

Compact Year 2001
Arkansas River Compact Administration
Assistant Operations Secretary Report
Mark E. Rude
December 11, 2001

Pursuant to the Arkansas River Compact (Compact) between Kansas and Colorado, the Assistant Operations Secretary (AOS) Report for Compact Year 2001 (CY 01) is provided to supplement the Operations Secretary (OS) report and to highlight several potentially controversial reservoir and river operations that occurred. Some actions and practices that should be included in the review of operations pursuant to the April 24, 1980 *Resolution Concerning an Operating Plan for John Martin Reservoir*, as amended (1980 Operating Plan) are outlined as follows:

I. Period of Winter Storage

- A. Pueblo Winter Water Storage Program
 - 1. Determination of Section III water at Las Animas gage
 - 2. Operation of an unauthorized account
 - 3. Delay of 35% delivery to accounts
- B. Conservation Storage Release Into Accounts

II. Summer Storage Season

- A. Season Commencement Date
- B. Colorado's Agreement B and Section II C provisions
- C. Measurement and release of non-account inflows
- D. Summer conservation storage events

III. Kansas demands for account water

- A. Offset Account delivery(not an 1980 Operating Plan operation)
- B. Kansas Section II delivery
 - 1. Run #1
 - 2. Run #2

IV. Previous Year's Accounting Concerns

I. The Period of Winter Storage

According to Section I A of the 1980 Operating Plan, the *period of winter storage* for CY01 began at 0001 hour, November 1, 2000. On that day, the JMR content from the U.S. Army Corps of Engineers (Corps) daily report for JMR was 112,184 acre feet (a.f.) and the balance in the accounts as described in the Operations Secretary (OS) report was 110,992.57 a.f. The correct ownership of the reservoir content by the various accounts was in question and remains in question due to some of the accounting and operations concerns noted in this and previous year's AOS Reports.

A. Pueblo Winter Water Storage Program

1. Determination of Section III water at Las Animas gage. Water flowing into John Martin Reservoir between November 16th and March 15th is split by the OS between water for conservation storage and for Section III account deliveries of Pueblo Winter Water Storage Program water. This daily split determination has a significant influence on winter conservation storage amounts. The OS split at the Las Animas gage for the early part of CY 2002 is 84% to Pueblo Winter Water Storage Program operations and 16% to JMR conservation storage. Details of these operations should be reported by Colorado, and reviewed by the operations committee when the annual report of Compact operations is made. An appropriate review should include the past years program and the presently operating program.

2. Operation of an unauthorized account. At the beginning of CY01, all daily inflows into JMR accrued to conservation storage until November 16th. At that time, Section III water was delivered to the reservoir and accounted in an unauthorized account according to the Operations Secretary (OS) Report to ARCA. The OS continues to deviate from Compact operations using a "winter water account" without authority from ARCA and in spite of continued objections from Kansas.

3. Delay of the 35% delivery to accounts. The OS does not deliver 35% "...to the accounts for Kansas transit losses, for Kansas, and for Colorado Water District 67 ditches at the time of delivery..." as required by Section III D of the 1980 Operating Plan. The delay in delivering the appropriate water to the transit loss account can have a significant consequence, as evidenced by the OS accounting of an early season spill event in CY2000. The apparent result was a loss of storage charge water that should have been transferred to the Kansas transit loss account. Kansas requests that the accounting be corrected to reflect the proper delivery of storage charge water in CY 2000 and at all other times.

B. Conservation storage release into accounts

Pursuant to Section II A and II D of the 1980 Operating Plan, a release of conservation storage into the section II accounts began on April 2nd. The daily amounts are detailed in the OS report.

II. The Summer Storage Season

A. Season commencement date

Pursuant to Section I A and B of the 1980 Operating Plan, the *period of winter storage* continued until the first exhaustion of conservation storage on April 22nd. The OS accounting is not consistent with Section I A and B of the 1980 Operating Plan and reflects summer storage accumulations before the end of the winter storage period.

B. Colorado's Agreement B and Section II C provisions

Conservation storage in JMR was completely released into the accounts on April 22nd. Pursuant to Section II C (1) of the 1980 Operating Plan, Colorado is required at that time to "... administer the decreed rights of water users in Colorado Water District 67 as against each other and as against all rights now or hereafter decreed to water users diverting upstream from John Martin Dam on the basis of relative priorities in the same manor in which their respective priority rights were administered before John Martin Reservoir began to operate and as though John Martin Dam had not been constructed." The implementation of agreement B to prevent calls being administered from District 67 when conservation storage is emptied contradicts this provision.

C. Measurement and release of non-account inflows

The second requirement pursuant to Section II C (1) of the 1980 Operating Plan is that when conservation storage is exhausted into accounts, "... inflows shall, to the extent practical, be measured and released from the reservoir without temporary storage or averaging flows..." There is no reporting of the daily measurements of Section II C (1) water made by the OS. A proper accounting of Section II C (1) water in the OS report is necessary to determine compliance with this provision. A set of tables are provided for review (See attached Section II C (1) tables, 12 pages). This accounting relies on information from the Colorado daily John Martin Accounting System (JMAS) reports and reservoir status information, and the Army Corps of Engineers (Corps) Daily Operations Reports for JMR. No independent analysis of this data was made and it is assumed to be correct for the purpose of this review. The same daily estimates for JMR beginning of day content, inflows and outflows were used as in the OS Report. Daily OS account data (JMAS) is subtracted from the Corps' reservoir data to determine actual JMR inflows and outflows not provided in the OS report as an accounting of river flows passed through JMR. The results are comparable to the OS daily reservoir status to determine the water passed through JMR. A comparison of the resulting values for pass through water can be made with the OS values when the specific OS numbers become available. The inflows reported by the Corps exceed the OS reported inflow into JMR for CY 01 by 84,316 acre-feet.

D. Summer conservation storage events.

"Reservoir status" is a daily determination of the difference of the JMR account balances from the actual reservoir content. A positive number indicates an amount owed to the river and a negative number indicates an amount owed to the reservoir. A significantly large positive number for several consecutive days can indicate reservoir inflows from a runoff event. A status amount that can reasonably be expected to exceed 1000 a.f. for several days may necessitate a Summer storage event pursuant to Section II B of the 1980 Operation Plan. A review of the criteria used by the OS to initiate Summer conservation storage in CY01 is needed. Notable days to review include May 17th thru May 19th and July 14th thru July 20th.

III. Kansas Demands for JMR Account Water

A. Offset Account delivery

Kansas called for a delivery of water from the Offset account starting June 18th. At that time, a 500 cfs release began from the account. Before the release, stateline flows were between 170 cfs and 200 cfs. Water from this release arrived at the stateline approximately 40 hours after the release was initiated from JMR. The maximum average daily cfs during the Offset account delivery at the stateline was 364 cfs on June 22nd. Graph 1 shows stateline flows for the month of June. Graph 2 details the release from the Offset account and the stateline flow through the arrival of Section II water.

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B. Kansas Section II Delivery

1. Run #1 On June 22nd, approximately 29 hours after the end of the Offset account release from JMR, Kansas called for a 550 cfs release from its Section II account. This release was accompanied by a 50 cfs release from the Kansas transit loss account. This 50 cfs release was based on a calculation using the Livingston formula. This release began arriving at the stateline 33 hours after release was initiated. On the morning of the third day of the call, the stateline flow was only at 476 cfs and not the requested 550 cfs. The release from the Kansas transit loss account was increased by 100 cfs to 150cfs to get more water down the river system for timely deliveries for use in Kansas (see Graph 3). The stateline flow did not reach 550 cfs (average daily) until June 27th (see Graph 4).

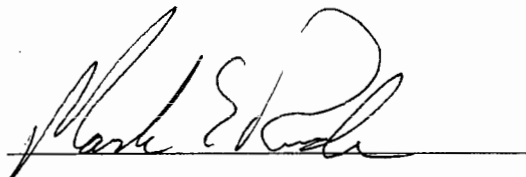
2. Run #2 On September 14th, Kansas called for a second release of its Section II account in the amount of 250 cfs and a release of 100 cfs from the transit loss account (See Graph 5).

IV. Previous Year's Accounting Concerns

A number of issues have been identified in previous years that must be resolved before concurrence between the OS and AOS on operation and accounting is achieved. These include the following:

- A. Interruption of releases from conservation storage into Section II accounts.
 - 1. November 1st interruptions
 - 2. When *demand* comes off the reservoir
- B. Pueblo Winter Water Storage Program
 - 1. Determination of Section III water at Las Animas gage
 - 2. No provision for a "Winter Water Account"
 - 3. Timely distribution of Section III storage charge
- C. John Martin Spill Accounting
 - 1. Timing of account losses

- 2. Extent of account losses
- 3. Inflow depletions
- 4. "Depletion credits" from accounts
- 5. Evaporation
- D. Kansas Section II delivery transit loss
- E. Offset account operations
- F. Summer storage season commencement
- G. Section II C operations and reporting
- H. Summer conservation storage event criteria



Mark E. Rude
Assistant Operations Secretary
Arkansas River Compact Administration
December 5, 2001

CY 2001 AOS REPORT

1980 OPERATING PLAN

Section II C (1)

NOVEMBER	2000		
DATE	DIFFERENCE INFLOW CORPS - OS acre-ft	DIFFERENCE OUTFLOW CORPS - OS acre-ft	RESERVOIR STATUS acre-ft
1	-983	208	1191
2	16	16	0
3	8	6	0
4	6	6	0
5	6	6	0
6	6	6	0
7	5	6	0
8	7	6	0
9	6	6	0
10	5	6	0
11	5	6	0
12	6	6	0
13	5	6	0
14	6	6	0
15	6	6	0
16	6	6	0
17	6	6	0
18	6	6	0
19	6	6	0
20	6	6	0
21	4	6	0
22	4	6	0
23	5	6	0
24	5	6	0
25	5	6	0
26	6	6	0
27	7	6	0
28	5	6	0
29	4	6	0
30	6	6	0
31			
total	-809	391	

DIFFERENCE INFLOW: The inflow data for John Martin Reservoir obtained from the Corps minus the Operation Secretary inflow into accounts.

DIFFERENCE OUTFLOW: The release data for John Martin Reservoir obtained from the Corps minus the Operation Secretary release from accounts.

RESERVOIR STATUS: The difference between the Operation Secretary's Reservoir Account contents and the Reservoir contents recorded by the Corps.

CY 2001 AOS REPORT

1980 OPERATING PLAN

Section II C (1)

DECEMBER	2000		
DATE	DIFFERENCE INFLOW CORPS - OS acre-ft	DIFFERENCE OUTFLOW CORPS - OS acre-ft	RESERVOIR STATUS acre-ft
1	6	6	0
2	5	6	0
3	6	6	0
4	7	6	0
5	7	6	0
6	6	6	0
7	5	6	0
8	5	6	0
9	4	6	0
10	4	6	0
11	5	6	0
12	4	6	0
13	5	6	0
14	5	6	0
15	4	6	0
16	5	6	0
17	5	4	0
18	5	4	0
19	4	4	0
20	4	4	0
21	5	4	0
22	5	4	0
23	4	4	0
24	4	4	0
25	4	4	0
26	5	4	0
27	6	4	0
28	4	4	0
29	4	4	0
30	4	4	0
31	4	4	0
total	149	155	

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RESERVOIR STATUS: The difference between the Operation Secretary's Reservoir Account contents and the Reservoir contents recorded by the Corps.

CY 2001 AOS REPORT

1980 OPERATING PLAN

Section II C (1)

JANUARY	2001		
DATE	DIFFERENCE INFLOW	DIFFERENCE OUTFLOW	RESERVOIR
	CORPS - OS	CORPS - OS	STATUS
	acre-ft	acre-ft	acre-ft
1	3	4	0
2	4	4	0
3	5	4	0
4	3	4	0
5	3	4	0
6	4	4	0
7	4	4	0
8	3	4	0
9	4	4	0
10	4	4	0
11	4	4	0
12	3	4	0
13	4	4	0
14	4	4	0
15	4	4	0
16	5	4	0
17	5	4	0
18	4	4	0
19	4	4	0
20	4	4	0
21	5	4	0
22	4	4	0
23	3	4	0
24	3	4	0
25	4	4	0
26	4	4	0
27	4	4	0
28	3	4	0
29	3	4	0
30	4	4	0
31	3	4	0
total	118	123	

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CY 2001 AOS REPORT

1980 OPERATING PLAN

Section II C (1)

FEBRUARY	2001		
DATE	DIFFERENCE INFLOW	DIFFERENCE OUTFLOW	RESERVOIR
	CORPS - OS	CORPS - OS	STATUS
	acre-ft	acre-ft	acre-ft
1	4	4	0
2	4	4	0
3	4	4	0
4	4	4	0
5	3	4	0
6	4	4	0
7	5	4	0
8	5	4	0
9	4	4	0
10	4	4	0
11	5	4	0
12	5	4	0
13	4	4	0
14	4	4	0
15	4	4	0
16	4	4	0
17	3	4	0
18	4	4	0
19	3	4	0
20	4	4	0
21	4	4	0
22	4	4	0
23	3	4	0
24	3	4	0
25	4	4	0
26	3	4	0
27	5	4	0
28	5	4	0
29			
30			
31			
total	113	111	

DIFFERENCE INFLOW: The inflow data for John Martin Reservoir obtained from the Corps minus the Operation Secretary inflow into accounts.

DIFFERENCE OUTFLOW: The release data for John Martin Reservoir obtained from the Corps minus the Operation Secretary release from accounts.

RESERVOIR STATUS: The difference between the Operation Secretary's Reservoir Account contents and the Reservoir contents recorded by the Corps.

CY 2001 AOS REPORT

1980 OPERATING PLAN

Section II C (1)

MARCH	2001		
DATE	DIFFERENCE INFLOW CORPS - OS acre-ft	DIFFERENCE OUTFLOW CORPS - OS acre-ft	RESERVOIR STATUS acre-ft
1	3	4	0
2	3	4	0
3	4	4	0
4	5	4	0
5	4	4	0
6	3	4	0
7	2	4	0
8	2	4	0
9	2	4	0
10	4	4	0
11	3	4	0
12	2	4	0
13	3	4	0
14	10	10	0
15	6	8	0
16	8	8	0
17	7	8	0
18	8	8	0
19	10	10	0
20	9	8	0
21	6	8	0
22	8	8	0
23	8	8	0
24	8	6	0
25	7	6	0
26	8	8	0
27	6	6	0
28	12	12	0
29	17	16	0
30	6	6	0
31	4	6	0
total	189	200	

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RESERVOIR STATUS: The difference between the Operation Secretary's Reservoir Account contents and the Reservoir contents recorded by the Corps.

CY 2001 AOS REPORT

1980 OPERATING PLAN

Section II C (1)

APRIL	2001		
DATE	DIFFERENCE INFLOW	DIFFERENCE OUTFLOW	RESERVOIR
	CORPS - OS	CORPS - OS	STATUS
	acre-ft	acre-ft	acre-ft
1	5	6	0
2	6	5	0
3	8	9	0
4	-4	-4	0
5	-5	-6	0
6	-2	-2	0
7	-1	-2	0
8	-2	-2	0
9	-61	-61	0
10	-41	-40	0
11	5	5	0
12	2	2	0
13	7	8	0
14	-1	-0	0
15	1	-0	0
16	0	-0	0
17	2	2	0
18	-1	-2	0
19	-1	-1	0
20	-9	-10	0
21	-6	-6	0
22	200	85	115
23	167	95	186
24	220	173	233
25	65	306	-9
26	307	225	72
27	381	194	259
28	267	354	171
29	432	249	355
30	235	478	113
31			

total

2175

2062

DIFFERENCE INFLOW:

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DIFFERENCE OUTFLOW:

The release data for John Martin Reservoir obtained from the Corps minus the Operation Secretary release from accounts.

RESERVOIR STATUS:

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CY 2001 AOS REPORT

1980 OPERATING PLAN

Section II C (1)

MAY	2001		
DATE	DIFFERENCE INFLOW CORPS - OS acre-ft	DIFFERENCE OUTFLOW CORPS - OS acre-ft	RESERVOIR STATUS acre-ft
1	680	292	502
2	46	668	-121
3	93	84	-111
4	962	96	754
5	524	975	302
6	603	284	620
7	797	900	517
8	301	734	83
9	351	301	133
10	301	320	115
11	357	243	229
12	298	364	163
13	226	293	98
14	649	209	539
15	222	684	77
16	319	255	141
17	2023	313	1852
18	444	1333	964
19	850	608	1205
20	561	1021	743
21	100	581	261
22	491	403	350
23	307	557	93
24	821	561	354
25	1032	885	501
26	289	908	-118
27	648	908	-379
28	1521	916	223
29	892	853	261
30	572	752	80
31	618	631	67
total	17898	17934	

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CY 2001 AOS REPORT

1980 OPERATING PLAN

Section II C (1)

JUNE	2001		
DATE	DIFFERENCE INFLOW	DIFFERENCE OUTFLOW	RESERVOIR
	CORPS - OS	CORPS - OS	STATUS
	acre-ft	acre-ft	acre-ft
1	554	541	79
2	514	542	47
3	916	559	404
4	941	583	763
5	243	585	422
6	403	585	239
7	2070	498	1812
8	-1540	270	0
9	15	14	0
10	15	16	0
11	17	16	0
12	-50	-49	0
13	-28	-28	0
14	-13	-14	0
15	291	291	0
16	531	383	147
17	380	302	225
18	320	277	268
19	147	209	206
20	704	335	575
21	351	485	441
22	470	607	304
23	337	671	-29
24	756	650	75
25	577	650	1
26	672	749	-76
27	670	657	-63
28	1089	740	286
29	754	723	317
30	776	964	128
31			
total	12881	12810	

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CY 2001 AOS REPORT

1980 OPERATING PLAN

Section II C (1)

JULY	2001		
DATE	DIFFERENCE INFLOW CORPS - OS acre-ft	DIFFERENCE OUTFLOW CORPS - OS acre-ft	RESERVOIR STATUS acre-ft
1	655	798	-16
2	655	828	85
3	928	813	-72
4	657	799	-4
5	869	652	0
6	655	590	0
7	591	605	0
8	605	479	0
9	429	292	0
10	341	222	0
11	222	222	0
12	222	284	0
13	286	941	-0
14	940	643	776
15	1418	393	1492
16	-200	759	1492
17	1766	1208	2092
18	2079	1233	1645
19	785	1212	1136
20	711	1245	688
21	803	1271	263
22	850	828	0
23	546	1066	0
24	1067	588	0
25	594	869	10
26	869	797	210
27	-1191	246	0
28	1872	443	370
29	1163	637	312
30	613	628	178
31	366	542	0
total	22162	22132	

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CY 2001 AOS REPORT

1980 OPERATING PLAN

Section II C (1)

AUGUST	2001		
DATE	DIFFERENCE INFLOW CORPS - OS acre-ft	DIFFERENCE OUTFLOW CORPS - OS acre-ft	RESERVOIR STATUS acre-ft
1	360	358	0
2	199	198	0
3	204	205	0
4	734	734	0
5	61	63	0
6	34	35	0
7	643	642	0
8	282	281	0
9	192	193	0
10	424	425	0
11	541	542	0
12	778	771	8
13	807	785	30
14	1022	754	299
15	768	781	286
16	696	784	198
17	793	755	236
18	780	741	274
19	740	746	268
20	730	698	300
21	664	601	362
22	595	665	292
23	389	680	0
24	284	284	0
25	345	344	0
26	272	273	0
27	208	257	-49
28	446	397	0
29	732	731	0
30	448	448	0
31	389	390	0
total	15559	15561	

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DIFFERENCE OUTFLOW: The release data for John Martin Reservoir obtained from the Corps minus the Operation Secretary release from accounts.

RESERVOIR STATUS: The difference between the Operation Secretary's Reservoir Account contents and the Reservoir contents recorded by the Corps.

CY 2001 AOS REPORT

1980 OPERATING PLAN

Section II C (1)

SEPTEMBER	2001		
DATE	DIFFERENCE INFLOW	DIFFERENCE OUTFLOW	RESERVOIR
	CORPS - OS	CORPS - OS	STATUS
	acre-ft	acre-ft	acre-ft
1	375	375	0
2	327	327	0
3	323	324	0
4	613	613	0
5	674	674	0
6	151	247	-96
7	234	224	x
8	190	162	x
9	125	173	-102
10	224	123	0
11	169	168	0
12	165	165	0
13	133	132	0
14	105	92	14
15	210	109	117
16	450	105	463
17	538	404	599
18	244	526	317
19	238	277	278
20	502	523	257
21	541	547	250
22	200	236	214
23	232	230	216
24	79	224	71
25	206	202	71
26	138	137	71
27	113	113	71
28	103	102	71
29	103	109	65
30	128	122	71
31			
total	7835	7765	

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RESERVOIR STATUS: The difference between the Operation Secretary's Reservoir Account contents and the Reservoir contents recorded by the Corps.

CY 2001 AOS REPORT

1980 OPERATING PLAN

Section II C (1)

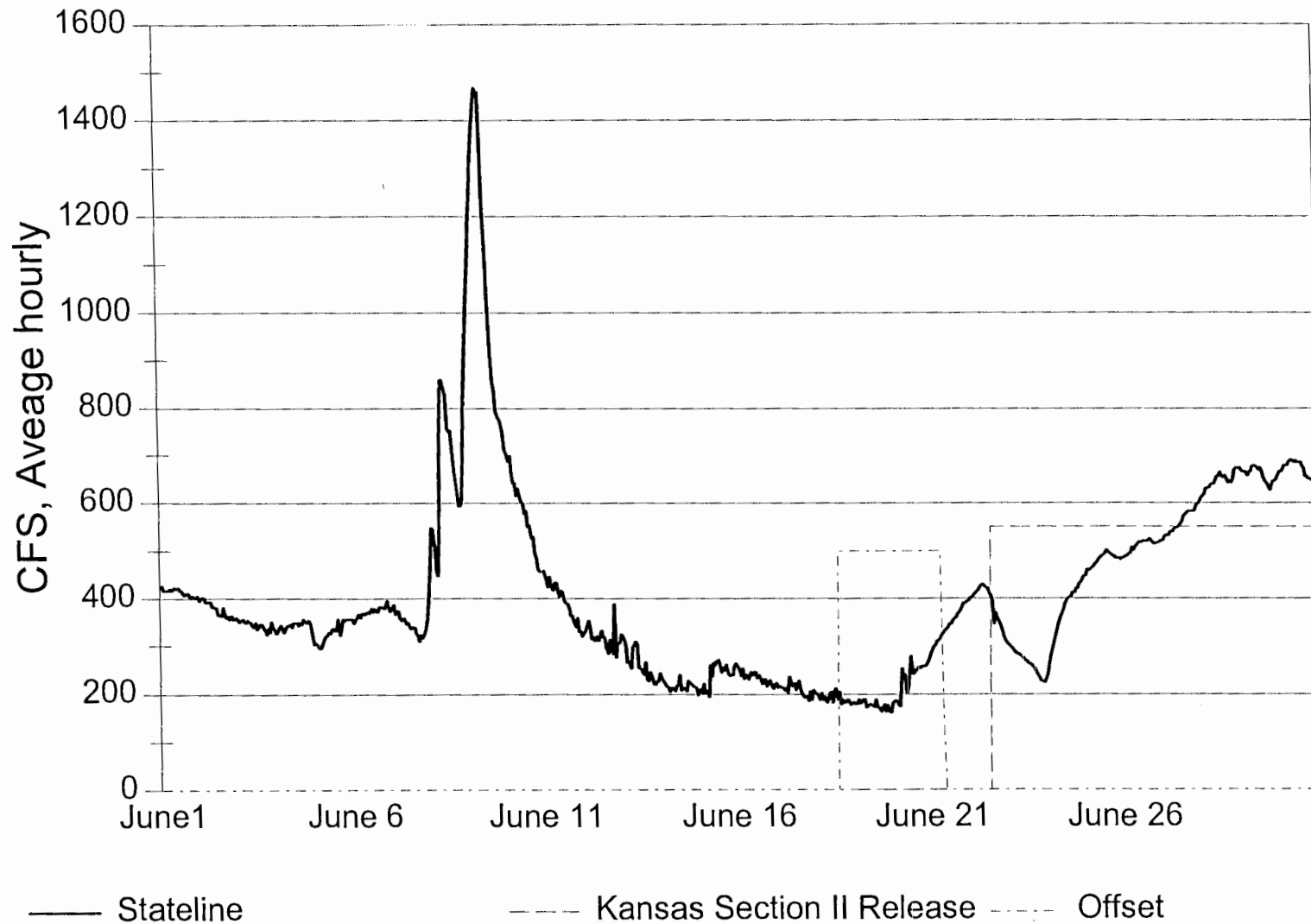
OCTOBER	2001		
DATE	DIFFERENCE INFLOW	DIFFERENCE OUTFLOW	RESERVOIR
	CORPS - OS	CORPS - OS	STATUS
	acre-ft	acre-ft	acre-ft
1	128	126	71
2	272	193	151
3	18	124	46
4	372	259	159
5	118	115	160
6	110	113	118
7	185	113	191
8	152	113	229
9	87	131	186
10	148	149	186
11	131	147	169
12	38	151	95
13	36	149	-17
14	71	149	-94
15	46	123	-187
16	196	95	-86
17	131	95	-160
18	436	95	290
19	347	147	491
20	300	204	585
21	226	204	606
22	278	248	636
23	379	323	691
24	133	341	483
25	395	333	543
26	73	319	298
27	111	315	93
28	75	317	-148
29	413	207	59
30	371	153	276
31	271	175	375
total	6045	5727	

DIFFERENCE INFLOW: The inflow data for John Martin Reservoir obtained from the Corps minus the Operation Secretary inflow into accounts.

DIFFERENCE OUTFLOW: The release data for John Martin Reservoir obtained from the Corps minus the Operation Secretary release from accounts.

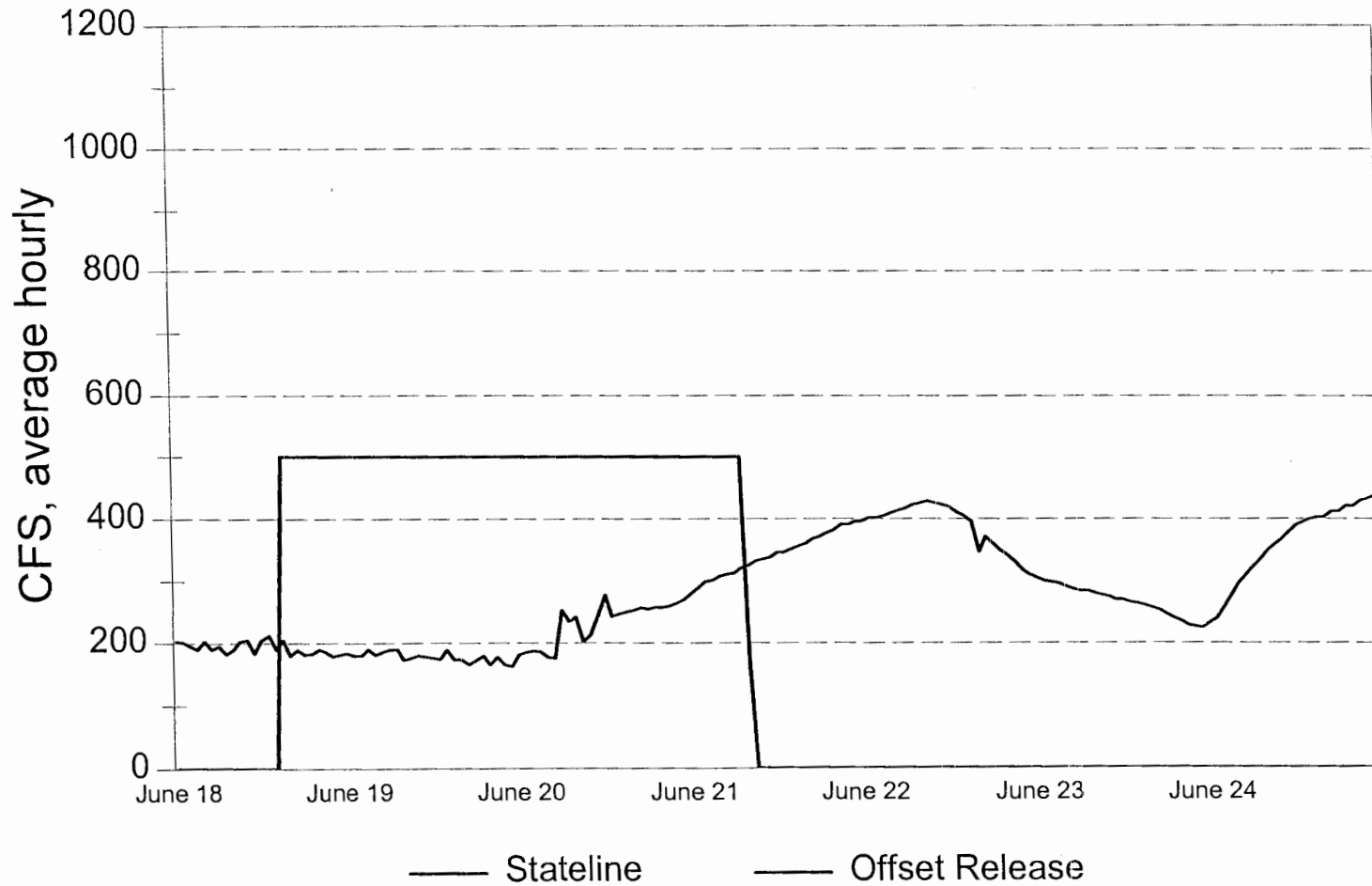
RESERVOIR STATUS: The difference between the Operation Secretary's Reservoir Account contents and the Reservoir contents recorded by the Corps.

Graph 1
Stateline Flow, June 2001



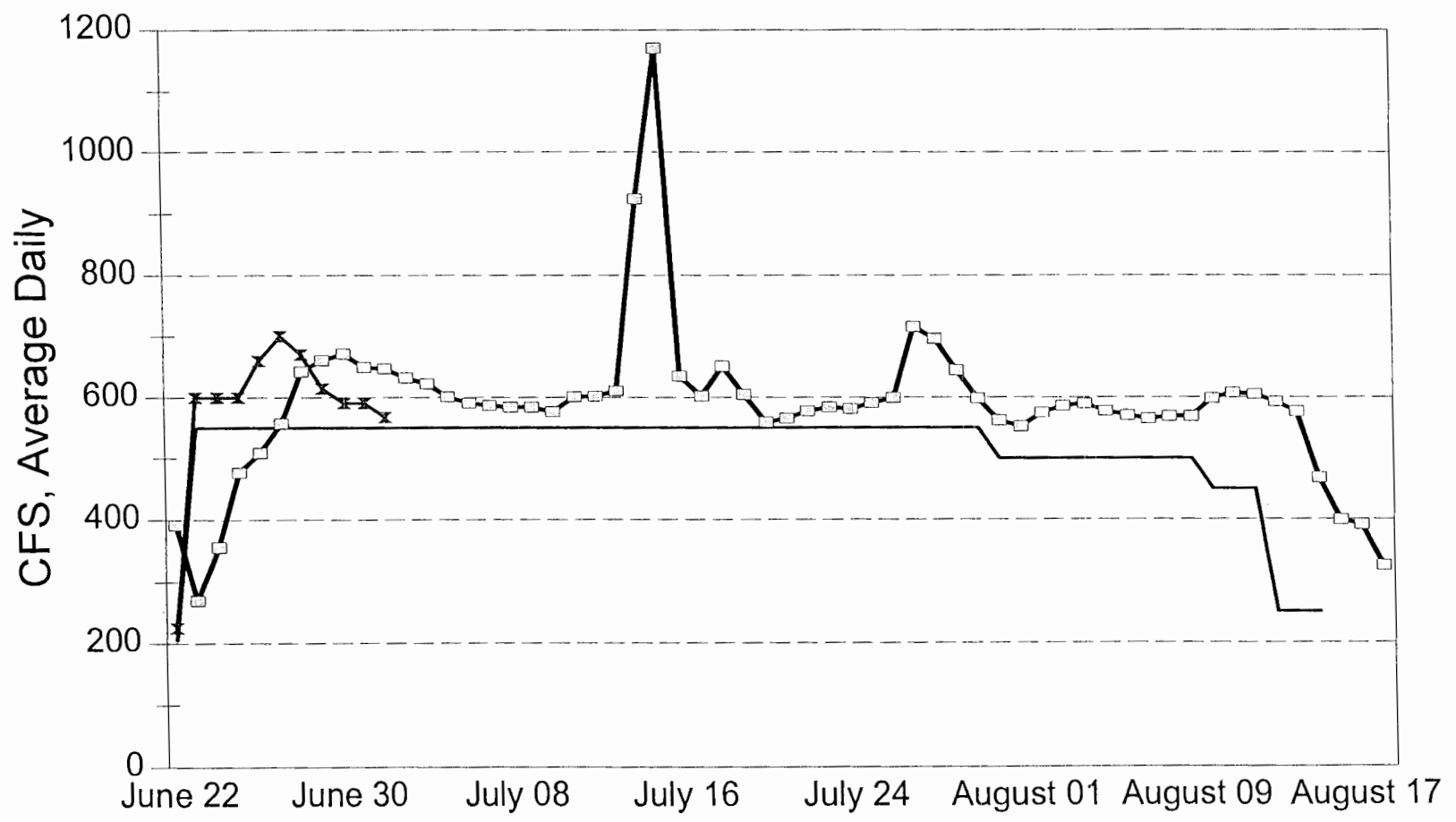
Graph 2

Offset Account Release



Graph 3

Kansas Section II Delivery, Run #1



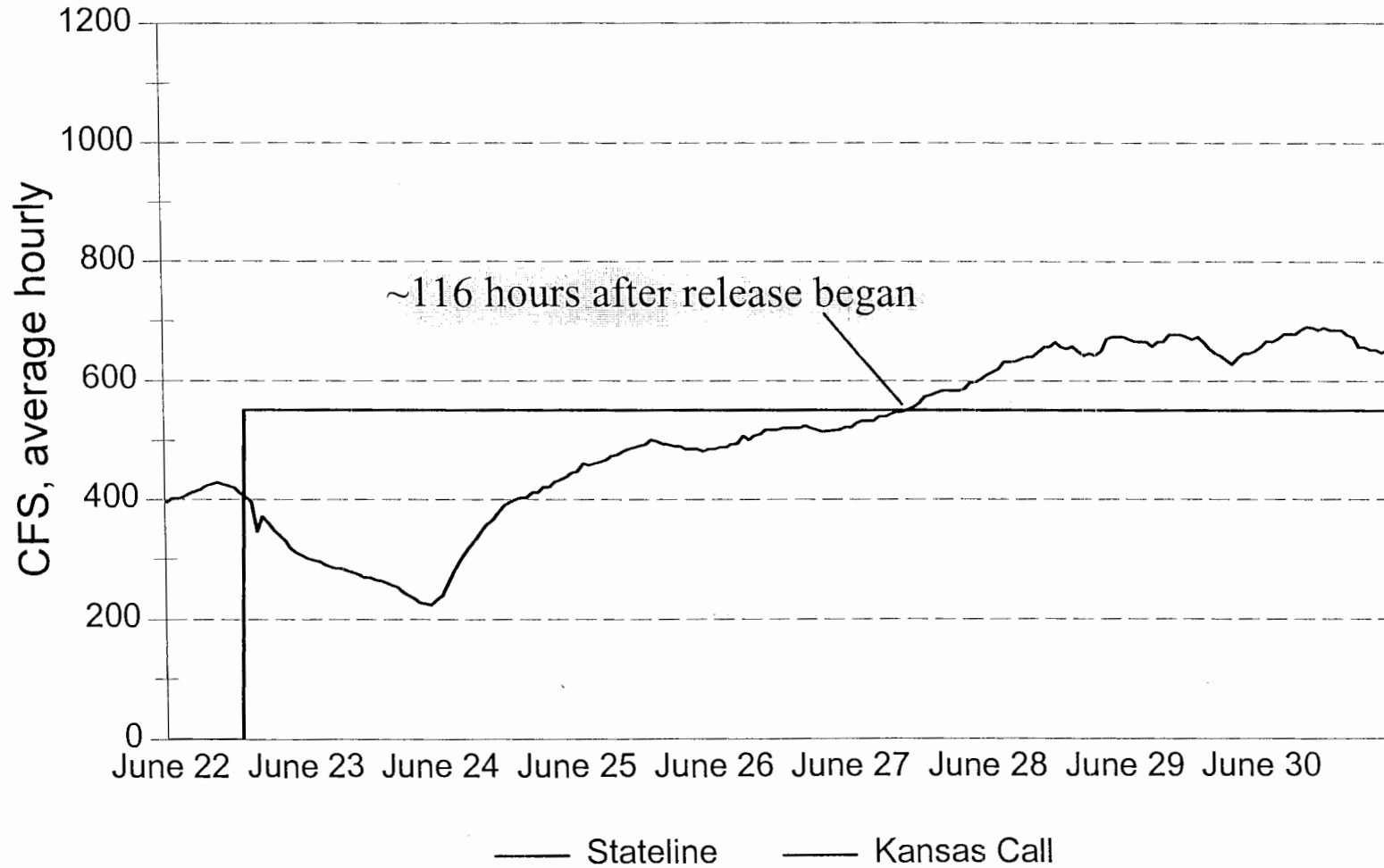
Kansas Call

 Transit Loss + Kansas Call

 Stateline

Graph 4

Kansas Section II Delivery, Run #1



Graph 5
Kansas Section II Delivery, Run #2

