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DATA REPOSITORY

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Figure DR9. Annual mean streamflow plotted against drainage area of the 5 suspended-sediment stations in the Rio Puerco, NM investigated in this study.

Table DR1-- Rio Puerco bankfull channel geometry and inner flood-plain changes, interpretations from Elliott (1979) .

Cross Section	Reach	Latitude Longitude	1977 Bankfull Width (m)	1977 Bankfull Mean Depth (m)	1977 Width to Mean Depth Ratio
Type 1 Channels					
1	Last	35°58'13" 106°59'25"	244.4	3.48	70.4
2	Forbidden	35°56'35" 106°59'15"	253.9	4.53	56.1
3	Forbidden	35°56'30" 106°59'12"	240.2	6.23	38.6
4	Marion Butte	35°55'50" 106°59'00"	658.2	6.20	106.0
5	E R P	35°55'05" 106°59' 20"	980.6	3.31	294.7
6	E R P	35°55'00" 106°59'33"	584.7	4.86	120.8
7	E R P	35°54'50" 106°59'22"	459.7	7.55	61.0
8	Horsefly	35°53'42" 106°58'30"	381.9	4.30	89.2
9	Horsefly	35°53'45" 106°58'38"	191.0	9.58	19.9
10	Horsefly	35°53'38" 106°58'32"	248.7	5.05	49.3
13	Guadalupe	35°32'22" 107°08' 38"	801.7	5.68	141.5
14	Guadalupe	35°32'22" 107°08'30"	1210.7	2.89	418.1
	Mean Type 1		521.3	5.3	122.1
Type 2 Channels					
15	Canoncito	35°04'18" 106°57'00"	285.8	15.95	17.9
16	Mesita Negra	35°03'28" 106°57'05"	272.3	17.42	15.6
17	Isleta	34°47'58" 106°59'25"	229.3	8.53	26.9
18	Hidden Lady	34°46'33" 106°58'50"	245.7	11.22	21.9
19	Sand Butte	34°45'30" 106°57'15"	266.7	15.09	17.7
20	Huning Bridge	34°38'08" 106°54'00"	206.7	15.09	13.7
23	Angular	34°36'20" 106°54'02"	272.3	13.06	20.8
24	Angular	34°36'12" 106°54'05"	173.9	7.55	23.0
25	Angular (c/o)	34°36'15" 106°54'00"	179.8	9.06	19.9
26	Powerline	34°36'07" 106°53'32"	201.5	13.62	14.8
27	County Line	34°35'03" 106°53'13"	212.6	13.81	15.4
28C	County Line	34°35'00" 106°53'10"	147.6	6.89	21.5
29	County Line	34°35'05" 106°53'05"	211.1	17.42	12.1
	Mean Type 2		223.5	12.7	18.6

Table DR2. Rio Puerco bankfull channel-geometry changes, 1977/78 to the 1990's

		Bankfull Channel Width					Bankfull Mean Depth			
Cross section	Reach name	1977 (m)	1990's (m)	Change (- = decrease in width) (m)	Change (- = decrease in width) (%)		1977 (m)	1990's (m)	Change (- = decrease in depth) (m)	Change (- = decrease in depth) (%)
Type 1 Reaches										
1	Last	22.7	8.9	-13.8	-61		0.32	1.12	0.80	248
2	Forbidden	23.6	12.0	-11.6	-49		0.42	1.02	0.60	143
3	Forbidden	22.3	8.2	-14.1	-63		0.58	1.52	0.94	162
4	Marion Butte	61.1	30.2	-30.9	-51		0.58	0.91	0.33	57
5	E R P	91.1	52.2	-38.9	-43		0.31	0.49	0.19	60
6	E R P	54.3	37.5	-16.8	-31		0.45	0.75	0.30	67
7	E R P	42.7	25.0	-17.7	-41		0.70	0.80	0.10	14
8	Horsefly	35.5	16.4	-19.1	-54		0.40	0.73	0.33	83
9	Horsefly	17.7	16.5	-1.2	-7		0.89	0.73	-0.16	-18
10	Horsefly	23.1	24.3	1.2	5		0.47	0.46	-0.01	-3
13	Guadalupe	74.5	49.6	-24.9	-33		0.53	0.73	0.20	38
14	Guadalupe	112.5	43.1	-69.3	-62		0.27	0.87	0.60	223
Mean Type 1		48.4	27.0	-21.4	-40.8		0.49	0.84	0.35	89.6
Stan Deviation		31.0	15.6	18.8	21.6		0.18	0.28	0.33	86.3
Type 2 Reaches										
15	Canoncito	26.5	20.9	-5.6	-21		1.48	1.98	0.50	34
16	Mesita Negra	25.3	21.6	-3.7	-15		1.62	2.00	0.38	23
17C	Isleta	21.3	13.5	-7.8	-37		0.79	1.06	0.27	33
31	Bryan/Hadley	23.8	20.7	-3.1	-13		1.98	2.15	0.17	9
18C	Hidden Lady	22.8	12.7	-10.1	-44		1.04	1.84	0.80	77
19	Sand Butte	24.8	14.8	-10.0	-40		1.40	1.86	0.46	33
20	Huning Bridge	19.2	16.0	-3.2	-17		1.40	1.23	-0.17	-12
23	Angular	25.3	19.4	-5.9	-23		1.21	1.27	0.06	5
25	Angular	16.7	13.3	-3.4	-20		0.84	1.13	0.29	34
26	Powerline	18.7	16.7	-2.0	-11		1.26	1.35	0.08	7
27	County Line	19.8	14.0	-5.8	-29		1.28	1.31	0.02	2
28C	County Line	13.7	8.4	-5.3	-39		0.64	0.83	0.19	30
29	County Line	19.6	14.4	-5.2	-26		1.62	1.45	-0.16	-10
Mean Type 2		21.3	15.9	-5.5	-25.8		1.28	1.50	0.22	20.3
Stan Deviation		3.8	3.9	2.6	11.2		0.38	0.42	0.27	23.9

Table DR2. Continued.

		Cross Sectional Area					Width/Depth Ratio			
Cross Section	Reach name	1977 (m^2)	1990's (m^2)	Change (- = decrease in cross-sectional area) (m^2)	Change (- = decrease in cross-sectional area) (%)		1977 (m/m)	1990's (m/m)	Change (- = decrease in width-depth ratio) (m/m)	Change (- = decrease in width-depth ratio) (%)
Type 1 Reaches										
1	Last	7.3	10.0	2.7	37		70.4	7.9	-62.5	-89
2	Forbidden	9.9	12.3	2.4	24		56.1	11.7	-44.4	-79
3	Forbidden	12.9	12.4	-0.5	-4		38.6	5.4	-33.2	-86
4	Marion Butte	35.3	27.4	-7.9	-22		106.0	33.4	-72.6	-68
5	E R P	28.2	25.8	-2.3	-8		294.7	105.4	-189.3	-64
6	E R P	24.4	28.2	3.8	15		120.8	49.9	-70.9	-59
7	E R P	29.9	20.1	-9.8	-33		61.0	31.2	-29.8	-49
8	Horsefly	14.1	12.0	-2.2	-15		89.2	22.4	-66.8	-75
9	Horsefly	15.8	12.0	-3.8	-24		19.9	22.7	2.8	14
10	Horsefly	10.8	11.2	0.3	3		49.3	53.1	3.8	8
13	Guadalupe	39.2	35.9	-3.3	-8		141.5	68.4	-73.1	-52
14	Guadalupe	30.3	37.3	7.1	23		418.1	49.8	-368.2	-88
Mean Type 1		21.5	20.4	-1.1	-1.0		122.1	38.4	-83.7	-57.3
Stan Deviation		10.9	10.1	4.8	21.8		117.8	28.9	102.4	34.6
Type 2 Reaches										
15	Canoncito	39.4	41.4	2.0	5		17.9	10.6	-7.3	-41
16	Mesita Negra	41.0	43.0	2.1	5		15.6	10.8	-4.8	-31
17C	Isleta	16.9	14.3	-2.6	-15		26.9	12.8	-14.2	-53
31	Bryan/Hadley	47.2	44.6	-2.6	-5		12.0	9.6	-2.4	-20
18C	Hidden Lady	23.8	23.4	-0.4	-2		21.9	6.9	-15.0	-68
19	Sand Butte	34.7	27.5	-7.3	-21		17.7	7.9	-9.8	-55
20	Huning Bridge	26.9	19.6	-7.3	-27		13.7	13.0	-0.7	-5
23	Angular	30.7	24.6	-6.1	-20		20.8	15.2	-5.6	-27
25	Angular	14.0	15.1	1.0	7		19.9	11.8	-8.1	-41
26	Powerline	23.7	22.5	-1.2	-5		14.8	12.4	-2.4	-16
27	County Line	25.3	18.3	-7.1	-28		15.4	10.7	-4.8	-31
28C	County Line	8.8	7.0	-1.7	-20		21.5	10.1	-11.4	-53
29	County Line	31.7	20.9	-10.8	-34		12.1	9.9	-2.2	-18
Mean Type 2		28.0	24.8	-3.2	-12.3		17.7	10.9	-6.8	-35.3
Stan Deviation		11.1	11.6	4.1	13.9		4.4	2.2	4.7	18.5

Table DR3. Rio Puerco channel and inner flood-plain elevation changes, 1977/78 to the 1990's. [S.D. = standard deviation; X, elevation change not quantified due to lack of common, local datum]

		Mean Bed Elevation Local Datum				Mean Bankfull Elevation Local Datum			
Cross section	Reach Name	1977/78 (m)	1990's (m)	Change (m) (- = decrease in bed elevation)		1977/78 (m)	1990's (m)	Change (m) (- = decrease in bankfull elevation)	Remarks
Type 1 Reaches									
1	Last	49.5	21.5	X		49.8	23.0	X	Channel re-incised. No common datum
2	Forbidden	48.8	22.8	X		49.2	24.0	X	Channel re-incised. No common datum
3	Forbidden	47.6	22.0	X		48.3	23.8	X	Channel re-incised. No common datum
4	Marion Butte	27.5	26.6	-0.9		28.1	27.7	-0.4	Channel re-incised. Inner flood plain developing.
5	E R P	23.0	23.1	0.1		23.4	23.7	0.3	Inner flood plain developing.
6	E R P	22.3	22.1	-0.2		22.9	23.1	0.2	Inner flood plain developing.
7	E R P	27.0	26.7	-0.3		27.7	27.5	-0.2	Inner flood plain developing.
8	Horsefly	23.7	22.3	-1.4		24.3	23.1	-1.2	Nearby arroyo bend avulsion.
9	Horsefly	23.1	22.3	-0.8		24.1	23.1	-1.0	Arroyo bend avulsion. Channel relocated 290 m eastward.
10	Horsefly	22.2	22.4	0.2		22.7	22.9	0.2	Arroyo bend avulsion. Lateral channel realignment.
13	Guadalupe	28.7	28.4	-0.3		29.3	29.2	-0.1	Major lateral shift of channel and arroyo.
14	Guadalupe	27.5	27.9	0.4		27.9	28.8	0.9	Major lateral shift of channel and arroyo.
Mean Type 1				-0.4				-0.2	Mean Type 1
S.D.				0.6				0.7	S.D.

Table DR3. Continued.

Type 2 Reaches									
			Mean Bed Elevation Local Datum				Mean Bankfull Elevation Local Datum		
Cross section	Reach Name	1977 (m)	1990's (m)	Change (m) (- = decrease in bed elevation)		1977 (m)	1990's (m)	Change (m) (- = decrease in bankfull elevation)	Remarks
15	Canoncito	X	18.9	X			21.5	X	No common datum
16	Mesita Negra	X	13.6	X		X	16.3	X	No common datum
17C	Isleta	X	18.8	X		X	20.1	X	No common datum
31	Bryan/Hadley	1521.2	1523.2	2.0		1523.7	1526.1	2.4	Inner flood plain aggrading.
18C	Hidden Lady	17.9	20.0	2.0		19.6	22.5	3.0	Inner flood plain aggrading.
19	Sand Butte	21.5	21.9	0.4		23.5	24.6	1.1	Inner flood plain aggrading.
20	Huning Bridge	21.2	21.0	-0.2		22.8	23.7	0.9	Inner flood plain aggrading.
23	Angular	93.3	21.0	X		94.8	22.7	X	Channel narrower, & deeper. No common datum
25	Angular	20.2	20.7	0.5		21.4	22.2	0.8	Inner flood plain aggrading.
26	Powerline	20.9	22.0	1.1		22.4	23.9	1.5	Inner flood plain aggrading.
27	County Line	19.7	20.3	0.6		21.4	22.4	1.0	No 1977 flood plain survey.
28C	County Line	21.1	21.2	0.1		22.1	22.2	0.1	Some streamflow carried by a second channel.
29	County Line	18.6	19.8	1.2		20.6	21.7	1.1	Inner flood plain aggrading.
Mean Type 2				0.9				1.3	Mean Type 2
S.D.				0.8				0.9	S.D.
nc, elevations not comparable because 1977 and 1978 datum could not be re-established									

Table DR4a. Rainfall data separated by rainfall classes for stations in the Rio Puerco, NM.

Cuba Rainage

Annual

	Rainfall class					
year	0.01-.12.7 mm	>12.7-25.4 mm	>25.4 mm	Total days of rainfall	Total rainfall, mm	annual rainfall intensity, mm/day
1939	44	6	1	51	304	5.95
1940	61	10	3	74	457	6.17
1941	92	16	3	111	656	5.91
1944	69	6	1	76	400	5.26
1945	64	6	1	71	310	4.36
1946	79	7	2	88	389	4.42
1949	95	6	0	101	348	3.45
1950	63	1	1	65	270	4.16
1951	79	4	0	83	248	2.99
1952	61	5	1	67	260	3.89
1953	57	3	3	63	301	4.78
1954	45	6	2	53	372	7.02
1955	48	8	2	58	372	6.42
1956	37	4	1	42	172	4.10
1957	92	5	4	101	485	4.80
1958	74	6	0	80	311	3.89
1959	52	6	3	61	281	4.61
1960	65	5	4	74	372	5.03
1961	75	4	6	85	526	6.19
1962	65	6	3	74	338	4.57
1965	73	3	3	79	401	5.08
1966	53	6	0	59	250	4.24
1967	59	5	1	65	317	4.88
1970	76	1	0	77	275	3.57
1971	51	7	1	59	374	6.34
1972	37	13	4	54	350	6.48
1974	72	5	2	79	323	4.09
1975	61	4	0	65	241	3.71
1976	47	4	0	51	190	3.72
1978	72	8	3	83	475	5.73
1979	65	6	3	74	352	4.75
1980	60	4	0	64	261	4.07
1981	45	5	0	50	248	4.96
1983	61	4	1	66	336	5.08
1984	64	4	1	69	289	4.19
1985	49	5	2	56	377	6.74
1986	56	9	1	66	440	6.67
1988	51	6	2	59	160	2.70
1989	25	3	1	29	168	5.80
1992	64	4	2	70	371	5.30
1994	41	10	1	52	367	7.06
1996	50	4	0	54	256	4.73
1998	38	5	4	47	358	7.61

Table DR4a. Continued.

Grants Raingage

Annual	Rainfall class					
year	0.01-.12.7 mm	>12.7-25.4 mm	>25.4 mm	Total days	Total rainfall, mm	annual rainfall intensity, mm/day
1954	43	5	1	49	275	5.60
1955	50	3	1	54	229	4.24
1956	34	1	1	36	112	3.11
1957	73	5	1	79	296	3.75
1958	65	1	1	67	225	3.36
1959	71	0	1	72	281	3.90
1960	62	1	1	64	222	3.46
1961	71	3	0	74	276	3.73
1962	55	2	0	57	187	3.28
1963	51	4	1	56	252	4.51
1964	58	4	0	62	234	3.78
1965	86	8	1	95	435	4.57
1966	53	4	2	59	277	4.69
1967	52	5	1	58	273	4.70
1968	62	1	1	64	200	3.13
1969	79	5	1	85	337	3.96
1971	58	7	0	65	283	4.36
1972	69	5	3	77	378	4.91
1976	25	2	1	28	164	5.84
1977	45	1	1	47	234	4.97
1979	44	5	1	50	297	5.95
1980	49	2	1	52	284	5.46
1981	43	4	1	48	260	5.41
1982	60	4	0	64	307	4.80
1983	47	4	1	52	305	5.87
1984	38	6	1	45	280	6.23
1985	42	5	0	47	278	5.91
1986	45	8	0	53	358	6.76
1988	77	3	1	81	240	2.97
1989	46	3	0	49	160	3.27
1990	81	9	1	91	404	4.44
1991	77	3	0	80	293	3.67
1992	80	2	0	82	344	4.20
1993	56	5	1	62	319	5.15
1994	78	4	0	82	297	3.62
1995	59	0	0	59	151	2.56
1996	52	6	0	58	252	4.34
1997	67	9	1	77	395	5.13
1998	42	5	1	48	249	5.20
1999	46	7	2	55	309	5.62

Table DR4a. Continued.

Laguna Raingage

Annual	Rainfall class					
year	0.01-.12.7 mm	>12.7-25.4 mm	>25.4 mm	Total days of rainfall	Total rainfall, mm	annual rainfall intensity, mm/day
1906	16	15	1	32	331	10.36
1908	13	3	3	19	212	11.16
1909	9	5	3	17	269	15.84
1910	18	4	2	24	231	9.61
1911	25	6	2	33	328	9.93
1912	12	1	3	16	205	12.81
1913	27	0	2	29	220	7.60
1920	29	7	2	38	350	9.20
1928	41	6	0	47	220	4.67
1930	43	3	1	47	181	3.86
1933	53	3	5	61	372	6.10
1937	26	6	0	32	218	6.82
1938	27	1	1	29	192	6.61
1939	22	5	1	28	238	8.50
1940	49	6	1	56	344	6.14
1941	62	7	3	72	468	6.50
1945	23	2	0	25	113	4.50
1951	24	3	0	27	121	4.47
1952	30	2	0	32	164	5.13
1953	25	1	0	26	95	3.64
1954	37	2	1	40	209	5.21
1955	38	0	2	40	184	4.60
1956	17	1	0	18	50	2.77
1957	56	4	2	62	333	5.37
1958	38	3	1	42	221	5.27
1959	33	4	2	39	273	6.99
1960	29	2	1	32	160	4.98
1961	45	3	1	49	217	4.42
1962	47	4	1	52	233	4.49
1963	45	4	0	49	194	3.96
1964	55	4	1	60	262	4.36
1965	67	6	0	73	277	3.80
1966	48	1	1	50	220	4.40
1967	44	4	0	48	225	4.69
1968	55	2	0	57	199	3.49
1969	60	7	1	68	392	5.77
1971	45	7	0	52	232	4.46
1972	54	6	1	61	349	5.72
1975	49	5	1	55	303	5.50
1976	43	3	1	47	202	4.30
1977	58	5	1	64	294	4.59
1978	69	2	1	72	271	3.76
1979	54	5	1	60	263	4.39

1980	51	1	0	52	188	3.61
1981	50	8	1	59	292	4.94
1982	61	2	0	63	277	4.39
1983	62	2	1	65	265	4.08
1984	59	5	0	64	302	4.71
1985	67	6	2	75	353	4.70
1986	47	5	3	55	356	6.47
1987	54	3	1	58	226	3.90
1988	44	6	2	52	328	6.31
1989	38	3	0	41	161	3.92
1990	63	9	2	74	413	5.58
1991	30	6	1	37	230	6.22
1992	47	6	1	54	271	5.02
1994	28	9	2	39	321	8.23
1995	37	0	1	38	135	3.56
1996	33	3	1	37	222	5.99
1999	44	4	0	48	255	5.31

Table DR4a. Continued.

Socorro Raingage

Annual	Rainfall class					
year	0.01-.12.7 mm	>12.7-25.4 mm	>25.4 mm	Total days of rainfall	Total rainfall, mm	annual rainfall intensity, mm/day
1899	31	5	1	37	196	5.29
1900	30	4	0	34	179	5.27
1901	37	4	2	43	256	5.94
1905	70	4	6	80	569	7.11
1906	55	3	1	59	294	4.99
1907	58	10	2	70	453	6.48
1908	34	2	0	36	160	4.44
1909	40	2	1	43	206	4.79
1910	43	2	2	47	194	4.12
1911	70	8	1	79	409	5.18
1912	44	4	0	48	203	4.24
1913	44	4	0	48	206	4.29
1914	69	6	2	77	452	5.87
1915	53	8	3	64	421	6.58
1916	46	4	5	55	416	7.56
1917	33	2	0	35	119	3.40
1918	70	5	1	76	310	4.08
1919	68	9	0	77	414	5.38
1920	40	5	0	45	219	4.86
1921	46	4	2	52	318	6.12
1923	36	6	0	42	224	5.32
1924	14	3	1	18	128	7.11
1925	26	2	0	28	105	3.74
1926	44	6	0	50	285	5.71
1928	37	2	0	39	177	4.55
1930	31	3	0	34	166	4.87
1934	36	3	1	40	172	4.31
1937	32	2	3	37	277	7.50
1938	20	6	1	27	220	8.16
1939	16	7	3	26	271	10.40
1940	44	0	1	45	185	4.11
1941	69	6	3	78	448	5.75
1942	41	2	0	43	155	3.60
1943	32	4	1	37	176	4.76
1944	52	2	0	54	189	3.51
1945	25	1	2	28	173	6.20
1946	49	1	0	50	160	3.20
1947	48	1	0	49	153	3.12
1948	41	3	1	45	203	4.50
1949	56	1	2	59	222	3.76
1950	38	3	2	43	214	4.99
1951	42	2	0	44	140	3.18
1952	50	2	1	53	173	3.27

1953	48	2	1	51	236	4.64
1954	38	2	1	41	185	4.52
1955	35	4	0	39	163	4.17
1956	32	0	0	32	77	2.41
1957	65	4	1	70	282	4.02
1958	63	4	3	70	292	4.17
1959	42	3	1	46	194	4.22
1960	49	4	2	55	264	4.80
1961	52	5	0	57	211	3.70
1962	49	1	1	51	198	3.88
1963	52	1	1	54	167	3.09
1964	40	5	0	45	172	3.83
1965	57	2	0	59	188	3.19
1966	43	0	1	44	153	3.47
1967	28	5	0	33	203	6.14
1968	43	5	1	49	292	5.95
1970	30	1	0	31	129	4.15
1972	48	7	1	56	355	6.34
1973	31	4	2	37	227	6.13
1974	37	9	1	47	296	6.30
1975	35	6	1	42	266	6.34
1976	34	5	1	40	239	5.97
1977	29	3	2	34	240	7.04
1978	40	2	1	43	233	5.43
1979	39	5	1	45	295	6.56
1980	32	2	4	38	315	8.29
1981	31	8	1	40	265	6.63
1982	39	0	1	40	189	4.72
1985	50	5	2	57	289	5.08
1986	56	10	2	68	396	5.82
1987	48	2	2	52	261	5.02
1990	46	2	0	48	185	3.86
1993	52	0	1	53	199	3.76
1995	38	1	0	39	115	2.96
1996	53	3	1	57	233	4.09
1997	75	6	1	82	351	4.28
1998	48	2	4	54	246	4.56
1999	47	2	1	50	250	5.01

Table DR4a. Continued.

Thoreau Raingage

Annual year	Rainfall class 0.01-.12.7 mm	>12.7-25.4 mm	>25.4 mm	Total days of rainfall	Total rainfall, mm	annual rainfall intensity, mm/day
1955	73	3	0	76	196	2.58
1956	57	0	0	57	133	2.33
1957	99	6	2	109	387	3.55
1958	78	2	0	80	277	3.46
1959	78	4	1	83	329	3.96
1960	75	1	1	79	221	2.80
1961	86	4	0	90	321	3.57
1962	76	2	0	78	221	2.83
1963	60	6	1	68	317	4.67
1964	69	7	0	76	352	4.63
1965	98	4	0	102	349	3.42
1966	73	5	0	78	278	3.56
1967	61	1	1	63	236	3.75
1968	68	3	0	71	222	3.12
1969	74	7	0	81	343	4.23
1970	71	3	0	74	243	3.28
1971	66	0	2	68	250	3.67
1972	72	3	0	75	262	3.49
1973	87	3	0	90	246	2.74
1974	59	4	1	64	288	4.50
1975	71	5	2	78	281	3.61
1976	68	1	0	69	174	2.53
1977	71	3	0	74	221	2.98
1978	84	3	0	87	274	3.14
1979	61	5	1	67	281	4.20
1980	75	2	0	77	248	3.23
1981	67	4	0	71	243	3.42
1982	74	7	0	81	305	3.77
1983	90	2	1	93	323	3.47
1984	76	2	2	80	329	4.11
1985	90	3	0	93	320	3.44
1986	82	4	1	87	435	5.00
1987	77	4	2	83	371	4.47
1988	79	2	1	82	313	3.81
1989	41	1	1	43	167	3.89
1990	85	5	0	90	322	3.58
1991	70	1	0	71	224	3.15
1995	61	4	0	68	274	4.03
1996	55	2	1	67	294	4.38
1997	66	10	1	84	457	5.44
1998	62	4	1	72	379	5.27
1999	64	2	0	68	233	3.43

Table DR4a. Continued.

Torreon Raingage

Annual year	Rainfall class 0.01-.12.7 mm	>12.7-25.4 mm	>25.4 mm	Total days of rainfall	Total rainfall, mm	annual rainfall intensity, mm/day
1962	59	1	0	60	153.416	2.556933
1963	58	0	1	59	186.69	3.164237
1964	62	0	0	62	223.266	3.601065
1965	46	4	0	50	259.842	5.19684
1966	57	0	1	58	202.692	3.49469
1967	35	3	2	40	227.076	5.6769
1968	37	4	0	41	225.298	5.495073
1969	50	7	1	58	313.436	5.404069
1970	53	5	0	58	210.312	3.626069
1971	47	5	0	52	236.22	4.542692
1972	59	5	2	66	357.886	5.422515
1974	52	7	0	59	277.622	4.705458
1975	62	1	2	65	249.682	3.841262
1976	49	3	0	52	151.13	2.906346
1977	52	4	1	57	293.878	5.155754
1978	66	2	2	70	293.624	4.194629
1979	66	4	1	71	310.388	4.371662
1980	46	1	1	48	200.152	4.169833
1981	55	3	2	60	289.306	4.821767
1983	38	4	0	42	212.344	5.05581
1984	41	5	0	46	238.506	5.184913
1985	79	4	1	84	322.326	3.837214
1986	57	7	2	66	345.948	5.241636
1987	42	3	0	45	192.278	4.272844
1988	62	4	2	68	367.538	5.404971
1989	32	3	0	35	150.368	4.296229
1990	52	6	0	58	316.992	5.465379
1991	42	6	0	48	258.826	5.392208
1992	53	5	1	59	289.56	4.907797
1993	35	5	1	41	238.252	5.811024
1994	36	10	3	49	387.35	7.905102
1995	56	3	0	59	230.124	3.900407
1996	40	3	1	44	222.504	5.056909
1997	65	4	2	71	379.222	5.341155
1998	45	4	0	49	251.46	5.131837
1999	46	5	2	53	333.502	6.292491

Table DR4b. Results of trend analysis for rainfall stations in the Rio Puerco basin, New Mexico. Slope of the regression line, with the sign indicating the trend of the regression line (increasing '+' or decreasing '-') are shown for only significant relations.

			Rainfall class					
Station	Time scale	Portion of year analyzed	0.01-.12.7 mm	>12.7-25.4 mm	>25.4 mm	Rainfall intensity, mm/day	Number of rainy days	Total precipitation, mm
Cuba	Entire period (1939-1998)	Annual	-0.39				-0.43	
Cuba	1962-99	Annual	-0.59				-0.58	
Cuba	Entire period (1939-1999)	Summer	-0.09			0.03		
Cuba	1962-99	Summer	-0.22			0.08		
Cuba	Entire period (1940-1998)	Winter	-0.33					
Cuba	1962-99	Winter				0.05		
Grants	Entire period (1954-1999)	Annual		0.05				
Grants	1962-99	Annual						
Grants	Entire period (1953-1999)	Summer						
Grants	1962-99	Summer						
Grants	Entire period (1954-1999)	Winter		0.06		0.03		1.51
Grants	1962-99	Winter		0.05				1.58
Laguna	Entire period (1906-1999)	Annual	0.35		-0.01	-0.05	0.34	
Laguna	1962-99	Annual	-0.35			0.04		
Laguna	Entire period (1905-1999)	Summer	0.15		-0.01	-0.06	0.14	
Laguna	1962-99	Summer	-0.21			0.05	-0.20	
Laguna	Entire period (1906-1998)	Winter	0.19			-0.07	0.17	
Laguna	1962-99	Winter				0.03		
Socorro	Entire period (1899-1999)	Annual						
Socorro	1962-99	Annual						
Socorro	Entire period (1894-1999)	Summer						
Socorro	1962-99	Summer			0.03			
Socorro	Entire period (1897-1998)	Winter						
Socorro	1962-99	Winter						
Thoreau	Entire period (1955-1999)	Annual				0.02		
Thoreau	1962-99	Annual						
Thoreau	Entire period (1954-1999)	Summer				0.03		
Thoreau	1962-99	Summer				0.03		
Thoreau	Entire period (1955-1999)	Winter				0.02		
Thoreau	1962-99	Winter				0.02		
Torreon	Entire period (1962-1999)	Annual		0.08		0.04		2.11
Torreon	1962-99	Annual		0.08		0.04		2.11
Torreon	Entire period (1961-1999)	Summer						
Torreon	1962-99	Summer						
Torreon	Entire period (1962-1999)	Winter		0.05		0.05		1.51

Table DR5a. Summary of single-ring infiltration measurements.

TYPE 1 REACHES

Measurement Date	Reach name	Geomorphic surface and condition	Flow in channel	Time to saturation, minute	Total Volume Loss in time to saturation, L	Infiltration rate at saturation (cm/min)	Stratigraphy, cm
7/21/1999	Forbidden Meander #1	Flood plain, dry	flowing	12.3	0.79	0.130	0-15 cm medium sand 15-24 cm fine sand 15-18 cm silty fine sand 24-38 cm medium sand with some gravel
7/23/1999	Marion Butte #1	Flood plain dry, sandy area some grasses and sparse salt cedar	flowing	15.9	1.35	0.157	0-4 cm fine sand 4-19 cm clayey silty fine sand in wavy laminations 19-29 cm medium-coarsesand some fine gravel
7/23/1999	Marion Butte # 4	Flood plain dry, broad and shallow, sandy surface, patchy thin clay films in ripple troughs	flowing	8.1	0.94	0.253	0-8 cm fine sand 8-15 cm clayey fine sand 15-26 cm brown silt 26-38 cm fine sand 38-46 cm medium sand
7/23/1999	ERP #1	Flood plain dry, vegetated with young willow, grasses, sparse Russian Olives	flowing	5.8	0.66	0.127	0-12 cm fine-med sand 12-16 cm medium sand 16-21 cm fine sand 21-23 cm med sand (dry) 23-28 cm silty fine sand 28-36 cm medium sand

							36-40 cm silty/clay
7/26/1999	ERP #4	Flood plain dry, sandy grassy area	flowing	6.5	0.82	0.242	0-13 cm fine sand
							13-15 cm medium sand
							15-18 cm silty fine sand
							18-20 cm fine sand
							20-21 cm silty fine sand
							21-24 cm medium sand
							24-29 cm clayey fine sand
							29-34 cm cross-bedded medium fine sand
							34-38 cm silt
							38-43 cm medium sand
8/4/1999	Horse Fly #4	Flood plain-straight reach, lower flood plain covered with reeds, horsetails, and salt cedar	flowing	16.0	0.47	0.065	0-17 cm medium-coarse grained sand unit, same thin cross bedding apparent
							17 cm - grassy deposit
							17-30 cm recently deposited medium-coarse grained sand unit,
							higher clay cement than overlying layer
8/4/1999	Horse Fly #3	Channel bed, in straight reach in 5cm water	flowing			0.003	not described
7/26/1999	ERP #6	bed along point bar, in 5-6 cm water	flowing			0.021	not described
7/21/1999	Forbidden Meander #6	Channel bed, in 3-5 cm water	flowing			0.033	not described
7/26/1999	ERP #3	Channel bed,straight reach,in ~5cm water	flowing			0.083	not described
7/23/1999	Marion Butte #6	Channel bed, on emerging bar in water	flowing			0.055	fine coarse sand some clay
8/4/1999	Horse Fly #1	Bed along point bar in flowing water	flowing			0.033	coarse cobbles and pebbles
7/21/1999	Forbidden Meander #2	Polnt bar dry, - higher surface, bare sand and some grasses	flowing	8.9	0.72	0.096	0-10cm med sand
							10-12 cm clayey-fine sand

							15-18 cm silty fine sand 12-19 cm moist fine sand 19-34 alternating layers of fine & medium sand 34 -47 cm coarse sand with some gravel
7/21/1999	Forbidden Meander #3	Point bar dry	flowing	3.8	0.50	0.281	0-28 cm sand unit, medium to coarse very unconsolidated silt with little clay few thin, plant roots dispersed throughout > 28 cm , sand unit, with abundunt clay silt, fine-grained sand
7/21/1999	Forbidden Meander #5	Mid-channel sand bar, moist, bare	flowing	38.9	0.24	0.004	sand
7/23/1999	Marion Butte #2	Mid-channel bar, dry	flowing	2.3	0.47	0.203	0-0.5 cm dry sand, f-gr little clay, sparsely vegetated with thin grasses 0.5-6 cm light gray fine-medium sand some loam, slightly moist, with few thin roots, little clay 19-29 cm medium-coarse sand some fine gravel 6-11 cn sand, dark brown, higher clay, rippled surface, few roots 11-20 cm silty clay unit, little sand. Moist, dark brown few roots some dark laminations (organics or charcoal) > 20cm - sand unit, coarse-very coarse sand. Loose and unconsolidated, few roots
7/23/1999	Marion Butte #5	Mid-channel bar, saturated	flowing	35.0	0.08	0.003	0-10 cm sandy silt, fairly homogenous. Saturated abundant clay 10-15 cm dark, black organic layer, charcoal, sticky, root and plant fragments
8/4/1999	Horse Fly #2	Mid-channel bar dry, bare sand	flowing	14.9	0.44	0.147	0-0.5 cm clayey sand 0.5-6 cm medium sand 6-12.5 cm coarse sand 12.5-13.5 cm clay 13.5-18 cm coarse sand 18-24 cm clayey fine sand 24-28 cm coarse sand
	Type 1 flood plain average			10.8	0.84	0.162	
	Type 1 channel bed average					0.038	
	Type 1 mid-channel bar average			17.3	0.41	0.122	

Table DR5a. Continued.

		Distribution of grain sizes, %										
	Sieve size mm		**9.5-**	**4.75-**			**0.50-**	**0.25-**	**0.106-**	**0.063-**		
TYPE 1 REACHES		**> 19 mm**	**19.0**	**9.5**	**2.0-4.75**	**1.0-2.0**	**1.0**	**0.50**	**0.25**	**0.106**	**< 0.063**	**D50, mm**
Reach name	**Geomorphic surface**											
Forbidden Meander #1	Flood plain	0	0	0	0	2	11	21	30	22	14	0.17
Marion Butte #1	Flood plain	0	0	0	1	1	9	2	3	16	12	0.21
Marion Butte # 4	Flood plain	Not determined										
ERP #1	Flood plain	0	0	0	0	0	1	21	49	21	8	0.17
ERP #4	Flood plain	0	0	0	0	0	4	15	41	25	14	0.14
Horse Fly #4	Flood plain	0	0	0	0	0	6	11	45	27	9	0.15
Horse Fly #3	Channel bed	Not determined										
ERP #6	Channel bed	Not determined										
Forbidden Meander #6	Channel bed	Not determined										
ERP #3	Channel bed	Not determined										
Marion Butte #6	Channel bed	Not determined										
Horse Fly #1	Channel bed	Not determined										
Forbidden Meander #2	Mid-channel bar	0	0	0	0	0	3	29	38	17	11	0.19
Forbidden Meander #3	Mid-channel bar	0	0	0	0	0	3	55	36	4	2	0.29
Forbidden Meander #5	Mid-channel bar	0	0	0	0	0	13	30	36	12	9	0.22
Marion Butte #2	Mid-channel bar	0	0	0	0	0	6	80	12	1	0	0.36
Marion Butte #5	Mid-channel bar	Not determined										
Horse Fly #2	Mid-channel bar	Not determined										

TYPE 2 REACHES

7/12/1999	Sandy Butte #1	Flood plain dry, in meander bend on sandy clearing	flowing	19.0	0.97	0.044	0-2 cm sandy crust, not cracked a lot of silt in it, light brown
							2-10 cm fine-medium sand, cross-bedded, light brown, few roots
							10-15 cm clay, light brown, with some darker clay laminations
							15-18 cm fine-medium sand
							18-21 cm clay, dark brown w laminations
							>21 cm-light brown sandy silt
7/12/1999	Sandy Butte #2	Flood plain dry, covered in willows	flowing	16.7	1.10	0.062	0-3 cm sand with plant litter
							3-8 cm sand
							8-12 cm clay, fine sand, organic matter
							12-14 cm fine clayey sand
							14-17 cm medium sand
							17-18 cm fine clayey sand
							18-20 cm medium sand
							20-22 cm fine clayey sand
							22-30 cm medium sand
							30-34 cm clayey silt
							34-41 cm fine sand
7/9/1999	Huning Bridge #4	Flood plain dry, covered with salt cedar	flowing	44.8	0.94	0.103	not described
7/9/1999	Huning Bridge #6	Flood plain, dry	flowing	10.7	1.10	0.124	0-1 cm, silty clay layer, dry cracked, sparse vegetation nearby, open area, light brown
							1-10 cm, sandy unit, very fine sand with abundant silt, dry, ligh. Brown, compact, moderately indurated
							10-20 cm. Sandy unit, v-fine to fine sand, light brown abundant silt and clay mixed in, compact, more indurated than sand unit above
							* plant roots were abundant throughout the 0-20 cm depth
6/25/1999	Angular Meander #1	Flood plain dry, covered with salt cedar	flowing	8.1	0.94	0.256	0-0.2 cm clayey sand drape
							0.2-7 cm fine sand ripples
							7-11 cm fine sand
							11-29 cm fine - med sand (root zone) damp
							29-34 cm planar fine-med sand less damp w/no roots
							34-41 cm sand with some clay, roots in upper half, damp

							41-60 cm, clayey fine sand, damp
6/25/1999	Angular Meander #3	Flood plain dry, covered with salt cedar	flowing	29.6	2.14	0.188	0-3 cm hard packed sand covered with pine straw
							3-16 cm sand: some roots
							16-24 cm fine clayey sand --sharp contact with underlying layer
							>24 cm - sand
6/28/1999	Power Line Meander #1	Flood plain dry, straight reach, covered with salt cedar	flowing	5.1	1.10	0.141	0-0.3 cm silty, mudcracked drape
							0.3-7 cm fine-medium sand
							7-7.7 cm dark clay
							7.7-13 cm, moist medium sand
							13-13.5 cm clay
							13.5-19 cm fine-medium sand
							19-25 cm clayey fine sand
							25-27 cm clay
							>27 cm medium sand
6/28/1999	Power Line Meander #6	Flood plain dry, salt cedar present	flowing	15.0	0.79	0.068	0.5-1 cm, clayey sand crust
							1-15 cm, light brown sandy clay and fine-medium sand
							15-17 cm, dark brown clay band
							>17 cm light fine-medium brown sandy clay layer
6/23/1999	County Line #1	Point bar, dry	flowing	20.1	0.35	0.022	0-3 cm brown clay
							3-8.5 cm light clay
							>8.5 cm Fine sand
6/23/1999	County Line #3	Flood plain dry, covered with salt cedar, willows	flowing	34.9	1.41	0.087	Loose hard sandy soil
6/23/1999	County Line #2A	Point bar dry, mid level elevation between thalweg and salt cedar flood plain	flowing	8.5	1.01	0.196	Surface sandy, with thin clay layers
7/19/1999	Louis Bench #2	Flood plain dry, narrow with grasses and weeds	flowing	7.0	0.94	0.350	0-4 cm fine-medium silty sand
							4-10 cm clayey fine sand
							10-40cm unconsolidated medium sand (very loose)

7/14/1999	Kirk Bryan #1	Flood plain dry, sandy bare area next to cotttonwoods	flowing	14.5	0.79	0.079	0-8 cm medium sand
							8-10 cm clayey sand
							8-13 cm medium sand
							13-14 cm clayey sand
							14-26 cm fine sand
							26-34 cm medium sand
							>34 cm fine sand
7/14/1999	Kirk Bryan #3	Flood plain on levee, dry, dense salt cedar	flowing	5.4	0.94	0.651	0-1 cm organic litter
							1-7 cm fine sand
							7-38 cm medium sand
7/16/1999	Cononcito #1	Flood plain dry, bare sandy area, some grass	flowing	26.0	1.29	0.477	0-20 cm medium sand
							20-40 cm fine-medium sand
7/19/1999	Louis bench #4	Flood plain dry, sparse grass	flowing	26.4	0.79	0.046	0-6 cm Silty medium sand
							6-15 cm silty fine sand
							15-29 cm clayey fine sand
							29-35 cm silt
7/9/1999	Huning Bridge #2	Channel bed, straight reach, in water	flowing			0.002	0-0.5 cm, dry silty clay, rippled surface, cracked, light buff
							0.5-13 cm, moist fine to medium. grained, light yellowish orange sand
							13-17 cm, clay unit with fine to medium sand, moist, dark gray brown
							17-18 cm, continuous undulatory reddish orange sand unit
							18-40 cm, moist sandy unit, fine to medium,light brown with clay to sandy clay lenses, lenses 1-3 cm, coarser sandy lense 4 cm thick, roots become more abundant with depth
7/9/1999	Huning Bridge #1	Channel bed, in slight bend, under water	flowing			0.002	not described
7/26/1999	Power Line Meander #3	Channel bed, at thalweg, in water	flowing			0.003	0-8 cm medium clayey sand
							8-15 cm clay
							15-20 cm clayey sand
							20 cm clay and sand

7/16/1999	Cononcito #3	Channel bed, straight reach, in 5-8 cm water	flowing			0.004	not described
7/16/1999	Cononcito #4	Channel bed, in water				0.013	surface sandy-little to no clay drape
6/21/1999	Mesita Negra I-40 #4	Channel bed near right bank, under water	flowing			0.004	mud draped surface
6/28/1999	Power Line Meander #5	Channel bed, at thalweg, channel sauturated from recent flow	not flowing	58.83	0.20	0.026	0-3 cm clay horizon, still saturated from previous flood 3-7 cm clayey sand unit, saturated 7-9 cm clay unit, thin dark 1-2 mm thick layer on top, possibly charcoal or organics 9-18 cm sand unit, fine-medium grained 18-19 cm, 1 cm thick clay unit >19 cm - sandy unit, abundant clay
6/25/1999	Angular Meander #4	Mid-channel bar, saturated	flowing	Saturated at time of measurement		0.003	0-1 cm clay layer on surface, wet and sticky, dark brown 1-2 cm thick reddish brown clay layer, saturated >2 cm fairly homogeneous sandy unit, medium-fine grained sand
6/28/1999	Power Line Meander #2	Mid-channel bar, dry	not flowing	24.0	0.79	0.043	1.5-2 cm, thick clay layers, moist, just beginning to crack at surface 2-5 cm, sandy clay, light brown 5-5.5 cm, thin clay layers 5.5-20 cm, sandy clay horizons has undulatory surface 20-22 cm, reddish clay horizons 22-29 cm, sandy clay 29-30 cm, clay horizons > 30 cm sandy clay
6/28/1999	Power Line Meander #4	Mid-channel bar, dry	not flowing	76.0	0.19	0.005	1-3 cm clayey sand layers, mosit from previous flow 5-8 cm some clay, medium-fine sand 8-10 cm clay layer 10-19 cm light brown sand layer, some clay 19-26 cm, darker brown sand layer, some clay >26 cm- light brown sand layer

7/16/1999	Cononcito #2	Mid level channel bar along straight reach, wet	flowing	17.8	0.16	0.014	0-3 cm fine grained clay rich sand unit 3-15 cm fine- med grained sand, little clay 15-16 cm clay unit dark brown 16-22 cm fine- medium grained sand 22-23 cm clay unit >23 cm sand unit appears to be laminated same bedding
7/16/1999	Cononcito #5	Mid-channel bar, ground moist, elevation between thalweg and flood plain	flowing	36.2	0.16	0.222	0-0.2cm clay 0,2-15 cm medium-coarse sand, minor clay 15-19 cm sand and clay >19 cm fine-med sand little clay
7/16/1999	Cononcito #6	Mid-channel bar, dry, sandy and bare	flowing	17.0	0.94	0.138	0-20 cm medium sand 20-40 cm fine-medium sand
7/14/1999	Kirk Bryan #2	Mid-channel bar, wet		5.5	0.47	0.101	0-0.25 cm, thin surface clay layers, rippled, still saturated 0.25->30 cm, fine, medium Grained sand unit, fairly homogeneous, no clay laminations or lenses visible, still saturated
7/14/1999	Kirk Bryant #4	Mid-channel bar , straight reach, muddy and wet	flowing	37.5	0.16	0.009	0-4cm clayey sand 4-5 cm med sand 5-6 cm clayey sand 6-12 cm medium sand 12-12.5 cm clayey sand 12.5- 17 cm fine sand 17-18 cm red clayey sand 18-25 cm medium sand 29-34 cm clayey sand 34-39 cm medium sand 39-40 cm clayey sand 40-48 cm medium sand

7/9/1999	Huning Bridge #3	Mid-channel bar , takin in 5-6 cm water	flowing	28.2	0.47	0.031	not described
7/9/1999	Huning Bridge #5	Mid-channel bar - dry	flowing	27.8	0.94	0.059	not described
6/23/1999	County Line #4	Mid-channel bar - dry	flowing	32.5	0.53	0.037	Thin wet clay film over sandy soil
7/19/1999	Louis Bench #1	Mid-channel bar, wet no vegetation	flowing	18.5	0.31	0.037	0-10 cm dark brown fine-medium and, appears fairly homogenous, no cross beds no roots 10-30 cm reddish brown sand fined grain also homogenous. Few thin plant roots into it. Almost indistinguishable from overlying unit except in color.
7/19/1999	Louis Bench #3	Mid-channel bar - sandy surface, few plants, surface wet	flowing	10.1	0.06	0.020	0-3 cm dark brown sand unit, some clay mixed in, saturated. Fine-medium grained sand 3-35 cm light saturated very coarse grained sand very little clay, pebbles on top of the unit, also saturated, no roots
	Type 2 flood plain average			18.2	1.04	0.181	
	Type 2 channel bed average					0.008	
	Type 2 mid-channel bar average			27.6	0.43	0.055	

Table DR5a. Continued

		Distribution of grain sizes, %										
	Sieve size mm		**9.5-**	**4.75-**			**0.50-**	**0.25-**	**0.106-**	**0.063-**		
TYPE 2 REACHES		**> 19 mm**	**19.0**	**9.5**	**2.0-4.75**	**1.0-2.0**	**1.0**	**0.50**	**0.25**	**0.106**	**< 0.063**	**D50, mm**
Reach name	**Geomorphic surface**											
Sandy Butte #1	Flood plain	0%	0%	0%	0%	0%	7%	5%	9%	41%	38%	0.08
Sandy Butte #2	Flood plain	0%	0%	0%	0%	0%	5%	6%	43%	32%	14%	0.12
Huning Bridge #4	Flood plain	Not determined										
Huning Bridge #6	Flood plain	0%	0%	0%	0%	0%	4%	16%	52%	20%	7%	0.17
Angular Meander #1	Flood plain	0%	0%	0%	0%	0%	0%	2%	71%	22%	4%	0.16
Angular Meander #3	Flood plain	0%	0%	0%	0%	0%	3%	11%	57%	20%	8%	0.16
Power Line Meander #1	Flood plain	0%	0%	0%	0%	1%	6%	13%	38%	29%	12%	0.14
Power Line Meander #6	Flood plain	0%	0%	0%	0%	0%	2%	12%	52%	27%	6%	0.15
County Line #1	Flood plain	0%	0%	0%	0%	13%	28%	17%	17%	13%	12%	0.37
County Line #3	Flood plain	0%	0%	0%	0%	0%	3%	8%	56%	23%	9%	0.15
County Line #2A	Flood plain	0%	0%	0%	0%	0%	0%	19%	70%	9%	2%	0.19
Louis Bench #2	Flood plain	0%	0%	1%	2%	6%	26%	26%	18%	16%	5%	0.35
Kirk Bryan #1	Flood plain	0%	0%	0%	0%	0%	1%	4%	65%	23%	8%	0.15
Kirk Bryan #3	Flood plain	0%	0%	0%	0%	0%	2%	6%	53%	28%	10%	0.14
Cononcito #1	Flood plain	0%	0%	0%	0%	0%	1%	34%	43%	14%	8%	0.20
Louis bench #4	Flood plain	0%	0%	1%	2%	3%	14%	22%	29%	19%	10%	0.21
Huning Bridge #2	Channel bed	Not determined										
Huning Bridge #1	Channel bed	Not determined										
Power Line Meander #3	Channel bed	0%	0%	0%	0%	0%	16%	25%	51%	6%	3%	0.20
Cononcito #3	Channel bed	Not determined										
Cononcito #4	Channel bed	Not determined										
Mesita Negra I-40 #4	Channel bed	0%	0%	0%	0%	1%	11%	48%	29%	8%	4%	0.15
Power Line Meander #5	Channel bed	0%	0%	0%	0%	0%	18%	13%	44%	14%	9%	0.19
Angular Meander #4	Mid-channel bar	Not determined										
Power Line Meander #2	Mid-channel bar	0%	0%	0%	0%	0%	12%	11%	24%	33%	20%	0.11
Power Line Meander #4	Mid-channel bar	0%	0%	0%	0%	0%	19%	17%	37%	17%	10%	0.20
Cononcito #2	Mid-channel bar	0%	0%	0%	0%	0%	2%	12%	46%	27%	12%	0.14
Cononcito #5	Mid-channel bar	0%	0%	0%	0%	0%	0%	12%	77%	9%	2%	0.18
Cononcito #6	Mid-channel bar	0%	0%	0%	0%	0%	0%	15%	55%	21%	9%	0.16
Kirk Bryan #2	Mid-channel bar	0%	0%	0%	0%	0%	11%	25%	42%	15%	6%	0.20
Kirk Bryant #4	Mid-channel bar	0%	0%	0%	0%	0%	12%	12%	38%	27%	11%	0.15
Huning Bridge #3	Mid-channel bar	0%	0%	0%	0%	0%	6%	12%	43%	23%	15%	0.15

Huning Bridge #5	Mid-channel bar	0%	0%	0%	0%	2%	6%	13%	59%	14%	6%	0.18
Louis Bench #1	Mid-channel bar	0%	0%	0%	0%	0%	8%	49%	29%	11%	2%	0.29
Louis Bench #3	Mid-channel bar	Not determined										

Table DR5b. Results of Mann Whitney rank sum test on single-ring infiltration measurments

geomorphic surface	Median Type 1 infiltation rate	Median Type 2 infiltation rate (cm/min)	*p* value
Bed	0.039	0.004	0.022
Floodplain	0.144	0.114	0.65
In-channel bar	0.121	0.037	0.508

Table DR6. Input data for HECRAS with input hydrograph, and cross sections and roughness values for 1936 and 2007 hydrograph scenarios. Input data to the program is in English units [[1] Manning's n values based on Arcement and Schneider, 1989; Phillips and Tadayon, 2006]

Input for all three hydrograph scenarios

Downstream reach lengths from	
Left overbank (LOB)	2640
Channel	2640
Right overbank (ROB)	2640
Downstream reach lengths from	
cross section 4.1 to 1.0, feet	
Left overbank (LOB)	650
Channel	650
Right overbank (ROB)	650
Boundary Condition	
Flow Hydrograph	
Normal depth friction slope	0.0021
Minimum	
flow, ft^3/s	70
Initial flow, ft^3/s	70
Hydrograph	
Output (minutes)	5

Simulation	Input flow	Simulation Time	Input flow
0	0.0	27	789.9
1	0.1	28	723.2
2	0.1	29	656.4
3	0.1	30	657.4
4	599.4	31	538.2
5	1260.1	32	486.7
6	1911.1	33	435.3
7	2406.0	34	399.5
8	2818.5	35	363.8
9	3165.7	36	328.0
10	3418.4	37	292.3
11	3387.7	38	286.2
12	3150.4	39	280.1
13	3044.1	40	268.1
14	2504.4	41	256.1
15	2168.2	42	244.2
16	1832.1	43	232.2
17	1561.6	44	220.2
18	1371.7	45	208.2
19	1249.1	46	196.2
20	1155.2	47	184.3
21	1075.5	48	172.3
22	1000.3	49	160.3
23	962.4	50	148.3
24	982.0	51	136.3
25	923.4	52	124.4
26	856.6	53	112.4

Table DR6. Continued.

Scenario 1, 1936 cross section with Manning's n values[1]

Station from left bank, feet	Elevation, feet	Manning's n	1936 Main Channel Bank Stations, feet	
0	5134.1	0.02	Left Bank, ft	150
25	5135.1	0.02	Right Bank, ft	299
48	5133.4	0.02		
50	5131.5	0.02		
85	5101.6	0.02		
116	5096.7	0.02		
150	5096.7	0.02		
170	5092.4	0.02		
175	5090.5	0.02		
190	5083.6	0.02		
193	5081.6	0.02		
200	5081.9	0.02		
211	5081.9	0.02		
214	5082.9	0.02		
218	5081.9	0.02		
230	5081.6	0.02		
238	5082.6	0.02		
249	5083.2	0.02		
250	5083.6	0.02		
266	5084.2	0.02		
266	5086.5	0.02		
284	5092.1	0.02		
289	5101.9	0.02		
294	5103.9	0.02		
299	5107.2	0.02		
320	5109.2	0.02		
347	5111.1	0.02		
356	5115.1	0.02		
365	5126.2	0.02		
375	5127.2	0.02		
390	5132.8	0.02		
410	5133.4	0.02		

Table DR6. Continued.

Scenario 2, 2007 cross section with 1936 Manning's n values[1]

Station from left bank, feet	Elevation, feet	n value	Station from left bank, feet continued	Elevation, feet continued	n value	2007 Main Channel Bank Stations, feet
46	5126.4	0.02	382	5126.1	0.02	Left bank ,ft
59	5111.6	0.02	392	5127.2	0.02	Right bank, ft
77	5103.0	0.02	415	5127.3	0.02	
83	5100.8	0.02	456	5125.7	0.02	
130	5100.4	0.02	495	5125.7	0.02	
146	5103.7	0.02	535	5127.6	0.02	
162	5094.9	0.02	549	5127.1	0.02	
164	5094.8	0.02				
174	5094.5	0.02				
180	5094.6	0.02				
183	5094.9	0.02				
187	5095.1	0.02				
192	5095.5	0.02				
198	5095.7	0.02				
208	5101.5	0.02				
210	5102.5	0.02				
215	5102.5	0.02				
219	5102.2	0.02				
230	5102.2	0.02				
254	5101.7	0.02				
257	5100.9	0.02				
263	5101.6	0.02				
276	5101.2	0.02				
280	5100.3	0.02				
286	5099.9	0.02				
297	5100.3	0.02				
302	5101.8	0.02				
305	5101.3	0.02				
312	5102.2	0.02				
314	5103.2	0.02				
319	5102.7	0.02				
328	5103.7	0.02				
339	5105.4	0.02				
346	5105.9	0.02				
370	5121.8	0.02				
370	5121.7	0.02				

Table DR6. Continued.

Scenario 3, 2007 cross section with higher Manning's n values on the flood plain[1]

Station from left bank, feet	Elevation, feet	Manning's n	Station from left bank, feet	Elevation, feet	Manning's n	2007 Main Channel bank stations, feet	
46	5131.9	0.011	382	5131.6	0.011	Left bank	146
59	5117.1	0.011	392	5132.7	0.011	Right bank	215
77	5108.5	0.011	415	5132.8	0.011		
83	5106.3	0.2	456	5131.3	0.011		
130	5105.9	0.2	495	5131.2	0.011		
146	5109.3	0.1	535	5133.1	0.011		
162	5100.5	0.1	549	5132.6	0.011		
164	5100.3	0.1					
174	5100.0	0.1					
180	5100.1	0.1					
183	5100.5	0.1					
187	5100.6	0.1					
192	5101.1	0.1					
198	5101.3	0.1					
208	5107.0	0.1					
210	5108.0	0.1					
215	5108.0	0.2					
219	5107.7	0.2					
230	5107.8	0.2					
254	5107.2	0.2					
257	5106.4	0.2					
263	5107.1	0.2					
276	5106.8	0.2					
280	5105.9	0.2					
286	5105.5	0.2					
297	5105.9	0.2					
302	5107.4	0.2					
305	5106.9	0.2					
312	5107.8	0.011					
314	5108.7	0.011					
319	5108.2	0.011					
328	5109.2	0.011					
339	5110.9	0.011					
346	5111.5	0.011					
370	5127.3	0.011					
370	5127.2	0.011					

Table DR7. Summary of limitations and error analysis.

Measurement Type	Magnitude and direction of errors	Cause	Reference
Infiltration measurements using the single ring infiltrometer	+	Lateral flow underneath the single ring infiltrometer'	Rice et al., 2014
Cross section surveys	± 0.6 cm	Survey and instrument error; Extrapolating field measurements made at small scales to larger scales	Gellis et al., 2017
Discharge measurements	±2% for ideal conditions; ±3 to 6% for most measurements; up to ±20% under poor conditions	Wind, ice, boundary conditions; obstructions, instrument error; operator error	Sauer, Meyer, 1992
Suspended sediment load estimation	±15–20%	Sediment collection, laboratory analysis, discharge measurements	Horowitz et al., 2014
Rainfall	±	instrument errors and failures; wind related losses; ice	Kuligowski, 1997

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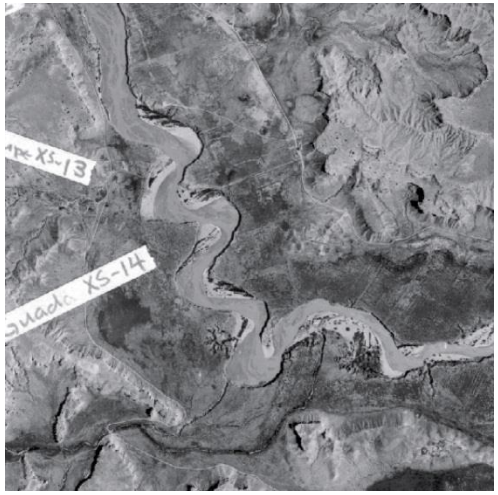
1935

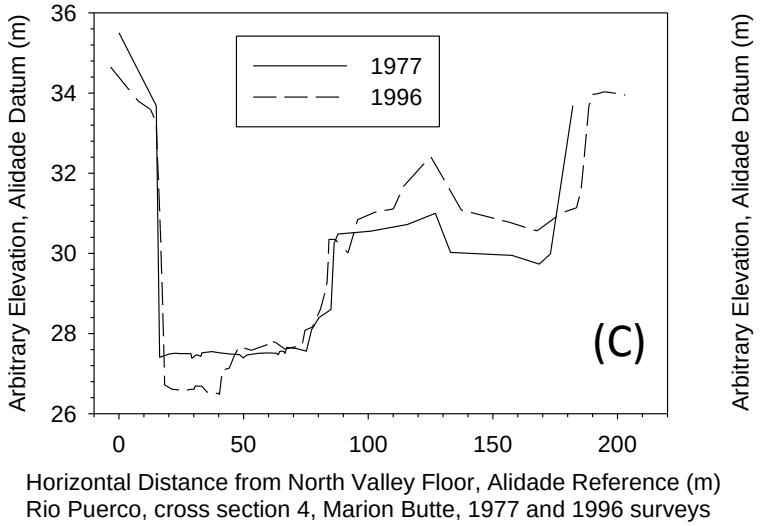
1954

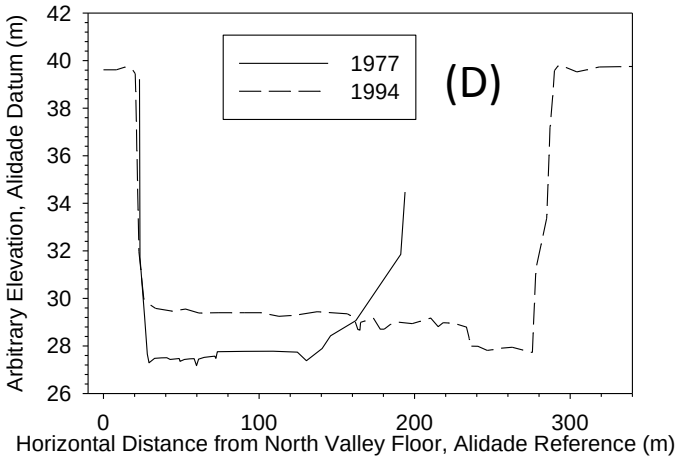


1973

1997

Figure DR1. Changes in the Guadalupe Reach (cross sections 13,14 in figure 1). Changes from 1935 to 1997 show progressive widening of the channel





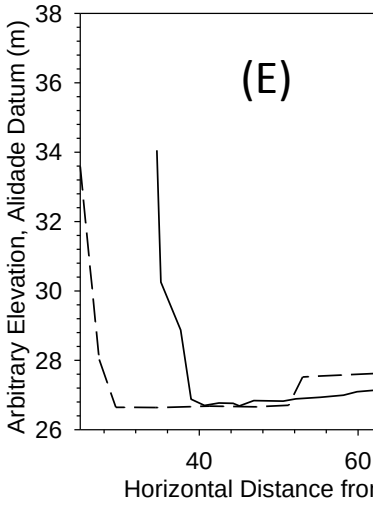


Figure DR2. Changes in the arroyo channel observed at Type 1 reaches.
(A) Marion Butte (cross section 4; fig.2d) channel in 1977. (B) Marion Butte channel in 1995. (C) Surveys of Marion Butte cross section in 1977 and 1996. (D) Surveys of Guadalupe Meanders (Cross section 14; fig. 2d). (E) Surveys of ERP Meanders 1977 and 1996 (Cross section 7 in fig. 2d).

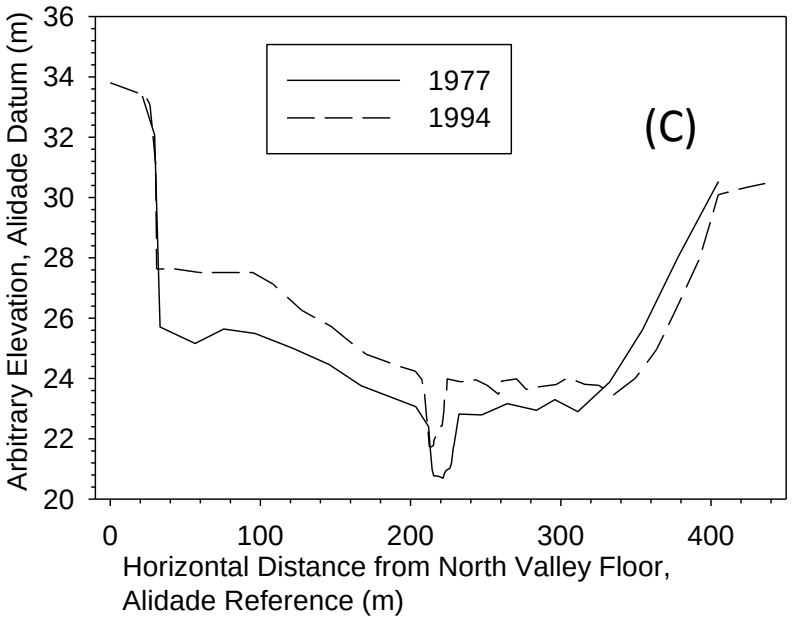
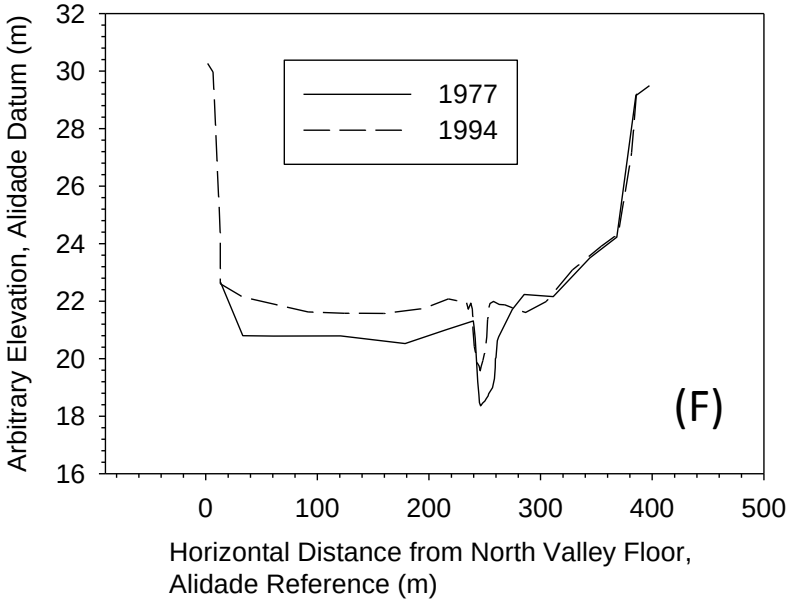
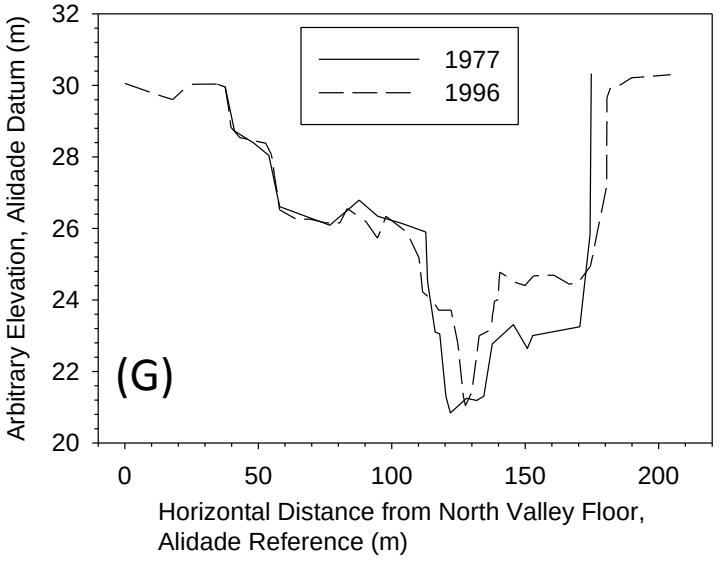
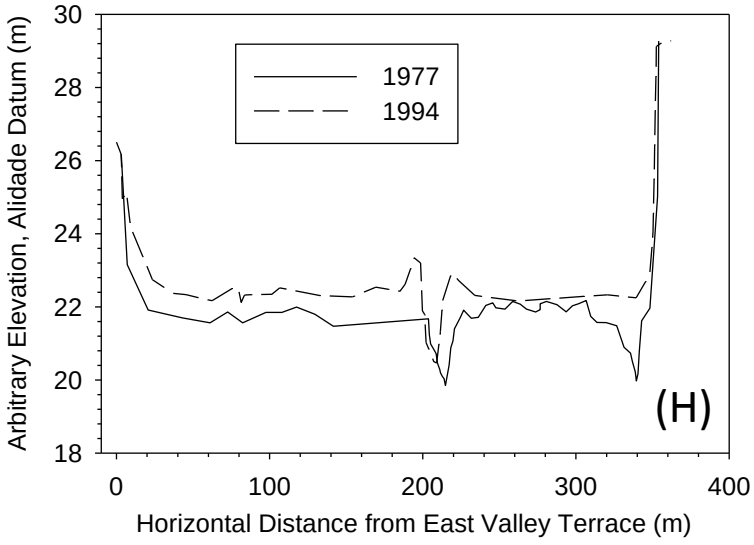
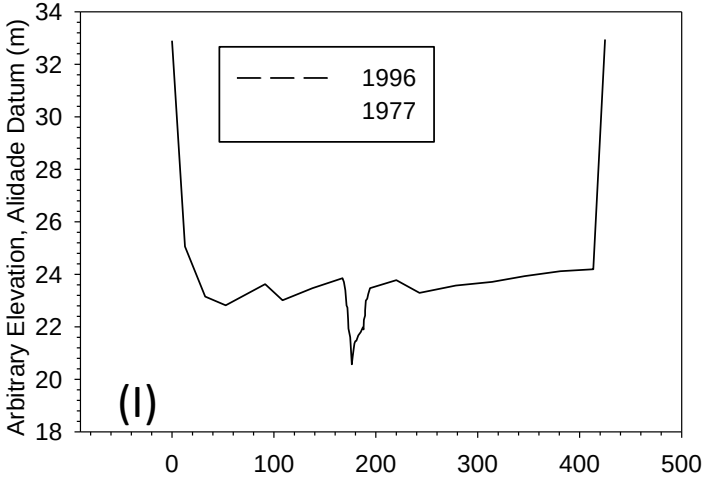


Figure DR3 . Changes in the arroyo channel observed at Type 2 reaches, (A) Powerline Cross section 1977 (cross section 26; fig.2b) (B) Powerline cross section 1996. (C) Powerline reach 1977 and 1994. (D) Countyline cross section 1977 (cross section 29; fig. 2b), (E) Countyline cross section 1994. (F) Surveyed cross section 29 at Countyline reach 1977 and 1994.









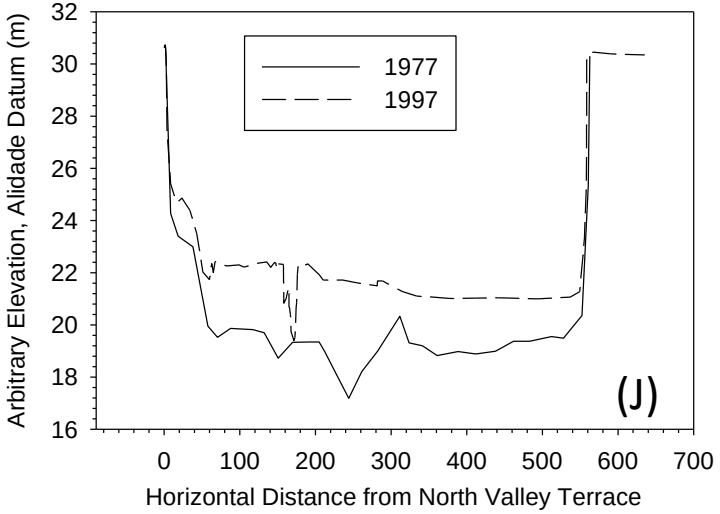


Figure DR3. (continued) (G) Surveys at Huning Reach, 1977 and 1996 (cross section 20 in fig. 2b). (H) Angular Reach, 1977 and 1994 (cross section 24 in fig. 2b). (I) Sand Butte Reach, 1977 and 1996 (cross section 19 in fig. 2b). Only the inner channel was resurveyed in 1996 (J) Hidden Lady Cross, 1977 and 1997 (cross section 18C in fig. 2b).

1935

1954

1975

1990

Figure DR4. Changes in the lower reaches of the Rio Puerco near Alamito Arroyo (fig. 1). Note the tributary channel, Alamito Arroyo filling in over time where it meets the Rio Puerco.

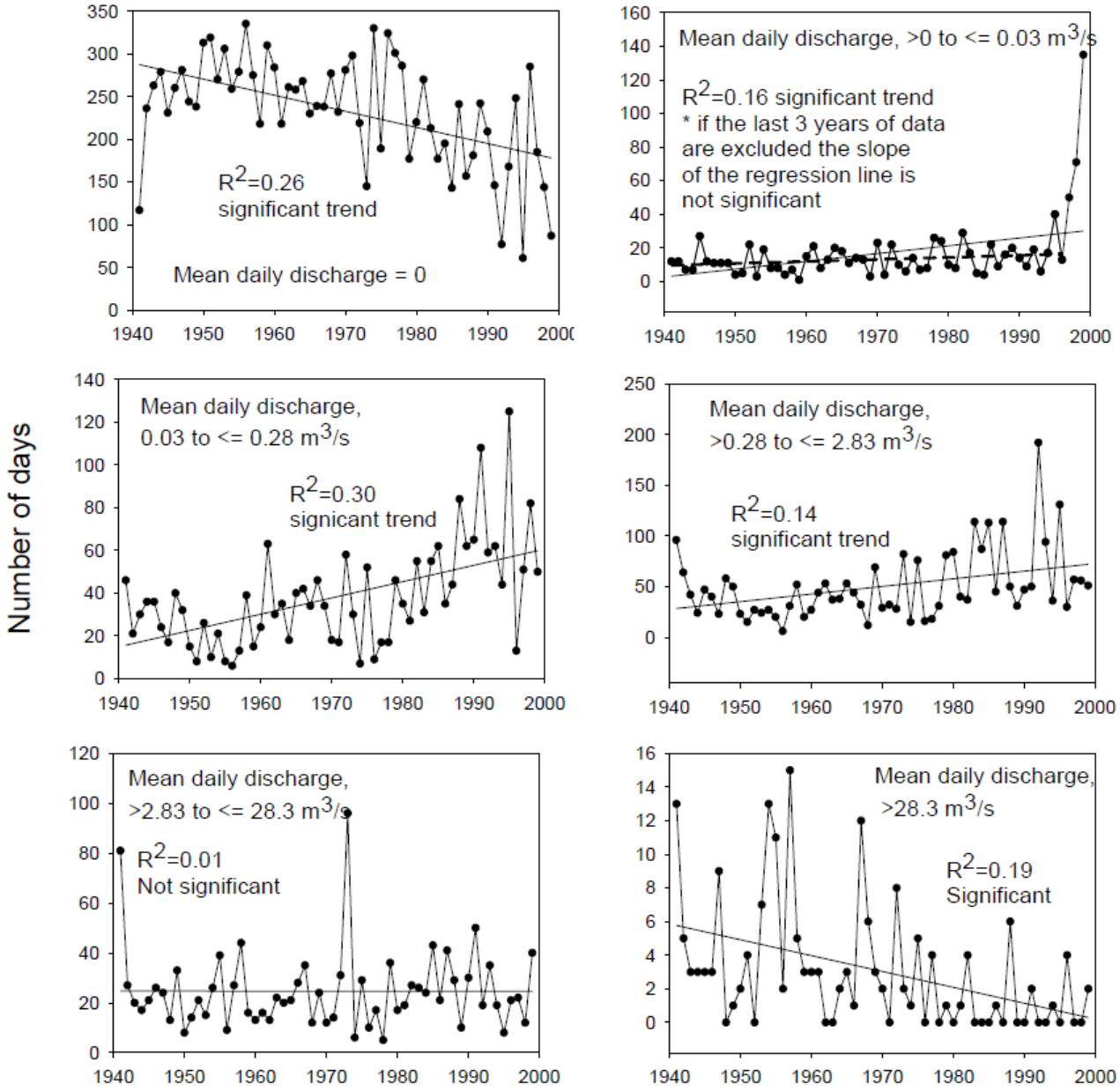


Figure DR5A. Time series plots for mean daily flows of different flow classes for the Rio Puerco near Bernardo (1941-99). [*p*-values are shown for significant relations]

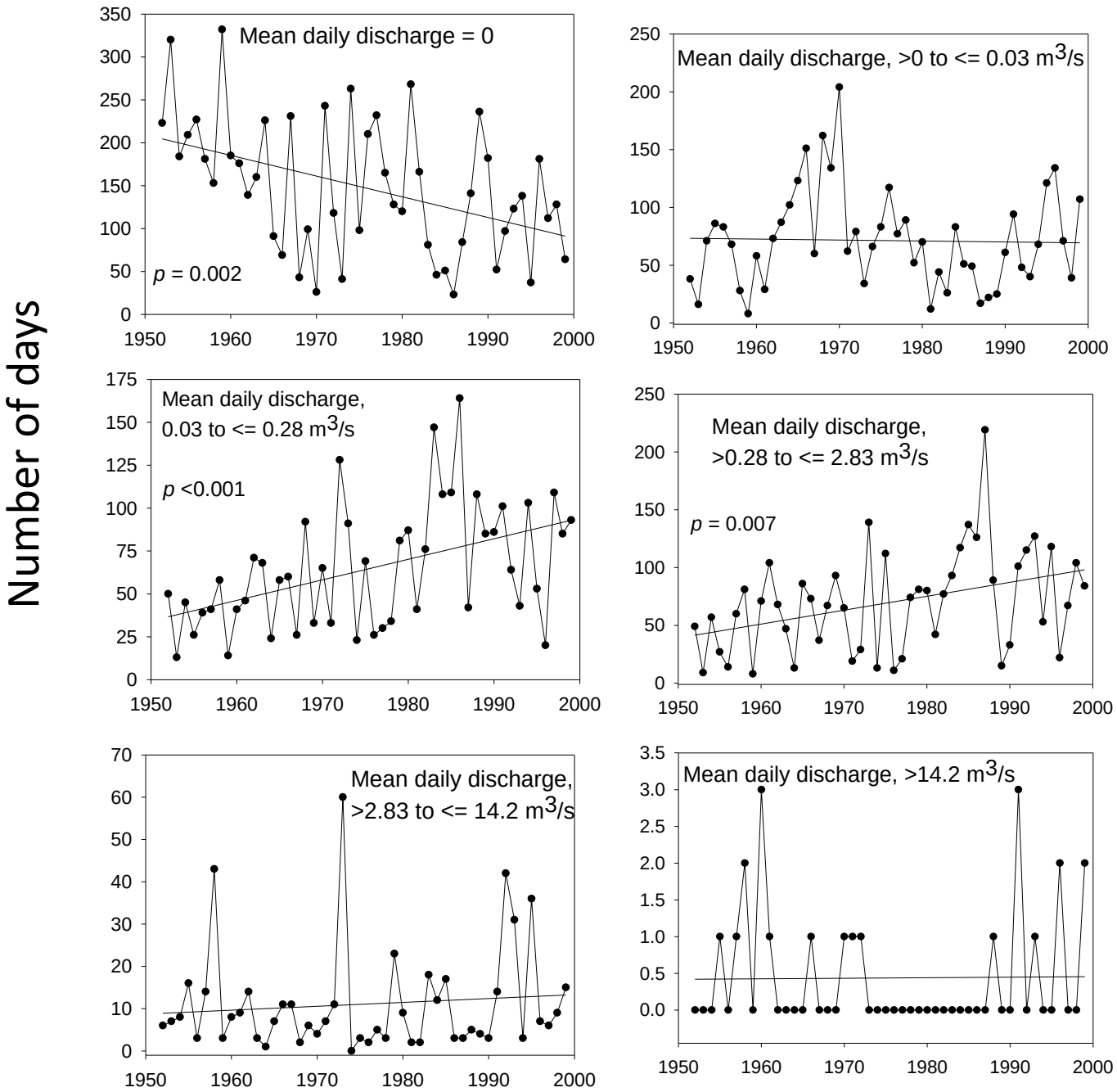


Figure DR5B.

Time series plots for mean daily flows of different flow classes for the Rio Puerco above Arroyo Chico (1952-99). *p*-values are shown for significant relations]

Figure DR6. Classes of annual rainfall averaged for 10 year increments: (A) Number of days of low-intensity rainfall , between 0.01 and 2.7 mm; (B) Number of days of low-intensity rainfall between 12.7 and 25.4 mm; (C) Number of days of high-intensity rainfall greater than 25.4 mm; (D) Annual rainfall intensity, mm/day. See figure 1 for location of raingages and Supplementary Table 2 for significance of trends.

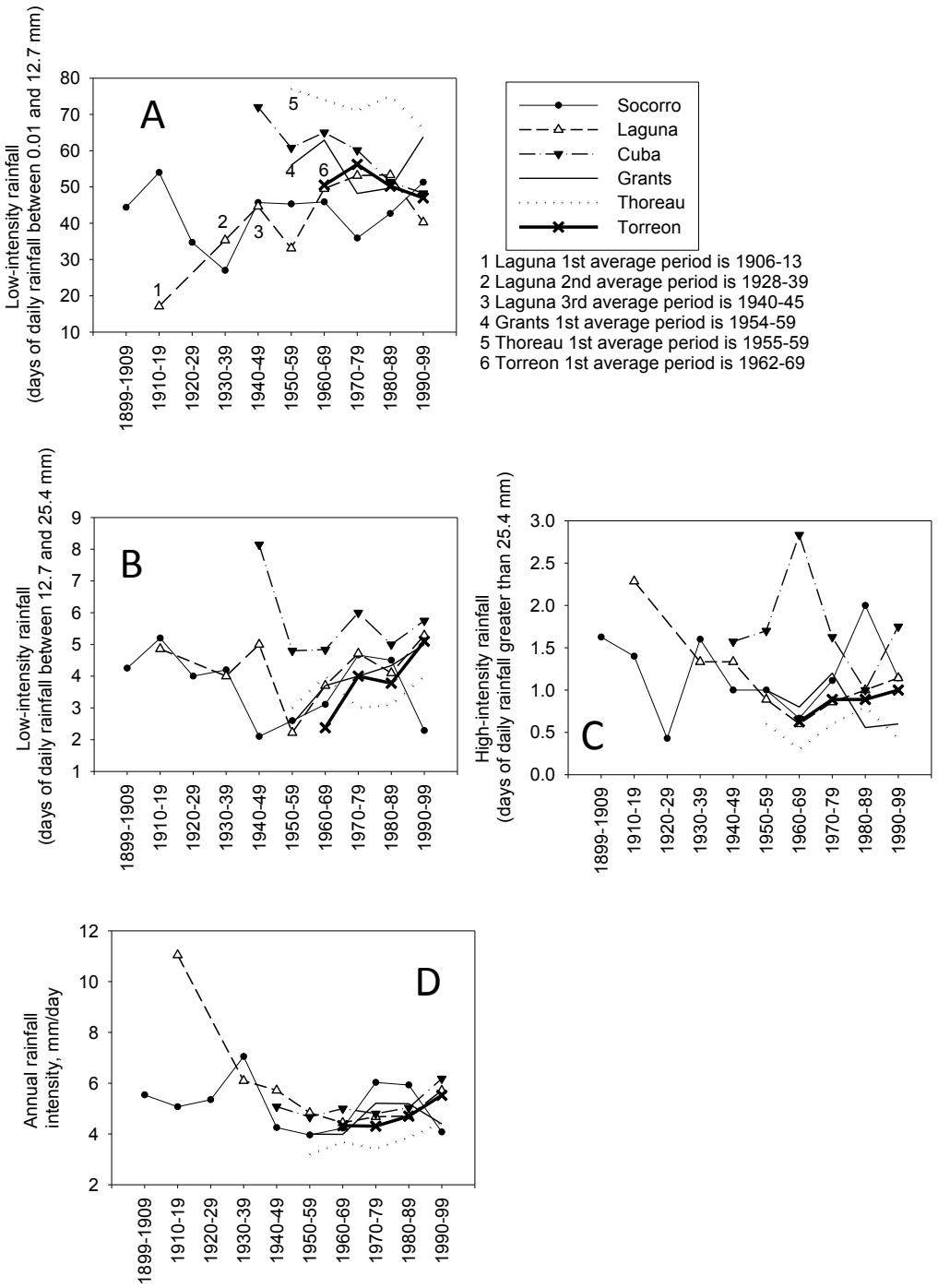


Figure DR7. Classes of summer rainfall averaged for 10 year increments: (A) Number of days of low-intensity rainfall , between 0.01 and 2.7 mm; (B) Number of days of low-intensity rainfall between 12.7 and 25.4 mm; (C) Number of days of high-intensity rainfall greater than 25.4 mm; (D) Annual rainfall intensity, mm/day. See figure 1 for location of raingages and Supplementary Table 2 for significance of trends.

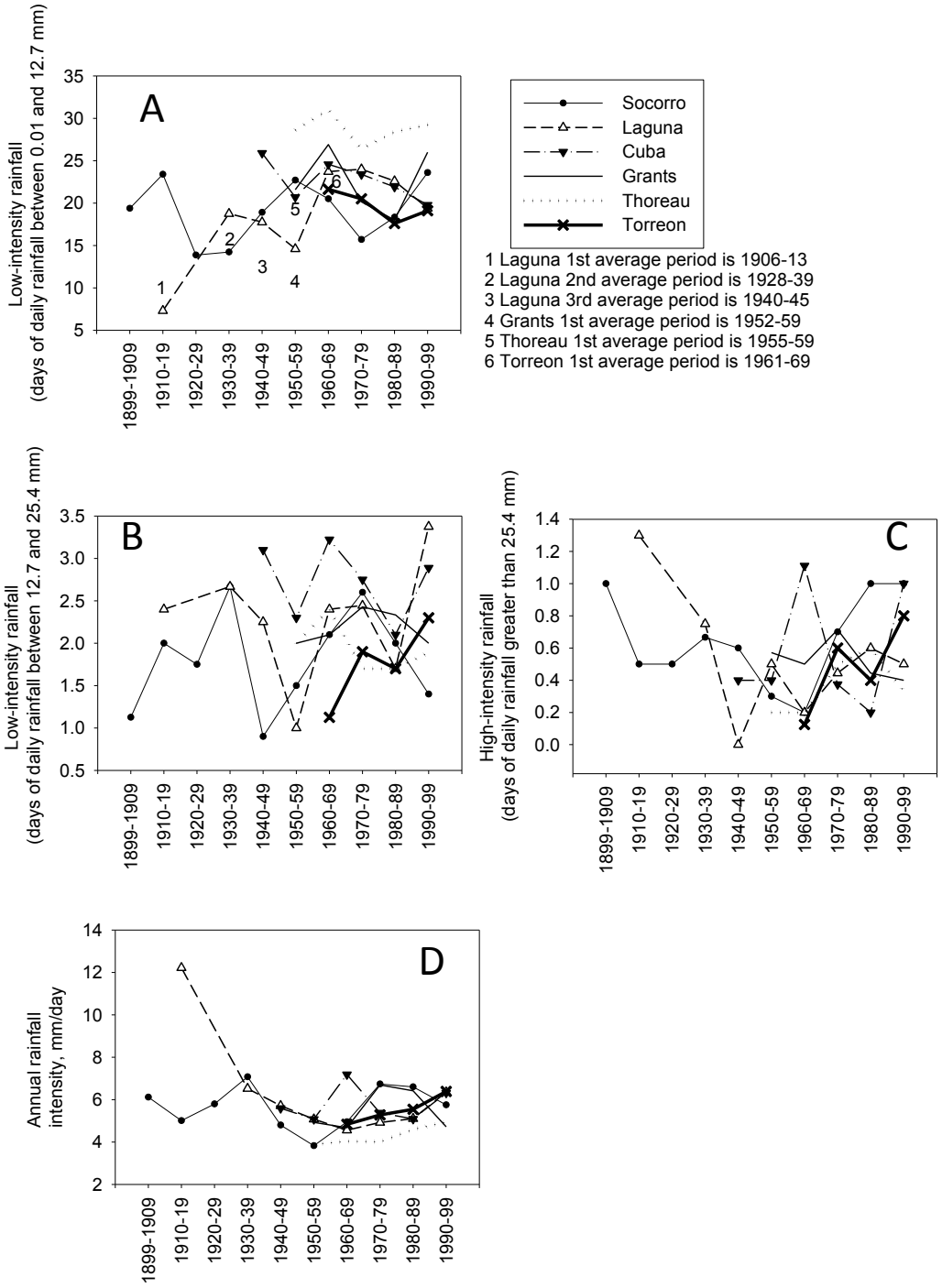
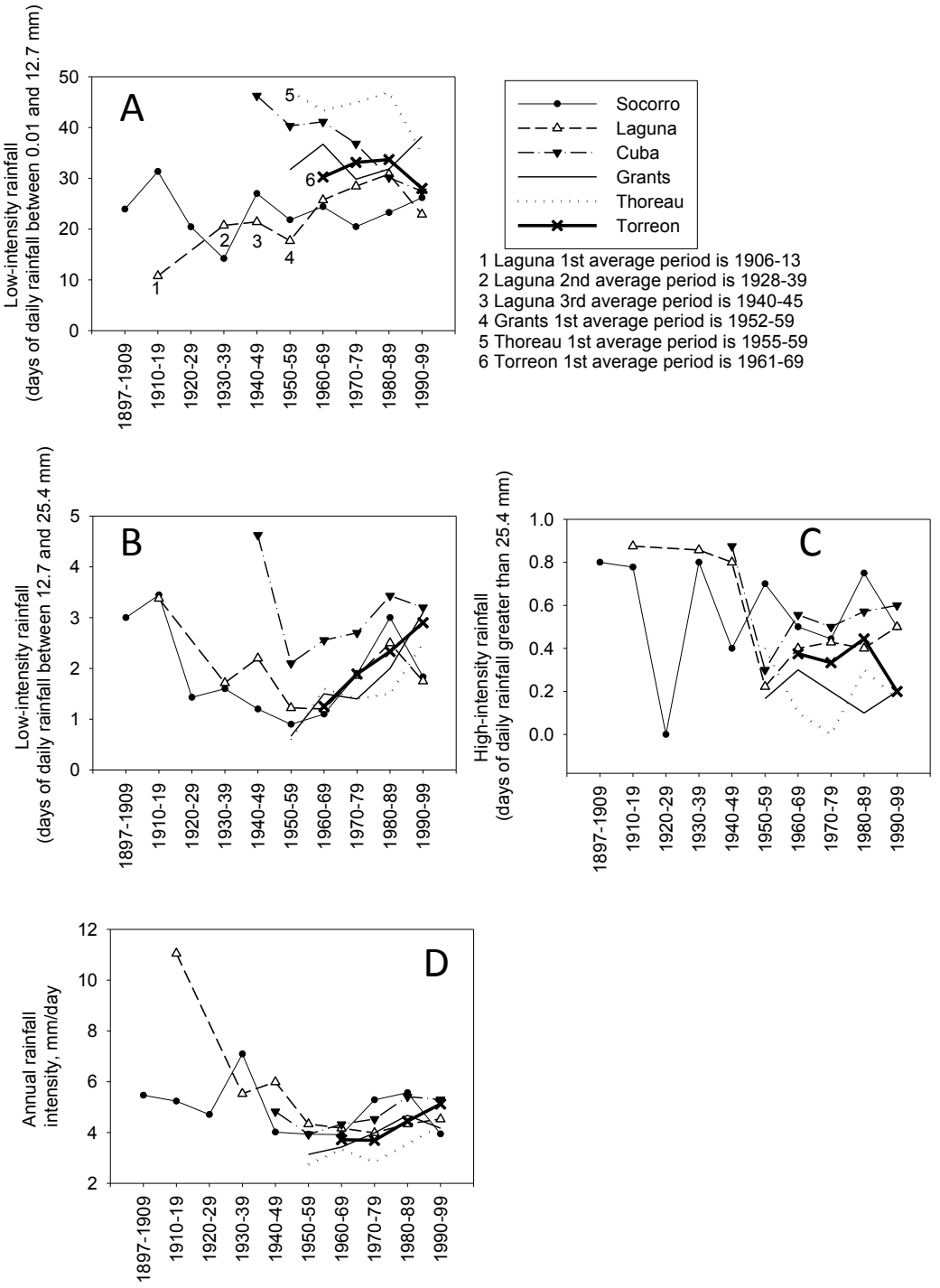


Figure DR8.
Classes of winter rainfall averaged for 10 year increments: (A) Number of days of low-intensity rainfall , between 0.01 and 2.7 mm; (B) Number of days of low-intensity rainfall between 12.7 and 25.4 mm; (C) Number of days of high-intensity rainfall greater than 25.4 mm; (D) Annual rainfall intensity, mm/day. See figure 1 for location of raingages and Supplementary Table 2 for significance of trends.



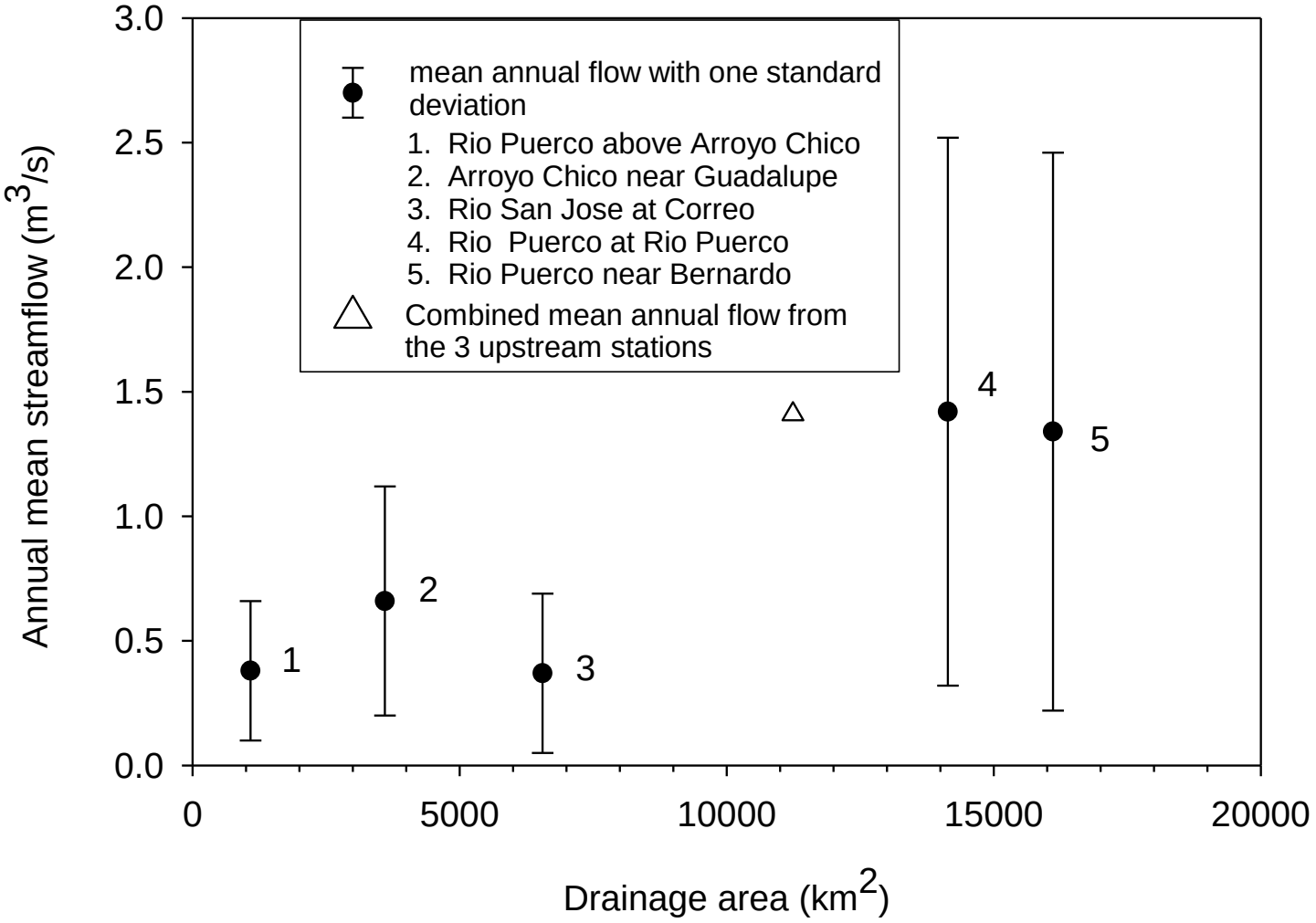


Figure DR9. Annual mean streamflow plotted against drainage area of the 5 suspended-sediment stations in the Rio Puerco, NM investigated in this study.