

Report of the Colorado State Engineer

Concerning Accounting of the Operations

of an Offset Account in John Martin Reservoir

for Colorado Pumping

1997

Submitted to the

Operations Committee

Arkansas River Compact Administration

December 1, 1997

Report of the Colorado State Engineer

Offset Account Operations

March 17, 1997 to October 31, 1997

An Offset Account in John Martin Reservoir was authorized this year by the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution").

This report summarizes the operations conducted using the Offset Account since the delivery of the Storage Charge and the initiation of Offset Account operations, and has been prepared pursuant to paragraph 11 of the Resolution.

At 2400 hours, 31 March, 1997, 500 acre-feet of fully consumable water was placed in the Offset Account to satisfy the Storage Charge prerequisite for using the account provided for in paragraph 9 of the Resolution,

In Section 1, a monthly summary of the contents of the Offset Account is provided in Table 1. A summary of the subaccounts of the Offset Account is provided in Tables A through B.2. The outline preceding the tables in Section 1 provides an explanation of the purpose of each subaccount.

Section 2 of this report contains the daily accounting records, by month, for all subaccounts in the Offset Account.

From April 1, 1997 through October 31, 1997, there have been five deliveries of water to the Offset Account. These deliveries are summarized in the following table.

Source	Delivery End Date	Net to Offset Account (ac-ft)	Net Consumable Water (ac-ft)	Net Return Flow Water (ac-ft)
LAWMA (Colorado Springs Utilities)	March 31, 1997	500	500	0
LAWMA (Colorado Springs Utilities)	June 3, 1997	684.8	684.8	0
LAWMA (Article II)	August 4, 1997	4000	2200	1800
LAWMA (PBWW & City of Aurora)	August 21, 1997	1003.24	1003.24	0
LAWMA (Highland Canal Shares)	October 10, 1997	2169.12	2065.96	103.16
TOTALS		8357.16	6454	1903.16

During the period referred to above, there have been two releases of water from the Offset Account directed by the Kansas Chief Engineer. These are summarized in the following table.

Description of Release	Release End Date	Quantity Released (ac-ft)	Credit at Stateline (ac-ft)
Kansas Storage Charge Water	Continued into next release	473.49	NA
Colorado Consumptive use Water	June 24, 1997	673.32	572.9
Colorado Consumptive use Water	September 2, 1997	1565.93	1362.3
TOTALS		2712.74	1935.2

Section 3 of this report provides copies of the letters reporting each delivery of water to the Offset Account as required by paragraph 3 of the Resolution and reporting each release of water from the Offset Account in conformance with paragraph 4 of the **Stipulation Re Offset Account in John Martin Reservoir** dated March 17, 1997 ("Stipulation").

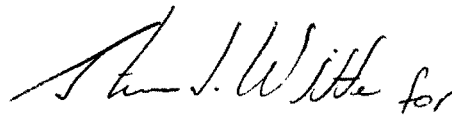
Section 4 of this report provides copies of the monthly letters reporting Colorado pumping and Offset Account operations, that were prepared and submitted in accordance with paragraph 12 of the Resolution.

Return Flow Considerations. In August, 1997, 4000 acre-feet of water from LAWMA's XY Article II account was transferred to the Offset Account. At that time, the allocation of the return flow component (1800 acre-feet) into its In State and State Line components had not been made. Before these allocations could be made, a release of 1565.93 acre-feet was made in late August through early September, 1997. Because the allocation of return flows had not been made before this release, the water used for this release was accounted as coming from the other water in the Offset Account, leaving the water transferred from Article II storage in the Offset Account until a proper accounting can be made for its return flow components. It is recommended that the allocation of the return flow water from this delivery from Article II storage should be based upon when the consumptive use part of the delivery is released to replace depletions to usable Stateline flow or is transferred to the Kansas Consumable Water subaccount. At that time, the necessary releases of return flow water will be calculated and made with the appropriate timing and quantities for both In State and Stateline purposes.

Crediting Considerations. Because the Kansas Chief Engineer requested two releases of water from the Offset Account this year, the consumable water determined to be delivered to the Stateline pursuant to paragraph 2 of the Stipulation has been credited to the entities which delivered the water to the Offset Account and will be applied against depletions to usable Stateline flow in accordance with the Stipulation. These credits are summarized in the preceding table and in the two letters in Section 3 which summarize the Offset Account releases performed this year. Between the initiation of the Offset Account in April and September 30, 1997, all depletions to usable Stateline flow estimated in accordance with paragraph 5.B. of the Resolution have been

replaced using water from sources other than the Offset Account (See the monthly reports of Colorado pumping and Offset Account operations provided in Section 4). Depletions to usable Stateline flow for October, 1997 were not completely replaced using water from sources other than the Offset Account. Therefore, credit for the water released from the Offset Account earlier this year was used to replace the remaining depletions. The monthly report of Colorado pumping and Offset Account operations for October, 1997 which is provided in Section 4 shows the amount of credit used to cover the remaining depletions.

The Colorado State Engineer and the Kansas Chief Engineer have coordinated Offset Account operations successfully through their respective delegates throughout the year. Colorado intends to solicit any suggestions and fully discuss any measures that might have the effect of minimizing Kansas' cost of monitoring use of the Offset Account to facilitate Compact compliance during the Operations Committee meeting of the Arkansas River Compact Administration on December 9, 1997.

A handwritten signature in cursive script, appearing to read "Hal D. Simpson for".

Hal D. Simpson
Colorado State Engineer

December 1, 1997
Date

SECTION 1

Outline of Tables

Offset Account (Table 1)

Contains a monthly summary of the total contents of the Offset Account.

A. Consumable Water (Table A)

1. Colorado Upstream Consumable Water (Table A.1.)

Contains a monthly summary of the water stored under the provisions of paragraph 6 of the Resolution.

2. Colorado Downstream Consumable Water (Table A.2.)

Contains a monthly summary of the consumptive use water stored by Colorado users which has not yet been made available to replace depletions to usable stateline flow and therefore has not been transferred to Kansas as provided for in paragraph 5.B. of the Resolution.

3. Kansas Consumable Water (Table A.3.)

Contains a monthly summary of the consumptive use water that has been made available to replace depletions to usable stateline flow and has therefore been transferred as provided for in paragraph 5.B. of the Resolution.

4. Kansas Storage Charge (Table A.4.)

Contains a monthly summary of the consumptive use water delivered to the Offset Account under the provisions of paragraph 9 of the Resolution.

B. Return Flow Water (Table B)

1. In State Return Flow Water (Table B.1.)

Contains a monthly summary of the return flow water which must be released to the river to maintain the return flows to Colorado water users because of deliveries of water historically used for irrigation to the offset account.

a. In State Upstream Return Flow Water (Table B.1.a.)

Contains a monthly summary of return flow water which must be released to John Martin Reservoir during periods of conservation storage to maintain return flows to conservation storage by the deliveries to the Offset Account of direct flow irrigation water from ditches above John Martin Reservoir.

b. In State Downstream Return Flow Water (Table B.1.b)

Contains a monthly summary of return flow water which must be released to the river to provide for the return flows to Colorado water users below John Martin Reservoir because of the deliveries of water historically used for irrigation to the offset account.

2. State Line Return Flow Water (Table B.2)

Contains a monthly summary of return flow water which must ultimately be released to the river to maintain the return flows to the river reaches below any Colorado water users under the provisions of paragraph 4 of the Resolution.

JOHN MARTIN RESERVOIR

TABLE 1
OFFSET ACCOUNT

WATER YEAR	CONTENTS BEG.	INFLOW	EVAPORATION	RELEASE	CONTENTS END
1997	OF MONTH A.F.	A.F.	A.F.	A.F.	OF MONTH A.F.
MONTH					
NOVEMBER	0.00	0.00	0.00	0.00	0.00
DECEMBER	0.00	0.00	0.00	0.00	0.00
JANUARY	0.00	0.00	0.00	0.00	0.00
FEBRUARY	0.00	0.00	0.00	0.00	0.00
MARCH	0.00	500.00	0.00	0.00	500.00
APRIL	500.00	0.00	6.98	0.00	493.02
MAY	493.02	0.00	11.07	0.00	481.95
JUNE	481.95	684.80	19.94	1146.81	0.00
JULY	0.00	137.05	0.70	0.00	136.35
AUGUST	136.35	6415.52	95.34	1144.01	5312.52
SEPTEMBER	5312.52	396.02	79.54	421.92	5207.08
OCTOBER	5207.08	223.78	73.89	0.00	5356.97
TOTALS		8357.17	287.46	2712.74	

OFFSET ACCOUNT

**TABLE A
CONSUMABLE WATER**

WATER YEAR	CONTENTS BEG.	INFLOW	EVAPORATION	RELEASE	CONTENTS END
1997	OF MONTH	A.F.	A.F.	A.F.	OF MONTH
MONTH	A.F.	A.F.	A.F.	A.F.	A.F.
NOVEMBER	0.00	0.00	0.00	0.00	0.00
DECEMBER	0.00	0.00	0.00	0.00	0.00
JANUARY	0.00	0.00	0.00	0.00	0.00
FEBRUARY	0.00	0.00	0.00	0.00	0.00
MARCH	0.00	500.00	0.00	0.00	500.00
APRIL	500.00	0.00	6.98	0.00	493.02
MAY	493.02	0.00	11.07	0.00	481.95
JUNE	481.95	684.80	19.94	1146.81	0.00
JULY	0.00	132.23	0.70	0.00	131.53
AUGUST	131.53	4545.13	64.29	1144.01	3468.36
SEPTEMBER	3468.36	378.22	50.63	421.92	3374.03
OCTOBER	3374.03	213.63	48.60	0.00	3539.06
TOTALS		6454.01	202.21	2712.74	

**TABLE B
RETURN FLOW WATER**

WATER YEAR	CONTENTS BEG.	INFLOW	EVAPORATION	RELEASE	CONTENTS END
1997	OF MONTH	A.F.	A.F.	A.F.	OF MONTH
MONTH	A.F.	A.F.	A.F.	A.F.	A.F.
NOVEMBER	0.00	0.00	0.00	0.00	0.00
DECEMBER	0.00	0.00	0.00	0.00	0.00
JANUARY	0.00	0.00	0.00	0.00	0.00
FEBRUARY	0.00	0.00	0.00	0.00	0.00
MARCH	0.00	0.00	0.00	0.00	0.00
APRIL	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	4.82	0.00	0.00	4.82
AUGUST	4.82	1870.39	31.05	0.00	1844.16
SEPTEMBER	1844.16	17.80	28.91	0.00	1833.05
OCTOBER	1833.05	10.15	25.29	0.00	1817.91
TOTALS		1903.16	85.25	0.00	

OFFSET ACCOUNT

**TABLE A.1.
CONSUMABLE WATER
COLORADO UPSTREAM**

WATER YEAR 1997 MONTH	CONTENTS BEG. OF MONTH A.F.	INFLOW A.F.	EVAPORATION A.F.	RELEASE A.F.	CONTENTS END OF MONTH A.F.
NOVEMBER	0.00	0.00	0.00	0.00	0.00
DECEMBER	0.00	0.00	0.00	0.00	0.00
JANUARY	0.00	0.00	0.00	0.00	0.00
FEBRUARY	0.00	0.00	0.00	0.00	0.00
MARCH	0.00	0.00	0.00	0.00	0.00
APRIL	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
AUGUST	0.00	0.00	0.00	0.00	0.00
SEPTEMBER	0.00	0.00	0.00	0.00	0.00
OCTOBER	0.00	0.00	0.00	0.00	0.00
TOTALS		0.00	0.00	0.00	

**TABLE A.2.
CONSUMABLE WATER
COLORADO DOWNSTREAM**

WATER YEAR 1997 MONTH	CONTENTS BEG. OF MONTH A.F.	INFLOW A.F.	EVAPORATION A.F.	RELEASE A.F.	CONTENTS END OF MONTH A.F.
NOVEMBER	0.00	0.00	0.00	0.00	0.00
DECEMBER	0.00	0.00	0.00	0.00	0.00
JANUARY	0.00	0.00	0.00	0.00	0.00
FEBRUARY	0.00	0.00	0.00	0.00	0.00
MARCH	0.00	0.00	0.00	0.00	0.00
APRIL	0.00	0.00	0.00	0.00	0.00
MAY	0.00	0.00	0.00	0.00	0.00
JUNE	0.00	684.80	11.48	673.32	0.00
JULY	0.00	132.23	0.70	0.00	131.53
AUGUST	131.53	4545.13	64.29	1144.01	3468.36
SEPTEMBER	3468.36	378.22	50.63	421.92	3374.03
OCTOBER	3374.03	213.63	48.60	0.00	3539.06
TOTALS		5954.01	175.70	2239.25	

OFFSET ACCOUNT

**TABLE A.3.
CONSUMABLE WATER
KANSAS**

WATER YEAR					
1997	CONTENTS BEG.	INFLOW	EVAPORATION	RELEASE	CONTENTS END
MONTH	OF MONTH A.F.	A.F.	A.F.	A.F.	OF MONTH A.F.
NOVEMBER	0.00	0.00	0.00	0.00	0.00
DECEMBER	0.00	0.00	0.00	0.00	0.00
JANUARY	0.00	0.00	0.00	0.00	0.00
FEBRUARY	0.00	0.00	0.00	0.00	0.00
MARCH	0.00	0.00	0.00	0.00	0.00
APRIL	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
AUGUST	0.00	0.00	0.00	0.00	0.00
SEPTEMBER	0.00	0.00	0.00	0.00	0.00
OCTOBER	0.00	0.00	0.00	0.00	0.00
TOTALS		0.00	0.00	0.00	

**TABLE A.2.
CONSUMABLE WATER
KANSAS STORAGE CHARGE**

WATER YEAR					
1997	CONTENTS BEG.	INFLOW	EVAPORATION	RELEASE	CONTENTS END
MONTH	OF MONTH A.F.	A.F.	A.F.	A.F.	OF MONTH A.F.
NOVEMBER	0.00	0.00	0.00	0.00	0.00
DECEMBER	0.00	0.00	0.00	0.00	0.00
JANUARY	0.00	0.00	0.00	0.00	0.00
FEBRUARY	0.00	0.00	0.00	0.00	0.00
MARCH	0.00	500.00	0.00	0.00	500.00
APRIL	500.00	0.00	6.98	0.00	493.02
MAY	493.02	0.00	11.07	0.00	481.95
JUNE	481.95	0.00	8.46	473.49	0.00
JULY	0.00	0.00	0.00	0.00	0.00
AUGUST	0.00	0.00	0.00	0.00	0.00
SEPTEMBER	0.00	0.00	0.00	0.00	0.00
OCTOBER	0.00	0.00	0.00	0.00	0.00
TOTALS		500.00	26.51	473.49	

OFFSET ACCOUNT

**TABLE B.1.
RETURN FLOW WATER
INSTATE**

WATER YEAR	CONTENTS BEG.	INFLOW	EVAPORATION	RELEASE	CONTENTS END
1997	OF MONTH A.F.	A.F.	A.F.	A.F.	OF MONTH A.F.
MONTH					
NOVEMBER	0.00	0.00	0.00	0.00	0.00
DECEMBER	0.00	0.00	0.00	0.00	0.00
JANUARY	0.00	0.00	0.00	0.00	0.00
FEBRUARY	0.00	0.00	0.00	0.00	0.00
MARCH	0.00	0.00	0.00	0.00	0.00
APRIL	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	4.82	0.00	0.00	4.82
AUGUST	4.82	1870.39	31.05	0.00	1844.16
SEPTEMBER	1844.16	17.80	28.91	0.00	1833.05
OCTOBER	1833.05	10.15	25.29	0.00	1817.91
TOTALS		1903.16	85.25	0.00	

**TABLE B.2.
RETURN FLOW WATER
STATELINE**

WATER YEAR	CONTENTS BEG.	INFLOW	EVAPORATION	RELEASE	CONTENTS END
1997	OF MONTH A.F.	A.F.	A.F.	A.F.	OF MONTH A.F.
MONTH					
NOVEMBER	0.00	0.00	0.00	0.00	0.00
DECEMBER	0.00	0.00	0.00	0.00	0.00
JANUARY	0.00	0.00	0.00	0.00	0.00
FEBRUARY	0.00	0.00	0.00	0.00	0.00
MARCH	0.00	0.00	0.00	0.00	0.00
APRIL	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
AUGUST	0.00	0.00	0.00	0.00	0.00
SEPTEMBER	0.00	0.00	0.00	0.00	0.00
OCTOBER	0.00	0.00	0.00	0.00	0.00
TOTALS		0.00	0.00	0.00	

OFFSET ACCOUNT

**TABLE B.1.a.
INSTATE RETURN FLOW
UPSTREAM**

WATER YEAR 1997 MONTH	CONTENTS BEG. OF MONTH A.F.	INFLOW A.F.	EVAPORATION A.F.	RELEASE A.F.	CONTENTS END OF MONTH A.F.
NOVEMBER	0.00	0.00	0.00	0.00	0.00
DECEMBER	0.00	0.00	0.00	0.00	0.00
JANUARY	0.00	0.00	0.00	0.00	0.00
FEBRUARY	0.00	0.00	0.00	0.00	0.00
MARCH	0.00	0.00	0.00	0.00	0.00
APRIL	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	4.82	0.00	0.00	4.82
AUGUST	4.82	70.39	0.97	0.00	74.24
SEPTEMBER	74.24	17.80	1.28	0.00	90.76
OCTOBER	90.76	10.15	1.38	0.00	99.53
TOTALS		103.16	3.63	0.00	

**TABLE B.1.b.
INSTATE RETURN FLOW
DOWNSTREAM**

WATER YEAR 1997 MONTH	CONTENTS BEG. OF MONTH A.F.	INFLOW A.F.	EVAPORATION A.F.	RELEASE A.F.	CONTENTS END OF MONTH A.F.
NOVEMBER	0.00	0.00	0.00	0.00	0.00
DECEMBER	0.00	0.00	0.00	0.00	0.00
JANUARY	0.00	0.00	0.00	0.00	0.00
FEBRUARY	0.00	0.00	0.00	0.00	0.00
MARCH	0.00	0.00	0.00	0.00	0.00
APRIL	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
AUGUST	0.00	1800.00	30.08	0.00	1769.92
SEPTEMBER	1769.92	0.00	27.63	0.00	1742.29
OCTOBER	1742.29	0.00	23.91	0.00	1718.38
TOTALS		1800.00	81.62	0.00	

SECTION 2

OFFSET ACCOUNT

APR 1997:	OFFSET ACCOUNT				CONSUMABLE WATER				RETURN FLOW			
	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN
1 :				0.00 :				0.00 :				0.00
2 :	500.00	0.00	0.27	499.73 :	499.73	0.00	0.00	499.73 :	0.00	0.00	0.00	0.00
3 :	0.00	0.00	0.14	499.59 :	0.00	0.00	0.14	499.59 :	0.00	0.00	0.00	0.00
4 :	0.00	0.00	0.12	499.47 :	0.00	0.00	0.12	499.47 :	0.00	0.00	0.00	0.00
5 :	0.00	0.00	0.30	499.17 :	0.00	0.00	0.30	499.17 :	0.00	0.00	0.00	0.00
6 :	0.00	0.00	0.29	498.88 :	0.00	0.00	0.29	498.88 :	0.00	0.00	0.00	0.00
7 :	0.00	0.00	0.30	498.58 :	0.00	0.00	0.30	498.58 :	0.00	0.00	0.00	0.00
8 :	0.00	0.00	0.20	498.38 :	0.00	0.00	0.20	498.38 :	0.00	0.00	0.00	0.00
9 :	0.00	0.00	0.10	498.28 :	0.00	0.00	0.10	498.28 :	0.00	0.00	0.00	0.00
10 :	0.00	0.00	0.15	498.13 :	0.00	0.00	0.15	498.13 :	0.00	0.00	0.00	0.00
11 :	0.00	0.00	0.10	498.03 :	0.00	0.00	0.10	498.03 :	0.00	0.00	0.00	0.00
12 :	0.00	0.00	0.09	497.94 :	0.00	0.00	0.09	497.94 :	0.00	0.00	0.00	0.00
13 :	0.00	0.00	0.10	497.84 :	0.00	0.00	0.10	497.84 :	0.00	0.00	0.00	0.00
14 :	0.00	0.00	0.10	497.74 :	0.00	0.00	0.10	497.74 :	0.00	0.00	0.00	0.00
15 :	0.00	0.00	0.16	497.58 :	0.00	0.00	0.16	497.58 :	0.00	0.00	0.00	0.00
16 :	0.00	0.00	0.32	497.26 :	0.00	0.00	0.32	497.26 :	0.00	0.00	0.00	0.00
17 :	0.00	0.00	0.32	496.94 :	0.00	0.00	0.32	496.94 :	0.00	0.00	0.00	0.00
18 :	0.00	0.00	0.30	496.64 :	0.00	0.00	0.30	496.64 :	0.00	0.00	0.00	0.00
19 :	0.00	0.00	0.40	496.24 :	0.00	0.00	0.40	496.24 :	0.00	0.00	0.00	0.00
20 :	0.00	0.00	0.38	495.86 :	0.00	0.00	0.38	495.86 :	0.00	0.00	0.00	0.00
21 :	0.00	0.00	0.38	495.48 :	0.00	0.00	0.38	495.48 :	0.00	0.00	0.00	0.00
22 :	0.00	0.00	0.27	495.21 :	0.00	0.00	0.27	495.21 :	0.00	0.00	0.00	0.00
23 :	0.00	0.00	0.31	494.90 :	0.00	0.00	0.31	494.90 :	0.00	0.00	0.00	0.00
24 :	0.00	0.00	0.27	494.63 :	0.00	0.00	0.27	494.63 :	0.00	0.00	0.00	0.00
25 :	0.00	0.00	0.19	494.44 :	0.00	0.00	0.19	494.44 :	0.00	0.00	0.00	0.00
26 :	0.00	0.00	0.17	494.27 :	0.00	0.00	0.17	494.27 :	0.00	0.00	0.00	0.00
27 :	0.00	0.00	0.17	494.10 :	0.00	0.00	0.17	494.10 :	0.00	0.00	0.00	0.00
28 :	0.00	0.00	0.17	493.93 :	0.00	0.00	0.17	493.93 :	0.00	0.00	0.00	0.00
29 :	0.00	0.00	0.27	493.66 :	0.00	0.00	0.27	493.66 :	0.00	0.00	0.00	0.00
30 :	0.00	0.00	0.33	493.33 :	0.00	0.00	0.33	493.33 :	0.00	0.00	0.00	0.00
TOT :	500.00	0.00	6.98		499.73	0.00	6.71		0.00	0.00	0.00	

CONSUMABLE WATER

APR 1997:	COLORADO UPSTREAM				COLORADO DOWNSTREAM				KANSAS			
	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN
1 :				0.00 :				0.00 :				0.00
2 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
3 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
4 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
5 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
6 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
7 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
8 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
9 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
10 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
11 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
12 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
13 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
14 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
15 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
16 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
17 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
18 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
19 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
20 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
21 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
22 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
23 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
24 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
25 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
26 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
27 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
28 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
29 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
30 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00
TOT :	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00	

CONSUMABLE WATER

APR 1997:	KANSAS STORAGE CHARGE				TOTAL								
	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	
:				0.00				0.00					
1 :	499.73	0.00	0.00	499.73	499.73	0.00	0.00	499.73					
2 :	0.00	0.00	0.14	499.59	0.00	0.00	0.14	499.59					
3 :	0.00	0.00	0.12	499.47	0.00	0.00	0.12	499.47					
4 :	0.00	0.00	0.30	499.17	0.00	0.00	0.30	499.17					
5 :	0.00	0.00	0.29	498.88	0.00	0.00	0.29	498.88					
6 :	0.00	0.00	0.30	498.58	0.00	0.00	0.30	498.58					
7 :	0.00	0.00	0.20	498.38	0.00	0.00	0.20	498.38					
8 :	0.00	0.00	0.10	498.28	0.00	0.00	0.10	498.28					
9 :	0.00	0.00	0.15	498.13	0.00	0.00	0.15	498.13					
10 :	0.00	0.00	0.10	498.03	0.00	0.00	0.10	498.03					
11 :	0.00	0.00	0.09	497.94	0.00	0.00	0.09	497.94					
12 :	0.00	0.00	0.10	497.84	0.00	0.00	0.10	497.84					
13 :	0.00	0.00	0.10	497.74	0.00	0.00	0.10	497.74					
14 :	0.00	0.00	0.16	497.58	0.00	0.00	0.16	497.58					
15 :	0.00	0.00	0.32	497.26	0.00	0.00	0.32	497.26					
16 :	0.00	0.00	0.32	496.94	0.00	0.00	0.32	496.94					
17 :	0.00	0.00	0.30	496.64	0.00	0.00	0.30	496.64					
18 :	0.00	0.00	0.40	496.24	0.00	0.00	0.40	496.24					
19 :	0.00	0.00	0.38	495.86	0.00	0.00	0.38	495.86					
20 :	0.00	0.00	0.38	495.48	0.00	0.00	0.38	495.48					
21 :	0.00	0.00	0.27	495.21	0.00	0.00	0.27	495.21					
22 :	0.00	0.00	0.31	494.90	0.00	0.00	0.31	494.90					
23 :	0.00	0.00	0.27	494.63	0.00	0.00	0.27	494.63					
24 :	0.00	0.00	0.19	494.44	0.00	0.00	0.19	494.44					
25 :	0.00	0.00	0.17	494.27	0.00	0.00	0.17	494.27					
26 :	0.00	0.00	0.17	494.10	0.00	0.00	0.17	494.10					
27 :	0.00	0.00	0.17	493.93	0.00	0.00	0.17	493.93					
28 :	0.00	0.00	0.27	493.66	0.00	0.00	0.27	493.66					
29 :	0.00	0.00	0.33	493.33	0.00	0.00	0.33	493.33					
30 :	0.00	0.00	0.31	493.02	0.00	0.00	0.31	493.02					
TOT :	499.73	0.00	6.71		499.73	0.00	6.71						

RETURN FLOW

APR 1997:	INSTATE				STATE LINE				TOTAL				
	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	
:				0.00				0.00					0.00
1 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOT :	0.00	0.00	0.00		0.00	0.00	0.00		0.00	0.00	0.00		

CONSUMABLE WATER

JUN 1997:	KANSAS STORAGE CHARGE				TOTAL								
	INFLOW	RELEASE	EVAP	OWN :	INFLOW	RELEASE	EVAP	OWN :	INFLOW	RELEASE	EVAP	OWN	
1 :				481.95 :				481.95 :					
2 :	0.00	0.00	0.41	481.54 :	156.17	0.00	0.41	637.71 :					
3 :	0.00	0.00	0.24	481.30 :	312.33	0.00	0.32	949.72 :					
4 :	0.00	0.00	0.32	480.98 :	216.30	0.00	0.64	1165.38 :					
5 :	0.00	0.00	0.51	480.47 :	0.00	0.00	1.23	1164.15 :					
6 :	0.00	0.00	0.29	480.18 :	0.00	0.00	0.70	1163.45 :					
7 :	0.00	0.00	0.28	479.90 :	0.00	0.00	0.69	1162.76 :					
8 :	0.00	0.00	0.30	479.60 :	0.00	0.00	0.72	1162.04 :					
9 :	0.00	0.00	0.30	479.30 :	0.00	0.00	0.72	1161.32 :					
10 :	0.00	0.00	0.11	479.19 :	0.00	0.00	0.26	1161.06 :					
11 :	0.00	0.00	0.28	478.91 :	0.00	0.00	0.68	1160.38 :					
12 :	0.00	0.00	0.37	478.54 :	0.00	0.00	0.90	1159.48 :					
13 :	0.00	0.00	0.50	478.04 :	0.00	0.00	1.22	1158.26 :					
14 :	0.00	0.00	0.38	477.66 :	0.00	0.00	0.91	1157.35 :					
15 :	0.00	0.00	0.36	477.30 :	0.00	0.00	0.88	1156.47 :					
16 :	0.00	0.00	0.36	476.94 :	0.00	0.00	0.88	1155.59 :					
17 :	0.00	0.00	0.14	476.80 :	0.00	0.00	0.33	1155.26 :					
18 :	0.00	0.00	0.31	476.49 :	0.00	0.00	0.76	1154.50 :					
19 :	0.00	0.00	0.36	476.13 :	0.00	0.00	0.88	1153.62 :					
20 :	0.00	0.00	0.53	475.60 :	0.00	0.00	1.28	1152.34 :					
21 :	0.00	0.00	0.53	475.07 :	0.00	0.00	1.28	1151.06 :					
22 :	0.00	0.00	0.52	474.55 :	0.00	0.00	1.25	1149.81 :					
23 :	0.00	0.00	0.52	474.03 :	0.00	0.00	1.25	1148.56 :					
24 :	0.00	473.49	0.54	0.00 :	0.00	702.22	1.31	445.03 :					
25 :	0.00	0.00	0.00	0.00 :	0.00	444.59	0.44	0.00 :					
26 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :					
27 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :					
28 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :					
29 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :					
30 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :					
TOT :	0.00	473.49	8.46	:	684.80	1146.81	19.94	:					

RETURN FLOW

JUN 1997:	INSTATE				STATE LINE				TOTAL				
	INFLOW	RELEASE	EVAP	OWN :	INFLOW	RELEASE	EVAP	OWN :	INFLOW	RELEASE	EVAP	OWN	
1 :				0.00 :				0.00 :				0.00	
2 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
3 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
4 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
5 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
6 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
7 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
8 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
9 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
10 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
11 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
12 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
13 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
14 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
15 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
16 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
17 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
18 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
19 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
20 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
21 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
22 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
23 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
24 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
25 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
26 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
27 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
28 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
29 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
30 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.00	0.00	0.00
TOT :	0.00	0.00	0.00	:	0.00	0.00	0.00	:	0.00	0.00	0.00		

INSTATE

JUL 1997:	UPSTREAM				DOWNSTREAM				TOTAL			OWN		
	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP			
:				0.00	:				0.00	:				0.00
1 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
2 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
3 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
4 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
5 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
6 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
7 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
8 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
9 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
10 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
11 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
12 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
13 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
14 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
15 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
16 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
17 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
18 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
19 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
20 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
21 :	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	0.00
22 :	1.52	0.00	0.00	1.52	:	0.00	0.00	0.00	0.00	:	1.52	0.00	0.00	1.52
23 :	0.74	0.00	0.00	2.26	:	0.00	0.00	0.00	0.00	:	0.74	0.00	0.00	2.26
24 :	0.30	0.00	0.00	2.56	:	0.00	0.00	0.00	0.00	:	0.30	0.00	0.00	2.56
25 :	0.17	0.00	0.00	2.73	:	0.00	0.00	0.00	0.00	:	0.17	0.00	0.00	2.73
26 :	0.02	0.00	0.00	2.75	:	0.00	0.00	0.00	0.00	:	0.02	0.00	0.00	2.75
27 :	0.00	0.00	0.00	2.75	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	2.75
28 :	0.00	0.00	0.00	2.75	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	2.75
29 :	0.00	0.00	0.00	2.75	:	0.00	0.00	0.00	0.00	:	0.00	0.00	0.00	2.75
30 :	0.79	0.00	0.00	3.54	:	0.00	0.00	0.00	0.00	:	0.79	0.00	0.00	3.54
31 :	1.28	0.00	0.00	4.82	:	0.00	0.00	0.00	0.00	:	1.28	0.00	0.00	4.82
TOT :	4.82	0.00	0.00		:	0.00	0.00	0.00		:	4.82	0.00	0.00	

JUL 1997:	INFLOW	RELEASE	EVAP	OWN	:	INFLOW	RELEASE	EVAP	OWN	:	INFLOW	RELEASE	EVAP	OWN
:					:					:				
1 :					:					:				
2 :					:					:				
3 :					:					:				
4 :					:					:				
5 :					:					:				
6 :					:					:				
7 :					:					:				
8 :					:					:				
9 :					:					:				
10 :					:					:				
11 :					:					:				
12 :					:					:				
13 :					:					:				
14 :					:					:				
15 :					:					:				
16 :					:					:				
17 :					:					:				
18 :					:					:				
19 :					:					:				
20 :					:					:				
21 :					:					:				
22 :					:					:				
23 :					:					:				
24 :					:					:				
25 :					:					:				
26 :					:					:				
27 :					:					:				
28 :					:					:				
29 :					:					:				
30 :					:					:				
31 :					:					:				
TOT :					:					:				

CONSUMABLE WATER

AUG 1997:	KANSAS STORAGE CHARGE				TOTAL				INFLow	RELEASE	EVAP	OWN
	INFLow	RELEASE	EVAP	OWN	INFLow	RELEASE	EVAP	OWN				
:				0.00				131.53				
1 :	0.00	0.00	0.00	0.00	68.82	0.00	0.12	200.23				
2 :	0.00	0.00	0.00	0.00	37.48	0.00	0.18	237.53				
3 :	0.00	0.00	0.00	0.00	41.28	0.00	0.21	278.60				
4 :	0.00	0.00	0.00	0.00	2255.74	0.00	0.11	2534.23				
5 :	0.00	0.00	0.00	0.00	64.17	0.00	1.26	2597.14				
6 :	0.00	0.00	0.00	0.00	68.28	0.00	0.34	2665.08				
7 :	0.00	0.00	0.00	0.00	70.48	0.00	2.03	2733.53				
8 :	0.00	0.00	0.00	0.00	65.94	0.00	0.96	2798.51				
9 :	0.00	0.00	0.00	0.00	65.94	0.00	0.85	2863.60				
10 :	0.00	0.00	0.00	0.00	71.03	0.00	0.86	2933.77				
11 :	0.00	0.00	0.00	0.00	72.27	0.00	0.96	3005.08				
12 :	0.00	0.00	0.00	0.00	73.05	0.00	1.96	3076.17				
13 :	0.00	0.00	0.00	0.00	42.54	0.00	2.12	3116.59				
14 :	0.00	0.00	0.00	0.00	65.74	0.00	2.33	3180.00				
15 :	0.00	0.00	0.00	0.00	211.77	0.00	2.09	3389.68				
16 :	0.00	0.00	0.00	0.00	214.16	0.00	2.13	3601.71				
17 :	0.00	0.00	0.00	0.00	203.39	0.00	2.25	3802.85				
18 :	0.00	0.00	0.00	0.00	203.99	0.00	2.11	4004.73				
19 :	0.00	0.00	0.00	0.00	203.99	0.00	2.88	4205.84				
20 :	0.00	0.00	0.00	0.00	198.72	0.00	2.34	4402.22				
21 :	0.00	0.00	0.00	0.00	35.62	0.00	3.24	4434.60				
22 :	0.00	0.00	0.00	0.00	37.96	0.00	3.17	4469.39				
23 :	0.00	0.00	0.00	0.00	25.15	0.00	3.20	4491.34				
24 :	0.00	0.00	0.00	0.00	25.85	0.00	3.21	4513.98				
25 :	0.00	0.00	0.00	0.00	14.23	0.00	3.41	4524.80				
26 :	0.00	0.00	0.00	0.00	10.60	0.00	3.61	4531.79				
27 :	0.00	0.00	0.00	0.00	12.15	0.00	1.85	4542.09				
28 :	0.00	0.00	0.00	0.00	19.66	264.36	4.17	4293.22				
29 :	0.00	0.00	0.00	0.00	23.79	330.29	3.69	3983.03				
30 :	0.00	0.00	0.00	0.00	20.67	274.68	3.44	3725.58				
31 :	0.00	0.00	0.00	0.00	20.67	274.68	3.21	3468.36				
TOT :	0.00	0.00	0.00		4545.13	1144.01	64.29					

RETURN FLOW

AUG 1997:	INSTATE				STATE LINE				TOTAL			
	INFLow	RELEASE	EVAP	OWN	INFLow	RELEASE	EVAP	OWN	INFLow	RELEASE	EVAP	OWN
:				4.82				0.00				4.82
1 :	3.69	0.00	0.00	8.51	0.00	0.00	0.00	0.00	3.69	0.00	0.00	8.51
2 :	2.02	0.00	0.01	10.52	0.00	0.00	0.00	0.00	2.02	0.00	0.01	10.52
3 :	2.08	0.00	0.01	12.59	0.00	0.00	0.00	0.00	2.08	0.00	0.01	12.59
4 :	1802.98	0.00	0.01	1815.56	0.00	0.00	0.00	0.00	1802.98	0.00	0.01	1815.56
5 :	3.23	0.00	0.91	1817.88	0.00	0.00	0.00	0.00	3.23	0.00	0.91	1817.88
6 :	3.68	0.00	0.24	1821.32	0.00	0.00	0.00	0.00	3.68	0.00	0.24	1821.32
7 :	3.69	0.00	1.38	1823.63	0.00	0.00	0.00	0.00	3.69	0.00	1.38	1823.63
8 :	3.81	0.00	0.64	1826.80	0.00	0.00	0.00	0.00	3.81	0.00	0.64	1826.80
9 :	3.81	0.00	0.56	1830.05	0.00	0.00	0.00	0.00	3.81	0.00	0.56	1830.05
10 :	3.75	0.00	0.55	1833.25	0.00	0.00	0.00	0.00	3.75	0.00	0.55	1833.25
11 :	3.65	0.00	0.60	1836.30	0.00	0.00	0.00	0.00	3.65	0.00	0.60	1836.30
12 :	3.61	0.00	1.20	1838.71	0.00	0.00	0.00	0.00	3.61	0.00	1.20	1838.71
13 :	2.14	0.00	1.26	1839.59	0.00	0.00	0.00	0.00	2.14	0.00	1.26	1839.59
14 :	3.31	0.00	1.38	1841.52	0.00	0.00	0.00	0.00	3.31	0.00	1.38	1841.52
15 :	2.24	0.00	1.21	1842.55	0.00	0.00	0.00	0.00	2.24	0.00	1.21	1842.55
16 :	2.36	0.00	1.16	1843.75	0.00	0.00	0.00	0.00	2.36	0.00	1.16	1843.75
17 :	1.82	0.00	1.15	1844.42	0.00	0.00	0.00	0.00	1.82	0.00	1.15	1844.42
18 :	1.94	0.00	1.03	1845.33	0.00	0.00	0.00	0.00	1.94	0.00	1.03	1845.33
19 :	1.94	0.00	1.33	1845.94	0.00	0.00	0.00	0.00	1.94	0.00	1.33	1845.94
20 :	1.89	0.00	1.02	1846.81	0.00	0.00	0.00	0.00	1.89	0.00	1.02	1846.81
21 :	1.87	0.00	1.36	1847.32	0.00	0.00	0.00	0.00	1.87	0.00	1.36	1847.32
22 :	2.22	0.00	1.32	1848.22	0.00	0.00	0.00	0.00	2.22	0.00	1.32	1848.22
23 :	1.33	0.00	1.32	1848.23	0.00	0.00	0.00	0.00	1.33	0.00	1.32	1848.23
24 :	1.37	0.00	1.32	1848.28	0.00	0.00	0.00	0.00	1.37	0.00	1.32	1848.28
25 :	0.75	0.00	1.40	1847.63	0.00	0.00	0.00	0.00	0.75	0.00	1.40	1847.63
26 :	0.57	0.00	1.47	1846.73	0.00	0.00	0.00	0.00	0.57	0.00	1.47	1846.73
27 :	0.65	0.00	0.75	1846.63	0.00	0.00	0.00	0.00	0.65	0.00	0.75	1846.63
28 :	1.06	0.00	1.70	1845.99	0.00	0.00	0.00	0.00	1.06	0.00	1.70	1845.99
29 :	1.07	0.00	1.58	1845.48	0.00	0.00	0.00	0.00	1.07	0.00	1.58	1845.48
30 :	0.93	0.00	1.59	1844.82	0.00	0.00	0.00	0.00	0.93	0.00	1.59	1844.82
31 :	0.93	0.00	1.59	1844.16	0.00	0.00	0.00	0.00	0.93	0.00	1.59	1844.16
TOT :	1870.39	0.00	31.05		0.00	0.00	0.00		1870.39	0.00	31.05	

CONSUMABLE WATER

KANSAS STORAGE CHARGE				TOTAL								
SEP 1997:	INFLOW	RELEASE	EVAP	OWN :	INFLOW	RELEASE	EVAP	OWN :	INFLOW	RELEASE	EVAP	OWN
:				0.00 :				3468.36 :				
1 :	0.00	0.00	0.00	0.00 :	17.24	274.68	3.00	3207.92 :				
2 :	0.00	0.00	0.00	0.00 :	14.10	147.24	0.73	3074.05 :				
3 :	0.00	0.00	0.00	0.00 :	10.18	0.00	1.64	3082.59 :				
4 :	0.00	0.00	0.00	0.00 :	3.32	0.00	1.91	3084.00 :				
5 :	0.00	0.00	0.00	0.00 :	9.94	0.00	1.53	3092.41 :				
6 :	0.00	0.00	0.00	0.00 :	10.37	0.00	1.54	3101.24 :				
7 :	0.00	0.00	0.00	0.00 :	16.55	0.00	1.54	3116.25 :				
8 :	0.00	0.00	0.00	0.00 :	21.27	0.00	1.62	3135.90 :				
9 :	0.00	0.00	0.00	0.00 :	27.29	0.00	0.85	3162.34 :				
10 :	0.00	0.00	0.00	0.00 :	33.18	0.00	2.50	3193.02 :				
11 :	0.00	0.00	0.00	0.00 :	24.50	0.00	2.33	3215.19 :				
12 :	0.00	0.00	0.00	0.00 :	24.50	0.00	2.09	3237.60 :				
13 :	0.00	0.00	0.00	0.00 :	5.95	0.00	2.10	3241.45 :				
14 :	0.00	0.00	0.00	0.00 :	0.00	0.00	2.17	3239.28 :				
15 :	0.00	0.00	0.00	0.00 :	0.00	0.00	2.86	3236.42 :				
16 :	0.00	0.00	0.00	0.00 :	0.00	0.00	2.39	3234.03 :				
17 :	0.00	0.00	0.00	0.00 :	0.00	0.00	1.57	3232.46 :				
18 :	0.00	0.00	0.00	0.00 :	0.00	0.00	3.07	3229.39 :				
19 :	0.00	0.00	0.00	0.00 :	0.00	0.00	1.37	3228.02 :				
20 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.27	3227.75 :				
21 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.27	3227.48 :				
22 :	0.00	0.00	0.00	0.00 :	0.00	0.00	1.84	3225.64 :				
23 :	0.00	0.00	0.00	0.00 :	0.00	0.00	1.03	3224.61 :				
24 :	0.00	0.00	0.00	0.00 :	0.00	0.00	1.29	3223.32 :				
25 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.75	3222.57 :				
26 :	0.00	0.00	0.00	0.00 :	29.49	0.00	1.71	3250.35 :				
27 :	0.00	0.00	0.00	0.00 :	42.21	0.00	1.73	3290.83 :				
28 :	0.00	0.00	0.00	0.00 :	39.61	0.00	1.82	3328.62 :				
29 :	0.00	0.00	0.00	0.00 :	22.65	0.00	1.48	3349.79 :				
30 :	0.00	0.00	0.00	0.00 :	25.87	0.00	1.63	3374.03 :				
TOT :	0.00	0.00	0.00	:	378.22	421.92	50.63	:				

RETURN FLOW

INSTATE				STATE LINE				TOTAL				
SEP 1997:	INFLOW	RELEASE	EVAP	OWN :	INFLOW	RELEASE	EVAP	OWN :	INFLOW	RELEASE	EVAP	OWN
:				1844.16 :				0.00 :				1844.16
1 :	0.84	0.00	1.59	1843.41 :	0.00	0.00	0.00	0.00 :	0.84	0.00	1.59	1843.41
2 :	0.63	0.00	0.42	1843.62 :	0.00	0.00	0.00	0.00 :	0.63	0.00	0.42	1843.62
3 :	0.46	0.00	0.99	1843.09 :	0.00	0.00	0.00	0.00 :	0.46	0.00	0.99	1843.09
4 :	0.15	0.00	1.14	1842.10 :	0.00	0.00	0.00	0.00 :	0.15	0.00	1.14	1842.10
5 :	0.48	0.00	0.91	1841.67 :	0.00	0.00	0.00	0.00 :	0.48	0.00	0.91	1841.67
6 :	0.50	0.00	0.91	1841.26 :	0.00	0.00	0.00	0.00 :	0.50	0.00	0.91	1841.26
7 :	0.74	0.00	0.92	1841.08 :	0.00	0.00	0.00	0.00 :	0.74	0.00	0.92	1841.08
8 :	0.92	0.00	0.96	1841.04 :	0.00	0.00	0.00	0.00 :	0.92	0.00	0.96	1841.04
9 :	1.30	0.00	0.50	1841.84 :	0.00	0.00	0.00	0.00 :	1.30	0.00	0.50	1841.84
10 :	1.57	0.00	1.46	1841.95 :	0.00	0.00	0.00	0.00 :	1.57	0.00	1.46	1841.95
11 :	1.16	0.00	1.34	1841.77 :	0.00	0.00	0.00	0.00 :	1.16	0.00	1.34	1841.77
12 :	1.16	0.00	1.19	1841.74 :	0.00	0.00	0.00	0.00 :	1.16	0.00	1.19	1841.74
13 :	0.28	0.00	1.20	1840.82 :	0.00	0.00	0.00	0.00 :	0.28	0.00	1.20	1840.82
14 :	0.00	0.00	1.24	1839.58 :	0.00	0.00	0.00	0.00 :	0.00	0.00	1.24	1839.58
15 :	0.00	0.00	1.62	1837.96 :	0.00	0.00	0.00	0.00 :	0.00	0.00	1.62	1837.96
16 :	0.00	0.00	1.35	1836.61 :	0.00	0.00	0.00	0.00 :	0.00	0.00	1.35	1836.61
17 :	0.00	0.00	0.89	1835.72 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.89	1835.72
18 :	0.00	0.00	1.74	1833.98 :	0.00	0.00	0.00	0.00 :	0.00	0.00	1.74	1833.98
19 :	0.00	0.00	0.78	1833.20 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.78	1833.20
20 :	0.00	0.00	0.16	1833.04 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.16	1833.04
21 :	0.00	0.00	0.16	1832.88 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.16	1832.88
22 :	0.00	0.00	1.05	1831.83 :	0.00	0.00	0.00	0.00 :	0.00	0.00	1.05	1831.83
23 :	0.00	0.00	0.58	1831.25 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.58	1831.25
24 :	0.00	0.00	0.74	1830.51 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.74	1830.51
25 :	0.00	0.00	0.42	1830.09 :	0.00	0.00	0.00	0.00 :	0.00	0.00	0.42	1830.09
26 :	1.41	0.00	0.97	1830.53 :	0.00	0.00	0.00	0.00 :	1.41	0.00	0.97	1830.53
27 :	2.00	0.00	0.97	1831.56 :	0.00	0.00	0.00	0.00 :	2.00	0.00	0.97	1831.56
28 :	1.88	0.00	1.01	1832.43 :	0.00	0.00	0.00	0.00 :	1.88	0.00	1.01	1832.43
29 :	1.08	0.00	0.81	1832.70 :	0.00	0.00	0.00	0.00 :	1.08	0.00	0.81	1832.70
30 :	1.24	0.00	0.89	1833.05 :	0.00	0.00	0.00	0.00 :	1.24	0.00	0.89	1833.05
TOT :	17.80	0.00	28.91	:	0.00	0.00	0.00	:	17.80	0.00	28.91	

CONSUMABLE WATER

OCT 1997:	KANSAS STORAGE CHARGE				TOTAL				INFLow	RELEASE	EVAP	OWN
	INFLow	RELEASE	EVAP	OWN	INFLow	RELEASE	EVAP	OWN				
:	:	:	:	0.00	:	:	:	3374.03	:	:	:	:
1 :	0.00	0.00	0.00	0.00	25.75	0.00	1.71	3398.07	:	:	:	:
2 :	0.00	0.00	0.00	0.00	25.09	0.00	2.44	3420.72	:	:	:	:
3 :	0.00	0.00	0.00	0.00	25.45	0.00	2.17	3444.00	:	:	:	:
4 :	0.00	0.00	0.00	0.00	21.65	0.00	2.18	3463.47	:	:	:	:
5 :	0.00	0.00	0.00	0.00	19.47	0.00	2.27	3480.67	:	:	:	:
6 :	0.00	0.00	0.00	0.00	19.35	0.00	2.28	3497.74	:	:	:	:
7 :	0.00	0.00	0.00	0.00	19.09	0.00	3.31	3513.52	:	:	:	:
8 :	0.00	0.00	0.00	0.00	19.60	0.00	1.63	3531.49	:	:	:	:
9 :	0.00	0.00	0.00	0.00	19.35	0.00	2.39	3548.45	:	:	:	:
10 :	0.00	0.00	0.00	0.00	18.83	0.00	3.06	3564.22	:	:	:	:
11 :	0.00	0.00	0.00	0.00	0.00	0.00	2.93	3561.29	:	:	:	:
12 :	0.00	0.00	0.00	0.00	0.00	0.00	2.93	3558.36	:	:	:	:
13 :	0.00	0.00	0.00	0.00	0.00	0.00	2.93	3555.43	:	:	:	:
14 :	0.00	0.00	0.00	0.00	0.00	0.00	0.91	3554.52	:	:	:	:
15 :	0.00	0.00	0.00	0.00	0.00	0.00	0.98	3553.54	:	:	:	:
16 :	0.00	0.00	0.00	0.00	0.00	0.00	0.83	3552.71	:	:	:	:
17 :	0.00	0.00	0.00	0.00	0.00	0.00	0.90	3551.81	:	:	:	:
18 :	0.00	0.00	0.00	0.00	0.00	0.00	0.90	3550.91	:	:	:	:
19 :	0.00	0.00	0.00	0.00	0.00	0.00	0.90	3550.01	:	:	:	:
20 :	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3549.26	:	:	:	:
21 :	0.00	0.00	0.00	0.00	0.00	0.00	0.30	3548.96	:	:	:	:
22 :	0.00	0.00	0.00	0.00	0.00	0.00	1.41	3547.55	:	:	:	:
23 :	0.00	0.00	0.00	0.00	0.00	0.00	1.13	3546.42	:	:	:	:
24 :	0.00	0.00	0.00	0.00	0.00	0.00	1.13	3545.29	:	:	:	:
25 :	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3545.29	:	:	:	:
26 :	0.00	0.00	0.00	0.00	0.00	0.00	0.67	3544.62	:	:	:	:
27 :	0.00	0.00	0.00	0.00	0.00	0.00	0.67	3543.95	:	:	:	:
28 :	0.00	0.00	0.00	0.00	0.00	0.00	0.83	3543.12	:	:	:	:
29 :	0.00	0.00	0.00	0.00	0.00	0.00	1.35	3541.77	:	:	:	:
30 :	0.00	0.00	0.00	0.00	0.00	0.00	1.36	3540.41	:	:	:	:
31 :	0.00	0.00	0.00	0.00	0.00	0.00	1.35	3539.06	:	:	:	:
TOT :	0.00	0.00	0.00	:	213.63	0.00	48.60	:	:	:	:	:

RETURN FLOW

OCT 1997:	INSTATE				STATE LINE				TOTAL			
	INFLow	RELEASE	EVAP	OWN	INFLow	RELEASE	EVAP	OWN	INFLow	RELEASE	EVAP	OWN
:	:	:	:	1833.05	:	:	:	0.00	:	:	:	1833.05
1 :	1.17	0.00	0.93	1833.29	0.00	0.00	0.00	0.00	1.17	0.00	0.93	1833.29
2 :	1.20	0.00	1.31	1833.18	0.00	0.00	0.00	0.00	1.20	0.00	1.31	1833.18
3 :	1.19	0.00	1.16	1833.21	0.00	0.00	0.00	0.00	1.19	0.00	1.16	1833.21
4 :	1.04	0.00	1.16	1833.09	0.00	0.00	0.00	0.00	1.04	0.00	1.16	1833.09
5 :	0.93	0.00	1.20	1832.82	0.00	0.00	0.00	0.00	0.93	0.00	1.20	1832.82
6 :	0.93	0.00	1.20	1832.55	0.00	0.00	0.00	0.00	0.93	0.00	1.20	1832.55
7 :	0.92	0.00	1.74	1831.73	0.00	0.00	0.00	0.00	0.92	0.00	1.74	1831.73
8 :	0.94	0.00	0.85	1831.82	0.00	0.00	0.00	0.00	0.94	0.00	0.85	1831.82
9 :	0.93	0.00	1.24	1831.51	0.00	0.00	0.00	0.00	0.93	0.00	1.24	1831.51
10 :	0.90	0.00	1.58	1830.83	0.00	0.00	0.00	0.00	0.90	0.00	1.58	1830.83
11 :	0.00	0.00	1.50	1829.33	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1829.33
12 :	0.00	0.00	1.50	1827.83	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1827.83
13 :	0.00	0.00	1.50	1826.33	0.00	0.00	0.00	0.00	0.00	0.00	1.50	1826.33
14 :	0.00	0.00	0.46	1825.87	0.00	0.00	0.00	0.00	0.00	0.00	0.46	1825.87
15 :	0.00	0.00	0.50	1825.37	0.00	0.00	0.00	0.00	0.00	0.00	0.50	1825.37
16 :	0.00	0.00	0.42	1824.95	0.00	0.00	0.00	0.00	0.00	0.00	0.42	1824.95
17 :	0.00	0.00	0.46	1824.49	0.00	0.00	0.00	0.00	0.00	0.00	0.46	1824.49
18 :	0.00	0.00	0.46	1824.03	0.00	0.00	0.00	0.00	0.00	0.00	0.46	1824.03
19 :	0.00	0.00	0.46	1823.57	0.00	0.00	0.00	0.00	0.00	0.00	0.46	1823.57
20 :	0.00	0.00	0.39	1823.18	0.00	0.00	0.00	0.00	0.00	0.00	0.39	1823.18
21 :	0.00	0.00	0.16	1823.02	0.00	0.00	0.00	0.00	0.00	0.00	0.16	1823.02
22 :	0.00	0.00	0.73	1822.29	0.00	0.00	0.00	0.00	0.00	0.00	0.73	1822.29
23 :	0.00	0.00	0.58	1821.71	0.00	0.00	0.00	0.00	0.00	0.00	0.58	1821.71
24 :	0.00	0.00	0.58	1821.13	0.00	0.00	0.00	0.00	0.00	0.00	0.58	1821.13
25 :	0.00	0.00	0.00	1821.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1821.13
26 :	0.00	0.00	0.35	1820.78	0.00	0.00	0.00	0.00	0.00	0.00	0.35	1820.78
27 :	0.00	0.00	0.34	1820.44	0.00	0.00	0.00	0.00	0.00	0.00	0.34	1820.44
28 :	0.00	0.00	0.43	1820.01	0.00	0.00	0.00	0.00	0.00	0.00	0.43	1820.01
29 :	0.00	0.00	0.70	1819.31	0.00	0.00	0.00	0.00	0.00	0.00	0.70	1819.31
30 :	0.00	0.00	0.70	1818.61	0.00	0.00	0.00	0.00	0.00	0.00	0.70	1818.61
31 :	0.00	0.00	0.70	1817.91	0.00	0.00	0.00	0.00	0.00	0.00	0.70	1817.91
TOT :	10.15	0.00	25.29	:	0.00	0.00	0.00	:	10.15	0.00	25.29	:

SECTION 3

STATE OF COLORADO

WATER DIVISION 2
OFFICE OF THE STATE ENGINEER

219 W. 5th Street, Room 223
P.O. Box 5728
Pueblo, CO 81002
Phone (719) 542-3368
FAX (719) 544-0800



March 27, 1997

Roy Romer
Governor

James S. Lochhead
Executive Director

Hal D. Simpson
State Engineer

Steven J. Witte, P.E.
Division Engineer

David L. Pope
Kansas Chief Engineer
Kansas Board of Agriculture
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283

RE: Notice of Delivery to the Offset Account in John Martin Reservoir

Dear Mr. Pope:

The purpose of this letter is to provide the notice required by paragraph 3 of the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution") of a delivery of water to the Offset Account.

The Lower Arkansas Water Management Association (LAWMA) has initiated actions to deliver 500 acre-feet of fully consumable water to the Offset Account for the purpose of satisfying the Storage Charge prerequisite for using the Offset Account as provided for in paragraph 9 of the Resolution.

LAWMA has purchased water from Colorado Springs Utilities and has initiated a release of a portion of that water from Lake Meredith. A draft copy of the purchase agreement is attached at Enclosure 1. The timing and quantities are described below. A copy of the letter from Colorado Springs Utilities describing the water being released is attached at Enclosure 2. The Fort Lyon Canal Company has arranged to divert the water delivered by LAWMA in exchange for water in its Section III account in John Martin Reservoir. To insure that 500 acre-feet of fully consumable water is delivered to Kansas in accordance with paragraph 9 of the Resolution, an actual delivery of 500 acre-feet from the Fort Lyon Section III account to the Offset Account in John Martin Reservoir will take place at 2400 hours, 31 March, 1997.

The following information is provided in accordance with paragraph 3 of the Resolution.

Source of Water Delivered: Colorado Springs Utilities water from Lake Meredith.

Times Associated With Delivery

Release Initiated At:	0900 hours, 27 March, 1997
Release Terminates At:	0900 hours, 29 March, 1997
Arrival Starts at Ft. Lyon Headgate:	2100 hours, 27 March, 1997
Arrival Finishes at Ft. Lyon Headgate:	2100 hours, 29 March, 1997

Flow Rates Associated With Delivery (See Enclosure 3)

Release Flow Rate: 131.07 cfs
Arrival Flow Rate at Ft. Lyon Headgate: 126.04 cfs

Extent Water is Fully Consumable:

Fully consumable water sold by Colorado Springs Utilities to LAWMA.

Return Flow Information

Quantity: Not Applicable
Timing: Not Applicable
Location: Not Applicable

Please provide your instructions for the disposition of the water being delivered as Storage Charge Water.

- Release to River
 Transfer to Kansas Article II Account
 Retain in Offset Account

Please contact me if you have any questions or require additional information.

Sincerely,



Steven J. Witte
Division Engineer
Colorado Division of Water Resources

3 Enclosures

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Bill Howland

DRAFT

AGREEMENT FOR THE PURCHASE OF WATER

THIS AGREEMENT is made and entered this _____ day of _____, 1997 by and between Colorado Springs Utilities, hereinafter called "CSU", and Lower Arkansas Water Management Association hereinafter called "LAWMA."

WITNESSED

WHEREAS, LAWMA requires releases of water to the Arkansas River for delivery to the Kansas State line to offset depletions of ground water resulting from post 1985 well users well pumping.

WHEREAS, LAWMA desires to purchase reusable water from CSU in 1997 to be used to offset depletions caused by members' wells.

WHEREAS, LAWMA desires to make available CSU's reusable water from its available water sources to the Division 2 Engineer in 1997 for well depletions caused by LAWMA members' wells.

WHEREAS, in 1997 CSU agrees to release reusable water from its accounts in Pueblo Reservoir, Lake Meredith and/or Lake Henry, for delivery to the Arkansas River by LAWMA.

AGREEMENT

NOW, THEREFORE, IT IS AGREED:

1. CSU agrees to sell to LAWMA 6,000 acre-feet of reusable water delivered to the Arkansas River from Pueblo Reservoir, and/or Lake Meredith, and/or Lake Henry between March 15, 1997 and September 30, 1997.
2. Cost per acre-foot and cumulative minimum delivery amounts shall be set according to the following schedule:

<u>Cost per Acre-Foot</u>	<u>Schedule Date</u>	<u>Cumulative Min. Delivery</u>
\$ 6.00 per acre-foot	March 15, 1997 - May 31, 1997	5,000 acre-feet
\$ 9.20 per acre-foot	June 1, 1997 - Sept. 30, 1997	6,000 acre-feet

Water will be delivered according to the schedule on attached Exhibit A. The schedule may be modified by ten (10) business days prior notice.

3. CSU agrees to release this reusable water at an approximate flow rate of 60 cfs from Pueblo Reservoir, and/or Lake Meredith, and/or Lake Henry between March 15, 1997 and September 30, 1997, not to exceed a total of 6,000 acre-feet.
4. The water sold hereunder shall be measured at the Lake Meredith outlet, and LAWMA shall be responsible for all transit losses associated with the delivery of this water from that point.

Enclosure 1

DRAFT

5. LAWMA agrees to pay CSU \$ _____ (dollars) upon receipt of an invoice from CSU.
6. CSU is not obligated to extend or renew this contract or deliver reusable water beyond September 30, 1997. LAWMA and CSU acknowledge and agree that this sale is based upon the circumstances now existing. This Agreement shall in no way obligate CSU at any future time to provide water for LAWMA's use after September 30, 1997.
7. LAWMA is responsible for obtaining approval by the State Engineer or Division 2 Engineer, as well as all other necessary approvals required for delivery of this water for LAWMA's intended uses from Lake Meredith, Lake Henry, and Pueblo Reservoir.
8. Delivery of this water must be coordinated with the Division 2 Engineer, Mr. Allen Ringle of the Colorado Canal Company, and Mr. Scott Howell of CSU. A one day notice must be provided to Mr. Ringle and Mr. Howell prior to beginning delivery of this water.
9. CSU makes no warranty as to the water quality of delivered water to LAWMA for its intended use as detailed above.
10. All water furnished under this agreement by CSU shall be for one time use only.
11. The water furnished under this agreement shall not be used for future residential development.
12. This Agreement contains the entire understanding between parties, no modification, amendment, notation, or other alteration to this Agreement shall be valid of any force or effect unless mutually agreed to by the parties in writing as an addendum to this Agreement. At the time of the Execution of the Agreement, there are no other terms, conditions, requirements, or obligations affecting this Agreement which are not specifically set forth herein.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on this _____ day of _____, 1997.

**COLORADO SPRINGS UTILITIES
WATER RESOURCES DEPARTMENT**

**LOWER ARKANSAS WATER
MANAGEMENT ASSOCIATION**

BY: _____
Edward W. Bailey, Director

BY: _____

APPROVED AS TO FORM:

Colorado Springs Utilities Attorney

WATER RESOURCES DEPARTMENT
Resources & Planning



COLORADO SPRINGS UTILITIES

March 26, 1997

Mr. Steve Witte
State Engineer's Office
P.O. Box 5728
Pueblo, Colorado 81003

Dear Mr. Witte:

Colorado Springs Utilities has agreed to sell fully reusable Colorado Canal Consumptive Use waters from our account in Lake Meredith, to the Lower Arkansas Water Management Association (LAWMA). This water is scheduled to be released from Lake Meredith between March 26 and April 1, 1997, and then stored in the Off Set Account in John Martin Reservoir.

Should you have any further questions, please feel free to contact me at (719) 448-8720.

Sincerely,

A handwritten signature in black ink that reads "Scott E. Howell". The signature is written in a cursive style.

Scott E. Howell
Senior Analyst

roz

cc: Philip C. Saletta

Enclosure 2

TRANSIT LOSS AND TRAVELTIME COMPUTATION

BASE RELEASE

MEREDITH OUTLET

FOR SITE NO. 13 : ~~Holbrook canal headgate~~

RELEASE DATE: 3 / 27 / 97
 TIME: 900 (MILITARY)
 MILES: 68.5
 BASE RELEASE: 144.7 CFS
 TYPE OF WATER: COLORADO CANAL FULLY CONSUMABLE
 DURATION: 2 DAYS

SUBREACH	ANTECEDENT STREAMFLOW	PERCENT TRANSIT LOSS	PROJECTED HOURS	ARRIVAL TIME	DATE
1	1,080	2.44	5.14	1408	3 27 97
2	1,190	1.49	6.44	2035	3 27 97
3	1,100	1.53	8.45	526	3 28 97
4	487	0.53	2.59	825	3 28 97
5	0	0.00	0.00	0	0 0 0
6	0	0.00	0.00	0	0 0 0
SUBTOTAL		5.99	22.62	HOURS	

=====

ADJUSTMENT FACTOR FOR BASE RELEASE OF 144.70 CFS = 0.98
 ADJUSTMENT FACTOR FOR RELEASE DURATION OF 2 DAYS = 1.60

=====

ADJUSTED TRANSIT LOSS TO SITE NO. 13 = 9.42 PERCENT. FOR A RESERVOIR
 RELEASE OF 144.70 CFS, THE DIVERSION AT SITE NO. 13 = 131.07 CFS.

=====

*RUN TO FT LYON MAIN - EXCHANGED @ JMR
 WITH FT LYON NW*

Enclosure 3

TRANSIT LOSS AND TRAVELTIME COMPUTATION

HEADGATE DIVERSION

FOR SITE NO. 16 : Fort Lyon canal headgate

RELEASE DATE: 3 / 27 / 97
 TIME: 900 (MILITARY)
 MILES: 89.6
 BASE RELEASE: 144.7 CFS
 TYPE OF WATER: COLORADO CANAL FULLY CONSUMABLE
 DURATION: 2 DAYS

SUBREACH	ANTECEDENT STREAMFLOW	PERCENT TRANSIT LOSS	PROJECTED HOURS	ARRIVAL TIME	DATE
1	1,080	2.44	5.14	1408	3 27 97
2	1,190	1.49	6.44	2035	3 27 97
3	1,100	1.53	8.45	526	3 28 97
4	487	2.72	13.29	1843	3 28 97
5	0	0.00	0.00	0	0 0 0
6	0	0.00	0.00	0	0 0 0
SUBTOTAL		8.19	33.32	HOURS	

=====

ADJUSTMENT FACTOR FOR BASE RELEASE OF 144.70 CFS = 0.98

ADJUSTMENT FACTOR FOR RELEASE DURATION OF 2 DAYS = 1.60

=====

ADJUSTED TRANSIT LOSS TO SITE NO. 16 = 12.86 PERCENT. FOR A DIVERSION OF 26.04 CFS AT SITE NO. 16, THE REQUIRED RESERVOIR RELEASE = 144.70 CFS.

=====

STATE OF COLORADO

WATER DIVISION 2
OFFICE OF THE STATE ENGINEER310 East Albiendo, Suite B
Pueblo, CO 81004
Phone (719) 542-3368
FAX (719) 544-0800

June 2, 1997

Roy Romer
GovernorJames S. Lochhead
Executive DirectorHal D. Simpson
State EngineerSteven J. Witte, P.E.
Division EngineerDavid L. Pope
Kansas Chief Engineer
Kansas Board of Agriculture
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283

RE: Notice of Delivery to the Offset Account in John Martin Reservoir

Dear Mr. Pope:

The purpose of this letter is to provide the notice required by paragraph 3 of the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution") of a delivery of water to the Offset Account.

The Lower Arkansas Water Management Association (LAWMA) has initiated actions to deliver 684.8 acre-feet of fully consumable water to the Offset Account for the purpose of replacing depletions to usable stateline flow caused by the operations of four Substitute Water Supply Plans operated by LAWMA.

LAWMA has purchased the water used in this delivery from Colorado Springs Utilities and has previously used a portion of the water from this purchase for payment of the storage charge for the use of the Offset Account. The documentation to support the classification of this water as fully consumable was provided with the notification of delivery of the storage charge. The timing and quantities associated with this delivery are described below.

The following information is provided in accordance with paragraph 3 of the Resolution.

Source of Water Delivered: Colorado Springs Utilities water from Lake Meredith.

Times Associated With Delivery

Release Initiated At:	2345 hours, 30 May, 1997
Release Terminates At:	0423 hours, 2 June, 1997
Arrival Starts at John Martin Reservoir:	1200 hours, 1 June, 1997 *
Arrival Finishes at John Martin Reservoir:	1638 hours, 3 June, 1997 *

(* The arrival times in the notification letter that was FAXed to you have been corrected.)

Flow Rates Associated With Delivery (See Enclosure 1)

Release Flow Rate:	175.15 cfs
Arrival Flow Rate at John Martin Reservoir:	157.41 cfs

David L. Pope
June 2, 1997

Page 2

Extent Water is Fully Consumable:

Fully consumable water sold by Colorado Springs Utilities to LAWMA.

Return Flow Information

Quantity: Not Applicable

Timing: Not Applicable

Location: Not Applicable

Please provide your instructions for the disposition of this water.

Please contact me if you have any questions or require additional information.

Sincerely,



Steven J. Witte
Division Engineer
Colorado Division of Water Resources

1 Enclosure

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Bill Howland

TRANSIT LOSS AND TRAVELTIME COMPUTATION

HEADGATE DIVERSION

FOR SITE NO. 13 : *Meredith Outlet*
~~Holbrook canal headgate.~~

RELEASE DATE: 5 / 30 / 97
 TIME: 2345 (MILITARY)
 MILES: 68.5
 BASE RELEASE: 193.2 CFS
 TYPE OF WATER: LAWMA
 DURATION: 2.1934 DAYS

SUBREACH	ANTECEDENT STREAMFLOW	PERCENT TRANSIT LOSS	PROJECTED HOURS	ARRIVAL TIME	DATE
1	1,190	2.51	4.92	400	5 31 97
2	1,460	1.47	5.88	953	5 31 97
3	962	1.74	9.03	1855	5 31 97
4	945	0.43	2.00	2055	5 31 97
5	0	0.00	0.00	0	0 0 0
6	0	0.00	0.00	0	0 0 0
SUBTOTAL		6.14	21.83	HOURS	

ADJUSTMENT FACTOR FOR BASE RELEASE OF 193.20 CFS = 0.96
 ADJUSTMENT FACTOR FOR RELEASE DURATION OF 2 DAYS = 1.58

ADJUSTED TRANSIT LOSS TO SITE NO. 13 = 9.32 PERCENT. FOR A DIVERSION OF
 75.15 CFS AT SITE NO. 13, THE REQUIRED RESERVOIR RELEASE = 193.20 CFS.

Release
Rate 175.15 cfs
Duration 2.1934 days
Quantity 762 acre-feet

Start at 2345 hrs, 30 May 1997
End at 0423 hrs, 2 Jun 1997

Enclosure 1

TRANSIT LOSS AND TRAVELTIME COMPUTATION

BASE RELEASE

FOR SITE NO. 20 : John Martin Dam

RELEASE DATE: 5 / 30 / 97
 TIME: 2345 (MILITARY)
 MILES: 142.2
 BASE RELEASE: 193.2 CFS
 TYPE OF WATER: LAWMA
 DURATION: 2.1934 DAYS

SUBREACH	ANTECEDENT STREAMFLOW	PERCENT TRANSIT LOSS	PROJECTED HOURS	ARRIVAL	
				TIME	DATE
1	1,190	2.51	4.92	400	5 31 97
2	1,460	1.47	5.88	953	5 31 97
3	962	1.74	9.03	1855	5 31 97
4	945	2.58	12.17	729	6 1 97
5	745	2.16	7.32	1448	6 1 97
6	725	1.75	8.40	2336	6 1 97
SUBTOTAL		12.21	47.72	HOURS	

ADJUSTMENT FACTOR FOR BASE RELEASE OF 193.20 CFS = 0.96

ADJUSTMENT FACTOR FOR RELEASE DURATION OF 2 DAYS = 1.58

ADJUSTED TRANSIT LOSS TO SITE NO. 20 = 18.52 PERCENT. FOR A RESERVOIR
 RELEASE OF 193.20 CFS, THE DIVERSION AT SITE NO. 20 = 157.41 CFS.

*Delivery
 Rate 157.41 cfs
 Duration 2.1934 days
 Quantity 684.8 acre-feet*

STATE OF COLORADO

**WATER DIVISION 2
OFFICE OF THE STATE ENGINEER**

310 East Albiendo, Suite B
Pueblo, CO 81004
Phone (719) 542-3368
FAX (719) 544-0800



July 16, 1997

David L. Pope
Kansas Chief Engineer
Kansas Board of Agriculture
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283

Roy Romer
Governor

James S. Lochhead
Executive Director

Hal D. Simpson
State Engineer

Steven J. Witte, P.E.
Division Engineer

RE: Notice of Release of Offset Account Water from John Martin Reservoir

Dear Mr. Pope:

The purpose of this letter is to provide an initial accounting for a release of water from the Offset Account in John Martin Reservoir for delivery to the Stateline demanded by the Kansas Chief Engineer in accordance with the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution") and the **Stipulation Re Offset Account in John Martin Reservoir** dated March 17, 1997 ("Stipulation").

Enclosure 1 is the release record from John Martin Reservoir showing that the Kansas Chief Engineer requested a release of water from the Offset Account at the rate of 600 c.f.s. The release began on June 24, 1997 and continued until the Offset Account was empty. Transit losses on the release of water from the Offset Account were determined using the transit losses for Subreach 6, including bank and channel storage, as set forth in U.S. Geological Survey Water Resources Investigations 78-75.

Enclosure 2 shows the quantities of water that were in the various subaccounts of the Offset Account prior to the initiation of the release, during the release, and following the release of all water from the account. Please note that storage charge water and fully consumable water for use in offsetting depletions to usable Stateline flow was released.

Enclosure 3 shows the credit at the Stateline for the delivery of the fully consumable water released from the Offset Account. The credit was determined in accordance with paragraphs 2 and 3 of the Stipulation and was 572.9 acre-feet.

Please contact me if you have any questions or require additional information.

David L. Pope
July 16, 1997

Page 2

Sincerely,

A handwritten signature in black ink, appearing to read "Steven J. Witte". The signature is fluid and cursive, with the first name "Steven" and last name "Witte" clearly legible.

Steven J. Witte
Division Engineer
Colorado Division of Water Resources

3 Enclosures

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Duane Helton
Bill Howland

ROY ROMER
Governor



JERIS A DANIELSON
State Engineer

DIVISION OF WATER RESOURCES
WATER DIVISION II

Steven J. White
Division Engineer
219 W. 5th Street, Room 223
P.O. Box 5726
Pueblo, Colorado 81003
(719) 542-3368

JOHN MARTIN RESERVOIR:

This report confirms the authorization on operation orders for John Martin Reservoir.

No.	Entity	Date	Time	Start	Increase or Decrease	Stop	Net	Remarks
1	Ft Bent	6/20	0930		68.01 | 99.28		95.0	
2	Amity	6/20	0930		303.23 | 328.66		325.0	
3	do	6/20	0900		328.66 | 353.78		330.0	
4	Xly	6/23	1130	20.81			20.81	LAWMA Aug. to River
5	OFFSET: 405' W. 1/2	6/23	1130	680.00			680.00	State of Kansas RIS 1
6	do	6/24	0755			680.00	0	Act dry
7	State of Kansas	6/24	0755	600.00			600.00	To State Line
8	Transit Loss	6/24	0755	80.00			80.00	To River
9	do	6/24	1000		80.00 | 120.00		120.00	To River
10	Lamar	6/24	1000		241.67 | 225.93		220.00	
11	Amity	6/24	1000		353.78 | 378.18		375.00	
12	Buffalo	6/24	1000	10.94			10.00	
13	Ft. Bent	6/24	1000		99.25 | 95.41		95.00	Antecedent Change
14	Keese	6/24	1000		26.11 | 26.09		26.00	Antecedent Change
15	Lamar	6/25	0930		225.93 | 235.87		235.00	
16	Ft. Bent	6/25	0930		95.41 | 130.38		120.00	
17	State of Kansas	6/26	0900			600.00		
18	Transit Loss	6/26	0900			120.00		
19	Amity	6/27	0930		378.18 | 404.00		400.00	
20								

Division Engineer

Enclosure 1

WATER STATUS REPORT
 OFFSET ACCOUNT

JUN 22, 1997

RECEIVED
 JUL 02 1997
 DIVISION ENGINEER
 PUEBLO, COLORADO

NO	NAME	INFLOW	RELEASE	EVAP	OWN
1	OFFSET ACCOUNT	0.00	0.00	1.25	1148.56
2	CONSUMABLE WATER	0.00	0.00	1.25	1148.56
3	RETURN FLOW	0.00	0.00	0.00	0.00
4	CONSUMABLE WATER	0.00	0.00	1.25	1148.56
5	COLORADO UPSTREAM	0.00	0.00	0.00	0.00
6	COLORADO DOWNSTREAM	0.00	0.00	0.73	674.53
7	KANSAS	0.00	0.00	0.00	0.00
8	KANSAS STORAGE CHARGE	0.00	0.00	0.52	474.03
9	RETURN FLOW	0.00	0.00	0.00	0.00
10	INSTATE	0.00	0.00	0.00	0.00
11	STATE LINE	0.00	0.00	0.00	0.00
12	INSTATE	0.00	0.00	0.00	0.00
13	UPSTREAM	0.00	0.00	0.00	0.00
14	DOWNSTREAM	0.00	0.00	0.00	0.00

Enclosure 2

ILY STATUS REPORT
 FSET ACCOUNT

JUN 23, 1997

RECEIVED

JUL 02 1997

DIVISION ENGINEER
 PUEBLO, COLORADO

2.	NAME	INFLOW	RELEASE	EVAP	OWN
1	OFFSET ACCOUNT	0.00	702.22	1.31	445.03
0	CONSUMABLE WATER	0.00	702.22	1.31	445.03
0	RETURN FLOW	0.00	0.00	0.00	0.00
0	CONSUMABLE WATER	0.00	702.22	1.31	445.03
1	COLORADO UPSTREAM	0.00	0.00	0.00	0.00
2	COLORADO DOWNSTREAM	0.00	228.73	0.77	445.03
3	KANSAS	0.00	0.00	0.00	0.00
4	KANSAS STORAGE CHARGE	0.00	473.49	0.54	0.00
0	RETURN FLOW	0.00	0.00	0.00	0.00
1	INSTATE	0.00	0.00	0.00	0.00
2	STATE LINE	0.00	0.00	0.00	0.00
1	INSTATE	0.00	0.00	0.00	0.00
1	UPSTREAM	0.00	0.00	0.00	0.00
1	DOWNSTREAM	0.00	0.00	0.00	0.00

Enclosure 2 (cont)

LY STATUS REPORT
 SET ACCOUNT

JUN 24, 1997

RECEIVED

JUL 02 1997

DIVISION ENGINEER
 PUEBLO, COLORADO

NAME	INFLOW	RELEASE	EVAP	OWN
OFFSET ACCOUNT	0.00	444.59	0.44	0.00
CONSUMABLE WATER	0.00	444.59	0.44	0.00
RETURN FLOW	0.00	0.00	0.00	0.00
CONSUMABLE WATER	0.00	444.59	0.44	0.00
COLORADO UPSTREAM	0.00	0.00	0.00	0.00
COLORADO DOWNSTREAM	0.00	444.59	0.44	0.00
KANSAS	0.00	0.00	0.00	0.00
KANSAS STORAGE CHARGE	0.00	0.00	0.00	0.00
RETURN FLOW	0.00	0.00	0.00	0.00
INSTATE	0.00	0.00	0.00	0.00
STATE LINE	0.00	0.00	0.00	0.00
INSTATE	0.00	0.00	0.00	0.00
UPSTREAM	0.00	0.00	0.00	0.00
DOWNSTREAM	0.00	0.00	0.00	0.00

Enclosure 2 (cont)

**Transit Loss Computation
for
Determination of Credits to Offset Depletions to Stateline Flows**

Flow Readings

Gage	June 22	June 23	June 24	June 25	June 26	June 27	June 28
JMR	694	704	1470	1500	1520	789	
Lamar	17	69	636	688	582	105	
Granada	64	67	72	411	531	461	152
Coolidge	153	156	156	324	571	679	400

Antecedent Flows

Transit Loss Computation

Subreach	Antecedent Flow	Percent Transit Loss =	$miles \times \frac{\% \text{ loss}}{mile}$
JMR-Lamar (21.1 mi)	704	1.7935 %	21.1 x 0.085 %/mi
Lamar-Granada (21.9 mi)	69	5.2341 %	21.9 x 0.239 %/mi
Granada-Coolidge (18.3 mi)	72	4.3188 %	18.3 x 0.236 %/mi
Subtotal		11.3464 %	
Adj Factor (>470 cfs)		0.9	
Adj Factor (3 days)		1.475	
Total Transit Loss		15.062 %	

Credit for Storage Charge

$$0.84938 \times 474.03 \text{ (Storage Charge Release)} = 402.6 \text{ acre-feet credit}$$

Credit for Colorado Consumptive Use Water

$$0.84938 \times 674.53 \text{ (Consumptive Use Water)} = 572.9 \text{ acre-feet credit}$$

Enclosure 3

Date

STATE OF COLORADO

**WATER DIVISION 2
OFFICE OF THE STATE ENGINEER**

310 East Albreindo, Suite B
Pueblo, CO 81004
Phone (719) 542-3368
FAX (719) 544-0800



August 6, 1997

Roy Romer
Governor
James S. Lochhead
Executive Director
Hal D. Simpson
State Engineer
Steven J. Witte, P.E.
Division Engineer

David L. Pope
Kansas Chief Engineer
Kansas Board of Agriculture
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283

RE: Notice of Delivery to the Offset Account in John Martin Reservoir

Dear Mr. Pope:

The purpose of this letter is to provide the notice required by paragraph 3 of the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution") of a delivery of water to the Offset Account.

The Lower Arkansas Water Management Association (LAWMA) has initiated actions to deliver 2200 acre-feet of fully consumable water to the Offset Account for the purpose of replacing depletions to usable stateline flow caused by the operations of their Arkansas River replacement plan which was approved on March 28, 1997. (See Enclosure 1)

The source of the water is LAWMA's X-Y/Graham Article II account in John Martin Reservoir. A total of 4000 acre-feet of water will be released from this account to the Offset Account. Of this quantity, 55% will be added to the fully consumable water presently in the Offset Account and 45% will be added to the return flow water in the account. Condition #2 of the March 28, 1997 replacement plan approval letter requires the use of the Offset Account when using water from LAWMA's Article II accounts to replace depletions to usable stateline flow. The replacement plan approval letter also provides the percentages to be used for determining the part of each release from LAWMA's Article II accounts which can be credited as fully consumable water.

The following information is provided in accordance with paragraph 3 of the Resolution.

Source of Water Delivered: LAWMA's X-Y/Graham Article II account.

Times Associated With Delivery: Water will be moved from LAWMA's X-Y/Graham Article II account to the Offset Account at 1200 hours, August 4, 1997.

Flow Rates Associated With Delivery: Not Applicable

David L. Pope
August 6, 1997

Page 2

Extent Water is Fully Consumable: 55% of X-Y/Graham Article II water, or 2200 acre-feet of this delivery, is considered fully consumable for delivery to the Offset Account.

Return Flow Information: 45% of X-Y/Graham Article II water, or 1800 acre-feet of this delivery will be accounted for as return flow water. This water will be released with the release of consumable water from the Offset Account as occurs with releases from Article II accounts.

Please contact me if you have any questions or require additional information.

Sincerely,



Steven J. Witte
Division Engineer
Colorado Division of Water Resources

1 Enclosure

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Bill Howland

LOWER ARKANSAS WATER MANAGEMENT ASSOCIATION

RECEIVED

JUL 28 1997

DIVISION ENGINEER
PUEBLO, COLORADO

BOX 1161 /
LAMAR, COLORADO 81052
(719)336 9696 Phone
(719)336 2422 Fax

July 25, 1997

Mr. William F. Howland
Colorado Division of Water Resources
1640 West 6th
Las Animas, Colorado 81054

Dear Bill:

Please transfer 4,000 acre-feet from LAWMA's X-Y/Graham Article II Account to the Offset Account. LAWMA will use this water in the coming months to replace depletions by its member wells with respect to Usable Stateline Flow.

Sincerely,



Donald F. Higbee, Secretary

cc: Hal D. Simpson
→ Steven J. Witte
Duane D. Helton

Enclosure 1

STATE OF COLORADO

**WATER DIVISION 2
OFFICE OF THE STATE ENGINEER**

310 East Albreindo, Suite B
Pueblo, CO 81004
Phone (719) 542-3368
FAX (719) 544-0800



August 19, 1997

Roy Romer
Governor

James S. Lochhead
Executive Director

Hal D. Simpson
State Engineer

Steven J. Witte, P.E.
Division Engineer

David L. Pope
Kansas Chief Engineer
Kansas Board of Agriculture
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283

RE: Notice of Delivery to the Offset Account in John Martin Reservoir

Dear Mr. Pope:

The purpose of this letter is to provide the notice required by paragraph 3 of the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution") of a delivery of water to the Offset Account.

The Lower Arkansas Water Management Association (LAWMA) has initiated actions to deliver 1003.24 acre-feet of fully consumable water to the Offset Account for the purpose of replacing depletions to usable stateline flow caused by the operation of the Arkansas River replacement plan operated by LAWMA.

LAWMA has obtained the water used in this delivery from the City of Aurora. This water is Colorado Canal consumptive use water stored in Lake Meredith, the same type of water provided by Colorado Springs Utilities used in previous deliveries to the Offset Account. The timing and quantities associated with this delivery are described below.

The following information is provided in accordance with paragraph 3 of the Resolution.

Source of Water Delivered: Aurora Colorado Canal consumptive use water from Lake Meredith.

Times Associated With Delivery

Release Initiated At:	1200 hours, 13 Aug, 1997
Release Terminates At:	1200 hours, 19 Aug, 1997
Arrival Starts at John Martin Reservoir:	0000 hours, 15 Aug, 1997
Arrival Finishes at John Martin Reservoir:	0000 hours, 21 Aug, 1997

Flow Rates Associated With Delivery (See Enclosure 1)

Release Flow Rate:	85.65 cfs
Arrival Flow Rate at John Martin Reservoir:	84.30 cfs

David L. Pope
August 19, 1997

Page 2

Extent Water is Fully Consumable:

Fully consumable Aurora Colorado Canal consumptive use water from Lake Meredith.

Return Flow Information

Quantity: Not Applicable

Timing: Not Applicable

Location: Not Applicable

Please provide your instructions for the disposition of this water.

Please contact me if you have any questions or require additional information.

Sincerely,



Steven J. Witte
Division Engineer
Colorado Division of Water Resources

1 Enclosure

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Bill Howland

TRANSIT LOSS AND TRAVELTIME COMPUTATION

BASE RELEASE

FOR SITE NO. 13 : Holbrook canal headgate

RELEASE DATE: 8 / 12 / 97
 TIME: 0 (MILITARY)
 MILES: 68.5
 BASE RELEASE: 90.4 CFS
 TYPE OF WATER:
 DURATION: 6 DAYS

SUBREACH	ANTECEDENT STREAMFLOW	PERCENT TRANSIT LOSS	PROJECTED HOURS	ARRIVAL TIME	DATE
1	1,740	2.03	4.23	414	8 12 97
2	3,020	1.10	4.02	815	8 12 97
3	2,910	1.02	4.99	1338	8 12 97
4	2,600	0.24	0.00	1338	8 12 97
5	0	0.00	0.00	0	0 0 0
6	0	0.00	0.00	0	0 0 0

SUBTOTAL 4.39 | 13.23 HOURS

=====

ADJUSTMENT FACTOR FOR BASE RELEASE OF 90.43 CFS = 1.00

ADJUSTMENT FACTOR FOR RELEASE DURATION OF 6 DAYS = 1.20

=====

ADJUSTED TRANSIT LOSS TO SITE NO. 13 = 5.29 PERCENT. FOR A RESERVOIR
 RELEASE OF 90.43 CFS, THE DIVERSION AT SITE NO. 13 = 85.65 CFS.

Enclosure 1

TRANSIT LOSS AND TRAVELTIME COMPUTATION

BASE RELEASE

FOR SITE NO. 20 : John Martin Dam

RELEASE DATE: 8 / 12 / 97
 TIME: 0 (MILITARY)
 MILES: 142.2
 BASE RELEASE: 90.4 CFS
 TYPE OF WATER:
 DURATION: 6 DAYS

SUBREACH	ANTECEDENT STREAMFLOW	PERCENT TRANSIT LOSS	PROJECTED HOURS	ARRIVAL TIME	DATE
1	1,740	2.03	4.23	414	8 12 97
2	3,020	1.10	4.02	815	8 12 97
3	2,910	1.02	4.99	1338	8 12 97
4	2,600	1.48	0.00	1338	8 12 97
5	3,000	0.00	0.00	1338	8 12 97
6	3,000	0.00	0.00	1338	8 12 97
SUBTOTAL		5.63	13.23	HOURS	

=====

ADJUSTMENT FACTOR FOR BASE RELEASE OF 90.43 CFS = 1.00

ADJUSTMENT FACTOR FOR RELEASE DURATION OF 6 DAYS = 1.20

=====

ADJUSTED TRANSIT LOSS TO SITE NO. 20 = 6.78 PERCENT. FOR A RESERVOIR
 RELEASE OF 90.43 CFS, THE DIVERSION AT SITE NO. 20 = 84.30 CFS.

Enclosure 1 (Continued)

STATE OF COLORADO

WATER DIVISION 2
OFFICE OF THE STATE ENGINEER310 East Albriendo, Suite B
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FAX (719) 544-0800

August 25, 1997

David L. Pope
Kansas Chief Engineer
Kansas Board of Agriculture
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283Roy Romer
Governor
James S. Lochhead
Executive Director
Hal D. Simpson
State Engineer
Steven J. Witte, P.E.
Division Engineer

RE: Notice of Delivery to the Offset Account in John Martin Reservoir

Dear Mr. Pope:

The purpose of this letter is to provide the notice required by paragraph 3 of the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution") of a delivery of water to the Offset Account. This letter supplements and amplifies the telephonic notification provided to Mark Rude on July 14, 1997.

The Lower Arkansas Water Management Association (LAWMA) has acquired 3569 shares of the Highland Irrigation Company which were historically used for irrigation of land along the lower end of the Purgatoire River. The State and Division Engineers have preliminarily approved the use of these shares for augmentation use in LAWMA's Rule 14 plan for 1997-98 and LAWMA has initiated the diversion and delivery of water from its shares of the direct flow water rights of the Highland Irrigation Company on the Purgatoire River to the Offset Account in John Martin Reservoir. This action was initiated at 0900 hours on Monday, 14 July, 1997 and will continue while these water rights are in priority.

The following paragraphs provide the information required by paragraph 3 of the Resolution related to the source of the water, times associated with the delivery, flow rates, the extent to which the water is fully consumable and information on the return flow water that will also be stored in the Offset Account.

The source of the water being delivered to the Offset Account is waters of the Purgatoire River divertible under the shares of the Highland Irrigation Company owned by LAWMA. The water rights owned by the Highland Irrigation Company are described in the 1986 report prepared by Tipton and Kalmbach, Inc. (Colo. Exh. 100). During the remainder of the term of its currently approved Arkansas River replacement plan (until March 31, 1997), water available for diversion under LAWMA's shares will be diverted at the headgate of the Highland Canal when the water rights decreed for diversion at the Highland Canal are in priority. The Highland Canal will be operated in two different modes, depending on the amount of water available for diversion. The first mode of operation will be used when a sufficient amount of water can be diverted to supply all shareholders on the canal at the same time. The other mode of operation will be used when

only a small amount of water can be diverted and this water is rotated to one or several shareholders at a time. When the canal is being operated in the first mode, water attributable to LAWMA's shares will be measured and returned to the river from Wasteway #3 (See map in Enclosure 1). When the canal is being operated in the second mode and the shares that LAWMA owns are scheduled to receive water as part of the rotation of water to each shareholder, the entire amount of water diverted into the canal will be measured at the 5 foot Parshall flume located 1.8 miles upstream from Waterway #3, delivered down the canal to Wasteway #3, and returned to the river. The measured amount at the flume will be reduced by 10% to account for transit loss in the canal between the flume and the wasteway. Enclosure 1 provides the operational description for delivery of water to the Offset Account. Enclosure 2 provides an updated analysis used to derive the consumptive use factors for the Highland Canal. Enclosure 3 provides the material to support the rating of Wasteway #3 when the canal is being operated in the first mode described above.

The timing of deliveries to the Offset Account and the flow rates associated with the deliveries will vary daily, depending on conditions on the Purgatoire River and whether LAWMA's shares are entitled to receive water diverted into the canal. A report will be prepared at the end of each month during which water is delivered to the Offset Account detailing the amount of water delivered, the time of delivery, the rate of delivery, the extent to which the water is fully consumable, and the quantity of associated return flows delivered to John Martin Reservoir. A format for this report is attached as Enclosure 4.

To determine the amount of fully consumable water delivered to the Offset Account, the quantity of water delivered back to the river at Wasteway #3 under either mode of operation will be reduced by the transit losses between Wasteway #3 and John Martin Reservoir using the procedures required by paragraph 4 of the Resolution for 8 river miles on the Purgatoire River and 19 river miles on the Arkansas River. The amount of water reaching John Martin Reservoir will then be multiplied by a consumptive use factor of 69%. The computation of this factor is detailed in Enclosure 1 and Enclosure 2. The resulting quantity of water will be placed in the consumptive use subaccount of the Offset Account.

The remainder of the total amount of water reaching John Martin Reservoir represents the return flows associated with the diversions of the Highland Canal attributable to LAWMA's shares which reach John Martin Reservoir. As described in Enclosure 1 and Enclosure 2, 3.1% of the total amount of water reaching John Martin Reservoir represents the delayed return flows from diversions attributable to LAWMA's shares which would arrive at the reservoir during the months of December, and January. This quantity will be stored as return flow water in the Offset Account to be released to conservation storage during those two months. The remaining water from the total quantity arriving at John Martin Reservoir represents the return flows associated with diversions attributable to LAWMA's shares currently arriving at the reservoir and will be treated as other native water arriving at the Reservoir.

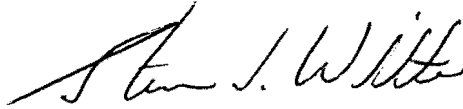
The accounting form provided at Enclosure #4 will be used to provide the accounting for quantities of fully consumable water and return flows delivered into the Offset Account.

David L. Pope
August 25, 1997

Page 3

Please contact me if you have any questions or require additional information.

Sincerely,



Steven J. Witte
Division Engineer
Colorado Division of Water Resources

4 Enclosures

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Bill Howland

HELTON & WILLIAMSEN, P.C.
CONSULTING ENGINEERS IN WATER RESOURCES
384 INVERNESS DRIVE SOUTH, SUITE 115
ENGLEWOOD, COLORADO 80112
PHONE (303) 792-2161
FAX (303) 792-2165

RECEIVED

JUL 11 1997

DIVISION ENGINEER
PUEBLO, COLORADO

July 10, 1997

Mr. Steven J. Witte
Colorado Division of Water Resources
310 E. Abriendo, Suite B
Pueblo, Colorado 81004

Subject: Highland Canal - LAWMA

Dear Mr. Witte:

The Lower Arkansas Water Management Association (LAWMA) requests that their deliveries to the Purgatoire River from the Highland Canal be included as a source of replacement water in their Rule 14 replacement plan. Our letter dated July 9, 1997 described the procedures, summarized below, for measuring and recording the deliveries to the river through Wasteway No. 3. Also, this letter sets forth a procedure for calculating the replacement credit available to LAWMA from these deliveries.

Measurement Procedure

A rating table (transmitted to you on July 9) was prepared for determining the discharge through the wasteway gate using the gate opening and head over the gate opening. When water is delivered to down-ditch irrigators, the discharge will be determined using this table. At times of low diversion rates, the water is rotated to the farm turnouts. During LAWMA's turn, all of the water in the canal will be discharged to the river through the wasteway gate. The rating table would not be appropriate then because there would be no head over the gate. At those times, the water discharged through the gate will be recorded as the flow through the 5-foot Parshall flume which is located about 1.8 miles upstream, less 10 percent to account for seepage losses. There is one turnout between the flume and Wasteway No. 3. If water is being delivered to this turnout, the ditchrider will deduct the delivery from the Parshall flume reading or record a "0" for the delivery. Enclosed as Attachment 1 is a copy of the form used by the ditchrider. The ditchrider will call Bill Howland daily to inform him of the previous day's deliveries through Wasteway No. 3.

Enclosed as Plate 1 is a location map showing the Highland Canal and irrigated land prepared by Tipton and Kalmbach, Inc. in 1986. Please note that ownership of some of the parcels has changed since 1986, that the Davidson Ranch was not included in the 1986 investigation, and that I have identified the turnouts located above Wasteway No. 3 in red.

Calculation of Replacement Credit

We have performed a water budget analysis of the Highland Canal system for 1950 through 1993. This analysis and discussion of the historical operations were presented in the preliminary feasibility report prepared in May 1997. Excerpts from the preliminary report are presented herein as Attachment 2. We will forward the final report to you upon completion. The stream depletions were calculated as the difference between the sellers' prorata diversions and their return flows of surface water and ground water. The surface water portion of the return flow was equal to the estimated volume of tail water runoff from the fields. The ground water component included canal and lateral seepage losses and deep percolation from the fields, and this component was lagged back to the Purgatoire and Arkansas Rivers based on a response function developed using Glover techniques. As indicated in Table 8 of Attachment 2, the historical consumptive use averaged 4,825 acre-feet annually, or 73 percent of the field delivery.

The depletion rates as a percentage of the diversion, presented in the preliminary report, would appropriately estimate the historical depletions if LAWMA's interests are bypassed at the river diversion, which we anticipate will be the procedure used in the future. However, this year the water is being diverted, conveyed down-ditch to Wasteway No. 3 and other down-ditch turnouts, so canal seepage losses associated with LAWMA's prorata interest will occur. We anticipate that the seepage losses under this year's operation will be similar to the seepage losses incurred historically because the entire canal will be operated at times and the canal's wetted perimeter will not change substantially due to checking at the farm turnouts. We propose that the replacement credit be calculated by multiplying the wasteway delivery by 69.4 percent. This factor combines the lateral conveyance efficiency, 95 percent, and the average farm irrigation efficiency, 73 percent.

Enclosed as Attachment 3 is the Agricultural Summary for the Highland Canal taken from "Arkansas River Basin Study - Water Budget Documentation" prepared by Boyle Engineering Corporation in December 1990. Only that portion of the Highland Canal's irrigated land overlying the valley fill aquifer and the corresponding portion of the diversions were used in that study. Canal and lateral seepage losses were estimated to be 10 percent and 5 percent, respectively, which match the values used for our analysis. The Agricultural Summary shows that the farm irrigation efficiency averaged 71 percent for 1950 through 1985 and 75 percent for 1970 through 1979.

Replacement Credit Algorithm

We propose to use the following algorithm for calculating replacement credit for LAWMA's Highland Canal interests delivered to the Purgatoire River through Wasteway No. 3:

1. When the Highland Canal diversions are being delivered to turnouts downstream of Wasteway No. 3 as well as to Wasteway No. 3, the delivery to the Purgatoire River will be measured and recorded using the rating table prepared for the wasteway gate. The replacement credit will equal the measured delivery times 69.4 percent.

Mr. Steven J. Witte
July 10, 1997
Page 3

2. When water is delivered to Wasteway No. 3, but not to down-ditch turnouts, the delivery will equal the measured flow at the 5-foot Parshall flume less 10 percent for ditch seepage and minus the delivery to Davidson's turnout (if any). The replacement credit will be equal to 69.4 percent of the calculated delivery.

LAWMA proposes to store the replacement credit less transit loss in John Martin Reservoir's offset account. LAWMA requests that 90 percent of the assessed transit loss between Wasteway No. 3 and the reservoir be used to replace depletions attributable to LAWMA members in Reach 10.

We will submit an amendment to LAWMA's Rule 14 plan within 30 days which in part will repeat the information described herein.

Please call if you have any questions.

Sincerely yours,

HELTON & WILLIAMSEN, P.C.



Thomas A. Williamsen

TAW/mlc

Enclosure

cc: Donald F. Higbee w/enc.
Bill Howland w/enc.
David L. Harrison, Esq., w/enc.

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ATTACHMENT 1

Highland Irrigation Company
Daily Water Report

Date: _____

Time	Gage Height, ft	Flow, cfs
------	-----------------	-----------

Highland Canal

Davidson Pump

Davidson Turnout

Nelson

Shiba - Hanson gate

Spady

Waldroup

Time	Gage Height, ft	Flow, cfs
------	-----------------	-----------

Wasteway No. 3

Shiba - pump gate

Shiba - big gate

Excess Water - end of ditch

Notes:

ATTACHMENT 2

Excerpts from Preliminary Report Water Rights Acquisitions and Augmentation Program

Prepared by
Helton & Williamsen, P.C.
May 1997

Highland Irrigation Company

The Highland Irrigation Company is a mutual ditch company that owns and operates the Highland Canal. This canal diverts from the westerly bank of the Purgatoire River in sec. 1, T. 25 S., R. 53 W., approximately 17 miles above the confluence with the Arkansas River. The diversions are measured by a 5-foot Parshall flume located about 1.5 miles downstream of the diversion works and about 0.1 mile downstream from a 1,000-foot long tunnel. Generally, much of the upper sections of the canal are cut in rock and some sections are lined with concrete. Two gated wasteways are located upstream of the Parshall flume and one wasteway is located about 1.5 miles downstream.

The company issued 3,800 shares of stock, of which 3,569 shares, or 93.92 percent, are considered as "sellers" for subsequent discussions. The sellers' lands are grouped in the lower half of the irrigation system and the non-sellers' lands are located in the upper half. The Consolidated Extension Canal Company (CECC) owns 200 shares and are included as sellers. Water is delivered to CECC through a turnout on the Highland Canal about 10 miles down-ditch from the diversion works. CECC also has water rights on the Arkansas River which are used through the Las Animas Consolidated Canal.

The Highland Irrigation Company is water short in most years and there are few if any irrigation wells. Accordingly, the company and shareholders are efficient with the distribution and use of water. Canal and lateral losses are estimated to be 14.5 percent of the diversion amount (1990, Boyle). In most cases tail water is collected and reused by the shareholder or is picked up by the lateral system for use on down gradient fields. The minimum amount of deep percolation and tail water was estimated to be 20 percent and 5 percent, respectively, of the field delivery. The maximum system efficiency (conveyance and farm efficiencies combined) was estimated to be about 64 percent.

Water Rights. Table 4 shows pertinent aspects of the three water rights, totaling 62.5 cfs, associated with the Highland Canal. The Highland Canal is the lowest ditch diverting water from the Purgatoire River and accordingly is affected by river calls originating from the Arkansas River in Water District 67. Such calls could occur when conservation storage in John Martin Reservoir is empty. Priority No. 27 for 16.6 cfs is senior to all the mainstem water rights downstream on the Arkansas River, and Priority No. 97 for 7.4 cfs is senior to all but 29.25 cfs. Accordingly, these two water rights, totaling 24.0 cfs, are not affected by mainstem river calls. Priority No. 120 for 38.5 cfs, on the other hand, is junior to about 1,100 cfs of mainstem direct flow water rights, and accordingly is in priority only when there is water in conservation storage.

Diversion Records. The diversion records for the Highland Canal were obtained from the files of the State Engineer and Division Engineer for 1950 through 1993. The prorata diversions for the sellers are summarized in Table 5. The prorata diversions averaged 7,712 acre-feet annually, and ranged from 2,436 acre-feet in 1964 to 14,367 acre-feet in 1983. Since 1980, the prorata diversions averaged 9,715 acre-feet annually, about 26 percent greater than for the longer period. Part of this increase obviously is due to favorable hydrological conditions in the early 1980's. The diversion records show that the ditch oftentimes diverted water during the winter months. Such irrigation deliveries were used to increase soil moisture reserves.

In 1993 and 1994, the company refused to honor a river call issued by the Division Engineer and diverted water out-of-priority. For the ensuing litigation, the Division Engineer quantified the amount of water diverted in priority in 1993, and only those volumes are reflected in Table 5. The records for 1994 were not adjusted by the Division Engineer and are not included in the analyses.

Irrigated Crops and Acreage. The irrigated crops and acreage were based on interviews of the owners in 1986 and aerial photographs (1986, Tipton). Excluding the CECC, the irrigated acreage for the sellers totaled 2,830.7 acres. The typical cropping pattern is:

Alfalfa	.....	46.3%
Corn	.....	14.4%
Winter Wheat	.....	4.6%
Grain Sorghum	.....	16.7%
Pasture	.....	18.0%

The CECC is water short, and therefore, the reduction in deliveries from the Highland Canal will result in less consumptive use by CECC's shareholders. Accordingly, specific lands for dry-up will not be necessary. To account for the CECC shares, the irrigated acreage under the Highland Canal was increased by 168 acres to 2,998.7 acres using the acres/shares ratio for the other sellers.

Historical Consumptive Use. A water budget procedure was performed using a monthly time step to estimate consumptive use and stream depletions caused by the sellers' use of water. The procedure accounts for the canal and lateral losses, application to the fields, crop consumptive use, deep percolation, tail water and return flows. The consumptive irrigation requirements were estimated using the modified Blaney-Criddle method (1971, USDA) and temperature and precipitation data for Las Animas (1993, NOAA).

The historical consumptive use by the sellers averaged 4,882 acre-feet annually (1.37 acre-feet per share) for 1950 through 1993 and ranged from 1,698 acre-feet in 1964 to 7,961 acre-feet in 1983 as shown in Table 6. The historical consumptive use includes crop evapotranspiration (ET), soil evaporation during the winter, and ET derived from canal and lateral losses. The net soil evaporation rate for November through March was estimated at 3 inches and was further limited to available soil moisture. The ET from canal and lateral losses was estimated to be 5 percent of the loss. Portions of the return flows

from ditch seepage, deep percolation, and tail water are consumed by vegetation or evaporated. These additional consumptive uses were not estimated for this investigation.

Stream Depletions. The stream depletion is the difference between the diversion and the return flow for a specific time period. The return flow component from tail water, runoff from the irrigated fields, occurs fairly quickly. However, the return flows caused by deep percolation and seepage losses take much longer. The timing and quantity of ground water return flows were estimated using Glover methods (1987, Schroeder). This method requires transmissivity and specific yield of the aquifer and the distance to the Purgatoire River. The irrigated land is located over valley fill alluvium and terrace deposits, and ranges from about 500 feet to over 3 miles from the river. The weighted value for transmissivity was estimated to be 50,000 gpd/ft², the specific yield was estimated to be 0.2, and the average weighted distance to the river was measured at 6,500 feet. The resulting monthly factors indicate fairly uniform return flows.

The stream depletions averaged 4,917 acre-feet annually for 1950 through 1993 and 6,372 acre-feet annually for 1980 through 1993 as shown in Table 7. A monthly summary of the water budget components is shown in Table 8. It shows that the stream depletions as a percentage of the prorata diversions range from 28.2 percent in November to 82.8 percent in August. In December, January and February, the stream accretions total 257 acre-feet, or 3.5 percent of the cumulative diversions for March through November.

Use as a Replacement Source. In the future, LAWMA will divert all water that is available to the Highland Canal in priority. A portion, 6.08 percent, would be delivered to the non-sellers and the remainder would be measured and returned to the Purgatoire River through a wasteway. Alternatively, only the non-sellers share would be diverted and LAWMA's share would remain in the river and be measured by a new stream gage. The replacement credit would be equal to LAWMA's prorata diversion volume multiplied by the following stream depletion rates:

March	.....	45.2%
April	.....	64.6%
May	.....	69.7%
June	.....	77.3%
July	.....	80.9%
August	.....	82.8%
September	.....	70.7%
October	.....	38.9%
November	.....	28.2%

For December through February, LAWMA would owe the stream accretions equal to 3.5 percent of the March through November diversions. Such water most likely would be owed to Conservation Storage in John Martin Reservoir.

TABLE 4
SUMMARY OF WATER RIGHTS

The Highland Irrigation Company: ^{1J}

Priority No.	Adjudication Date	Appropriation Date	Amount (cfs)
27 ^{2J}	8/10/1903	5/31/1866	16.6 ^{2J}
97 ^{2J}	8/10/1903	4/1/1884	7.4 ^{2J}
120	8/30/1922	3/1/1909	<u>38.5</u>
		Total	62.5

The Fort Bent Ditch Company: ^{3J}

Priority No.	Adjudication Date	Appropriation Date	Amount (cfs)
6	7/1/1895	4/1/1886	27.77
10	7/1/1895	3/10/1889	32.77
12	7/11/1895	9/11/1889	11.70
14	7/11/1895	8/12/1890	26.27
1918-2	10/14/1918	1/1/1893	50.00
1918-9	10/14/1918	12/31/1900	<u>80.00</u>
Total		Total	228.51

^{1J} The source of water for the Highland Canal is the Purgatoire River and its headgate is located in sec. 1, T. 25 S., R. 53 W.

^{2J} Transferred from the Sizer Ditch by decree of the Bent County District Court entered November 11, 1910.

^{3J} The source of the water for the Fort Bent Canal is the Arkansas River and its headgate is located in sec. 1., T. 23 S., R. 49 W.

TABLE 5
PRORATA SHARE OF HISTORICAL DIVERSIONS
FOR 3,569 SHARES
HIGHLAND IRRIGATION COMPANY
(values in acre-feet)

Water Year (1)	Nov (2)	Dec (3)	Jan (4)	Feb (5)	Mar (6)	Apr (7)	May (8)	Jun (9)	Jul (10)	Aug (11)	Sep (12)	Oct (13)	Annual (14)	Yield ac/ft per share (15)
1950	853	259	0	199	317	0	136	390	1,209	1,248	976	0	5,587	1.57
1951	0	0	0	0	0	485	1,038	798	1,185	2,033	242	0	5,777	1.62
1952	0	0	0	0	0	847	585	1,336	144	658	745	0	4,313	1.21
1953	0	0	0	328	333	0	384	799	1,788	1,832	621	0	8,065	1.70
1954	0	0	0	510	110	0	460	91	844	2,044	294	423	4,776	1.34
1955	521	0	0	192	106	233	28	559	326	1,125	1,399	484	4,953	1.39
1956	356	155	65	76	508	15	667	678	1,648	1,932	125	0	6,225	1.74
1957	0	0	0	0	28	1,388	1,392	2,383	3,607	2,897	1,201	788	13,684	3.83
1958	782	164	0	0	0	1,258	1,645	2,805	2,277	2,877	855	67	12,730	3.57
1959	475	0	0	0	887	1,417	1,328	826	1,201	922	169	0	7,225	2.02
1960	762	309	0	0	0	635	851	87	1,407	494	714	712	5,971	1.67
1961	622	0	0	0	0	993	719	1,587	1,479	1,585	868	502	8,355	2.34
1962	641	121	0	0	369	1,110	673	1,002	1,885	546	0	0	6,347	1.78
1963	0	0	0	587	0	0	0	78	184	2,049	1,731	235	4,864	1.36
1964	0	0	0	0	0	701	214	364	356	801	0	0	2,436	0.68
1965	0	0	0	0	269	173	514	1,203	1,783	1,885	1,353	631	7,811	2.19
1966	507	404	0	0	0	36	2	382	1,938	1,980	1,744	390	7,383	2.07
1967	691	250	0	784	621	38	521	2,279	2,034	1,928	1,701	862	11,689	3.28
1968	430	123	0	907	982	589	1,123	1,309	1,108	1,997	305	0	8,873	2.49
1969	0	0	93	943	350	1,646	1,382	1,450	1,786	1,565	1,415	300	10,930	3.06
1970	0	0	0	213	888	1,067	968	998	1,458	997	179	333	7,101	1.99
1971	0	0	0	957	1,114	775	407	807	1,451	1,859	424	283	8,077	2.28
1972	341	0	0	384	457	16	273	221	1,889	673	1,222	5	5,461	1.53
1973	0	0	0	261	363	767	1,279	1,579	1,804	861	128	195	7,237	2.03
1974	0	0	0	28	1,391	623	115	288	7	280	0	0	2,732	0.77
1975	0	0	0	70	415	384	21	336	748	951	0	0	2,905	0.81
1976	0	28	329	472	133	0	241	334	471	589	9	392	3,008	0.84
1977	21	518	457	768	224	34	748	152	708	1,288	712	0	5,630	1.58
1978	0	274	481	739	508	12	611	1,527	1,580	835	112	0	6,679	1.87
1979	0	0	0	194	815	459	834	2,119	1,429	2,232	403	0	8,485	2.38
1980	522	596	0	0	804	1,127	1,128	1,802	1,032	964	1,084	293	9,350	2.62
1981	1,015	945	879	841	1,312	673	326	1,393	1,916	2,035	1,695	1,186	14,216	3.98
1982	862	974	0	0	529	415	906	1,272	1,020	2,673	1,287	797	10,735	3.01
1983	387	0	0	0	1,120	314	2,278	1,986	2,485	2,474	2,094	1,229	14,367	4.03
1984	748	0	0	0	0	481	1,060	1,919	1,244	2,251	1,374	392	9,467	2.65
1985	1,044	214	0	0	554	1,354	1,873	1,198	1,330	1,487	1,331	1,075	11,460	3.21
1986	457	0	0	0	0	691	547	1,977	1,808	1,801	1,075	563	8,919	2.50
1987	0	0	0	0	0	680	1,945	2,180	1,321	2,517	1,476	866	10,985	3.08
1988	194	0	0	0	394	1,517	1,800	1,604	2,334	1,885	1,288	849	11,865	3.32
1989	646	0	0	0	406	845	329	136	351	1,011	319	114	4,157	1.16
1990	317	0	0	0	376	968	855	104	1,385	2,331	46	711	7,093	1.99
1991	701	46	0	0	547	969	207	354	1,206	1,304	895	108	6,337	1.78
1992	0	0	0	0	522	1,461	397	1,432	1,501	1,589	916	839	8,657	2.43
1993	0	0	0	0	0	1,251	1,605	1,457	886	1,430	1,193	574	8,396	2.35
1950-93														
Avg	316	122	52	214	403	646	782	1,081	1,353	1,562	812	368	7,712	2.16
Af/share	0.09	0.03	0.01	0.06	0.11	0.18	0.22	0.30	0.38	0.44	0.23	0.10	2.16	---
Max	1,044	974	879	957	1,391	1,646	2,278	2,805	3,607	2,897	2,094	1,229	14,367	4.03
Min	0	0	0	0	0	0	0	78	7	280	0	0	2,436	0.68
1980-93														
Avg	492	198	63	60	469	910	1,090	1,344	1,416	1,839	1,148	685	9,715	2.72
Af/share	0.14	0.06	0.02	0.02	0.13	0.26	0.31	0.38	0.40	0.52	0.32	0.19	2.72	---
Max	1,044	974	879	841	1,312	1,517	2,278	2,180	2,485	2,673	2,094	1,229	14,367	4.03
Min	0	0	0	0	0	314	207	104	351	964	46	108	4,157	1.16

TABLE 6
HISTORICAL CONSUMPTIVE USE AND SOIL EVAPORATION
FOR 3,589 SHARES
HIGHLAND IRRIGATION COMPANY
(values in acre-feet)

Water Year (1)	Nov (2)	Dec (3)	Jan (4)	Feb (5)	Mar (6)	Apr (7)	May (8)	Jun (9)	Jul (10)	Aug (11)	Sep (12)	Oct (13)	Annual (14)	Yield ac/ft per share (15)
1950	47	2	0	1	789	236	88	253	784	809	580	53	3,622	1.01
1951	0	0	0	0	0	304	683	516	769	1,318	157	0	3,747	1.05
1952	0	0	0	0	0	250	679	866	93	425	483	0	2,796	0.78
1953	0	0	0	2	426	0	236	519	1,160	936	655	0	3,934	1.10
1954	0	0	0	4	399	0	298	59	547	1,326	191	109	2,933	0.82
1955	12	0	0	1	683	151	18	362	211	730	896	225	3,289	0.92
1956	3	1	1	1	772	72	433	440	1,069	1,038	296	0	4,126	1.16
1957	0	0	0	0	18	16	503	1,172	1,587	1,468	758	136	5,658	1.59
1958	6	1	0	0	750	286	433	1,298	776	1,531	1,032	166	6,279	1.76
1959	7	0	0	0	775	293	702	1,671	1,637	854	109	0	6,048	1.69
1960	6	2	0	0	687	237	727	57	912	321	463	29	3,441	0.96
1961	11	0	0	0	764	350	709	1,114	989	1,029	563	198	5,727	1.60
1962	5	1	0	0	766	431	695	770	1,223	354	0	0	4,245	1.19
1963	0	0	0	4	376	0	0	51	119	1,329	881	277	3,037	0.85
1964	7	0	0	0	110	256	325	249	231	520	0	0	1,698	0.48
1965	0	0	0	0	174	112	333	516	1,368	1,276	853	240	4,872	1.37
1966	44	3	0	0	738	23	1	248	1,257	1,284	666	178	4,442	1.24
1967	13	2	0	6	850	521	590	1,274	1,312	1,354	752	186	6,860	1.92
1968	8	1	0	7	777	300	807	1,087	1,411	1,382	822	220	6,822	1.91
1969	6	0	1	7	753	312	632	811	1,739	1,506	624	28	6,419	1.80
1970	7	0	0	2	756	243	804	1,393	1,288	647	116	104	5,360	1.50
1971	6	0	0	7	780	321	411	1,219	942	1,206	275	64	5,231	1.47
1972	6	0	0	3	852	23	177	144	1,225	437	774	22	3,663	1.03
1973	0	0	0	2	403	168	555	1,523	1,275	558	83	126	4,693	1.31
1974	0	0	0	0	822	304	273	187	4	182	0	0	1,772	0.50
1975	0	0	0	1	314	237	13	218	484	617	0	0	1,884	0.53
1976	0	0	2	3	618	0	157	216	305	388	6	82	1,777	0.50
1977	0	4	3	6	772	296	698	287	459	835	462	0	3,822	1.07
1978	0	2	4	5	835	394	463	926	1,089	541	73	0	4,332	1.21
1979	0	0	0	1	653	298	541	1,305	995	1,195	514	0	5,502	1.54
1980	4	4	0	0	763	19	416	1,596	1,745	625	703	190	6,065	1.70
1981	13	7	6	6	795	553	870	1,571	1,841	1,263	762	194	7,881	2.21
1982	14	7	0	0	818	413	722	561	1,544	1,685	724	212	6,700	1.88
1983	3	0	0	0	767	137	377	1,385	2,093	1,809	1,146	244	7,961	2.23
1984	11	0	0	0	757	179	693	1,599	1,723	1,700	778	28	7,468	2.09
1985	16	2	0	0	824	313	666	1,610	1,483	1,408	833	107	7,262	2.03
1986	3	0	0	0	851	491	374	1,184	1,290	1,122	527	58	5,880	1.65
1987	5	0	0	0	519	440	674	1,236	1,623	1,172	548	226	6,443	1.81
1988	8	0	0	0	772	242	668	1,420	1,924	1,766	659	229	7,688	2.15
1989	13	0	0	0	832	443	525	929	228	655	207	74	3,906	1.09
1990	9	0	0	0	440	374	390	486	898	1,512	30	158	4,297	1.20
1991	11	0	0	0	798	303	793	230	782	846	581	70	4,414	1.24
1992	0	0	0	0	339	494	712	929	973	1,031	594	180	5,252	1.47
1993	0	0	0	0	364	281	601	1,210	1,279	927	743	155	5,560	1.56
1950-93														
Avg	7	1	0	2	614	253	488	834	1,061	1,021	498	104	4,882	1.37
Af/share	0.00	0.00	0.00	0.00	0.17	0.07	0.14	0.23	0.30	0.29	0.14	0.03	1.37	---
Max	47	7	6	7	852	553	870	1,671	2,093	1,809	1,146	277	7,961	2.23
Min	0	0	0	0	0	0	0	51	4	182	0	0	1,698	0.48
1980-93														
Avg	8	1	0	0	689	334	606	1,138	1,368	1,252	631	152	6,198	1.74
Af/share	0.00	0.00	0.00	0.00	0.19	0.09	0.17	0.32	0.39	0.35	0.18	0.04	1.74	---
Max	16	7	6	6	851	553	870	1,610	2,093	1,809	1,146	244	7,961	2.23
Min	0	0	0	0	339	19	374	230	228	625	30	28	3,906	1.09

Includes crop evapotranspiration, winter soil evaporation, and evapotranspiration of canal and lateral losses.

TABLE 7
HISTORICAL STREAM DEPLETIONS
FOR 3,589 SHARES
HIGHLAND IRRIGATION COMPANY
(values in acre-feet)

Water Year (1)	Nov (2)	Dec (3)	Jan (4)	Feb (5)	Mar (6)	Apr (7)	May (8)	Jun (9)	Jul (10)	Aug (11)	Sep (12)	Oct (13)	Annual (14)	Yield ac/ft per share (15)
1950	634	64	-186	6	120	-180	-47	199	986	1,026	764	-172	3,214	0.90
1951	-174	-175	-173	-170	-166	302	833	604	978	1,787	69	-167	3,548	0.99
1952	-170	-170	-168	-165	-161	654	408	1,125	-16	473	557	-157	2,208	0.62
1953	-157	-156	-154	163	171	-146	205	624	1,572	1,612	449	-151	4,032	1.13
1954	-155	-156	-155	335	-45	-148	295	-56	668	1,817	140	261	2,801	0.78
1955	352	-149	-149	35	-44	79	-114	396	175	942	1,204	307	3,034	0.85
1956	200	5	-82	-71	344	-126	500	512	1,441	1,711	-23	-148	4,263	1.19
1957	-151	-151	-150	-147	-117	1,188	1,193	2,140	3,275	2,534	973	488	11,075	3.10
1958	443	-82	-227	-232	-232	975	1,265	2,353	1,803	2,436	548	-223	8,827	2.47
1959	157	-302	-302	-298	556	1,044	955	506	864	595	-128	-290	3,357	0.94
1960	442	12	-281	-277	-271	342	554	-173	1,094	222	434	433	2,531	0.71
1961	347	-248	-246	-243	-238	717	460	1,293	1,190	1,290	599	244	5,165	1.45
1962	374	-124	-240	-237	120	833	417	734	1,580	296	-229	-230	3,294	0.92
1963	-228	-226	-221	346	-212	-208	-204	-125	-19	1,771	1,468	34	2,176	0.61
1964	-194	-196	-196	-193	-189	485	23	169	164	592	-173	-172	120	0.03
1965	-171	-168	-165	-161	100	12	341	1,003	1,559	1,654	1,139	442	5,585	1.56
1966	316	213	-176	-177	-175	-138	-167	201	1,693	1,735	1,506	203	5,034	1.41
1967	485	58	-183	547	412	-146	317	2,001	1,767	1,660	1,436	624	8,978	2.52
1968	203	-96	-216	654	727	351	862	1,041	847	1,695	71	-225	5,914	1.66
1969	-227	-225	-133	685	121	1,364	1,111	1,175	1,495	1,278	1,129	56	7,829	2.19
1970	-235	-237	-235	-28	622	797	705	735	1,175	733	-53	92	4,071	1.14
1971	-226	-225	-222	699	853	530	178	561	1,178	1,567	190	51	5,134	1.44
1972	105	-221	-220	132	225	-194	56	9	1,609	447	971	-196	2,723	0.76
1973	-202	-202	-200	54	155	546	1,038	1,326	1,539	633	-75	-14	4,598	1.29
1974	-202	-201	-198	-167	1,142	410	-76	91	-177	87	-179	-176	354	0.10
1975	-173	-169	-165	-94	240	195	-133	172	568	764	-146	-147	912	0.26
1976	-146	-118	173	312	-10	-136	96	187	320	444	-120	246	1,248	0.35
1977	-109	369	310	609	88	-95	589	19	552	1,107	555	-129	3,865	1.08
1978	-131	131	330	578	357	-119	455	1,331	1,381	665	-32	-143	4,803	1.35
1979	-145	-144	-142	47	644	305	664	1,894	1,231	1,995	237	-157	6,429	1.80
1980	338	407	-164	-164	607	918	918	1,564	823	753	863	101	6,964	1.95
1981	789	720	654	595	1,053	450	114	1,134	1,633	1,744	1,413	919	11,218	3.14
1982	601	683	-234	-236	271	164	637	989	749	2,330	1,000	526	7,480	2.10
1983	127	-247	-246	-244	832	64	1,853	1,667	2,138	2,118	1,744	904	10,710	3.00
1984	342	-289	-294	-295	-292	173	733	1,559	914	1,877	1,035	89	5,552	1.56
1985	709	-87	-292	-290	245	1,016	1,516	870	995	1,143	990	742	7,557	2.12
1986	146	-293	-292	-289	-283	384	251	1,625	1,465	1,457	756	262	5,189	1.45
1987	-281	-281	-279	-275	-269	388	1,604	1,831	1,007	2,148	1,144	553	7,290	2.04
1988	-96	-285	-284	-281	101	1,181	1,455	1,269	1,964	1,530	951	524	8,029	2.25
1989	325	-296	-296	-293	100	526	37	-144	66	701	43	-151	618	0.17
1990	46	-254	-250	-244	120	693	587	-129	1,099	2,005	-185	449	3,937	1.10
1991	437	-191	-235	-232	295	703	-24	120	937	1,033	641	-114	3,370	0.94
1992	-219	-218	-216	-212	293	1,195	180	1,171	1,235	1,317	668	590	5,784	1.62
1993	-217	-218	-218	-214	-210	992	1,334	1,192	644	1,161	931	334	5,511	1.54
1950-93														
Avg	69	-94	-180	-3	182	417	545	836	1,095	1,293	574	143	4,917	1.38
Af/share	0.02	-0.03	-0.04	0.00	0.05	0.12	0.15	0.23	0.31	0.36	0.16	0.04	1.38	---
Max	789	720	654	699	1,142	1,364	1,853	2,353	3,275	2,534	1,744	919	11,218	3.14
Min	-281	-302	-302	-298	-292	-208	-204	-173	-177	87	-229	-290	120	0.03
1980-93														
Avg	218	-61	-189	-191	205	632	800	1,051	1,119	1,523	857	409	6,372	1.78
Af/share	0.06	-0.02	-0.05	-0.05	0.06	0.18	0.22	0.29	0.31	0.43	0.24	0.11	1.79	---
Max	789	720	654	595	1,053	1,195	1,853	1,831	2,138	2,330	1,744	919	11,218	3.14
Min	-281	-296	-296	-295	-292	64	-24	-144	66	701	-185	-151	618	0.17

TABLE 8
 HIGHLAND CANAL
 WATER BUDGET SUMMARY FOR 3,569 SHARES
 1950-1993
 (values in acre-feet)

Row	Component	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Ditch Operation														
1)	Diversion	316	122	52	214	403	646	782	1,081	1,353	1,562	812	368	7,711
2)	Canal & Lateral Loss	46	18	8	31	58	94	113	157	196	226	118	53	1,118
3)	Canal & Lateral CU	2	1	0	2	3	5	6	8	10	11	6	3	57
4)	Field Delivery	270	104	44	183	345	552	669	924	1,157	1,336	694	315	6,593
Soil Root Zone Operation														
5)	Field Delivery	270	104	44	183	345	552	669	924	1,157	1,336	694	315	6,593
6)	Deep Percolation	71	25	9	38	70	113	152	194	247	281	139	70	1,409
7)	Tailwater	18	6	2	10	18	28	38	49	62	70	35	17	353
8)	Consumptive Use	5	0	0	0	611	248	482	826	1,051	1,009	492	101	4,825
9)	EOM Storage	579	652	685	820	466	629	626	481	278	254	282	409	—
10)	Storage Change	170	73	33	135	-354	163	-3	-145	-203	-24	28	127	0
Return Flow														
11)	Surface Water	18	6	2	10	18	28	38	49	62	70	35	17	353
12)	Ground Water	209	210	210	207	203	201	199	196	196	199	203	208	2,441
13)	Total	227	216	212	217	221	229	237	245	258	269	238	225	2,794
Stream Depletion with respect to the River Headgate Diversions														
14)	Stream Depletion	89	-94	-160	-3	182	417	545	836	1,095	1,293	574	143	4,917
15)	% of Diversion	28.2%	—	—	—	45.2%	64.6%	69.7%	77.3%	80.9%	82.8%	70.7%	38.9%	63.8%

Row Description

- 1) Prorata share (3569/3800) of the average monthly diversion
- 2) Canal and lateral seepage loss at 14.5 percent
- 3) Canal and lateral consumptive use at 5 percent of losses.
- 4) Row 1 - Row 2
- 5) From Row 3
- 6) Percolation through root zone to ground water
- 7) Irrigation runoff

- 8) Crop consumptive use
- 9) Previous month's storage + Row 4 - Rows (5,6,7)
- 10) Change in soil moisture storage
- 11) From Row 6
- 12) Delayed return from canal and lateral seepage and deep percolation
- 13) Row 11 + Row 12
- 14) Diversion - Return Flow (Row 1 - Row 12)
- 15) Row 14 / Row 1 x 100%

AGRICULTURAL SUMMARY

BASH	YEAR	MO	WATER SUPPLY (af)							TRANSIT LOSSES (af)				FARM LOSS (af)			EFFIC (X)		
			IRRI AREA (A ac) 4	USBR AREA (na ac) 5	DIVERT FR STR (DVa) 6	OTHER SUPPLY (OS) 7	GW TO DITCH (PUC) 8	GW TO FARM (PUf) 9	SPLY (AW) ft) 10	DITCH LOSS (Tca) 11	(X) 12	LATERAL LOSS (Tda) 13	(X) 14	AVAIL TO FARM (WSf) 15	SW RETURN (Rff) 16	(X) 17	AVAIL TO SOIL (WSz) 18	FARM EFF (FE) 19	SYS EFF (SE) 20
HLAN	1940	13	2541.	-1.	0.	6664.	0.	0.	2.62	666.	10.	300.	5.	5698.	129.	2.	5568.	75.	64.
HLAN	1941	13	2541.	-1.	0.	7829.	0.	0.	3.08	783.	10.	352.	5.	6694.	174.	3.	6520.	75.	64.
HLAN	1942	13	2541.	-1.	0.	7173.	0.	0.	2.82	717.	10.	323.	5.	6133.	267.	4.	5866.	71.	60.
HLAN	1943	13	2541.	-1.	0.	3008.	0.	0.	1.18	301.	10.	135.	5.	2572.	3.	0.	2569.	75.	64.
HLAN	1944	13	2541.	-1.	0.	5754.	0.	0.	2.26	575.	10.	259.	5.	4920.	239.	5.	4680.	75.	64.
HLAN	1945	13	2541.	-1.	0.	5955.	0.	0.	2.34	595.	10.	268.	5.	5091.	17.	0.	5074.	75.	64.
HLAN	1946	13	2541.	-1.	0.	4732.	0.	0.	1.86	473.	10.	213.	5.	4046.	87.	2.	3959.	75.	64.
HLAN	1947	13	2541.	-1.	0.	5956.	0.	0.	2.34	596.	10.	268.	5.	5093.	180.	4.	4913.	75.	64.
HLAN	1948	13	2514.	-1.	0.	7243.	0.	0.	2.88	724.	10.	326.	5.	6193.	189.	3.	6004.	74.	64.
HLAN	1949	13	2487.	-1.	0.	8211.	0.	0.	3.30	821.	10.	369.	5.	7020.	133.	2.	6887.	72.	62.
HLAN	1950	13	2460.	-1.	0.	5374.	0.	0.	2.18	537.	10.	242.	5.	4595.	95.	2.	4500.	75.	64.
HLAN	1951	13	2432.	-1.	0.	5555.	0.	0.	2.28	556.	10.	250.	5.	4750.	170.	4.	4579.	75.	64.
HLAN	1952	13	2405.	-1.	0.	4148.	0.	0.	1.72	415.	10.	187.	5.	3547.	10.	0.	3537.	75.	64.
HLAN	1953	13	2378.	-1.	0.	5833.	0.	0.	2.45	583.	10.	262.	5.	4987.	47.	1.	4940.	75.	64.
HLAN	1954	13	2401.	-1.	0.	4595.	0.	0.	1.91	459.	10.	207.	5.	3928.	19.	0.	3909.	75.	64.
HLAN	1955	13	2424.	-1.	0.	4765.	0.	0.	1.97	476.	10.	214.	5.	4074.	34.	1.	4040.	75.	64.
HLAN	1956	13	2446.	-1.	0.	5989.	0.	0.	2.45	599.	10.	269.	5.	5120.	87.	2.	5034.	75.	64.
HLAN	1957	13	2469.	-1.	0.	13162.	0.	0.	5.33	1316.	10.	592.	5.	11253.	1034.	9.	10219.	56.	48.
HLAN	1958	13	2492.	-1.	0.	12244.	0.	0.	4.91	1224.	10.	551.	5.	10469.	855.	8.	9614.	52.	45.
HLAN	1959	13	2515.	-1.	0.	6951.	0.	0.	2.76	695.	10.	313.	5.	5943.	147.	2.	5796.	68.	58.
HLAN	1960	13	2538.	-1.	0.	5743.	0.	0.	2.26	574.	10.	258.	5.	4910.	117.	2.	4793.	75.	64.
HLAN	1961	13	2561.	-1.	0.	8037.	0.	0.	3.14	804.	10.	362.	5.	6872.	276.	4.	6596.	73.	62.
HLAN	1962	13	2583.	-1.	0.	6105.	0.	0.	2.36	611.	10.	275.	5.	5220.	128.	2.	5092.	74.	63.
HLAN	1963	13	2606.	-1.	0.	4679.	0.	0.	1.80	468.	10.	211.	5.	4000.	127.	3.	3873.	75.	64.
HLAN	1964	13	2628.	-1.	0.	2342.	0.	0.	.89	234.	10.	105.	5.	2002.	18.	1.	1985.	75.	64.
HLAN	1965	13	2638.	-1.	0.	7514.	0.	77.	2.88	751.	10.	338.	5.	6501.	247.	4.	6254.	75.	64.
HLAN	1966	13	2646.	-1.	0.	7100.	0.	128.	2.73	710.	10.	319.	5.	6198.	126.	2.	6072.	73.	62.
HLAN	1967	13	2655.	-1.	0.	11243.	0.	88.	4.27	1124.	10.	506.	5.	9700.	503.	5.	9198.	65.	56.
HLAN	1968	13	2663.	-1.	0.	8537.	0.	92.	3.24	854.	10.	384.	5.	7391.	196.	3.	7195.	67.	58.
HLAN	1969	13	2672.	-1.	0.	10501.	0.	63.	3.95	1050.	10.	473.	5.	9041.	288.	3.	8753.	71.	60.
HLAN	1970	13	2680.	-1.	0.	6827.	0.	60.	2.57	683.	10.	307.	5.	5897.	201.	3.	5696.	75.	64.
HLAN	1971	13	2665.	-1.	0.	7764.	0.	93.	2.95	776.	10.	349.	5.	6732.	213.	3.	6518.	75.	64.
HLAN	1972	13	2649.	-1.	0.	5254.	0.	107.	2.02	525.	10.	236.	5.	4599.	12.	0.	4587.	75.	64.
HLAN	1973	13	2634.	-1.	0.	6981.	0.	74.	2.68	698.	10.	314.	5.	6043.	322.	5.	5721.	74.	63.
HLAN	1974	13	2618.	-1.	0.	2636.	0.	136.	1.06	264.	10.	119.	5.	2390.	22.	1.	2368.	75.	65.
HLAN	1975	13	2603.	-1.	0.	5410.	0.	141.	2.13	541.	10.	243.	5.	4766.	45.	1.	4721.	75.	64.
HLAN	1976	13	2587.	-1.	0.	2885.	0.	139.	1.17	289.	10.	130.	5.	2606.	14.	1.	2592.	75.	65.
HLAN	1977	13	2572.	-1.	0.	5421.	0.	97.	2.15	542.	10.	244.	5.	4732.	96.	2.	4636.	75.	64.
HLAN	1978	13	2556.	-1.	0.	6437.	0.	119.	2.56	644.	10.	290.	5.	5622.	109.	2.	5513.	75.	64.
HLAN	1979	13	2541.	-1.	0.	8197.	0.	93.	3.26	820.	10.	369.	5.	7101.	320.	5.	6781.	73.	63.
HLAN	1980	13	2525.	-1.	0.	9001.	0.	84.	3.60	900.	10.	405.	5.	7780.	320.	4.	7460.	63.	54.
HLAN	1981	13	2510.	-1.	0.	13689.	0.	122.	5.50	1369.	10.	616.	5.	11826.	390.	3.	11436.	65.	56.
HLAN	1982	13	2494.	-1.	0.	10316.	0.	87.	4.17	1032.	10.	464.	5.	8907.	358.	4.	8549.	65.	55.
HLAN	1983	13	2479.	-1.	0.	13845.	0.	57.	5.61	1384.	10.	623.	5.	11894.	859.	7.	11035.	61.	52.
HLAN	1984	13	2463.	-1.	0.	9114.	0.	68.	3.73	911.	10.	410.	5.	7860.	323.	4.	7538.	71.	61.
HLAN	1985	13	2448.	-1.	0.	11038.	0.	64.	4.54	1104.	10.	497.	5.	9502.	439.	5.	9063.	67.	57.
AVE	40-85		2543.	-1.	0.	7125.	0.	43.	2.82	712.	10.	321.	5.	6135.	217.	3.	5918.	72.	61.
AVE	50-85		2545.	-1.	0.	7368.	0.	55.	2.92	737.	10.	332.	5.	6354.	238.	3.	6116.	71.	61.
AVE	70-79		2611.	-1.	0.	5781.	0.	106.	2.26	578.	10.	260.	5.	5049.	135.	2.	4913.	75.	64.

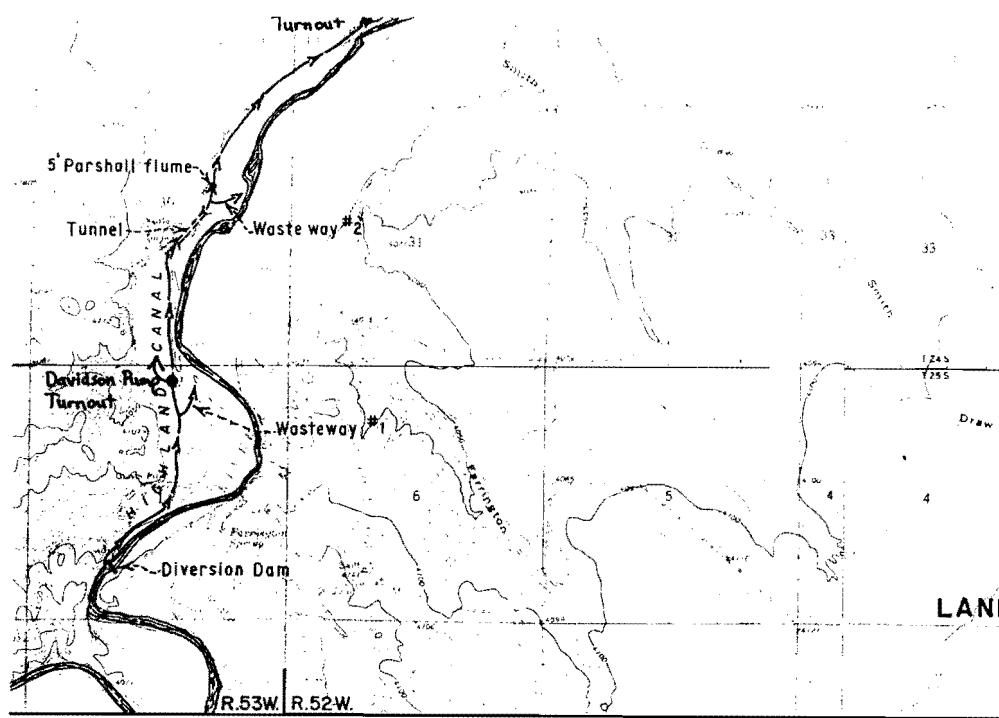
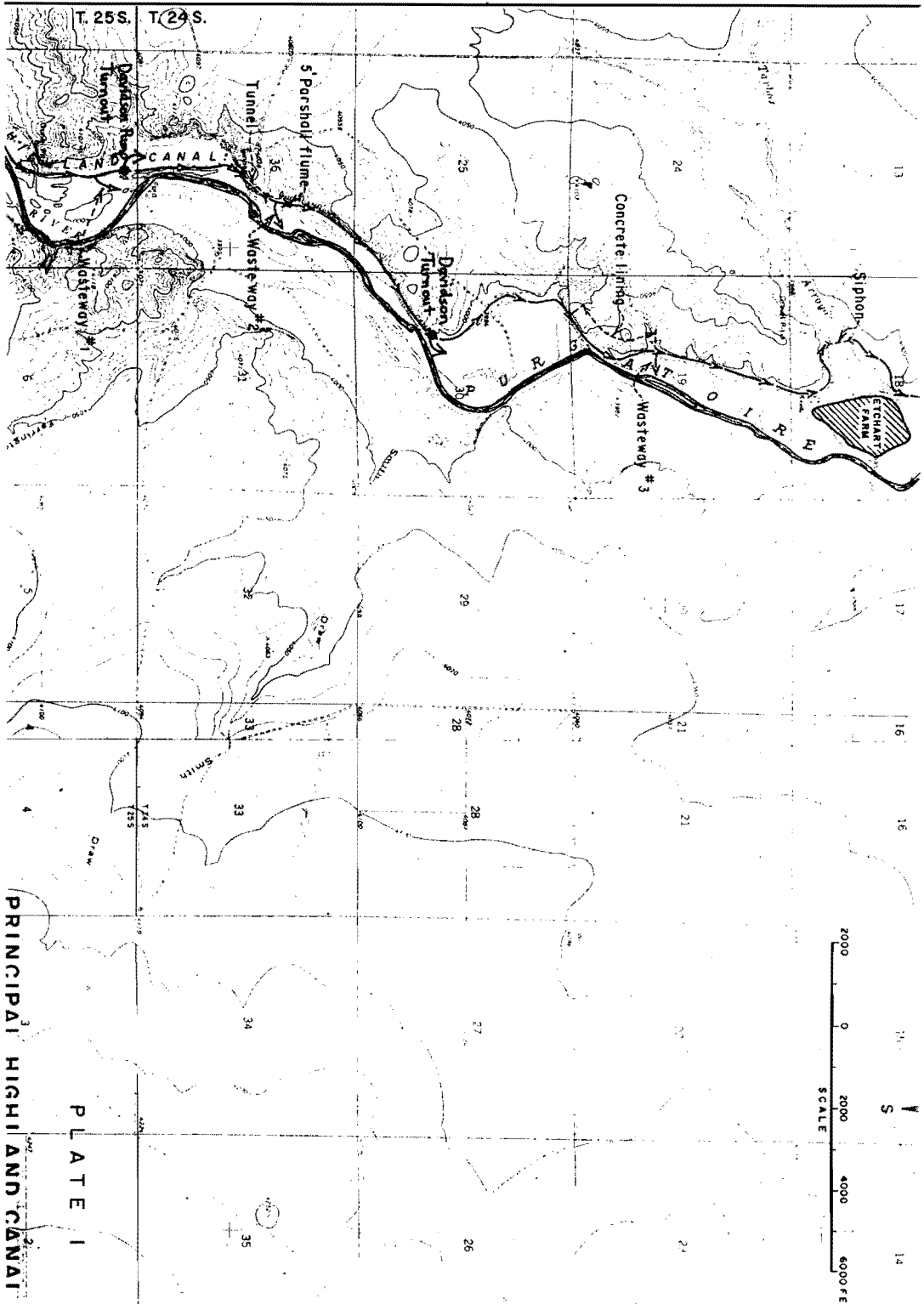


PLATE I
PRINCIPAL HIGHLAND CANAL FEAT
AND
LANDS IRRIGATED BY PARTICIPATING SHAF

TIPTON AND KALMBACH, INC. - CONSULTING ENGI
JUNE 1986



PRINCIPAL HIGH AND CANAL
 PLATE I

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PUEBLO, COLORADO

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August 8, 1997

Mr. Steven J. Witte
Colorado Division of Water Resources
310 E. Abriendo, Suite B
Pueblo, Colorado 81004

Subject: Supplemental Information for Replacement Plan Amendment -
Lower Arkansas Water Management Association

Dear Mr. Witte:

This letter supplements the information concerning the historical use of LAWMA's interests in the Highland Irrigation Company. Our earlier correspondence, dated July 10, 1997, requested that the Highland Canal water be included as a replacement source for LAWMA's 1997 plan. We submitted an amendment to the replacement plan on August 1 in which we agreed to present an analysis of the historical use of the Highland Canal consistent with the algorithm and parameters used in Kansas' H-I model. This letter presents the results of that analysis.

I conferred with Dewayne Schroeder about the data and procedures used in the H-I model. The Highland Canal was not included in Kansas' analyses of Colorado irrigation ditches, so the parameters used in this analysis are based on information for similar ditches included in the H-I model. In general, the H-I model performs a water budget analysis in which irrigation deliveries are inflow to the root zone and crop consumptive use, tail water and deep percolation are outflow. The soil acts as a reservoir, and when the root zone is full, excess applications are assigned to deep percolation. The model also accounts for canal and lateral seepage. The canal seepage rate is based on the canal length. For the Highland Canal, the seepage rate is calculated to be about 10 percent of the diversion. The lateral seepage has off-farm and on-farm components. The lateral seepage rate used for all Colorado ditches was 7 percent. One-half of this rate, or 3.5 percent, is applied to the canal diversion volume and one-half, 3.5 percent, is applied to the farm delivery. Tail water for all ditches is calculated as 10 percent of the farm delivery less on-farm lateral losses. In the recent H-I model version, the maximum irrigation efficiency for Colorado ditches was limited to 65 percent except for the Lamar/Manvel and Colorado Canals which were set at 70 percent. The irrigation efficiency includes on-farm lateral seepage, tail water and deep percolation losses. Using a maximum efficiency of 65 percent, the minimum deep percolation rate works out to be about 22.6 percent of the farm delivery less on-farm lateral losses.

The H-I model also calculates "secondary evaporation" (SEV) on the canal seepage, off-farm and on-farm lateral seepage and tail water. Following are the monthly SEV rates:

November	.....	9.9%
December	.....	8.1%
January	.....	8.7%
February	.....	12.6%
March	.....	21.3%
April	.....	29.1%
May	.....	34.8%
June	.....	42.0%
July	.....	45.3%
August	.....	38.7%
September	.....	29.4%
October	.....	20.1%

I modified our computer program used for the July 10 submittal to mimic the H-I model's calculations of lateral seepage and secondary evaporation. The deep percolation and net seepage were routed back to the river by a response function developed using Glover techniques which is consistent with the procedure used by Kansas to develop response functions for the Colorado ditches.

The results of our analyses are summarized in Table 1 which is similar in format to the summary presented in our July 10 submittal. On an annual basis, the stream depletions amount to about 64.6 percent of the river diversion, and the monthly values range from 0.9 percent in February to 82.8 percent in August. The monthly values are very similar to the depletion rates presented in our July 10 submittal.

In December and January, the return flow exceeds the diversion, i.e., net gain in streamflow. These monthly volumes represent 4.5 percent of the sum of the stream depletions in the other 10 months. In our July 10 submittal, the December through February river gain averaged 5.0 percent of the stream depletions in the other 9 months.

Also shown is the amount of consumptive use, attributable to on-farm uses as a percent of the farm delivery. The consumptive use includes crop consumptive use, secondary evaporation associated with on-farm laterals and tail water, and change in soil moisture storage. The annual value averages 69.0 percent of the farm delivery, and the monthly values range from 63.7 percent in November to 70.0 percent in July. Until such time that a river gage is installed at the Highland Canal diversion dam, LAWMA's water will be delivered to the Purgatoire River through Wasteway No. 3. Accordingly, these percentages would represent the consumptive use when delivering water through this wasteway. The values presented above and in Table 1 are not substantially different from the values presented in our July 10 submittal.

LAWMA has obtained ownership of 2,682 shares (about 71 percent of the outstanding shares) and anticipates purchasing 887 shares before next spring. At that time, LAWMA will own 3,569 shares out of 3,800 shares outstanding. The owners, which have sold their shares to LAWMA, have discontinued irrigation of the fields at the time of the closing. The purchase contracts have provisions for revegetation and dry-up.

Mr. Steven J. Witte
August 8, 1997
Page 3

The use of the H-I model parameters does not change our conclusions set forth in the July 10 submittal about the procedure to calculate replacement credit for this year. Accordingly, we propose to use the following algorithm for calculating replacement credit for LAWMA's Highland Canal interests delivered to the Purgatoire River through Wasteway No. 3:

1. When the Highland Canal diversions are being delivered to turnouts downstream of Wasteway No. 3 as well as to Wasteway No. 3, the delivery to the Purgatoire River will be measured and recorded using the rating table prepared for the wasteway gate. The replacement credit at the Purgatoire River will equal the measured delivery times 69.4 percent.
2. When water is delivered to Wasteway No. 3, but not to down-ditch turnouts, the delivery will equal the measured flow at the 5-foot Parshall flume less 10 percent for ditch seepage and minus the delivery to Davidson's turnout (if any). The replacement credit will be equal to 69.4 percent of the calculated delivery.

The Highland Canal ditchrider will inform Bill Howland daily of the deliveries to the Purgatoire River and will submit the daily written record to LAWMA. LAWMA proposes to store the replacement credit less transit loss in John Martin Reservoir's Offset Account. LAWMA requests that the unconsumed portion of the assessed transit loss (90 percent) between Wasteway No. 3 and the reservoir be stored in the Offset Account. LAWMA also requests that 5.0 percent of the storage accruals in the Offset Account attributable to Highland Canal deliveries be reserved for replacement with respect to Conservation Storage during December, January and February.

Please call if you have any questions.

Sincerely yours,

HELTON & WILLIAMSEN, P.C.



Thomas A. Williamsen

TAW/mlc

Enclosure

cc: Donald F. Higbee w/enc.
Hal D. Simpson w/enc.
David L. Harrison, Esq. w/enc.
Dennis M. Montgomery, Esq., w/enc.

T 11
HIGHLAND CANAL
WATER BUDGET SUMMARY FOR 3,569 SHARES
USING KANSAS H-I MODEL PARAMETERS
AVERAGE FOR 1950-1993
(values in acre-feet)

Row	Component	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Ditch Operation														
1)	Prorata Diversion	316	122	52	214	403	646	782	1,081	1,353	1,562	812	368	7,711
2)	Canal Loss	32	12	5	21	40	65	78	108	135	156	81	37	770
3)	Lateral Loss	11	4	2	7	14	23	27	38	47	55	28	13	269
4)	Secondary Evaporation	4	1	1	4	12	26	37	61	82	82	32	10	352
On-Farm Operation														
5)	Farm Delivery	273	106	45	186	349	558	677	935	1,171	1,351	703	318	6,672
6)	Farm Lateral Loss	10	4	2	7	12	20	24	33	41	47	25	11	236
7)	Deep Percolation	67	25	10	40	76	122	152	211	267	297	153	69	1,489
8)	Tailwater	26	10	4	18	34	54	65	90	113	130	68	31	643
9)	Crop Consumptive Use	4	0	0	0	576	235	440	738	896	878	441	92	4,300
10)	EOM Storage	398	465	494	615	266	393	389	252	106	105	121	236	—
11)	Soil Storage Change	166	67	29	121	-349	127	-4	-137	-146	-1	16	115	4
12)	Secondary Evaporation	4	1	1	3	10	22	31	52	70	68	27	8	297
13)	Total Consumptive Use	12	2	2	7	598	283	508	851	1,048	1,028	500	110	4,949
14)	Consumptive Use and Soil Storage Change as % of Diversion	56.3%	56.6%	59.6%	59.8%	61.8%	63.5%	64.5%	66.0%	66.7%	65.7%	63.5%	61.1%	64.2%
15)	Consumptive Use and Soil Storage Change as % of Farm Delivery	63.7%	64.2%	66.7%	66.7%	67.9%	68.8%	69.0%	69.8%	70.0%	69.9%	68.8%	67.6%	69.0%
Return Flow														
16)	Surface Water	23	9	4	16	27	38	42	52	62	80	48	25	426
17)	Ground Water	197	198	198	196	193	190	188	187	186	188	191	195	2,307
18)	Total	220	207	202	212	220	228	230	239	248	268	239	220	2,733
Stream Depletion with respect to the River Headgate Diversions														
19)	Stream Depletion	96	-85	-150	2	183	418	552	842	1,105	1,294	573	148	4,978
20)	Stream Depletion as % of Diversion	30.4%	---	---	0.9%	45.4%	64.7%	70.6%	77.9%	81.7%	82.8%	70.6%	40.2%	64.6%

Row Description:

- 1) Prorata share (3569/3800) of the average monthly diversion.
- 2) Row 1 x 10 percent.
- 3) Row 1 x 3.5 percent.
- 4) Sum of Rows 2 & 3 x Secondary evaporation rates
- 5) Row 1 - Row 2 - Row 3.
- 6) Row 5 x 3.5 percent.
- 7) (Row 5 - Row 6) x 22.6 percent plus excess field deliveries.
- 8) (Row 5 - Row 6) x 10 percent.
- 9) Crop consumptive use using modified Blaney-Criddle and water budget procedure.
- 10) Previous month's storage + Row 5 - the sum of Rows 6, 7, 8 & 9.

- 11) Previous month storage - present month storage.
- 12) Sum of Rows 6 & 8 x Secondary evaporation rates.
- 13) Row 4 + Row 9 + Row 12
- 14) Sum of Rows 11 & 13 / Row 1 x 100 percent.
- 15) Sum of Rows 9 & 12 / Row 5 x 100 percent. *9 + 11 + 12 / 5*
- 16) Row 8 x (1 - Secondary evaporation rate)
- 17) Delayed return flow from canal and lateral seepage and deep percolation.
- 18) Row 16 + Row 17.
- 19) Row 1 - Row 18.
- 20) Row 19 / Row 1 x 100 percent.

Note: The maximum farm efficiency is 65 percent. This value relates to farm lateral losses, tailwater and deep percolation.

D. Straw

HELTON & WILLIAMSEN, P.C.
CONSULTING ENGINEERS IN WATER RESOURCES
384 INVERNESS DRIVE SOUTH, SUITE 115
ENGLEWOOD, COLORADO 80112
PHONE (303) 792-2161
FAX (303) 792-2165

RECEIVED

JUL 11 1997

DIVISION ENGINEER
PUEBLO, COLORADO

July 9, 1997

Mr. Steven J. Witte
Colorado Division of Water Resources
310 E. Abriendo, Suite B
Pueblo, Colorado 81004

Subject: Highland Canal Deliveries to the Purgatoire River - LAWMA

Dear Steve:

On July 2, 1997, we performed several discharge measurements at the Highland Canal's Wasteway No. 3. The Highland Canal delivers LAWMA's water to the Purgatoire River at this site. The purpose of the measurements was to develop a discharge rating table for the wasteway gate.

The gate is rectangular with an open width of 41-1/4 inches and when open, it is similar to a rectangular orifice. Discharge through an orifice can be estimated using the following formula:

$$Q = CA\sqrt{2gH}$$

- Where Q = discharge in cfs
- A = area of the orifice, square feet
- g = acceleration due to gravity, 32.2 feet per second²
- H = measured head on the orifice, feet and
- C = Discharge coefficient

The rating developed for the wasteway gate involves two variables; the head, H, and the gate opening. The gate opening is measured from the top of the northerly gate frame down to the top of the gate. When the gate is fully closed, the top of the gate is 57-3/4 inches below the top of the gate frame. The gate opening is the difference between 57-3/4 inches and the measured distance to the top of the gate.

We installed a staff gage in the right bank of the canal about 66 feet downstream of the gate. The gage could not be located upstream of the gate due to the turbulence caused by the change from the concrete lined section to the earthen section. Also, shale is exposed at the gate and is just below the canal invert down-ditch of the gate. We set benchmark pins (3/8" rebar) near the gate and near a burnt tree stump about 38 feet down-ditch. We used a surveyor's level to establish relative elevations for the two pins, the bottom of the gate frame, and the bottom (0.00) of the staff gage mounted to a post. See Sketch 1. The bottom of the gate frame is 2.95 feet lower than the zero point on the staff gage, so the head, H, at the gate can be calculated as 2.95 + the staff gage height. The bottom of the gate is almost 3 feet lower than the canal invert.

The diversion, measured at the 5-foot Parshall flume, was about 11.3 cfs at 5:35 a.m. and about 8.7 cfs at 6:00 p.m. With these small diversion rates, it was not possible to measure the wasteway deliveries through the whole range of expected conditions. We did, however, measure the wasteway discharge for four gate openings with discharges ranging from 3.46 cfs to 7.49 cfs. The water drops about 20 feet from the gate down a shale bank to a channel leading to the Purgatoire River. The discharge was measured in the channel at a point about 15 to 20 feet upstream of the confluence with the river. Attached are copies of the discharge measurement notes.

Following is a summary of the data and calculations:

Measured Discharge, cfs	Gate Setting, inches	Gate Opening		Staff Gage Ht ft	H ft	C
		inches	sq. ft.			
3.46	56-7/8	7/8	0.2507	0.55	3.50	0.919
4.98	56	1-3/4	0.5013	0.415	3.365	0.675
6.88	55-1/4	2-1/2	0.7161	0.20	3.15	0.675
7.49	54-1/2	3-1/4	0.9310	0.065	3.015	0.577

The discharge coefficient, C, is calculated by rearranging the equation described earlier.

The gate leaks on both edges of the gate frame, and with the smaller gate opening, 7/8-inch, it was visually apparent that the leakage was a significant portion of the total flow. Accordingly, we will not use that measurement in determining a discharge coefficient for the orifice equation. The three discharge calibration coefficients for the other measurements average 0.642. Substituting the known values into the orifice equation yields:

$$Q = 0.642A\sqrt{2gH} \text{ or}$$

$$Q = 0.642 (8.025) \left(\frac{41.25 \times D}{144} \right) \sqrt{2.95 + S} \text{ or}$$

$$Q = 1.476D \sqrt{2.95 + S} \text{ where}$$

Q = discharge, cfs
 D = gate opening, inches
 S = staff gage height, feet

The above equation was used to generate the enclosed rating table. We realize that the relationship should be checked with respect to larger discharges. Bill Howland will inform us as to the likelihood of larger divertible flows based on the flow at the Thatcher and Ninemile gages so that we can make additional measurements this summer.

At low diversion rates, the Highland Canal Company often rotates the water to the various turnouts. There may be times that all of the water will be delivered to LAWMA

Mr. Steven J. Witte
July 9, 1997
Page 3

through the wasteway gate. When this occurs, there will not be any water at the installed staff gage, and accordingly our rating will not be appropriate. In this instance, we propose to record the diversion at the 5-foot Parshall flume, deduct 10 percent of the recorded amount for canal seepage loss, and use the remainder as the delivery to the Purgatoire River. This loss rate was used in Colorado's Water Budget ("Water Budget Documentation" by Boyle Engineering Corporation, December 1990). We also believe that since we are using less than half of the canal and much of the ditch is chiseled through shale with the invert sealed with silt or is concrete-lined, we believe that 10 percent is conservatively high.

The ditchrider for the Highland Canal, Walter Garcia, will report LAWMA's deliveries to the Purgatoire River daily to Bill Howland by telephone. Mr. Garcia will submit the daily record sheets to Don Higbee weekly, and copies of the daily record sheets will be provided to the appropriate parties.

We believe that the above-described methods for measuring and reporting the deliveries to the Purgatoire River are appropriate. Please call if you have any questions.

Sincerely yours,

HELTON & WILLIAMSEN, P.C.



Thomas A. Williamsen

TAW/mlc

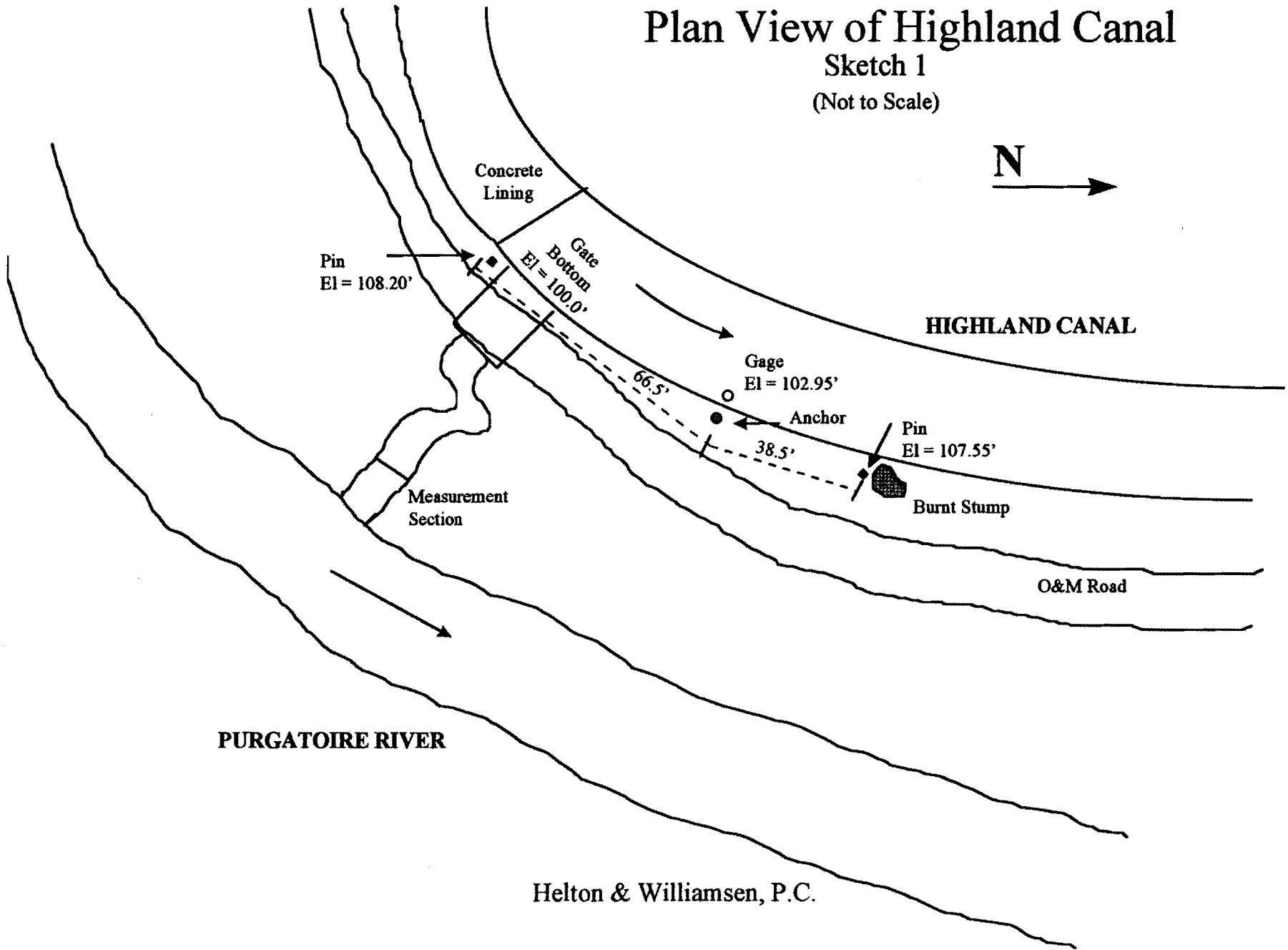
Enclosure

cc: Bill Howland w/enc.
Dale Straw w/enc.
Donald F. Higbee w/enc.

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Plan View of Highland Canal

Sketch 1
(Not to Scale)



TIPTON AND KALMBACH, INC.
CONSULTING ENGINEERS

DISCHARGE MEASUREMENT NOTES

River, Creek, Canal, Ditch WV #3 Highland Canal
 1. Near, Above, Below 1.13 pm District TAW
 Date 19 7/2/97 Division TAW
 Measurement by RLH Notes by TAW

GAGE READINGS

Time	Outside	Inside	Recorder
110	0.55		
132	0.55		
	0.55		

Intake flushed.
 Record removed
 Measured: wading, cable, ice, upst.,
 downst., side bridge, _____ feet,
 mile, above, below, at, gage and
 Meter No. 44904 Date rated _____
 Spin: before _____ after _____
 Type and Weight used _____
 B M Levels obtained: _____

Measurement rated excellent (2%), good (5%), fair (8%), poor (over 8%)
 based on following conditions:

cross section sght = 0.55 Flon 3.46 cfs
 weather Sunny - hot gate opening = 57 3/4 - 56 7/8 = 78"
 (Kind-Condition)

MARKS:
 Start time 11:30 am End time 12:27 pm
 Measurement No. _____ Temperature _____ PH _____ Conductivity _____
 Discharge _____ Area _____ Vel _____ G. H. _____ Disch. _____
 Method _____ No. Secs. _____ G. H. Change _____ In. _____ Hrs. Susp. _____
 Flood coef. _____ Har. ang. _____ Har. ang. _____ Susp. coef. _____

River at _____ .60 .70 .75

Dist. from Initial Point	Width	Depth	Description	Revolutions	Time in Seconds	VELOCITY		Adjusted for Hor. Angle or Vertical	Area	Discharge
						At Point	Mean in Vertical			
1.13 pm										
REW 0.6	0.25	0				0				
1.1	0.5	1.1		15	51	0.318			0.55	0.173
1.6	0.5	1.2		10	47	0.236			0.60	0.142
2.1	0.5	1.2		20	52	0.404			0.60	0.242
2.6	0.5	1.4		20	51	0.411			0.70	0.288
3.1	0.5	1.5		25	45	0.571			0.75	0.428
3.6	0.5	1.5		30	47	0.652			0.75	0.487
4.1	0.5	1.4		35	42	0.842			0.70	0.589
4.6	0.5	1.2		35	41	0.862			0.60	0.517
5.1	0.55	1.3		35	43	0.823			0.715	0.588
LEW 5.7	0.3	0								
0	5.1									3.456
1.27 pm										

Sheet No. _____ of _____ sheets, Checked by: TAW
 Measurement computed by: TAW
 1/4
 RLH
 7/5/97

CONSULTING ENGINEERS

DISCHARGE MEASUREMENT NOTES

River, Creek, Canal, Ditch Wd #3 Highland Canal

At, Near, Above, Below _____
 Date 7/2 19 27 Division _____ District _____
 Measurement by RLH Notes by TRW

GAGE READINGS

Time	Outside	Inside	Recorder
<u>2:50 PM</u>	<u>0.20</u>		
<u>3:10 PM</u>	<u>0.20</u>		
<u>AGS</u>	<u>0.20</u>		

Intake flushed _____
 Record removed _____
 Measured: mading, cable, ice, upst., _____
 damst., side bridge, _____ feet.
 mile, above, below, at, gorge and _____

Meter No. 449 my Date rated _____
 Spin: before _____ after _____
 Type and Weight used _____
 S M Levels obtained: _____

Measurement rated excellent (2X), good (3X), fair (4X), poor (over 8X) based on following conditions:

Gross section sght = 0.20' Flow 6.88 cfs

Weather gate opening = 57 3/4 - 55.25 = 2.50 inches

Control (Kind-Condition) _____

REMARKS: _____
 Start time 2:52 PM End time 3:28 PM

Measurement No. _____ Temperature _____ Phi _____ Conductivity _____
 Width _____ Area _____ Vel _____ G. H. _____ Disch. _____
 Method _____ No. Secs. _____ G. H. Change _____ In _____ Mrs. Susp. _____
 Method coef. _____ No. angle coef. _____ Susp. coef. _____

River at - .0 .10 .20 .30 .40 .50 .60 .70 .80

Dist. from Initial Point	Width	Depth	Revolutions	Time in Seconds	VELOCITY		Adjusted for Hor. Angle or Vertical	Area	Discharge
					At Point	Mean in Vertical			
<u>REW 0.6</u>									
<u>1.1</u>	<u>0.5</u>	<u>1.2</u>	<u>20</u>	<u>53</u>	<u>.397</u>			<u>0.60</u>	<u>0.238</u>
<u>1.6</u>	<u>0.5</u>	<u>1.3</u>	<u>25</u>	<u>47</u>	<u>.548</u>			<u>0.65</u>	<u>0.356</u>
<u>2.1</u>	<u>0.5</u>	<u>1.3</u>	<u>35</u>	<u>47</u>	<u>.757</u>	<u>.773</u>		<u>0.65</u>	<u>0.497</u>
<u>2.6</u>	<u>0.5</u>	<u>1.5</u>	<u>40</u>	<u>42</u>	<u>.958</u>			<u>0.75</u>	<u>0.718</u>
<u>3.1</u>	<u>0.5</u>	<u>1.6</u>	<u>55</u>	<u>45</u>	<u>1.22</u>			<u>0.80</u>	<u>0.976</u>
<u>3.6</u>	<u>0.5</u>	<u>1.6</u>	<u>65</u>	<u>43</u>	<u>1.51</u>	<u>1.50</u>		<u>0.80</u>	<u>1.208</u>
<u>4.1</u>	<u>0.5</u>	<u>1.5</u>	<u>65</u>	<u>45</u>	<u>1.44</u>			<u>0.75</u>	<u>1.080</u>
<u>4.6</u>	<u>0.5</u>	<u>1.5</u>	<u>55</u>	<u>44</u>	<u>1.25</u>			<u>0.75</u>	<u>0.938</u>
<u>5.1</u>	<u>0.55</u>	<u>1.4</u>	<u>60</u>	<u>53</u>	<u>0.950</u>			<u>0.77</u>	<u>0.752</u>
<u>5.7</u>	<u>0.3</u>								
<u>0</u>									<u>6.737</u>

Sheet No. _____ of _____ sheets, Checked by: TRW

3/4

RLH 7/27/27

TIPTON AND KALMBACH, INC.
CONSULTING ENGINEERS

DISCHARGE MEASUREMENT NOTES

River, Creek, Canal, Ditch WV # 3 Highland Canal
 At, Near, Above, Below
 Date 7/2 19 97 Division District
 Measurement by RLH Notes by JAW

GAGE READINGS

Time	Outsdy	Inside	Recorder
3:35pm	0.0		
4:00pm	0.05		
Avg	0.065		

Intake flushed.
 Record removed
 Measured: mowing, cable, ice, upst..
 downst., side bridge, _____ feet.
 mile, above, below, at, gage and _____

Meter No. PP904 Date rated _____
 Spin: before _____ after _____
 Type and Weight used _____
 B M Levels obtained: _____

Measurement rated excellent (28), good (58), fair (88), poor (over 98) based on following conditions:
 Cross section Sq ft = 0.265. Flow 7.49 cfs
 Weather gate opening = 57 3/4" - 54 1/2" = 3 1/4"
 Control (Kind-Condition) _____
 REMARKS: _____
 Start time _____ End time _____
 Measurement No. _____ Temperature _____ Ft _____ Conductivity _____
 Width _____ Area _____ Vel _____ G. H. _____ Disch. _____
 Method _____ No. Secs. _____ G. H. Change _____ In. _____ Mrs. Susp. _____
 Method coef. _____ Her. angle coef. _____ Susp. coef. _____

Angle of Sight	Dist. from Initial Point	Width	Depth	Speed	Rev. Observations	Time in Secs.	VELOCITY		Adjusted Cor. Nr. Angle or Vertical	Area	Discharge
							At Point	Mean in Vertical			
2.0	0.6										
1.1	0.5	1.2			20	47	4.44		0.60	0.266	
1.6	0.5	1.3			25	54	4.80		0.65	0.312	
2.1	0.5	1.3			35	44	8.05		0.65	0.523	
2.6	0.5	1.5			50	42	1.19		0.75	0.892	
3.1	0.5	1.6			60	45	1.33		0.80	1.064	
3.6	0.5	1.6			65	44	1.47		0.80	1.176	
4.1	0.5	1.7			65	44	1.47		0.85	1.250	
4.6	0.5	1.5			50	41	1.22		0.75	0.915	
5.1	0.55	1.4			60	42	1.42		0.77	1.093	
5.7										7.49	
0											1.00

Sheet No. _____ of _____ sheets. Checked by: JAW
 Measurement computed by: JAW
 4/4

HIGHLAND CANAL
WASTE GATE #3
RATING

STAFF GAGE HEIGHT

GATE (inches)	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15
57 3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 1/2	0.63	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.65	0.65	0.65	0.65	0.65
57 1/4	1.27	1.27	1.27	1.28	1.28	1.28	1.28	1.28	1.29	1.29	1.29	1.29	1.30	1.30	1.30
57	1.90	1.91	1.91	1.91	1.92	1.92	1.92	1.93	1.93	1.93	1.94	1.94	1.94	1.95	1.95
56 3/4	2.54	2.54	2.55	2.55	2.56	2.56	2.56	2.57	2.57	2.58	2.58	2.59	2.59	2.59	2.60
56 1/2	3.17	3.18	3.18	3.19	3.20	3.20	3.21	3.21	3.22	3.22	3.23	3.23	3.24	3.24	3.25
56 1/4	3.81	3.82	3.82	3.83	3.83	3.84	3.85	3.85	3.86	3.87	3.87	3.88	3.89	3.89	3.90
56	4.44	4.45	4.46	4.47	4.47	4.48	4.49	4.50	4.50	4.51	4.52	4.53	4.53	4.54	4.55
55 3/4	5.08	5.09	5.10	5.10	5.11	5.12	5.13	5.14	5.15	5.15	5.16	5.17	5.18	5.19	5.20
55 1/2	5.71	5.72	5.73	5.74	5.75	5.76	5.77	5.78	5.79	5.80	5.81	5.82	5.83	5.84	5.85
55 1/4	6.35	6.36	6.37	6.38	6.39	6.40	6.41	6.42	6.43	6.44	6.45	6.46	6.48	6.49	6.50
55	6.98	6.99	7.01	7.02	7.03	7.04	7.05	7.06	7.08	7.09	7.10	7.11	7.12	7.13	7.15
54 3/4	7.62	7.63	7.64	7.66	7.67	7.68	7.69	7.71	7.72	7.73	7.74	7.76	7.77	7.78	7.80
54 1/2	8.25	8.27	8.28	8.29	8.31	8.32	8.34	8.35	8.36	8.38	8.39	8.40	8.42	8.43	8.45
54 1/4	8.89	8.90	8.92	8.93	8.95	8.96	8.98	8.99	9.01	9.02	9.04	9.05	9.07	9.08	9.09
54	9.52	9.54	9.55	9.57	9.59	9.60	9.62	9.63	9.65	9.67	9.68	9.70	9.71	9.73	9.74
53 3/4	10.16	10.17	10.19	10.21	10.22	10.24	10.26	10.28	10.29	10.31	10.33	10.34	10.36	10.38	10.39
53 1/2	10.79	10.81	10.83	10.85	10.86	10.88	10.90	10.92	10.94	10.95	10.97	10.99	11.01	11.03	11.04
53 1/4	11.43	11.45	11.46	11.48	11.50	11.52	11.54	11.56	11.58	11.60	11.62	11.64	11.66	11.67	11.69
53	12.06	12.08	12.10	12.12	12.14	12.16	12.18	12.20	12.22	12.24	12.26	12.28	12.30	12.32	12.34
52 3/4	12.70	12.72	12.74	12.76	12.78	12.80	12.82	12.84	12.87	12.89	12.91	12.93	12.95	12.97	12.99
52 1/2	13.33	13.35	13.38	13.40	13.42	13.44	13.46	13.49	13.51	13.53	13.55	13.58	13.60	13.62	13.64
52 1/4	13.97	13.99	14.01	14.04	14.06	14.08	14.11	14.13	14.15	14.18	14.20	14.22	14.25	14.27	14.29
52	14.60	14.62	14.65	14.67	14.70	14.72	14.75	14.77	14.80	14.82	14.84	14.87	14.89	14.92	14.94
51 3/4	15.23	15.26	15.29	15.31	15.34	15.36	15.39	15.41	15.44	15.46	15.49	15.52	15.54	15.57	15.59
51 1/2	15.87	15.90	15.92	15.95	15.98	16.00	16.03	16.06	16.08	16.11	16.14	16.16	16.19	16.21	16.24
51 1/4	16.50	16.53	16.56	16.59	16.62	16.64	16.67	16.70	16.73	16.75	16.78	16.81	16.84	16.86	16.89
51	17.14	17.17	17.20	17.23	17.25	17.28	17.31	17.34	17.37	17.40	17.43	17.45	17.48	17.51	17.54
50 3/4	17.77	17.80	17.83	17.86	17.89	17.92	17.95	17.98	18.01	18.04	18.07	18.10	18.13	18.16	18.19
50 1/2	18.41	18.44	18.47	18.50	18.53	18.56	18.59	18.63	18.66	18.69	18.72	18.75	18.78	18.81	18.84
50 1/4	19.04	19.08	19.11	19.14	19.17	19.20	19.24	19.27	19.30	19.33	19.36	19.39	19.43	19.46	19.49
50	19.68	19.71	19.74	19.78	19.81	19.84	19.88	19.91	19.94	19.98	20.01	20.04	20.07	20.11	20.14
49 3/4	20.31	20.35	20.38	20.42	20.45	20.48	20.52	20.55	20.59	20.62	20.65	20.69	20.72	20.75	20.79
49 1/2	20.95	20.98	21.02	21.05	21.09	21.12	21.16	21.19	21.23	21.26	21.30	21.33	21.37	21.40	21.44
49 1/4	21.58	21.62	21.66	21.69	21.73	21.76	21.80	21.84	21.87	21.91	21.94	21.98	22.02	22.05	22.09
49	22.22	22.25	22.29	22.33	22.37	22.40	22.44	22.48	22.52	22.55	22.59	22.63	22.66	22.70	22.74
48 3/4	22.85	22.89	22.93	22.97	23.01	23.04	23.08	23.12	23.16	23.20	23.23	23.27	23.31	23.35	23.39
48 1/2	23.49	23.53	23.57	23.61	23.65	23.68	23.72	23.76	23.80	23.84	23.88	23.92	23.96	24.00	24.04
48 1/4	24.12	24.16	24.20	24.24	24.28	24.32	24.37	24.41	24.45	24.49	24.53	24.57	24.61	24.65	24.69
48	24.76	24.80	24.84	24.88	24.92	24.96	25.01	25.05	25.09	25.13	25.17	25.21	25.25	25.29	25.34
47 3/4	25.39	25.43	25.48	25.52	25.56	25.60	25.65	25.69	25.73	25.77	25.82	25.86	25.90	25.94	25.98
47 1/2	26.03	26.07	26.11	26.16	26.20	26.24	26.29	26.33	26.38	26.42	26.46	26.51	26.55	26.59	26.63
47 1/4	26.66	26.71	26.75	26.80	26.84	26.89	26.93	26.97	27.02	27.06	27.11	27.15	27.20	27.24	27.28
47	27.30	27.34	27.39	27.43	27.48	27.53	27.57	27.62	27.66	27.71	27.75	27.80	27.84	27.89	27.93
46 3/4	27.93	27.98	28.02	28.07	28.12	28.17	28.21	28.26	28.31	28.35	28.40	28.44	28.49	28.54	28.58
46 1/2	28.57	28.61	28.66	28.71	28.76	28.81	28.85	28.90	28.95	29.00	29.04	29.09	29.14	29.19	29.23
46 1/4	29.20	29.25	29.30	29.35	29.40	29.45	29.49	29.54	29.59	29.64	29.69	29.74	29.79	29.83	29.88
46	29.83	29.89	29.94	29.99	30.04	30.09	30.14	30.19	30.24	30.28	30.33	30.38	30.43	30.48	30.53
45 3/4	30.47	30.52	30.57	30.62	30.67	30.73	30.78	30.83	30.88	30.93	30.98	31.03	31.08	31.13	31.18

STAFF GAGE HEIGHT

GATE (inches)	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30
57 3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 1/2	0.65	0.65	0.65	0.65	0.65	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.67
57 1/4	1.30	1.30	1.31	1.31	1.31	1.31	1.31	1.32	1.32	1.32	1.32	1.32	1.33	1.33	1.33
57	1.95	1.96	1.96	1.96	1.96	1.97	1.97	1.97	1.98	1.98	1.98	1.99	1.99	1.99	2.00
56 3/4	2.60	2.61	2.61	2.62	2.62	2.62	2.63	2.63	2.64	2.64	2.64	2.65	2.65	2.66	2.66
56 1/2	3.25	3.26	3.26	3.27	3.27	3.28	3.28	3.29	3.29	3.30	3.31	3.31	3.32	3.32	3.33
56 1/4	3.90	3.91	3.92	3.92	3.93	3.94	3.94	3.95	3.95	3.96	3.97	3.97	3.98	3.98	3.99
56	4.55	4.56	4.57	4.58	4.58	4.59	4.60	4.61	4.61	4.62	4.63	4.63	4.64	4.65	4.66
55 3/4	5.21	5.21	5.22	5.23	5.24	5.25	5.26	5.26	5.27	5.28	5.29	5.30	5.30	5.31	5.32
55 1/2	5.86	5.87	5.87	5.88	5.89	5.90	5.91	5.92	5.93	5.94	5.95	5.96	5.97	5.98	5.99
55 1/4	6.51	6.52	6.53	6.54	6.55	6.56	6.57	6.58	6.59	6.60	6.61	6.62	6.63	6.64	6.65
55	7.16	7.17	7.18	7.19	7.20	7.21	7.23	7.23	7.24	7.25	7.26	7.27	7.28	7.29	7.32
54 3/4	7.81	7.82	7.83	7.85	7.86	7.87	7.88	7.90	7.91	7.92	7.93	7.94	7.96	7.97	7.98
54 1/2	8.46	8.47	8.49	8.50	8.51	8.53	8.54	8.55	8.57	8.58	8.59	8.61	8.62	8.63	8.65
54 1/4	9.11	9.12	9.14	9.15	9.17	9.18	9.20	9.21	9.23	9.24	9.25	9.27	9.28	9.30	9.31
54	9.76	9.78	9.79	9.81	9.82	9.84	9.85	9.87	9.88	9.90	9.92	9.93	9.95	9.96	9.98
53 3/4	10.41	10.43	10.44	10.46	10.48	10.49	10.51	10.53	10.54	10.56	10.58	10.59	10.61	10.63	10.64
53 1/2	11.06	11.08	11.10	11.11	11.13	11.15	11.17	11.19	11.20	11.22	11.24	11.26	11.27	11.29	11.31
53 1/4	11.71	11.73	11.75	11.77	11.79	11.81	11.82	11.84	11.86	11.88	11.90	11.92	11.94	11.95	11.97
53	12.36	12.38	12.40	12.42	12.44	12.46	12.48	12.50	12.52	12.54	12.56	12.58	12.60	12.62	12.64
52 3/4	13.01	13.03	13.06	13.08	13.10	13.12	13.14	13.16	13.18	13.20	13.22	13.24	13.26	13.28	13.30
52 1/2	13.66	13.69	13.71	13.73	13.75	13.77	13.80	13.82	13.84	13.86	13.88	13.90	13.93	13.95	13.97
52 1/4	14.31	14.34	14.36	14.38	14.41	14.43	14.45	14.47	14.50	14.52	14.54	14.57	14.59	14.61	14.63
52	14.97	14.99	15.01	15.04	15.06	15.09	15.11	15.13	15.16	15.18	15.20	15.23	15.25	15.27	15.30
51 3/4	15.62	15.64	15.67	15.69	15.72	15.74	15.77	15.79	15.82	15.84	15.87	15.89	15.91	15.94	15.96
51 1/2	16.27	16.29	16.32	16.34	16.37	16.40	16.42	16.45	16.47	16.50	16.53	16.55	16.58	16.60	16.63
51 1/4	16.92	16.94	16.97	17.00	17.03	17.05	17.08	17.11	17.13	17.16	17.19	17.21	17.24	17.27	17.29
51	17.57	17.60	17.62	17.65	17.68	17.71	17.74	17.76	17.79	17.82	17.85	17.88	17.90	17.93	17.96
50 3/4	18.22	18.25	18.28	18.31	18.34	18.36	18.39	18.42	18.45	18.48	18.51	18.54	18.57	18.60	18.62
50 1/2	18.87	18.90	18.93	18.96	18.99	19.02	19.05	19.08	19.11	19.14	19.17	19.20	19.23	19.26	19.29
50 1/4	19.52	19.55	19.58	19.61	19.65	19.68	19.71	19.74	19.77	19.80	19.83	19.86	19.89	19.92	19.95
50	20.17	20.20	20.24	20.27	20.30	20.33	20.36	20.40	20.43	20.46	20.49	20.52	20.56	20.59	20.62
49 3/4	20.82	20.85	20.89	20.92	20.95	20.99	21.02	21.05	21.09	21.12	21.15	21.19	21.22	21.25	21.28
49 1/2	21.47	21.51	21.54	21.58	21.61	21.64	21.68	21.71	21.75	21.78	21.81	21.85	21.88	21.92	21.95
49 1/4	22.12	22.16	22.19	22.23	22.26	22.30	22.34	22.37	22.41	22.44	22.48	22.51	22.55	22.58	22.62
49	22.77	22.81	22.85	22.88	22.92	22.96	22.99	23.03	23.06	23.10	23.14	23.17	23.21	23.24	23.28
48 3/4	23.42	23.46	23.50	23.54	23.57	23.61	23.65	23.69	23.72	23.76	23.80	23.83	23.87	23.91	23.95
48 1/2	24.07	24.11	24.15	24.19	24.23	24.27	24.31	24.34	24.38	24.42	24.46	24.50	24.53	24.57	24.61
48 1/4	24.73	24.77	24.80	24.84	24.88	24.92	24.96	25.00	25.04	25.08	25.12	25.16	25.20	25.24	25.28
48	25.38	25.42	25.46	25.50	25.54	25.58	25.62	25.66	25.70	25.74	25.78	25.82	25.86	25.90	25.94
47 3/4	26.03	26.07	26.11	26.15	26.19	26.24	26.28	26.32	26.36	26.40	26.44	26.48	26.52	26.57	26.61
47 1/2	26.68	26.72	26.76	26.81	26.85	26.89	26.93	26.98	27.02	27.06	27.10	27.15	27.19	27.23	27.27
47 1/4	27.33	27.37	27.42	27.46	27.50	27.55	27.59	27.63	27.68	27.72	27.76	27.81	27.85	27.89	27.94
47	27.98	28.02	28.07	28.11	28.16	28.20	28.25	28.29	28.34	28.38	28.42	28.47	28.51	28.56	28.60
46 3/4	28.63	28.68	28.72	28.77	28.81	28.86	28.90	28.95	29.00	29.04	29.09	29.13	29.18	29.22	29.27
46 1/2	29.28	29.33	29.37	29.42	29.47	29.51	29.56	29.61	29.65	29.70	29.75	29.79	29.84	29.89	29.93
46 1/4	29.93	29.98	30.03	30.07	30.12	30.17	30.22	30.27	30.31	30.36	30.41	30.46	30.50	30.55	30.60
46	30.58	30.63	30.68	30.73	30.78	30.83	30.87	30.92	30.97	31.02	31.07	31.12	31.17	31.21	31.26
45 3/4	31.23	31.28	31.33	31.38	31.43	31.48	31.53	31.58	31.63	31.68	31.73	31.78	31.83	31.88	31.93

STAFF GAGE HEIGHT

GATE (inches)	0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42	0.43	0.44	0.45
57 3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 1/2	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.68	0.68	0.68	0.68	0.68	0.68
57 1/4	1.33	1.33	1.34	1.34	1.34	1.34	1.34	1.35	1.35	1.35	1.35	1.35	1.36	1.36	1.36
57	2.00	2.00	2.00	2.01	2.01	2.01	2.02	2.02	2.02	2.03	2.03	2.03	2.03	2.04	2.04
56 3/4	2.66	2.67	2.67	2.68	2.68	2.69	2.69	2.69	2.70	2.70	2.71	2.71	2.71	2.72	2.72
56 1/2	3.33	3.34	3.34	3.35	3.35	3.36	3.36	3.37	3.37	3.38	3.38	3.39	3.39	3.40	3.40
56 1/4	4.00	4.00	4.01	4.02	4.02	4.03	4.03	4.04	4.05	4.05	4.06	4.06	4.07	4.08	4.08
56	4.66	4.67	4.68	4.68	4.69	4.70	4.71	4.71	4.72	4.73	4.73	4.74	4.75	4.76	4.76
55 3/4	5.33	5.34	5.35	5.35	5.36	5.37	5.38	5.39	5.39	5.40	5.41	5.42	5.43	5.43	5.44
55 1/2	6.00	6.00	6.01	6.02	6.03	6.04	6.05	6.06	6.07	6.08	6.09	6.10	6.10	6.11	6.12
55 1/4	6.66	6.67	6.68	6.69	6.70	6.71	6.72	6.73	6.74	6.75	6.76	6.77	6.78	6.79	6.80
55	7.33	7.34	7.35	7.36	7.37	7.38	7.40	7.41	7.42	7.43	7.44	7.45	7.46	7.47	7.48
54 3/4	7.99	8.01	8.02	8.03	8.04	8.06	8.07	8.08	8.09	8.10	8.12	8.13	8.14	8.15	8.16
54 1/2	8.66	8.67	8.69	8.70	8.71	8.73	8.74	8.75	8.77	8.78	8.79	8.81	8.82	8.83	8.84
54 1/4	9.33	9.34	9.36	9.37	9.38	9.40	9.41	9.43	9.44	9.45	9.47	9.48	9.50	9.51	9.52
54	9.99	10.01	10.02	10.04	10.05	10.07	10.08	10.10	10.11	10.13	10.14	10.16	10.17	10.19	10.20
53 3/4	10.66	10.68	10.69	10.71	10.72	10.74	10.76	10.77	10.79	10.80	10.82	10.84	10.85	10.87	10.89
53 1/2	11.32	11.34	11.36	11.38	11.39	11.41	11.43	11.45	11.46	11.48	11.50	11.51	11.53	11.55	11.57
53 1/4	11.99	12.01	12.03	12.05	12.06	12.08	12.10	12.12	12.14	12.16	12.17	12.19	12.21	12.23	12.25
53	12.66	12.68	12.70	12.72	12.73	12.75	12.77	12.79	12.81	12.83	12.85	12.87	12.89	12.91	12.93
52 3/4	13.32	13.34	13.36	13.38	13.40	13.43	13.45	13.47	13.49	13.51	13.53	13.55	13.57	13.59	13.61
52 1/2	13.99	14.01	14.03	14.05	14.08	14.10	14.12	14.14	14.16	14.18	14.20	14.22	14.24	14.27	14.29
52 1/4	14.66	14.68	14.70	14.72	14.75	14.77	14.79	14.81	14.83	14.86	14.88	14.90	14.92	14.95	14.97
52	15.32	15.35	15.37	15.39	15.42	15.44	15.46	15.49	15.51	15.53	15.56	15.58	15.60	15.62	15.65
51 3/4	15.99	16.01	16.04	16.06	16.09	16.11	16.13	16.16	16.18	16.21	16.23	16.26	16.28	16.30	16.33
51 1/2	16.65	16.68	16.71	16.73	16.76	16.78	16.81	16.83	16.86	16.88	16.91	16.93	16.96	16.98	17.01
51 1/4	17.32	17.35	17.37	17.40	17.43	17.45	17.48	17.51	17.53	17.56	17.58	17.61	17.64	17.66	17.69
51	17.99	18.01	18.04	18.07	18.10	18.12	18.15	18.18	18.21	18.23	18.26	18.29	18.31	18.34	18.37
50 3/4	18.65	18.68	18.71	18.74	18.77	18.80	18.82	18.85	18.88	18.91	18.94	18.96	18.99	19.02	19.05
50 1/2	19.32	19.35	19.38	19.41	19.44	19.47	19.50	19.53	19.55	19.58	19.61	19.64	19.67	19.70	19.73
50 1/4	19.99	20.02	20.05	20.08	20.11	20.14	20.17	20.20	20.23	20.26	20.29	20.32	20.35	20.38	20.41
50	20.65	20.68	20.71	20.75	20.78	20.81	20.84	20.87	20.90	20.93	20.97	21.00	21.03	21.06	21.09
49 3/4	21.32	21.35	21.38	21.42	21.45	21.48	21.51	21.55	21.58	21.61	21.64	21.67	21.71	21.74	21.77
49 1/2	21.98	22.02	22.05	22.08	22.12	22.15	22.19	22.22	22.25	22.29	22.32	22.35	22.38	22.42	22.45
49 1/4	22.65	22.68	22.72	22.75	22.79	22.82	22.86	22.89	22.93	22.96	22.99	23.03	23.06	23.10	23.13
49	23.32	23.35	23.39	23.42	23.46	23.49	23.53	23.57	23.60	23.64	23.67	23.71	23.74	23.78	23.81
48 3/4	23.98	24.02	24.06	24.09	24.13	24.17	24.20	24.24	24.27	24.31	24.35	24.38	24.42	24.46	24.49
48 1/2	24.65	24.69	24.72	24.76	24.80	24.84	24.87	24.91	24.95	24.99	25.02	25.06	25.10	25.14	25.17
48 1/4	25.31	25.35	25.39	25.43	25.47	25.51	25.55	25.58	25.62	25.66	25.70	25.74	25.78	25.81	25.85
48	25.98	26.02	26.06	26.10	26.14	26.18	26.22	26.26	26.30	26.34	26.38	26.42	26.45	26.49	26.53
47 3/4	26.65	26.69	26.73	26.77	26.81	26.85	26.89	26.93	26.97	27.01	27.05	27.09	27.13	27.17	27.21
47 1/2	27.31	27.36	27.40	27.44	27.48	27.52	27.56	27.60	27.65	27.69	27.73	27.77	27.81	27.85	27.89
47 1/4	27.98	28.02	28.07	28.11	28.15	28.19	28.24	28.28	28.32	28.36	28.41	28.45	28.49	28.53	28.57
47	28.65	28.69	28.73	28.78	28.82	28.86	28.91	28.95	28.99	29.04	29.08	29.12	29.17	29.21	29.25
46 3/4	29.31	29.36	29.40	29.45	29.49	29.54	29.58	29.62	29.67	29.71	29.76	29.80	29.85	29.89	29.93
46 1/2	29.98	30.02	30.07	30.12	30.16	30.21	30.25	30.30	30.34	30.39	30.43	30.48	30.52	30.57	30.61
46 1/4	30.64	30.69	30.74	30.78	30.83	30.88	30.92	30.97	31.02	31.06	31.11	31.16	31.20	31.25	31.30
46	31.31	31.36	31.41	31.45	31.50	31.55	31.60	31.64	31.69	31.74	31.79	31.83	31.88	31.93	31.98
45 3/4	31.98	32.03	32.07	32.12	32.17	32.22	32.27	32.32	32.37	32.41	32.46	32.51	32.56	32.61	32.66

STAFF GAGE HEIGHT

GATE (inches)	0.46	0.47	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.60
57 3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 1/2	0.68	0.68	0.68	0.68	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.70
57 1/4	1.36	1.36	1.37	1.37	1.37	1.37	1.37	1.38	1.38	1.38	1.38	1.38	1.39	1.39	1.39
57	2.04	2.05	2.05	2.05	2.06	2.06	2.06	2.06	2.07	2.07	2.07	2.08	2.08	2.08	2.09
56 3/4	2.73	2.73	2.73	2.74	2.74	2.75	2.75	2.75	2.76	2.76	2.76	2.77	2.77	2.78	2.78
56 1/2	3.41	3.41	3.42	3.42	3.43	3.43	3.44	3.44	3.45	3.45	3.46	3.46	3.47	3.47	3.48
56 1/4	4.09	4.09	4.10	4.11	4.11	4.12	4.12	4.13	4.14	4.14	4.15	4.15	4.16	4.17	4.17
56	4.77	4.78	4.78	4.79	4.80	4.80	4.81	4.82	4.82	4.83	4.84	4.85	4.85	4.86	4.87
55 3/4	5.45	5.46	5.47	5.47	5.48	5.49	5.50	5.51	5.51	5.52	5.53	5.54	5.55	5.55	5.56
55 1/2	6.13	6.14	6.15	6.16	6.17	6.18	6.19	6.19	6.20	6.21	6.22	6.23	6.24	6.25	6.26
55 1/4	6.81	6.82	6.83	6.84	6.85	6.86	6.87	6.88	6.89	6.90	6.91	6.92	6.93	6.94	6.95
55	7.49	7.51	7.52	7.53	7.54	7.55	7.56	7.57	7.58	7.59	7.60	7.61	7.63	7.64	7.65
54 3/4	8.18	8.19	8.20	8.21	8.22	8.24	8.25	8.26	8.27	8.28	8.29	8.31	8.32	8.33	8.34
54 1/2	8.86	8.87	8.88	8.90	8.91	8.92	8.93	8.95	8.96	8.97	8.99	9.00	9.01	9.02	9.04
54 1/4	9.54	9.55	9.57	9.58	9.59	9.61	9.62	9.64	9.65	9.66	9.68	9.69	9.70	9.72	9.73
54	10.22	10.23	10.25	10.26	10.28	10.29	10.31	10.32	10.34	10.35	10.37	10.38	10.40	10.41	10.43
53 3/4	10.90	10.92	10.93	10.95	10.97	10.98	11.00	11.01	11.03	11.04	11.06	11.08	11.09	11.11	11.12
53 1/2	11.58	11.60	11.62	11.63	11.65	11.67	11.68	11.70	11.72	11.73	11.75	11.77	11.78	11.80	11.82
53 1/4	12.26	12.28	12.30	12.32	12.34	12.35	12.37	12.39	12.41	12.42	12.44	12.46	12.48	12.50	12.51
53	12.95	12.96	12.98	13.00	13.02	13.04	13.06	13.08	13.10	13.11	13.13	13.15	13.17	13.19	13.21
52 3/4	13.63	13.65	13.67	13.69	13.71	13.73	13.75	13.77	13.79	13.81	13.82	13.84	13.86	13.88	13.90
52 1/2	14.31	14.33	14.35	14.37	14.39	14.41	14.43	14.45	14.47	14.50	14.52	14.54	14.56	14.58	14.60
52 1/4	14.99	15.01	15.03	15.06	15.08	15.10	15.12	15.14	15.16	15.19	15.21	15.23	15.25	15.27	15.29
52	15.67	15.69	15.72	15.74	15.76	15.79	15.81	15.83	15.85	15.88	15.90	15.92	15.94	15.97	15.99
51 3/4	16.35	16.38	16.40	16.42	16.45	16.47	16.50	16.52	16.54	16.57	16.59	16.61	16.64	16.66	16.68
51 1/2	17.03	17.06	17.08	17.11	17.13	17.16	17.18	17.21	17.23	17.26	17.28	17.31	17.33	17.35	17.38
51 1/4	17.71	17.74	17.77	17.79	17.82	17.84	17.87	17.90	17.92	17.95	17.97	18.00	18.02	18.05	18.07
51	18.40	18.42	18.45	18.48	18.50	18.53	18.56	18.58	18.61	18.64	18.66	18.69	18.72	18.74	18.77
50 3/4	19.08	19.11	19.13	19.16	19.19	19.22	19.24	19.27	19.30	19.33	19.35	19.38	19.41	19.44	19.46
50 1/2	19.76	19.79	19.82	19.85	19.87	19.90	19.93	19.96	19.99	20.02	20.05	20.07	20.10	20.13	20.16
50 1/4	20.44	20.47	20.50	20.53	20.56	20.59	20.62	20.65	20.68	20.71	20.74	20.77	20.80	20.83	20.86
50	21.12	21.15	21.18	21.21	21.24	21.28	21.31	21.34	21.37	21.40	21.43	21.46	21.49	21.52	21.55
49 3/4	21.80	21.83	21.87	21.90	21.93	21.96	21.99	22.03	22.06	22.09	22.12	22.15	22.18	22.21	22.25
49 1/2	22.48	22.52	22.55	22.58	22.62	22.65	22.68	22.71	22.75	22.78	22.81	22.84	22.88	22.91	22.94
49 1/4	23.17	23.20	23.23	23.27	23.30	23.33	23.37	23.40	23.44	23.47	23.50	23.54	23.57	23.60	23.64
49	23.85	23.88	23.92	23.95	23.99	24.02	24.06	24.09	24.12	24.16	24.19	24.23	24.26	24.30	24.33
48 3/4	24.53	24.56	24.60	24.64	24.67	24.71	24.74	24.78	24.81	24.85	24.88	24.92	24.96	24.99	25.03
48 1/2	25.21	25.25	25.28	25.32	25.36	25.39	25.43	25.47	25.50	25.54	25.58	25.61	25.65	25.69	25.72
48 1/4	25.89	25.93	25.97	26.00	26.04	26.08	26.12	26.15	26.19	26.23	26.27	26.30	26.34	26.38	26.42
48	26.57	26.61	26.65	26.69	26.73	26.77	26.80	26.84	26.88	26.92	26.96	27.00	27.04	27.07	27.11
47 3/4	27.25	27.29	27.33	27.37	27.41	27.45	27.49	27.53	27.57	27.61	27.65	27.69	27.73	27.77	27.81
47 1/2	27.93	27.98	28.02	28.06	28.10	28.14	28.18	28.22	28.26	28.30	28.34	28.38	28.42	28.46	28.50
47 1/4	28.62	28.66	28.70	28.74	28.78	28.82	28.87	28.91	28.95	28.99	29.03	29.07	29.11	29.16	29.20
47	29.30	29.34	29.38	29.43	29.47	29.51	29.55	29.60	29.64	29.68	29.72	29.77	29.81	29.85	29.89
46 3/4	29.98	30.02	30.07	30.11	30.15	30.20	30.24	30.28	30.33	30.37	30.41	30.46	30.50	30.54	30.59
46 1/2	30.68	30.70	30.75	30.79	30.84	30.88	30.93	30.97	31.02	31.06	31.11	31.15	31.19	31.24	31.28
46 1/4	31.34	31.39	31.43	31.48	31.52	31.57	31.62	31.66	31.71	31.75	31.80	31.84	31.89	31.93	31.98
46	32.02	32.07	32.12	32.16	32.21	32.26	32.30	32.35	32.40	32.44	32.49	32.53	32.58	32.63	32.67
45 3/4	32.70	32.75	32.80	32.85	32.90	32.94	32.99	33.04	33.09	33.13	33.18	33.23	33.27	33.32	33.37

STAFF GAGE HEIGHT

GATE (inches)	0.61	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.70	0.71	0.72	0.73	0.74	0.75
57 3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 1/2	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.71	0.71	0.71	0.71	0.71
57 1/4	1.39	1.39	1.40	1.40	1.40	1.40	1.40	1.41	1.41	1.41	1.41	1.41	1.42	1.42	1.42
57	2.09	2.09	2.09	2.10	2.10	2.10	2.11	2.11	2.11	2.11	2.12	2.12	2.12	2.13	2.13
56 3/4	2.78	2.79	2.79	2.80	2.80	2.80	2.81	2.81	2.82	2.82	2.82	2.83	2.83	2.83	2.84
56 1/2	3.48	3.49	3.49	3.50	3.50	3.51	3.51	3.51	3.52	3.52	3.53	3.53	3.54	3.54	3.55
56 1/4	4.18	4.18	4.19	4.19	4.20	4.21	4.21	4.22	4.22	4.23	4.24	4.24	4.25	4.25	4.26
56	4.87	4.88	4.89	4.89	4.90	4.91	4.91	4.92	4.93	4.93	4.94	4.95	4.95	4.96	4.97
55 3/4	5.57	5.58	5.58	5.59	5.60	5.61	5.62	5.62	5.63	5.64	5.65	5.65	5.66	5.67	5.68
55 1/2	6.27	6.27	6.28	6.29	6.30	6.31	6.32	6.33	6.34	6.34	6.35	6.36	6.37	6.38	6.39
55 1/4	6.96	6.97	6.98	6.99	7.00	7.01	7.02	7.03	7.04	7.05	7.06	7.07	7.08	7.09	7.10
55	7.66	7.67	7.68	7.69	7.70	7.71	7.72	7.73	7.74	7.75	7.76	7.78	7.79	7.80	7.81
54 3/4	8.35	8.37	8.38	8.39	8.40	8.41	8.42	8.44	8.45	8.46	8.47	8.48	8.49	8.50	8.52
54 1/2	9.05	9.06	9.08	9.09	9.10	9.11	9.13	9.14	9.15	9.16	9.18	9.19	9.20	9.21	9.23
54 1/4	9.75	9.76	9.77	9.79	9.80	9.81	9.83	9.84	9.86	9.87	9.88	9.90	9.91	9.92	9.94
54	10.44	10.46	10.47	10.49	10.50	10.52	10.53	10.54	10.56	10.57	10.59	10.60	10.62	10.63	10.65
53 3/4	11.14	11.15	11.17	11.19	11.20	11.22	11.23	11.25	11.26	11.28	11.29	11.31	11.32	11.34	11.36
53 1/2	11.83	11.85	11.87	11.88	11.90	11.92	11.93	11.95	11.97	11.98	12.00	12.02	12.03	12.05	12.07
53 1/4	12.53	12.55	12.57	12.58	12.60	12.62	12.64	12.65	12.67	12.69	12.71	12.72	12.74	12.76	12.77
53	13.23	13.25	13.26	13.28	13.30	13.32	13.34	13.36	13.37	13.39	13.41	13.43	13.45	13.47	13.48
52 3/4	13.92	13.94	13.96	13.98	14.00	14.02	14.04	14.06	14.08	14.10	14.12	14.14	14.16	14.17	14.19
52 1/2	14.62	14.64	14.66	14.68	14.70	14.72	14.74	14.76	14.78	14.80	14.82	14.84	14.86	14.88	14.90
52 1/4	15.32	15.34	15.36	15.38	15.40	15.42	15.44	15.47	15.49	15.51	15.53	15.55	15.57	15.59	15.61
52	16.01	16.03	16.06	16.08	16.10	16.12	16.15	16.17	16.19	16.21	16.23	16.26	16.28	16.30	16.32
51 3/4	16.71	16.73	16.75	16.78	16.80	16.82	16.85	16.87	16.89	16.92	16.94	16.96	16.99	17.01	17.03
51 1/2	17.40	17.43	17.45	17.48	17.50	17.53	17.55	17.57	17.60	17.62	17.65	17.67	17.69	17.72	17.74
51 1/4	18.10	18.13	18.15	18.18	18.20	18.23	18.25	18.28	18.30	18.33	18.35	18.38	18.40	18.43	18.45
51	18.80	18.82	18.85	18.88	18.90	18.93	18.95	18.98	19.01	19.03	19.06	19.08	19.11	19.14	19.16
50 3/4	19.49	19.52	19.55	19.57	19.60	19.63	19.66	19.68	19.71	19.74	19.76	19.79	19.82	19.84	19.87
50 1/2	20.19	20.22	20.25	20.27	20.30	20.33	20.36	20.39	20.41	20.44	20.47	20.50	20.53	20.55	20.58
50 1/4	20.88	20.91	20.94	20.97	21.00	21.03	21.06	21.09	21.12	21.15	21.18	21.20	21.23	21.26	21.29
50	21.58	21.61	21.64	21.67	21.70	21.73	21.76	21.79	21.82	21.85	21.88	21.91	21.94	21.97	22.00
49 3/4	22.28	22.31	22.34	22.37	22.40	22.43	22.46	22.49	22.53	22.56	22.59	22.62	22.65	22.68	22.71
49 1/2	22.97	23.01	23.04	23.07	23.10	23.13	23.17	23.20	23.23	23.26	23.29	23.33	23.36	23.39	23.42
49 1/4	23.67	23.70	23.74	23.77	23.80	23.83	23.87	23.90	23.93	23.97	24.00	24.03	24.06	24.10	24.13
49	24.37	24.40	24.43	24.47	24.50	24.54	24.57	24.60	24.64	24.67	24.71	24.74	24.77	24.81	24.84
48 3/4	25.06	25.10	25.13	25.17	25.20	25.24	25.27	25.31	25.34	25.38	25.41	25.45	25.48	25.51	25.55
48 1/2	25.76	25.79	25.83	25.87	25.90	25.94	25.97	26.01	26.05	26.08	26.12	26.15	26.19	26.22	26.26
48 1/4	26.45	26.49	26.53	26.57	26.60	26.64	26.68	26.71	26.75	26.79	26.82	26.86	26.90	26.93	26.97
48	27.15	27.19	27.23	27.26	27.30	27.34	27.38	27.42	27.45	27.49	27.53	27.57	27.60	27.64	27.68
47 3/4	27.85	27.89	27.92	27.96	28.00	28.04	28.08	28.12	28.16	28.20	28.23	28.27	28.31	28.35	28.39
47 1/2	28.54	28.58	28.62	28.66	28.70	28.74	28.78	28.82	28.86	28.90	28.94	28.98	29.02	29.06	29.10
47 1/4	29.24	29.28	29.32	29.36	29.40	29.44	29.48	29.52	29.57	29.61	29.65	29.69	29.73	29.77	29.81
47	29.93	29.98	30.02	30.06	30.10	30.14	30.19	30.23	30.27	30.31	30.35	30.39	30.43	30.48	30.52
46 3/4	30.63	30.67	30.72	30.76	30.80	30.85	30.89	30.93	30.97	31.02	31.06	31.10	31.14	31.18	31.23
46 1/2	31.33	31.37	31.41	31.46	31.50	31.55	31.59	31.63	31.68	31.72	31.76	31.81	31.85	31.89	31.94
46 1/4	32.02	32.07	32.11	32.16	32.20	32.25	32.29	32.34	32.38	32.43	32.47	32.51	32.56	32.60	32.65
46	32.72	32.77	32.81	32.86	32.90	32.95	32.99	33.04	33.08	33.13	33.18	33.22	33.27	33.31	33.36
45 3/4	33.42	33.46	33.51	33.56	33.60	33.65	33.70	33.74	33.79	33.84	33.88	33.93	33.97	34.02	34.07

STAFF GAGE HEIGHT

GATE (inches)	0.76	0.77	0.78	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.86	0.87	0.88	0.89	0.90
57 3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 1/2	0.71	0.71	0.71	0.71	0.71	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
57 1/4	1.42	1.42	1.43	1.43	1.43	1.43	1.43	1.43	1.44	1.44	1.44	1.44	1.44	1.45	1.45
57	2.13	2.13	2.14	2.14	2.14	2.15	2.15	2.15	2.15	2.16	2.16	2.16	2.17	2.17	2.17
56 3/4	2.84	2.85	2.85	2.85	2.86	2.86	2.87	2.87	2.87	2.88	2.88	2.88	2.89	2.89	2.90
56 1/2	3.55	3.56	3.56	3.57	3.57	3.58	3.58	3.59	3.59	3.60	3.60	3.61	3.61	3.62	3.62
56 1/4	4.26	4.27	4.28	4.28	4.29	4.29	4.30	4.30	4.31	4.32	4.32	4.33	4.33	4.34	4.34
56	4.97	4.98	4.99	4.99	5.00	5.01	5.01	5.02	5.03	5.03	5.04	5.05	5.05	5.06	5.07
55 3/4	5.69	5.69	5.70	5.71	5.72	5.72	5.73	5.74	5.75	5.75	5.76	5.77	5.78	5.78	5.79
55 1/2	6.40	6.40	6.41	6.42	6.43	6.44	6.45	6.46	6.46	6.47	6.48	6.49	6.50	6.51	6.52
55 1/4	7.11	7.12	7.13	7.14	7.14	7.15	7.16	7.17	7.18	7.19	7.20	7.21	7.22	7.23	7.24
55	7.82	7.83	7.84	7.85	7.86	7.87	7.88	7.89	7.90	7.91	7.92	7.93	7.94	7.95	7.96
54 3/4	8.53	8.54	8.55	8.56	8.57	8.59	8.60	8.61	8.62	8.63	8.64	8.65	8.66	8.68	8.69
54 1/2	9.24	9.25	9.26	9.28	9.29	9.30	9.31	9.33	9.34	9.35	9.36	9.37	9.39	9.40	9.41
54 1/4	9.95	9.96	9.98	9.99	10.00	10.02	10.03	10.04	10.06	10.07	10.08	10.10	10.11	10.12	10.14
54	10.66	10.67	10.69	10.70	10.72	10.73	10.75	10.76	10.77	10.79	10.80	10.82	10.83	10.85	10.86
53 3/4	11.37	11.39	11.40	11.42	11.43	11.45	11.46	11.48	11.49	11.51	11.52	11.54	11.55	11.57	11.58
53 1/2	12.08	12.10	12.11	12.13	12.15	12.16	12.18	12.19	12.21	12.23	12.24	12.26	12.28	12.29	12.31
53 1/4	12.79	12.81	12.83	12.84	12.86	12.88	12.90	12.91	12.93	12.95	12.96	12.98	13.00	13.01	13.03
53	13.50	13.52	13.54	13.56	13.58	13.59	13.61	13.63	13.65	13.67	13.68	13.70	13.72	13.74	13.76
52 3/4	14.21	14.23	14.25	14.27	14.29	14.31	14.33	14.35	14.37	14.38	14.40	14.42	14.44	14.46	14.48
52 1/2	14.92	14.94	14.96	14.98	15.00	15.02	15.04	15.06	15.08	15.10	15.12	15.14	15.16	15.18	15.20
52 1/4	15.63	15.66	15.68	15.70	15.72	15.74	15.76	15.78	15.80	15.82	15.84	15.86	15.89	15.91	15.93
52	16.35	16.37	16.39	16.41	16.43	16.46	16.48	16.50	16.52	16.54	16.56	16.59	16.61	16.63	16.65
51 3/4	17.06	17.08	17.10	17.12	17.15	17.17	17.19	17.22	17.24	17.26	17.28	17.31	17.33	17.35	17.37
51 1/2	17.77	17.79	17.81	17.84	17.86	17.89	17.91	17.93	17.96	17.98	18.00	18.03	18.05	18.08	18.10
51 1/4	18.48	18.50	18.53	18.55	18.58	18.60	18.63	18.65	18.68	18.70	18.72	18.75	18.77	18.80	18.82
51	19.19	19.21	19.24	19.27	19.29	19.32	19.34	19.37	19.39	19.42	19.44	19.47	19.50	19.52	19.55
50 3/4	19.90	19.93	19.95	19.98	20.01	20.03	20.06	20.09	20.11	20.14	20.17	20.19	20.22	20.24	20.27
50 1/2	20.61	20.64	20.66	20.69	20.72	20.75	20.78	20.80	20.83	20.86	20.89	20.91	20.94	20.97	20.99
50 1/4	21.32	21.35	21.38	21.41	21.43	21.46	21.49	21.52	21.55	21.58	21.61	21.63	21.66	21.69	21.72
50	22.03	22.06	22.09	22.12	22.15	22.18	22.21	22.24	22.27	22.30	22.33	22.35	22.38	22.41	22.44
49 3/4	22.74	22.77	22.80	22.83	22.86	22.89	22.92	22.95	22.99	23.02	23.05	23.08	23.11	23.14	23.17
49 1/2	23.45	23.48	23.52	23.55	23.58	23.61	23.64	23.67	23.70	23.73	23.77	23.80	23.83	23.86	23.89
49 1/4	24.16	24.20	24.23	24.26	24.29	24.32	24.36	24.39	24.42	24.45	24.49	24.52	24.55	24.58	24.61
49	24.87	24.91	24.94	24.97	25.01	25.04	25.07	25.11	25.14	25.17	25.21	25.24	25.27	25.31	25.34
48 3/4	25.58	25.62	25.65	25.69	25.72	25.76	25.79	25.82	25.86	25.89	25.93	25.96	25.99	26.03	26.06
48 1/2	26.29	26.33	26.37	26.40	26.44	26.47	26.51	26.54	26.58	26.61	26.65	26.68	26.72	26.75	26.79
48 1/4	27.01	27.04	27.08	27.11	27.15	27.19	27.22	27.26	27.29	27.33	27.37	27.40	27.44	27.47	27.51
48	27.72	27.75	27.79	27.83	27.87	27.90	27.94	27.98	28.01	28.05	28.09	28.12	28.16	28.20	28.23
47 3/4	28.43	28.46	28.50	28.54	28.58	28.62	28.66	28.69	28.73	28.77	28.81	28.85	28.88	28.92	28.96
47 1/2	29.14	29.18	29.22	29.25	29.29	29.33	29.37	29.41	29.45	29.49	29.53	29.57	29.60	29.64	29.68
47 1/4	29.85	29.89	29.93	29.97	30.01	30.05	30.09	30.13	30.17	30.21	30.25	30.29	30.33	30.37	30.41
47	30.56	30.60	30.64	30.68	30.72	30.76	30.80	30.85	30.89	30.93	30.97	31.01	31.05	31.09	31.13
46 3/4	31.27	31.31	31.35	31.40	31.44	31.48	31.52	31.56	31.60	31.65	31.69	31.73	31.77	31.81	31.85
46 1/2	31.98	32.02	32.07	32.11	32.15	32.19	32.24	32.28	32.32	32.37	32.41	32.45	32.49	32.54	32.58
46 1/4	32.69	32.73	32.78	32.82	32.87	32.91	32.95	33.00	33.04	33.08	33.13	33.17	33.22	33.26	33.30
46	33.40	33.45	33.49	33.54	33.58	33.63	33.67	33.72	33.76	33.80	33.85	33.89	33.94	33.98	34.03
45 3/4	34.11	34.16	34.20	34.25	34.30	34.34	34.39	34.43	34.48	34.52	34.57	34.61	34.66	34.70	34.75

STAFF GAGE HEIGHT

GATE (inches)	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1.00	1.01	1.02	1.03	1.04	1.05
57 3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 1/2	0.72	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.74	0.74	0.74	0.74
57 1/4	1.45	1.45	1.45	1.46	1.46	1.46	1.46	1.46	1.46	1.47	1.47	1.47	1.47	1.47	1.48
57	2.17	2.18	2.18	2.18	2.19	2.19	2.19	2.19	2.20	2.20	2.20	2.21	2.21	2.21	2.21
56 3/4	2.90	2.90	2.91	2.91	2.91	2.92	2.92	2.93	2.93	2.93	2.94	2.94	2.94	2.95	2.95
56 1/2	3.62	3.63	3.63	3.64	3.64	3.65	3.65	3.66	3.66	3.67	3.67	3.68	3.68	3.68	3.69
56 1/4	4.35	4.35	4.36	4.37	4.37	4.38	4.38	4.39	4.39	4.40	4.41	4.41	4.42	4.42	4.43
56	5.07	5.08	5.09	5.09	5.10	5.11	5.11	5.12	5.13	5.13	5.14	5.15	5.15	5.16	5.17
55 3/4	5.80	5.81	5.81	5.82	5.83	5.84	5.84	5.85	5.86	5.87	5.87	5.88	5.89	5.90	5.90
55 1/2	6.52	6.53	6.54	6.55	6.56	6.57	6.57	6.58	6.59	6.60	6.61	6.62	6.62	6.63	6.64
55 1/4	7.25	7.26	7.27	7.28	7.29	7.30	7.31	7.31	7.32	7.33	7.34	7.35	7.36	7.37	7.38
55	7.97	7.98	7.99	8.00	8.02	8.03	8.04	8.05	8.06	8.07	8.08	8.09	8.10	8.11	8.12
54 3/4	8.70	8.71	8.72	8.73	8.74	8.75	8.77	8.78	8.79	8.80	8.81	8.82	8.83	8.84	8.86
54 1/2	9.42	9.44	9.45	9.46	9.47	9.48	9.50	9.51	9.52	9.53	9.54	9.56	9.57	9.58	9.59
54 1/4	10.15	10.16	10.17	10.19	10.20	10.21	10.23	10.24	10.25	10.27	10.28	10.29	10.31	10.32	10.33
54	10.87	10.89	10.90	10.92	10.93	10.94	10.96	10.97	10.99	11.00	11.01	11.03	11.04	11.05	11.07
53 3/4	11.60	11.61	11.63	11.64	11.66	11.67	11.69	11.70	11.72	11.73	11.75	11.76	11.78	11.79	11.81
53 1/2	12.32	12.34	12.36	12.37	12.39	12.40	12.42	12.43	12.45	12.47	12.48	12.50	12.51	12.53	12.54
53 1/4	13.05	13.06	13.08	13.10	13.12	13.13	13.15	13.17	13.18	13.20	13.22	13.23	13.25	13.27	13.28
53	13.77	13.79	13.81	13.83	13.84	13.86	13.88	13.90	13.91	13.93	13.95	13.97	13.99	14.00	14.02
52 3/4	14.50	14.52	14.54	14.55	14.57	14.59	14.61	14.63	14.65	14.67	14.68	14.70	14.72	14.74	14.76
52 1/2	15.22	15.24	15.26	15.28	15.30	15.32	15.34	15.36	15.38	15.40	15.42	15.44	15.46	15.48	15.50
52 1/4	15.95	15.97	15.99	16.01	16.03	16.05	16.07	16.09	16.11	16.13	16.15	16.17	16.19	16.21	16.23
52	16.67	16.69	16.72	16.74	16.76	16.78	16.80	16.82	16.84	16.87	16.89	16.91	16.93	16.95	16.97
51 3/4	17.40	17.42	17.44	17.46	17.49	17.51	17.53	17.55	17.58	17.60	17.62	17.64	17.67	17.69	17.71
51 1/2	18.12	18.15	18.17	18.19	18.22	18.24	18.26	18.29	18.31	18.33	18.36	18.38	18.40	18.42	18.45
51 1/4	18.85	18.87	18.90	18.92	18.94	18.97	18.99	19.02	19.04	19.07	19.09	19.11	19.14	19.16	19.19
51	19.57	19.60	19.62	19.65	19.67	19.70	19.72	19.75	19.77	19.80	19.82	19.85	19.87	19.90	19.92
50 3/4	20.30	20.32	20.35	20.38	20.40	20.43	20.45	20.48	20.51	20.53	20.56	20.58	20.61	20.64	20.66
50 1/2	21.02	21.05	21.08	21.10	21.13	21.16	21.18	21.21	21.24	21.27	21.29	21.32	21.35	21.37	21.40
50 1/4	21.75	21.77	21.80	21.83	21.86	21.89	21.92	21.94	21.97	22.00	22.03	22.05	22.08	22.11	22.14
50	22.47	22.50	22.53	22.56	22.59	22.62	22.65	22.67	22.70	22.73	22.76	22.79	22.82	22.85	22.88
49 3/4	23.20	23.23	23.26	23.29	23.32	23.35	23.38	23.41	23.44	23.47	23.50	23.52	23.55	23.58	23.61
49 1/2	23.92	23.95	23.98	24.01	24.05	24.08	24.11	24.14	24.17	24.20	24.23	24.26	24.29	24.32	24.35
49 1/4	24.65	24.68	24.71	24.74	24.77	24.81	24.84	24.87	24.90	24.93	24.96	25.00	25.03	25.06	25.09
49	25.37	25.40	25.44	25.47	25.50	25.53	25.57	25.60	25.63	25.67	25.70	25.73	25.76	25.79	25.83
48 3/4	26.10	26.13	26.16	26.20	26.23	26.26	26.30	26.33	26.37	26.40	26.43	26.47	26.50	26.53	26.57
48 1/2	26.82	26.86	26.89	26.93	26.96	26.99	27.03	27.06	27.10	27.13	27.17	27.20	27.23	27.27	27.30
48 1/4	27.55	27.58	27.62	27.65	27.69	27.72	27.76	27.79	27.83	27.87	27.90	27.94	27.97	28.01	28.04
48	28.27	28.31	28.34	28.38	28.42	28.45	28.49	28.53	28.56	28.60	28.63	28.67	28.71	28.74	28.78
47 3/4	29.00	29.03	29.07	29.11	29.15	29.18	29.22	29.26	29.29	29.33	29.37	29.41	29.44	29.48	29.52
47 1/2	29.72	29.76	29.80	29.84	29.87	29.91	29.95	29.99	30.03	30.07	30.10	30.14	30.18	30.22	30.25
47 1/4	30.45	30.48	30.52	30.56	30.60	30.64	30.68	30.72	30.76	30.80	30.84	30.88	30.92	30.95	30.99
47	31.17	31.21	31.25	31.29	31.33	31.37	31.41	31.45	31.49	31.53	31.57	31.61	31.65	31.69	31.73
46 3/4	31.90	31.94	31.98	32.02	32.06	32.10	32.14	32.18	32.22	32.26	32.31	32.35	32.39	32.43	32.47
46 1/2	32.62	32.66	32.70	32.75	32.79	32.83	32.87	32.91	32.96	33.00	33.04	33.08	33.12	33.16	33.21
46 1/4	33.35	33.39	33.43	33.47	33.52	33.56	33.60	33.65	33.69	33.73	33.77	33.82	33.86	33.90	33.94
46	34.07	34.11	34.16	34.20	34.25	34.29	34.33	34.38	34.42	34.46	34.51	34.55	34.60	34.64	34.68
45 3/4	34.79	34.84	34.88	34.93	34.97	35.02	35.06	35.11	35.15	35.20	35.24	35.29	35.33	35.38	35.42

STAFF GAGE HEIGHT

GATE (inches)	1.06	1.07	1.08	1.09	1.10	1.11	1.12	1.13	1.14	1.15	1.16	1.17	1.18	1.19	1.20
57 3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 1/2	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
57 1/4	1.48	1.48	1.48	1.48	1.49	1.49	1.49	1.49	1.49	1.49	1.50	1.50	1.50	1.50	1.50
57	2.22	2.22	2.22	2.22	2.23	2.23	2.23	2.24	2.24	2.24	2.24	2.25	2.25	2.25	2.25
56 3/4	2.96	2.96	2.96	2.97	2.97	2.97	2.98	2.98	2.98	2.99	2.99	3.00	3.00	3.00	3.01
56 1/2	3.69	3.70	3.70	3.71	3.71	3.72	3.72	3.73	3.73	3.74	3.74	3.74	3.75	3.75	3.76
56 1/4	4.43	4.44	4.44	4.45	4.46	4.46	4.47	4.47	4.48	4.48	4.49	4.49	4.50	4.50	4.51
56	5.17	5.18	5.18	5.19	5.20	5.20	5.21	5.22	5.22	5.23	5.24	5.24	5.25	5.26	5.26
55 3/4	5.91	5.92	5.93	5.93	5.94	5.95	5.95	5.96	5.97	5.98	5.98	5.99	6.00	6.01	6.01
55 1/2	6.65	6.66	6.67	6.67	6.68	6.69	6.70	6.71	6.72	6.72	6.73	6.74	6.75	6.76	6.76
55 1/4	7.39	7.40	7.41	7.42	7.43	7.43	7.44	7.45	7.46	7.47	7.48	7.49	7.50	7.51	7.52
55	8.13	8.14	8.15	8.16	8.17	8.18	8.19	8.20	8.21	8.22	8.23	8.24	8.25	8.26	8.27
54 3/4	8.87	8.88	8.89	8.90	8.91	8.92	8.93	8.94	8.95	8.97	8.98	8.99	9.00	9.01	9.02
54 1/2	9.60	9.62	9.63	9.64	9.65	9.66	9.68	9.69	9.70	9.71	9.72	9.74	9.75	9.76	9.77
54 1/4	10.34	10.36	10.37	10.38	10.40	10.41	10.42	10.43	10.45	10.46	10.47	10.48	10.50	10.51	10.52
54	11.08	11.10	11.11	11.12	11.14	11.15	11.17	11.18	11.19	11.21	11.22	11.23	11.25	11.26	11.27
53 3/4	11.82	11.84	11.85	11.87	11.88	11.89	11.91	11.92	11.94	11.95	11.97	11.98	12.00	12.01	12.03
53 1/2	12.56	12.58	12.59	12.61	12.62	12.64	12.65	12.67	12.68	12.70	12.72	12.73	12.75	12.76	12.78
53 1/4	13.30	13.32	13.33	13.35	13.37	13.38	13.40	13.41	13.43	13.45	13.46	13.48	13.50	13.51	13.53
53	14.04	14.06	14.07	14.09	14.11	14.13	14.14	14.16	14.18	14.19	14.21	14.23	14.25	14.26	14.28
52 3/4	14.78	14.80	14.81	14.83	14.85	14.87	14.89	14.91	14.92	14.94	14.96	14.98	15.00	15.01	15.03
52 1/2	15.52	15.54	15.55	15.57	15.59	15.61	15.63	15.65	15.67	15.69	15.71	15.73	15.75	15.77	15.78
52 1/4	16.25	16.27	16.30	16.32	16.34	16.36	16.38	16.40	16.42	16.44	16.46	16.48	16.50	16.52	16.54
52	16.99	17.01	17.04	17.06	17.08	17.10	17.12	17.14	17.16	17.18	17.20	17.22	17.25	17.27	17.29
51 3/4	17.73	17.75	17.78	17.80	17.82	17.84	17.86	17.89	17.91	17.93	17.95	17.97	18.00	18.02	18.04
51 1/2	18.47	18.49	18.52	18.54	18.56	18.59	18.61	18.63	18.65	18.68	18.70	18.72	18.75	18.77	18.79
51 1/4	19.21	19.23	19.26	19.28	19.31	19.33	19.35	19.38	19.40	19.42	19.45	19.47	19.50	19.52	19.54
51	19.95	19.97	20.00	20.02	20.05	20.07	20.10	20.12	20.15	20.17	20.20	20.22	20.25	20.27	20.29
50 3/4	20.69	20.71	20.74	20.76	20.79	20.82	20.84	20.87	20.89	20.92	20.94	20.97	20.99	21.02	21.05
50 1/2	21.43	21.45	21.48	21.51	21.53	21.56	21.59	21.61	21.64	21.67	21.69	21.72	21.74	21.77	21.80
50 1/4	22.17	22.19	22.22	22.25	22.28	22.30	22.33	22.36	22.39	22.41	22.44	22.47	22.49	22.52	22.55
50	22.90	22.93	22.96	22.99	23.02	23.05	23.07	23.10	23.13	23.16	23.19	23.22	23.24	23.27	23.30
49 3/4	23.64	23.67	23.70	23.73	23.76	23.79	23.82	23.85	23.88	23.91	23.94	23.97	23.99	24.02	24.05
49 1/2	24.38	24.41	24.44	24.47	24.50	24.53	24.56	24.59	24.62	24.65	24.68	24.71	24.74	24.77	24.80
49 1/4	25.12	25.15	25.18	25.21	25.25	25.28	25.31	25.34	25.37	25.40	25.43	25.46	25.49	25.52	25.56
49	25.86	25.89	25.92	25.96	25.99	26.02	26.05	26.08	26.12	26.15	26.18	26.21	26.24	26.28	26.31
48 3/4	26.60	26.63	26.66	26.70	26.73	26.76	26.80	26.83	26.86	26.90	26.93	26.96	26.99	27.03	27.06
48 1/2	27.34	27.37	27.41	27.44	27.47	27.51	27.54	27.57	27.61	27.64	27.68	27.71	27.74	27.78	27.81
48 1/4	28.08	28.11	28.15	28.18	28.22	28.25	28.29	28.32	28.35	28.39	28.42	28.46	28.49	28.53	28.56
48	28.81	28.85	28.89	28.92	28.96	28.99	29.03	29.07	29.10	29.14	29.17	29.21	29.24	29.28	29.31
47 3/4	29.55	29.59	29.63	29.66	29.70	29.74	29.77	29.81	29.85	29.88	29.92	29.96	29.99	30.03	30.07
47 1/2	30.29	30.33	30.37	30.41	30.44	30.48	30.52	30.56	30.59	30.63	30.67	30.71	30.74	30.78	30.82
47 1/4	31.03	31.07	31.11	31.15	31.19	31.22	31.26	31.30	31.34	31.38	31.42	31.45	31.49	31.53	31.57
47	31.77	31.81	31.85	31.89	31.93	31.97	32.01	32.05	32.09	32.12	32.16	32.20	32.24	32.28	32.32
46 3/4	32.51	32.55	32.59	32.63	32.67	32.71	32.75	32.79	32.83	32.87	32.91	32.95	32.99	33.03	33.07
46 1/2	33.25	33.29	33.33	33.37	33.41	33.45	33.50	33.54	33.58	33.62	33.66	33.70	33.74	33.78	33.82
46 1/4	33.99	34.03	34.07	34.11	34.16	34.20	34.24	34.28	34.32	34.37	34.41	34.45	34.49	34.53	34.57
46	34.73	34.77	34.81	34.86	34.90	34.94	34.98	35.03	35.07	35.11	35.16	35.20	35.24	35.28	35.33
45 3/4	35.46	35.51	35.55	35.60	35.64	35.68	35.73	35.77	35.82	35.86	35.90	35.95	35.99	36.03	36.08

STAFF GAGE HEIGHT

GATE (Inches)	1.21	1.22	1.23	1.24	1.25	1.26	1.27	1.28	1.29	1.30	1.31	1.32	1.33	1.34	1.35
57 3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 1/2	0.75	0.75	0.75	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.77
57 1/4	1.51	1.51	1.51	1.51	1.51	1.51	1.52	1.52	1.52	1.52	1.52	1.52	1.53	1.53	1.53
57	2.26	2.26	2.26	2.27	2.27	2.27	2.27	2.28	2.28	2.28	2.28	2.29	2.29	2.29	2.30
56 3/4	3.01	3.01	3.02	3.02	3.02	3.03	3.03	3.04	3.04	3.04	3.05	3.05	3.05	3.06	3.06
56 1/2	3.76	3.77	3.77	3.78	3.78	3.79	3.79	3.79	3.80	3.80	3.81	3.81	3.82	3.82	3.83
56 1/4	4.52	4.52	4.53	4.53	4.54	4.54	4.55	4.55	4.56	4.56	4.57	4.57	4.58	4.59	4.59
56	5.27	5.27	5.28	5.29	5.29	5.30	5.31	5.31	5.32	5.32	5.33	5.34	5.34	5.35	5.36
55 3/4	6.02	6.03	6.03	6.04	6.05	6.06	6.06	6.07	6.08	6.09	6.09	6.10	6.11	6.11	6.12
55 1/2	6.77	6.78	6.79	6.80	6.81	6.81	6.82	6.83	6.84	6.85	6.85	6.86	6.87	6.88	6.89
55 1/4	7.53	7.53	7.54	7.55	7.56	7.57	7.58	7.59	7.60	7.61	7.62	7.62	7.63	7.64	7.65
55	8.28	8.29	8.30	8.31	8.32	8.33	8.34	8.35	8.36	8.37	8.38	8.39	8.40	8.41	8.42
54 3/4	9.03	9.04	9.05	9.06	9.07	9.08	9.10	9.11	9.12	9.13	9.14	9.15	9.16	9.17	9.18
54 1/2	9.78	9.79	9.81	9.82	9.83	9.84	9.85	9.86	9.88	9.89	9.90	9.91	9.92	9.93	9.95
54 1/4	10.54	10.55	10.56	10.57	10.59	10.60	10.61	10.62	10.64	10.65	10.66	10.67	10.69	10.70	10.71
54	11.29	11.30	11.32	11.33	11.34	11.36	11.37	11.38	11.40	11.41	11.42	11.44	11.45	11.46	11.48
53 3/4	12.04	12.06	12.07	12.08	12.10	12.11	12.13	12.14	12.16	12.17	12.18	12.20	12.21	12.23	12.24
53 1/2	12.79	12.81	12.82	12.84	12.85	12.87	12.89	12.90	12.92	12.93	12.95	12.96	12.98	12.99	13.01
53 1/4	13.55	13.56	13.58	13.59	13.61	13.63	13.64	13.66	13.68	13.69	13.71	13.72	13.74	13.76	13.77
53	14.30	14.32	14.33	14.35	14.37	14.38	14.40	14.42	14.43	14.45	14.47	14.49	14.50	14.52	14.54
52 3/4	15.05	15.07	15.09	15.10	15.12	15.14	15.16	15.18	15.19	15.21	15.23	15.25	15.27	15.28	15.30
52 1/2	15.80	15.82	15.84	15.86	15.88	15.90	15.92	15.94	15.95	15.97	15.99	16.01	16.03	16.05	16.07
52 1/4	16.56	16.58	16.60	16.62	16.64	16.65	16.67	16.69	16.71	16.73	16.75	16.77	16.79	16.81	16.83
52	17.31	17.33	17.35	17.37	17.39	17.41	17.43	17.45	17.47	17.49	17.52	17.54	17.56	17.58	17.60
51 3/4	18.06	18.08	18.10	18.13	18.15	18.17	18.19	18.21	18.23	18.26	18.28	18.30	18.32	18.34	18.36
51 1/2	18.81	18.84	18.86	18.88	18.90	18.93	18.95	18.97	18.99	19.02	19.04	19.06	19.08	19.11	19.13
51 1/4	19.57	19.59	19.61	19.64	19.66	19.68	19.71	19.73	19.75	19.78	19.80	19.82	19.85	19.87	19.89
51	20.32	20.34	20.37	20.39	20.42	20.44	20.46	20.49	20.51	20.54	20.56	20.59	20.61	20.63	20.66
50 3/4	21.07	21.10	21.12	21.15	21.17	21.20	21.22	21.25	21.27	21.30	21.32	21.35	21.37	21.40	21.42
50 1/2	21.82	21.85	21.88	21.90	21.93	21.95	21.98	22.01	22.03	22.06	22.08	22.11	22.14	22.16	22.19
50 1/4	22.58	22.60	22.63	22.66	22.68	22.71	22.74	22.77	22.79	22.82	22.85	22.87	22.90	22.93	22.95
50	23.33	23.36	23.38	23.41	23.44	23.47	23.50	23.52	23.55	23.58	23.61	23.63	23.66	23.69	23.72
49 3/4	24.08	24.11	24.14	24.17	24.20	24.23	24.25	24.28	24.31	24.34	24.37	24.40	24.43	24.45	24.48
49 1/2	24.83	24.86	24.89	24.92	24.95	24.98	25.01	25.04	25.07	25.10	25.13	25.16	25.19	25.22	25.25
49 1/4	25.59	25.62	25.65	25.68	25.71	25.74	25.77	25.80	25.83	25.86	25.89	25.92	25.95	25.98	26.01
49	26.34	26.37	26.40	26.43	26.47	26.50	26.53	26.56	26.59	26.62	26.65	26.68	26.72	26.75	26.78
48 3/4	27.09	27.12	27.16	27.19	27.22	27.25	27.29	27.32	27.35	27.38	27.41	27.45	27.48	27.51	27.54
48 1/2	27.84	27.88	27.91	27.94	27.98	28.01	28.04	28.08	28.11	28.14	28.18	28.21	28.24	28.28	28.31
48 1/4	28.60	28.63	28.66	28.70	28.73	28.77	28.80	28.84	28.87	28.90	28.94	28.97	29.01	29.04	29.07
48	29.35	29.38	29.42	29.45	29.49	29.52	29.56	29.59	29.63	29.66	29.70	29.73	29.77	29.80	29.84
47 3/4	30.10	30.14	30.17	30.21	30.25	30.28	30.32	30.35	30.39	30.43	30.46	30.50	30.53	30.57	30.60
47 1/2	30.85	30.89	30.93	30.96	31.00	31.04	31.08	31.11	31.15	31.19	31.22	31.26	31.30	31.33	31.37
47 1/4	31.61	31.64	31.68	31.72	31.76	31.80	31.83	31.87	31.91	31.95	31.98	32.02	32.06	32.10	32.13
47	32.36	32.40	32.44	32.48	32.51	32.55	32.59	32.63	32.67	32.71	32.75	32.78	32.82	32.86	32.90
46 3/4	33.11	33.15	33.19	33.23	33.27	33.31	33.35	33.39	33.43	33.47	33.51	33.55	33.59	33.62	33.66
46 1/2	33.86	33.90	33.95	33.99	34.03	34.07	34.11	34.15	34.19	34.23	34.27	34.31	34.35	34.39	34.43
46 1/4	34.62	34.66	34.70	34.74	34.78	34.82	34.87	34.91	34.95	34.99	35.03	35.07	35.11	35.15	35.19
46	35.37	35.41	35.45	35.50	35.54	35.58	35.62	35.67	35.71	35.75	35.79	35.83	35.88	35.92	35.96
45 3/4	36.12	36.17	36.21	36.25	36.29	36.34	36.38	36.42	36.47	36.51	36.55	36.60	36.64	36.68	36.72

STAFF GAGE HEIGHT

GATE (inches)	1.36	1.37	1.38	1.39	1.40	1.41	1.42	1.43	1.44	1.45	1.46	1.47	1.48	1.49	1.50
57 3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 1/2	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.78	0.78	0.78	0.78
57 1/4	1.53	1.53	1.54	1.54	1.54	1.54	1.54	1.54	1.55	1.55	1.55	1.55	1.55	1.55	1.56
57	2.30	2.30	2.30	2.31	2.31	2.31	2.31	2.32	2.32	2.32	2.32	2.33	2.33	2.33	2.33
56 3/4	3.06	3.07	3.07	3.07	3.08	3.08	3.09	3.09	3.09	3.10	3.10	3.10	3.11	3.11	3.11
56 1/2	3.83	3.83	3.84	3.84	3.85	3.85	3.86	3.86	3.87	3.87	3.87	3.88	3.88	3.89	3.89
56 1/4	4.60	4.60	4.61	4.61	4.62	4.62	4.63	4.63	4.64	4.64	4.65	4.65	4.66	4.66	4.67
56	5.36	5.37	5.37	5.38	5.39	5.39	5.40	5.41	5.41	5.42	5.42	5.43	5.44	5.44	5.45
55 3/4	6.13	6.13	6.14	6.15	6.16	6.16	6.17	6.18	6.18	6.19	6.20	6.21	6.21	6.22	6.23
55 1/2	6.89	6.90	6.91	6.92	6.93	6.93	6.94	6.95	6.96	6.97	6.97	6.98	6.99	7.00	7.00
55 1/4	7.66	7.67	7.68	7.69	7.70	7.70	7.71	7.72	7.73	7.74	7.75	7.76	7.77	7.77	7.78
55	8.43	8.44	8.45	8.46	8.46	8.47	8.48	8.49	8.50	8.51	8.52	8.53	8.54	8.55	8.56
54 3/4	9.19	9.20	9.21	9.22	9.23	9.24	9.26	9.27	9.28	9.29	9.30	9.31	9.32	9.33	9.34
54 1/2	9.96	9.97	9.98	9.99	10.00	10.02	10.03	10.04	10.05	10.06	10.07	10.08	10.10	10.11	10.12
54 1/4	10.72	10.74	10.75	10.76	10.77	10.79	10.80	10.81	10.82	10.84	10.85	10.86	10.87	10.88	10.90
54	11.49	11.50	11.52	11.53	11.54	11.56	11.57	11.58	11.60	11.61	11.62	11.64	11.65	11.66	11.67
53 3/4	12.26	12.27	12.28	12.30	12.31	12.33	12.34	12.35	12.37	12.38	12.40	12.41	12.43	12.44	12.45
53 1/2	13.02	13.04	13.05	13.07	13.08	13.10	13.11	13.13	13.14	13.16	13.17	13.19	13.20	13.22	13.23
53 1/4	13.79	13.80	13.82	13.84	13.85	13.87	13.88	13.90	13.92	13.93	13.95	13.96	13.98	13.99	14.01
53	14.55	14.57	14.59	14.60	14.62	14.64	14.65	14.67	14.69	14.70	14.72	14.74	14.75	14.77	14.79
52 3/4	15.32	15.34	15.36	15.37	15.39	15.41	15.43	15.44	15.46	15.48	15.50	15.51	15.53	15.55	15.57
52 1/2	16.09	16.10	16.12	16.14	16.16	16.18	16.20	16.22	16.23	16.25	16.27	16.29	16.31	16.33	16.34
52 1/4	16.85	16.87	16.89	16.91	16.93	16.95	16.97	16.99	17.01	17.03	17.05	17.07	17.08	17.10	17.12
52	17.62	17.64	17.66	17.68	17.70	17.72	17.74	17.76	17.78	17.80	17.82	17.84	17.86	17.88	17.90
51 3/4	18.38	18.40	18.43	18.45	18.47	18.49	18.51	18.53	18.55	18.57	18.60	18.62	18.64	18.66	18.68
51 1/2	19.15	19.17	19.19	19.22	19.24	19.26	19.28	19.30	19.33	19.35	19.37	19.39	19.41	19.44	19.46
51 1/4	19.92	19.94	19.96	19.98	20.01	20.03	20.05	20.08	20.10	20.12	20.15	20.17	20.19	20.21	20.24
51	20.68	20.71	20.73	20.75	20.78	20.80	20.82	20.85	20.87	20.90	20.92	20.94	20.97	20.99	21.01
50 3/4	21.45	21.47	21.50	21.52	21.55	21.57	21.60	21.62	21.65	21.67	21.69	21.72	21.74	21.77	21.79
50 1/2	22.21	22.24	22.26	22.29	22.32	22.34	22.37	22.39	22.42	22.44	22.47	22.50	22.52	22.55	22.57
50 1/4	22.98	23.01	23.03	23.06	23.09	23.11	23.14	23.17	23.19	23.22	23.24	23.27	23.30	23.32	23.35
50	23.75	23.77	23.80	23.83	23.86	23.88	23.91	23.94	23.96	23.99	24.02	24.05	24.07	24.10	24.13
49 3/4	24.51	24.54	24.57	24.60	24.62	24.65	24.68	24.71	24.74	24.77	24.79	24.82	24.85	24.88	24.91
49 1/2	25.28	25.31	25.34	25.37	25.39	25.42	25.45	25.48	25.51	25.54	25.57	25.60	25.63	25.66	25.68
49 1/4	26.04	26.07	26.10	26.13	26.16	26.19	26.22	26.25	26.28	26.31	26.34	26.37	26.40	26.43	26.46
49	26.81	26.84	26.87	26.90	26.93	26.96	27.00	27.03	27.06	27.09	27.12	27.15	27.18	27.21	27.24
48 3/4	27.58	27.61	27.64	27.67	27.70	27.73	27.77	27.80	27.83	27.86	27.89	27.92	27.96	27.99	28.02
48 1/2	28.34	28.37	28.41	28.44	28.47	28.51	28.54	28.57	28.60	28.64	28.67	28.70	28.73	28.77	28.80
48 1/4	29.11	29.14	29.17	29.21	29.24	29.28	29.31	29.34	29.38	29.41	29.44	29.48	29.51	29.54	29.58
48	29.87	29.91	29.94	29.98	30.01	30.05	30.08	30.11	30.15	30.18	30.22	30.25	30.29	30.32	30.35
47 3/4	30.64	30.67	30.71	30.75	30.78	30.82	30.85	30.89	30.92	30.96	30.99	31.03	31.06	31.10	31.13
47 1/2	31.41	31.44	31.48	31.51	31.55	31.59	31.62	31.66	31.70	31.73	31.77	31.80	31.84	31.88	31.91
47 1/4	32.17	32.21	32.25	32.28	32.32	32.36	32.39	32.43	32.47	32.51	32.54	32.58	32.62	32.65	32.69
47	32.94	32.98	33.01	33.05	33.09	33.13	33.17	33.20	33.24	33.28	33.32	33.35	33.39	33.43	33.47
46 3/4	33.70	33.74	33.78	33.82	33.86	33.90	33.94	33.98	34.01	34.05	34.09	34.13	34.17	34.21	34.25
46 1/2	34.47	34.51	34.55	34.59	34.63	34.67	34.71	34.75	34.79	34.83	34.87	34.91	34.95	34.99	35.02
46 1/4	35.24	35.28	35.32	35.36	35.40	35.44	35.48	35.52	35.56	35.60	35.64	35.68	35.72	35.76	35.80
46	36.00	36.04	36.08	36.13	36.17	36.21	36.25	36.29	36.33	36.38	36.42	36.46	36.50	36.54	36.58
45 3/4	36.77	36.81	36.85	36.89	36.94	36.98	37.02	37.06	37.11	37.15	37.19	37.23	37.28	37.32	37.36

STAFF GAGE HEIGHT

GATE (inches)	1.51	1.52	1.53	1.54	1.55	1.56	1.57	1.58	1.59	1.60	1.61	1.62	1.63	1.64	1.65
57 3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 1/2	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
57 1/4	1.56	1.56	1.56	1.56	1.57	1.57	1.57	1.57	1.57	1.57	1.58	1.58	1.58	1.58	1.58
57	2.34	2.34	2.34	2.35	2.35	2.35	2.35	2.36	2.36	2.36	2.36	2.37	2.37	2.37	2.37
56 3/4	3.12	3.12	3.12	3.13	3.13	3.13	3.14	3.14	3.14	3.15	3.15	3.15	3.16	3.16	3.17
56 1/2	3.90	3.90	3.90	3.91	3.91	3.92	3.92	3.93	3.93	3.94	3.94	3.94	3.95	3.95	3.96
56 1/4	4.68	4.68	4.69	4.69	4.70	4.70	4.71	4.71	4.72	4.72	4.73	4.73	4.74	4.74	4.75
56	5.45	5.46	5.47	5.47	5.48	5.48	5.49	5.50	5.50	5.51	5.52	5.52	5.53	5.53	5.54
55 3/4	6.23	6.24	6.25	6.25	6.26	6.27	6.28	6.28	6.29	6.30	6.30	6.31	6.32	6.32	6.33
55 1/2	7.01	7.02	7.03	7.04	7.04	7.05	7.06	7.07	7.08	7.08	7.09	7.10	7.11	7.11	7.12
55 1/4	7.79	7.80	7.81	7.82	7.83	7.84	7.84	7.85	7.86	7.87	7.88	7.89	7.90	7.90	7.91
55	8.57	8.58	8.59	8.60	8.61	8.62	8.63	8.64	8.65	8.66	8.67	8.68	8.69	8.70	8.70
54 3/4	9.35	9.36	9.37	9.38	9.39	9.40	9.41	9.42	9.43	9.44	9.45	9.46	9.48	9.49	9.50
54 1/2	10.13	10.14	10.15	10.16	10.17	10.19	10.20	10.21	10.22	10.23	10.24	10.25	10.26	10.28	10.29
54 1/4	10.91	10.92	10.93	10.95	10.96	10.97	10.98	10.99	11.01	11.02	11.03	11.04	11.05	11.07	11.08
54	11.69	11.70	11.71	11.73	11.74	11.75	11.77	11.78	11.79	11.81	11.82	11.83	11.84	11.86	11.87
53 3/4	12.47	12.48	12.50	12.51	12.52	12.54	12.55	12.56	12.58	12.59	12.61	12.62	12.63	12.65	12.66
53 1/2	13.25	13.26	13.28	13.29	13.31	13.32	13.34	13.35	13.36	13.38	13.39	13.41	13.42	13.44	13.45
53 1/4	14.03	14.04	14.06	14.07	14.09	14.10	14.12	14.14	14.15	14.17	14.18	14.20	14.21	14.23	14.24
53	14.80	14.82	14.84	14.85	14.87	14.89	14.90	14.92	14.94	14.95	14.97	14.99	15.00	15.02	15.04
52 3/4	15.58	15.60	15.62	15.64	15.65	15.67	15.69	15.71	15.72	15.74	15.76	15.77	15.79	15.81	15.83
52 1/2	16.36	16.38	16.40	16.42	16.44	16.45	16.47	16.49	16.51	16.53	16.55	16.56	16.58	16.60	16.62
52 1/4	17.14	17.16	17.18	17.20	17.22	17.24	17.26	17.28	17.30	17.31	17.33	17.35	17.37	17.39	17.41
52	17.92	17.94	17.96	17.98	18.00	18.02	18.04	18.06	18.08	18.10	18.12	18.14	18.16	18.18	18.20
51 3/4	18.70	18.72	18.74	18.76	18.78	18.81	18.83	18.85	18.87	18.89	18.91	18.93	18.95	18.97	18.99
51 1/2	19.48	19.50	19.52	19.55	19.57	19.59	19.61	19.63	19.65	19.68	19.70	19.72	19.74	19.76	19.78
51 1/4	20.26	20.28	20.30	20.33	20.35	20.37	20.39	20.42	20.44	20.46	20.48	20.51	20.53	20.55	20.57
51	21.04	21.06	21.09	21.11	21.13	21.16	21.18	21.20	21.23	21.25	21.27	21.30	21.32	21.34	21.37
50 3/4	21.82	21.84	21.87	21.89	21.92	21.94	21.96	21.99	22.01	22.04	22.06	22.08	22.11	22.13	22.16
50 1/2	22.60	22.62	22.65	22.67	22.70	22.72	22.75	22.77	22.80	22.82	22.85	22.87	22.90	22.92	22.95
50 1/4	23.38	23.40	23.43	23.45	23.48	23.51	23.53	23.56	23.58	23.61	23.64	23.66	23.69	23.71	23.74
50	24.16	24.18	24.21	24.24	24.26	24.29	24.32	24.34	24.37	24.40	24.42	24.45	24.48	24.50	24.53
49 3/4	24.93	24.96	24.99	25.02	25.05	25.07	25.10	25.13	25.16	25.18	25.21	25.24	25.27	25.30	25.32
49 1/2	25.71	25.74	25.77	25.80	25.83	25.86	25.89	25.91	25.94	25.97	26.00	26.03	26.06	26.09	26.11
49 1/4	26.49	26.52	26.55	26.58	26.61	26.64	26.67	26.70	26.73	26.76	26.79	26.82	26.85	26.88	26.91
49	27.27	27.30	27.33	27.36	27.39	27.42	27.45	27.49	27.52	27.55	27.58	27.61	27.64	27.67	27.70
48 3/4	28.05	28.08	28.11	28.15	28.18	28.21	28.24	28.27	28.30	28.33	28.36	28.39	28.43	28.46	28.49
48 1/2	28.83	28.86	28.89	28.93	28.96	28.99	29.02	29.06	29.09	29.12	29.15	29.18	29.22	29.25	29.28
48 1/4	29.61	29.64	29.68	29.71	29.74	29.77	29.81	29.84	29.87	29.91	29.94	29.97	30.01	30.04	30.07
48	30.39	30.42	30.46	30.49	30.52	30.56	30.59	30.63	30.66	30.69	30.73	30.76	30.79	30.83	30.86
47 3/4	31.17	31.20	31.24	31.27	31.31	31.34	31.38	31.41	31.45	31.48	31.52	31.55	31.58	31.62	31.65
47 1/2	31.95	31.98	32.02	32.05	32.09	32.13	32.16	32.20	32.23	32.27	32.30	32.34	32.37	32.41	32.44
47 1/4	32.73	32.76	32.80	32.84	32.87	32.91	32.95	32.98	33.02	33.05	33.09	33.13	33.16	33.20	33.24
47	33.51	33.54	33.58	33.62	33.66	33.69	33.73	33.77	33.80	33.84	33.88	33.92	33.95	33.99	34.03
46 3/4	34.28	34.32	34.36	34.40	34.44	34.48	34.51	34.55	34.59	34.63	34.67	34.70	34.74	34.78	34.82
46 1/2	35.06	35.10	35.14	35.18	35.22	35.26	35.30	35.34	35.38	35.42	35.45	35.49	35.53	35.57	35.61
46 1/4	35.84	35.88	35.92	35.96	36.00	36.04	36.08	36.12	36.16	36.20	36.24	36.28	36.32	36.36	36.40
46	36.62	36.66	36.70	36.75	36.79	36.83	36.87	36.91	36.95	36.99	37.03	37.07	37.11	37.15	37.19
45 3/4	37.40	37.44	37.49	37.53	37.57	37.61	37.65	37.69	37.74	37.78	37.82	37.86	37.90	37.94	37.98

STAFF GAGE HEIGHT

GATE (inches)	1.66	1.67	1.68	1.69	1.70	1.71	1.72	1.73	1.74	1.75	1.76	1.77	1.78	1.79	1.80
57 3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 1/2	0.79	0.79	0.79	0.79	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
57 1/4	1.58	1.59	1.59	1.59	1.59	1.59	1.59	1.60	1.60	1.60	1.60	1.60	1.60	1.61	1.61
57	2.38	2.38	2.38	2.38	2.39	2.39	2.39	2.39	2.40	2.40	2.40	2.40	2.41	2.41	2.41
56 3/4	3.17	3.17	3.18	3.18	3.18	3.19	3.19	3.19	3.20	3.20	3.20	3.21	3.21	3.21	3.22
56 1/2	3.96	3.97	3.97	3.97	3.98	3.98	3.99	3.99	4.00	4.00	4.00	4.01	4.01	4.02	4.02
56 1/4	4.75	4.76	4.76	4.77	4.77	4.78	4.78	4.79	4.79	4.80	4.80	4.81	4.81	4.82	4.82
56	5.55	5.55	5.56	5.56	5.57	5.58	5.58	5.59	5.59	5.60	5.61	5.61	5.62	5.62	5.63
55 3/4	6.34	6.34	6.35	6.36	6.36	6.37	6.38	6.39	6.39	6.40	6.41	6.41	6.42	6.43	6.43
55 1/2	7.13	7.14	7.15	7.15	7.16	7.17	7.18	7.18	7.19	7.20	7.21	7.21	7.22	7.23	7.24
55 1/4	7.92	7.93	7.94	7.95	7.96	7.96	7.97	7.98	7.99	8.00	8.01	8.02	8.02	8.03	8.04
55	8.71	8.72	8.73	8.74	8.75	8.76	8.77	8.78	8.79	8.80	8.81	8.82	8.83	8.84	8.85
54 3/4	9.51	9.52	9.53	9.54	9.55	9.56	9.57	9.58	9.59	9.60	9.61	9.62	9.63	9.64	9.65
54 1/2	10.30	10.31	10.32	10.33	10.34	10.35	10.37	10.38	10.39	10.40	10.41	10.42	10.43	10.44	10.45
54 1/4	11.09	11.10	11.11	11.13	11.14	11.15	11.16	11.17	11.19	11.20	11.21	11.22	11.23	11.25	11.26
54	11.88	11.90	11.91	11.92	11.93	11.95	11.96	11.97	11.99	12.00	12.01	12.02	12.04	12.05	12.06
53 3/4	12.68	12.69	12.70	12.72	12.73	12.74	12.76	12.77	12.78	12.80	12.81	12.83	12.84	12.85	12.87
53 1/2	13.47	13.48	13.50	13.51	13.53	13.54	13.55	13.57	13.58	13.60	13.61	13.63	13.64	13.66	13.67
53 1/4	14.26	14.27	14.29	14.31	14.32	14.34	14.35	14.37	14.38	14.40	14.41	14.43	14.44	14.46	14.47
53	15.05	15.07	15.08	15.10	15.12	15.13	15.15	15.17	15.18	15.20	15.21	15.23	15.25	15.26	15.28
52 3/4	15.84	15.86	15.88	15.90	15.91	15.93	15.95	15.96	15.98	16.00	16.01	16.03	16.05	16.07	16.08
52 1/2	16.64	16.65	16.67	16.69	16.71	16.73	16.74	16.76	16.78	16.80	16.82	16.83	16.85	16.87	16.89
52 1/4	17.43	17.45	17.47	17.48	17.50	17.52	17.54	17.56	17.58	17.60	17.62	17.63	17.65	17.67	17.69
52	18.22	18.24	18.26	18.28	18.30	18.32	18.34	18.36	18.38	18.40	18.42	18.44	18.46	18.48	18.49
51 3/4	19.01	19.03	19.05	19.07	19.09	19.12	19.14	19.16	19.18	19.20	19.22	19.24	19.26	19.28	19.30
51 1/2	19.80	19.83	19.85	19.87	19.89	19.91	19.93	19.95	19.98	20.00	20.02	20.04	20.06	20.08	20.10
51 1/4	20.60	20.62	20.64	20.66	20.69	20.71	20.73	20.75	20.77	20.80	20.82	20.84	20.86	20.89	20.91
51	21.39	21.41	21.44	21.46	21.48	21.50	21.53	21.55	21.57	21.60	21.62	21.64	21.67	21.69	21.71
50 3/4	22.18	22.21	22.23	22.25	22.28	22.30	22.33	22.35	22.37	22.40	22.42	22.44	22.47	22.49	22.52
50 1/2	22.97	23.00	23.02	23.05	23.07	23.10	23.12	23.15	23.17	23.20	23.22	23.25	23.27	23.30	23.32
50 1/4	23.77	23.79	23.82	23.84	23.87	23.89	23.92	23.95	23.97	24.00	24.02	24.05	24.07	24.10	24.12
50	24.56	24.58	24.61	24.64	24.66	24.69	24.72	24.74	24.77	24.80	24.82	24.85	24.88	24.90	24.93
49 3/4	25.35	25.38	25.41	25.43	25.46	25.49	25.51	25.54	25.57	25.60	25.62	25.65	25.68	25.71	25.73
49 1/2	26.14	26.17	26.20	26.23	26.26	26.28	26.31	26.34	26.37	26.40	26.42	26.45	26.48	26.51	26.54
49 1/4	26.93	26.96	26.99	27.02	27.05	27.08	27.11	27.14	27.17	27.20	27.23	27.25	27.28	27.31	27.34
49	27.73	27.76	27.79	27.82	27.85	27.88	27.91	27.94	27.97	28.00	28.03	28.06	28.09	28.11	28.14
48 3/4	28.52	28.55	28.58	28.61	28.64	28.67	28.70	28.73	28.77	28.80	28.83	28.86	28.89	28.92	28.95
48 1/2	29.31	29.34	29.37	29.41	29.44	29.47	29.50	29.53	29.56	29.60	29.63	29.66	29.69	29.72	29.75
48 1/4	30.10	30.14	30.17	30.20	30.23	30.27	30.30	30.33	30.36	30.40	30.43	30.46	30.49	30.52	30.56
48	30.90	30.93	30.96	31.00	31.03	31.06	31.10	31.13	31.16	31.20	31.23	31.26	31.29	31.33	31.36
47 3/4	31.69	31.72	31.76	31.79	31.82	31.86	31.89	31.93	31.96	32.00	32.03	32.06	32.10	32.13	32.17
47 1/2	32.48	32.52	32.55	32.59	32.62	32.66	32.69	32.73	32.76	32.80	32.83	32.87	32.90	32.93	32.97
47 1/4	33.27	33.31	33.34	33.38	33.42	33.45	33.49	33.52	33.56	33.60	33.63	33.67	33.70	33.74	33.77
47	34.06	34.10	34.14	34.17	34.21	34.25	34.29	34.32	34.36	34.40	34.43	34.47	34.50	34.54	34.58
46 3/4	34.86	34.89	34.93	34.97	35.01	35.04	35.08	35.12	35.16	35.20	35.23	35.27	35.31	35.34	35.38
46 1/2	35.65	35.69	35.73	35.76	35.80	35.84	35.88	35.92	35.96	35.99	36.03	36.07	36.11	36.15	36.19
46 1/4	36.44	36.48	36.52	36.56	36.60	36.64	36.68	36.72	36.76	36.79	36.83	36.87	36.91	36.95	36.99
46	37.23	37.27	37.31	37.35	37.39	37.43	37.47	37.51	37.55	37.59	37.63	37.67	37.71	37.75	37.79
45 3/4	38.03	38.07	38.11	38.15	38.19	38.23	38.27	38.31	38.35	38.39	38.44	38.48	38.52	38.56	38.60

STAFF GAGE HEIGHT

GATE (inches)	1.81	1.82	1.83	1.84	1.85	1.86	1.87	1.88	1.89	1.90	1.91	1.92	1.93	1.94	1.95
57 3/4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
57 1/2	0.80	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.82	0.82	0.82
57 1/4	1.61	1.61	1.61	1.62	1.62	1.62	1.62	1.62	1.62	1.63	1.63	1.63	1.63	1.63	1.63
57	2.41	2.42	2.42	2.42	2.43	2.43	2.43	2.43	2.44	2.44	2.44	2.44	2.45	2.45	2.45
56 3/4	3.22	3.22	3.23	3.23	3.23	3.24	3.24	3.24	3.25	3.25	3.25	3.26	3.26	3.26	3.27
56 1/2	4.02	4.03	4.03	4.04	4.04	4.05	4.05	4.05	4.06	4.06	4.07	4.07	4.08	4.08	4.08
56 1/4	4.83	4.83	4.84	4.85	4.85	4.86	4.86	4.87	4.87	4.88	4.88	4.89	4.89	4.90	4.90
56	5.63	5.64	5.65	5.65	5.66	5.66	5.67	5.68	5.68	5.69	5.69	5.70	5.71	5.71	5.72
55 3/4	6.44	6.45	6.45	6.46	6.47	6.47	6.48	6.49	6.49	6.50	6.51	6.51	6.52	6.53	6.53
55 1/2	7.24	7.25	7.26	7.27	7.28	7.28	7.29	7.30	7.31	7.31	7.32	7.33	7.34	7.34	7.35
55 1/4	8.05	8.06	8.07	8.08	8.08	8.09	8.10	8.11	8.12	8.13	8.13	8.14	8.15	8.16	8.17
55	8.85	8.86	8.87	8.88	8.89	8.90	8.91	8.92	8.93	8.94	8.95	8.96	8.97	8.97	8.98
54 3/4	9.66	9.67	9.68	9.69	9.70	9.71	9.72	9.73	9.74	9.75	9.76	9.77	9.78	9.79	9.80
54 1/2	10.46	10.48	10.49	10.50	10.51	10.52	10.53	10.54	10.55	10.56	10.57	10.58	10.60	10.61	10.62
54 1/4	11.27	11.28	11.29	11.31	11.32	11.33	11.34	11.35	11.36	11.38	11.39	11.40	11.41	11.42	11.43
54	12.07	12.09	12.10	12.11	12.13	12.14	12.15	12.16	12.18	12.19	12.20	12.21	12.23	12.24	12.25
53 3/4	12.88	12.89	12.91	12.92	12.93	12.95	12.96	12.97	12.99	13.00	13.01	13.03	13.04	13.05	13.07
53 1/2	13.68	13.70	13.71	13.73	13.74	13.76	13.77	13.78	13.80	13.81	13.83	13.84	13.86	13.87	13.88
53 1/4	14.49	14.50	14.52	14.54	14.55	14.57	14.58	14.60	14.61	14.63	14.64	14.66	14.67	14.69	14.70
53	15.29	15.31	15.33	15.34	15.36	15.37	15.39	15.41	15.42	15.44	15.45	15.47	15.49	15.50	15.52
52 3/4	16.10	16.12	16.13	16.15	16.17	16.18	16.20	16.22	16.23	16.25	16.27	16.28	16.30	16.32	16.33
52 1/2	16.90	16.92	16.94	16.96	16.98	16.99	17.01	17.03	17.05	17.06	17.08	17.10	17.12	17.13	17.15
52 1/4	17.71	17.73	17.75	17.77	17.78	17.80	17.82	17.84	17.86	17.88	17.89	17.91	17.93	17.95	17.97
52	18.51	18.53	18.55	18.57	18.59	18.61	18.63	18.65	18.67	18.69	18.71	18.73	18.75	18.77	18.78
51 3/4	19.32	19.34	19.36	19.38	19.40	19.42	19.44	19.46	19.48	19.50	19.52	19.54	19.56	19.58	19.60
51 1/2	20.12	20.15	20.17	20.19	20.21	20.23	20.25	20.27	20.29	20.31	20.33	20.36	20.38	20.40	20.42
51 1/4	20.93	20.95	20.97	21.00	21.02	21.04	21.06	21.08	21.10	21.13	21.15	21.17	21.19	21.21	21.23
51	21.73	21.76	21.78	21.80	21.83	21.85	21.87	21.89	21.92	21.94	21.96	21.98	22.01	22.03	22.05
50 3/4	22.54	22.56	22.59	22.61	22.63	22.66	22.68	22.70	22.73	22.75	22.77	22.80	22.82	22.85	22.87
50 1/2	23.34	23.37	23.39	23.42	23.44	23.47	23.49	23.52	23.54	23.56	23.59	23.61	23.64	23.66	23.69
50 1/4	24.15	24.17	24.20	24.23	24.25	24.28	24.30	24.33	24.35	24.38	24.40	24.43	24.45	24.48	24.50
50	24.95	24.98	25.01	25.03	25.06	25.08	25.11	25.14	25.16	25.19	25.22	25.24	25.27	25.29	25.32
49 3/4	25.76	25.79	25.81	25.84	25.87	25.89	25.92	25.95	25.97	26.00	26.03	26.06	26.08	26.11	26.14
49 1/2	26.56	26.59	26.62	26.65	26.68	26.70	26.73	26.76	26.79	26.81	26.84	26.87	26.90	26.92	26.95
49 1/4	27.37	27.40	27.43	27.46	27.48	27.51	27.54	27.57	27.60	27.63	27.66	27.68	27.71	27.74	27.77
49	28.17	28.20	28.23	28.26	28.29	28.32	28.35	28.38	28.41	28.44	28.47	28.50	28.53	28.56	28.59
48 3/4	28.98	29.01	29.04	29.07	29.10	29.13	29.16	29.19	29.22	29.25	29.28	29.31	29.34	29.37	29.40
48 1/2	29.78	29.82	29.85	29.88	29.91	29.94	29.97	30.00	30.03	30.06	30.10	30.13	30.16	30.19	30.22
48 1/4	30.59	30.62	30.65	30.69	30.72	30.75	30.78	30.81	30.85	30.88	30.91	30.94	30.97	31.00	31.04
48	31.39	31.43	31.46	31.49	31.53	31.56	31.59	31.62	31.66	31.69	31.72	31.75	31.79	31.82	31.85
47 3/4	32.20	32.23	32.27	32.30	32.33	32.37	32.40	32.43	32.47	32.50	32.54	32.57	32.60	32.64	32.67
47 1/2	33.00	33.04	33.07	33.11	33.14	33.18	33.21	33.25	33.28	33.31	33.35	33.38	33.42	33.45	33.49
47 1/4	33.81	33.84	33.88	33.92	33.95	33.99	34.02	34.06	34.09	34.13	34.16	34.20	34.23	34.27	34.30
47	34.61	34.65	34.69	34.72	34.76	34.80	34.83	34.87	34.90	34.94	34.98	35.01	35.05	35.08	35.12
46 3/4	35.42	35.46	35.49	35.53	35.57	35.60	35.64	35.68	35.72	35.75	35.79	35.83	35.86	35.90	35.94
46 1/2	36.22	36.26	36.30	36.34	36.38	36.41	36.45	36.49	36.53	36.56	36.60	36.64	36.68	36.72	36.75
46 1/4	37.03	37.07	37.11	37.15	37.18	37.22	37.26	37.30	37.34	37.38	37.42	37.45	37.49	37.53	37.57
46	37.83	37.87	37.91	37.95	37.99	38.03	38.07	38.11	38.15	38.19	38.23	38.27	38.31	38.35	38.39
45 3/4	38.64	38.68	38.72	38.76	38.80	38.84	38.88	38.92	38.96	39.00	39.04	39.08	39.12	39.16	39.20

STAFF GAGE HEIGHT

GATE (inches)	1.96	1.97	1.98	1.99	2.00
57 3/4	0.00	0.00	0.00	0.00	0.00
57 1/2	0.82	0.82	0.82	0.82	0.82
57 1/4	1.64	1.64	1.64	1.64	1.64
57	2.45	2.46	2.46	2.46	2.46
56 3/4	3.27	3.27	3.28	3.28	3.28
56 1/2	4.09	4.09	4.10	4.10	4.10
56 1/4	4.91	4.91	4.92	4.92	4.93
56	5.72	5.73	5.73	5.74	5.75
55 3/4	6.54	6.55	6.55	6.56	6.57
55 1/2	7.36	7.37	7.37	7.38	7.39
55 1/4	8.18	8.18	8.19	8.20	8.21
55	8.99	9.00	9.01	9.02	9.03
54 3/4	9.81	9.82	9.83	9.84	9.85
54 1/2	10.63	10.64	10.65	10.66	10.67
54 1/4	11.45	11.46	11.47	11.48	11.49
54	12.26	12.28	12.29	12.30	12.31
53 3/4	13.08	13.09	13.11	13.12	13.13
53 1/2	13.90	13.91	13.93	13.94	13.96
53 1/4	14.72	14.73	14.75	14.76	14.78
53	15.53	15.55	15.57	15.58	15.60
52 3/4	16.35	16.37	16.38	16.40	16.42
52 1/2	17.17	17.19	17.20	17.22	17.24
52 1/4	17.99	18.00	18.02	18.04	18.06
52	18.80	18.82	18.84	18.86	18.88
51 3/4	19.62	19.64	19.66	19.68	19.70
51 1/2	20.44	20.46	20.48	20.50	20.52
51 1/4	21.26	21.28	21.30	21.32	21.34
51	22.07	22.10	22.12	22.14	22.16
50 3/4	22.89	22.92	22.94	22.96	22.98
50 1/2	23.71	23.73	23.76	23.78	23.81
50 1/4	24.53	24.55	24.58	24.60	24.63
50	25.34	25.37	25.40	25.42	25.45
49 3/4	26.16	26.19	26.22	26.24	26.27
49 1/2	26.98	27.01	27.03	27.06	27.09
49 1/4	27.80	27.83	27.85	27.88	27.91
49	28.61	28.64	28.67	28.70	28.73
48 3/4	29.43	29.46	29.49	29.52	29.55
48 1/2	30.25	30.28	30.31	30.34	30.37
48 1/4	31.07	31.10	31.13	31.16	31.19
48	31.88	31.92	31.95	31.98	32.01
47 3/4	32.70	32.74	32.77	32.80	32.84
47 1/2	33.52	33.55	33.59	33.62	33.66
47 1/4	34.34	34.37	34.41	34.44	34.48
47	35.16	35.19	35.23	35.26	35.30
46 3/4	35.97	36.01	36.05	36.08	36.12
46 1/2	36.79	36.83	36.87	36.90	36.94
46 1/4	37.61	37.65	37.68	37.72	37.76
46	38.43	38.46	38.50	38.54	38.58
45 3/4	39.24	39.28	39.32	39.36	39.40

STATE OF COLORADO

WATER DIVISION 2
OFFICE OF THE STATE ENGINEER310 East Abriendo, Suite B
Pueblo, CO 81004
Phone (719) 542-3368
FAX (719) 544-0800

October 9, 1997

Roy Romer
GovernorJames S. Lochhead
Executive DirectorHal D. Simpson
State EngineerSteven J. Witte, P.E.
Division EngineerDavid L. Pope
Kansas Chief Engineer
Kansas Board of Agriculture
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283

RE: Notice of Delivery to the Offset Account in John Martin Reservoir

Dear Mr. Pope:

The purpose of this letter is to provide the notice required by paragraph 3 of the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution") of a delivery of water to the Offset Account. This letter provides the monthly reporting of deliveries to the Offset Account from the Lower Arkansas Water Management Association (LAWMA) shares of the Highland Irrigation Company using the procedures described in my letter of August 25, 1997 which provided the initial notice of the delivery of water from this replacement source. This is the first of the monthly reports to be provided and covers the period from the initiation of deliveries on July 14, 1997 through the end of September, 1997. Having now established this reporting procedure, reports will be provided on a monthly basis for each month when deliveries are made.

Enclosure 1 contains the accounting spreadsheets for the months of July, August, and September. The format of these spreadsheets is provided and described in my letter of August 25, 1997. Enclosure 2 contains the accounting sheets for the Offset Account for July, August, and September which reflect the delivery of the quantities reported in Enclosure 1 to the appropriate subaccounts of the Offset Account.

The following table summarizes the delivery of water into the Offset Account during the reporting period. As stated in my August 25, 1997 letter, the return flow water is being stored in the Offset Account for delivery to conservation storage in John Martin Reservoir during the months of December, 1997 and January, 1998.

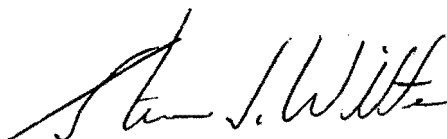
MONTH	C. U. Water (ac-ft)	Return Flow (ac-ft)
July	132.23	4.82
August	1341.88	70.39
September	378.22	17.80

Please contact me if you have any questions or require additional information.

David L. Pope
October 9, 1997

Page 2

Sincerely,

A handwritten signature in black ink, appearing to read "Steven J. Witte". The signature is fluid and cursive, with a large initial "S" and "W".

Steven J. Witte
Division Engineer
Colorado Division of Water Resources

2 Enclosures

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Bill Howland

Accounting Spreadsheet
Deliveries from Highland Canal to Offset Account
 Month July 1997

JULY, 1997	Diversion	Wasteway	Transit	Arrival	Arrival	Amount to	Amount to	
Day	Mode	at 5 ft	#3 Flow	Loss to	Rate at	CU Water	Return	
	(1 or 2)	Fume	Rate	JMR	JMR	Account	Flow Acct	
		(cfs)	(cfs)	(%)	(cfs)	(ac-ft)	(ac-ft)	
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15	2	8.7	6.03	8.39	5.52	6.84	4.75	0
16	2	4.2	3.78	8.529	3.46	6.86	4.76	0
17	2	2.7	2.43	8.529	2.22	4.4	3.08	0
18	2	1.8	1.44	8.529	1.32	2.62	1.81	0
19	2	0.68	0.61	8.529	0.55	1.09	0.78	0
20	2	0.066	0.077	8.529	0.07	0.14	0.1	0
21	2	0.088	0.077	8.529	0.07	0.14	0.1	0
22	2	27.6	24.84	8.744	22.67	44.98	30.15	1.52
23	2	13.34	12.01	8.2636	11.02	21.86	14.88	0.74
24	2	5.47	4.92	8.858	4.5	8.93	5.99	0.3
25	2	3.11	2.8	9.127	2.54	6.03	3.37	0.17
26	2	0.41	0.37	9.127	0.34	0.67	0.45	0.02
27	2	0	0	0	0	0	0	0
28	2	0	0	0	0	0	0	0
29	2	0	0	0	0	0	0	0
30	2	13.1	11.8	7.395	10.9	21.68	14.5	0.79
31	2	41.3	37.2	4.9252	35.35	70.11	47.77	1.28

Enclosure 1

**Accounting Spreadsheet
Deliveries from Highland Canal to Offset Account
Month: August 1997**

Aug., 1997	Diversion	Wasteway	Transit	Arrival	Arrival	Amount to	Amount to	
Day	Mode	at 6 ft	#3 Flow	Loss to	Rate at	CU Water	Return	
	(1 or 2)	Fume	Rate	JMR	JMR	Account	Flow Acct	
		(cfs)	(cfs)	(%)	(cfs)	(ac-ft)	(ac-ft)	
1	2	61	55	5.6868	51.66	102.85	68.82	3.69
2	1		29.2	6.7289	27.23	54.01	37.48	2.02
3	2	35.5	31.95	6.144	29.99	59.48	41.28	2.08
4	1		43	6.781	40.49	80.31	55.74	2.98
5	1		49.5	6.781	46.62	92.47	64.17	3.23
6	1		53	6.4117	49.6	98.38	68.28	3.68
7	1		53.2	3.849	51.2	101.56	70.48	3.69
8	2	53.2	49.58	3.288	47.9	95.01	65.94	3.81
9	2	55	49.5	3.288	47.9	95.01	65.94	3.81
10	1		64	4.4715	51.8	102.35	71.03	3.75
11	2	61.1	55	4.4715	52.5	104.13	72.27	3.65
12	2	61.1	65	3.6156	53.07	105.26	73.05	3.61
13	2	35.6	32	3.4469	30.9	61.29	42.54	2.14
14	2	55	49.5	3.5158	47.76	94.73	65.74	3.31
15	2	37.2	33.6	3.368	32.37	64.21	44.56	2.24
16	2	39.2	35.3	3.368	34.11	67.65	46.95	2.36
17	2	30.22	27.2	3.368	26.28	52.13	36.18	1.82
18	2	30.7	27.65	3.368	26.72	53	36.78	1.94
19	2	31	27.8	4.1681	26.7	53	36.78	1.94
20	2	26.5	23.9	4.1681	22.9	45.42	31.52	1.69
21	2	30	27	4.1681	25.9	51.33	35.62	1.87
22	2	32	28.8	4.1681	27.8	54.7	37.96	2.22
23	1		19.06	4.1681	18.27	36.24	25.15	1.33
24	1		19.6	4.1681	18.78	37.25	25.65	1.37
25	1		11	6.0365	10.34	20.51	14.23	0.75
26	1		8.2	6.0365	7.7	15.27	10.6	0.57
27	1		9.4	6.0365	8.83	17.51	12.15	0.65
28	1		15.2	6.0365	14.28	28.32	19.66	1.06
29	2	21	18.9	8.037	17.36	34.48	23.79	1.07
30	2	18.2	16.4	8.037	15.1	29.95	20.67	0.93
31	2	18.2	16.4	8.037	15.1	29.96	20.67	0.93

< TTBW

Enclosure 1 (continued)

Accounting Spreadsheet
Deliveries from Highland Canal to Offset Account
Month: September, 1987

Day	Mode (1 or 2)	Diversion at 6 ft Flume (cfs)	Wasteway #3 Flow Rate (cfs)	Transit Loss to JMR (%)	Arrival Rate at JMR (cfs)	Arrival Quantity at JMR (ac-ft)	Amount to CU Water Account (ac-ft)	Amount to Return Flow Acct (ac-ft)
1	2	15.2	13.7	6.037	12.8	24.99	17.24	0.84
2	2	12.4	11.2	6.037	10.3	20.43	14.1	0.83
3	2	8.9	8	7.052	7.44	14.78	10.18	0.48
4	2			7.052	9.7	19.24	3.32(8hr)	0.15
5	2	8.88	7.81	7.052	7.26	14.41	9.94	0.48
6	2	9.08	8.15	7.082	7.58	15.03	10.37	0.5
7	2	14.3	12.91	6.3623	12.09	23.99	18.56	0.74
8	2	18.4	16.8	6.3623	15.54	30.82	21.27	0.82
9	2	23.45	21.1	5.511	19.94	39.55	27.29	1.3
10	2	28.5	25.65	5.511	24.24	48.1	33.18	1.57
11	2	21	18.9	5.511	17.9	35.5	24.5	1.18
12	2	21	18.9	5.511	17.9	35.5	24.5	1.18
13	2	17.6	15.8	6.511	14.9	29.55	5.95(7hr)	0.28
14			0	0	0	0	0	0
15			0	0	0	0	0	0
16			0	0	0	0	0	0
17			0	0	0	0	0	0
18			0	0	0	0	0	0
19			0	0	0	0	0	0
20			0	0	0	0	0	0
21			0	0	0	0	0	0
22			0	0	0	0	0	0
23			0	0	0	0	0	0
24			0	0	0	0	0	0
25			0	0	0	0	0	0
26	2	25.55	23	6.302	21.55	42.74	29.49	1.41
27	1		32.5	5.104	30.84	61.17	42.21	2
28	1		30.5	5.104	28.94	57.4	39.81	1.88
29	1		17.6	5.9892	18.55	32.83	22.85	1.08
30	2	22.3	20.08	5.9892	18.9	37.48	25.87	1.24
31	--	--	--	--	--	--	--	--

Enclosure 1 (Continued)

RECEIVED

AUG 05 1997

DIVISION ENGINEER
PUEBLO OFFICE ACCOUNT

OFFSET ACCOUNT
CONSUMABLE WATER

RETURN FLOW

PG 1

JUL 1997	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	4.75	0.00	0.00	4.75	4.75	0.00	0.00	4.75	0.00	0.00	0.00	0.00
16	4.76	0.00	0.00	9.51	4.76	0.00	0.00	9.51	0.00	0.00	0.00	0.00
17	3.06	0.00	0.01	12.56	3.06	0.00	0.01	12.56	0.00	0.00	0.00	0.00
18	1.81	0.00	0.01	14.36	1.81	0.00	0.01	14.36	0.00	0.00	0.00	0.00
19	0.76	0.00	0.01	15.11	0.76	0.00	0.01	15.11	0.00	0.00	0.00	0.00
20	0.10	0.00	0.01	15.20	0.10	0.00	0.01	15.20	0.00	0.00	0.00	0.00
21	0.10	0.00	0.01	15.29	0.10	0.00	0.01	15.29	0.00	0.00	0.00	0.00
22	31.67	0.00	0.01	46.95	30.15	0.00	0.01	45.43	1.52	0.00	0.00	1.52
23	15.40	0.00	0.06	62.29	14.66	0.00	0.06	60.03	0.74	0.00	0.00	2.26
24	6.29	0.00	0.07	68.51	5.99	0.00	0.07	65.95	0.30	0.00	0.00	2.56
25	3.54	0.00	0.07	71.98	3.37	0.00	0.07	69.25	0.17	0.00	0.00	2.73
26	0.47	0.00	0.07	72.38	0.45	0.00	0.07	69.63	0.02	0.00	0.00	2.75
27	0.00	0.00	0.07	72.31	0.00	0.00	0.07	69.56	0.00	0.00	0.00	2.75
28	0.00	0.00	0.09	72.22	0.00	0.00	0.09	69.47	0.00	0.00	0.00	2.75
29	0.00	0.00	0.04	72.18	0.00	0.00	0.04	69.43	0.00	0.00	0.00	2.75
30	15.29	0.00	0.08	87.39	14.50	0.00	0.08	83.85	0.79	0.00	0.00	3.54
31	49.05	0.00	0.09	136.35	47.77	0.00	0.09	131.53	1.28	0.00	0.00	4.82
TOT	137.05	0.00	0.70		132.23	0.00	0.70		4.82	0.00	0.00	

CONSUMABLE WATER

PG 1

JUL 1997	COLORADO UPSTREAM				COLORADO DOWNSTREAM				KANSAS			
INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	4.75	0.00	0.00	4.75	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	4.76	0.00	0.00	9.51	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	3.06	0.00	0.01	12.56	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	1.81	0.00	0.01	14.36	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.76	0.00	0.01	15.11	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.10	0.00	0.01	15.20	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.10	0.00	0.01	15.29	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	30.15	0.00	0.01	45.43	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	14.66	0.00	0.06	60.03	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	5.99	0.00	0.07	65.95	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	3.37	0.00	0.07	69.25	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.45	0.00	0.07	69.63	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.07	69.56	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.09	69.47	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.04	69.43	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	14.50	0.00	0.08	83.85	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00	47.77	0.00	0.09	131.53	0.00	0.00	0.00	0.00
T	0.00	0.00	0.00		132.23	0.00	0.70		0.00	0.00	0.00	

Enclosure 2

INSTATE

JUL 1997:	UPSTREAM				DOWNSTREAM				TOTAL			
	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	1.52	0.00	0.00	1.52	0.00	0.00	0.00	0.00	1.52	0.00	0.00	1.52
23	0.74	0.00	0.00	2.26	0.00	0.00	0.00	0.00	0.74	0.00	0.00	2.26
24	0.30	0.00	0.00	2.56	0.00	0.00	0.00	0.00	0.30	0.00	0.00	2.56
25	0.17	0.00	0.00	2.73	0.00	0.00	0.00	0.00	0.17	0.00	0.00	2.73
26	0.02	0.00	0.00	2.75	0.00	0.00	0.00	0.00	0.02	0.00	0.00	2.75
27	0.00	0.00	0.00	2.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.75
28	0.00	0.00	0.00	2.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.75
29	0.00	0.00	0.00	2.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.75
30	0.79	0.00	0.00	3.54	0.00	0.00	0.00	0.00	0.79	0.00	0.00	3.54
31	1.28	0.00	0.00	4.82	0.00	0.00	0.00	0.00	1.28	0.00	0.00	4.82
TOT	4.82	0.00	0.00		0.00	0.00	0.00		4.82	0.00	0.00	

JUL 1997:	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN
1												
2												
3												
4												
5												
6												
7												
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26												
27												
28												
29												
30												
31												

OFFSET ACCOUNT

PG 1

Table with columns: AUG 1997, INFLOW, RELEASE, EVAP, OWN, CONSUMABLE WATER, RETURN FLOW, INFLOW, RELEASE, EVAP, OWN, INFLOW, RELEASE, EVAP, OWN. Includes daily data from day 1 to 31 and a TOT row.

CONSUMABLE WATER

PG 1

Table with columns: AUG 1997, COLORADO UPSTREAM, COLORADO DOWNSTREAM, KANSAS, INFLOW, RELEASE, EVAP, OWN, INFLOW, RELEASE, EVAP, OWN, INFLOW, RELEASE, EVAP, OWN. Includes daily data from day 1 to 31 and a JT row.

Enclosure 2 (continued)

CONSUMABLE WATER

AUG 1997:	KANSAS STORAGE CHARGE				TOTAL				INFLOW	RELEASE	EVAP	OWN
	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN				
1	0.00	0.00	0.00	0.00	68.82	0.00	0.12	131.53				
2	0.00	0.00	0.00	0.00	37.48	0.00	0.18	200.23				
3	0.00	0.00	0.00	0.00	41.28	0.00	0.21	237.53				
4	0.00	0.00	0.00	0.00	2255.74	0.00	0.11	278.60				
5	0.00	0.00	0.00	0.00	64.17	0.00	1.26	2534.23				
6	0.00	0.00	0.00	0.00	68.28	0.00	0.34	2597.14				
7	0.00	0.00	0.00	0.00	70.48	0.00	2.03	2665.08				
8	0.00	0.00	0.00	0.00	65.94	0.00	0.96	2733.53				
9	0.00	0.00	0.00	0.00	65.94	0.00	0.85	2798.51				
10	0.00	0.00	0.00	0.00	71.03	0.00	0.86	2863.60				
11	0.00	0.00	0.00	0.00	72.27	0.00	0.96	2933.77				
12	0.00	0.00	0.00	0.00	73.05	0.00	1.96	2997.14				
13	0.00	0.00	0.00	0.00	42.54	0.00	2.12	3005.08				
14	0.00	0.00	0.00	0.00	65.74	0.00	2.33	3076.17				
15	0.00	0.00	0.00	0.00	211.77	0.00	2.09	3116.59				
16	0.00	0.00	0.00	0.00	214.16	0.00	2.13	3180.00				
17	0.00	0.00	0.00	0.00	203.39	0.00	2.25	3389.68				
18	0.00	0.00	0.00	0.00	203.99	0.00	2.11	3601.71				
19	0.00	0.00	0.00	0.00	203.99	0.00	2.88	3802.85				
20	0.00	0.00	0.00	0.00	198.72	0.00	2.34	4004.73				
21	0.00	0.00	0.00	0.00	35.62	0.00	3.24	4205.84				
22	0.00	0.00	0.00	0.00	37.96	0.00	3.17	4402.22				
23	0.00	0.00	0.00	0.00	25.15	0.00	3.20	4434.60				
24	0.00	0.00	0.00	0.00	25.85	0.00	3.21	4469.39				
25	0.00	0.00	0.00	0.00	14.23	0.00	3.41	4491.34				
26	0.00	0.00	0.00	0.00	10.60	0.00	3.61	4513.98				
27	0.00	0.00	0.00	0.00	12.15	0.00	1.85	4524.80				
28	0.00	0.00	0.00	0.00	19.66	264.36	4.17	4531.79				
29	0.00	0.00	0.00	0.00	23.79	330.29	3.69	4542.09				
30	0.00	0.00	0.00	0.00	20.67	274.68	3.44	4293.22				
31	0.00	0.00	0.00	0.00	20.67	274.68	3.21	3983.03				
TOT	0.00	0.00	0.00	0.00	4545.13	1144.01	64.29	3725.58				
								3468.36				

RETURN FLOW

AUG 1997:	INSTATE				STATE LINE				TOTAL			
	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN
1				4.82				0.00				4.82
2	3.69	0.00	0.00	8.51	0.00	0.00	0.00	0.00	3.69	0.00	0.00	8.51
3	2.02	0.00	0.01	10.52	0.00	0.00	0.00	0.00	2.02	0.00	0.01	10.52
4	2.08	0.00	0.01	12.59	0.00	0.00	0.00	0.00	2.08	0.00	0.01	12.59
5	1802.98	0.00	0.01	1815.56	0.00	0.00	0.00	0.00	1802.98	0.00	0.01	1815.56
6	3.23	0.00	0.91	1817.88	0.00	0.00	0.00	0.00	3.23	0.00	0.91	1817.88
7	3.68	0.00	0.24	1821.32	0.00	0.00	0.00	0.00	3.68	0.00	0.24	1821.32
8	3.69	0.00	1.38	1823.63	0.00	0.00	0.00	0.00	3.69	0.00	1.38	1823.63
9	3.81	0.00	0.64	1826.80	0.00	0.00	0.00	0.00	3.81	0.00	0.64	1826.80
10	3.81	0.00	0.56	1830.05	0.00	0.00	0.00	0.00	3.81	0.00	0.56	1830.05
11	3.75	0.00	0.55	1833.25	0.00	0.00	0.00	0.00	3.75	0.00	0.55	1833.25
12	3.65	0.00	0.60	1836.30	0.00	0.00	0.00	0.00	3.65	0.00	0.60	1836.30
13	3.61	0.00	1.20	1838.71	0.00	0.00	0.00	0.00	3.61	0.00	1.20	1838.71
14	2.14	0.00	1.26	1839.59	0.00	0.00	0.00	0.00	2.14	0.00	1.26	1839.59
15	3.31	0.00	1.38	1841.52	0.00	0.00	0.00	0.00	3.31	0.00	1.38	1841.52
16	2.24	0.00	1.21	1842.55	0.00	0.00	0.00	0.00	2.24	0.00	1.21	1842.55
17	2.36	0.00	1.16	1843.75	0.00	0.00	0.00	0.00	2.36	0.00	1.16	1843.75
18	1.82	0.00	1.15	1844.42	0.00	0.00	0.00	0.00	1.82	0.00	1.15	1844.42
19	1.94	0.00	1.03	1845.33	0.00	0.00	0.00	0.00	1.94	0.00	1.03	1845.33
20	1.94	0.00	1.33	1845.94	0.00	0.00	0.00	0.00	1.94	0.00	1.33	1845.94
21	1.89	0.00	1.02	1846.81	0.00	0.00	0.00	0.00	1.89	0.00	1.02	1846.81
22	1.87	0.00	1.36	1847.32	0.00	0.00	0.00	0.00	1.87	0.00	1.36	1847.32
23	2.22	0.00	1.32	1848.22	0.00	0.00	0.00	0.00	2.22	0.00	1.32	1848.22
24	1.33	0.00	1.32	1848.23	0.00	0.00	0.00	0.00	1.33	0.00	1.32	1848.23
25	1.37	0.00	1.32	1848.28	0.00	0.00	0.00	0.00	1.37	0.00	1.32	1848.28
26	0.75	0.00	1.40	1847.63	0.00	0.00	0.00	0.00	0.75	0.00	1.40	1847.63
27	0.57	0.00	1.47	1846.73	0.00	0.00	0.00	0.00	0.57	0.00	1.47	1846.73
28	0.65	0.00	0.75	1846.63	0.00	0.00	0.00	0.00	0.65	0.00	0.75	1846.63
29	1.06	0.00	1.70	1845.99	0.00	0.00	0.00	0.00	1.06	0.00	1.70	1845.99
30	1.07	0.00	1.58	1845.48	0.00	0.00	0.00	0.00	1.07	0.00	1.58	1845.48
31	0.93	0.00	1.59	1844.82	0.00	0.00	0.00	0.00	0.93	0.00	1.59	1844.82
TOT	1870.39	0.00	31.05	1844.16	0.00	0.00	0.00	0.00	1870.39	0.00	31.05	1844.16

INSTATE

AUG 1997:	UPSTREAM				DOWNSTREAM				TOTAL			
	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN
1	3.69	0.00	0.00	4.82	0.00	0.00	0.00	0.00	3.69	0.00	0.00	4.82
2	2.02	0.00	0.01	8.51	0.00	0.00	0.00	0.00	2.02	0.00	0.01	8.51
3	2.08	0.00	0.01	10.52	0.00	0.00	0.00	0.00	2.08	0.00	0.01	10.52
4	2.98	0.00	0.01	12.59	0.00	0.00	0.00	0.00	2.98	0.00	0.01	12.59
5	3.23	0.00	0.01	15.56	1800.00	0.00	0.00	1800.00	1802.98	0.00	0.01	1815.56
6	3.68	0.00	0.00	18.78	0.00	0.00	0.90	1799.10	3.23	0.00	0.91	1817.88
7	3.69	0.00	0.00	22.46	0.00	0.00	0.24	1798.86	3.68	0.00	0.24	1821.32
8	3.81	0.00	0.02	26.13	0.00	0.00	1.36	1797.50	3.69	0.00	1.38	1823.63
9	3.81	0.00	0.01	29.93	0.00	0.00	0.63	1796.87	3.81	0.00	0.64	1826.80
10	3.75	0.00	0.01	33.73	0.00	0.00	0.55	1796.32	3.81	0.00	0.56	1830.05
11	3.65	0.00	0.01	37.47	0.00	0.00	0.54	1795.78	3.75	0.00	0.55	1833.25
12	3.61	0.00	0.01	41.11	0.00	0.00	0.59	1795.19	3.65	0.00	0.60	1836.30
13	2.14	0.00	0.03	44.69	0.00	0.00	1.17	1794.02	3.61	0.00	1.20	1838.71
14	3.31	0.00	0.04	46.80	0.00	0.00	1.23	1792.79	2.14	0.00	1.26	1839.59
15	2.24	0.00	0.03	50.07	0.00	0.00	1.34	1791.45	3.31	0.00	1.38	1841.52
16	2.36	0.00	0.03	52.28	0.00	0.00	1.18	1790.27	2.24	0.00	1.21	1842.55
17	1.82	0.00	0.03	54.61	0.00	0.00	1.13	1789.14	2.36	0.00	1.16	1843.75
18	1.94	0.00	0.03	56.40	0.00	0.00	1.12	1788.02	1.82	0.00	1.15	1844.42
19	1.94	0.00	0.04	58.31	0.00	0.00	1.00	1787.02	1.94	0.00	1.03	1845.33
20	1.89	0.00	0.03	60.21	0.00	0.00	1.29	1785.73	1.94	0.00	1.33	1845.94
21	1.87	0.00	0.05	62.07	0.00	0.00	0.99	1784.74	1.89	0.00	1.02	1846.81
22	2.22	0.00	0.05	63.89	0.00	0.00	1.31	1783.43	1.87	0.00	1.36	1847.32
23	1.33	0.00	0.05	66.06	0.00	0.00	1.27	1782.16	2.22	0.00	1.32	1848.22
24	1.37	0.00	0.05	67.34	0.00	0.00	1.27	1780.89	1.33	0.00	1.32	1848.23
25	0.75	0.00	0.05	68.66	0.00	0.00	1.27	1779.62	1.37	0.00	1.32	1848.28
26	0.57	0.00	0.06	69.36	0.00	0.00	1.35	1778.27	0.75	0.00	1.40	1847.63
27	0.65	0.00	0.03	69.87	0.00	0.00	1.41	1776.86	0.57	0.00	1.47	1846.73
28	1.06	0.00	0.06	70.49	0.00	0.00	0.72	1776.14	0.65	0.00	0.75	1846.63
29	1.07	0.00	0.06	71.49	0.00	0.00	1.64	1774.50	1.06	0.00	1.70	1845.99
30	0.93	0.00	0.06	72.50	0.00	0.00	1.52	1772.98	1.07	0.00	1.58	1845.48
31	0.93	0.00	0.06	73.37	0.00	0.00	1.53	1771.45	0.93	0.00	1.59	1844.82
TOT	70.39	0.00	0.97	74.24	1800.00	0.00	30.08	1769.92	1870.39	0.00	31.05	1844.16

AUG 1997:	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN
1												
2												
3												
4												
5												
6												
7												
8												
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25												
26												
27												
28												
29												
30												
31												
TOT												

CONSUMABLE WATER

SEP 1997:	KANSAS STORAGE CHARGE				TOTAL				INFLW	RELEASE	EVAP	OWN
	INFLW	RELEASE	EVAP	OWN	INFLW	RELEASE	EVAP	OWN				
1	0.00	0.00	0.00	0.00	17.24	274.68	3.00	3468.36				
2	0.00	0.00	0.00	0.00	14.10	147.24	0.73	3207.92				
3	0.00	0.00	0.00	0.00	10.18	0.00	1.64	3074.05				
4	0.00	0.00	0.00	0.00	3.32	0.00	1.91	3082.59				
5	0.00	0.00	0.00	0.00	9.94	0.00	1.53	3084.00				
6	0.00	0.00	0.00	0.00	10.37	0.00	1.54	3092.41				
7	0.00	0.00	0.00	0.00	16.55	0.00	1.54	3101.24				
8	0.00	0.00	0.00	0.00	21.27	0.00	1.62	3116.25				
9	0.00	0.00	0.00	0.00	27.29	0.00	0.85	3122.44				
10	0.00	0.00	0.00	0.00	33.18	0.00	2.50	3162.34				
11	0.00	0.00	0.00	0.00	24.50	0.00	2.33	3193.02				
12	0.00	0.00	0.00	0.00	24.50	0.00	2.09	3215.19				
13	0.00	0.00	0.00	0.00	5.95	0.00	2.10	3237.60				
14	0.00	0.00	0.00	0.00	0.00	0.00	2.17	3241.45				
15	0.00	0.00	0.00	0.00	0.00	0.00	2.86	3239.28				
16	0.00	0.00	0.00	0.00	0.00	0.00	2.39	3236.42				
17	0.00	0.00	0.00	0.00	0.00	0.00	1.57	3234.03				
18	0.00	0.00	0.00	0.00	0.00	0.00	3.07	3232.46				
19	0.00	0.00	0.00	0.00	0.00	0.00	1.37	3229.39				
20	0.00	0.00	0.00	0.00	0.00	0.00	0.27	3228.02				
21	0.00	0.00	0.00	0.00	0.00	0.00	0.27	3227.75				
22	0.00	0.00	0.00	0.00	0.00	0.00	1.84	3227.48				
23	0.00	0.00	0.00	0.00	0.00	0.00	1.03	3225.64				
24	0.00	0.00	0.00	0.00	0.00	0.00	1.29	3224.61				
25	0.00	0.00	0.00	0.00	0.00	0.00	0.75	3223.32				
26	0.00	0.00	0.00	0.00	29.49	0.00	1.71	3222.57				
27	0.00	0.00	0.00	0.00	42.21	0.00	1.73	3250.83				
28	0.00	0.00	0.00	0.00	39.61	0.00	1.82	3250.83				
29	0.00	0.00	0.00	0.00	22.65	0.00	1.48	3328.92				
30	0.00	0.00	0.00	0.00	25.87	0.00	1.63	3349.79				
TOT	0.00	0.00	0.00		378.22	421.92	50.63	3374.03				

RETURN FLOW

SEP 1997:	INSTATE				STATE LINE				TOTAL			
	INFLW	RELEASE	EVAP	OWN	INFLW	RELEASE	EVAP	OWN	INFLW	RELEASE	EVAP	OWN
1	0.84	0.00	1.59	1844.16	0.00	0.00	0.00	0.00	0.84	0.00	1.59	1844.16
2	0.63	0.00	0.42	1843.41	0.00	0.00	0.00	0.00	0.63	0.00	0.42	1843.41
3	0.46	0.00	0.99	1843.62	0.00	0.00	0.00	0.00	0.46	0.00	0.99	1843.62
4	0.15	0.00	1.14	1843.09	0.00	0.00	0.00	0.00	0.15	0.00	1.14	1843.09
5	0.18	0.00	0.91	1842.10	0.00	0.00	0.00	0.00	0.18	0.00	0.91	1842.10
6	0.50	0.00	0.91	1841.67	0.00	0.00	0.00	0.00	0.50	0.00	0.91	1841.67
7	0.74	0.00	0.92	1841.26	0.00	0.00	0.00	0.00	0.74	0.00	0.92	1841.26
8	0.92	0.00	0.96	1841.08	0.00	0.00	0.00	0.00	0.92	0.00	0.96	1841.08
9	1.30	0.00	0.50	1841.04	0.00	0.00	0.00	0.00	1.30	0.00	0.50	1841.04
10	1.57	0.00	1.46	1841.84	0.00	0.00	0.00	0.00	1.57	0.00	1.46	1841.84
11	1.16	0.00	1.34	1841.95	0.00	0.00	0.00	0.00	1.16	0.00	1.34	1841.95
12	1.16	0.00	1.19	1841.77	0.00	0.00	0.00	0.00	1.16	0.00	1.19	1841.77
13	0.28	0.00	1.20	1841.74	0.00	0.00	0.00	0.00	0.28	0.00	1.20	1841.74
14	0.00	0.00	1.24	1840.82	0.00	0.00	0.00	0.00	0.00	0.00	1.24	1840.82
15	0.00	0.00	1.62	1839.58	0.00	0.00	0.00	0.00	0.00	0.00	1.62	1839.58
16	0.00	0.00	1.35	1837.96	0.00	0.00	0.00	0.00	0.00	0.00	1.35	1837.96
17	0.00	0.00	0.89	1836.61	0.00	0.00	0.00	0.00	0.00	0.00	0.89	1836.61
18	0.00	0.00	1.74	1835.72	0.00	0.00	0.00	0.00	0.00	0.00	1.74	1835.72
19	0.00	0.00	0.78	1833.98	0.00	0.00	0.00	0.00	0.00	0.00	0.78	1833.98
20	0.00	0.00	0.16	1833.20	0.00	0.00	0.00	0.00	0.00	0.00	0.16	1833.20
21	0.00	0.00	0.16	1833.04	0.00	0.00	0.00	0.00	0.00	0.00	0.16	1833.04
22	0.00	0.00	1.05	1832.88	0.00	0.00	0.00	0.00	0.00	0.00	1.05	1832.88
23	0.00	0.00	0.58	1831.83	0.00	0.00	0.00	0.00	0.00	0.00	0.58	1831.83
24	0.00	0.00	0.74	1831.25	0.00	0.00	0.00	0.00	0.00	0.00	0.74	1831.25
25	0.00	0.00	0.42	1830.51	0.00	0.00	0.00	0.00	0.00	0.00	0.42	1830.51
26	1.41	0.00	0.97	1830.09	0.00	0.00	0.00	0.00	1.41	0.00	0.97	1830.09
27	2.00	0.00	0.97	1830.53	0.00	0.00	0.00	0.00	2.00	0.00	0.97	1830.53
28	1.88	0.00	1.01	1831.56	0.00	0.00	0.00	0.00	1.88	0.00	1.01	1831.56
29	1.08	0.00	0.81	1832.43	0.00	0.00	0.00	0.00	1.08	0.00	0.81	1832.43
30	1.24	0.00	0.89	1832.70	0.00	0.00	0.00	0.00	1.24	0.00	0.89	1832.70
TOT	17.80	0.00	28.91	1833.05	0.00	0.00	0.00	0.00	17.80	0.00	28.91	1833.05

SEP 1997:	UPSTREAM				INSTATE DOWNSTREAM				TOTAL			
	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN
				74.24				1769.92				1844.16
1	0.84	0.00	0.06	75.02	0.00	0.00	1.53	1768.39	0.84	0.00	1.59	1843.41
2	0.63	0.00	0.02	75.63	0.00	0.00	0.40	1767.99	0.63	0.00	0.42	1843.62
3	0.46	0.00	0.04	76.05	0.00	0.00	0.95	1767.04	0.46	0.00	0.99	1843.09
4	0.15	0.00	0.05	76.15	0.00	0.00	1.09	1765.95	0.15	0.00	1.14	1842.10
5	0.48	0.00	0.04	76.59	0.00	0.00	0.87	1765.08	0.48	0.00	0.91	1841.67
6	0.50	0.00	0.04	77.05	0.00	0.00	0.87	1764.21	0.50	0.00	0.91	1841.26
7	0.74	0.00	0.04	77.75	0.00	0.00	0.88	1763.33	0.74	0.00	0.92	1841.08
8	0.92	0.00	0.04	78.63	0.00	0.00	0.92	1762.41	0.92	0.00	0.96	1841.04
9	1.30	0.00	0.02	79.91	0.00	0.00	0.48	1761.93	1.30	0.00	0.50	1841.84
10	1.57	0.00	0.06	81.42	0.00	0.00	1.40	1760.53	1.57	0.00	1.46	1841.95
11	1.16	0.00	0.06	82.52	0.00	0.00	1.28	1759.25	1.16	0.00	1.34	1841.77
12	1.16	0.00	0.05	83.63	0.00	0.00	1.14	1758.11	1.16	0.00	1.19	1841.74
13	0.28	0.00	0.05	83.86	0.00	0.00	1.15	1756.96	0.28	0.00	1.20	1841.82
14	0.00	0.00	0.06	83.80	0.00	0.00	1.18	1755.78	0.00	0.00	1.24	1839.58
15	0.00	0.00	0.07	83.73	0.00	0.00	1.55	1754.23	0.00	0.00	1.62	1837.96
16	0.00	0.00	0.06	83.67	0.00	0.00	1.29	1752.94	0.00	0.00	1.35	1836.61
17	0.00	0.00	0.04	83.63	0.00	0.00	0.85	1752.09	0.00	0.00	0.89	1835.72
18	0.00	0.00	0.08	83.55	0.00	0.00	1.66	1750.43	0.00	0.00	1.74	1833.98
19	0.00	0.00	0.04	83.51	0.00	0.00	0.74	1749.69	0.00	0.00	0.78	1833.20
20	0.00	0.00	0.01	83.50	0.00	0.00	0.15	1749.54	0.00	0.00	0.16	1833.04
21	0.00	0.00	0.01	83.49	0.00	0.00	0.15	1749.39	0.00	0.00	0.16	1832.88
22	0.00	0.00	0.05	83.44	0.00	0.00	1.00	1748.39	0.00	0.00	1.05	1831.83
23	0.00	0.00	0.03	83.41	0.00	0.00	0.55	1747.84	0.00	0.00	0.58	1831.25
24	0.00	0.00	0.03	83.38	0.00	0.00	0.71	1747.13	0.00	0.00	0.74	1830.51
25	0.00	0.00	0.02	83.36	0.00	0.00	0.40	1746.73	0.00	0.00	0.42	1830.09
26	1.41	0.00	0.04	84.73	0.00	0.00	0.93	1745.80	1.41	0.00	0.97	1830.53
27	2.00	0.00	0.04	86.69	0.00	0.00	0.93	1744.87	2.00	0.00	0.97	1831.56
28	1.88	0.00	0.05	88.52	0.00	0.00	0.96	1743.91	1.88	0.00	1.01	1832.43
29	1.08	0.00	0.04	89.56	0.00	0.00	0.77	1743.14	1.08	0.00	0.81	1832.70
30	1.24	0.00	0.04	90.76	0.00	0.00	0.85	1742.29	1.24	0.00	0.89	1833.05
TOT	17.80	0.00	1.28		0.00	0.00	27.63		17.80	0.00	28.91	

SEP 1997:	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
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16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
TOT												

STATE OF COLORADO

WATER DIVISION 2
OFFICE OF THE STATE ENGINEER310 East Abriendo, Suite B
Pueblo, CO 81004
Phone (719) 542-3368
FAX (719) 544-0800

October 9, 1997

Roy Romer
GovernorJames S. Lochhead
Executive DirectorHal D. Simpson
State EngineerSteven J. Witte, P.E.
Division EngineerDavid L. Pope
Kansas Chief Engineer
Kansas Board of Agriculture
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283

RE: Notice of Release of Offset Account Water from John Martin Reservoir

Dear Mr. Pope:

The purpose of this letter is to provide an initial accounting for a release of water from the Offset Account in John Martin Reservoir for delivery to the Stateline demanded by the Kansas Chief Engineer in accordance with the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution") and the **Stipulation Re Offset Account in John Martin Reservoir** dated March 17, 1997 ("Stipulation").

Enclosure 1 is the release record from John Martin Reservoir showing that the Kansas Chief Engineer requested a release of water from the Offset Account at an initial rate of 213.25 c.f.s. The release began at 0900 hours, August 28, 1997 and continued at the initial rate for 24 hours. From 0900 hours, August 29, 1997 to 0900 hours, September 2, 1997, the release rate was 138.48 c.f.s. The final 6.5 hours of the release used a release rate of 82.35 c.f.s. with the release finishing at 1530 hours, September 2, 1997. Transit losses on the release of water from the Offset Account were determined using the transit losses for Subreach 6, including bank and channel storage, as set forth in U.S. Geological Survey Water Resources Investigations 78-75.

Enclosure 2 shows the quantities of water that were released from the Offset Account during each day of the release. Please note that fully consumable water for use in offsetting depletions to usable Stateline flow was released.

Enclosure 3 shows the credit at the Stateline for the delivery of the fully consumable water released from the Offset Account. The credit was determined in accordance with paragraphs 2 and 3 of the Stipulation and was 1362.3 acre-feet.

Please contact me if you have any questions or require additional information.

David L. Pope
October 9, 1997

Page 2

Sincerely,

A handwritten signature in cursive script, appearing to read "Steven J. Witte".

Steven J. Witte
Division Engineer
Colorado Division of Water Resources

3 Enclosures

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Duane Helton
Bill Howland

ROY ROMER
Governor



JERIS A. DANIELSON
State Engineer

DIVISION OF WATER RESOURCES
WATER DIVISION II

Steven J. Witte
Division Engineer
219 W. 5th Street, Room 223
P.O. Box 5728
Pueblo, Colorado 81003
(719) 542-3368

JOHN MARTIN RESERVOIR: 1997

This report confirms the authorization on operation orders for John Martin Reservoir.

No.	Entity	Date	Time	Start	Increase or Decrease	Stop	Net	Remarks
1	Ft. Bent	8/20	0930	28.26			28.00	
2	Keesee	8/20	0930	14.13			14.00	
3	do	8/21	0900			14.13	0	
4	Amity	8/21	0900		164.43	132.16	130.00	
5	do	8/22	0900		132.16	82.38	81.00	
6	Lamar	8/22	1400		116.41	142.72	138.00	
7	Keesee	8/22	0900	14.63			14.50	
8	Amity	8/25	0900		82.38	133.21	131.00	
9	do	8/26	1130		133.21	234.51	231.00	
10	Lamar	8/27	1400		142.72	186.16	180.00	
11	OFFSET Acct	8/28	0900	213.25			160.00	Kansas made total 400 est. line
12	Ft. Bent	8/28	0900		28.26	64.32	64.00	
13	Amity	8/28	0900		234.51	303.97	300.00	
14	OFFSET Acct	8/29	0900		213.25	138.48	120.00	Kansas Ads for Antecedent signature
15	Lamar	8/29	0900		186.16	1209.76	205.00	
16	Buffalo	8/28	1400	25.35			22.50	
17	Ft. Bent	9/2	0900		64.32	22.10	22.00	
18	OFFSET Acct	9/2	0900		138.48	82.35	75.00	
19	do	9/2	1530			82.35	0	
20	Amity	9/3	0900		303.97	354.18	350.00	

Enclosure 1

Steven J. Witte

Division Engineer

OFFSET ACCOUNT

CONSUMABLE WATER

RETURN FLOW

PG 1

Table with columns: CRP 997, OFFSET ACCOUNT (INFLOW, RELEASE, EVAP), OWN, CONSUMABLE WATER (INFLOW, RELEASE, EVAP), OWN, RETURN FLOW (INFLOW, RELEASE, EVAP), OWN. Rows 1-30 and Summary (TOT).

CONSUMABLE WATER

COLORADO UPSTREAM

COLORADO DOWNSTREAM

KANSAS

PG 1

Table with columns: CRP 997, COLORADO UPSTREAM (INFLOW, RELEASE, EVAP), OWN, COLORADO DOWNSTREAM (INFLOW, RELEASE, EVAP), OWN, KANSAS (INFLOW, RELEASE, EVAP), OWN. Rows 1-30 and Summary (TOT).

Enclosure 2 (continued)

**Transit Loss Computation
for
Determination of Credits to Offset Depletions to Stateline Flows**

Flow Readings

GAGE	Sep 28	Sep 29	Sep 30	Sep 31	Aug 1	Aug 2	Aug 3	Aug 4	Aug 5
JMR	468	815	736	757	752	757	546	595	600
Lamar	33	226	182	335	280	223	80	44	51
Granada	129	121	225	227	400	275	261	185	157
Coolidge	304	327	416	458	492	550	499	437	377

Antecedent Flows

Transit Loss Computation for 1 day @ 213.25 c.f.s. (422.98 ac-ft)

Subreach	Antecedent Flow	Percent Transit Loss =	$miles \times \frac{\% \text{ loss}}{mile}$
JMR-Lamar (21.1 mi)	468	2.178 %	$21.1 \times 0.103 \% / mi$
Lamar-Granada (21.9 mi)	33	6.029 %	$21.9 \times 0.275 \% / mi$
Granada-Coolidge (18.3 mi)	121	3.459 %	$18.3 \times 0.189 \% / mi$
Subtotal		11.666 %	
Adj Factor (>470 cfs)		0.95629	
Adj Factor (3 days)		2.00	
Total Transit Loss		22.312 %	

Credit for Colorado Consumptive Use Water

$$0.77688 \times 422.98 \text{ (Consumptive Use Water)} = 328.6 \text{ acre-feet credit}$$

Enclosure 3

Transit Loss Computation for 4 days @ 138.48 c.f.s. (1098.68 ac-ft)

Subreach	Antecedent Flow	Percent Transit Loss =	$miles \times \frac{\% \text{ loss}}{\text{mile}}$
JMR-Lamar (21.1 mi)	815	1.701 %	21.1 x 0.081 %/mi
Lamar-Granada (21.9 mi)	226	2.914 %	21.9 x 0.133 %/mi
Granada-Coolidge (18.3 mi)	225	2.438 %	18.3 x 0.133 %/mi
Subtotal		7.053 %	
Adj Factor (>470 cfs)		0.9848	
Adj Factor (3 days)		1.35	
Total Transit Loss		9.377 %	

Credit for Colorado Consumptive Use Water

$$0.90623 \times 1098.68 \text{ (Consumptive Use Water)} = 995.7 \text{ acre-feet credit}$$

Transit Loss Computation for 6.5 hours @ 82.35 c.f.s. (44.24 ac-ft)

Subreach	Antecedent Flow	Percent Transit Loss =	$miles \times \frac{\% \text{ loss}}{\text{mile}}$
JMR-Lamar (21.1 mi)	757	1.750 %	21.1 x 0.083 %/mi
Lamar-Granada (21.9 mi)	223	2.926 %	21.9 x 0.134 %/mi
Granada-Coolidge (18.3 mi)	261	2.313 %	18.3 x 0.126 %/mi
Subtotal		6.989 %	
Adj Factor (>470 cfs)		1.009	
Adj Factor (3 days)		2.00	
Total Transit Loss		14.104 %	

Credit for Colorado Consumptive Use Water

$$0.85896 \times 44.24 \text{ (Consumptive Use Water)} = 38.0 \text{ acre-feet credit}$$

$$\text{Total Credit} = 328.6 + 995.7 + 38.0 = 1362.3 \text{ acre-feet}$$

Enclosure 3 (continued)

STATE OF COLORADO

WATER DIVISION 2
OFFICE OF THE STATE ENGINEER310 East Abriendo, Suite B
Pueblo, CO 81004
Phone (719) 542-3368
FAX (719) 544-0800

November 24, 1997

David L. Pope
Kansas Chief Engineer
Kansas Board of Agriculture
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283Roy Romer
GovernorJames S. Lochhead
Executive DirectorHal D. Simpson
State EngineerSteven J. Witte, P.E.
Division Engineer

RE: Notice of Delivery to the Offset Account in John Martin Reservoir

Dear Mr. Pope:

The purpose of this letter is to provide the notice required by paragraph 3 of the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution") of a delivery of water to the Offset Account. This letter provides the monthly reporting of deliveries to the Offset Account from the Lower Arkansas Water Management Association (LAWMA) shares of the Highland Irrigation Company using the procedures described in my letter of August 25, 1997 which provided the initial notice of the delivery of water from this replacement source. This report provides the information for the month of October, 1997.

Enclosure 1 contains the accounting spreadsheet for the month of October, 1997. The format of this spreadsheet is provided and described in my letter of August 25, 1997. Enclosure 2 contains the accounting sheet for the Offset Account for October which reflects the delivery of the quantities reported in Enclosure 1 to the appropriate subaccounts of the Offset Account.

The following table summarizes the delivery of water into the Offset Account during the reporting period. As stated in my August 25, 1997 letter, the return flow water is being stored in the Offset Account for delivery to conservation storage in John Martin Reservoir during the months of December, 1997 and January, 1998.

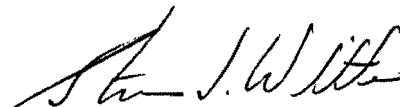
MONTH	C. U. Water (ac-ft)	Return Flow (ac-ft)
October	213.63	10.15

Please contact me if you have any questions or require additional information.

David L. Pope
November 24, 1997

Page 2

Sincerely,

A handwritten signature in black ink, appearing to read "Steven J. Witte". The signature is fluid and cursive, with the first name "Steven" and last name "Witte" clearly legible.

Steven J. Witte
Division Engineer
Colorado Division of Water Resources

2 Enclosures

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Bill Howland

**Accounting Spreadsheet
Deliveries from Highland Canal to Offset Account
Month: October, 1997**

Day	Mode (1 or 2)	Diversion at 5 ft Flume (cfs)	Wasteway #3 Flow Rate (cfs)	Transit Loss to JMR (%)	Arrival Rate at JMR (cfs)	Arrival Quantity at JMR (ac-ft)	Amount to CU Water Account (ac-ft)	Amount to Return Flow Acct (ac-ft)
1	2	25	20	5.9892	18.81	37.32	25.76	1.17
2	2	22.7	19.5	5.9892	18.33	36.36	25.09	1.2
3	2	21.6	19.4	6.3696	18.16	36.69	25.45	1.19
4	2	18.8	16.9	6.3696	15.52	31.38	21.65	1.04
5	2	16.8	15.2	6.3696	14.23	28.22	19.47	0.93
6	2	16.8	15.1	6.3696	14.14	28.05	19.35	0.93
7	2	16.6	14.9	6.3696	13.95	27.67	19.09	0.92
8	2	17	15.3	6.3696	14.32	28.4	19.8	0.94
9	2	16.8	15.1	6.3696	14.14	28.05	19.35	0.93
10	2	16.3	14.7	6.3696	13.76	27.29	18.83	0.9
11		0	0	0	0	0	0	0
12		0	0	0	0	0	0	0
13		0	0	0	0	0	0	0
14		0	0	0	0	0	0	0
15		0	0	0	0	0	0	0
16		0	0	0	0	0	0	0
17		0	0	0	0	0	0	0
18		0	0	0	0	0	0	0
19		0	0	0	0	0	0	0
20		0	0	0	0	0	0	0
21		0	0	0	0	0	0	0
22		0	0	0	0	0	0	0
23		0	0	0	0	0	0	0
24		0	0	0	0	0	0	0
25		0	0	0	0	0	0	0
26		0	0	0	0	0	0	0
27		0	0	0	0	0	0	0
28		0	0	0	0	0	0	0
29		0	0	0	0	0	0	0
30		0	0	0	0	0	0	0
31		0	0	0	0	0	0	0

Enclosure 1

OFFSET ACCOUNT				CONSUMABLE WATER				RETURN FLOW				PG 1
1997:	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN
OT	223.78	0.00	73.89	5207.08	213.63	0.00	48.60	3374.03	10.15	0.00	25.29	1833.05

COLORADO UPSTREAM				CONSUMABLE WATER				KANSAS				PG 1
1997:	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN	INFLOW	RELEASE	EVAP	OWN
TOT	0.00	0.00	0.00	0.00	213.63	0.00	48.60	3374.03	0.00	0.00	0.00	0.00

Enclosure 2

SECTION 4

STATE OF COLORADO

WATER DIVISION 2
OFFICE OF THE STATE ENGINEER

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June 25, 1997

Roy Romer
Governor

James S. Lochhead
Executive Director

Hal D. Simpson
State Engineer

Steven J. Witte, P.E.
Division Engineer

Mr. Don Higbee
Recording Secretary
Arkansas River Compact Administration
307 South Fifth Street
Lamar, CO 81052

David L. Pope
Kansas Chief Engineer
Kansas Board of Agriculture
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283

RE: Monthly Report of Colorado Pumping and Offset Account Operations for April, 1997

Dear Mr. Higbee and Mr. Pope:

The purpose of this letter is to provide the monthly report required by paragraph 12 of the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution"). This letter reports the monthly pumping in excess of Colorado's pre-Compact entitlement, Colorado's monthly accounting of Compact compliance, and the status of water delivered to the Offset Account, all during the month of April, 1997.

Table 1 shows the amount of pumping during the month of April, 1997 by irrigation wells pumping from the Valley Fill Aquifer and surficial aquifers along the Arkansas River between Pueblo and the Stateline, as well as the corresponding wellhead depletions, by user group. The wellhead depletions were computed using the presumptive stream depletions in Rule 4.2 of the **AMENDED RULES AND REGULATIONS GOVERNING THE DIVERSION AND USE OF TRIBUTARY GROUND WATER IN THE ARKANSAS RIVER BASIN, COLORADO** ("Rules") approved in Case No. 95CW211.

Table 2 shows the wellhead depletions due to pumping by irrigation wells in the user groups below John Martin Reservoir that is in excess of the pre-Compact entitlements.

Since the depletions caused by pumping above John Martin Reservoir were fully replaced, and that accounting has been provided to Kansas, and the depletions caused by pumping below John Martin Reservoir which affect senior surface water rights in Colorado were fully replaced, and that accounting has been provided to Kansas, the accounting in this report shows only remaining depletions caused by irrigation pumping in excess of the pre-Compact entitlements for those

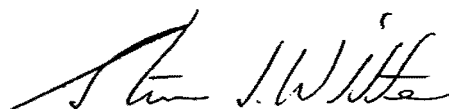
river reaches where no replacements or only partial replacements were made to replace out-of-priority depletions to senior surface water rights in Colorado.

Table 3 shows the remaining stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements which were not replaced by making replacements to senior surface water rights in Colorado. These stream depletions were computed using the wellhead depletions shown in Table 2 with the Ground Water Accounting Model. Please note that in Reaches 14, 15, and 16, replacements to senior surface water rights in Colorado replaced 50% of the stream depletions caused by pumping affecting those reaches. This percentage reflects the fact that there was a call by a Colorado surface water right in those three reaches on 15 of the 30 days during April. The remaining depletions shown in Table 3 are the estimated stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements remaining after replacements were made to senior surface water rights in Colorado. Table 3 also shows the estimated depletions to usable Stateline flow, which were calculated using the assumptions in paragraph 5.B of the Resolution, and the replacements to Stateline flows which were made during the month.

Except for the delivery of the 500 acre-feet for the storage charge at 0000 hours on April 1, 1997, no other deliveries or releases were made from the Offset Account during the month of April, 1997. As of June 1, 1997, there were 481.95 acre-feet being stored in the offset account.

Please contact me if you have any questions or require additional information.

Sincerely,



Steven J. Witte
Division Engineer
Colorado Division of Water Resources

3 Tables

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Bill Howland

Larry E. Trujillo, Sr.
Robert Buerkle
Eugene Overton
Daries C. Lile
Carl G. Genova
James G. Rogers

TABLE 1
Pumping By Rule 3 Irrigation Wells
April, 1997

USER NO.	DITCH NAME	AF PUMPED	WELLHEAD DEPL
1	Bessemer	581	240
2	Booth Orchard	87	29
3	Excelsior	178	120
4	Collier	48	14
5	Colorado	90	40
6	Rocky Ford Highline	536	167
7	Oxford	244	78
8	Otero	126	39
9	Catlin	508	220
10	Fort Lyon Up Stream	767	245
11	Rocky Ford	114	39
12	Holbrook	123	52
13	Las Animas Consolidated	35	11
14	Baldwin-Stubbs	490	245
15	Fort Bent	38	17
16	Keese	383	115
17	Amity	1,322	485
18	Lamar/Manvel	872	294
19	Hyde	195	63
20	Fort Lyon Down Stream	1,007	477
21	XY Graham	253	79
22	Buffalo	680	217
23	Sisson	2	1
24	Stateline Sole Source	1,148	708
600	LAWMA APOD	1,184	571
601	LAWMA APOD	0	0
602	LAWMA APOD	9	7
	Totals	11,018	4,573

Date

STATE OF COLORADO

**WATER DIVISION 2
OFFICE OF THE STATE ENGINEER**

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July 14, 1997

Roy Romer
Governor

James S. Lochhead
Executive Director

Hal D. Simpson
State Engineer

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Mr. Don Higbee
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Arkansas River Compact Administration
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Lamar, CO 81052

David L. Pope
Kansas Chief Engineer
Kansas Board of Agriculture
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283

RE: Monthly Report of Colorado Pumping and Offset Account Operations for May, 1997

Dear Mr. Higbee and Mr. Pope:

The purpose of this letter is to provide the monthly report required by paragraph 12 of the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution"). This letter reports the monthly pumping in excess of Colorado's pre-Compact entitlement, Colorado's monthly accounting of Compact compliance, and the status of water delivered to the Offset Account, all during the month of May, 1997.

Table 1 shows the amount of pumping during the month of May, 1997 by irrigation wells pumping from the Valley Fill Aquifer and surficial aquifers along the Arkansas River between Pueblo and the Stateline, as well as the corresponding wellhead depletions, by user group. The wellhead depletions were computed using the presumptive stream depletions in Rule 4.2 of the **AMENDED RULES AND REGULATIONS GOVERNING THE DIVERSION AND USE OF TRIBUTARY GROUND WATER IN THE ARKANSAS RIVER BASIN, COLORADO** ("Rules") approved in Case No. 95CW211.

Table 2 shows the wellhead depletions due to pumping by irrigation wells in the user groups below John Martin Reservoir that is in excess of the pre-Compact entitlements.

Since the depletions caused by pumping above John Martin Reservoir were fully replaced, and that accounting has been provided to Kansas, and the depletions caused by pumping below John Martin Reservoir which affect senior surface water rights in Colorado were fully replaced, and that accounting has been provided to Kansas, the accounting in this report shows only remaining depletions caused by irrigation pumping in excess of the pre-Compact entitlements for those

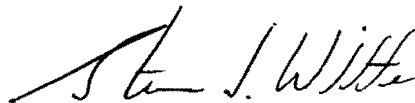
river reaches where no replacements or only partial replacements were made to replace out-of-priority depletions to senior surface water rights in Colorado.

Table 3 shows the remaining stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements which were not replaced by making replacements to senior surface water rights in Colorado. These stream depletions were computed using the wellhead depletions shown in Table 2 with the Ground Water Accounting Model. Please note that in Reaches 14, 15, and 16, replacements to senior surface water rights in Colorado replaced 9.68% of the stream depletions caused by pumping affecting those reaches. This percentage reflects the fact that there was a call by a Colorado surface water right in those three reaches on 3 of the 31 days during May. The remaining depletions shown in Table 3 are the estimated stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements remaining after replacements were made to senior surface water rights in Colorado. Table 3 also shows the estimated depletions to usable Stateline flow, which were calculated using the assumptions in paragraph 5.B of the Resolution, and the replacements to Stateline flows which were made during the month.

No deliveries or releases were made from the Offset Account during the month of May, 1997. As of June 1, 1997, there were 481.95 acre-feet being stored in the offset account.

Please contact me if you have any questions or require additional information.

Sincerely,



Steven J. Witte
Division Engineer
Colorado Division of Water Resources

3 Tables

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Bill Howland

Larry E. Trujillo, Sr.
Robert Buerkle
Eugene Overton
Daries C. Lile
Carl G. Genova
James G. Rogers

TABLE 1
Pumping By Rule 3 Irrigation Wells
May, 1997

USER NO.	DITCH NAME	AF PUMPED	WELLHEAD DEPL
1	Bessemer	948	418
2	Booth Orchard	180	112
3	Excelsior	454	312
4	Collier	0	0
5	Colorado	429	181
6	Rocky Ford Highline	603	187
7	Oxford	139	56
8	Otero	218	72
9	Catlin	667	329
10	Fort Lyon Up Stream	1622	532
11	Rocky Ford	187	65
12	Holbrook	457	143
13	Las Animas Consolidated	43	15
14	Baldwin-Stubbs	862	431
15	Fort Bent	69	34
16	Keese	536	161
17	Amity	2577	1135
18	Lamar/Manvel	681	261
19	Hyde	430	142
20	Fort Lyon Down Stream	1228	530
21	XY Graham	559	283
22	Buffalo	420	136
23	Sisson	16	12
24	Stateline Sole Source	2631	1673
600	LAWMA APOD	1305	391
601	LAWMA APOD	0	0
602	LAWMA APOD	41	31
	Totals	17301	7640

Date

STATE OF COLORADO

**WATER DIVISION 2
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August 4, 1997

Roy Romer
Governor

James S. Lochhead
Executive Director

Hal D. Simpson
State Engineer

Steven J. Witte, P.E.
Division Engineer

Mr. Don Higbee
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Lamar, CO 81052

David L. Pope
Kansas Chief Engineer
Kansas Board of Agriculture
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283

RE: Monthly Report of Colorado Pumping and Offset Account Operations for June, 1997

Dear Mr. Higbee and Mr. Pope:

The purpose of this letter is to provide the monthly report required by paragraph 12 of the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution"). This letter reports the monthly pumping in excess of Colorado's pre-Compact entitlement, Colorado's monthly accounting of Compact compliance, and the status of water delivered to the Offset Account, all during the month of June, 1997.

Table 1 shows the amount of pumping during the month of June, 1997 by irrigation wells pumping from the Valley Fill Aquifer and surficial aquifers along the Arkansas River between Pueblo and the Stateline, as well as the corresponding wellhead depletions, by user group. The wellhead depletions were computed using the presumptive stream depletions in Rule 4.2 of the **AMENDED RULES AND REGULATIONS GOVERNING THE DIVERSION AND USE OF TRIBUTARY GROUND WATER IN THE ARKANSAS RIVER BASIN, COLORADO** ("Rules") approved in Case No. 95CW211.

Table 2 shows the wellhead depletions due to pumping by irrigation wells in the user groups below John Martin Reservoir that is in excess of the pre-Compact entitlements.

Since the depletions caused by pumping above John Martin Reservoir were fully replaced, and that accounting has been provided to Kansas, and the depletions caused by pumping below John Martin Reservoir which affect senior surface water rights in Colorado were fully replaced, and that accounting has been provided to Kansas, the accounting in this report shows only remaining depletions caused by irrigation pumping in excess of the pre-Compact entitlements for those

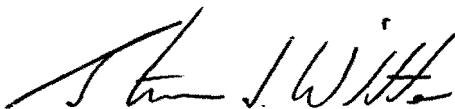
river reaches where no replacements or only partial replacements were made to replace out-of-priority depletions to senior surface water rights in Colorado.

Table 3 shows the remaining stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements which were not replaced by making replacements to senior surface water rights in Colorado. These stream depletions were computed using the wellhead depletions shown in Table 2 with the Ground Water Accounting Model. Please note that in Reaches 14, 15, and 16, replacements to senior surface water rights in Colorado replaced 10% of the stream depletions caused by pumping affecting those reaches. This percentage reflects the fact that there was a call by a Colorado surface water right in those three reaches on 3 of the 30 days during June. The remaining depletions shown in Table 3 are the estimated stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements remaining after replacements were made to senior surface water rights in Colorado. Table 3 also shows the estimated depletions to usable Stateline flow, which were calculated using the assumptions in paragraph 5.B of the Resolution, and the replacements to Stateline flows which were made during the month.

A delivery of water to the Offset Account was made during the month of June, 1997. This delivery was described in my letter to the Kansas Chief Engineer dated June 2, 1997 and netted 684.8 acre-feet of fully consumable water into the Offset Account. A release of water was also made from the Offset Account during the month of June, 1997. This release was requested by the Kansas Chief Engineer and was described in my letter to him dated July 16, 1997. This release resulted in a credit of 572.9 acre-feet which will be applied against depletions to usable Stateline flows caused by the Colorado well users that placed the water in the Offset Account. This release removed all water from the Offset Account. As of June 30, 1997, there was no water being stored in the Offset Account.

Please contact me if you have any questions or require additional information.

Sincerely,



Steven J. Witte
Division Engineer
Colorado Division of Water Resources

3 Tables

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Bill Howland

Larry E. Trujillo, Sr.
Robert Buerkle
Eugene Overton
Daries C. Lile
Carl G. Genova
James G. Rogers

TABLE 1
Pumping By Rule 3 Irrigation Wells
June, 1997

USER NO.	DITCH NAME	AF PUMPED	WELLHEAD DEPL
1	Bessemer	1272	544
2	Booth Orchard	123	100
3	Excelsior	580	392
4	Collier	12	4
5	Colorado	364	156
6	Rocky Ford Highline	395	128
7	Oxford	159	59
8	Otero	69	24
9	Catlin	524	244
10	Fort Lyon Up Stream	1645	554
11	Rocky Ford	213	72
12	Holbrook	73	25
13	Las Animas Consolidated	14	5
14	Baldwin-Stubbs	2	1
15	Fort Bent	197	66
16	Keese	589	177
17	Amity	2395	1099
18	Lamar/Manvel	507	195
19	Hyde	554	181
20	Fort Lyon Down Stream	1255	574
21	XY Graham	553	206
22	Buffalo	561	169
23	Sisson	12	9
24	Stateline Sole Source	2314	1477
600	LAWMA APOD	881	264
601	LAWMA APOD	0	0
602	LAWMA APOD	39	30
	Totals	15302	6755

STATE OF COLORADO

WATER DIVISION 2
OFFICE OF THE STATE ENGINEER

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September 15, 1997

Mr. Don Higbee
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901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283

Roy Romer
Governor

James S. Lochhead
Executive Director

Hal D. Simpson
State Engineer

Steven J. Witte, P.E.
Division Engineer

RE: Monthly Report of Colorado Pumping and Offset Account Operations for July, 1997

Dear Mr. Higbee and Mr. Pope:

The purpose of this letter is to provide the monthly report required by paragraph 12 of the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution"). This letter reports the monthly pumping in excess of Colorado's pre-Compact entitlement, Colorado's monthly accounting of Compact compliance, and the status of water delivered to the Offset Account, all during the month of July, 1997.

Table 1 shows the amount of pumping during the month of July, 1997 by irrigation wells pumping from the Valley Fill Aquifer and surficial aquifers along the Arkansas River between Pueblo and the Stateline, as well as the corresponding wellhead depletions, by user group. The wellhead depletions were computed using the presumptive stream depletions in Rule 4.2 of the **AMENDED RULES AND REGULATIONS GOVERNING THE DIVERSION AND USE OF TRIBUTARY GROUND WATER IN THE ARKANSAS RIVER BASIN, COLORADO** ("Rules") approved in Case No. 95CW211.

Table 2 shows the wellhead depletions due to pumping by irrigation wells in the user groups below John Martin Reservoir that is in excess of the pre-Compact entitlements.

Since the depletions caused by pumping above John Martin Reservoir were fully replaced, and that accounting has been provided to Kansas, and the depletions caused by pumping below John Martin Reservoir which affect senior surface water rights in Colorado were fully replaced, and that accounting has been provided to Kansas, the accounting in this report shows only remaining depletions caused by irrigation pumping in excess of the pre-Compact entitlements for those

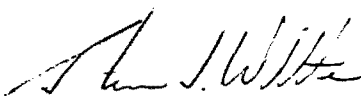
river reaches where no replacements or only partial replacements were made to replace out-of-priority depletions to senior surface water rights in Colorado.

Table 3 shows the remaining stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements which were not replaced by making replacements to senior surface water rights in Colorado. These stream depletions were computed using the wellhead depletions shown in Table 2 with the Ground Water Accounting Model. Please note that in Reaches 14, 15, and 16, replacements to senior surface water rights in Colorado replaced 35.5% of the stream depletions caused by pumping affecting those reaches. This percentage reflects the fact that there was a call by a Colorado surface water right in those three reaches on 11 of the 31 days during July. The remaining depletions shown in Table 3 are the estimated stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements remaining after replacements were made to senior surface water rights in Colorado. Table 3 also shows the estimated depletions to usable Stateline flow, which were calculated using the assumptions in paragraph 5.B of the Resolution, and the replacements to Stateline flows which were made during the month.

A delivery of water to the Offset Account was started at 0900 hours on 14 July, 1997. This delivery was described in my letter to the Kansas Chief Engineer dated August 25, 1997 and involves a daily delivery of a variable quantity of water obtained from shares of the Highland Canal owned by LAWMA. A daily accounting spreadsheet showing the daily operations of this activity has been designed and is currently being completed to summarize the deliveries for July. As of August 1, 1997, 136.35 acre-feet of water was being stored in the Offset Account, 131.53 acre-feet of consumable water and 4.82 acre feet of Colorado in-state return flow water.

Please contact me if you have any questions or require additional information.

Sincerely,



Steven J. Witte
Division Engineer
Colorado Division of Water Resources

3 Tables

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Bill Howland

Larry E. Trujillo, Sr.
Robert Buerkle
Eugene Overton
Daries C. Lile
Carl G. Genova
James G. Rogers

TABLE 1
Pumping By Rule 3 Irrigation Wells
July, 1997

USER NO.	DITCH NAME	AF PUMPED	WELLHEAD DEPL
1	Bessemer	2272	918
2	Booth Orchard	409	271
3	Excelsior	885	578
4	Collier	78	23
5	Colorado	903	420
6	Rocky Ford Highline	820	272
7	Oxford	536	183
8	Otero	208	70
9	Catlin	1477	621
10	Fort Lyon Up Stream	2520	855
11	Rocky Ford	226	78
12	Holbrook	265	110
13	Las Animas Consolidated	105	34
14	Baldwin-Stubbs	1413	707
15	Fort Bent	253	109
16	Keese	754	226
17	Amity	4096	1586
18	Lamar/Manvel	1580	518
19	Hyde	685	215
20	Fort Lyon Down Stream	1926	807
21	XY Graham	1339	523
22	Buffalo	1502	481
23	Sisson	37	28
24	Stateline Sole Source	3524	2337
600	LAWMA APOD	2545	763
601	LAWMA APOD	0	0
602	LAWMA APOD	78	58
	Totals	30436	12790

STATE OF COLORADO

WATER DIVISION 2
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October 14, 1997

Mr. Don Higbee
Recording Secretary
Arkansas River Compact Administration
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David L. Pope
Kansas Chief Engineer
Kansas Board of Agriculture
901 S. Kansas Avenue, 2nd Floor
Topeka, KS 66612-1283

Roy Romer
Governor

James S. Lochhead
Executive Director

Hal D. Simpson
State Engineer

Steven J. Witte, P.E.
Division Engineer

RE: Monthly Report of Colorado Pumping and Offset Account Operations for August, 1997

Dear Mr. Higbee and Mr. Pope:

The purpose of this letter is to provide the monthly report required by paragraph 12 of the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution"). This letter reports the monthly pumping in excess of Colorado's pre-Compact entitlement, Colorado's monthly accounting of Compact compliance, and the status of water delivered to the Offset Account, all during the month of August, 1997.

Table 1 shows the amount of pumping during the month of August, 1997 by irrigation wells pumping from the Valley Fill Aquifer and surficial aquifers along the Arkansas River between Pueblo and the Stateline, as well as the corresponding wellhead depletions, by user group. The wellhead depletions were computed using the presumptive stream depletions in Rule 4.2 of the **AMENDED RULES AND REGULATIONS GOVERNING THE DIVERSION AND USE OF TRIBUTARY GROUND WATER IN THE ARKANSAS RIVER BASIN, COLORADO** ("Rules") approved in Case No. 95CW211.

Table 2 shows the wellhead depletions due to pumping by irrigation wells in the user groups below John Martin Reservoir that is in excess of the pre-Compact entitlements.

Since the depletions caused by pumping above John Martin Reservoir were fully replaced, and that accounting has been provided to Kansas, and the depletions caused by pumping below John Martin Reservoir which affect senior surface water rights in Colorado were fully replaced, and that accounting has been provided to Kansas, the accounting in this report shows only remaining depletions caused by irrigation pumping in excess of the pre-Compact entitlements for those

river reaches where no replacements or only partial replacements were made to replace out-of-priority depletions to senior surface water rights in Colorado.

Table 3 shows the remaining stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements which were not replaced by making replacements to senior surface water rights in Colorado. These stream depletions were computed using the wellhead depletions shown in Table 2 with the Ground Water Accounting Model. Please note that in Reaches 14, 15, and 16, replacements to senior surface water rights in Colorado replaced 0.0% of the stream depletions caused by pumping affecting those reaches. This percentage reflects the fact that there was a call by a Colorado surface water right in those three reaches on none of the 31 days during August. The remaining depletions shown in Table 3 are the estimated stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements remaining after replacements were made to senior surface water rights in Colorado. Table 3 also shows the estimated depletions to usable Stateline flow, which were calculated using the assumptions in paragraph 5.B of the Resolution, and the replacements to Stateline flows which were made during the month.

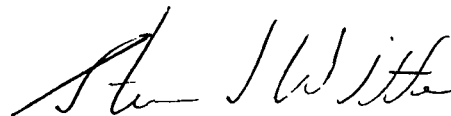
Several deliveries of water to the Offset Account were made during August, 1997. The first was a transfer of water from the Lower Arkansas Water Management Association (LAWMA) X-Y / Graham Article II account in John Martin Reservoir to the Offset Account. The delivery was described in my letter to the Kansas Chief Engineer dated August 6, 1997 and resulted in an addition of 2200 acre-feet of fully consumable water and 1800 acre-feet of return flow water to the Offset Account. The second delivery was described in my letter dated August 19, 1997 and resulted in an addition of 1003.24 acre-feet of fully consumable water to the Offset Account. The delivery of water to the Offset Account from the Highland Canal which started at 0900 hours on 14 July, 1997 continued through the month of August. This delivery was described in my letter to the Kansas Chief Engineer dated August 25, 1997. My letter dated October 9, 1997 provides the summary of the deliveries from this source for the months of July, August, and September, 1997. The deliveries in August resulted in an addition of 1341.88 acre-feet of fully consumable water and 70.39 acre-feet of return flow water to the Offset Account. Finally, a release of water was made from the Offset Account from 0900 hours, August 28, 1997 to 1530 hours, September 2, 1997. My letter dated October 9, 1997 described the details of this release. A total of 1565.9 acre-feet of fully consumable water was released from the Offset Account which produced a credit of 1362.3 acre-feet at the Stateline. As of September 2, 1997, 4917.67 acre-feet of water was being stored in the Offset Account, 3074.05 acre-feet of fully consumable water and 1843.62 acre feet of return flow water.

Please contact me if you have any questions or require additional information.

Mr. Don Higbee and Mr. David L. Pope
October 14, 1997

Page 3

Sincerely,



Steven J. Witte
Division Engineer
Colorado Division of Water Resources

3 Tables

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Bill Howland

Larry E. Trujillo, Sr.
Robert Buerkle
Eugene Overton
Daries C. Lile
Carl G. Genova
James G. Rogers

TABLE 1
Pumping By Rule 3 Irrigation Wells
August, 1997

USER NO.	DITCH NAME	AF PUMPED	WELLHEAD DEPL .
1	Bessemer	1768	705
2	Booth Orchard	127	89
3	Excelsior	430	287
4	Collier	61	18
5	Colorado	666	278
6	Rocky Ford Highline	785	252
7	Oxford	532	171
8	Otero	176	57
9	Catlin	1034	361
10	Fort Lyon Up Stream	1717	586
11	Rocky Ford	215	71
12	Holbrook	305	104
13	Las Animas Consolidated	158	49
14	Baldwin-Stubbs	352	176
15	Fort Bent	231	82
16	Keese	336	101
17	Amity	1426	645
18	Lamar/Manvel	759	247
19	Hyde	133	40
20	Fort Lyon Down Stream	586	246
21	XY Graham	670	341
22	Buffalo	893	285
23	Sisson	18	13
24	Stateline Sole Source	3760	2397
600	LAWMA APOD	1013	304
601	LAWMA APOD	0	0
602	LAWMA APOD	26	19
	Totals	18176	7925

TABLE 2
Wellhead Depletions From Irrigation Wells Below John Martin Reservoir (Acre-Feet)
(Reduced By Pre-Compact Entitlements)
August, 1997

USER NUMBER

15	16	17	18	19	20	21	22	23	24	Total
59	101	645	247	40	246	218	285	13	2397	4251

TABLE 3
Remaining Depletions To Usable Stateline Flow (Acre-Feet)
August, 1997

REACH NUMBER

	14	15	16	17	18	21	Sum
Remaining Depletion	212	112	113	361	1566	12	2376
Depletion to Usable SL Flow	173.6	91.7	92.5	295.7	1282.6	9.8	1945.9
Replacements							
LAWMA-CO Beef Credit	121.9						121.9
LAWMA-Ft Bent Ditch Shrs	108.8						108.8
LAWMA-Stubbs Direct Flow					56		56
LAWMA-XY Direct Flow		1365.2					1365.2
LAWMA-Manvel Direct Flow		300					300
Total Replacements	230.7	1665.2			56		1951.9

STATE OF COLORADO

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November 12, 1997

Mr. Don Higbee
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Topeka, KS 66612-1283

Roy Romer
Governor

James S. Lochhead
Executive Director

Hal D. Simpson
State Engineer

Steven J. Witte, P.E.
Division Engineer

RE: Monthly Report of Colorado Pumping and Offset Account Operations for September, 1997

Dear Mr. Higbee and Mr. Pope:

The purpose of this letter is to provide the monthly report required by paragraph 12 of the **Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping** dated March 17, 1997 ("Resolution"). This letter reports the monthly pumping in excess of Colorado's pre-Compact entitlement, Colorado's monthly accounting of Compact compliance, and the status of water delivered to the Offset Account, all during the month of September, 1997.

Table 1 shows the amount of pumping during the month of September, 1997 by irrigation wells pumping from the Valley Fill Aquifer and surficial aquifers along the Arkansas River between Pueblo and the Stateline, as well as the corresponding wellhead depletions, by user group. The wellhead depletions were computed using the presumptive stream depletions in Rule 4.2 of the **AMENDED RULES AND REGULATIONS GOVERNING THE DIVERSION AND USE OF TRIBUTARY GROUND WATER IN THE ARKANSAS RIVER BASIN, COLORADO** ("Rules") approved in Case No. 95CW211.

Table 2 shows the wellhead depletions due to pumping by irrigation wells in the user groups below John Martin Reservoir that is in excess of the pre-Compact entitlements.

Since the depletions caused by pumping above John Martin Reservoir were fully replaced, and that accounting has been provided to Kansas, and the depletions caused by pumping below John Martin Reservoir which affect senior surface water rights in Colorado were fully replaced, and that accounting has been provided to Kansas, the accounting in this report shows only remaining depletions caused by irrigation pumping in excess of the pre-Compact entitlements for those

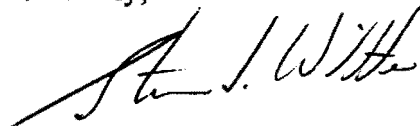
river reaches where no replacements or only partial replacements were made to replace out-of-priority depletions to senior surface water rights in Colorado.

Table 3 shows the remaining stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements which were not replaced by making replacements to senior surface water rights in Colorado. These stream depletions were computed using the wellhead depletions shown in Table 2 with the Ground Water Accounting Model. Please note that in Reaches 14, 15, and 16, replacements to senior surface water rights in Colorado replaced 20.0% of the stream depletions caused by pumping affecting those reaches. This percentage reflects the fact that there was a call by a Colorado surface water right in those three reaches on 6 of the 30 days during September. The remaining depletions shown in Table 3 are the estimated stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements remaining after replacements were made to senior surface water rights in Colorado. Table 3 also shows the estimated depletions to usable Stateline flow, which were calculated using the assumptions in paragraph 5.B of the Resolution, and the replacements to Stateline flows which were made during the month.

One delivery of water to the Offset Account was made during September, 1997. This delivery of water to the Offset Account from the Highland Canal started at 0900 hours on 14 July, 1997 and continued through the month of September. This delivery was described in my letter to the Kansas Chief Engineer dated August 25, 1997. My letter dated October 9, 1997 provided the summary of the deliveries from this source for the months of July, August, and September, 1997. The deliveries in September resulted in an addition of 378.22 acre-feet of fully consumable water and 17.80 acre-feet of return flow water to the Offset Account. As of September 30, 1997, 5207.08 acre-feet of water was being stored in the Offset Account, 3374.03 acre-feet of fully consumable water and 1833.05 acre feet of return flow water.

Please contact me if you have any questions or require additional information.

Sincerely,



Steven J. Witte
Division Engineer
Colorado Division of Water Resources

3 Tables

cc: Mark Rude
John Draper
Dale Book
Hal Simpson
Dennis Montgomery
Bill Howland

Larry E. Trujillo, Sr.
Robert Buerkle
Eugene Overton
Daries C. Lile
Carl G. Genova
James G. Rogers

TABLE 1
Pumping By Rule 3 Irrigation Wells
September, 1997

USER NO.	DITCH NAME	AF PUMPED	WELLHEAD DEPL
1	Bessemer	1135	464
2	Booth Orchard	205	131
3	Excelsior	649	418
4	Collier	52	16
5	Colorado	223	89
6	Rocky Ford Highline	446	145
7	Oxford	112	43
8	Otero	83	28
9	Catlin	502	252
10	Fort Lyon Up Stream	891	317
11	Rocky Ford	64	24
12	Holbrook	72	25
13	Las Animas Consolidated	164	51
14	Baldwin-Stubbs	853	427
15	Fort Bent	118	42
16	Keese	684	205
17	Amity	1360	704
18	Lamar/Manvel	371	137
19	Hyde	304	91
20	Fort Lyon Down Stream	736	375
21	XY Graham	822	470
22	Buffalo	618	208
23	Sisson	26	20
24	Stateline Sole Source	3128	2021
600	LAWMA APOD	986	296
601	LAWMA APOD	0	0
602	LAWMA APOD	16	12
	Totals	14620	7011

TABLE 2
Wellhead Depletions From Irrigation Wells Below John Martin Reservoir (Acre-Feet)
(Reduced By Pre-Compact Entitlements)
September, 1997

USER NUMBER										
15	16	17	18	19	20	21	22	23	24	Total
17	205	612	137	91	375	289	208	20	2021	3975

TABLE 3
Remaining Depletions To Usable Stateline Flow (Acre-Feet)
September, 1997

REACH NUMBER							
	14	15	16	17	18	21	Sum
Remaining Depletion	151.2	90.4	94.4	333	1698	22	2389
Depletion to Usable SL Flow	123.8	74.0	77.3	272.7	1390.7	18.0	1956.5
Replacements							
LAWMA-CO Beef Credit	135.4						135.4
LAWMA-Ft Bent Ditch Shrs	44.3						44.3
LAWMA-Stubbs Direct Flow					54		54
LAWMA-XY Direct Flow		1549.2					1549.2
LAWMA-Manvel Direct Flow		180					180
Total Replacements	179.7	1729.2			54		1962.9

STATE OF COLORADO

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December 1, 1997

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RE: Monthly Report of Colorado Pumping and Offset Account Operations for October, 1997

Dear Mr. Higbee and Mr. Pope:

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Table 1 shows the amount of pumping during the month of October, 1997 by irrigation wells pumping from the Valley Fill Aquifer and surficial aquifers along the Arkansas River between Pueblo and the Stateline, as well as the corresponding wellhead depletions, by user group. The wellhead depletions were computed using the presumptive stream depletions in Rule 4.2 of the **AMENDED RULES AND REGULATIONS GOVERNING THE DIVERSION AND USE OF TRIBUTARY GROUND WATER IN THE ARKANSAS RIVER BASIN, COLORADO** ("Rules") approved in Case No. 95CW211.

Table 2 shows the wellhead depletions due to pumping by irrigation wells in the user groups below John Martin Reservoir that is in excess of the pre-Compact entitlements.

Since the depletions caused by pumping above John Martin Reservoir were fully replaced, and that accounting has been provided to Kansas, and the depletions caused by pumping below John Martin Reservoir which affect senior surface water rights in Colorado were fully replaced, and that accounting has been provided to Kansas, the accounting in this report shows only remaining depletions caused by irrigation pumping in excess of the pre-Compact entitlements for those

river reaches where no replacements or only partial replacements were made to replace out-of-priority depletions to senior surface water rights in Colorado.

Table 3 shows the remaining stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements which were not replaced by making replacements to senior surface water rights in Colorado. These stream depletions were computed using the wellhead depletions shown in Table 2 with the Ground Water Accounting Model. Please note that in Reaches 11, 12, and 13, replacements to senior surface water rights in Colorado replaced 61.3% of the stream depletions caused by pumping affecting those reaches. This percentage reflects the fact that there was a call by a Colorado surface water right in those three reaches on 19 of the 31 days during October. Also note that in Reaches 14, 15, and 16, replacements to senior surface water rights in Colorado replaced 0% of the stream depletions caused by pumping affecting those reaches. This percentage reflects the fact that there was a call by a Colorado surface water right in those three reaches on none of the 31 days during October. The remaining depletions shown in Table 3 are the estimated stream depletions caused by irrigation pumping in excess of the pre-Compact entitlements remaining after replacements were made to senior surface water rights in Colorado. Table 3 also shows the estimated depletions to usable Stateline flow, which were calculated using the assumptions in paragraph 5.B. of the Resolution, and the replacements to Stateline flows which were made during the month. Note that 1084.5 acre-feet of fully consumable water was required from the Offset Account to replace a portion of the depletions to usable Stateline flow which were estimated to occur during October, 1997. Under the provisions of paragraph 2 of the **Stipulation Re Offset Account in John Martin Reservoir** dated March 17, 1997 ("Stipulation"), a portion of the credit of 2239.25 acre-feet of consumable water which was released earlier this year, as directed by the Kansas Chief Engineer, was credited as replacement of these depletions. At the end of October, 1997, the remaining credit from the previous releases of consumable water produced a credit at the Stateline of 1004.6 acre-feet.

One delivery of water to the Offset Account was made during October, 1997. This delivery of water to the Offset Account from the Highland Canal started at 0900 hours on 14 July, 1997 and continued through the month of October. This delivery was described in my letter to the Kansas Chief Engineer dated August 25, 1997. My letter dated November 24, 1997 provided the summary of the deliveries from this source for the month of October, 1997. The deliveries in October resulted in an addition of 213.63 acre-feet of fully consumable water and 10.15 acre-feet of return flow water to the Offset Account. As of October 31, 1997, 5356.97 acre-feet of water was being stored in the Offset Account, 3539.06 acre-feet of fully consumable water and 1817.91 acre feet of return flow water.

Please contact me if you have any questions or require additional information.

Sincerely,



Steven J. Witte
Division Engineer
Colorado Division of Water Resources

3 Tables

cc: Mark Rude
John Draper
Dale Book
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Robert Buerkle
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Tom Pointon
James G. Rogers

TABLE 1
Pumping By Rule 3 Irrigation Wells
October, 1997

USER NO.	DITCH NAME	AF PUMPED	WELLHEAD DEPL
1	Bessemer	410	171
2	Booth Orchard	18	13
3	Excelsior	219	154
4	Collier	24	7
5	Colorado	346	171
6	Rocky Ford Highline	423	136
7	Oxford	135	51
8	Otero	42	17
9	Catlin	380	174
10	Fort Lyon Up Stream	172	57
11	Rocky Ford	110	40
12	Holbrook	74	22
13	Las Animas Consolidated	44	14
14	Baldwin-Stubbs	413	206
15	Fort Bent	51	19
16	Keese	120	36
17	Amity	689	273
18	Lamar/Manvel	132	55
19	Hyde	13	4
20	Fort Lyon Down Stream	390	202
21	XY Graham	381	215
22	Buffalo	133	54
23	Sisson	25	19
24	Stateline Sole Source	1263	889
600	LAWMA APOD	717	229
601	LAWMA APOD	0	0
602	LAWMA APOD	2	1
	Totals	6726	3229

TABLE 2
Wellhead Depletions From Irrigation Wells Below John Martin Reservoir (Acre-Feet)
(Reduced By Pre-Compact Entitlements)
October, 1997

USER NUMBER

15	16	17	18	19	20	21	22	23	24	Total
11	36	242	55	4	202	167	54	19	889	1679

TABLE 3
Remaining Depletions To Usable Stateline Flow (Acre-Feet)
October, 1997

REACH NUMBER

	11	12	13	14	15	16	17	18	21	Sum
Remaining Depletion	10.06	64.63	70.43	174	107	116	304	1575	36	
Depletion to Usable SL Flow	8.2	52.9	57.7	142.5	87.6	95.0	249.0	1289.9	29.5	2012.3
Replacements										
LAWMA-CO Beef Credit				15						15
LAWMA-Ft Bent Ditch Shrs				142.7						142.7
LAWMA-Stubbs Direct Flow								56		56
LAWMA-XY Direct Flow					655.3					655.3
LAWMA-Manvel Direct Flow					70					70
Offset Account Water	1084.5									1084.5
Total Replacements	1084.5			157.7	725.3			56		2023.5