.0	137.0	81.0	88.0	99.0	791.0	2,290.0	2,300.0	36.0	0.0	63.0	175.0	24
25	168.0	134.0	80.0	86.0	88.0	1,040.0	2,440.0	2,250.0	26.0	0.0	63.0	180.0	25
26	162.0	132.0	79.0	90.0	88.0	1,340.0	2,540.0	2,300.0	22.0	0.0	76.0	172.0	26
27	159.0	132.0	80.0	96.0	90.0	1,580.0	2,590.0	2,280.0	35.0	2.4	100.0	165.0	27
28	159.0	132.0	82.0	99.0	94.0	937.0	2,680.0	2,210.0	29.0	31.0	111.0	131.0	28
29	162.0	132.0	84.0	---	47.0	541.0	2,740.0	1,890.0	15.0	52.0	102.0	106.0	29
30	168.0	132.0	86.0	---	40.0	366.0	2,620.0	1,610.0	13.0	59.0	91.0	73.0	30
31	---	121.0	90.0	---	365.0	---	2,530.0	---	4.0	65.0	---	74.0	31
TOTAL CFS	5,707.0	4,513.0	3,118.0	2,538.0	2,827.0	23,386.0	44,190.0	52,424.0	15,199.0	543.4	2,225.0	2,522.3	TOTAL CFS
TOTAL AF	11,320	8,960	6,180	5,030	5,610	46,390	87,650	104,000	30,150	1,080	4,410	5,000	TOTAL AF
THE YEAR	315,780	ACRE FEET											

NOTE: Data from this gage was historically included in the ARCA Annual Report until the complete record gage was converted to a high-flow, partial-record gaging station on June 30, 1970. On October 1, 1986 the gage was restored to a complete record gaging station. This report resumes the practice of reporting the Garden City flow. Flows for Compact Years 1987 and 1988 are included for completeness.

B-8b **1988** [IN 89 REPORT]

DISCHARGE: ARKANSAS RIVER AT GARDEN CITY, KANSAS

U.S.G.S. PUBLISHED RECORDS. GAGING STATION # 7139000 [1]
DAILY MEAN DISCHARGE,CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1988

B-8b **1988** [89 REPORT]

COMPACT YEAR 1988

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	83.0	194.0	170.0	190.0	190.0	60.0	0.0	82.0	0.0	0.0	0.0	27.0	1
2	99.0	178.0	160.0	185.0	182.0	163.0	0.0	286.0	0.0	0.0	0.0	18.0	2
3	112.0	180.0	155.0	185.0	175.0	214.0	0.0	302.0	0.0	0.0	0.0	15.0	3
4	122.0	181.0	150.0	185.0	167.0	244.0	0.2	275.0	0.0	0.0	0.0	11.0	4
5	105.0	188.0	145.0	180.0	160.0	252.0	3.8	246.0	0.0	0.0	0.0	8.2	5
6	70.0	187.0	150.0	180.0	163.0	249.0	7.2	239.0	0.0	0.0	0.0	5.8	6
7	64.0	188.0	140.0	180.0	163.0	154.0	4.9	232.0	0.0	0.0	0.0	1.5	7
8	56.0	192.0	135.0	180.0	148.0	69.0	2.9	230.0	0.0	0.0	0.0	0.0	8
9	91.0	186.0	130.0	180.0	134.0	11.0	2.0	205.0	0.0	0.0	0.0	0.0	9
10	83.0	187.0	120.0	180.0	73.0	6.6	1.4	165.0	0.0	0.0	0.0	0.0	10
11	72.0	185.0	115.0	180.0	41.0	5.1	0.4	143.0	0.0	0.0	0.0	0.0	11
12	71.0	184.0	115.0	185.0	35.0	3.2	0.0	132.0	0.0	0.0	0.0	0.0	12
13	73.0	185.0	120.0	195.0	26.0	2.2	0.0	129.0	0.0	0.0	0.0	0.0	13
14	74.0	191.0	125.0	210.0	20.0	0.8	0.0	129.0	0.0	0.0	0.0	0.0	14
15	70.0	190.0	130.0	220.0	18.0	0.1	0.0	116.0	0.0	0.0	0.0	0.0	15
16	77.0	185.0	130.0	218.0	21.0	0.8	0.0	56.0	0.0	0.0	29.0	0.0	16
17	117.0	175.0	130.0	205.0	55.0	2.8	0.0	40.0	0.0	0.0	174.0	0.0	17
18	124.0	170.0	125.0	204.0	115.0	1.8	0.0	23.0	0.0	0.0	298.0	0.0	18
19	75.0	170.0	125.0	197.0	93.0	0.5	0.0	13.0	0.0	0.0	308.0	0.0	19
20	62.0	170.0	125.0	195.0	116.0	0.0	0.0	9.1	0.0	0.0	292.0	0.0	20
21	84.0	165.0	130.0	196.0	127.0	0.0	0.0	6.2	0.0	0.0	268.0	0.0	21
22	150.0	165.0	135.0	190.0	137.0	0.0	0.0	4.3	0.0	0.0	248.0	0.0	22
23	167.0	170.0	140.0	182.0	134.0	0.0	0.0	1.9	0.0	0.0	238.0	0.0	23
24	177.0	175.0	150.0	182.0	129.0	0.0	3.2	0.0	0.0	0.0	240.0	0.0	24
25	177.0	175.0	160.0	196.0	126.0	0.0	4.5	0.0	0.0	0.0	218.0	0.0	25
26	179.0	170.0	180.0	200.0	130.0	0.0	3.0	0.0	0.0	0.0	206.0	0.0	26
27	185.0	170.0	185.0	196.0	137.0	0.0	3.8	0.0	0.0	0.0	196.0	0.0	27
28	185.0	175.0	190.0	190.0	127.0	0.0	12.0	0.0	0.0	0.0	144.0	0.0	28
29	186.0	171.0	190.0	190.0	125.0	0.0	15.0	0.0	0.0	0.0	59.0	0.0	29
30	191.0	170.0	190.0	---	100.0	0.0	23.0	0.0	0.0	0.0	40.0	0.0	30
31	---	170.0	190.0	---	59.0	---	41.0	---	0.0	0.0	---	0.0	31
TOTAL CFS	3,381.0	5,542.0	4,535.0	5,556.0	3,426.0	1,439.9	128.3	3,064.5	0.0	0.0	2,958.0	86.5	TOTAL CFS
TOTAL AF	6,710	10,990	9,000	11,020	6,800	2,860	255	6,080	0	0	5,970	172	TOTAL AF
THE YEAR	59,857	ACRE FEET											

NOTE: Data from this gage was historically included in the ARCA Annual Report until the complete record gage was converted to a high-flow, partial-record gaging station on June 30, 1970. On October 1, 1986 the gage was restored to a complete record gaging station. This report resumes the practice of reporting the Garden City flow. Flows for Compact Years 1987 and 1988 are included for completeness.

B-8c **1989** [IN 89 REPORT]

DISCHARGE: ARKANSAS RIVER AT GARDEN CITY, KANSAS

B-8c **1989** [89 REPORT]

U.S.G.S. PUBLISHED RECORDS, GAGING STATION # 7139000, [1]
DAILY MEAN DISCHARGE,CUBIC FEET PER SECOND
REPORT YEAR ENDING OCTOBER 31, 1989
COMPACT YEAR 1989

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	0.0	115.0	70.0	75.0	26.0	0.0	0.0	33.0	21.0	0.0	0.0	0.0	1
2	0.0	116.0	60.0	60.0	22.0	0.0	0.0	22.0	24.0	0.0	0.0	0.0	2
3	0.0	112.0	70.0	35.0	18.0	0.0	0.0	16.0	14.0	0.0	0.0	0.0	3
4	0.0	106.0	80.0	14.0	5.2	0.0	0.0	40.0	12.0	0.0	0.0	0.0	4
5	0.0	110.0	100.0	1.4	4.7	0.0	0.0	95.0	9.3	0.0	0.0	0.0	5
6	0.0	94.0	130.0	0.0	4.5	0.0	0.0	130.0	5.7	0.0	0.0	0.0	6
7	0.0	106.0	166.0	0.0	5.0	0.0	0.0	217.0	1.6	0.0	0.0	0.0	7
8	0.0	126.0	110.0	35.0	20.0	0.0	0.0	233.0	0.0	0.0	0.0	0.0	8
9	0.0	121.0	70.0	50.0	70.0	0.0	0.0	239.0	0.0	0.0	0.0	0.0	9
10	0.9	116.0	70.0	70.0	99.0	0.0	0.0	226.0	0.0	0.0	0.0	0.0	10
11	2.8	109.0	80.0	90.0	30.0	0.0	0.0	210.0	0.0	0.0	0.0	0.0	11
12	5.7	101.0	90.0	110.0	19.0	0.0	0.0	178.0	0.1	0.0	5.5	0.0	12
13	10.0	120.0	70.0	130.0	10.0	0.0	0.0	154.0	0.0	0.0	0.0	0.0	13
14	32.0	118.0	60.0	110.0	2.4	0.0	0.0	143.0	0.0	0.0	6.9	0.0	14
15	49.0	103.0	70.0	110.0	0.4	0.0	0.0	131.0	128.0	0.0	33.0	0.0	15
16	51.0	118.0	80.0	125.0	0.0	0.0	0.0	129.0	318.0	0.0	58.0	0.0	16
17	44.0	126.0	100.0	140.0	0.0	0.0	0.0	112.0	246.0	0.0	63.0	0.0	17
18	44.0	125.0	130.0	140.0	0.0	0.0	1.8	79.0	238.0	0.0	64.0	0.0	18
19	42.0	130.0	175.0	130.0	0.0	0.0	338.0	43.0	147.0	0.0	67.0	0.0	19
20	54.0	120.0	250.0	140.0	0.0	0.0	263.0	25.0	19.0	0.0	64.0	0.0	20
21	74.0	126.0	250.0	130.0	0.0	0.0	184.0	10.0	7.2	0.0	56.0	0.0	21
22	63.0	130.0	181.0	150.0	0.0	0.0	108.0	10.0	3.6	0.0	56.0	0.0	22
23	73.0	131.0	114.0	140.0	0.0	0.0	160.0	12.0	0.9	0.0	52.0	0.0	23
24	84.0	130.0	103.0	170.0	0.0	0.0	142.0	12.0	0.0	0.0	54.0	0.0	24
25	76.0	129.0	99.0	170.0	0.0	0.0	116.0	15.0	0.0	0.0	37.0	0.0	25
26	83.0	123.0	100.0	117.0	0.0	0.0	85.0	22.0	0.0	0.0	13.0	0.0	26
27	84.0	85.0	90.0	59.0	0.0	0.0	61.0	30.0	0.0	0.0	6.0	0.0	27
28	90.0	60.0	102.0	34.0	0.0	0.0	68.0	21.0	0.0	0.0	1.6	0.0	28
29	98.0	50.0	78.0	---	0.0	0.0	61.0	18.0	0.0	0.0	28.0	0.0	29
30	116.0	50.0	75.0	---	0.0	0.0	53.0	16.0	0.0	0.0	0.0	0.0	30
31	---	60.0	88.0	---	0.0	---	41.0	---	0.0	0.0	---	0.0	31
TOTAL CFS	1,176.4	3,366.0	3,311.0	2,535.4	336.2	0.0	1,681.8	2,621.0	1,195.4	0.0	665.0	0.0	TOTAL CFS
TOTAL AF	2,330	6,680	6,570	5,030	667	0	3,340	5,200	2,370	0	1,320	0	TOTAL AF
THE YEAR	33,507	ACRE FEET											

NOTE: Data from this gage was historically included in the ARCA Annual Report until the complete record gage was converted to a high-flow, partial-record gaging station on June 30, 1970. On October 1, 1986 the gage was restored to a complete record gaging station. This report resumes the practice of reporting the Garden City flow. Flows for Compact Years 1987 and 1988 are included for completeness.

B-9 **CONTENTS JOHN MARTIN RESERVOIR CONSERVATION STORAGE** **B-9**

[PREVIOUSLY B-5a] OPERATIONS SECRETARY, ARCA MONTHLY ACCOUNTING SHEETS [PREV.B-5a]

1989 MIDNIGHT CONTENTS [2400 HOURS] TO NEAREST ACRE FOOT [1] **1989**

REPORT YEAR ENDING OCTOBER 31, 1989

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	353	6,047	10,926	16,107	20,793	24,470	0	0	0	0	0	0	1
2	542	6,209	11,124	16,163	21,029	22,138	0	0	0	0	0	0	2
3	806	6,423	11,274	16,222	21,237	19,915	0	0	0	0	0	0	3
4	1,035	6,591	11,518	16,285	21,397	18,082	0	596	0	0	0	0	4
5	1,132	6,755	11,724	16,349	21,580	16,207	0	782	0	0	0	0	5
6	1,316	6,916	11,936	16,419	21,791	14,311	0	0	0	0	0	0	6
7	1,437	7,077	12,047	16,488	22,060	12,415	0	0	0	0	0	0	7
8	1,552	7,285	12,123	16,558	22,320	10,524	0	0	0	0	0	0	8
9	1,716	7,444	12,270	16,660	22,582	8,645	0	0	0	0	0	0	9
10	1,845	7,602	12,365	16,770	22,825	6,749	0	0	0	0	0	0	10
11	2,200	7,763	12,530	16,881	23,054	4,890	0	0	0	0	0	0	11
12	2,329	7,921	12,692	17,013	23,283	3,046	0	0	0	0	0	0	12
13	2,458	8,085	12,804	17,169	23,510	1,161	0	0	0	0	0	0	13
14	2,594	8,357	12,886	17,326	23,719	0	0	0	0	0	0	0	14
15	2,753	8,636	12,969	17,436	23,873	0	0	0	0	0	0	0	15
16	2,894	8,718	13,104	17,541	24,024	0	1,273	0	0	0	0	0	16
17	3,116	8,846	13,295	17,962	24,142	0	1,504	0	0	0	0	0	17
18	3,551	9,071	13,538	18,164	24,325	0	1,401	0	0	0	0	0	18
19	3,734	9,463	13,728	18,499	24,508	0	2,158	0	0	0	0	0	19
20	4,001	9,704	14,032	18,758	24,687	0	1,571	0	0	0	0	0	20
21	4,061	9,876	14,284	18,870	24,894	0	49	0	0	0	0	0	21
22	4,309	10,030	14,472	19,054	25,101	0	0	0	0	0	0	0	22
23	4,608	10,148	14,600	19,384	25,275	0	0	0	0	0	0	0	23
24	4,726	10,275	14,732	19,677	25,465	0	0	0	0	0	0	0	24
25	4,904	10,402	14,874	19,980	25,641	0	0	0	0	0	0	0	25
26	5,146	10,531	15,020	20,291	25,857	0	0	0	0	0	0	0	26
27	5,300	10,558	15,281	20,426	25,977	0	0	0	0	0	0	0	27
28	5,555	10,568	15,543	20,567	26,130	0	0	0	0	0	0	0	28
29	5,727	10,592	15,749	---	26,340	0	0	0	0	0	0	0	29
30	5,886	10,611	15,903	---	26,563	0	0	0	0	0	0	0	30
31	---	10,680	16,063	---	26,794	---	0	---	0	0	---	0	31

NOTES. [1] Values are the volume of winter and/or summer compact water remaining in conservation storage prior to release to agreement accounts, as reported by the Operations Secretary.

B-10 1989

TRANSFER OF WATER FROM JMR CONSERVATION STORAGE

B-10 1989

INTO AGREEMENT ACCOUNTS

OPERATIONS SECRETARY, ARCA ; IN ACRE FEET [1], [2]

REPORT YEAR ENDING OCTOBER 31, 1989

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	0.0	0.0	0.0	0.0	0.0	2,479.4	0.0	0.0	0.0	0.0	0.0	0.0	1
2	0.0	0.0	0.0	0.0	0.0	2,479.4	0.0	0.0	0.0	0.0	0.0	0.0	2
3	0.0	0.0	0.0	0.0	0.0	2,364.7	0.0	0.0	0.0	0.0	0.0	0.0	3
4	0.0	0.0	0.0	0.0	0.0	1,983.5	0.0	0.0	0.0	0.0	0.0	0.0	4
5	0.0	0.0	0.0	0.0	0.0	1,983.5	0.0	0.0	0.0	0.0	0.0	0.0	5
6	0.0	0.0	0.0	0.0	0.0	1,983.5	0.0	1,028.2	0.0	0.0	0.0	0.0	6
7	0.0	0.0	0.0	0.0	0.0	1,983.5	0.0	194.0	0.0	0.0	0.0	0.0	7
8	0.0	0.0	0.0	0.0	0.0	1,983.5	0.0	181.0	0.0	0.0	0.0	0.0	8
9	0.0	0.0	0.0	0.0	0.0	1,983.5	0.0	155.0	0.0	0.0	0.0	0.0	9
10	0.0	0.0	0.0	0.0	0.0	1,983.5	0.0	158.0	0.0	0.0	0.0	0.0	10
11	0.0	0.0	0.0	0.0	0.0	1,983.5	0.0	205.0	0.0	0.0	0.0	0.0	11
12	0.0	0.0	0.0	0.0	0.0	1,983.5	0.0	149.7	0.0	0.0	0.0	0.0	12
13	0.0	0.0	0.0	0.0	0.0	1,983.5	0.0	384.3	0.0	0.0	0.0	0.0	13
14	0.0	0.0	0.0	0.0	0.0	1,232.0	0.0	186.4	0.0	0.0	0.0	0.0	14
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96.8	0.0	0.0	0.0	0.0	15
16	0.0	0.0	0.0	0.0	0.0	0.0	1,239.7	0.0	0.0	0.0	0.0	0.0	16
17	0.0	0.0	0.0	0.0	0.0	0.0	1,983.5	0.0	0.0	0.0	0.0	0.0	17
18	0.0	0.0	0.0	0.0	0.0	0.0	991.8	0.0	0.0	0.0	0.0	0.0	18
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19
20	0.0	0.0	0.0	0.0	0.0	0.0	991.8	0.0	0.0	0.0	0.0	0.0	20
21	0.0	0.0	0.0	0.0	0.0	0.0	1,983.5	0.0	0.0	0.0	0.0	0.0	21
22	0.0	0.0	0.0	0.0	0.0	0.0	313.4	0.0	0.0	0.0	0.0	0.0	22
23	0.0	0.0	0.0	0.0	0.0	0.0	299.0	0.0	0.0	0.0	0.0	0.0	23
24	0.0	0.0	0.0	0.0	0.0	0.0	187.0	0.0	0.0	0.0	0.0	0.0	24
25	0.0	0.0	0.0	0.0	0.0	0.0	104.0	0.0	0.0	0.0	0.0	0.0	25
26	0.0	0.0	0.0	0.0	0.0	0.0	131.0	0.0	0.0	0.0	0.0	0.0	26
27	0.0	0.0	0.0	0.0	0.0	0.0	179.0	0.0	0.0	0.0	0.0	0.0	27
28	0.0	0.0	0.0	0.0	0.0	0.0	132.0	0.0	0.0	0.0	0.0	0.0	28
29	0.0	0.0	0.0	---	0.0	0.0	50.3	0.0	0.0	0.0	0.0	0.0	29
30	0.0	0.0	0.0	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30
31	---	0.0	0.0	---	0.0	---	0.0	0.0	0.0	0.0	0.0	0.0	31
TOTAL AF	0.0	0.0	0.0	0.0	0.0	28,390.4	8,585.9	2,738.5	0.0	0.0	0.0	0.0	TOTAL AF
THE YEAR	39,715	ACRE FEET											

NOTES: [1] All conservation storage water was released into Colorado and Kansas accounts as follows: 40% to Kansas and 60% to Colorado,as described in the 1980 Colorado-Kansas Operating Plan Resolution.

[2] Values reported are "winter compact water" and "summer compact water" releases from monthly accounting sheets, rounded to the nearest 0.1 AF.

B-11 **DEMANDS BY COLORADO FOR AGREEMENT ACCOUNT WATER FROM JMR** **B-11**

1989

OPERATIONS SECRETARY, ARCA ; IN ACRE FEET [1]

REPORT YEAR ENDING OCTOBER 31, 1989

1989

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	0.0	0.0	0.0	0.0	0.0	787.7	678.5	563.5	0.0	279.8	0.0	0.0	1
2	0.0	0.0	0.0	0.0	0.0	787.7	594.2	563.5	74.9	269.7	0.0	0.0	2
3	0.0	0.0	0.0	0.0	0.0	926.0	557.5	211.3	282.7	269.7	0.0	0.0	3
4	0.0	0.0	0.0	0.0	0.0	1,051.7	546.2	0.0	380.4	269.7	0.0	0.0	4
5	0.0	0.0	0.0	0.0	0.0	1,079.2	650.2	0.0	380.4	253.5	83.9	0.0	5
6	0.0	0.0	0.0	0.0	0.0	1,080.3	731.6	0.0	415.5	249.9	134.2	50.8	6
7	0.0	0.0	0.0	0.0	0.0	1,174.1	710.5	0.0	468.5	230.7	134.2	81.3	7
8	0.0	0.0	0.0	0.0	0.0	1,230.4	812.6	0.0	507.0	219.2	119.2	81.3	8
9	0.0	0.0	0.0	0.0	0.0	1,230.4	869.4	0.0	507.0	219.2	110.2	81.3	9
10	0.0	0.0	0.0	0.0	0.0	1,216.0	820.7	0.0	490.9	219.2	110.2	81.3	10
11	0.0	0.0	0.0	0.0	0.0	1,188.2	725.2	0.0	456.7	119.5	90.5	81.3	11
12	0.0	0.0	0.0	0.0	0.0	1,116.9	709.9	68.7	316.6	59.7	29.5	30.5	12
13	0.0	0.0	0.0	0.0	0.0	1,069.3	619.9	159.3	261.9	59.7	0.0	0.0	13
14	0.0	0.0	0.0	0.0	0.0	1,098.7	619.9	168.4	261.9	59.7	0.0	0.0	14
15	0.0	0.0	0.0	0.0	128.9	909.3	415.7	158.8	139.6	51.0	0.0	0.0	15
16	0.0	0.0	0.0	0.0	215.6	893.9	299.7	174.8	93.1	0.0	0.0	0.0	16
17	0.0	0.0	0.0	0.0	225.8	908.7	341.3	0.0	485.3	0.0	0.0	0.0	17
18	0.0	0.0	0.0	0.0	225.8	879.3	151.1	0.0	611.5	0.0	0.0	0.0	18
19	0.0	0.0	0.0	0.0	225.8	856.3	0.0	157.5	587.4	0.0	0.0	0.0	19
20	0.0	0.0	0.0	0.0	210.4	856.3	0.0	281.9	557.4	0.0	0.0	0.0	20
21	0.0	0.0	0.0	0.0	200.3	839.7	0.0	666.3	546.4	0.0	0.0	0.0	21
22	0.0	0.0	0.0	0.0	192.8	810.4	0.0	857.4	549.3	0.0	0.0	0.0	22
23	0.0	0.0	0.0	0.0	188.3	796.6	0.0	783.2	549.3	0.0	0.0	0.0	23
24	0.0	0.0	0.0	0.0	201.2	807.8	0.0	458.7	385.1	302.6	0.0	0.0	24
25	0.0	0.0	0.0	0.0	208.9	814.8	0.0	275.1	363.9	302.6	0.0	0.0	25
26	0.0	0.0	0.0	0.0	208.9	739.7	0.0	178.0	401.9	126.1	0.0	0.0	26
27	0.0	0.0	0.0	0.0	215.4	694.5	0.0	66.8	356.9	0.0	0.0	0.0	27
28	0.0	0.0	0.0	0.0	251.8	694.5	0.0	184.3	338.9	0.0	0.0	0.0	28
29	0.0	0.0	0.0	---	271.3	694.5	97.1	110.6	338.9	0.0	0.0	0.0	29
30	0.0	0.0	0.0	---	271.3	694.5	515.1	0.0	317.9	0.0	0.0	0.0	30
31	---	0.0	0.0	---	508.0	---	626.3	---	305.3	0.0	---	0.0	31
TOTAL AF	0.0	0.0	0.0	0.0	3,950.5	27,927.3	12,092.5	6,088.1	11,732.1	3,561.5	812.0	488.0	TOTAL AF
THE YEAR	66,652	ACRE FEET											

NOTE: [1] Rounded to nearest 0.1 af

DEMANDS BY KANSAS FOR AGREEMENT ACCOUNT WATER FROM JMR

B-12 1989

OPERATIONS SECRETARY, ARCA ; IN ACRE FEET [1],[2]
REPORT YEAR ENDING OCTOBER 31, 1989

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	1
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	309.9	2
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	495.9	3
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	495.9	4
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	495.9	5
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	495.9	6
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	396.7	793.4	0.0	495.9	7
8	0.0	0.0	0.0	0.0	0.0	0.0	446.3	0.0	793.4	793.4	0.0	495.9	8
9	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	793.4	793.4	0.0	495.9	9
10	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	793.4	793.4	0.0	495.9	10
11	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	793.4	793.4	0.0	495.9	11
12	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	793.4	793.4	0.0	186.0	12
13	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	793.4	297.5	0.0	0.0	13
14	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	793.4	0.0	0.0	0.0	14
15	0.0	0.0	0.0	0.0	0.0	0.0	495.9	0.0	314.1	0.0	0.0	0.0	15
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	495.9	0.0	0.0	0.0	25
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	26
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	27
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	28
29	0.0	0.0	0.0	---	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	29
30	0.0	0.0	0.0	---	0.0	0.0	0.0	0.0	793.4	0.0	0.0	0.0	30
31	---	0.0	0.0	---	0.0	---	0.0	---	793.4	0.0	---	0.0	31
TOTAL AF	0.0	0.0	0.0	0.0	0.0	0.0	5,702.6	0.0	11,520.8	9,818.3	0.0	4,958.8	TOTAL AF
THE YEAR	32,001 ACRE FEET												

NOTE: [1] Rounded to nearest 0.1 af
[2] Does not include transit loss account releases

B-13 1989

STATELINE FLOWS ON DAYS OF KANSAS DEMANDS

ARKANSAS RIVER AT THE STATELINE [1],[2]
OPERATIONS SECRETARY, ARCA ; IN ACRE FEET
REPORT YEAR ENDING OCTOBER 31, 1989

B-13 1989

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	DAY
1	0	0	0	0	0	0	0	0	0	960	0	0	1
2	0	0	0	0	0	0	0	0	0	1,246	0	0	2
3	0	0	0	0	0	0	0	0	0	1,087	0	0	3
4	0	0	0	0	0	0	0	0	0	1,000	0	0	4
5	0	0	0	0	0	0	0	0	0	950	0	341	5
6	0	0	0	0	0	0	0	0	0	938	0	413	6
7	0	0	0	0	0	0	0	0	0	996	0	486	7
8	0	0	0	0	0	0	0	0	0	996	0	490	8
9	0	0	0	0	0	0	0	0	442	990	0	516	9
10	0	0	0	0	0	0	532	0	700	948	0	514	10
11	0	0	0	0	0	0	833	0	819	930	0	504	11
12	0	0	0	0	0	0	948	0	998	1,208	0	506	12
13	0	0	0	0	0	0	994	0	1,083	2,013	0	504	13
14	0	0	0	0	0	0	1,404	0	1,115	1,172	0	401	14
15	0	0	0	0	0	0	1,511	0	1,073	815	0	341	15
16	0	0	0	0	0	0	1,652	0	1,170	654	0	305	16
17	0	0	0	0	0	0	1,349	0	766	742	0	286	17
18	0	0	0	0	0	0	1,416	0	611	532	0	270	18
19	0	0	0	0	0	0	960	0	546	458	0	262	19
20	0	0	0	0	0	0	736	0	438	434	0	0	20
21	0	0	0	0	0	0	641	0	389	0	0	0	21
22	0	0	0	0	0	0	575	0	343	0	0	0	22
23	0	0	0	0	0	0	0	0	0	0	0	0	23
24	0	0	0	0	0	0	0	0	0	0	0	0	24
25	0	0	0	0	0	0	0	0	0	0	0	0	25
26	0	0	0	0	0	0	0	0	0	0	0	0	26
27	0	0	0	0	0	0	0	0	532	0	0	0	27
28	0	0	0	0	0	0	0	0	724	0	0	0	28
29	0	0	0	---	0	0	0	0	819	0	0	0	29
30	0	0	0	---	0	0	0	0	879	0	0	0	30
31	---	0	0	---	0	---	0	---	916	0	---	0	31
TOTAL AF	0	0	0	0	0	0	13,551	0	14,363	19,069	0	6,139	TOTAL AF
THE YEAR	53,122	ACRE FEET											

NOTES [1]Flow revised from that presented in Oper. Sec. 89 Report to reflect USGS published data.
[2] Stateline flow is sum of Arkansas River at Coolidge, Kansas and Frontier Ditch near Coolidge, on days of Kansas demand, including applicable rundown period.

B-14a
1989

DIVERSIONS BY DITCHES, COLORADO WATER DISTRICT 14

COLORADO DIV. WATER RESOURCES, WATER COMMISSIONER REPORTS, ACRE FEET [1]
REPORT-YEAR ENDING OCTOBER 31,1989

B-14a
1989

NAME OF CANAL	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	YEAR
BESSEMER (RIVER)	2,068.2	0.0	0.0	0.0	1,683.4	4,212.4	5,757.3	11,683.8	5,921.0	4,507.1	4,333.4	4,425.5	44,591.9
RES. OR IMPORTED	0.0	0.0	0.0	0.0	0.0	2,822.9	2,966.0	1,305.1	5,770.4	6,433.2	187.5	0.0	19,485.1
TOTAL BESSEMER	2,068.2	0.0	0.0	0.0	1,683.4	7,035.2	8,723.3	12,989.0	11,691.4	10,940.3	4,520.9	4,425.5	64,077.1
MINNEQUA-FT. UNION	6,918.5	7,438.1	3,477.1	2,365.9	6,671.2	4,076.5	6,036.2	7,223.4	7,460.7	7,226.3	7,218.4	7,457.3	73,569.5
WEST PUEBLO	0.0	0.0	0.0	0.0	64.4	112.5	88.5	145.2	162.7	143.6	0.0	0.0	716.9
EXCELSIOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLLIER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COLORADO (RIVER)	0.0	0.0	0.0	9,514.2	10,989.9	0.0	1,112.1	403.6	1,592.1	0.0	0.0	0.0	23,611.8
RES. OR IMPORTED	0.0	0.0	0.0	0.0	54.7	6,028.8	0.0	0.0	11,023.3	5,427.0	0.0	0.0	22,533.9
TOTAL COLORADO	0.0	0.0	0.0	9,514.2	11,044.6	6,028.8	1,112.1	403.6	12,615.4	5,427.0	0.0	0.0	46,145.7
HIGHLINE (RIVER)	2,517.6	0.0	0.0	0.0	3,336.2	7,545.6	8,019.4	12,366.3	8,199.7	6,969.7	5,306.5	5,657.5	59,918.4
RES. OR IMPORTED	101.1	0.0	0.0	0.0	2,162.7	6,913.2	905.0	0.0	3,506.3	4,099.9	590.6	0.0	18,278.6
TOTAL HIGHLINE	2,618.7	0.0	0.0	0.0	5,498.8	14,458.8	8,924.4	12,366.3	11,705.9	11,069.6	5,897.0	5,657.5	78,197.0
OXFORD FARMER (RIVER)	1,334.7	0.0	0.0	0.0	3,459.2	1,429.1	3,893.5	5,655.8	2,178.3	3,042.9	863.0	943.0	22,799.5
RES. OR IMPORTED	0.0	0.0	0.0	0.0	97.0	1,483.1	581.8	69.4	1,692.9	760.1	297.5	307.4	5,289.2
TOTAL OXFORD FARMER	1,334.7	0.0	0.0	0.0	3,556.2	2,912.1	4,475.3	5,725.2	3,871.2	3,803.0	1,160.6	1,250.5	28,088.8
RIVER, DISTRICT #14	12,839.0	7,438.1	3,477.1	11,880.1	26,204.2	17,376.0	24,907.0	37,478.0	25,514.4	21,889.5	17,721.2	18,483.3	225,208.0
RES./IMP. DIST. #14	101.1	0.0	0.0	0.0	2,314.4	17,247.9	4,452.8	1,374.6	21,992.9	16,720.2	1,075.6	307.4	65,586.8
TOTAL DISTRICT #14	12,940.1	7,438.1	3,477.1	11,880.1	28,518.6	34,624.0	29,359.8	38,852.6	47,507.3	38,609.8	18,796.8	18,790.8	290,794.9

NOTES: [1] Monthly report data rounded to nearest 0.1 AF.
[2] "River" refers to direct flow diversions of native Arkansas River flows.
"Res." refers to diversion of stored water released to river from reservoirs for rediversion.
"Imported" refers to diversions of non-native (trans-mountain) water brought into the Arkansas Basin for use by the canal.

DIVERSIONS BY DITCHES, COLORADO WATER DISTRICT 17

B-14b
1989

COLORADO DIV WATER RESOURCES, WATER COMMISSIONER REPORTS, ACRE FEET [1]
REPORT-YEAR ENDING OCTOBER 31,1989

NAME OF CANAL	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	YEAR
OTERO (RIVER)	850.7	772.8	0.0	388.1	1,275.5	0.0	372.8	800.4	409.7	1.7	0.0	0.0	4,871.6
RES. OR IMPORTED	0.0	0.0	0.0	0.0	0.0	0.0	165.3	124.0	1,054.1	551.1	0.0	0.0	1,894.5
TOTAL OTERO	850.7	772.8	0.0	388.1	1,275.5	0.0	538.1	924.4	1,463.8	552.8	0.0	0.0	6,766.1
CATLIN CANAL (RIVER)	4,645.5	0.0	0.0	0.0	8,515.2	12,566.6	12,123.1	15,331.0	13,913.7	12,497.8	4,796.1	5,417.4	89,806.3
RES. OR IMPORTED	0.0	0.0	0.0	0.0	0.0	3,111.0	0.0	0.0	2,945.5	3,876.0	3,237.4	1,164.8	14,334.7
TOTAL CATLIN	4,645.5	0.0	0.0	0.0	8,515.2	15,677.6	12,123.1	15,331.0	16,859.2	16,373.8	8,033.5	6,582.2	104,141.0
HOLBROOK (RIVER)	0.0	2,683.5	3,233.4	0.0	2,129.9	392.6	1,380.7	5,429.9	6,499.1	4,731.9	0.0	0.0	26,481.1
RES. OR IMPORTED	590.1	1,128.6	72.0	0.0	5,932.0	4,971.1	2,022.4	0.0	7,854.8	5,761.1	0.0	0.0	28,332.2
TOTAL HOLBROOK	590.1	3,812.1	3,305.4	0.0	8,061.9	5,363.7	3,403.1	5,429.9	14,353.9	10,493.1	0.0	0.0	54,813.3
ROCKY FORD	1,036.5	0.0	0.0	0.0	2,952.6	6,428.4	5,218.1	5,289.0	6,636.8	6,604.9	2,830.7	2,258.0	39,254.9
FT. LYON STORAGE (RIVER)	7,097.0	13,493.8	12,906.8	16,792.3	3,731.9	0.0	1,204.6	0.0	78.2	453.4	0.0	0.0	55,757.9
FT. LYON STORAGE RES/IMP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5,439.2	453.4	0.0	0.0	5,892.6
TOTAL FT. LYON STORAGE	7,097.0	13,493.8	12,906.8	16,792.3	3,731.9	0.0	1,204.6	0.0	5,517.4	906.8	0.0	0.0	61,650.5
FT. LYON (RIVER)	12,340.0	0.0	0.0	0.0	13,556.4	10,387.4	23,613.7	37,938.7	12,466.8	12,227.6	9,395.5	10,387.3	142,313.3
RES. OR IMPORTED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	542.3	23,417.0	12,928.5	0.0	0.0	36,887.8
TOTAL FT. LYON	12,340.0	0.0	0.0	0.0	13,556.4	10,387.4	23,613.7	38,481.0	35,883.8	25,156.1	9,395.5	10,387.3	179,201.1
LAS ANIMAS CONSOL.	1,396.8	0.0	0.0	0.0	1,616.6	3,161.9	3,281.1	4,257.9	4,698.8	3,438.3	2,635.9	2,773.7	27,261.0
NATIVE-DISTRICT #17	20,269.6	3,456.3	3,233.4	388.1	30,046.2	32,936.8	45,989.5	69,046.8	44,624.9	39,502.2	19,658.1	20,836.4	329,988.2
RES. OR IMPORTED #17	590.1	1,128.6	72.0	0.0	5,932.0	8,082.1	2,187.7	666.3	35,271.4	23,116.8	3,237.4	1,164.8	81,449.2
TOTAL DISTRICT #17	20,859.7	4,584.9	3,305.4	388.1	35,978.1	41,018.9	48,177.2	69,713.1	79,896.3	62,619.0	22,895.5	22,001.1	411,437.4
NATIVE DIST. #14 + #17	33,108.6	10,894.4	6,710.5	12,268.2	56,250.4	50,312.8	70,896.5	106,524.9	70,139.2	61,391.7	37,379.3	39,319.7	555,196.2
RES/IMP DIST.#14 + #17	691.2	1,128.6	72.0	0.0	8,246.4	25,330.0	6,640.5	2,040.8	57,264.3	39,837.0	4,313.0	1,472.2	147,036.0
TOTAL DIST. #14 + #17	33,799.8	12,023.0	6,782.5	12,268.2	64,496.7	75,642.9	77,537.0	108,565.7	127,403.5	101,228.7	41,692.3	40,791.9	702,232.3

NOTES: [1] Monthly report data rounded to nearest 0.1 AF.
[2] "River" refers to direct flow diversions of native Arkansas River flows.
"Res." refers to diversion of stored water released to river from reservoirs for rediversion.
"Imported" refers to diversions of non-native (trans-mountain) water brought into the Arkansas Basin for use by the canal.

B-14c
[PREVIOUSLY B-15]
1989

DIVERSIONS BY DITCHES, COLORADO WATER DISTRICT 67

COLORADO DIV. WATER RESOURCES, WATER COMMISSIONER REPORTS, ACRE FEET [1]
REPORT-YEAR ENDING OCTOBER 31,1989

B-14c
[PREV. B-15]
1989

NAME OF CANAL	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	YEAR
FORT BENT	226.1	0.0	0.0	0.0	0.0	2,661.9	1,505.5	1,745.5	3,929.3	3,407.7	1,664.2	1,727.6	16,867.7
KESSEE DITCH	148.8	0.0	0.0	0.0	0.0	797.4	628.8	595.1	1,071.1	843.0	299.5	741.8	5,125.4
AMITY	67.4	0.0	0.0	0.0	17.9	20,804.9	9,514.9	5,280.1	12,585.3	13,761.5	505.8	0.0	62,537.8
LAMAR	1,194.1	0.0	0.0	0.0	2,271.1	4,708.8	3,865.8	4,254.6	6,890.7	5,982.2	4,917.1	4,022.5	38,107.0
HYDE	79.3	0.0	0.0	0.0	166.6	380.8	382.8	299.5	353.1	561.3	388.8	251.9	2,864.2
MANVEL	0.0	0.0	0.0	0.0	1,140.5	1,227.8	0.0	0.0	285.6	0.0	0.0	0.0	2,653.9
X.Y. & GRAHAM	727.9	0.0	0.0	0.0	63.5	1,876.4	1,414.2	1,408.3	2,179.9	1,557.1	1,608.6	1,253.6	12,089.4
BUFFALO	1,176.2	0.0	0.0	0.0	386.8	3,570.3	1,164.3	1,971.6	4,683.0	3,187.5	2,590.5	1,477.7	20,207.9
TOTAL NATIVE	3,619.9	0.0	0.0	0.0	4,046.3	36,028.3	18,476.3	15,554.6	31,978.0	29,300.3	11,974.4	9,475.2	160,453.3
TRANSMTN. DEL.[2]									880.7	858.9			1,739.5
TOTAL DIST 67	3,619.9	0.0	0.0	0.0	4,046.3	36,028.3	18,476.3	15,554.6	32,858.7	30,159.1	11,974.4	9,475.2	162,192.8

NOTES: [1] Monthly report data rounded to nearest 0.1 AF.
[2] City of Lamar's receipt of Fry-Ark water via Ft. Bent Canal

B-15
[PREVIOUSLY B-16]
1989

DIVERSIONS BY DITCHES, KANSAS STATELINE TO GARDEN CITY

COMPILED BY KANSAS DIV. OF WATER RESOURCES, ACRE FEET
FRONTIER DITCH USGS RECORD, OTHER DITCHES DWR RECORDS
REPORT-YEAR ENDING OCTOBER 31, 1989

B-15
[PREV. B-16]
1989

NAME OF CANAL	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	YEAR
FRONTIER DITCH [1], [2]	698	0	0	0	0	2,354	563	1,142	2,225	1,051	998	1,168	10,199
TOTAL STATELINE TO SYRACUSE [1]	698	0	0	0	0	2,354	563	1,142	2,225	1,051	998	1,168	10,199
AMAZON CANAL	0	0	0	0	442	1,535	0	734	6,970	4,395	1,892	4,110	20,078
GREAT EASTERN CANAL	0	0	0	912	4,796	212	4,752	1,349	119	6,647	0	256	19,043
SOUTH SIDE DITCH [3]	728	0	0	0	0	605	1,511	0	63	2,743	0	1,583	7,233
FARMERS DITCH	764	0	0	0	712	2,029	2,176	666	1,680	3,261	420	1,496	13,204
GARDEN CITY CANAL	143	0	0	0	0	337	240	60	232	363	93	268	1,736
TOTAL SYRACUSE TO GARDEN CITY [3]	1,635	0	0	912	5,950	4,718	8,679	2,809	9,064	17,409	2,405	7,713	61,294
TOTAL STATELINE TO GARDEN CITY [4]	2,333	0	0	912	5,950	7,072	9,242	3,951	11,289	18,460	3,403	8,881	71,493

NOTES [1] Frontier Ditch total diversion includes 3,038 AF returned directly to the River.
[2] During the period Nov. 1, 1988 through Oct. 31, 1989 the Frontier Ditch was authorized to divert water authorized to be diverted by the Fort Aubrey Ditch.
[3] South Side Ditch total diversion of 7,233 AF includes a total of 1,035 AF which was returned to the River for subsequent diversion by downstream ditches during the period Nov. 1, 1988 through Oct. 31, 1989.
[4] Total diversions Stateline to Garden City include 4,073 AF returned to the River, 3,038 AF by the Frontier Ditch and 1,035 AF by the South Side

TRANSMOUNTAIN DIVERSIONS INTO THE ARKANSAS BASIN

SOURCE: COLORADO DIVISION 2 ENGINEER , IN ACRE FEET [1]
REPORT-YEAR ENDING OCTOBER 31, 1989

STRUCTURE/OWNER	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	YEAR
TWIN LAKES TUNNEL [2]	27.3	30.6	24.1	24.1	26.8	1,429.9	10,984.6	16,004.9	5,978.3	2,431.3	16.9	72.8	37,051.4
HOMESTAKE TUNNEL [3]	4,770.3	0.0	0.0	0.0	0.0	1,674.1	3,788.5	1,459.9	2,644.0	3,695.3	3,528.7	1,237.7	22,798.4
WURTZ DITCH (PUEBLO)	0.0	0.0	0.0	0.0	0.0	57.4	951.9	788.6	187.6	60.1	0.0	0.0	2,045.7
LARKSPUR DITCH (CATLIN)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.3	1.6	0.0	0.0	0.0	28.8
EWING DITCH (PUEBLO)	0.0	0.0	0.0	0.0	0.0	28.6	287.4	294.8	105.9	59.5	24.5	0.0	800.7
COLUMBINE DITCH (PUEBLO)	0.0	0.0	0.0	0.0	0.0	0.0	426.5	713.3	217.2	75.4	0.0	0.0	1,432.4
BOUSTED TUNNEL (SECWCD)	0.0	0.0	0.0	0.0	0.0	1,800.0	17,080.0	15,560.0	2,520.0	275.0	0.0	0.0	37,235.0
BUSK-IVANHOE TUNNEL [4]	2.0	0.0	0.0	0.0	0.0	49.9	1,246.6	1,774.8	465.5	136.5	39.1	39.8	3,754.3
COLORADO SPGS. BLUE RIVER [5]	732.0	318.0	225.0	166.0	470.0	1,218.0	1,241.0	1,369.0	1,114.0	589.0	934.0	717.0	9,093.0
TRANSMTN. TOTAL	5,531.6	348.6	249.1	190.1	496.8	6,257.8	36,006.5	37,992.5	13,234.1	7,322.1	4,543.1	2,067.3	114,239.6

NOTES: [1] Transmountain water diverted into the Arkansas Basin through a facility is generally delivered to some type of storage prior to use. The values reported reflect water diverted into the basin, generally to storage, and not necessarily measured as flow below Pueblo.
[2] Ownership of Twin Lakes: Colorado Spgs. 54.65%, Pueblo 23.14%, Pueblo West 11.56%, Aurora 4.9%, others 5.75%; (also known as Independence Pass Tunnel).
[3] Ownership of Homestake: Colorado Spgs. 50%, Aurora 50%
[4] Ownership of Busk-Ivanhoe: Pueblo 50%, Aurora 49%, others 1%; (also known as Carlton Tunnel)
[5] Values show amount of transmountain water "delivered into the Colorado Springs potable water system" through Montgomery Pipeline from the Blue River via Hoosier Tunnel and the South Platte River, as shown in Table 2 of city's Blue River letter report for water year 1989 (October data from subsequent report).
[6] Aurora owned transmountain water is generally rediverted into and used in the South Platte River Basin via the Otero Pump Station and Spinney Mountain Reservoir. Total imports for 1989 should be reduced by 22,521 AF to reflect water used by Aurora outside the Arkansas Basin.

B-17
[PREVIOUSLY B-18]
1989

SUMMARY TABULATION

COMPILED BY COLORADO WATER CONS BD., IN ACRE FEET
REPORT YEAR ENDING OCTOBER 31, 1989

B-17
[PREV B-18]
1989

STATION/DATA	SOURCE	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	YEAR
Arkansas River at Las Animas	App B-2a	5,680	8,420	8,140	9,880	5,970	3,050	7,700	7,190	19,050	16,210	3,040	2,810	97,140
Purgatoire River near Las Animas	App B-2b	2,020	2,000	1,850	1,740	1,840	392	1,600	628	944	1,930	216	756	15,916
River Flow into John Martin Res.	App B-2c	7,700	10,420	9,990	11,620	7,810	3,442	9,300	7,818	19,994	18,140	3,256	3,566	113,056
End Month Reservoir contents	App B-3	87,300	97,800	109,000	120,000	124,000	95,300	84,400	78,500	52,800	37,400	34,600	28,300	N/A
Net Change in JMR Contents	calculate	8,316	10,500	11,200	11,000	4,000	(28,700)	(10,900)	(5,900)	(25,700)	(15,400)	(2,800)	(6,300)	(50,684)
Evaporation from JMR	Table 1	988	622	175	181	2,282	2,875	2,851	2,656	3,616	2,047	1,506	934	20,733
Outflow from John Martin Res	App B-4	369	168	178	191	4,320	32,390	23,140	12,240	41,760	31,880	6,210	9,920	162,766
Diversions in District 67	App B-14c	3,620	0	0	0	4,046	36,028	18,476	15,555	32,859	30,159	11,974	9,475	162,193
Arkansas River at Stateline	App B-7c	11,647	12,240	10,390	8,910	9,950	7,330	19,636	8,900	17,350	22,130	6,844	9,890	145,217
Diversions by ditches in Kansas	App B-15	2,333	0	0	912	5,950	7,072	9,242	3,951	11,289	18,460	3,403	8,881	71,493

NOTES: [1] Beginning contents of JMR at 0001 hours, Nov. 1, 1988 was 78,983.57 AF.
[2] Diversions by ditches in Kansas include 4,073 AF diverted and then returned directly to the River, see Appendix B-15 and notes 1,3, and 4 thereof

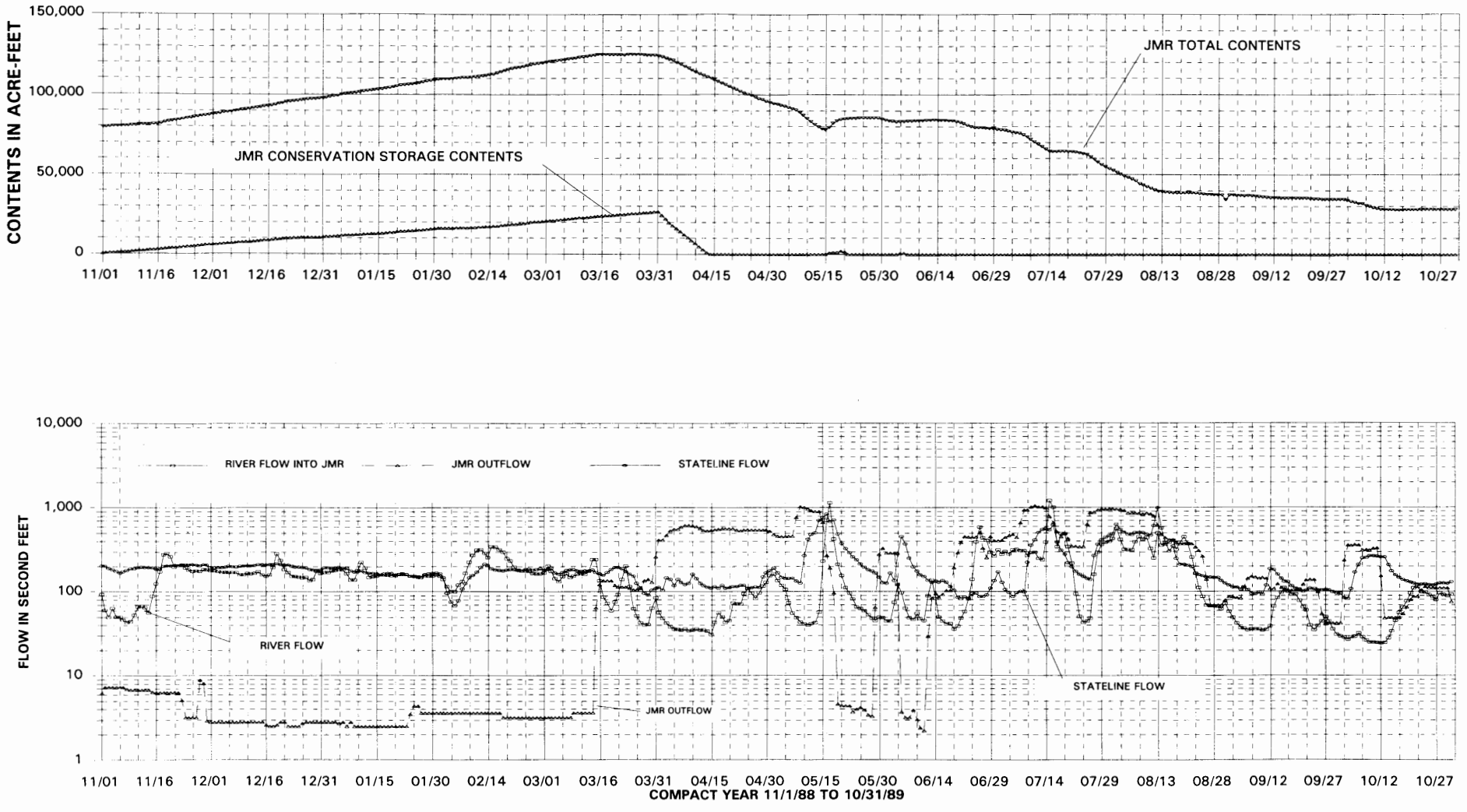

PLATE I: INFLOW, OUTFLOW, STATELINE FLOW, AND CONTENTS JMR