PECOS RIVER COMPACT

Report of the River Master

Water Year 1996

Accounting Year 1997

Final Report

June 25, 1997

Neil S. Grigg
River Master of the Pecos River
749 S. Lemay, #A3-330
Fort Collins, Colorado 80524

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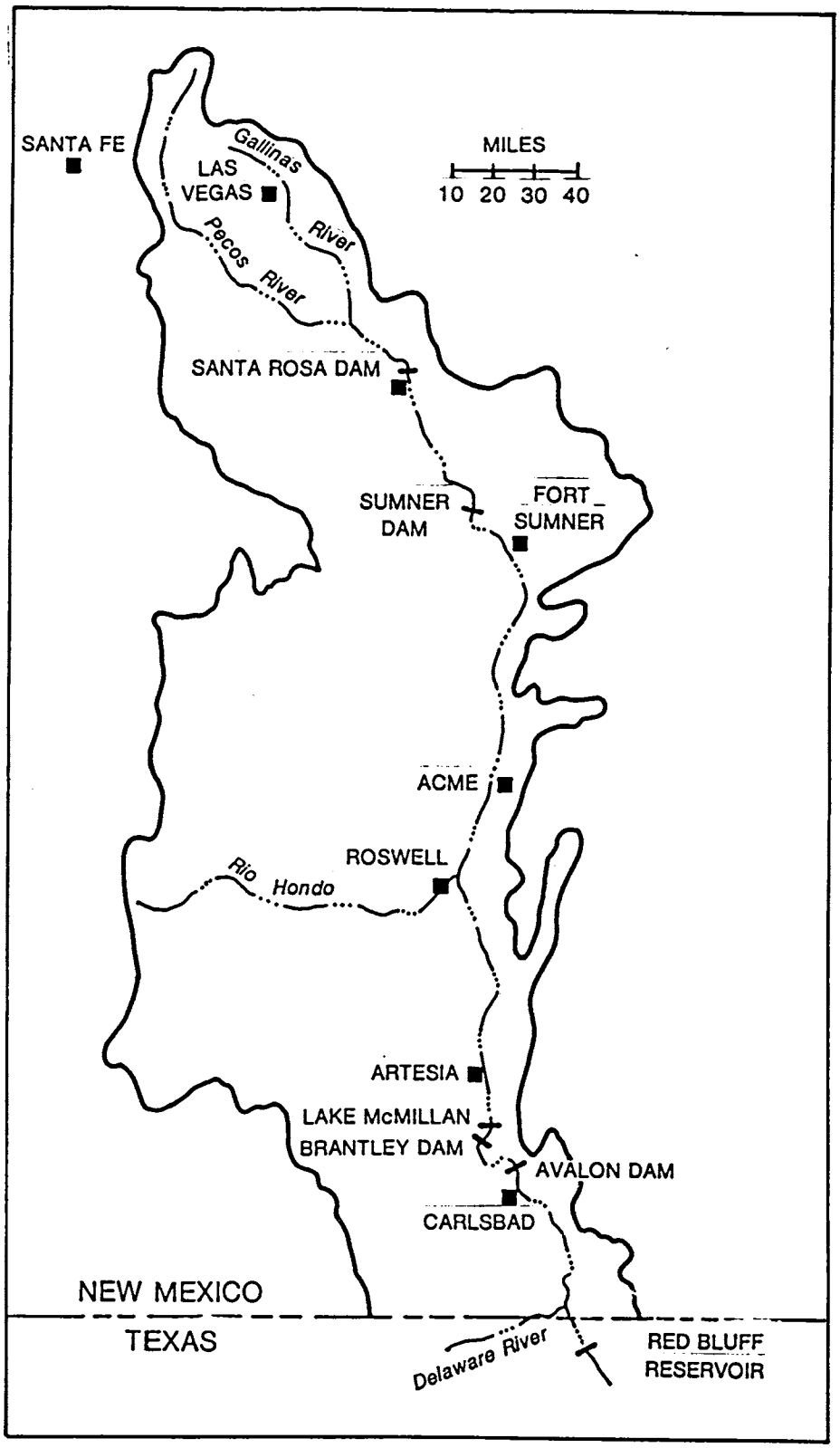


Map of Pecos River Basin Showing Accounting Reaches

PECOS RIVER COMPACT
Supreme Court of the United States
No. 65, Original
Amended Decree

Final Report of the River Master
Water Year 1996 - Accounting Year 1997
June 25, 1997

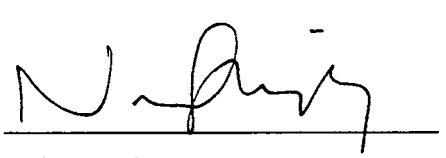
Purpose of the Report. In its Amended Decree issued March 28, 1988 the Supreme Court of the United States appointed a River Master of the Pecos River and directed him to "... Deliver to the parties a Preliminary Report setting forth the tentative results of the calculations required by Section III.B.1 of this Decree by May 15 of the accounting year..." and to consider "... any written objections to the Preliminary Report submitted by the parties prior to June 15 of the accounting year..." and to deliver "... to the parties a Final Report setting forth the final results of the calculations required by Section III.B.1 of this Decree by July 1 of the accounting year." This is the required Final Report with the determination of:

a. The Article III(a) obligation;

b. Any shortfall or overage, which calculation shall disregard deliveries of water pursuant to an Approved Plan;

c. The net shortfall, if any, after subtracting any overages accumulated in previous years, beginning with water year 1987.

Result of Calculations and Statement of Shortfall or Overage. The results of the calculations in this Final Report show that New Mexico's delivery in Water Year 1996 was a shortfall of 6,700 acre-feet. The accumulated overage since the beginning of Water Year 1987 is 14,600 acre-feet.



Neil S. Grigg
River Master of the Pecos River

Pecos River Compact

Accumulated Shortfall or Overage

Water Year	Annual Overage or Shortfall, AF	Accumulated Overage or Shortfall, AF
1987	15,400	15,400
1988	23,600	39,000
1989	2,700	41,700
1990	-14,100	27,600
1991	-16,500	11,100
1992	10,900	22,000
1993	6,600	28,600
1994	5,900	34,500
1995	-13,200	21,300
1996	-6,700	14,600

Table 1. General Calculation of Annual Departures, TAF			
6/23/97			
6:33	1994	1995	1996
B.1.a. Index Inflows			
(1) Annual flood inflow			
(a) Gaged flow Pecos R bel Alamogordo Dam	174.0	197.6	134.2
(b) Flood Inflow Alamogordo - Artesia (Table 2)	1.8	-5.1	9.4
(c) Flood Inflow Artesia - Carlsbad (Table 3)	6.2	-5.8	10.3
(d) Flood Inflow Carlsbad - State Line (Table 4)	4.3	5.1	10.5
Total (annual flood inflow)	186.3	191.8	164.4
(2) Index Inflow (3-year avg)			180.8
B.1.b. 1947 Condition Delivery Obligation			79.9
(Index Outflow)			
B.1.c. Average Historical (Gaged) Outflow			
Gaged Flow Pecos River at Red Bluff NM	66.3	69.2	72.8
Gaged Flow Delaware River nr Red Bluff NM	1.3	1.9	5.6
(1) Total Annual Historical Outflow	67.6	71.1	78.4
(2) Average Historical Outflow (3-yr average)			72.4
B.1.d. Annual Departure			-7.5
C. Adjustments to Computed Departure			
1. Adjustments for Depletions above Alam Dam			
a. Depletions Due to Irrigation (Table 5)	-3.5	-0.2	-2.2
b. Depl fr Operation of Santa Rosa Reservoir (Table 6)	3.7	0.5	3.5
c. Transfer of Water Use to Upstream of AD	0	0	0
Recomputed Index Inflows			
(1) Annual flood inflow			
(a) Gaged flow Pecos R bel Alamogordo Dam	174.2	197.9	135.5
(b) Flood Inflow Alamogordo - Artesia	1.8	-5.1	9.4
(c) Flood Inflow Artesia - Carlsbad	6.2	-5.8	10.3
(d) Flood Inflow Carlsbad - State Line	4.3	5.1	10.5
Total (annual flood inflow)	186.5	192.1	165.7
Recomputed Index Inflow (3-year avg)			181.4
Recomputed 1947 Condition Del Outflow			80.3
(Index Outflow)			
Recomputed Annual Departures			-7.9
Credits to New Mexico			
C.2 Depletions Due to McMillan Dike			1.3
C.3 Salvage Water Analysis			0
C.4 Unappropriated Flood Waters			0
C.5 Texas Water Stored in NM Reservoirs			0
C.6 Beneficial C.U. Delaware River Water			0
Final Calculated Departure, TAF			-6.7

Table 2. Determination of Flood Inflows, Alamogordo Dam to Artesia (B.3)													
Water Year 1996													
6/23/97													
6:15 AM													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOT
Flow bel Alamog Dam	3.0	4.1	6.4	5.7	43.7	45.9	10.3	5.6	4.7	4.9	0.0	0.0	134.2
FtSumner Irrig Div	0.0	2.5	5.5	5.1	5.1	5.2	5.5	5.9	5.0	4.8	0.0	0.0	44.8
Ft Sumner ID Return	0.9	0.7	1.7	1.9	2.8	2.8	2.8	2.8	2.6	2.4	1.2	0.9	23.7
Flow past FS IDist	3.9	2.3	2.5	2.4	41.4	43.5	7.6	2.8	2.6	2.4	1.2	1.0	113.7
Channel loss	0.3	0.2	0.7	1.4	6.0	7.9	1.7	1.6	0.8	0.8	0.6	0.2	22.1
Residual Flow	3.6	2.1	1.9	1.1	35.4	35.6	5.9	1.2	1.8	1.6	0.6	0.8	91.6
Base Inflow	3.0	3.5	2.6	2.0	1.7	1.9	2.4	3.2	2.8	2.7	2.9	3.1	31.7
River Pump Divers	0.0	0.1	0.2	0.4	1.1	0.8	0.6	0.6	0.3	0.4	0.0	0.0	4.6
Residual, Artesia	6.5	5.5	4.3	2.6	36.0	36.7	7.7	3.8	4.3	3.9	3.4	3.9	118.7
Pecos Flow Artesia	6.1	5.2	4.4	2.7	31.9	28.5	17.9	8.5	10.3	4.5	4.0	4.0	128.1
Flood Inflow, AD-Art	-0.4	-0.2	0.1	0.1	-4.2	-8.2	10.2	4.7	6.0	0.6	0.6	0.1	9.4

Table 3. Determination of Flood Inflows, Artesia to Carsbad, WY 1996 (B.4)													
4/12/97													
4:22 PM	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOT
Rio Penasco at Dayton	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.6
Fourmile Draw nr Lakew	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
South Seven Rivers nr	0.0	0.0	0.0	0.0	0.0	0.6	0.0	4.6	0.0	0.0	0.0	0.0	5.2
Rocky Arroyo at Hwy Br	0.0	0.0	0.0	0.0	0.0	0.8	0.1	2.8	0.1	0.0	0.0	0.0	3.9
Flood Inflow, Art-DS3	0.0	0.0	0.0	0.0	0.0	1.7	0.3	7.6	0.1	0.0	0.0	0.0	9.8
Pecos R at Dam Site 3	0.4	4.6	6.0	16.0	23.0	15.9	23.5	14.2	4.4	11.5	9.0	1.5	129.7
CB Sprgs New Water, T7	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-5.5
Total Inflow, DS3 - CB	-0.1	4.1	5.5	15.5	22.5	15.4	23.0	13.7	3.9	11.0	8.5	1.0	123.7
Evap Loss, Lake Avalon, T10	0.0	0.0	0.5	0.5	0.8	0.5	0.4	0.2	0.3	0.3	0.1	0.2	3.7
Storage Chg, Lake Aval, T11	0	3.0	-1.7	-0.1	-0.1	0.0	-0.2	3.0	-2.9	0.0	0.3	0.6	1.7
Carls ID diversions	0.3	0.0	7.5	14.9	14.0	12.3	13.9	9.4	4.9	11.4	0.0	0.0	88.6
93% CID diver	0.2	0.0	7.0	13.9	13.1	11.4	12.9	8.8	4.5	10.6	0.0	0.0	82.4
Other depletions	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	1.4
Dark Canyon at Csbad	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0.0
Pecos b Dark Canyon	1.5	0.8	0.9	0.8	6.4	3.1	7.8	1.0	1.5	1.4	8.9	1.2	35.0
Pecos R at Carlsbad	1.5	0.8	0.9	0.8	6.4	3.1	7.7	1.0	1.5	1.4	8.9	1.2	35.0
Total Outflow	1.8	3.8	6.7	15.1	20.2	15.0	21.1	13.1	3.6	12.3	9.4	2.1	124.2
Flood Inflow, DS3-CB	1.9	-0.2	1.2	-0.3	-2.3	-0.4	-1.9	-0.6	-0.3	1.3	0.9	1.1	0.5
Flood Inflow, Art-CB	1.9	-0.2	1.2	-0.3	-2.3	1.3	-1.6	7.0	-0.2	1.3	0.9	1.1	10.3

Table 4. Summary Table for Computations, Carlsbad to State Line							
6/21/97							
	Final						
	Rept						
Jan	64						
Feb	0						
Mar	0						
Apr	177						
May	31						
Jun	433						
Jul	189						
Aug	1192						
Sep	3645						
Oct	122						
Nov	10						
Dec	30						
	5893						
Summary of flood inflows, Carlsbad to State Line, TAF							
Carlsbad to Red Bluff						5.9	
Delaware River (USGS Computation						4.6	
Total Flood Inflow, Carlsbad to State Line						10.5	TAF

Table 5. Depletions Due to Irrigation Above Alamogordo Dam - WY 1996 (C.1.a)								
4/12/97								
16:24	APR	MAY	JUN	JUL	AUG	SEPT	OCT	OTA
Precip Las Vegas FAA AP	0.01	0.01	4.54	4.89	4.61	2.03	1.97	18.06
Eff prec Las Veg FAA AP	0.01	0.01	3.62	3.78	3.64	1.86	1.81	14.73
Precip Pecos Natl Monument	0.03	0.01	2.62	3.57	6.10	2.30	1.15	15.78
Eff Precip Pecos RS	0.03	0.01	2.31	3.00	4.06	2.06	1.11	12.58
Precip Santa Rosa	0.00	0.00	1.81	3.78	3.37	2.65	0.80	12.41
Eff Precip Santa Ro	0.00	0.00	1.67	3.15	2.86	2.33	0.78	10.79
Average eff precip, ft	0.00	0.00	0.21	0.28	0.29	0.17	0.10	1.06
Consumptive use, ft	0.19	0.36	0.36	0.30	0.27	0.18	0.11	1.77
CU less eff precip, ft	0.19	0.36	0.15	0.02	0.00	0.01	0.01	0.74
Acres (most recent inventory)	11761							
Streamflow depletion, AF	8644							
1947 depletion, AF	10804							
Difference, TAF	2.2							
Adjustment to Gaged Flow Pecos River below Alamogordo Dam =						-2.2		

Table 6. Depletions Due to Santa Rosa Reservoir Operations - WY 1996 - (C.1.b)													
6/21/97													
16:55													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
Lk Sumner ga ht, avg	59.19	60.62	59.86	58.76	50.27	45.14	39.07	40.92	43.52	50.72	51.70	53.85	51.14
LS content, AF, avg	38850	42703	40627	37735	19890	12526	6936	8280	10693	20645	22342	26392	
LS area, acres, avg	2616	2780	2686	2571	1660	1208	674	803	1053	1694	1769	2023	1795
LS evap, inches	4.52	5.79	9.40	13.80	19.86	16.42	13.08	9.94	10.06	7.22	5.31	5.38	120.78
.77 LS Evap	3.48	4.46	7.24	10.63	15.29	12.64	10.07	7.65	7.75	5.56	4.09	4.14	93.00
LS Precip, inches	0.12	0.24	0.00	0.00	0.00	3.27	2.36	3.75	1.51	1.22	0.07	0.00	12.54
Net LS Evap, inches	3.36	4.22	7.24	10.63	15.29	9.37	7.71	3.90	6.24	4.34	4.02	4.14	80.46
LSum Evaploss, TAF	0.73	0.98	1.62	2.28	2.12	0.94	0.43	0.26	0.55	0.61	0.59	0.70	11.81
L S Rosa ga ht, avg	33.22	32.76	32.93	32.97	25.85	11.45	8.65	21.07	27.18	22.71	22.91	23.34	24.59
LSR content, AF, avg	60008	58811	59252	59356	42660	19635	16638	33490	45492	36463	36837	37652	
LSR area, acres, avg	2620	2578	2594	2597	2079	1148	1000	1771	2177	1858	1874	1911	
LSR evap, inches	3.72	5.22	8.58	9.75	14.48	10.79	10.24	9.34	6.56	5.98	4.47	3.76	92.89
.77 LSR Evap	2.86	4.02	6.61	7.51	11.15	8.31	7.88	7.19	5.05	4.60	3.44	2.90	71.53
LSR precip, inches	0.34	0.29	0.03	0.00	0.00	2.64	2.90	2.50	1.45	0.71	0.40	0.09	11.35
Net LSR Evap, inches	2.52	3.73	6.58	7.51	11.15	5.67	4.98	4.69	3.60	3.89	3.04	2.81	60.18
LSR Evaploss, TAF	0.55	0.80	1.42	1.62	1.93	0.54	0.42	0.69	0.65	0.60	0.48	0.45	10.16
Total evaploss, TAF	1.28	1.78	3.04	3.90	4.05	1.49	0.85	0.95	1.20	1.22	1.07	1.15	21.97
Sum contents, AF	98858	101514	99879	97091	62550	32161	23574	41770	56185	57108	59179	64044	
1947 area, acres	3765	3840	3790	3720	2820	1615	1240	1975	2600	2640	2720	2850	
1947 evaploss, TAF	1.05	1.35	2.29	3.29	3.59	1.26	0.80	0.64	1.35	0.95	0.91	0.98	18.48
current-1947evaploss	0.23	0.43	0.76	0.61	0.45	0.22	0.05	0.31	-0.15	0.26	0.16	0.16	3.49
						Annual adjustment for excess evaporation =							3.5
ADJUSTMENT FOR EXCESSIVE STORAGE IN SANTA ROSA RESERVOIR													
			1995	1995	1996	1996							
			Gage	Storage	Gage	Storage							
EndYear Sumner Sto			4255.69	30335	4254.73	28224							
EndYear S R Sto			4736.22	68411	4723.48	37921							
Sum				98746		66145							
Sto Adjustment, AF						0							
Adjustm Ex Evap, TAF						3.5							
Total Adjustment,TAF						3.5							

Table 7. Carlsbad Springs New Water WY 1996 - (B.4.c)							
6/21/97							
8:41		TAF	cfs	Totals			
Pecos R bel DC, cfs		35.0	48.3	48.3			
Dark Canyon, cfs		0	0.0	0.0			
Pecos R bel Lake Av,		23.6	32.6	32.6			
Depletion, cfs				2.0			
CID lag seep, cfs (Table 8)				8.7			
Return flow, cfs				1.0			
Lake Av lagged seep, cfs (Table 9)				12.6			
PR seepage, cfs				3.0			
Carls new water, cfs				-7.6			
Carls new wat, TAF				-5.5			
Carls new wat monthly, TAF				-0.5			

Table 8. Carlsbad Main Canal Seepage Lagged - WY 1996 - [B.4.c.(1)(e)]													
6/21/97													
9:11	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
WY 1996													
CID, TAF	0.3	0.0	7.5	14.9	14.0	12.3	13.9	9.4	4.9	11.4	0.0	0.0	88.6
days/mo	31	29	31	30	31	30	31	31	30	31	30	31	366
cfs	4.1	0.0	122.1	250.6	228.3	206.2	226.2	153.4	82.0	184.9	0.0	0.0	121.5
cfs, qtr avg			43.0			228.4			154.6			62.3	
1995		1Q	2Q	3Q	4Q								
FLOWS, cfs				221.9	62.3								
SEVEN %				15.5	4.4								
1996		1Q	2Q	3Q	4Q								
FLOWS, cfs		43.0	228.4	154.6	62.3								
SEVEN %		3.0	16.0	10.8	4.4								
LAG		5.5	9.7	11.2	8.5	Avg =	8.7	cfs					

Table 9. Lake Avalon Leakage Lagged - WY 1996 - B.4.c.(1)(g)													
6/21/97													
9:57													
WY 1996	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOT
ga ht, avg	0.00	8.26	17.02	16.21	16.08	15.82	15.71	16.11	19.04	15.78	15.65	16.87	
cfs	0.0	0.0	19.4	15.5	14.9	13.6	13.1	15.0	29.0	13.4	12.8	18.6	
days	31	29	31	30	31	30	31	31	30	31	30	31	365
cfs avg	6.7			14.7			18.9			15.0			13.8
1995		1Q	2Q	3Q	4Q								
cfs				17.1	5.7								
1996		1Q	2Q	3Q	4Q								
cfs		6.7	14.7	18.9	15.0								
lag cfs		8.1	10.5	15.5	16.2	Avg =	12.6	cfs					

Table 10. Evaporation Loss at Lake Avalon - WY 1996													
4/12/97													
16:17	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOT
Avalon ga ht, avg, ft	0.00	8.26	17.02	16.21	16.08	15.82	15.71	16.11	19.04	15.78	15.65	16.87	
Avg area Avalon, ac.	0	1	683	599	579	540	523	584	825	534	514	671	
Panevap Brantley, in.	4.65	5.80	10.69	13.36	20.64	15.89	13.43	10.84	8.52	7.90	4.80	4.34	120.86
Lakeevap Brantley, in.	3.58	4.47	8.23	10.29	15.89	12.24	10.34	8.35	6.56	6.08	3.70	3.34	93.06
Precip Brantley, in.	0.43	0.00	0.00	0.83	0.00	2.15	0.80	3.53	1.69	0.11	0.31	0.00	9.85
Netevap, inches	3.15	4.47	8.23	9.46	15.89	10.09	9.54	4.82	4.87	5.97	3.39	3.34	83.21
Evaploss Av, TAF	0.0	0.0	0.5	0.5	0.8	0.5	0.4	0.2	0.3	0.3	0.1	0.2	3.7

Table 11. Change in Storage, Lake Avalon - 1996														
(Gage heights are end of month)														
4/12/97														
16:19														
	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOT
	1995													
Gage EOM, ft	0	0.0	18.8	16.4	16.2	16.1	16.1	15.7	19.8	15.8	15.8	16.3	17.2	
Storage, AF	0	0	2952	1214	1091	1032	1032	811	3795	864	864	1152	1746	
Change sto, TAF		0.0	3.0	-1.7	-0.1	-0.1	0.0	-0.2	3.0	-2.9	0.0	0.3	0.6	1.7

Table 12. Data Required for River Master Manual Calculations, Water Year 1996													
6/21/97													
4:52 PM	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
STREAMFLOW GAGING RECORDS, TAF													
Pecos R b Sumner Dam	3.0	4.1	6.4	5.7	43.7	45.9	10.3	5.6	4.7	4.9	0.0	0.0	134.2
Fort Sumner Main C	0.0	2.5	5.5	5.1	5.1	5.2	5.5	5.9	5.0	4.8	0.0	0.0	44.8
Pecos R nr Artesia	6.1	5.2	4.4	2.7	31.9	28.5	17.9	8.5	10.3	4.5	4.0	4.0	128.1
Rio Penasco at Dayton	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.6
Fourmile Draw nr Lakewood	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
South Seven Rivers nr Lkwd	0.0	0.0	0.0	0.0	0.0	0.6	0.0	4.6	0.0	0.0	0.0	0.0	5.2
Rocky Arroyo at Hwy Br nr	0.0	0.0	0.0	0.0	0.0	0.8	0.1	2.8	0.1	0.0	0.0	0.0	3.9
Pecos R at Dam Site 3	0.4	4.6	6.0	16.0	23.0	15.9	23.5	14.2	4.4	11.5	9.0	1.5	129.7
Pecos bel Avalon Dam	0.0	0.0	0.0	0.0	6.2	2.1	7.0	0.0	0.0	0.0	8.5	0.0	23.6
Carlsbad Main Canal	0.3	0.0	7.5	14.9	14.0	12.3	13.9	9.4	4.9	11.4	0.0	0.0	88.6
Dark Canyon at Carlsbad	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pecos below Dark Canyon	1.5	0.8	0.9	0.8	6.4	3.1	7.8	1.0	1.5	1.4	8.9	1.2	35.0
Pecos R at Red Bluff	4.9	3.6	3.3	3.2	6.7	6.6	10.3	4.3	7.4	4.3	13.4	4.9	72.8
Delaware R nr Red Bluff	0.1	0.1	0.1	0.1	0.0	1.0	0.4	2.5	1.0	0.1	0.1	0.1	5.6
GAGE HEIGHTS													
													DEC95
Avalon gage ht, end mo	0.0	18.8	16.4	16.2	16.1	16.1	15.7	19.8	15.8	15.8	16.3	17.2	0.0
Avalon gage ht, avg	0.00	8.26	17.02	16.21	16.08	15.82	15.71	16.11	19.04	15.78	15.65	16.87	
Alamogordo ga ht, end mo	60.42	60.28	59.38	58.08	46.83	40.07	41.36	42.05	49.29	50.44	52.81	54.73	55.69
Alamogordo gage ht, avg	59.19	60.62	59.86	58.76	50.27	45.14	39.07	40.92	43.52	50.72	51.70	53.85	
Lake S Rosa ga ht, end mo	32.57	32.85	32.98	32.83	23.37	86.90	19.61	25.10	23.19	22.75	23.12	23.48	36.22
Lake S Rosa ga ht, avg	33.22	32.76	32.93	32.97	25.85	11.45	8.65	21.07	27.18	22.71	22.91	23.34	
PRECIPITATION, INCHES													
Brantley Lake	0.43	0.00	0.00	0.83	0.00	2.15	0.80	3.53	1.69	0.11	0.31	0.00	9.85
Las Vegas FAA AP				0.01	0.01	4.54	4.89	4.61	2.03	1.97			18.06
Pecos National Monument				0.03	0.01	2.62	3.57	6.10	2.30	1.15			15.78
Santa Rosa				0.00	0.00	1.81	3.78	3.37	2.65	0.80			12.41
Lake Santa Rosa	0.34	0.29	0.03	0.00	0.00	2.64	2.90	2.50	1.45	0.71	0.40	0.09	11.35
Sumner Lake	0.12	0.24	0.00	0.00	0.00	3.27	2.36	3.75	1.51	1.22	0.07	0.00	12.54
PAN EVAPORATION, INCHES													
Lake Santa Rosa	3.72	5.22	8.58	9.75	14.48	10.79	10.24	9.34	6.56	5.98	4.47	3.76	92.89
Lake Sumner	4.52	5.79	9.40	13.80	19.86	16.42	13.08	9.94	10.06	7.22	5.31	5.38	120.78
Brantley Lake	4.65	5.80	10.69	13.36	20.64	15.89	13.43	10.84	8.52	7.90	4.80	4.34	120.86
OTHER REPORTS													
Base Acme-Artesia, TAF	3.0	2.9	2.6	1.9	1.7	1.8	2.2	2.6	2.4	2.5	2.8	3.1	29.5
Pump depl Ac-Artesia, TAF	0.0	0.1	0.2	0.4	1.1	0.8	0.6	0.6	0.3	0.4	0.0	0.0	4.6
NM irrigation inv, acres													11761
NM Transfer water use, TAF													0
NM salvaged water, TAF													0
Texas, water stored NM, TAF													0
Texas, use Del water, TAF													0

APPENDIX

RIVER MASTER'S RESPONSE TO STATES' OBJECTIONS

RESPONSE TO STATES' OBJECTIONS
Final Report, Accounting Year 1997

NEW MEXICO'S OBJECTIONS

1. **Flow Past Fort Sumner Irrigation District**

The River Master accepts this objection and has adjusted the monthly flows accordingly. (Same as Texas' objection I).

2. **Base Inflow, Acme to Artesia**. New Mexico objected to USGS's determination of base flow, Acme to Artesia. The table at the end of this section contains a summary of the differences in acre-feet between USGS's and New Mexico's analyses.

The 4.5 AF difference in the analyses comes principally from the Jan-Feb and June-November periods. The differences in USGS's and New Mexico's results are caused by assumptions in separating base inflow from total flow. This matter was evaluated in New Mexico's Amended First Motion to Modify the River Master's Manual, and the Technical Representatives of the States could not agree on a common approach. USGS monitored the discussion at a meeting at which the states' technical representatives discussed the approaches to hydrograph scalping. The current approach, as outlined in the modified River Master's Manual, is to use the USGS determination for the Preliminary Report, and then for the River Master to make any adjustments based on consideration of the states' objections. USGS is to submit a statement outlining the procedures they used, which they did, in their item 11 furnished with their data package. However, USGS's statement does not give much detail.

New Mexico's submittal provides more detail and takes into account flood inflow, operational releases, precipitation, and groundwater flows. To illustrate the reasons for my decisions about base inflow quantities, I am including Attachment A which consists of photocopies of USGS's graph, with New Mexico's base flow lines indicated. Also included are photocopies of New Mexico's base inflow computation.

January - February. As shown on Attachment A, I am persuaded by New Mexico's reasoning for the Artesia plus pumping line in February. It seems more consistent with the USGS Acme line for the same period; that is, the base flow converges on the lower portions of both hydrographs nearly the same time in early February. However, I am not persuaded by New Mexico's Artesia plus pumping or Acme line for January because they don't provide a gradual adjustment; that is, they jump too much from the lower flows before the Lake Sumner release about December 1. Thus, as you see from the table given later in this section, I retained USGS's January value and accepted New Mexico's February value.

March, April, and May values as computed by USGS and New Mexico differ only about a total of 100 acre-feet and, as I see merit in both approaches, the selected values are a compromise.

June - November is the main period of difference. The main question is: does New Mexico's or USGS's Acme base line best represent the hydrologic base flow process? See the graph for August 30 for the main period of difference. It is very difficult to analyze all of the hydrologic processes in this period to get an integrated view. The graphs were hard to read and bordered on being illegible for critical intervals. New Mexico provided a good discussion, but there are differing conclusions that can be reached. USGS's decisions have some merit as well. A case can be made for either USGS's or New Mexico's approach, and in fact, for other approaches as well. There is room for judgment in selecting the base flows due to the rapidly changing flows in this interval. On the theory that New Mexico's Acme base line represents a lower bound (it is nearly zero for several months) and that USGS's line represents somewhat of an upper bound, I have split the values for the June-November period rather than draw a new line. Analytically, this is about the same as selecting an Acme base flow line half way between USGS and New Mexico on August 30 and retaining USGS's Artesia plus pumping line throughout the period (which is close to New Mexico's).

December. I conclude that in December, New Mexico carried the Artesia plus pumping line too high too quickly and I have retained USGS's estimate.

The results are shown in this table which provides a total base inflow of 31,685 acre-feet or 31.7 TAF.

	USGS	NM	Diff	RM
Jan	2951	3380	429	2951
Feb	2934	3450	516	3450
Mar	2583	2640	57	2612
Apr	1904	2020	116	1962
May	1722	1660	-62	1691
Jun	1844	2020	176	1932
Jul	2152	2640	488	2396
Aug	2644	3750	1106	3197
Sep	2380	3270	890	2825
Oct	2521	2950	429	2736
Nov	2797	2920	123	2859
Dec	3074	3260	186	3074
Totals	29506	33960	4454	31685

3. **Number of days in February**. The River Master accepts New Mexico's objection and has revised Tables 8 and 9. In Table 8 the small change makes a difference in the

lagged cfs from CID, but in Table 9 there is no change. There is no net change in Carlsbad Springs New Water as shown in Table 7.

4. **Carlsbad Main Canal Seepage Lagged**. The River Master accepts this objection and has revised Table 8. See response to Texas' objection IV for further issues related to rounding. If New Mexico and Texas choose to adopt a different policy on rounding, they may do so through a joint motion.

5. **Flood Inflows, Carlsbad to Red Bluff**. New Mexico presented a number of specific objections to the flood inflow computation, and my responses follow New Mexico's presentations which are grouped by date of flood event.

April: New Mexico's main point is that I carried the base flow line too far, or assumed that the flood runoff, as opposed to base inflow, lasted too long. As shown in the Attachment to this discussion, this amounts to a difference of 97.5-50 = 47.5 cfs-days, or about 94 acre-feet. The essence of the issue is that New Mexico would cut the flood off on April 8, or two days after the rain, whereas I assumed that it lasted until April 14, with a gradually receding peak discharge. The rain did halt on April 6, but it was heavy on that day, reaching 0.73" at Carlsbad Caverns. However, the key issue is, in general, are the runoffs in the reach "flashy" or do they last longer? This question deals both with the actual hydrology and how the early analysts treated it, leading to the basic inflow-outflow relationship in the River Master's Manual. Clues to that are the early documents of the Compact, in particular the Review of Basic Data (Attachment) which includes page 21-21 from the RBD) and other documents, such as the Pecos River Joint Investigation. From my review of these documents, I believe that the analysts considered the river to be somewhat "flashy" in this reach, but that runoffs can last more than two days. As an indication for that, consider May 5-11, 1940 where a flood event is shown as lasting six days from a single day's rain, and the analyst initiated the flood before the day's rain. Also see August 5-31 where the flood is shown as lasting 26 days, including a period of eight days, August 14-22, of flooding after the rain ended. However, I think that the main issue is: what could cause hydrograph rises in the reach other than rain? The answer must be either base flow increases or operational releases. The flow at Red Bluff from April 8-14, 1996 would not seem to be due to any operational release and drops too sharply to have been a higher base, in my opinion. Moreover, I see limited evidence in the slightly elevated flows of Delaware River and Black River for the period April 8-14 that a flood runoff is occurring.

I studied issues such as the above in evaluating New Mexico's Sixth Motion to Modify the River Master's Manual and the Modification Determination was issued on November 4, 1991. The states might re-review the discussion of that Motion with regard to New Mexico reporting operational rises that might explain an increase such as the one at Red Bluff from April 8-14. Without operational reports that New Mexico might submit in the objections to the Preliminary Report, the River Master has little to go on except the shapes of the hydrographs and the records of rain and tributary runoff. Based on those, I

conclude that the elevated Red Bluff flow in this period is indeed flood runoff rather than operational rise or base increase.

May: In general, I concur with New Mexico's analysis for the first part of May. Moreover, a further check on the NWS rain reports for May shows no rain on May 1st. New Mexico's original data report showed 0.08" at Carlsbad Caverns on May 1st, but the NWS shows only 0.08" on May 30th for that gage. Taking all of these findings into account, I am reducing the flood inflow for the first part of May to zero. (See June for discussion of May 30-June 5 event).

June: For the flood event that lasted from May 30 - June 5, New Mexico suggests a constant or slightly increasing baseflow. I accept New Mexico's argument that the releases from Avalon Reservoir would tend to hold up the base flow and have adopted New Mexico's figures for this period.

For the latter part of June, New Mexico would stop the flooding on June 17 at Red Bluff, but this makes for a very choppy base flow line which does not seem reasonable. Therefore, I am retaining the Preliminary Report figures for this period. New Mexico pointed out an error for June 30, and it has been corrected.

July: New Mexico's argument for July is similar to that for the May 30-June 5 event. I accept New Mexico's figures for this month with the same reasoning as for the May 30-June 5 event above.

August and September: New Mexico's objections are accepted for this period. They make the computation more accurate, in my opinion, after reviewing their computations.

The Attachment to this discussion includes the River Master's worksheets to evaluate New Mexico's objections. Also, a final table is presented in the attachment showing the Flood Inflow, Carlsbad to Red Bluff.

6. **Lake Sumner Evaporation**. The value has been corrected in Tables 6 and 12. The change does not effect the depletions due to Santa Rosa Reservoir operations.

7. **Lake Santa Rosa Contents and Surface Area**. New Mexico suggests using the old version of the tables for Lake Santa Rosa because the new tables are applicable beginning January 1, 1997. The table was transmitted from the Corps via letter from Mr. Ga ry Gamel dated January 10, 1997. Mr. Gamel stated that it was based on data collected during 1996 and they are adopting it retroactive to January 1, 1997. The table would affect computations for depletions due to Santa Rosa Reservoir operations given on Table 6. Table 6 in the Preliminary Report gave 3.5 TAF for the adjustment for excess evaporation and 0 for the storage adjustment. A trial Table 6 with the earlier elevation-storage-area table is attached. It shows that the adjustment only changes 0.1 TAF. New Mexico did not submit a computation for Table 6. My decision is to use the new tables because: 1) the Corps transmitted the document for adoption beginning January 1, 1997

and the water accounting was done during 1997; 2) the surveys on which the tables are based were taken during the water year being accounted for (1996); and 3) the difference is insignificant.

8. **Final Calculated Departure.**

New Mexico arrived at - 6.0 TAF and the Final Determination is -6.7 TAF.

TEXAS' OBJECTIONS

I. Flow Past Fort Sumner Project

The River Master accepts this objection and has adjusted the monthly flows accordingly.

II. Flood Inflow, Alamogordo Dam to Artesia Reach

The River Master accepts this objection which follows from No. I above. The flood inflow for the reach was also adjusted for a revised base inflow, Acme to Artesia (see New Mexico objection No. 2).

III. Carlsbad Springs New Water

The River Master accepts Texas' calculation of 8.8 cfs as the lagged seepage from the Carlsbad Main Canal. Instead of rounding, a spreadsheet computational error was found to explain the wrong value in the Preliminary Report. Note a subsequent correction to 8.7 cfs as a result of New Mexico's objection No. 3 for the leap year correction.

IV. Flood Inflow, Dam Site #3 to Carlsbad Reach

The River Master rejects Texas' objection of the Flood Inflow, Dam Site #3 to Carlsbad Reach. The issue revolves around the policy in the River Master's Manual for rounding. Whichever policy is adopted for rounding does not favor one or the other State, so in rejecting this objection I am stating my interpretation of the Manual's intentions. If the States agree on a different policy, please submit it as a joint motion.

Section B.4.c.(1)(i) and (j) say:

"(i) The annual new water in cfs is: (a)-(b)-(c)+(d)-(e)-(f)-(g)-(h)."
[Note: this is computed on row 10 in Table 7 as "Carls new wat, TAF" and comes out to be -5.5 TAF, revised from -6.3 TAF.]

"(j) Convert the new water in cfs, item (i), above, to units of 1000 acre-feet, and distribute equally to each month of the year."

[Note: this instruction requires that the quantity computed in (i) be converted to units of TAF and divided by 12. All units in the annual computation are to be rounded to the nearest 0.1 TAF, so the quantity is -5.5 TAF. When -5.5 TAF is divided by 12, the result is -0.4583 TAF which rounds to 0.5 TAF. So, it turns out that the monthly quantity, expressed in TAF to the nearest 0.1 TAF, does not change because the original quantity, - 6.3 TAF, distributes to -0.5250 TAF which also rounds to -0.5 TAF.]

VI. (Should be V). **Final Departure**. The final calculated departure results from the above decisions and those responding to New Mexico's objections. Texas' computation was - 7.1 TAF and the Final Determination is - 6.7 TAF.

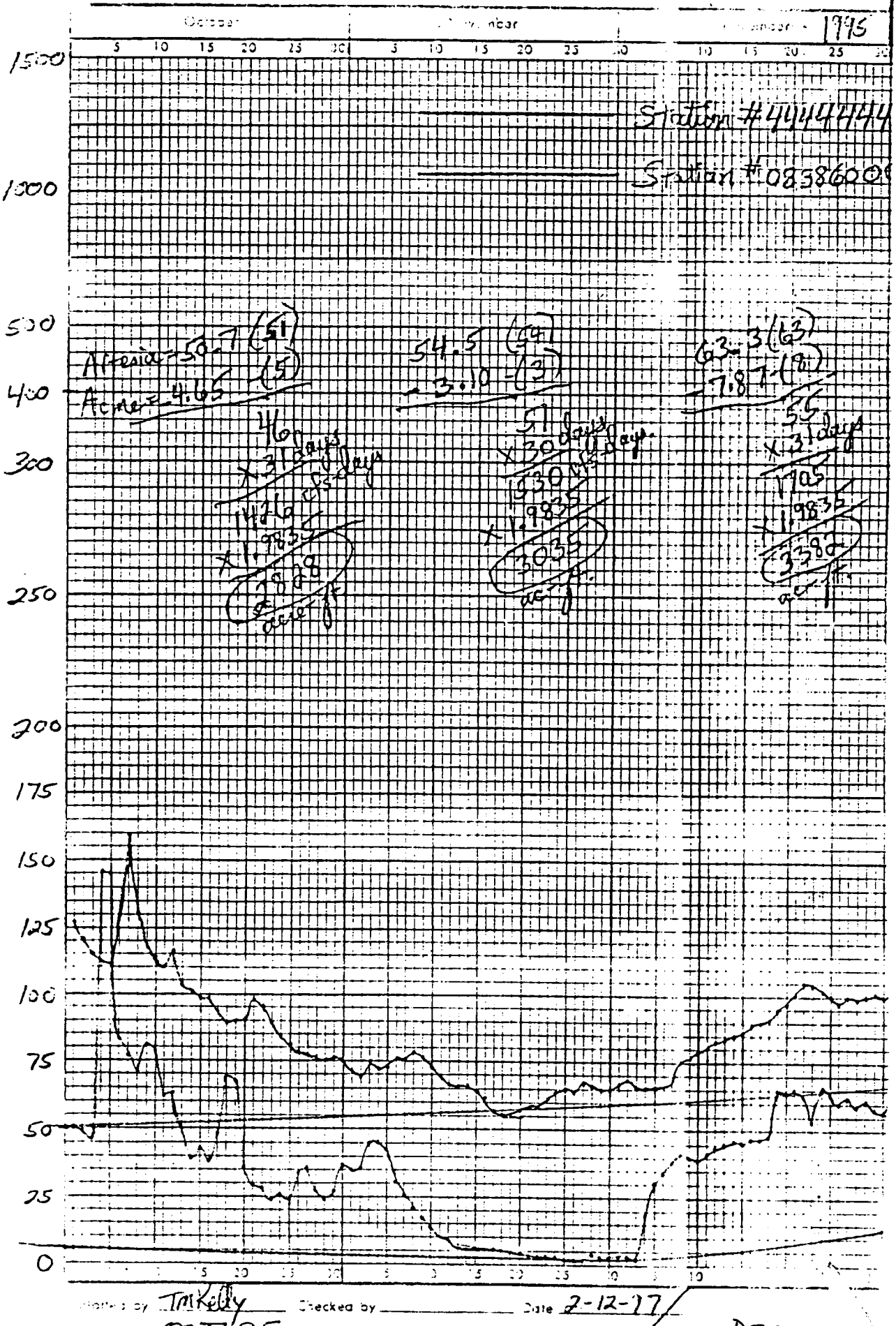
ATTACHMENT A

RIVER MASTER'S RESPONSE TO OBJECTIONS

USGS GRAPHS FOR ACME TO ARTESIA BASE INFLOW WITH RIVER MASTER'S ANNOTATIONS

9-279-D

UNITED STATES DEPARTMENT OF THE INTERIOR



Plotted by TM Kelly Checked by _____ Date 2-12-97

OCT 95 NOV DEC

ECOLOGICAL SURVEY WATER RESOURCES DIVISION

1996 January February March

5 10 15 20 25 30 5 10 15 20 25 1 5 10 15 20 30

Pecos River NR Artesia (08396500) + Pecos River Pump

Pecos River NR Acme, NM

Base Flow Curves: Monthly Means

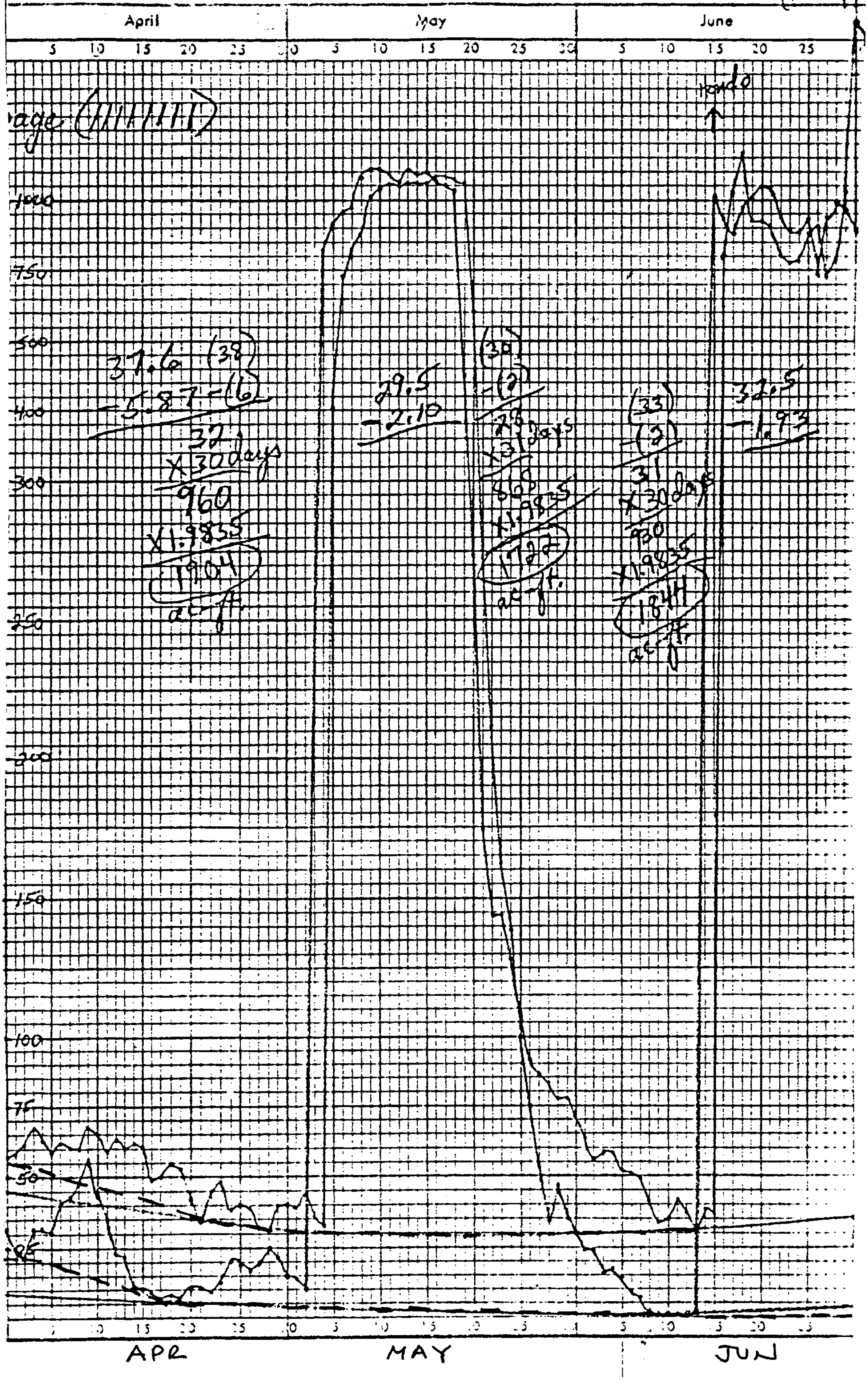
Artesia = 71.7 (72)
Acme = 23.6 (24)
48
X 31 days
1488
1488
X1.9835
2951
ac-ft.

Artesia = 72.6 (73)
Acme = 22.4 (22)
51
X 29 days
1479
X1.9835
2934
ac-ft.

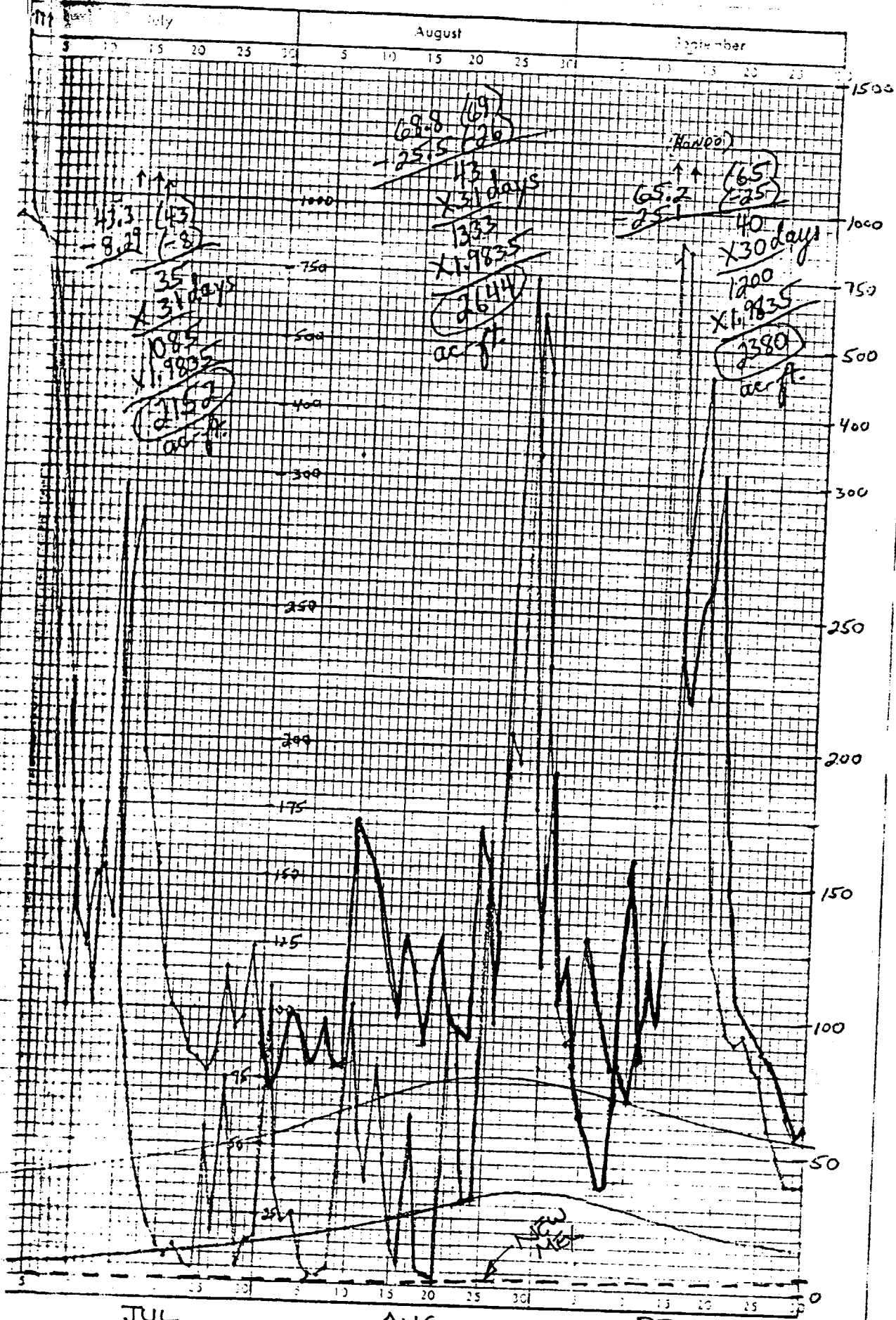
54.2 (54)
- 11.8 (12)
42
X 31 days
1302
X1.9835
2583
ac-ft.

JAN '96 FEB MAR

...GRAPH FOR Acme to Artesia, NM Baseflow Determination

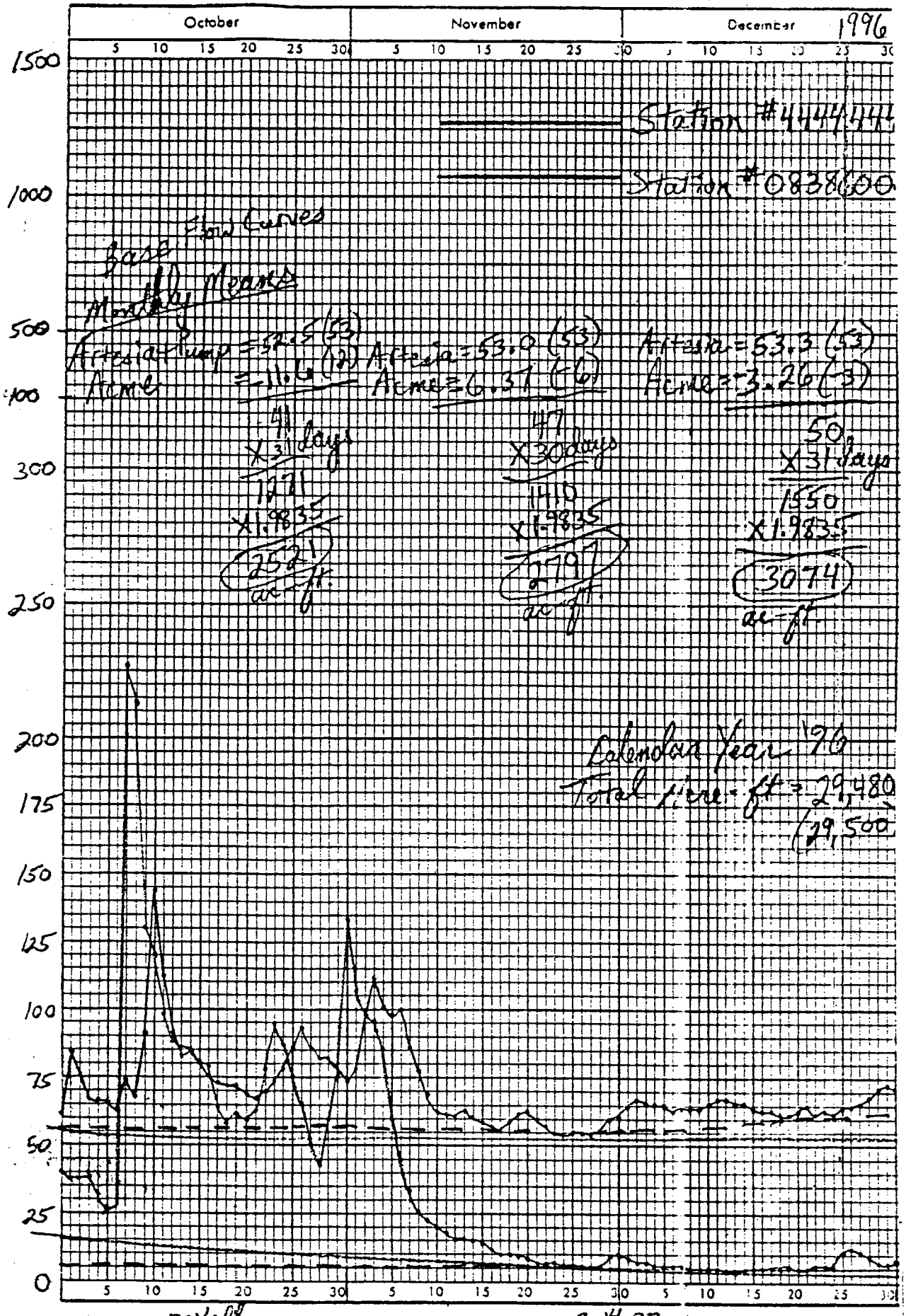


1116


July
August
September
5 10 15 20 25 30
1500
1000
750
500
400
300
250
200
175
150
125
100
75
50
25
0
43.3 (43)
-8.29 (-8)
35
x 31 days
1085
x 1.9835
2150
ac-ft.
69.8 (69)
-25.5 (-26)
43
x 31 days
1333
x 1.9835
2644
ac-ft.
(Hanoo)
65.2 (65)
-25 (-25)
40
x 30 days
1200
x 1.9835
2380
ac-ft.
JUL
AUG
SEPT

9-279-D

UNITED STATES DEPARTMENT OF THE INTERIOR



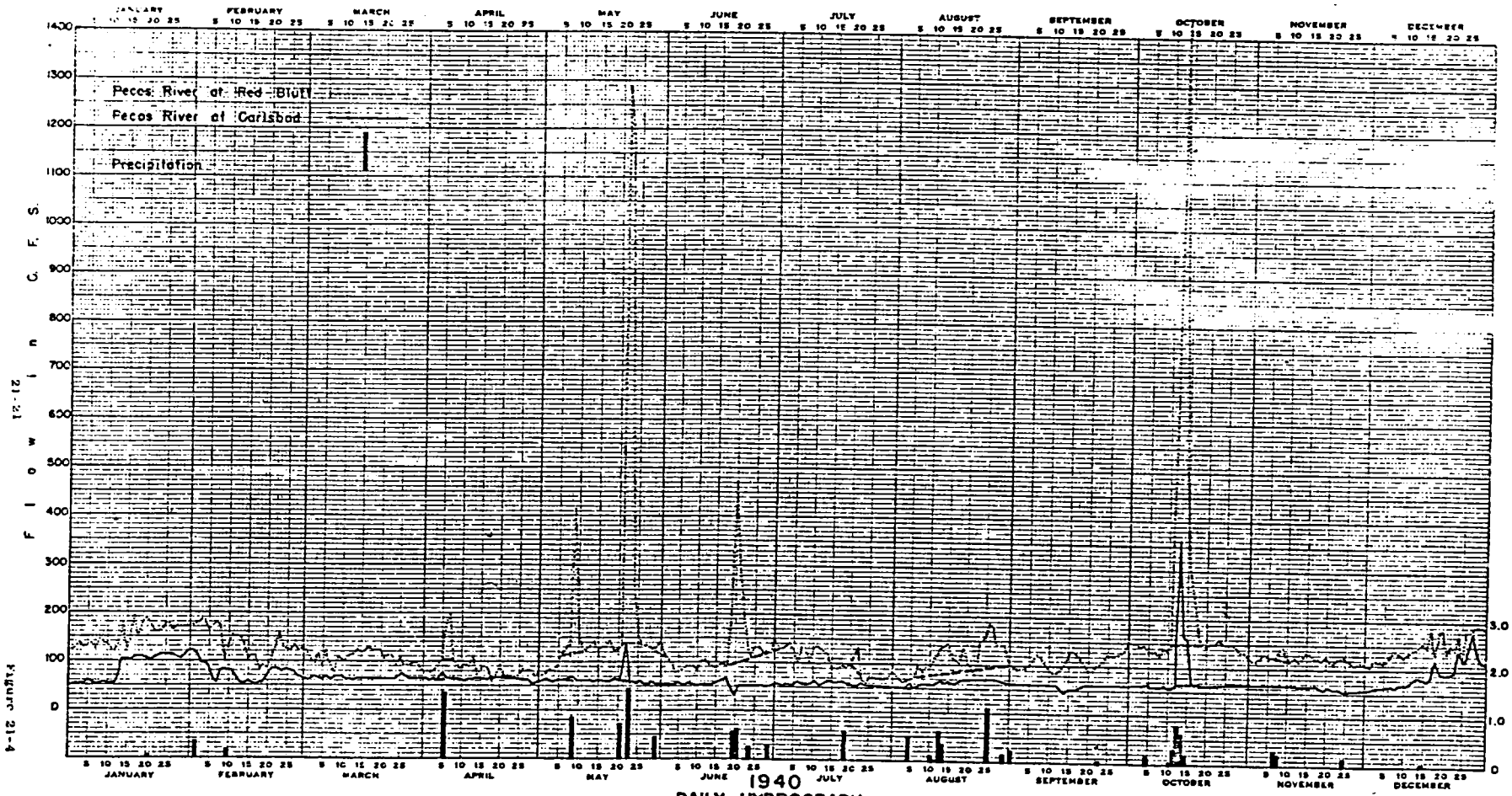
Plotted by TMKelly Checked by _____ Date 2-14-97

OCT NOV DEC

ATTACHMENT B

RIVER MASTER'S RESPONSE TO OBJECTIONS

GRAPHS AND TABLES FOR FLOOD INFLOW CARLSBAD TO RED BLUFF GAGE



1940
DAILY HYDROGRAPH
Pecos River at Carlsbad
Pecos River at Red Bluff

Figure 21-4

From Report on Review of Basic Data to the Engineering Advisory Committee, Pecos River Commission October 18, 1960

ATTACHMENT 1

From New Mexico's Objections
w/River Master Annotations

Revisions to Computed Flood Flows at Red Bluff																
	April					May					June					
Date	Flow	BF (RM)	Diff (RM)	BF (NM)	Diff (NM)	Flow	BF (RM)	Diff (RM)	BF (NM)	Diff (NM)	Flow	BF (RM)	Diff (RM)	BF (NM)	Diff (NM)	
1						48	48	0	48	0	353	311	42	322	31	
2						57	48.3	8.7	50	7	347	305	42	322	25	
3	52	50.5	1.5	52	0	56	48.7	7.3	50	6	340	300	40	322	18	88
4	52	50.5	1.5	52	0	50	49	1	50	0	336	295	41	322	14	
5	62	50.5	11.5	52	10	57	49.3	7.7	57	0	320	290	30	320	0	
6	71	50.5	20.5	55	16	60	49.7	10.3	60	0						
7	70	50.5	19.5	55	15	50	50	0	50	0						
8	66	50.5	15.5	57	9											
9	58	50.5	7.5	58	0											
10	57	50.5	6.5	57	0											
11	59	50.5	8.5	59	0											
12	53	50.5	2.5	53	0											
13	53	50.5	2.5	53	0						46	46	0	46	0	
14											55	46	9	46	9	
15											79	45	34	47	32	
16											91	45	46	47	44	
17											63	44	19	48	15	
18											51	44	7	48	3	
19											49	43	6	49	0	
20											47	43	4	47	0	
21											45	42	3	45	0	
22											42	42	0	42	0	
23											47	43	4	43	4	
24											50	43	7	43	7	
25											51	44	7	45	6	
26											65	45	20	45	20	
27											60	45	15	46	14	
28											58	46	12	47	11	
29											71	46	25	48	23	
30						321	321	0	321	0	56	47	9	49	7	
31						344	316	28	322	22						
	Toatl Diff in CFS-DAYS		97.5		50			63		35			422		283	
	Total Diff in AC-FT		193		99			125		69			837		561	

SET TO ZERO

MAY DIFF
RB 69
BDC 38
31

JUNE DIFF
RB (88 + 227) 1.9835 = 62
BDC (97) 1.9835 = 19
81

Revisions to Computed Flood Flows at Red Bluff

Date	July Flow	BF (RM)	Diff (RM)	BF (NM)	Diff (NM)	August Flow	BF (RM)	Diff (RM)	BF (NM)	Diff (NM)
1	55	47	8	49	6					
2	51	48	3	50	1					
3	49	49	0	49	0					
4										
5										
6						48	48	0	48	0
7						51	51	0	47	4
8						47	47	0	46	1
9						45	45	0	45	0
10						48	48	0	45	3
11						52	52	0	43	9
12						48	48	0	43	5
13						52	52	0	43	9
14						42	42	0	42	0
15	316	316	0	316	0	41	41	0	41	0
16	346	313	33	316	30					
17	324	311	13	316	8					
18	350	308	42	316	34	42	43	-1	43	-1
19	366	305	61	316	50	60	43	17	43	17
20	341	303	38	316	25	165	43	122	43	122
21	355	300	55	316	39	59	43	16	43	16
22						53	43	10	43	10
23						44	43	1	43	1
24						44	43	1	43	1
25						60	44	16	44	16
26						135	45	90	45	90
27						178	46	132	46	132
28						134	46	88	46	88
29						114	47	67	47	67
30						95	48	47	48	47
31						191	49	142	49	142
			253		193			748		779
			502		383			1484		1545

SEPTEMBER MISSING (ACCEDTS RIVER MASTER COMP)

Revisions to Computed Flood Flows at Dark Canyon

Date	May					June					July				
	Flow	BF (RM)	Diff (RM)	BF (NM)	Diff (NM)	Flow	BF (RM)	Diff (RM)	BF (NM)	Diff (NM)	Flow	BF (RM)	Diff (RM)	BF (NM)	Diff (NM)
1						326	309	17	315	11					
2						321	307	14	315	6					
3						305	305	0	305	0					
4															
5															
6															
7															
8						10	10	0	10	0					
9						13	10	3	10	3					
10						12	10	2	10	2					
11						15	11	4	11	4					
12						14	11	3	11	3					
13						21	11	10	11	10	278	278	0	278	0
14						26	11	15	11	15	290	277	13	278	12
15						20	11	9	11	9	290	275	15	278	12
16						15	12	3	12	3	283	274	9	278	5
17						13	12	1	12	1	288	273	15	278	10
18						12	12	0	12	0	295	271	24	278	17
19						13	12	1	12	1	320	270	50	278	42
20						18	12	6	12	6					
21						12	12	0	12	0					
22						13	13	0	13	0					
23						21	13	8	13	8					
24						14	13	1	13	1					
25						22	13	9	13	9					
26						14	13	1	13	1					
27						14	14	0	14	0					
28						18	14	4	14	4					
29	315	315	0	315	0	14	14	0	14	0					
30	319	313	6	315	4	14	14	0	14	0					
31	330	311	19	315	15										
	Total in CFS-DAYS		25		19			111		97			126		98
	Total in AC-FT		50		38			220		192			250		194

111 - 14 = 97

Revisions to Computed Flood Flows at Dark Canyon

Date	August					September				
	Flow	BF (RM)	Diff (RM)	BF (NM)	Diff (NM)	Flow	BF (RM)	Diff (RM)	BF (NM)	Diff (NM)
1						10	10	0	10	0
2						18			11	7
3						16			12	4
4	17	17	0	11	6	16			13	3
5						17			13	4
6						18			14	4
7						20			15	5
8						19			15	4
9						19			16	3
10						21	21	0	16	5
11	16	16	0	10	6	47	21	26	17	30
12						41	22	19	18	23
13						31	22	9	18	13
14						37	22	15	18	19
15						34	23	11	20	14
16						23	23	0	20	3
17						23	23	0	20	3
18										
19										
20										
21	10	10	0	10	0					
22	20	10	10	10	10					
23	42	10	32	10	32					
24	48	10	38	10	38					
25	9	10	-1	10	-1					
26	44	10	34	10	34					
27	9	10	-1	10	-1					
28	45	10	35	10	35					
29	15	10	5	10	5					
30	9	10	-1	10	-1					
31	25	10	15	10	15					
			166		178 ✓			80		144 ✓
			329		353			159		286

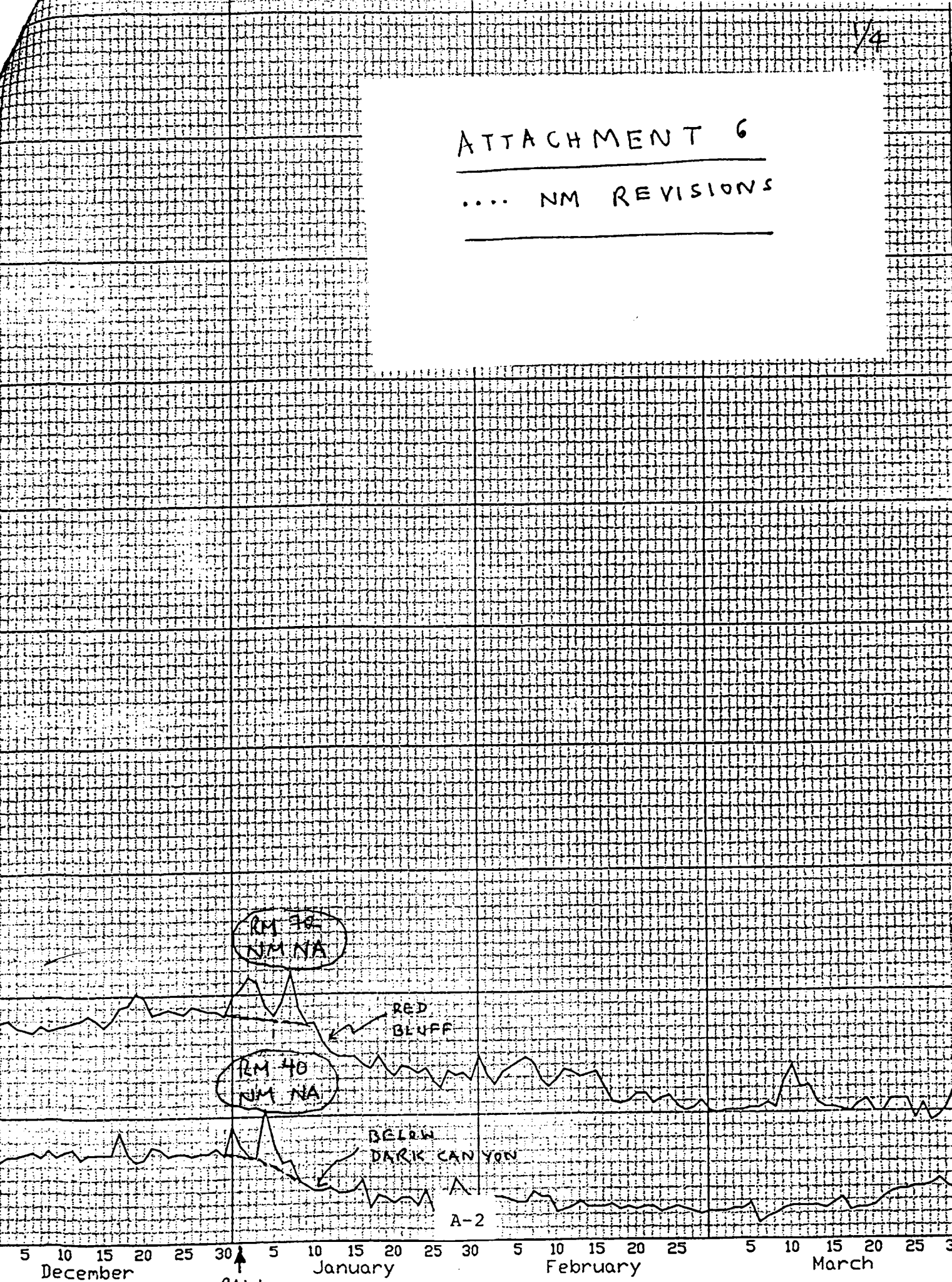
5/5-

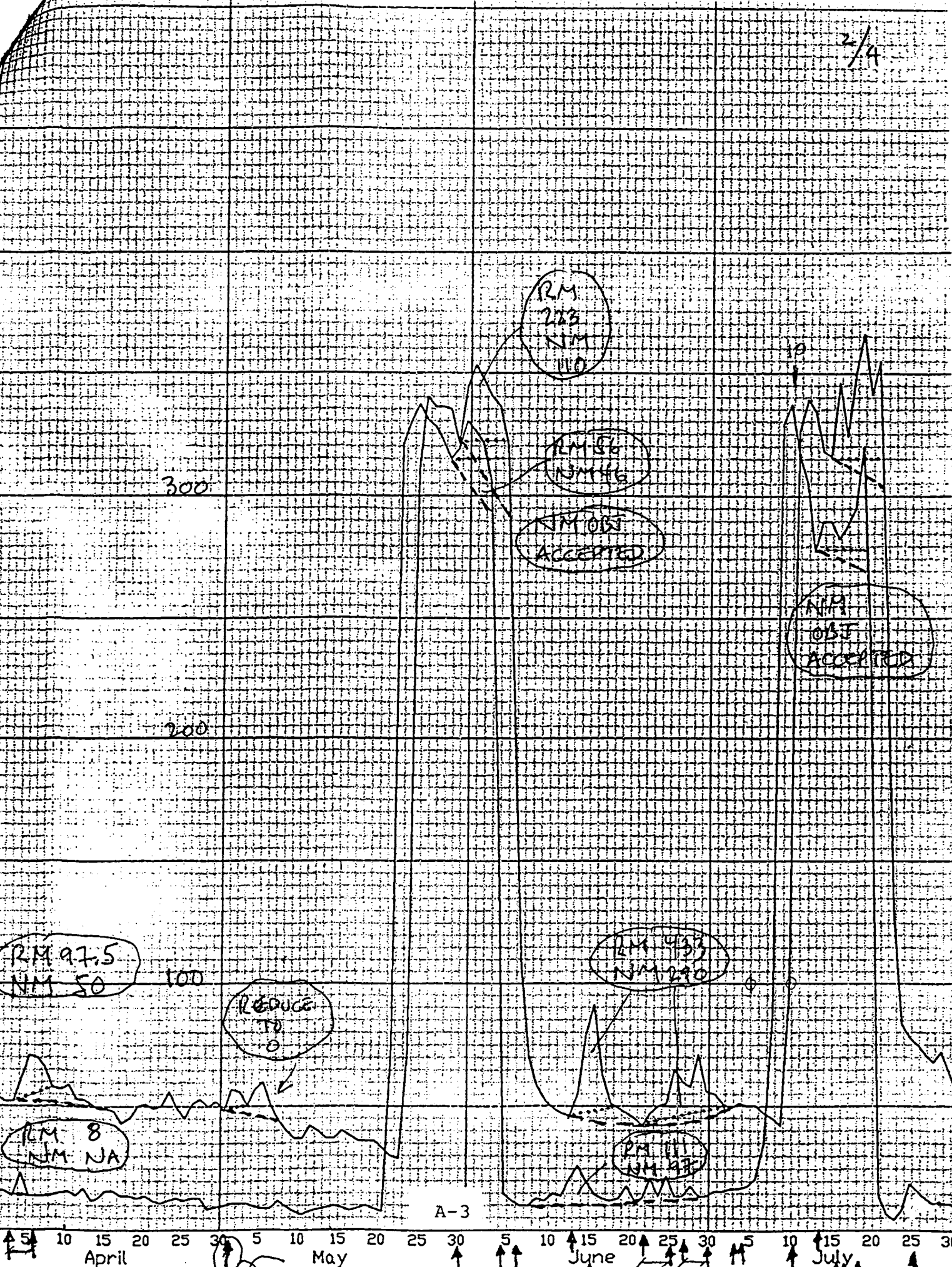
Summary of Revisions to Computed Flood Inflows - Carlsbad to Red Bluff

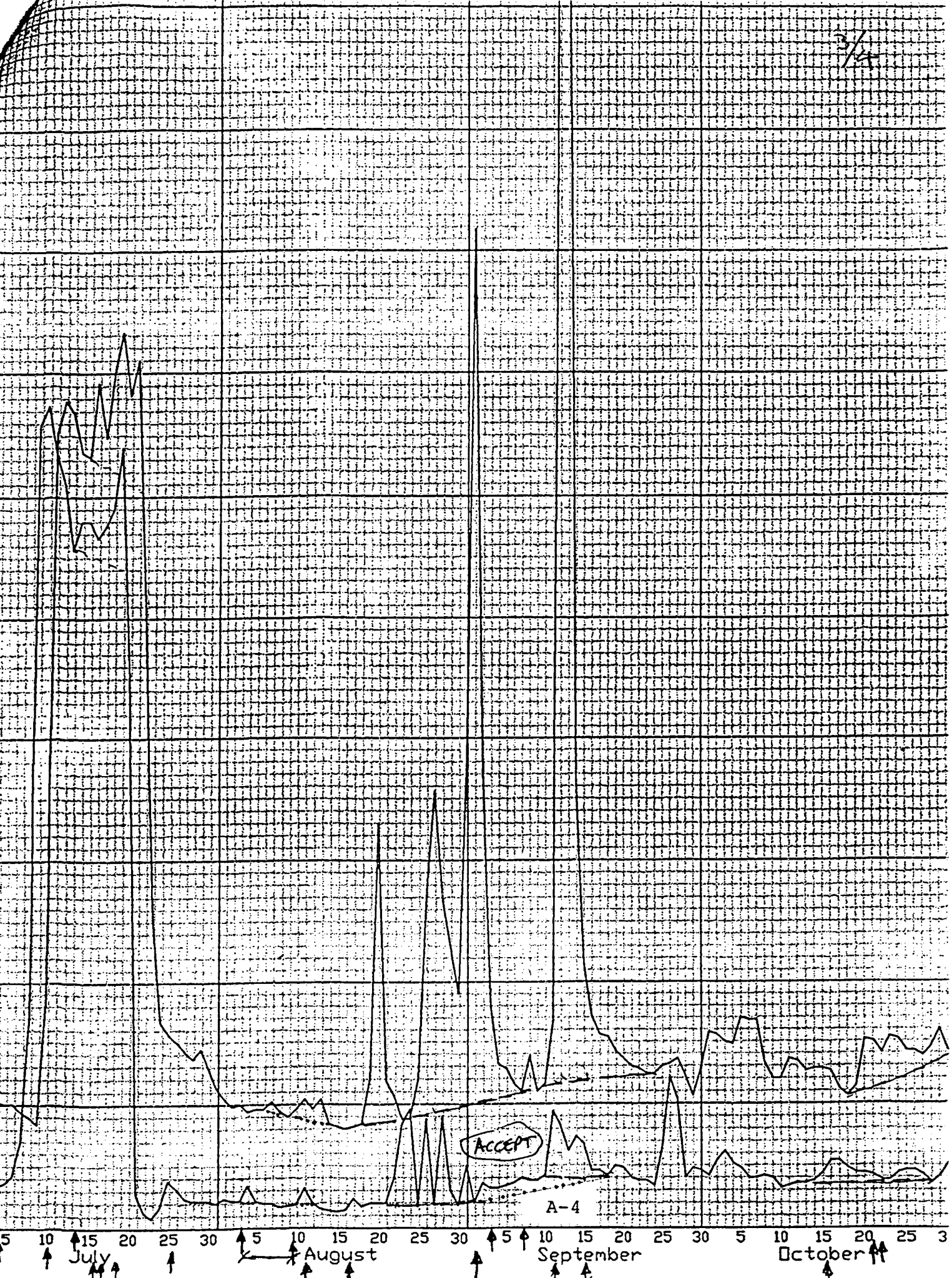
	RB Comp RM	RB Comp NM	BDC Comp RM	BDC Comp NM	Diff Comp RM	Diff Comp NM	Final AF
Jan	143	143	79	79	64	64	64
Feb	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0
Apr	193	99	16	16	177	83	177
May	125	69	50	38	75	31	31
Jun	837	561	220	192	617	369	433
Jul	502	383	250	194	252	189	189
Aug	1484	1545	329	353	1155	1192	1192
Sep	3931	3931	159	286	3772	3645	3645
Oct	224	224	102	102	122	122	122
Nov	34	34	24	24	10	10	10
Dec	30	30	0	0	30	30	30
Total	7503	7019	1229	1284	6274	5735	5893

ATTACHMENT 6

.... NM REVISIONS




RM 243 NM 110
RM 156 NM 146
NM OBJ ACCEPTED
RM 97.5 NM 50
REDUCE TO 0
RM 433 NM 290
RM 8 NM NA
RM 111 NM 98
300
200
100
5 10 15 20 25 30 5 10 15 20 25 30 5 10 15 20 25 30 5 10 15 20 25 30
April
May
June
July


3/4
ACCEPT
A-4
5 10 15 20 25 30 5 10 15 20 25 30 5 10 15 20 25 30 5 10 15 20 25 3
July
August
September
October

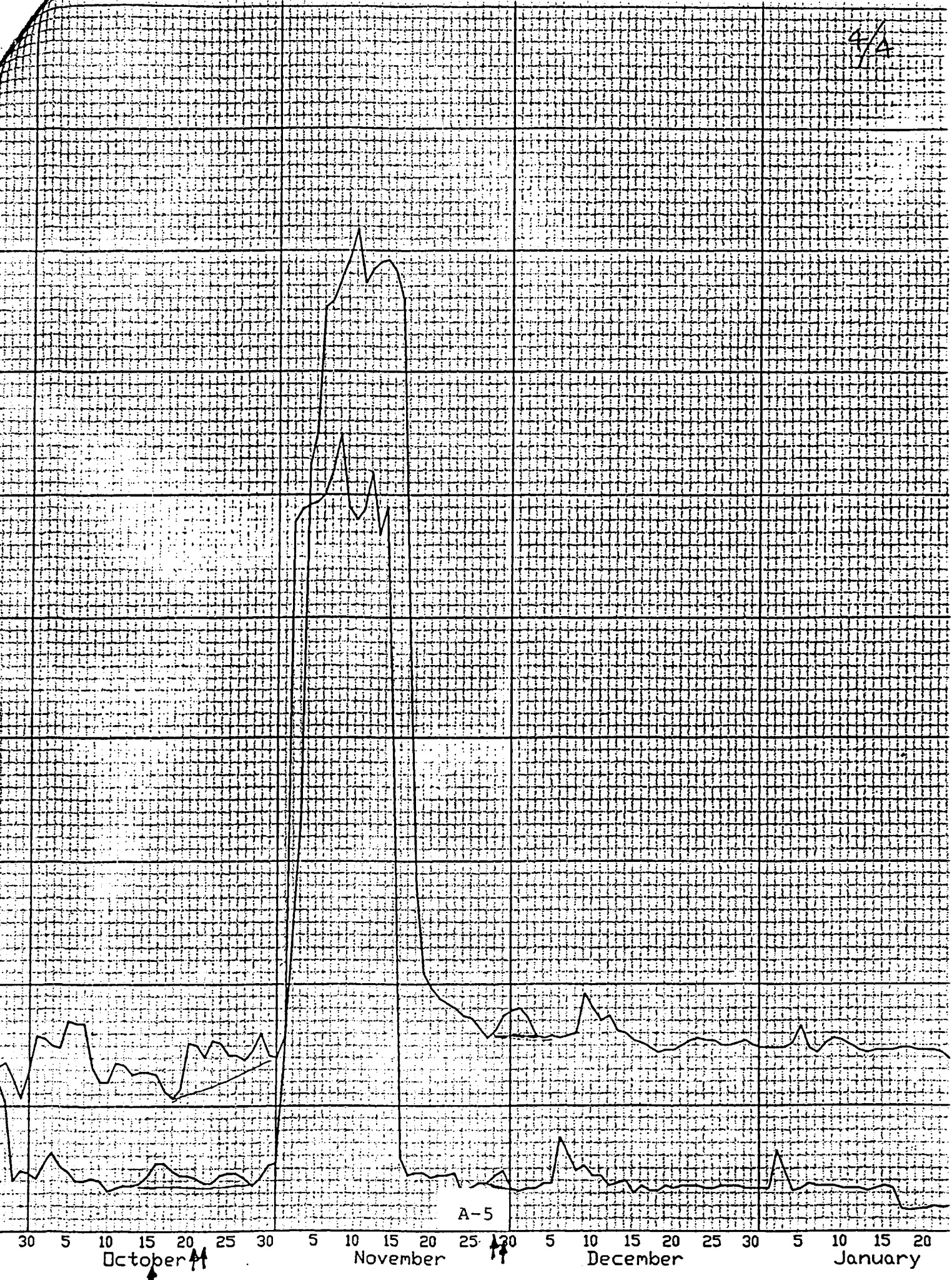

A-5
30 5 10 15 20 25 30 5 10 15 20 25 30 5 10 15 20 25 30 5 10 15 20
October
November
December
January

Table 4. Summary Table for Computations, Carlsbad to State Line									
6/21/97									
	RedBluff		Below Carlsbad		Difference		Diff	Final	Comments
	Comp	USGS	Comp	USGS	Comp	USGS	NM	Rept	
Jan	143	0	79	0	64	0	64	64	no objections
Feb	0	0	0	0	0	0	0	0	no objections
Mar	0	198	0	103	0	95	0	0	no objections
Apr	193	276	16	48	177	228	83	177	NM obj rejected
May	125	123	50	0	75	123	31	31	revise
Jun	837	458	248	143	589	315	369	433	NM obj partially acc.
Jul	502	377	250	345	252	32	189	189	NM obj accepted
Aug	1484	1502	329	371	1155	1130	1192	1192	NM obj accepted
Sep	3931	3967	159	317	3772	3650	3645	3645	NM obj accepted
Oct	224	728	102	137	122	591	122	122	no objections
Nov	34	46	24	81	10	0	10	10	no objections
Dec	30	222	0	127	30	95	30	30	no objections
	7503	7897	1257	1672	6246	6259	5735	5893	
Summary of flood inflows, Carlsbad to State Line, TAF									
Carlsbad to Red Bluff					5.9				
Delaware River (USGS Computation					4.6				
Total Flood Inflow, Carlsbad to State Line					10.5				

ATTACHMENT C

RIVER MASTER'S RESPONSE TO OBJECTIONS

TRIAL TABLE 6 WITH OCTOBER 1990 SURVEY DATA FOR SANTA ROSA RESERVOIR

Table 6. Depletions Due to Santa Rosa Reservoir Operations - WY 1996 - (C.1.b)													
6/21/97	Uses Table Dated October 1990												
17:06													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
Lk Sumner ga ht, avg	59.19	60.62	59.86	58.76	50.27	45.14	39.07	40.92	43.52	50.72	51.70	53.85	51.14
LS content, AF, avg	38850	42703	40627	37735	19890	12526	6936	8280	10693	20645	22342	26392	
LS area, acres, avg	2616	2780	2686	2571	1660	1208	674	803	1053	1694	1769	2023	1795
LS evap, inches	4.52	5.79	9.40	13.80	19.86	16.42	13.08	9.94	10.06	7.22	5.31	5.38	120.78
.77 LS Evap	3.48	4.46	7.24	10.63	15.29	12.64	10.07	7.65	7.75	5.56	4.09	4.14	93.00
LS Precip, inches	0.12	0.24	0.00	0.00	0.00	3.27	2.36	3.75	1.51	1.22	0.07	0.00	12.54
Net LS Evap, inches	3.36	4.22	7.24	10.63	15.29	9.37	7.71	3.90	6.24	4.34	4.02	4.14	80.46
LSum Evaploss, TAF	0.73	0.98	1.62	2.28	2.12	0.94	0.43	0.26	0.55	0.61	0.59	0.70	11.81
L S Rosa ga ht, avg	33.22	32.76	32.93	32.97	25.85	11.45	8.65	21.07	27.18	22.71	22.91	23.34	24.59
LSR content, AF, avg	60165	58969	59410	59514	43100	20109	17035	34079	45903	37033	37401	38195	
LSR area, acres, avg	2618	2577	2592	2595	2049	1150	1025	1770	2162	1825	1832	1856	
LSR evap, inches	3.72	5.22	8.58	9.75	14.48	10.79	10.24	9.34	6.56	5.98	4.47	3.76	92.89
.77 LSR Evap	2.86	4.02	6.61	7.51	11.15	8.31	7.88	7.19	5.05	4.60	3.44	2.90	71.53
LSR precip, inches	0.34	0.29	0.03	0.00	0.00	2.64	2.90	2.50	1.45	0.71	0.40	0.09	11.35
Net LSR Evap, inches	2.52	3.73	6.58	7.51	11.15	5.67	4.98	4.69	3.60	3.89	3.04	2.81	60.18
LSR Evaploss, TAF	0.55	0.80	1.42	1.62	1.90	0.54	0.43	0.69	0.65	0.59	0.46	0.43	10.10
Total evaploss, TAF	1.28	1.78	3.04	3.90	4.02	1.49	0.86	0.95	1.20	1.20	1.06	1.13	21.91
Sum contents, AF	99015	101672	100037	97249	62990	32635	23971	42359	56596	57678	59743	64587	
1947 area, acres	3765	3840	3790	3720	2820	1615	1240	1975	2600	2640	2720	2850	
1947 evaploss, TAF	1.05	1.35	2.29	3.29	3.59	1.26	0.80	0.64	1.35	0.95	0.91	0.98	18.48
current-1947evaploss	0.23	0.43	0.75	0.61	0.43	0.23	0.06	0.31	-0.16	0.25	0.15	0.15	3.43
						Annual adjustment for excess evaporation =							3.4
ADJUSTMENT FOR EXCESSIVE STORAGE IN SANTA ROSA RESERVOIR													
			1995	1995	1996	1996							
			Gage	Storage	Gage	Storage							
EndYear Sumner Sto			4255.69	30335	4254.73	28224							
EndYear S R Sto			4736.22	68411	4723.48	38857							
Sum				98746		67081							
Sto Adjustment, AF						0							
Adjustm Ex Evap, TAF						3.4							
Total Adjustment,TAF						3.4							