

RECLAMATION

Managing Water in the West

RIO GRANDE PROJECT

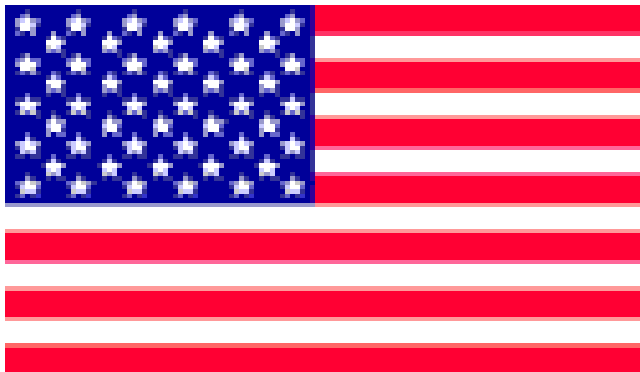
El Paso Field Division
10737 Gateway Blvd. West, Suite 350
El Paso, TX 79935



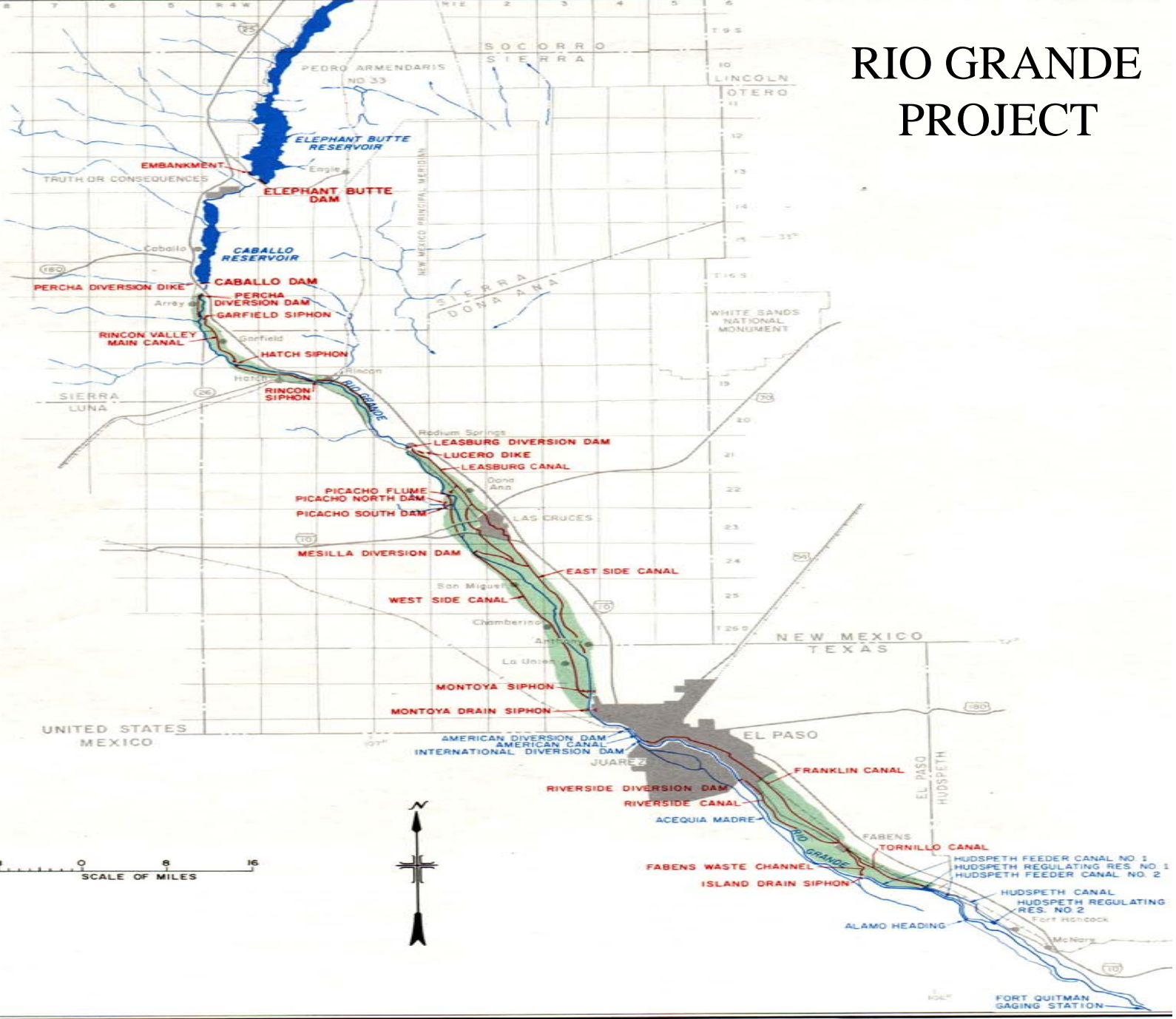
U. S Dept. of the Interior
Bureau of Reclamation

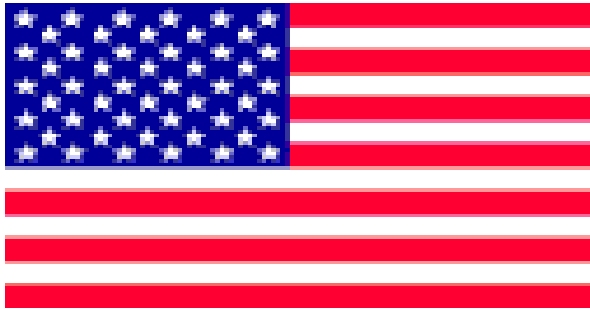
U. S. BUREAU OF RECLAMATION

RIO GRANDE PROJECT



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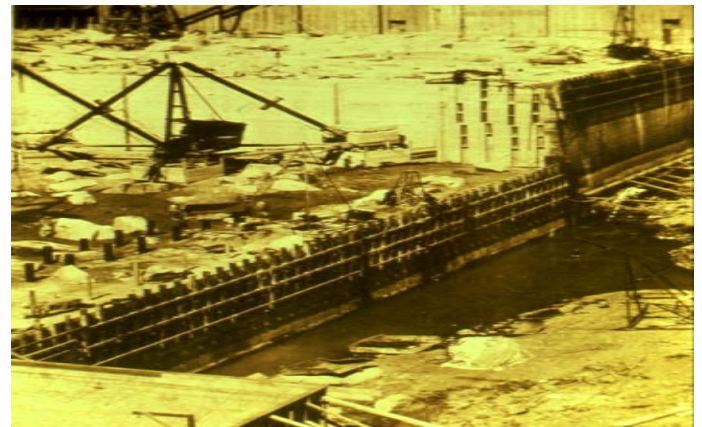




Rio Grande Project
authorized by U. S. Congress
on February 25, 1905

Treaty between U. S. and
Mexico signed on
May 21, 1906

New Mexico Territory becomes
A State of the United States
Of America on January 6, 1912





Elephant Butte Dam and Reservoir

Completed in 1916

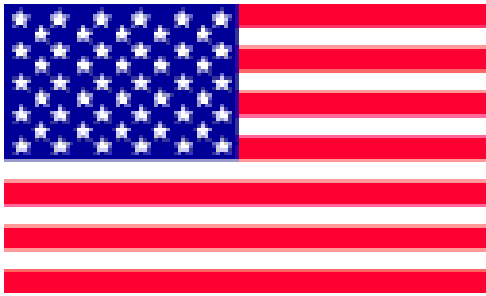
Total Storage Capacity: 2,023,358 acre-feet

Flood Reservation Pool: 50,000 acre-feet

Minimum Recreation Pool: 50,000 acre-feet







February 1, 1933 Treaty
Between U. S. and Mexico



Alleviate Flooding in
El Paso – Juarez Region,
Build a Flood Control
Facility

CABALLO DAM & RESERVOIR

Completed in 1938

Total Storage Capacity: 326,672 acre-feet
Excl. Flood Control Pool: 100,000 acre-feet
Min. Fish & Wildlife Pool: 25,000 acre-feet

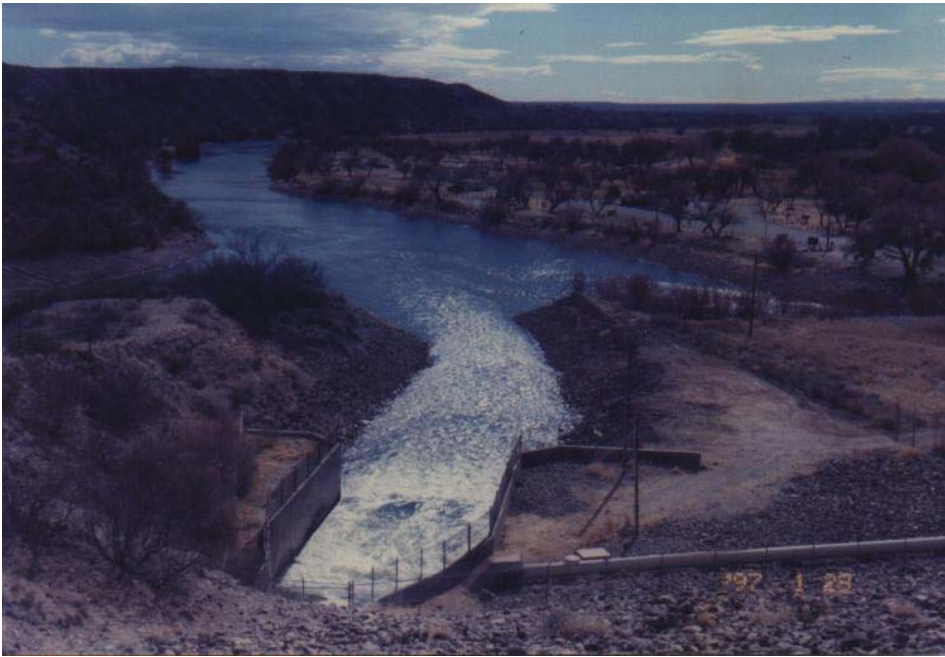
ELEPHANT BUTTE RESERVOIR

	<u>TOTAL STORAGE</u>	<u>FLOOD RESERVATION POOL</u>
<u>Top of Conservation Storage Pool:</u> (Rio Grande Project Authorization)	2,023,358 AF (ELEV 4407.00 FT)	
<u>Top of Conservation Storage Pool:</u> Winter (October 1 - March 31)	1,998,358 AF (ELEV 4406.30 FT)	25,000 AF (WINTER)
<u>Top of Conservation Storage Pool:</u> Summer (April 1 - September 30)	1,973,358 AF (ELEV 4405.60 FT)	50,000 AF (SUMMER)
<u>Top of City of Albuquerque SJ-C Pool:</u> 1983 Contract for irrig. and domestic	50,000 AF (ELEV 4295.11 FT)	
<u>Top of Federal Recreation Pool:</u> 1974 Public Law 93-493, 88 Stat. 1486	50,000 AF (ELEV 4282.68 FT)	

CABALLO RESERVOIR

		<u>EXCLUSIVE FLOOD CONTROL</u>
<u>Top of Flood Control Pool:</u>	326,672 AF (ELEV 4182.00 FT)	
<u>Top of Conservation Storage Pool:</u>	226,672 AF (ELEV 4172.44 FT)	100,000 AF
<u>Top of Minimum Fishery Pool:</u> Biological Opinion (1991)	25,000 AF (ELEV 4138.24 FT)	
<u>Court Order No. CIV-90-95 HB/WWD:</u>		

October 1 - January 31 (each year), storage level will not exceed 50,000 AF (elev 4146.11 ft)





Percha Diversion Dam

Completed in 1918

Arrey Canal delivers irrigation
water to Rincon Valley

16,260 acres of irrigation
(Elephant Butte Irrig. Dist.)





Leasburg Diversion Dam

Completed in 1907

Leasburg Canal delivers
irrigation water to upper
Mesilla Valley

31,600 acres of irrigation
(Elephant Butte Irrig. Dist.)





Mesilla Diversion Dam

Completed in 1916

East Side & West Side Canals
deliver irrigation water to
lower Mesilla Valley

53,650 acres of irrigation
(Elephant Butte Irrig. Dist.
& El Paso County WI Dist.)





AMERICAN DIVERSION DAM

Completed in 1938

Bypass 1906 Treaty water to Mexico; divert remaining waters to American Canal for U. S. waters

Owned and operated by U. S. International Boundary & Water Commission





INTERNATIONAL DIVERSION DAM

Owned and operated by U. S. International
Boundary & Water Commission;
Water diverted into Acequia Madre to
Satisfy 1906 Treaty requirements for Mexico



Riverside Diversion Dam

Completed in 1928, removed 2003

Riverside Canal delivers
Irrigation water to Lower
El Paso Valley and City
Of El Paso

39,000 acres of irrigation
(El Paso County Water
Improvement Dist. No. 1)





American Canal Extension

Completed in 1998

Delivers irrigation water to El Paso Valley and City of El Paso

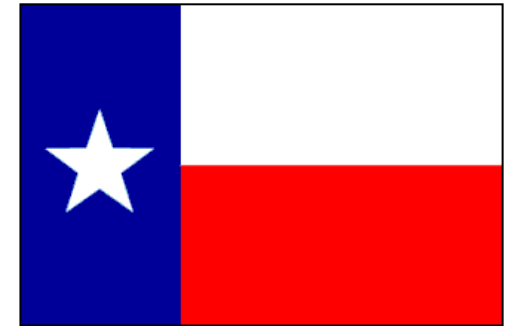
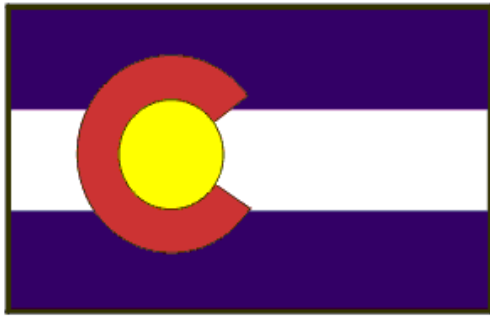
56,000 acres of irrigation
(El Paso County Water Improvement Dist. No. 1)







Rio Grande Compact



- **3 States signed final Compact on Mar. 18, 1938; U. S. Congress ratifies Compact on May 31, 1939**
- **Compact apportions Rio Grande waters among 3 States from headwaters of southern Colorado to Fort Quitman, Texas**
 - **Texas portion of Compact is the Rio Grande Project which irrigates lands in southern New Mexico, far west Texas, and includes water delivery to Mexico under the 1906 Treaty**
- **Compact is administered by the Rio Grande Compact Commission consisting of a commissioner appointed by each State's Governor, and a Federal Representative which serves as Chairperson**
 - **Per Compact accounting regulations, the Rio Grande Project's average normal release is 790,000 acre-feet per year; Elephant Butte & Caballo Reservoirs are key components**

RIO GRANDE PROJECT

Sale of Project Water for Miscellaneous Purposes Act –

February 25, 1920

Conversion of agricultural water to other purposes

Recreational Facilities at Elephant Butte & Caballo Reservoirs

July 25, 1962

established construction & administration of recreational facilities

Authorization of a 50,000 AF Minimum Pool for Recreation at

Elephant Butte Reservoir – October 27, 1974

established minimum recreational pool to be filled with SJ-C water

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Transfer of O&M of Irrigation Distribution System – February 15, 1979 and March 14, 1980

Elephant Butte Irrig. Dist. and El Paso County Water Improvement Dist. No. 1 assume O&M responsibilities of the Project's canals and distribution system

Title Transfer of Canals, Laterals, & Drains to Elephant Butte Irrig. Dist. & El Paso County Water Improvement Dist. # 1 - January 19, 1996

Elephant Butte Irrig. Dist. & El Paso County Water Improvement Dist. # 1 acquire title and ownership to their respective canals, laterals, and drains of their irrigation delivery systems, make allocation to their farmers

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RIO GRANDE PROJECT

Court Order No. CIV-90-95 HB/WWD – October 17, 1996

established maximum storage level of 50,000 AF in Caballo Reservoir during winter months and minimize evaporation differences between Caballo and Elephant Butte Reservoirs

New Rio Grande Project Operating Agreement Signed by Elephant Butte Irrig. Dist. & El Paso County Water Improvement Dist. # 1 - February 14, 2008

established new procedures for allocating Project water supply to Elephant Butte Irrigation District, El Paso County Water Improvement District # 1, and Mexico

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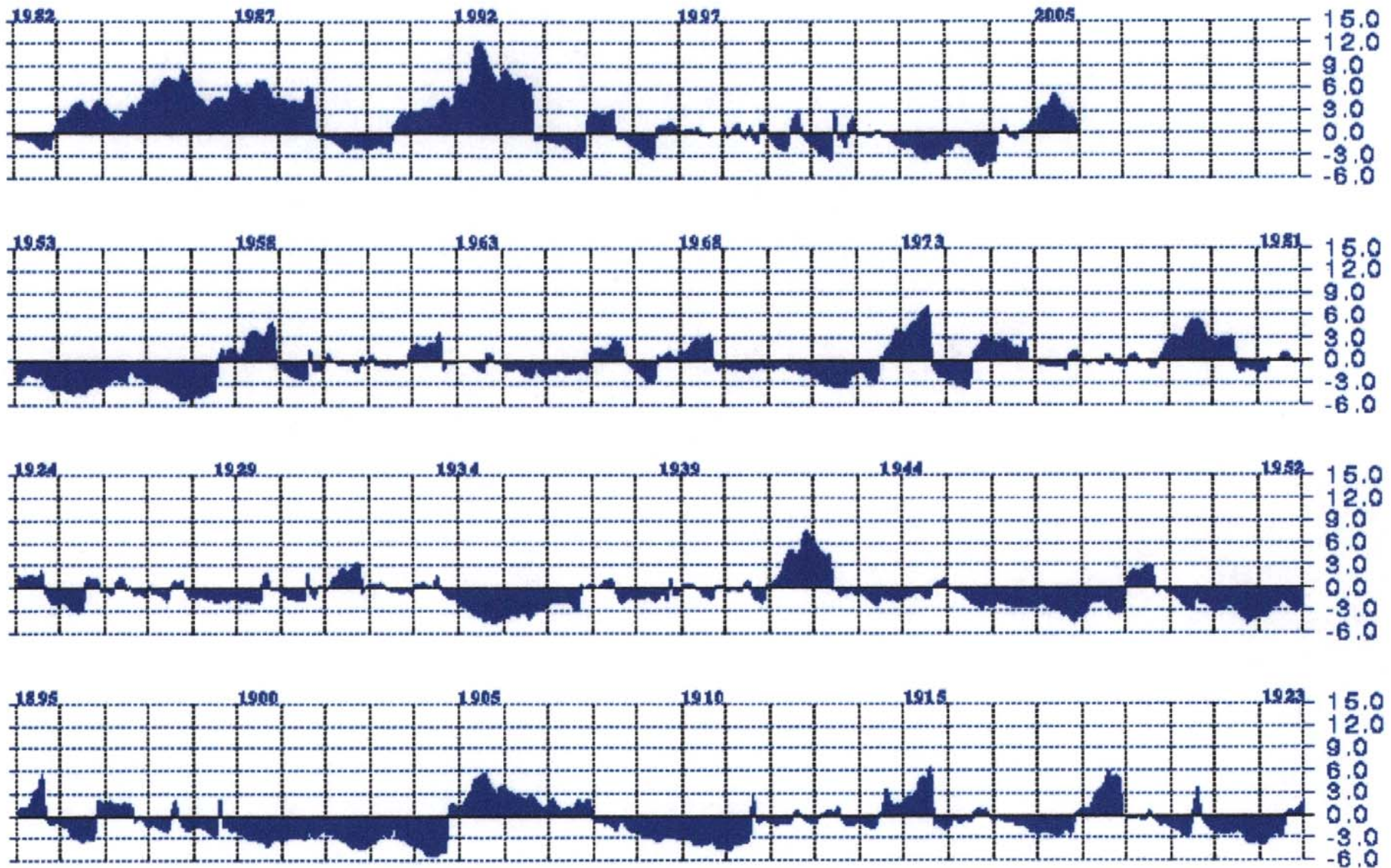
RIO GRANDE PROJECT

HYDROLOGIC HISTORY OF UPPER RIO GRANDE BASIN



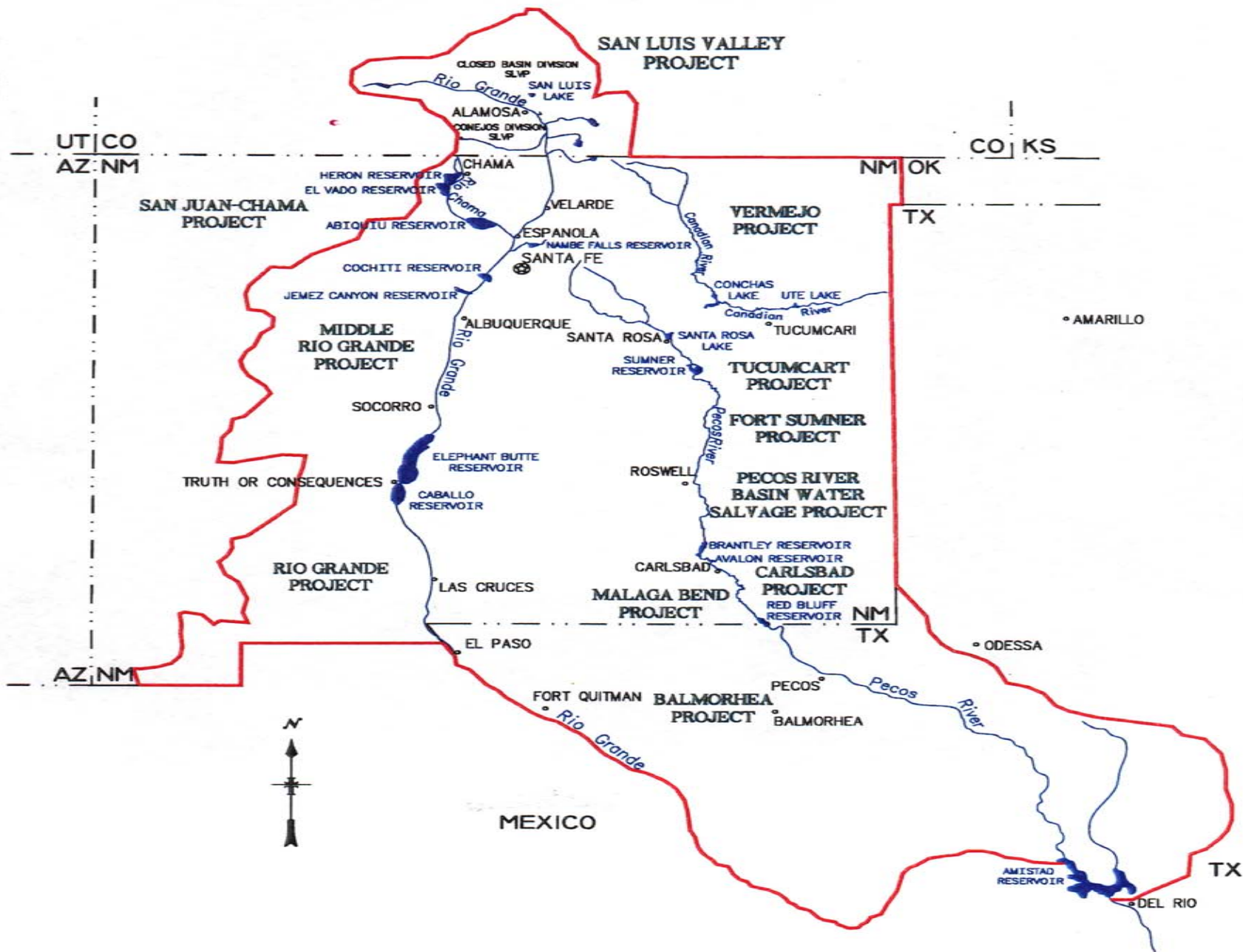
U. S Dept. of the Interior
Bureau of Reclamation

Palmer Drought Severity Index

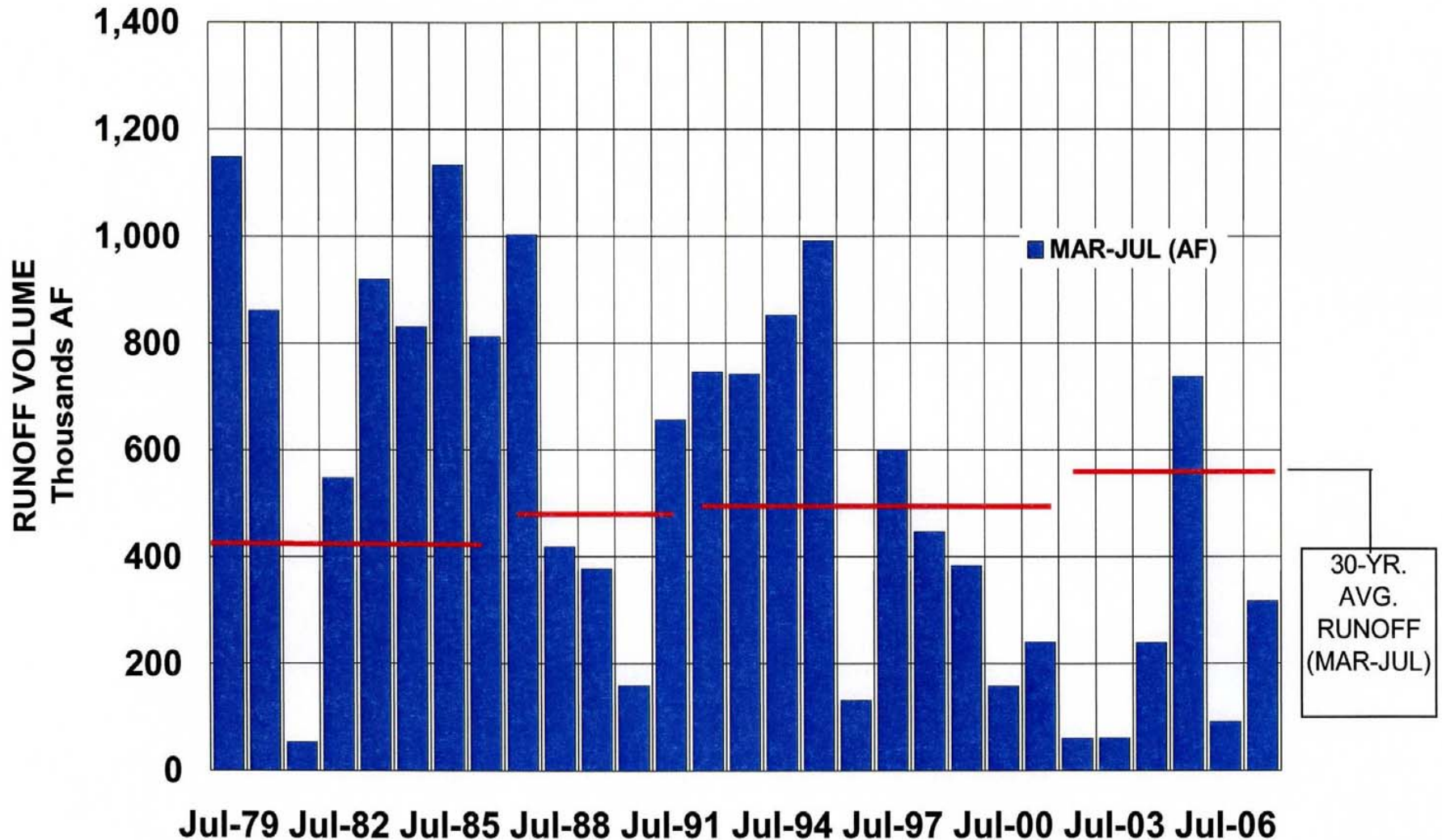


New Mexico - Division 08: 1895-2005 (Monthly Averages)

ALBUQUERQUE AREA OFFICE BUREAU OF RECLAMATION

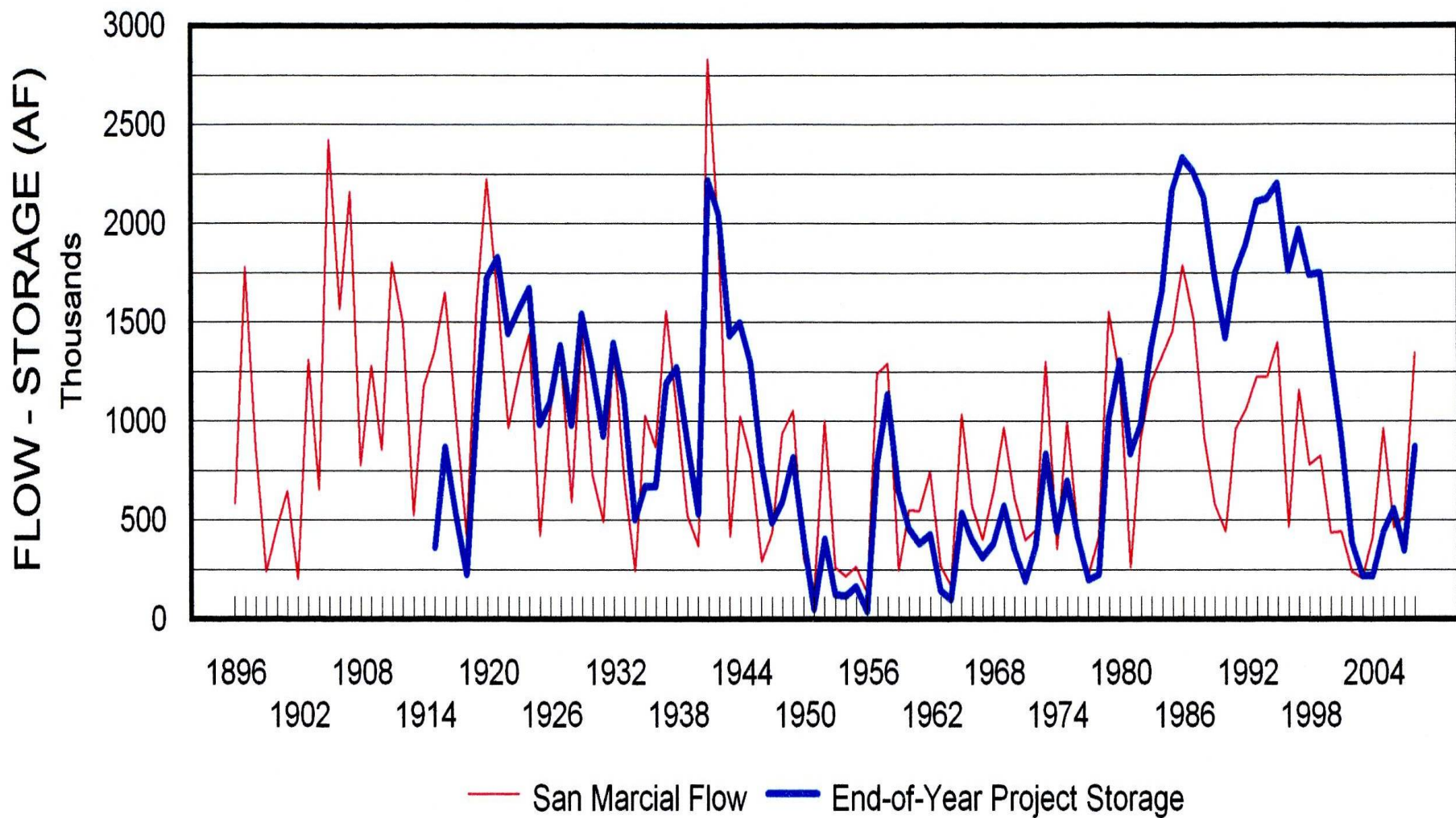


HISTORICAL RUNOFF - SAN MARCIAL 1979 - 2007



SAN MARCIAL FLOW - RIO GRANDE PROJECT STORAGE

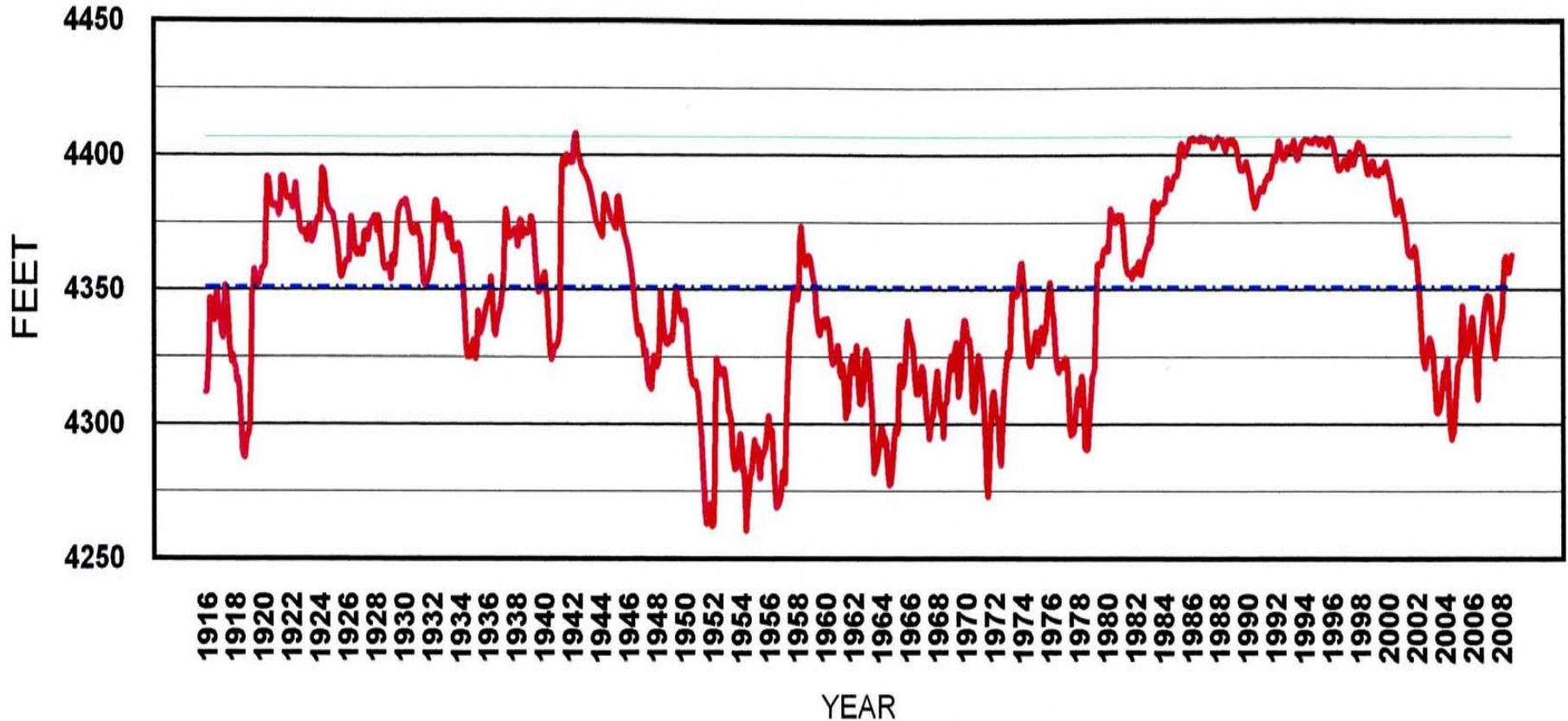
1896 Through 2008*



* End-of-year project storage and San Marcial flow for 2008 is a projection based on Rio Grande Project most probable plan.

ELEPHANT BUTTE RESERVOIR

HISTORICAL END-OF-MONTH ELEVATION**



— Elevation * — Spillway Elevation - - - Historical avg end-of-month elevation

**2008 data is a projection, based on Reclamation's 2008 most probable plan.

* BOR project datum. To obtain mean sea level datum, add 43.3 feet



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RIO GRANDE PROJECT

CURRENT RIO GRANDE PROJECT RESERVOIRS OPERATIONAL PLAN



U. S Dept. of the Interior
Bureau of Reclamation

SPRING RUNOFF FORECASTS

2008

R I O G R A N D E B A S I N

(ACRE-FEET)

FORECAST POINT	Rio Grande nr Del Norte	Rio Chama at El Vado Reservoir	Rio Grande at Otowi Bridge	Jemez River at Jemez Canyon Reservoir	Rio Grande at San Marcial
FORECAST PERIOD	APR-SEP	MAR-JUL	MAR-JUL	MAR-JUL	MAR-JUL
30-YEAR AVERAGE RUNOFF *	531,000	237,000	757,000	45,000	573,000
JANUARY 1 FORECAST	690,000 130%	295,000 124%	940,000 124%	36,000 80%	750,000 131%
FEBRUARY 1 FORECAST	790,000 149%	390,000 165%	1,300,000 172%	50,000 111%	1,050,000 183%
MARCH 1 FORECAST					
APRIL 1 FORECAST					
MAY 1 FORECAST **					
		70% Exceedance: (drier)	1,100,000 145%		845,000 147%
		90% Exceedance: (minimum - driest)	840,000 111%		580,000 101%
FEB 1, 2007	555,000 105%	225,000 95%	770,000 102%	46,000 102%	570,000 99%

* based on 1971-2000 runoff data.

** last official forecast for 2008 spring runoff.

BASED ON 2008 MARCH THROUGH JULY WATER SUPPLY OUTLOOK REPORT Feb 1

2008 MAR-JUL @ SAN MARCIAL (NRCS Feb. 1 forecast)
 2008 MAR-JUL @ SAN MARCIAL (regulated forecast)

183% 1050 KAF
 176% 1010 KAF

** Based on 30-yr (1971-2000) avg of 573,000 Acre-feet.

* Actual historical data

YEAR	COCHITI RELEASE	NET LOSSES	SAN MARCIAL	<==== LOSSES	ELEPHANT BUTTE<====> EVAP CONTENT	RELEASE	<==== EVAP	CABALLO IRRIG. LOSSES	EXCESS DEMAND	RELEASE	TOTAL RELEASE	CABALLO CONTENT		
2007													2007	
* JAN	38	-14	52	5	2	558	1	1	-3	0	0	45	JAN	
* FEB	40	-3	44	-1	4	598	0	1	-2	0	0	47	FEB	
* MAR	86	28	57	-14	7	609	54	1	4	76	0	19	MAR	
* APR	73	8	66	-15	10	556	124	2	6	74	0	61	APR	
* MAY	161	29	133	4	10	601	73	3	6	56	0	68	MAY	
* JUN	84	38	46	-11	14	571	73	4	-7	104	0	40	JUN	
* JUL	50	34	16	-13	11	461	128	3	1	105	0	59	JUL	
* AUG	44	29	15	-15	9	397	86	3	4	105	0	33	AUG	
* SEP	40	23	17	-12	7	358	61	1	0	77	0	16	SEP	
* OCT	32	21	11	-5	6	326	42	1	-2	39	0	21	OCT	
* NOV	32	5	27	-4	4	352	0	1	-2	0	0	22	NOV	
* DEC	56	23	33	-27	3	409	0	1	-3	0	0	24	DEC	
TOTAL	736	221	515	-109	87	642	22	2	637	0	637	TOTAL		
AVG	Total Mar-Jul						483						38	AVG
	454	137	317	55%										
2008													2008	
* JAN	45	-1	46	-3	3	455	0	1	-3	0	0	26	JAN	
FEB	52	10	42	0	4	476	17	1	-0	12	0	30	FEB	
MAR	99	-42	141	-1	8	492	118	1	4	98	0	45	MAR	
APR	217	66	151	-2	14	544	87	2	6	79	0	45	APR	
MAY	294	11	283	-4	18	703	110	3	6	96	0	50	MAY	
JUN	313	49	264	-6	20	826	127	4	-7	130	0	50	JUN	
JUL	337	166	171	-7	20	847	137	3	1	133	0	50	JUL	
AUG	78	12	66	-9	16	787	119	3	4	132	0	30	AUG	
SEP	55	23	32	-6	10	745	69	1	0	78	0	20	SEP	
OCT	47	17	30	-2	6	751	21	1	-2	31	0	11	OCT	
NOV	52	-7	59	2	4	804	0	1	-2	0	0	12	NOV	
DEC	53	-7	60	2	3	859	0	1	-3	0	0	14	DEC	
TOTAL	1642	297	1346	-35	126	806	22	3	790	0	790	TOTAL		
AVG	Total Mar-Jul						691						32	AVG
	1260	250	1010	176%										
2009													2009	
JAN	40	-7	47	0	4	901	0	1	-3	0	0	16	JAN	
FEB	44	-4	48	-0	8	924	18	1	-2	0	0	35	FEB	
MAR	75	15	60	-1	11	850	123	2	2	119	0	35	MAR	
APR	157	37	120	-2	18	866	88	2	2	79	0	40	APR	
MAY	250	55	195	-4	20	950	95	3	2	90	0	40	MAY	
JUN	197	67	130	-6	25	920	142	4	2	131	0	45	JUN	
JUL	119	51	68	-7	19	840	136	4	-1	133	0	45	JUL	
AUG	78	34	44	-9	14	761	118	2	-3	124	0	40	AUG	
SEP	55	23	32	-6	13	728	58	1	-2	78	0	20	SEP	
OCT	47	17	30	-2	11	724	24	1	-2	35	0	11	OCT	
NOV	52	-7	59	2	7	775	0	1	-2	0	0	12	NOV	
DEC	53	-7	60	2	4	828	0	0	-3	0	0	14	DEC	
TOTAL	1167	274	894	-33	154	803	22	-9	790	0	790	TOTAL		
AVG	Total Mar-Jul						839						29	AVG
	798	225	573	100%										

**STATUS OF RIO GRANDE COMPACT CREDIT WATERS
IN ELEPHANT BUTTE RESERVOIR SINCE LAST SPILL
FROM RIO GRANDE PROJECT STORAGE ***

<u>YEAR</u>	<u>COLORADO (acre-feet)</u>	<u>NEW MEXICO (acre-feet)</u>	
1995	0	0	SPILL YEAR
1996	2,400	68,800	
1997	2,900	105,500	
1998	11,500	153,100	
1999	17,700	170,700	
2000	27,000	269,100	
2001	10,100	155,700	
2002	42,800	265,000	
2003	1,200	54,000	
2004	4,400	35,600	
2005	4,600	37,100	
2006	15,500	180,100	

* derived from Rio Grande Compact Commission yearly reports.

**RIO GRANDE PROJECT HISTORICAL
ALLOCATION OF PROJECT WATER SUPPLY**

W/Trees
02/13/2008

YEAR	EO FEB. TOTAL RIO GRANDE PROJECT STORAGE (acre-feet)	SAN MARCIAL SPRING RUNOFF (Mar-Jul) (acre-feet)	INITIAL ALLOTMENT TO PROJECT LANDS (acre-foot/acre)	FINAL ALLOTMENT TO PROJECT LANDS (acre-foot/acre)	INITIAL ALLOTMENT TO PROJECT CANAL HEADINGS (acre-feet)	FINAL ALLOTMENT TO PROJECT CANAL HEADINGS (acre-feet)	EO OCT. TOTAL RIO GRANDE PROJECT STORAGE (acre-feet)	MEXICO DIVERSION AT ACEQUIA MADRE HEADING (acre-feet)	INITIAL RELEASE DATE FROM CABALLO DAM	CABALLO DAM TOTAL YEARLY RELEASE (acre-feet)
1951	452,730	17,877	1.00	1.75			32,900	33,059	03/06	469,450
1952	103,920	832,160	0.21	2.50			370,950	49,890	03/20	543,975
1953	468,600	143,170	1.00	1.90			99,990	37,760	03/10	528,628
1954	184,460	76,720	0.42	0.50			91,480	10,147	03/20	244,165
1955	169,850	68,920	0.21	0.42			129,700	8,185	03/20	219,157
1956	212,180	59,885	0.33	0.39			31,040	7,864	03/18	246,140
1957	77,130	600,680	0.10	1.17			645,760	23,290	03/20	397,103
1958	857,510	988,030	1.75	4.00			1,007,170	60,050	03/01	737,125
1959	1,185,120	72,590	3.00	3.50			575,670	60,110	03/02	687,414
1960	713,550	410,900	2.25	3.25			405,820	60,320	03/02	705,162
1961	492,870	269,550	1.25	2.45			223,080	48,610	03/10	561,697
1962	486,570	448,250	1.75	3.25			269,580	60,057	03/05	651,941
1963	513,170	116,765	1.85	2.00			109,440	39,693	03/05	517,172
1964	194,790	67,930	0.25	0.33			58,670	6,653	03/15	206,085
1965	172,340	598,290	0.17	1.85			340,940	36,658	03/20	505,598
1966	627,430	328,380	1.75	2.50			312,910	49,618	03/05	610,341
1967	454,710	74,090	1.25	1.50			223,340	29,829	02/27	456,517
1968	386,860	238,560	1.00	2.00			277,530	39,677	02/27	505,691
1969	466,970	358,710	1.25	3.00			387,410	59,884	02/27	667,669
1970	614,620	257,960	2.00	3.00			223,870	60,065	02/23	661,125
1971	435,640	112,837	1.50	1.75			75,540	34,847	02/26	498,375
1972	283,380	77,630	0.60	0.80			258,910	16,077	03/01	260,911
1973	457,960	914,090	1.00	3.00			707,340	60,000	03/09	617,461
1974	915,650	95,430	3.00	3.00			376,650	60,050	03/02	640,843
1975	507,700	617,850	1.00	3.00			534,490	60,052	01/24	580,617
1976	762,230	204,260	2.50	3.00			353,910	60,172	01/16	679,676
1977	482,460	43,374	1.00	1.25			140,460	24,824	03/03	416,496
1978	268,220	248,610	0.25	0.75			112,160	14,903	03/10	356,167
1979	328,690	1,148,880	0.67	3.00		790,000	855,640	60,055	03/08	568,687
1980	1,080,400	861,894	3.00	3.00		790,000	1,178,400	60,033	01/17	658,686
1981	1,339,860	54,256	3.00	3.00	750,650	750,650	774,380	60,262	02/04	608,166
1982	878,660	548,573	3.00	3.00	790,000	790,000	866,140	59,257	01/27	635,642
1983	1,070,130	920,545	3.00	3.00	790,000	790,000	1,289,750	60,621	02/03	648,386
1984	1,424,200	831,291	3.00	3.00	902,000	902,000	1,515,500	58,588	02/09	653,150
1985	1,747,700	1,133,599			902,000	902,000	2,121,600	60,276	02/20	677,398
1986	2,322,200	812,686			902,000	902,000	2,290,800	66,163	04/01	1,396,165
1987	2,336,900	1,003,319			902,000	902,000	2,168,400	65,866	02/03	1,376,099
1988	2,383,900	419,098			902,000	902,000	2,060,100	61,935	01/20	838,008
1989	2,151,900	378,144			890,900	890,900	1,705,300	58,854	02/13	736,866
1990	1,801,000	159,213			931,841	931,841	1,319,400	58,353	02/12	680,107
1991	1,509,660	656,638			931,841	931,841	1,580,080	59,242	02/19	625,956
1992	1,830,380	745,950			931,841	931,841	1,802,720	58,080	01/09	734,982
1993	1,980,230	742,508			931,841	931,841	1,978,640	63,763	01/12	823,263
1994	2,155,690	852,845			931,841	931,841	2,003,860	60,167	01/11	893,384
1995	2,203,730	991,736			931,841	931,841	2,083,050	63,618	01/17	1,096,146
1996	2,263,420	131,980			931,841	931,841	1,689,550	60,063	01/12	774,335
1997	1,814,910	600,666			931,841	931,841	1,814,980	59,442	01/21	798,621
1998	2,036,000	447,172			931,841	931,841	1,636,860	60,628	01/16	808,661
1999	1,803,410	384,225			931,841	931,841	1,658,810	58,308	01/27	735,467
2000	1,804,980	159,000			931,841	931,841	1,243,900	60,611	01/20	751,373
2001	1,359,370	241,000			931,841	931,841	856,910	61,037	02/02	786,549
2002	974,610	61,095			738,139	931,841	323,190	60,324	02/19	801,147
2003	456,140	62,029			74,860	317,495	170,490	26,948	03/17	364,528
2004	288,480	240,387			43,667	353,944	128,010	27,613	03/12	398,612
2005	331,000	738,095			138,549	931,841	362,060	58,091	03/09	676,031
2006	517,170	92,521			351,560	472,426	436,950	27,112	03/08	434,228
2007	644,990	316,979			369,466	760,391	346,170	51,779	03/07	636,730

bold number means full irrigation supply for Rio Grande Project water users.

* derived from International Boundary & Water Commission (IBWC) - U. S. Section, Yearly Flow Data Publications.