HYDROLOGY

EXHIBIT B

## HYDROLOGIC DATA LYTLE-CAJON CREEKS DRAINAGE AREA

## TABLE OF CONTENTS

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I.	Hydrologic Data Pertinent To Lytle-Cajon Flood Control Improvements	
	A. List of present stream gauges in or near Lytle Creek Basin	B-1
	B. Runoff data for Lytle Creek stream gauges	
	<ol> <li>Lytle Creek (West Branch) at Colton, California 1929-1945</li> <li>Lytle Creek (East Channel) at San Bernardino 1928-1957</li> <li>Lytle Creek at Colton Stn. 11065000 1958-1988</li> <li>Lytle Creek Near Fontana Stn. 11062000 1918-1988</li> <li>Graph of average monthly discharge at Lytle Creek Near Fontana 1918-1988</li> <li>Graph of water year discharge at Lytle Creek Near Fontana 1919-1988</li> </ol>	B-2 B-3 B-5 B-7 B-10 B-11
	C. List of precipitation stations in or near Lytle-Cajon Creeks	B-12
	D. Precipitation Data From Gauges in or near Lytle-Cajon Creeks	
	<ol> <li>Data from San Bernardino County Hospital 1869-1989</li> <li>Graph of monthly precipitation at San Bernardino County Hospital 1870-1989</li> </ol>	B-13 B-14
	3. Graph of water year precipitation at San Bernardino County Hospital 1870-1989	B-15
	<ul> <li>4. Data from Lytle Creek Ranger Station 1869-1989</li> <li>5. Graph of monthly precipitation at Lytle Creek Ranger Station 1930-1989</li> </ul>	B-16 B-17
	6. Graph of water year precipitation at Lytle Creek Ranger Station 1930-1989	B-18
II.	Standard Project Design Flood and Larger Floods	
	A. Standard Project Flood Determination	B-19
	<ol> <li>Discharge frequency curves for Lytle Creek at Foothill Blvd.</li> <li>Summary of climatological data for San Bernardino</li> <li>List of precipitation stations used to determine SPF</li> <li>List of stream gauging stations used to determine SPF</li> </ol>	B-23 B-24 B-25 B-27
	B. Larger Floods	B-28

B-i

<u>Stream Gages in Lytle Creek Basin</u>	USGS Numb	Lat	био"j	Drainage (Area-sq.mí)	Elevation (ft)	Period of Record	Map Ref. No. Plate 7
Devil Canyon Creek near San Bernardino	11063680	34 0 121 30"	1170191 50"	5.49	2080	11/11 to 9/12, 10/13 to 9/14, and 12/10 to pres	17
Cajon Creek below Lone Pine Creek near*	11063510	34 O 191 04"	1170271 58"	56.5	2600	10/71 to 9/77 and 10/83 to pres	
Keenbrook Lone Pine Creek near Keenbrook	11063500	340 151 591	1170271 471	15.1 26.6	2606 2580	12/19 to 9/38 and 6/49 to pres 10/18 to pres	15 44
Lytle Creek near Fontana *Cajon Creek near Keenbrook  OPERATIVE AT TIME OF SPF STUDY)	11062000	34 0 161 01"	1170271 33"		2630	1919-1967	16
		Strea	m Gages near L	<u>Stream Gages near Lytle Creek Basin</u>	cı		
	11045000	N77 170 072	1170 181 171	172	975	10/57 to 9/83 and 10/84 to pres	12
Lytle Creek at coiton Warm Creek mear San Bernardino East Twin Creek near Arrowheed Springs	11060400 11058500	34 0 101 45"	1170151 58" 1170151 53"	11.0 8.8	960 1590	2/64 to 9/72 and 10/74 to pres 12/19 to pres (aka Strawberry Crk	е Ч
San Timoteo Creek near Loma Linda	11057500	34 <b>0</b> 03• 46"	1170161 16"	125	1030	10/54 to 9/65, 2/68 to 10/73,	4
Santa Ana River at E Street near San Rernardino	11059300	340 031 544	117 <b>0</b> 171 58"	28	076	3/39 to 9/54 and 10/66 to pres	

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San Timoteo Creek near Loma Linda Santa Ana River at E Street near San Bernardino

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PRESENT STREAMGAGES IN OR NEAR LYTLE-CAJON CREEKS

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LYTLE CREEK (WEST CHANNEL) AT COLTON, CALIFORNIA ELEVATION 980 FEET PERIOD OF RECORD 1929 TO 1945

## MONTHLY DISCHARGE (ACRE-FEET)

WATER YR	ОСТ	NOV	DEC	JAN	FEB	MAR	APR	MAY	NUL	JUL	AUG	SEP	ANN
1928-29				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1929-30	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
1930-31	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
1931-32	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
1932-33	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
1933-34	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
1934-35	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
1934-35	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
1935-30	0.0	0.0	4.2	0.6	7.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7
1935-37	0.0	0.0	0.0	0.0	3.8	6010.0	0.0	0.0	0.0	0.0	0.0	0.0	6013.8
1937-38	0.0	Q.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1938-39	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
1939-40	0.0	0.0	3.6	0.6	17.0	9.7	4.4	0.0	0.0	0.0	0.0	0.0	35.3
	0.0	0.0	1.4	0.0	0.0	1.0	0.Z	0.0	0.0	0.0	0.0	0.0	2.8
1941-42		0.0	0.2	3140.0	0.0	16.0	0.0	0.0	0.0	0.0	0.0	0.0	3156.2
1942-43	0.0		0.0	0.0	568.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	568.0
1943-44	0.0	0.0			2.4	0.8	0.0	0.0	0.0	0.0	0.0	0.0	5.6
1944-45	0.0	0.0	2.0	0.4	2.4	0.0	0.0	0.0	•				

NOTES:

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-AVERAGE DISCHARGE, 16 YEARS: 0.85 CFS (615 ACRE-FEET YEAR) .

-MOST FLOWS ONLY LOCAL RUNOFF

-WATER DIVERTED UPSTREAM BY FONTANA PIPELINE AND FOR SPREADING ON GRAVEL CONE -MOST FLOOD FLOWS OF LYTLE CREEK DIVERTED TO EAST CHANNEL -CONSTRUCTION OF LYTLE CREEK FLOODWAY PERMANENTLY CUT OFF THIS CHANNEL AT END OF 1945

DRAINAGE AREA NOT ESTABLISHED APPROXIMATELY 72 SQ-MI

WAS WEST BRANCH OF LYTLE CREEK BEFORE INTAKE STRUCTURE AT TIME WHEN BOTH WEST AND EAST BRANCHES WERE NATURAL CHANNELS

## LYTLE CREEK (EAST CHANNEL) AT SAN BERNARDINO ELEVATION 1050 FEET PERIOD OF RECORD 1929 TO 1957

## MONTHLY DISCHARGE (ACRE-FEET)

WATER YR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANN
1928-29	0	0	0	0	0	D	0	C	G	D	0	0	0
1929-30	0	0	0	0	0	C	0	0	0	0	0	0	0
1930-31	0	Ð	Ċ	0	0	0	0	0	0	C	0	0	0
1931-32	0	0	0	0	1100	36	0	0	0	0	0	0	1136
1932-33	0	0	0	0	G	C	0	0	0	0	0	0	0
1933-34	C	0	3	317	0	0	0	Ð	Û	0	0	0	320
1934-35	192	0	32	348	173	3	162	0	0	0	0	0	910
1935-36	0	0	0	0	346	2	22	0	0	0	0	e	370
1936-37	0	0	744	11	2060	533	0	0	0	0	0	0	3348
1937-38	G	0	0	19	1320	29390	1580	2290	206	0	Û	Û	34805
1938- <b>39</b>	0	0	0	0	5	83	37	6	11	12	12	562	728
1939-40	9	12	12	351	104	28	41	9	12	12	9	12	611
1940-41	18	12	588	58	1270	1960	223	12	110	18	12	9	4290
1941-42	9	30	79	18	17	23	24	12	14	17	19	18	280
1942-43	14	40	31	4840	472	2130	524	172	15	16	19	27	8300
1943-44	36	24	128	58	1300	689	492	262	57	74	37	30	3187
1944-45	61	984	37	37	503	507	1780	93	48	18	18	20	4106
1945-46	35	60	76	60	70	70	61	73	20	34	30	24	613
1946-47	31	48	50	55	54	60	41	37	31	33	27	32	499
1947-48	35	52	51	48	60	67	54	68	42	39	35	38	589
1948-49	38	44	46	48	38	35	38	45	35	30	32	29	458
1949-50	33	63	59	77	79	47	38	43	52	24	31	32	578
1950-51	34	33	19	34	21	29	34	35	23	19	33	24	338
1951-52	40	45	53	85	46	65	60	47	39	35	37	42	594
1952-53	52	51	42	36	33	30	56	66	46	24	31	31	498 521
1953-54	49	49	77	83	56	55	42	49	18	14	12	17	343
1954-55	29	42	29	51	35	26	41	31	14	19	14	12	343 314
1955-56	12	20	18	53	29	19	32	22	29	29	31	20	
1956-57	22	17	31	142	14	18	20	63	28	23	27	16	421
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
SUM	749	1626	2205	6829	9205	35905	5402	3435	850	490	466	995	68157
MEAN	26	56	76	235	317	1238	186	118	29	17	16	34	2350
	400	00/	· · · ·	4840	2060	29390	1780	2290	206	74	37	562	34805
MAX	192	984	744		2050		1945						1937-38
YEAR	1954	1944	1936	1943	1931	0641	1742	1750	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
NOTES:								_					

-Flows upstream diverted for irrigation and to debris cone for ground water recharge.

-Lytle Creek flood-control dam, 1.5 miles above this station, has diverted flow

away from this channel and carried it directly to Warm Creek since 1945.

-A maximum of 300 cfs of low stage flow can be diverted to east channel

at dam when desired. Water over spillway of dam would enter east channel. DRAINAGE AREA NOT ESTABLISHED, WAS EAST BRANCH OF LYTLE CREEK BEFORE (APPROX 94 SQ-MI) INTAKE STRUCTURE AS NATURAL EAST BRANCH OF LYTLE CREEK LYTLE CREEK AT COLTON WEST CHANNEL

## LYTLE CREEK AT SAN BERNARDINO EAST CHANNEL ELEV 1050

:									
		MAX					MAX		
	MEAN	MEAN				MEAN	MEAN		
WATER YEAR	DAILY	DAILY	PEAK			DAILY	DAILY	PEAK	
ENDING	FLOW	FLOW	FLOW			FLOW	FLOW	FLOW	
SEP 30	CFS	CFS	CFS	DATE		CFS	CFS	CFS	DATE(S)
				·····	*			-	
1929	0	0	0		*	0	0	0	
1930	0	0	0		*	0.032	6		MAR15
1931	0	0	Ð		*	0	0	0	
1932	0	0	0		*	1.573	383	700	FEB09
1933	0	0	0		*	0.264	62	610	JAN19
1934	0	0	0		*	0.442	159	555	JAN01
1935	0.009	1.6	20	JAN05	*	1.256	80	500	00118
1936	0.017	5	м	FEB13	*	0.511	37	208	FEB12/FEB11
1937	0.018	4	16	FEB06	*	4.624	521	1060	FEB14
1938	8.295	2180	7900	MAROZ	*	48.03	7640	21500	MAR02
1939	0	0	0		*	1.005	277	1760	SEP25
1940	0.011	0	м		*	0.845	160	1180	JAN08
1941	0.05	4.8	м	FEB20	*	5.921	970	368	DEC24/FEB20
1942	0.004	0.5	м	TWICE	*	0.386	20	20	DEC29
1943	4.362	1570	13000	JAN23	*	11.46	1440	7800	JAN23
1944	0.784	286	2000	FE822	*	4.403	617	1300	FEB22
1945	0.008	0.6	4.4	FEB01	*	5.673	100	425	NOV12
1946						0.86	4.5	15	DEC22
1947						0.689	3	13	DEC26/NOV13
1948						0.813	3.4	12	FEB05/DEC01
1949						0.632	1.8	9.2	NOV08/MAY19
1950						0.798	9.2	36	NOV10
1951						0.467	1.9	15	MAY14/MAY13
1952						0.82	5.4	5.4	JAN16
1953						0.687	2.8	14	APR27/NOV14
1954						0.719	7.2	19	JAN19/FEB02
1955						0.473	4.4	21	NOV11
1956						0.429	9.8	20	JAN26
1958						0.581	11	20	JAN 13

MONTHLY RUNOFF IN ACRE-FEET---LYTLE CREEX AT COLTON STATION NUMBER 11065000 ELEVATION 975 FEET DRAINAGE AREA 186 SQUARE MILES PERIOD OF RECORD 1957 TO 1988 (WY 1984 MISSING)

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WATER YR	OCT	NOV	DEC	NAL	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANN
1957-58	0.0	0.0	95.0	22.0	1040.0	386.0	1980.0	1.8	0.0	0.0	0.0	0.0	3524.8
1958-59	0.0	0.0	0.0	24.0	292.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	316.8
1959-60	0.0	1.4	7.3	11.0	9.9	1.8	3.4	0.0	0.0	0.0	0.0	0.0	34.8
1960-61	0.0	7.9	0.4	0.2	0.0	6.9	0.0	0.0	0.0	0.0	4.6	0.0	20.0
1961-62	0.0	4.8	17.0	31.0	1300.0	3.4	0.0	0.2	0.0	0.0	0.0	0.0	1356.4
1962-63	0.0	0.0	0.0	0.0	74.0	18.0	24.0	0.0	0.6	0.0	0.0	42.0	158.6
1963-64	1.0	31.0	0.2	85.0	0.4	228.0	104.0	0.0	0.0	0.0	0.0	0.0	449.6
1964-65	0.0	223.0	175.0	5.8	0.8	31.0	428.0	0.0	0.0	0.0	0.0	0.0	863.6
1965-66	0.0	4700.0	6380.0	382.0	455.0	506.0	569.0	34.0	0.0	0.0	0.0	0.0	13026.0
1966-67	1.0	88.0	4840.0	1130.0	0.0	159.0	294.0	0.0	21.0	0.0	178.0	41.0	6752.0
1967-68	0.0	376.0	41.0	9.5	0.2	458.0	8.5	0.0	0.0	0.2	0.0	0.0	893.4
1968-69	0.0	0.1	0.5	19550.0	12930.0	3360.0	3410.0	5390.0	1100.0	241.0	1050.0	352.0	47383.6
1969-70	65.0	250.0	0.0	27.0	155.0	454.0	1.7	4.0	0.0	0.8	0.4	0.0	957.9
1970-71	0.0	713.0	466.0	15.0	2.7	48.0	6.9	6.3	0.0	0.0	0.0	0.0	1257.9
1971-72	5.1	1.5	1130.0	0.0	0.0	12.0	0.0	0.0	0.2	0.0	0.3	0.0	1149.1
1972-73	0.4	131.0	32.0	145.0	2210.0	221.0	0.0	3300.0	0.0	0.0	0.0	0.2	6039.6
1973-74	0.0	28.0	0.1	795.0	16.0	87.0	33.0	0.0	0.0	0.0	0.0	0.0	959.1
1974-75	14.0	0.0	115.0	0.0	31.0	91.0	2.6	0.0	0.0	0.0	0.0	3.2 1	
1975-76	1.2	0.7	0.7	0.8	463.0	81.0	2.7	0.6	0.7	0.0	0.0	501.0	1052.4
1976-77	0.0	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1
1977-78	0.0	0.0	635.0	3060.0	4810.0	20050.0	1750.0	1470.0	3650.0	2180.0	0.0	63.0	37668.0
1978-79	1.2	178.0	159.0	340.0	248.0	2110.0	0.0	24.0	0.0	0.0	0.0	0.0	3060.2
1979-80	22.0	0.0	0.0	3890.0	20870.0	1650.0	105.0	1.5	119.0	0.0	48.0	570.0	27275.5
1980-81	972.0	1060.0	709.0	513.0	147.0	353.0	50.0	25.0	23.0	22.0	24.0	22.0	3920.0
1981-82	3.7	17.0	5.0	103.0	53.0	537.0	298.0	0.0	0.0	3.2	0.0	22.0	1041.9
1982-83	31.0	1380.0	585,0	844.0	1460.0	9000.0	308.0	2.4	292.0	407.0	562.0	41.0	14912.4
1983-84													
1984-85	1.1	27.0	1170.0	74.0	109.0	54.0	0.0	0.0	0.0	0.0	0.0	18.0	1453.1
1985-86	44.0	1040.0	52.0	488.0	1860.0	1550.0	359.0	13.0	32.0	8,0	1.0	183.0	5630.0
1986-87	5.6	55.0	107.0	341.0	95.0	177.0	16.0	0.0	0.0	0.0	1.2	0.0	797.8
1987-88	309.0	475.0	319.0	654.0	54.0	132.0	276.0	5.2	0.0	0.0	0.0	0.0	2224.2
1988-89													

MEAN	49.2	359.8	568.0	1084.7	1622.9	1392.2	334.4	342.6	174.6	95.4	62.3	61.9	6148.1
MAX YEAR MIN	972.0 1980 0.0	4700.0 1965 0.0	6380.0 1965 0.0	19550.0 1969 0.0	20870.0 1980 0.0	20050.0 1978 0.0	3410.0 1969 0.0	5390.0 1969 0.0	1978	2180.0 1978 0.0	1050.0 1969 0.0	570.0 1980 0.0	47383.6 1968-69 6.† 1976-77

## LYTLE CREEK AT COLTON STATION NUMBER 11065000 ELEVATION 975 FEET DRAINAGE AREA--186 SQUARE MILES PERIOD OF RECORD--1957 TO PRESENT (WY 1984 MISSING)

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WATER YEAR ENDING SEP 30	MEAN DAILY Flow CFS	MAX MEAN DAILY FLOW CFS	DATE	PEAK FLOW CFS	DATE
1958	4.86	488	APR04	4080	APR04
1959	0.44	118	FEB16	1120	FEB16
1960	0.05	2.5	DEC24	52	JAN12
1961	0.03	2.6	NOV07	64	AUG04
1962	1.88	371	FEB11	1520	FEB11
1963	0.22	28	FEB10	139	SEP18
1964	0.62	67	MAR22	594	MAR22
1965	1.19	87	NOV17	470	DEC28
1966	18	2740	DEC29	14800	DEC29
1967	9.32	1630	DEC06	4600	DEC06
1968	1.23	230	MAR08	730	MAR08
1969	65.4	5040	JAN25	16800	JAN25
1970	1.32	110	MAR01	726	NOV07
1971	1.74	340	NOV29	1600	NOV29
1972	1.59	319	DEC24	2830	DEC24
1973	8.34	1020	FEB11	4810	FEB11
1974	1.3	208	JAN07	814	JAN08
1975	0.35	52	DEC04	462	DEC04
1976	1.45	184	SEP11	1170	SEP11
1977	0.01	3.1	NOV12	77	NOV12
1978	52	3870	MAR04	17500	MAR04
1979	4.22	340	MAR27	1035	MAR27
1980	37.6	2530	FEB16	8070	FE816
1981	5.41	135	JAN29	620	JAN29
1982	1.44	203	MAR17	722	MAR17
1983	20.5	2040	MAR02	4000	MAR01
1984	- M				
1985	2	152	DEC27	348	DEC19
1986	7.77	508	FEB15	908	JAN30
1987	1.1	81	JANOS	572	JAN04
1988	3.06	271	JAN17	1010	JAN17

MAXIMUM DISCHARGE OF RECORD--17,500 CFS ON MARCH 4, 1978

## LYTLE CREEK NEAR FONTANA, CA, MONTHLY DISCHARGE (ACRE-FEET) Combined discharge of Lytle Creek and conduit and pipeline diversions three miles upstream Drainage Area: 46.6 square miles, Gage Elevation 2380 feet

ANN	17800 26500	21000	25500 15700 14700 33800 12700 12700 12700	13300 28800 17600 13200 27780 27780 20890 51350 103900 26180 26180	74180 26970 65265 48830 48830 32220 32730 32730 11905 11905	7760 339930 117110 117140 114800 124800 52840 20990 11440			23060 24360 305910 305920 16620 14630 16310
SEP	928 2590	1330 M		2460 2460 827 827 827 2669 11700 2550 3550 2550	4 870 23210 23210 23210 23210 7850 7850 7850 835 835	3090 3090 821 821 821 8240 815 716 716 598 598	489 970 527 590 1720 1720 1110 1110 1110 1210	867 867 9220 9220 8672 8697 87897 8778 877	847 5353 5370 5370 5370 2972 8593 8593 8593 8593 8593 8593 8593 8593
AUG	959 2610	1460	1570 898 756 1180 2870 2870 910 744 1060	867 2610 885 885 885 885 885 885 885 835 4510 1440 1440 1630	5160 1750 2210 2210 1690 1855 280 29	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	502 885 688 685 685 606 1160 1160 1160 1140	9 1 1 1 1 1 1 1 1 1 1 1 1 1	893 6370 6370 1500 19040 19230 9221 9221
JUL	978 2020	1700	1660 1740 1320 3060 1030 1667 1460	978 1110 795 795 795 795 795 11490 1750	7350 16350 4940 22100 22100 1950 1950 732 732	552 18552 968 1060 1060 783 783 1040 1040 1040	522 988 605 605 605 605 1180 1180 1230 1230 1230	986 841 13720 10320 9140 10304 10304 10304 10300 1000000	978 1730 9590 1470 1000 2000 1020 1020
NUC	1150 2240	2060	1590 1220 1420 1420 1280 1170 1170	2000 2000 2000 2000 2000 2000 2000 200	7530 7530 4860 22170 22170 22060 12250 12250 12250 732	595 2595 12550 12550 12550 12550 12500 1210 121	578 1170 899 704 889 889 889 2310 2310 2310 88940 88940 1280 1280	1120 910 91012450 112450 112450 112450 112450 11220 11220 8650 8650	1140 2160 10700 1770 1780 1780 1170
МАХ	1510 2810	2050	1980 1510 1080 2090 2340 1460 1520 2130	1220 14420 16420 16420 16420 2620 2720 2230 2230	8950 56140 6160 26520 26520 28530 28330 11730 11730	736 1770 1770 1260 1270 1280 1280 1280 1280 13700 1020	668 1340 1360 1270 1270 2860 6580 10450 1670	1360 1040 1040 1660 13660 13860 13860 13860	1490 3050 2010 2010 1220 1220 1350 1350
APR	1680 3530	1920	2030 2030 2340 2340 2850 1480 1930	1420 2830 1580 1580 3820 3820 3820 1960 1980 1980 1980	11190 2290 7220 7220 7220 7220 3230 3230 3230 323	718 5020 1210 1210 12330 13330 13330 13330 123930 12990 12990 12990 1260	698 698 11850 12840 13840 13860 12880 14840 14890 14890 14890 14890 2020	1480 1120 3740 3740 2380 2380 1120 1490 1490 1050 15690 15690 15690 8970	1870 4710 10410 2090 122090 31920 11590 11590
MAR	1510 4650	2030	1970 1520 935 904 1380 1380 2060	1140 3670 1650 1170 2650 2650 48380 48380 2860 2860	15310 14930 14930 33100 3310 1480 1290 1290 986	785 785 785 785 785 7490 1490 1280 2180 2180 2180	843 2680 1340 1340 742 742 742 742 25190 25190 3150	1630 1270 1270 12120 12120 12120 12120 12120 12400 5340 5340 5340	25540 3200 21930 2420 1580 1580 1580
FEB	1280 1650	1560	2000 1260 1270 1550 1550 17890	1620 1580 1580 1580 1580 2910 2910 2820 2820	7270 1950 6970 3350 3350 1980 1010 1010 1280	704 2640 1500 1770 1410 1440 1260 2720 2720 1180	791 4020 1350 778 778 778 778 778 3710 3080 3080 3080 3080 2530 2530	1850 1580 4710 2160 1390 14050 14050 3950 37590	1550 1570 1570 1570 1550 1550
JAN	1630 848	1650	2250 1280 916 1320 916 916 935	25510 25510 25500 25510 255000 255000 255000 255000 25500000000	2420 2670 8160 25500 2130 2130 2130 2130 1180 1180 1180	675 5280 5280 2110 1640 1540 1680 1530 1750 1200	850 850 1360 804 804 7590 4130 2640 3640 3260	2090 22700 22700 3360 11390 11390 10540 3740 3740 8850	2230 2550 3550 2550 1650 2050 2050
DEC	1810 1220	1610	2540 1510 1540 1540 1650 867 836	004080000	1280 12840 12840 12840 1280 1280 1280 1280 1280 1280	470 1220 1220 1220 1220 1370 1120 1370 1120 1370 1120 1200 1200	889 1440 1440 750 8220 10350 1280 1280	2223 2223 2223 2223 2223 2223 2223 2232 2332 2	2530 12530 12530 12530 22230 2530 2530 2530 2530
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ocr	2460 1240	20	1000000	NOPNO0NNNN	480046046		<u>~ vo o o s a na o m</u>	1060 872 872 1960 1964 1964 1964 1966 3860 3240	3880 1910 19910 19900 14420 19900 19900 19900 19900
WATER YR	6 1 - 1 7 - 1	920-2	1921-22 1922-23 1922-23 1926-26 1926-27 1926-27 1928-29	. 899999999999 . 941111111111 . 94999999999999 . 99999999999999999999	22222222222222222222222222222222222222	99999999999999999999999999999999999999	00000000000000000000000000000000000000	1970-71 1971-72 1972-73 1973-74 1973-75 1975-75 1975-75 1975-78 1975-78 1975-78	00000000000 0000000000 000000000000000

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ANNUAL	30652 20990	84	140360 1968-69	7760 1950-51
SEP	1672 1140	56	5370 1983	489 1961
AUG	1872 1160	60	6610 1969	502 1961
JUL	2084 1230	69	9590 1983	522 1961
NUL	2472 1450	82	10700 1983	578 1961
МАҮ	2891 1770	ē Ģ	13860 1978	668 1961
APR	3326 1950	111	15690 1978	698 1961
MAR	4836 2060	156	48280 1938	742 1965
FEB	3510 1830	124	37590 1980	67 <b>4</b> 1965
JAN	2746 1750	68	34640 1969	675 1951
DEC	1967 1550	63	10350 1966	470 1950
NON	1772 1450	63	16990 1965	519 1961
OCT	1623 1300	52	4420 1983	463 1961
	MEAN Median	MEAN DARY	MAX YEAR	MIN YEAR

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Lytle Creek near Fontana (8 Mi North of Fontana)

Station Number 11062000

Drainage Area 46.3 square miles

Elevation 2380 feet (slightly lower gage sites before 1963)

Period of Record 1919 to present

No regulation upstream, SoCal Edison and Fontana Union Water Co divert and collect Lytle Creek flow within 2 and 1/2 miles upstream

ATER YEAR ENDING SEP 30	MEAN DAILY FLOW CMBND CFS	PEAK Flow CFS	DATE	MAX DAILY CFS	DATE	COMBINED RUNOFF AC-FT	UNDVRTD RUNOFF AC-FT	DIVERTED Runoff AC-FT	PERCENT DIVERTE!
*010	24.4			/0	00704	17800	0	17800	100
1919 1920	24.6 36.6			48 329	OCTO4 MARO2	26500	1950	24550	92.6
1921	29.1	•		160	MAR13	21100	100	21000	99.5
1922									
1923	34.5			55	OCT01	25000	0	25000	100
1924	21.7			42	MAR27	15700	0	15700	100
1925	14.6			34	APR05	10600	C	10600	100
1926	20.3			354	APR06	14700		14700	100
1927	46.6			1370	FEB16	33800	7090	26710	79
1928	23.2			42	FEB04	16800	0	16800	100
1929	17.5			53	MAR10	12700	0	12700	100
1930	21			57	MAY04	15200	0	15200	100
1931	18.3	417	APR26	108	APR26	13300	0	13300	100
1932	39.7	865	FEB08	659	FEB09	28800	4500	24300	84.4
1933	24.3	100	JAN19	55	JAN19	17600	100	17500	99.4
1934	18.2	560	JAN01	250	JAN01	13200	920	12280	93
1935	38.3	1500	APR08	296	APR08	27780	3500	24280	87.4
1936	28,8	730	FEB02	148	FE802	20890	1280	<b>1</b> 9610	93.9
1937	70.8	1250	FEB14	480	FEB06	51350	16190	35160	68.5
1938	143	25200	MAR02	8960	MAR02	103900	68200	35700	34.4
1939	36.1	568	SEP25			26180	1880	24300	92.8
1940	35.5			327	JAN08	25760	1650	24110	93.6
1941	102			573	MAR04	74180	36990	37190	50.1
1942	37.2			76	DEC10	26970	640	26330	97.6
1943	90	4800	JAN23	1310	JAN23	65260	31070	34190	52.4
1944	67.4		FEB22	338	FEB22	48830	10440	38390	78.6
1945	44.4		FEB02	204	FEB02	32220	1550	30670	95.2
1946	41.6		MAR30	571	MAR30	30150	4640		84.6
1947	45.1	1000	NOV20	440	DEC26	32730	6960		78.7
1948	21.4	140	APR03	49	APR29	15490	100		99.4
1949	16.4	200	JAN20	26	MAY	11900	70		<b>9</b> 9.4
1950	15	207	DEC19	73	DEC19	10860	314		97.1
1951	10,7	65	APR28	17	APR28	7760	33		99.6
1952	46.8	1500	JAN16	469	JAN16	33930	17130		49.5
1953	24.4	98	DEC01	54	NOV15	17710	2000		88.7
1954	23.6	780	JAN25	123	JAN25	17140	2750		84
1955	20.4	114	NOV11	69	NOV11	14800	320		97.8
1956	18.6	964	JAN26	382	JAN26	13450			89.8
1957	16.6	575	JAN12	204	JAN13	12060	1230	10830	89.8

Lytle Creek near Fontana (8 Mi North of Fontana) Station Number 11062000 Drainage Area 46.3 square miles Elevation 2380 feet (slightly lower gage sites before 1963) Period of Record 1919 to present No regulation upstream, SoCal Edison and Fontana Union Water Co divert and collect Lytle Creek flow within 2 and 1/2 miles upstream

WATER YEAR ENDING SEP 30	MEAN DAILY FLOW CMBND CFS	PEAK FLOW CFS	DATE	MAX Daily CFS	Date	COMBINED RUNOFF AC-FT	UNDVRTD 1 RUNOFF AC-FT	DIVERTED RUNOFF AC-FT	PERCENT DIVERTE
						528/0	75/00	17440	33
1958	72.9	1190	APR03	687	APR03	52840	35400 3660	17330	82.6
1959	29	832	FEB16	276	FEB16	20990	2000 48	11392	99.6
1960	15.8	96	JAN10	27	JAN10	11440		8309	98.9
1961	11.6	102	JAN26	27	JAN26	8400	91 (7(0		
1962	23.5	760	DEC02	180	FEB09	17020	4360	12660	74.4
1963	19.3	122	FEB10	75	FEB10	13980	345	13635	97.5
1964	13.1	277	APR01	122	APR01	9500	381	9119	96
1965	13.9	80	APR09	49	APR10	10060	332	9728	96.7
1966	75.3	9120	DEC29	3010	NOV23	54620	36330	18290	33.5
1967	70.7	7200	DEC06	2260	DEC06	51280	33130	18150	35.4
1968	29.7	336	NOV19	138	NOV19	21560	7540	14020	65
1969	194	35900	JAN25	8330	JAN25	140300	128100	12200	8.7
1970	34.8	145	FEB28	92	MAR01	25210	7350	17860	70.8
1971	23.7	1100	NOV29	116	DEC21	17200	2880	14320	83.3
1972	21	1360	DEC24	373	DEC24	15250	2880	12370	81.1
1973	37	1580	FEB11	945	FEB11	26840	9360	17480	65.1
1974	33.3	266	JAN07	166	JAN07	24140	5400	18740	77.6
1975	23.5	199	MAR06	81	MAR08	17010	868	16142	94.9
1976	21	403	SEP10	92	SEP11	15240	899	14341	94.1
1977	20.1	305	JAN03	139	AUG17	14570	1500	13070	89.7
1978	171	8600	MAR04	3510	MARO4	123800	105700	18100	14.6
1979	74.2	356	MAR27	199	MAR27	53810	27570	26240	48.8
1980	163	10330	FEB16	2830	FEB16	118100	91630	26470	22.4
	31.8	266	JAN29	90	JAN29	23060	5580	17480	75.8
1981		835	MAR17	369	MAR17	24360	7820		67.9
1982	33.6 132	4000	MAR02	1530	MAROZ	95910	78990		17.6
1983		4000	DEC25	200	DEC25	30690			55.9
1984	42.3		DEC25	135	DEC27	16620			88.1
1985	22.9	253		203	FEB15	26130			57.2
1986	36	372	JAN30			14690			86
1987	20.3	243	JAN04	102	JAN04				78.2
1988	22.5	480	JAN17	208	JAN17	16310	2000	12170	70.C
AVERAGE	42.3					30652	12397	182 <b>55</b>	59.6
MAXIMUM	7210	35900		8960		140300	128100	37190	
DATE		227.00	25 JAN 69		02MAR3	8 WY 1969	WY 1969	WY 1941	

Average Discharge, Creek only, 70 years: 18.1 cfs (13110 acre-feet per year) Average Discharge, Combined creek and diversions, 85 years (WYs 1899, 1905-88): 45.0 cfs (32,600 acre-feet/year)

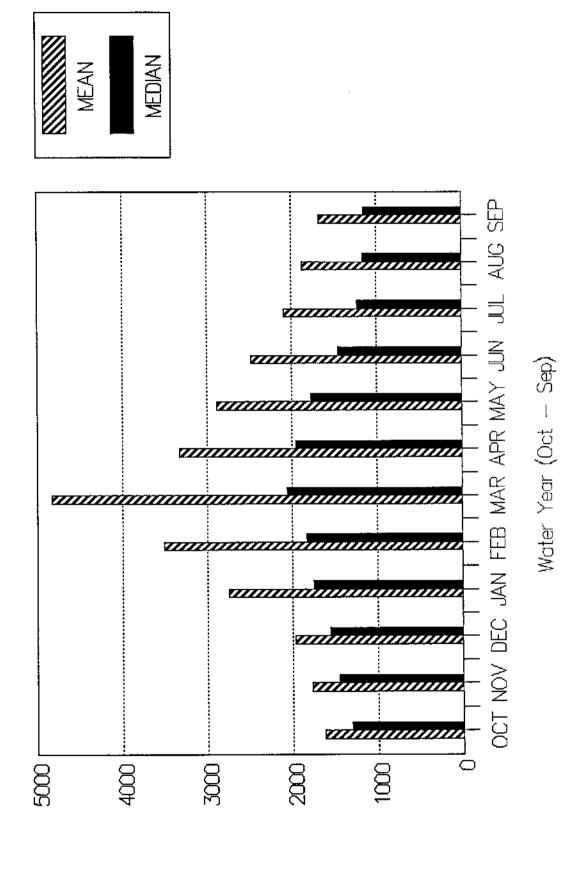
Maximum Discharge on record, Creek only: 35,900 cfs on Jan. 25, 1969 (same maximum for creek and diversions)

Minimum Discharge on record, combined creek and diversions: 0.12 cfs (ave. daily) for June 21 and 22, 1976

8-9

CREEK NEAR FONTANA LYTLE

(988)AVERAGE MONTHLY DISCHARGE (1918)

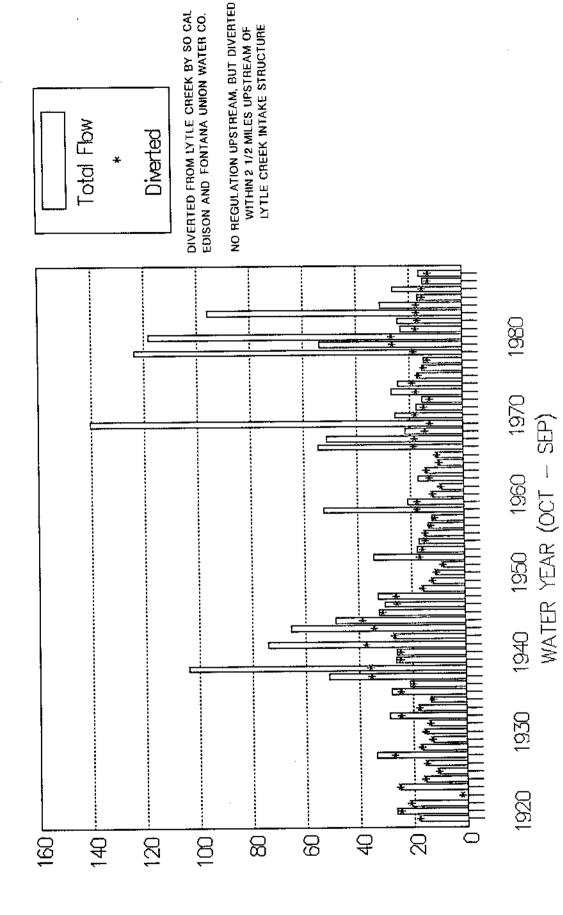


(ACRE-FEET)

B-10

LYTLE CREEK NEAR FONTANA

## Discharge (1919 to 1988)





## RAINGAUGES

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Recording Rain Gages	Source <sup>2</sup>	Elev. ft.	Period of Record	ID
Cajon West Summit	HPD	4779	1945-pr	8-0-386
Lytle Creek Ranger Station	HPD	2730	1927-pr	8-0-158
Lytle Creek Foothill Blvd.	HPD, LATS	1160	1948-pr	<b>8-</b> 0-376
Devore FireStation	LATS	2080		
Lytle Creek Ranger Sth.	HPD	2730	1922-pr	8-0-158
	Non-record	ing Rain	Gages	
Fontana 5N	CD	2023	1954-84	
Devore	SBCFCD	2435	1927-pr	
Cajon Junction	SBCFCD	3118	1944-pr	8-0-367
Panorama Point	SBCFCD	3775	1935-pr	8-0-160
Lake Arrowhead	CD	5203	1940-pr	8-0 <b>-266</b>

## Precipitation Stations in Lytle Creek Basin<sup>1</sup>

## Precipitation Stations near Lytle Creek Basin Recording Rain Gages

Wrightw	ood	SBCFCD	6038	1957-pr	
Crestli	ne FS2	HPD	4900	1971-pr	
San Ber	n Cty Fld Cont Dist Ofc	LATS	1040		8-0-327
Demens	Creek Debris Basin	LATS	1900		
Mount B	aldy Forest Serv. Station	LATS	4300		8-0-29
Running	Springs	HPD	5965		8-0-213

## Ron-recording raingages

Del Rosa Ranger Station	SBCFCD	1580	1954-pr	8-0 <b>-186</b> 8
Day Canyon	SBCFCD	2576	1946-pr	8-0-371
San Bernardino County Hospital	CD	1125	1870-pr	8-0-24A

## 1 LOCATIONS SHOWN ON PLATE 7

2 LEGEND:	CD
	HPD
	LATS
	SBCFCD

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MONTHLY PRECIPITATION AMOUNTS (IN INCHES) SAN BERNARDINO COUNTY HOSPITAL STATION NO. 8-0-24A (PLATE 7)

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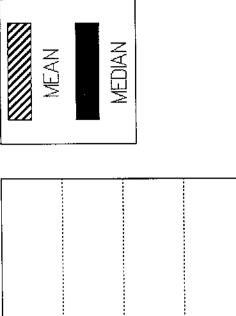
	ANN	14.09 9.03 15.97 13.79 13.99 9.53 11.55 20.22 20.22	11.50 9.89 9.89 9.89 10.74 21.93 21.93 21.93 21.83 21.83 21.83 21.83 21.34 21.34	16.75 20.07 20.07 20.41 20.41 8.23 16.70 8.23 7.51 7.50 9.20	16.13 18.02 18.02 28.96 28.71 29.80 19.80 14.48 14.18	17.77 17.777 17.777 17.777 17.777 17.777 17.7777 17.7777 17.77777 17.77777777	17,12 11,12 11,12 12,05 12,05 12,05 13,05 13,05 13,05 13,05 13,05 13,05 13,05 13,05 13,05 13,05 13,05 13,05 13,05 13,05 14,0500000000000000000000000000000000000	41212120 80212120 80212120 80222 80222 80222 80222 80222 80222 80222 80222 80222 80222 80222 80222 80222 80222 80222 802 80	8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	2011 2012 2011 2012 2011 2012 2011 2012 2011 2012 2012 2012 2012 2012 2012 2013 2013	600 10112 10112 11112 11112 11112 11112 11112 1112 112 112 111	11.97 9.62 9.62 12.66 113.66 115.86 115.86 115.86 115.86 190.49 190.49 190.09	10,45 18,36 32,34 11,0,88 17,88 17,88 17,88 17,88 17,88 17,88 17,88 17,88 17,88 17,88 17,88 17,88 17,88 17,79 17,7	A);K 1935,85 113 16.41 14.57 14.57 1383-84 6.00 6.00	1960-61
	SEP	0 . 0 . 0 . 0 . 0 . 0 . 0 . 0 . 0 . 0 .	0.00 53 0.00 0.00 0.00 0.00 0.00 11 1.00 0.000000	60.00 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.000 60.00000 60.00000 60.00000 60.00000 60.00000 60.00000 60.00000 60.0000000000	00.00 00.00 00.00 00.00 00.00 00.00 00.00 00.00 00.00 00	40000000000000000000000000000000000000	10000000000000000000000000000000000000	000000000000000000000000000000000000000	000000000000000000000000000000000000000	00000000000000000000000000000000000000	H		H 0.00 0.16 0.16 0.16 0.16 0.15 0.15	5527 35:11 119 0.30 0.30 1976 1976	0.00 46 39
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	NUL						ы	00000000000000000000000000000000000000							0
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(TE 7)	MAR							00000000000000000000000000000000000000					ម	EB MAR .19 329.41 19 119 109 2.77 .40 2.04 .50 10.10	
24A (PLA	FEB		- · · · A					887-01-1981 1997 1997 1997 1997 1997 1997 1997			r r	ធ	ы	UAN FE 9.96 368.1 119 119 3.22 3.0 2.43 2.1 15.51 12.1 1916 19	0
NO. 8-0-2	JAN							001010101000 00101000 0010101000 0010101000 0010101000 0010101000 0010101000 0010101000 0010101000 001000000 001000000 001000000 001000000 00100000 0010000 0010000 0010000 0010000 0010000 0010000 001000 001000 001000 001000 001000 001000 001000 001000 001000 001000 001000 00100 00100 00100 00100 00100 00100 00100 00100 00100 00100 0000 00100 000				មាស		EC JA 12 379. 19 11: 19 11: 15 315. 15 15. 589 15.	
TATION NC	V DEC			10004040404	08.400-40080 8000-800-800		01000000000000000000000000000000000000	, , , , , , , , , , , , , , , , , , ,	<b>ぶつお ユ ら ち き つ つ ち</b>	54500000000 10000000 1000000000000000000	5 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	011191010144 01119191040 F	MOV DE 119 115 119 115 1163 115 1.43 2. 0.95 1. 1965 10	0
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	ATER YR	1869-70 1371-72 1871-72 1871-72 1871-74 1871-74 1875-77 1875-77 1875-77 1875-77 1875-77 1875-77 1875-77 1875-77 1875-77		11899 11899 11899 11899 11899 11899 11899 11899 11899 11899 11899 11899 11899 1990 1990	1000011 1000011 1000011 10000011 10000011 10000011 10000011 10000011 10000011 10000011 10000011 10000011 10000011			44444444444444444444444444444444444444	44411 44411 444444 0144444 0144444 0144444 0144444 014444 014444 014444 014444 014444 014444 014444 014444 014444 014444 014444 0144444 0144444 0144444 0144444 0144444 0144444 0144444 0144444444	ល្លេះ ហេតុំសេរ៉ាស់លំហំលំ ក្រុមក្រុមក្រុមក្រុមក្រុម សូតសូតសូតស្រាស់សំណ ក្រុមក្រុមក្រុមក្រុម ក្រុមក្រុមក្រុមក្រុមក្រុម ក្រុមក្រុមក្រុមក្រុមក្រុមក្រុមក្រុម ក្រុមក្រុមក្រុមក្រុមក្រុមក្រុមក្រុមក្រុម		11111111111111111111111111111111111111		SUM YEARS Mean Median Year	VER W/O

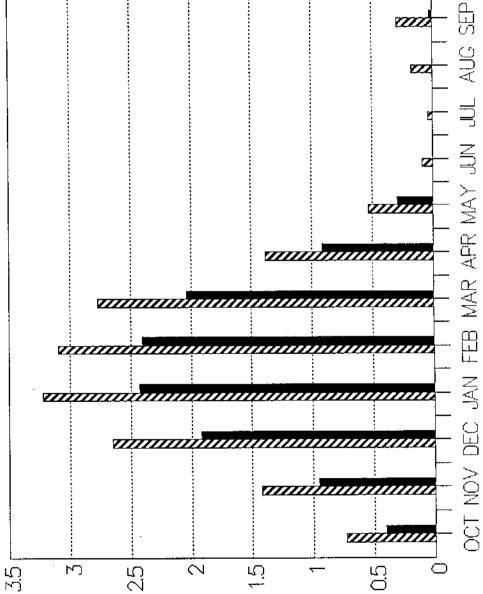
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B-13



# Monthly Precipitation (1870–1989)



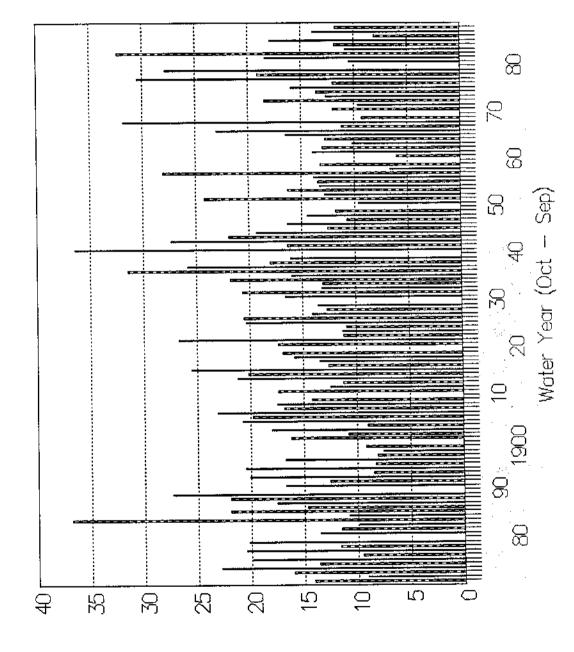


PRECIPITATION (INCHES)

## SAN BERNARDINO

## Water Year Precipitation

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PRECIPITATION (NCHES)

## MONTHLY PRECIPITATION AMOUNTS (IN INCHES) LYTLE CREEK RANGER STATION PRECIPITATION RECORD

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	LYTLE CR	LYTLE CREEK RANGER ELEVATI STATION NO.	ier stati (ation 27 10. 8-0-	E CREEK RANGER STATION PRECIPITATION ELEVATION 2730 FEET STATION NO. 8-0-158 (PLATE 7)	PITATION -ATE 7)	RECORD							
WATER YR	001	VON	DEC	JAN	FEB	MAR	APR	MAY	nu)	٦î	AUG	ŞEP	ANN
1030-31				S£ 7	77 5	, 25 (	7 85	77 0	00 0		05 Q	57 U	
22-1261	1.98	7.51	10.15	3.12 P	13.25 P	0.00 P	0.70	0.00 T	0.86	0.00	0.00	0.00 P	37.57
- 1932 - 33	0.19	0.0	3.26	12.24 P	4 77 0	0.99 P	0.59	1.46	60 <sup>-0</sup>	0.00	0.11	0.02	19.39
31-710L	0.92 A 50	6.0	4 55.41 A 0 R	0.18 P	4 C 2	0.10 P	0.07 P	0.15 P	V9-0	00-00 00-00	0,10 0,41	0.22 0.00 t	20.12
92-5261.	0.25	0.77	0.87	0.09 P	16.92	2.76	2.62	0.00	0.0	1 00.0	6.0	0.00	24.28
1936-37	3.75	0.33	19.52	6.68	9.16	12.60	0.41	0.23	0.00	0.00	0.00	0.00	52.68
1937-38	0.0	0.00	7.82	5.51	20.83	19.19 P 2.15	3.00 P	1.7 2	0.00 T	0.00	0.00 T	0.00	58.08
1938-59 1939-40	1.05 0.60	0.32	14.40	4.85 11.39	10.21	5.49	2.28 3.72	0.18 0.00 T	0.00	0.00	0.00	9.62 0.00	38.5U 32.02
, 1940-41	3.02	1.65	14.27	5.28		20.78	10.20	1.31	00.0	00.0	0.29	0,00	75_78
27-1761.	3.46	1.28	12.79	0.81	3.06	3.55	5.36	0.13	0,00	0.00	0.73	0.00	31.17
. 1942-43	2.08	1.17	1.49	28.00	11.58	11.55	2.38	0,00	0.00 T	0.00	0.00	0.12	58.37
.1943-44	1.54		13. 73 15. 73	2.57	22.00 22.00	3.83	3.71	0.27	0.32	0.0 8.0	8°.0	0.0	49.06 49.06
1945-46	0.50	40.cl	12.84	0.69	2.65	13.76	0.81 0.81	0.12 12	50.0	0.17 0.17	8.0	0.24	32.00 32.00
1946-47	2.71	Z1.12	7.62	1.57	2.03	1.89	0.69	0.19	0.10	0.0	0,00 T	0.19	38,11
87-2761.	0.12	0.01	6.48	0.02	7.08	5.62	5,55	0.11	0.72	0.00	00.0	0.00 T	25.71
, 1948-49	0.62	0.06 5.18	6.90 6.82	12.01 5.73	3.58	2.55 2.46	0.00 T 2.95	0.22	0.0	0.00 0.00	0.00 T	0.00 T 0.08	26.70 26.77
1950-51	0.70	3.66	0.00	4 44	1.45	0.62	3, 13	с \$\$			5	0.2K	27 71
-1951-52	2.77	2.57	11.86	18.82	0,19	17.48	2.67	0.00	00 <sup>-0</sup>	0.00	0.0	0.39	26.75
25-2561.	0.00	9.69	5.75	4.16	1.20	2.09	0.90	6.73	0.0	0.00	0.00	0.00	54.49
- 1953-54	0,00 T	1.44	0.38	16.46	6.62	10.49	0.28	0.00	70.0	0.07	0.04	0.00	35.82
1954-55	0.00	3.92	2.97	7.69	2.21	0.56	1.88	3.00	0.00	0.00	0.00	0.00	22.23
, 1955-56	0.0 9	2.50	1. 1.	12.41	1.21	8.0 0	3.53	1.69	0.00	0.20	0.00	0.00	22.85 
76-9641	00 3.09	0.0	0c.1 2,46	3.85	5. 59 16. 41	1.75	13.55	1.66 0.10	0.20	0.0	0.0	0.00	23.56 55.64
,1958-59	0.22 T	0.50	0.00	6,.40	12.57	0.0	1.35	2.00 <b>.</b> 0	0.00	0.0	0.0	0.20	19.24
,1959-60	0.00	27'0	2.85	<b>6.</b> 77	3.32	1.22	3.90	0.06	0.0	0.0	0.00	0.00	18.54
19-0961.	1,53		0.37	2.83	0.00	2.12	0.43	0.00	00.00	0,00	0.11	0,00	13.09
1961-62	0.00 T		5.74	5.55	13.88	2.75	0.08	1.26	0,10	0.00	0.0	0,00	34.70
. 1962-63	0.22		00.00	1.26	5.82	3.09	3.42	0,00	0.01	0.0	00'0	3.76	17.58
1963-64	1.07		0.32	5.16	0.09	3.64	3.70	1.44	0.31	00.00	0.00	0.0	20.11
· 1964 - 65	0.65		3.06	1.36	0.42	0.98	12.26 2.26	0.09	0.03	0.16	0.0	0.28	22.70
ao-ce41 79-9961,	0.14 0,14	4.50	15.38	7.08	6.0 20.0	0.01 9.01	60.0 X	0.17	0.0	8 8 8 8	8.0	0.24 0 45	39.14 45 83
89-7961.	0.0		2.89	2,12	1.92	3.86	1.63	67-D	10.0	1.25	0.0	0.0	21.89
.1968-69	0.46		1.67	74.47	21.62	2.02	1,47	1.14	0.06	0.15	0.00	0.00	74.02
02-6961.	0.00 1		0.07	2.32	4.48	7.75	0.78	0.00	0.18	0.12	0.00	0.00	18.62
12-0261.	27-0	7.34	8.28	1.25	1.82	2.02	1.25	1.72	0.00	0.50	0.00	0.00	24.65
22-1261.	1.54	0.92	15.91	0.00	0.22	0.00	67-0	0.20	0.19	0.00	0.10	0.22	19.79
57-5791°	0.54	6.36 15	3.50	5.68	18.62	9.97	8 ; 8 ;	0.20	0.00	0.0	0.0	0.0	14.87
52-7261.	2.20	0.30	2°-2	0.70	4.59	a. 17 11.53		6. 28.0	00'0		0.00	0.00 1	29.89
92-5261.	1.18	б. I	0.64	0.00	13.72	5.05	1.63	0.28	0.27	0.07	0.03	S.13	29.70
22-9261.	0.12	0.79	1.77	8.81	<b>0</b> .64	3.26	70°0	7.15	0.00	00	2.56	0.00	25.14
97-7791'	0.03	0.35 0 00 4	11.80 A 54	17.94	21.93 7 35	29.74 16 20	5.12 0.00	10.0 10.0	0.0	8.8	8.0 0	2.10	89.02 47 71
08-020L.	2.20	0.15	0.12	26.12	30.89	11.36	0.00 1.29	1.39	20.0 20.0	0.0	0.0	- 00-0	73.56
													i
1980-81	0.18	0.0 1	1.43	6.20 27	2.24	7.62	1. J	0.32 21	0.0	0.0 0	81	0.62	20.34
79-1961.	20°0	در. ۲ ۲	20.1	6 X	2.49 17 84	16.60	C . 0		0.0	9 0 0	0.0 2 2	77.1	76.17
. 1983 - 84	3.48	6.25	8.05	0.60	0.57	0.43	1.01	0.01	0.05	0.0	0.41	0.07	21.02
- 1984 - 85	0.30	4.89	18,35	1.37	3.10	3.84	0.12	0.24	0.08	0.15	0.00	0.31	32.75
1985-86	1.06	9.16	3.18	5.21	11.10	10.16 - 25	2.10	70'0	0.02	0°.15	0 0 8 0	3,48	45.65
1986-87 1087-88	0.50 7 24	2.03	1.41 1.41	4-92 5 82	2.27	3.92	1.16 6 02	0.19	8.0	6.0 6	00-00 00-00	0.00 0 02	35.55
68-8861,	0,00	5.29	6.22	1.50		2.84 2.84	0.00	0.32					
06-6861.					1								

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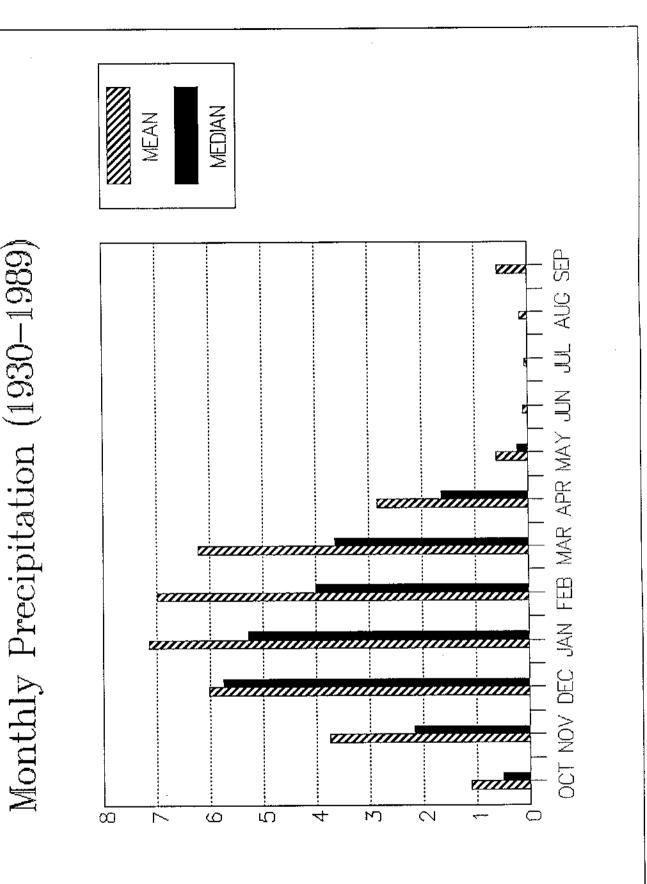
B-16

	001		DEC			MAR	APR	MAY	ירא	JUL.	AUG	SEP	ANNUAL
NUS	64.28		348.99		-	367.03	167.37	34.88	4.67	3.15	8.43	32.71	2044.60
YEARS	58		58		8	59	59	59	58	58	58	58	52
MEAN	1.11	3.75	6.02	7.14		6.22	2.84	0.59	0.08	0.05	0.15	0.56	35.87
MEDIAN	0.50		5.75		3.99	3.64	1.63	0.20	0.00	0.00	0,00	0.00	31.75
MAX	7.46		19.52			29.74	13.55	7.15	0.86	1.25	2.56	9.62	89.02
YEAR	1987			1969	1980	1978	1958	1977	1932	1968	1977	1939	1977-78
MIN	0.00	0.00	0,00	0,00	0,00	0.00	0.00	0.0	0.00	0.00	0.00	0.00	13.09
													1960-61
NO. YRS U/O		5		N	2	4	4	10	32	43	ŝ	31	
PERCENT	16	\$	ŝ	m	m	~	۲	37	55	72	67	ß	
3070 Q.J 4													

T-TRACE P-LYTLE CREEK POWERHOUSE DATA (LYTLE CREEK PH, ELEV. 2250 FEET, PERIOD OF RECORD 1905.T0\_1977, MEAN ANNUAL PRECIP (1905-60): 33.44"

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YTLE CREEK RANGER STATION

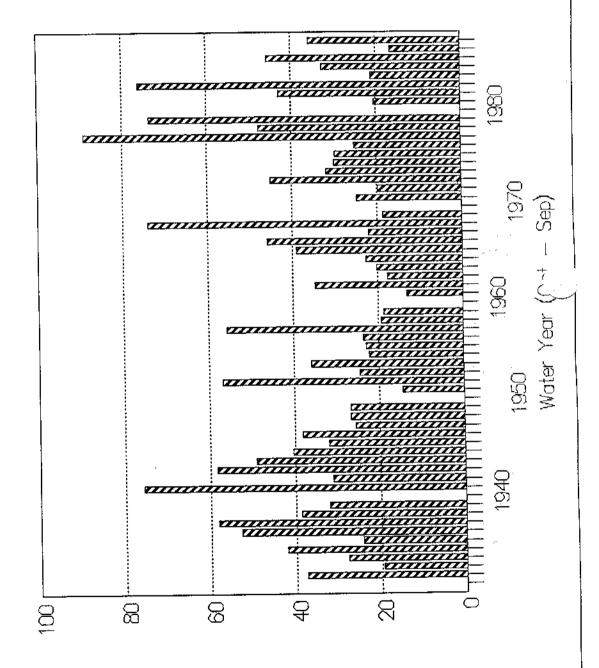


PRECIPITATION (NCHES)

CREEK RANGER STATION **VTLE** 

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PRECIPITATION (NCHES)

B-18

## Standard Project Flood Determination

The SPF for Lytle Creek was developed and presented in the 1964 Corps of Engineers Review Report for Flood Control, Lytle and Warm Creeks, San Bernardino County, California, October 30, 1964. (Plate 1, Ref. 16)

A standard project flood is an estimated or hypothetical flood that might be expected from the most severe combination of meteorological and hydrological conditions that are considered reasonably characteristic of the geographical region involved, excluding extraordinarily rare combinations. The magnitude of such a flood constitutes a reasonable appraisal of the floodproducing potentialities of the stream, and is considered a reasonable upper limit in determining the size of the flood for which flood-control improvements might be designed.

Estimates of the magnitude of the standard project floods in the areas considered in that report are based on calculations of runoff that would result if a storm having the characteristics of the storm of January 21-24, 1943, which centered in the Los Angeles area, were to center over the considered drainage areas. The estimates are also based on the assumption that future developments in the drainage areas would render much of the foothill and valley areas impervious to percolation and that the Lytle Creek channel would be paved at some future time from the mouths of Lytle Creek and Cajon Creek Canyons to the Foothill Boulevard inlet structure.

Floods of record. - Little information is available on the magnitude of floods before 1884. The largest flood of record during the period 1884 to 1962 occurred on February 23, 1891, at which time the peak discharge in the East Branch of Lytle Greek at the foot of "F" Street (present Colton Avenue crossing) in San Bernardino was estimated to be 30,000 cubic feet per second. No information is available regarding the flow along the West Branch of Lytle Creek at that time. However, assuming the same percent of total flow in the East and West Branches of Lytle Creek in 1891 as occurred in 1938, the peak discharge during the 1891 flood for Lytle Creek at Foothill Boulevard is estimated at 41,200 cubic feet per second. Large floods also occurred on March 2, 1938, and January 23, 1943, when estimated flows of 30,000 and 14,000 cubic feet per second, respectively, occurred on Lytle Greek at Foothill Boulevard. Other medium to large floods occurred in 1884, 1886, 1889, 1894, 1903, 1910, 1914, 1916, 1921, 1922, 1927, and 1958. After the 1964 SPF study was completed, other medium to large floods occurred in 1966, 1967, 1969, 1978, 1980 and 1983.

Floods along the Santa Ana River have generally occurred at the same time as floods along Lytle Creek. Estimates of discharges of the Santa Ana River at Riverside Narrows, near Riverside, Calif., indicate that the 1891 and 1938 floods were about the same magnitude - about 100,000 cubic feet per second.

Flood Characteristics - The rate of infiltration of rainfall in the mountainous parts of the drainage area is low, and the rate of runoff from the steep slopes is high. During periods of intense rainfall, runoff quickly concentrates in the canyons and discharges upon the alluvial cones. Heavy loads of debris and silt are carried by the streams during large floods. Floodwaters emerging from Lytle Creek and Cajon Creek Canyons and the Devil Creek diversion, which empties into Cajon Creek at its confluence with Lytle Creek are effectively confined above Foothill Boulevard between the levees of the existing project.

<u>Flood Frequencies</u> - A study was made of the runoff records in and near the Lytle Creek basin during the 79-year period, 1884-1962, and the peak flows of all major floods were determined for Lytle Creek at Foothill Boulevard and for the Santa Ana River at Riverside Narrows. Lytle Creek flows were adjusted to reflect the 1958 diversion of Devil and Badger Creek (a small creek to the east of Devil Creek) to Lytle Creek. The Santa Ana River flow data for Riverside Narrows were adjusted to reflect average future conditions at a point downstream from Warm Creek.

<u>Estimates Of Peak Discharge</u> - Peak-discharge data used to develop the discharge-frequency curves for Lytle Creek at Foothill Boulevard and for the Santa Ana River at Riverside Narrows for the 79-year period 1884-1962 are given in the following table:

Floods decreas			tude		Estimated discharge of record	: : :	Adjusted discharge*	:::::::::::::::::::::::::::::::::::::::	Source of information
:				:	Auto Pant	:	0.54. e	:	
:				÷	Cubic feet per second				
	<b>T-</b>	00	1801	1	41,200		ha hoo	2	USGS - WSP-447***.
1:	Hen.	<u>ر</u> ې	1028			:	31,300		( <del>**</del> )
3					20,000		21,200	:	(***).
4	Jen.	27	1016	-	15,500	_	17,100	÷	USGS - WSP-426.
5	Jan.	18.	1916	-	16,000		16,400		Do.
6:	Feb.	21.	1914	÷	16,000		16.100	:	USGS - WSF-447.
7	Feb.	17.	1884.		14,000	:	14,600	:	USGS - WSP-981.
8:	Jan.	23	1943	:	14,000		14,400	:	USGS - WSP-1315B.
9:	Mar.	15.	1889	:	11,000		11,500	:	( <del>***</del> ).
10:	Dec. :	25.	1889	:	10,000	:	10,600	1	( <del>***</del> ).
บ:	Jan.	ī,	1910	:	9,500	:	9,900	:	(***).
12:	Jan.	19,	1886	1	9,000	1	9,500	:	( <del>***</del> ).
13:	Feb.	9,	1922	:	8,000	:	8,100		
14:	Apr.	1,	1903	:	7,000		7,500		
15:	Dec.	20,	1921	:	6,000		6,300	:	( <del>***</del> ).
16:	Dec.	19,	1894	:	6,000		6,300	1	(***).
17:	Jan.	18,	1914	:	4,900		5,000	:	(***).
18:	Feb.	16,	1927	\$	3,500		3,800	-	(***). (***).
19:	Feb.	22,	1944	:	3,700		3,700	1	<b>v v v</b>
20:	Jan.	26,	1890	Ŧ	3,500	:	3,700	:	
21:	Jan.	8,	1940	:	3,600		3,600	:	
22:	Mar.	4,	1943	:	3,400		3,400	:	3 1
23:	Mar.	4,	1941	2	2,800		3,200		N (*
24:	Mar.	22,	1893	:	3,000	:	3,200	:	(~~~J•
:				:		:		. •	

Estimated and recorded peak discharges for Lytle Creek at Foothill Blvd. 1884-1962 - Santa Ana River basin, Calif.

\* All discharges were adjusted to include the inflow from Devil and Bedger Creeks, which were diverted into Lytle Creek in 1958.

\*\* Computed by U.S. Army Engineer District, Los Angeles. \*\*\* Estimated from discharges of tributaries and nearby streams.

The tables on pages B-24 - B-27 are extracted from the 1964 reference previously cited. Precipitation and runoff data were gathered from stations as shown on Plate 7 and identified in tables 2 & 3. Table 1 shows a summary of climatological data for San Bernardino (1870-1961); Table 2 gives identification of precipitation stations to determine the SPF; Table 3 gives information on stream gauges located within the Lytle-Cajon drainage area.

Determination Of The Standard Project Flood - The standard project flood was determined at each of the selected concentration points by the following procedure: (a) Determination of unit-time increments of precipitation for each subarea, (b) determination of effective precipitation by subtraction of loss rate, (c) determination of subarea surface-runoff hydrograph by application of subarea synthetic unit-hydrograph values to the unit-period effective precipitation,  $(\underline{d})$  determination of subarea total runoff hydrograph by addition of base flow and subtraction of channel-percolation losses, and  $(\underline{e})$  determination of total flood hydrograph for the concentration points by channel routing and combining subarea hydrographs as required.

Discharge-frequency curves for Lytle Creek at Foothill Boulevard and Santa Ana River downstream from Warm Creek were developed. (see plate B-1) The estimated frequencies of uncontrolled floods of various magnitudes for the two points are given in the following table:

Santa Ana River at Warm Creek	, Santa Ana River	basin, Calif.
NOTE: LYTLE CREEK AT FOOTHILL REPRESEN		
Number of times that flood	Uncontrolled p	eak discharges
would be equaled or exceeded in 100 years	Lytle Creek at : Foothill Blvd. :	Santa Ana River downstream from Warm Creek
0.30. 0.36. 0.64. 0.97. 1.2.	60,000 : 48,000 : 42,000 :	<u>Cubic feet</u> <u>per second</u> *227,000 218,000 178,000 150,000 136,000
1.8 2.6	••••••••••••••	110,000 90,000
4.0 5.5 7.5		65,000 50,000 38,000

Estimated flood frequencies - Lytle Creek at Foothill Blvd, and the E

\* Standard project flood.

PERIOD OF RECORD: 1884-1962

NOTE: THE FOLLOWING SPF WAS DEVELOPED IN 1964.

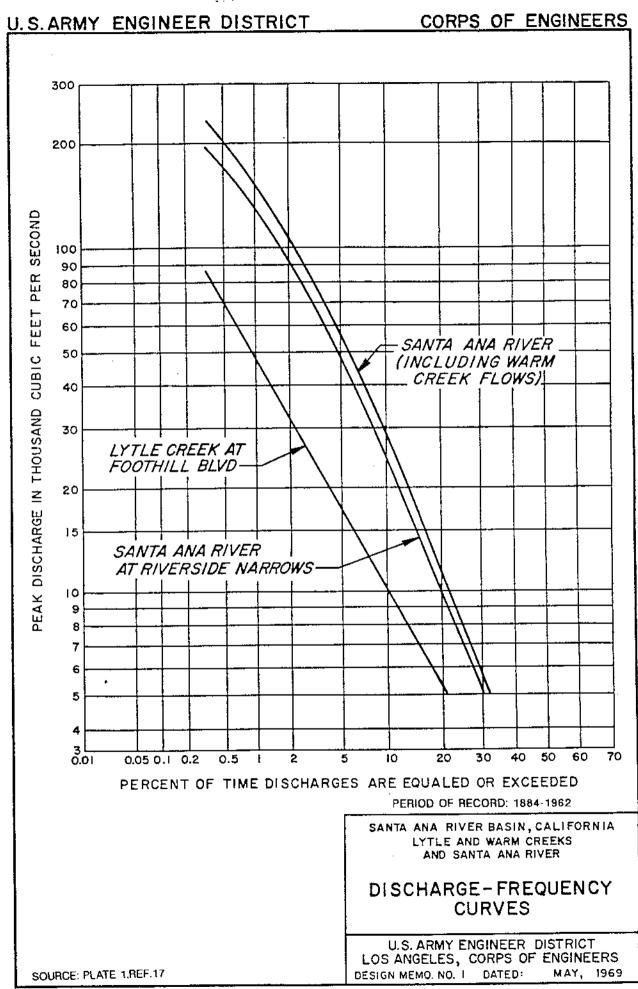
The peak discharges of the standard project flood at pertinent points on Lytle, and Warm Creeks and on the Santa Ana River are given in the following table:

Estimated peak discharges	; of	the standard project flood on Lytle
and Warm Creeks and on	the	Santa Ana River, Santa Ana River
basin, Calif.		

At Foothill Blvd       88,0         East Branch of Lytle Creek at Warm Creek       58,0         West Branch of Lytle Creek at Warm Creek       30,5         Warm Creek:       :         Upstream from East Branch of Lytle Creek       :         Downstream from East Branch of Lytle Creek       :         Downstream from West Branch of Lytle Creek       :         Santa Ana River:       :         Upstream from Warm Creek	Location :	Peak discharges*
	Lytle Creek: At Foothill Blvd East Branch of Lytle Creek at Warm Creek West Branch of Lytle Creek at Warm Creek Warm Creek: Upstream from East Branch of Lytle Creek Downstream from East Branch of Lytle Creek Downstream from West Branch of Lytle Creek Santa Ana River: Upstream from Warm Creek	Cubic feet per second 88,000 58,000 30,500 **9,000 60,000 90,000 156,000 227,000

\* Peak discharges are based on the assumption that much of the foothill and valley areas will be impervious to percolation due to future urban and commercial developments and that Lytle Creek would be a paved channel from the mouths of Lytle and Cajon Creek Canyons to the Foothill Blvd. inlet structure. \*\* Based on local storm of March 3-4, 1943.

Discharges for locations on the Santa Ana River downstream and upstream of Warm Creek were recomputed for subareas contributing downstream of Lytle Creek Intake Structure to account for increased impervious area than previously calculated. The 1969 COE General Design Memorandum No. 1 for Lytle and Warm Creeks San Bernardino County, California computed design values of 234,000 and 167,000 cubic feet per second respectively for these locations. Subsequent hydrologic studies performed in support of the Santa Ana River Project produced revised SPF and discharge frequency estimates on the mainstream Santa Ana River from those shawn above and in Plate B-1.



## Table 1

Month	(period		emperature record 189	1-	-1961)**	:	P (period of	re r	cipitatio ecord 187	n 0-	<b>1</b> 961)***
· · · · · · · · · · · · · · · · · · ·	Mean monthly	:	Record highest	:	Record - lowest	:	Mean monthly		Maximum monthly	:	Minimum monthly
Jan Feb: Mar: Apr: June: July: Aug: Sept: Oct: Nov: Dec:	58.0 56.2 60.3 64.5 70.5 76.9 76.8 72.9 65.4 58.1		Degrees Fahrenheit 92 93 97 103 109 116 116 116 115 107 99 93	::	Degrees Fahrenheit 17 21 26 27 33 37 42 42 42 36 29 24 17		<u>Inches</u> 3.26 3.21 2.73 1.41 .58 .09 .03 .20 .21 .73 1.29 2.71		Inches 15.51 12.20 10.10 9.35 3.34 1.02 .42 2.16 2.37 4.63 7.50 10.85		<u>Inches</u> 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

## Summary of climatological data at San Bernardino (station No. 8-0-24A)\*, Lytle and Warm Creeks, Santa Ana River basin, Calif.

\* See pl. 1 for location of station, which is numbered in accordance with quadrangle-index system of the U.S. Army Engineer District, Los Angeles, Corps of Engineers.

\*\* Mean-annual temperature for period of record is 63.3 degrees Fahrenheit. \*\*\* Mean-annual precipitation for period of record is 16.41 inches.

NOTE .-- Above data from U.S. Weather Bureau climatological data.

STATIONS SHOWN ON PLATE 7

## Table 2

## Precipitation stations in and near drainage areas of Lytle and Warm Creeks, Santa Ana River basin, Calif.

:	· · · · · · · · · · · · · · · · · · ·	Eleva-	Geographic coordinates		: : Period of record :		Com- plete	73-year mean	Author-
No.*	Station**	tion		· · · · · · · · ·	Record-	Non-	years	seasonal	ity.
· .	1		Lati-	Longi-	: ing	recording	of	precipi-	:
:	1		tude	tude	gage	gage	record	tation***	:
:	:		1				: : :		:
:	1		: Degrees		:		: :		:
:	:	-	: <u>and</u> :	: and	:	:	: :		:
1	at Devel		: minutes			: 19-00 10-0		Inches	:
	Glenn Ranch;	3,250				: 1899-1948 (144)	: 21 :		USWB.
	Glenn Ranch: Squirrel Inn No. 1	3,250 5,239	: 34-15 : 34-14 :			: ( <i>눼</i> ) : 1919-63	22 : 44 :		Do.
	Squirrel Inn No. 2	5,680				: 1931-63	: 44 : 32		
	Lytle Creek Powerhouse:	2,250				1906-63			USWR.
	San Bernardino County :	1,125		·		: 1870-1963			
	Hospital.		:	:	:		: .		
3-0-24B:	Perris Hill	1,280	: 34-08 :	: 117-16	: (##)	: 1935-63 :	: 28 :		SBCFCD.
3-0-25:	Santa Ana River PH No. 1:	2,765	: 34-09 :	: 117-03	: (册):	: 1904-63 :	: 59 :	26.8	USWB.
-0-26:	Mill Creek No. 2:	2,940	: 34-05				: 60 :	22.8	: Do.
	Redlands	1,318				: 1888-1963			
	Camp Baldy	4,275					: 43 :		
	Arrowhead Springs	2,000			: (卅) :	: 1909-25	: 16 :		
3-0-32:	Atopa Ranch-Reche :	1,750	: 34-00	: 117-15	: (拼)	: 1920-63	: 43 :	14.6	: DWR.
· · · ·	Canyon. :	8 200	։ ծեղե	117 26		1930-43		1.7 6	
	Kelly's Camp;	8,300 : 1,850 :	: 34-14 : 34-10			1930-43	: 13 : : 35 :		LACFCD.
	Bennett Ranch: Lytle Creek Intake:	2,360	: 34-10						
	Devore Ranch	2,500	34-14				<b>4</b> 4		USWB.
	Devil Canyon Gate	1,880					41		SECFCD
	Devil Canyon-Panorana:	3,758	34-14			1929-38	9		
	Lake Arrowhead	5,150	: 34-15	: 117-12	: (#)	: 1891-1940			LA Cor
	Running Springs	6,050	34-12			1934-63	: 29		DWR.
	Lytle Creek PH No. 2:	1,590	: 34-09	: 117-24	: (#)	1926-43	: 16 :	19.2	: Do.
3-0-107:	Lytle Creek Baseline;	1,225	: 34-07	: 117-21		: 1926-63	: 37:		
8-0-108:	San Bernardino-Hanford:	1,048	: 34-06			: 1929-63	: 34		: USWB.
	Colton City Hall:	975	: 34-04			: 1923-63	: 40 ;		DWR.
	Highland - Corwin:		: 34⊢08			: 1908-63	: 55 :		-
	Highland - Ewing	1,450				: 1924-45	: 20 ;		-
	E. Highland - Orange	1,520				: 1947-63	: 16;		
	Santa Ana River PH No. 3:	1,970				: 1904-63 : 1930-63	: 59 :		USWB.
5-0-114	Redlands - Crafton :	2,120	: 34-03	: 117-06	: (#) ·	• 1930-03	: 33 :	. 10.3	: DWR.
-0.115	Heights. : Mentone - Crafton Orange :	1,650	: 34-04	117-08	: : (#)	1929-63	34	16.4	: Do.
	Grovers.	1,0,0	•	t	• \\\\\\\\	:	:		
ት ው 124	Crown Jewel - Redlands;	1,225	34-05	117-13	: (枡)	1929-45	: 15	13.8	Do.
	Yucaipa - Arnett	2,850				: 1924-45	: 20		: Do.
	Yucaipa - SECFCD	2,705		: 117-04		: 1943-63	: 20 ;		: SECFCD
	Redlands - Anderson:	1,460	: 34-03	: 117-10	: (#)	: 1930-63	: 33 :		; Do.
8-0-147:	Colton - SCE Substation:	940			: (栅)		: 34		
	Colton - SFRR	975	: 34-04			: 1877-1963			: Do.
	Lytle Creck Ranger Sta:	2,760	: 34-14				: 33		: USWB,
	Lytle Creek FUW Co	2,360					: 38		Do. DWR.
	Panorana Meintenance:	4,000		: 117-18			: 7 : 23		
	Righto - Adams	1,175					: 23 : 33		
	East Highland - Gold : Buckle Assn. :	1,400	• J <sup>2</sup> ***(		• \##}	. ~~~~~~	در . •		
<u>ት</u> ው ነ6ና የ	Redlands Junction	1,255	12-14 ع	117-13	: 1935-63	: 1935-63	: 28	. (##)	SECTO
	Craftonville - SPER:	1,759				1892-1918		; 15.2	
	Crafton - SECFCD				: 1927-63		: 36	: (+ <del>###</del> )	SECTOR
	Cajon Ranger Sta:	2,900				<b>1</b>	: 9	: 23.9	: Do.
	Mill Creek Ranger Sta:		: 34-06	: 117-02	<b>: (₩</b> )		-	: 22.8	-
	Devil Canyon:	2,780	: 34-14					: 29.5	
	Del Rosa Ranger Sta:	1,580			: 1943-63			: (###)	: Do.
	Burton's Ranch	4,400	: 34-17			: 1904-15			: LA Coz
	Grass Valley	5,190	: 34-15			: 1893-1915	-	: 37.5	
	Cajon Pass Summit No. 2;	3,820	: 34-20				- 0		: USWB. : LA Con
	Deep Creek	5,200							: LA CON
	Morses	5,250 1, 865				: 1892-1915 : 1939-53			USWB.
	Crestline:	4,865				1939-53 1927-44	_	: 31.1	
	Devil Canyon USFS:					1939-63		36.3	
	Running Springs 1 E	1,100	- I, _,			: 1952-63	: 11	· · · · · · · · · · · · · · · · · · ·	SECFCI
	Bloomington: Cajon Creek Muscoy Ranch:					1928-38	: 7		DWR.
	Redlands - Eving	1,750				: 1924-45	: 21	-	· _
	Miscoy					1940-63	: 23	-	_
	Etivanda - Moore		·	• •	: (#)	1948-63	15	: 19.2	: Do.
	Lake Arrowhead		-1			1940-63	: 23		USWB.
			·			: 1893-1900	. 7	42.6	DWR.
8-0-276	; Fleming's Mill	/y +	• • • • •	•	- <u>16.67</u>			: 48.2	: Do.

See footnotes at end of table.

STATIONS SHOWN ON PLATE 7

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### Table 2--Continued

No.*	Station**	Eleva- tion	Geographic coordinates		Period of record		Com- plete years	73-year mean seasonal	Author-
			Lati- tude	Longi- tude	: Record- : ; ing : ; gage :	recording	of	precipi- tation***	1ty#
			Degrees	: Degrees					
	•		and	and		•	•		
-		Feet	·	: minutes				Inches :	
8-0-327	San Bernardino County :	1,040	: 34-07	: 117-12	: 1941-63 :	1941-63	: 22		SECFCD.
	Garage. :		:	:	: _ :		:		
8-0-355:	Strawberry Peak Lookout:	6,150		: 117-14	: (#):	1953-63	: 10	: (###) :	CE.
8-0-367	Cajon Junction:	3,120				: 1943-63	: 20 :		SBCFCD.
	Day Canyon:	2,576				: 1947-63	: 16 :		
8-0-376	Lytle Creek - Foothill :	1,160	: 34-06	: 117-20	: (耕) :	: 1947-63	: 16 :	: (###) :	USWB.
n	Blvd.	1.1.0-	: ;	•	•		:		
	Crestline-Lake Gregory;	4,425			: 1953-63		: 10		
	: Cajon West Summit	4,780	· :				: 24 :		Do.
	Etiwanda	1,390			: 1948-63		: 15	10.0.0.1	Do.
	Blue Jay	5,400				1958-63	: 5		SECFCD. USWB.
	El Casco Sta SPRR:	1,874				1899-1918 1928-45	: 19 : 16		
0-F-207	Moreno Mutual Water Co :	2,295	: 33-58	: 117-02	: (1777)	1920-47	: 10 ·	10.0	Dwn.
8.9.006	: Singleton. : : Moreno Matual Watar Co :	1,550	: 33-55	: 117-10	· (##)	1927-45	: 14	11.0	SCS.
0-1-200		1, ) ) 0	• 35-77	* *	• •	*761-47			
	San Timoteo	1.603	33-58	117-07	· (##)	1953-63	10	(###)	SECFCD.
	Holcomb	7.240				1909-18	. 9		DWR.
	Big Bear Lake - Preston	6,800				1931-42	-		Do.
	Seven Oaks	5.057				1909-55	: 41	: 27.1	USWB.
	Big Bear Lake - Ridecut;	6,800	34-14	: 116-57		1928-43	: 12	32.0	DWR.
	: Forest Home - Edison :	5,100	: 34-05	: 116-56	: (拼):	: 1930-45	: 14	: 35.2	: Do.
-	Intake. :		:	:	:		:	:	:
9-0-118:	Mill Creek Intake	4,945			: 1948-63 :		: 15		USWB.
9-0-12:	Raywood Flat					: 1931-63	: 32		
	: Big Bear Lake Dam:				: 1940-63				
	: Camp Angelus						: 24		
	: Converse Barsery:	6,000	: 34-12		: (# <b>†</b> )	: 1912-17		: 27.6	
	: Upper Mill Creek					: 1939-57	•	: 38.7	
9-0-25	; Santa Ana River - Filerea ;	4,230	: 34-10	: 116-57	: (#)	: 1895-1902	: 7	: 30.0	DWR.
0.0-064	: Reservoir. :	4,900	: 34-01	: 116-56	: (##)	1900-09	: 9	30.8	USDA.
	: Oak Glen : Oak Glen						29	•	SBCFCD.
	Big Bear Lake F.D					1940-63	: 23	1 1 1 1 1 1	USWB.
	Big Bear Lake City		34-16			1942-63	. 21		SBCFCD.
	: Oak Glen - SB 122		: 34-03			: 1952-63	-	· (###)	: Do.
	: Oak Gless - SE 174					1957-63		(###)	Do.
	Beaumont					1888-1963	: 75		USWB.
	Beaumont Pumping Plant				1939-11	1911-63	: 52		Do.
	Beaumont I E				: 1939-57	· · · ·	: 24	: 15.6	: Do.
						•		•	•

Precipitation stations in and near drainage areas of Lytle and Marm Creeks, Santa Ana River basin, Calif.

Stations numbered in accordance with quadrangle-index system of the U.S. Army Engineer District, Los Angeles, \* Corps of Engineers. \*\* See pl. 1 for locations.

See pl. 1 for locations. ### Computed to a common 73-year (1870-1943) mean by index-of-witness method. # CE indicates Corps of Engineers; DMR, Department of Water Resources; LACFCD, Los Angeles County Flood Control District; LA Corp., Lake Arrowhead Corporation; SBCFCD, San Bernardizo County Flood Control District; SCS, Soil Con-servation Service; USDA, United States Department of Agriculture; and USNB, United States Weather Bureau. ### Not applicable. ### Not applicable.

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## Table 3

## Principal stream-gaging stations and pertiment data in and near the drainage areas of lytle and Warm Creeks, Sante Ang River basin, Calif.

Station			Drain-	Period	Discharge of record			
			age ;	or	Average	Peak		
No.	Stream	Location*	area	record	Average	Amount :	Dete	
	:	1	:	:	1	t Cubic r		
:	:	1	1		<u>Cubic</u> : feet per :	fact per :		
:	1	, t	Square 1		second 1	second 1		
1	:	1	miles :	topo di	$\frac{Becond}{12.5}$	7 600	Jan. 24, 1943	
1	Santa Ana River	At "E" Street bridge :	469 1	1939-54		1,000	0aar c+, 17.5	
:	. 1	near San Bernardino, 1	1	1009.37				
2 <b>.:</b> .	do	Near San Bernardino	302	1928-37 1954-61	7.7	11,200	Feb. 6, 1937	
··· +	1	Near Mentone	202	1896-1961	30.0	52,300 1	Mer. 2, 1938	
3 <b>:</b> .		Near Lona Linda	125	1954-61	1.3 1		Apr. 1, 1958	
41	San Timoteo Creek	Near Redlands	123	1926-61	1.41		Mar. 2, 1938	
5		Near Colton	259	1920-61	43.61	27,500 :	Do.	
61	Warm Creek	Near Highland	19.8		. B.O :	6,900 1	Do.	
7	City Creek	Near East Highlands		1919-61	5.7 1	5,340 1	Do .	
8	Plunge Creek	Near Mentone			3.1 :	1,500 #	Dec. 23, 1945	
		hear Mentones	39.9		12.5	18,100	Mar. 2, 1938	
10	đo	Near Craftonville	t 39.9	1947-54	1. 1. 1			
11	Little San Gorgonio	: Near Beaumont	2.6	: 1948-61	! .1 :	320 1	Aug. 23, 1955	
	Creek.		:	<b>1</b>	*	1	AD 1060	
12	Lytle Creek	(West Branch) at	ı (**)	1928-45	: .8:	13,000 :	Jan. 23, 1943	
• • • •	1, 12 11 11 11 11	Colton.	1	t	* <u> </u>	:	N 0 1028	
13	do	: (East Branch) at	: (**)	1929-57	: 53	21,500	Mar. 2, 1938	
		: San Bernardino.	1	1	1		. Do.	
14	do	: Near Fontana	46.9		: 10.5		• • • •	
		Near Keenbrook	: 15.0	: 1919-38	1.2	6,180	Do.	
			1	: 1949-61	8.6	1 14500	: Mar. 2, 1938	
161	Cajon Creek	t Near Keenbrook	: 40.9		ī		_	
17.	Devil Canvon Creek	Near San Bernardino	1 6.2	1911-14	1.7	3,320	: Do.	
	•	1	: 8.6		4.5	3,360	. Do.	
18:	East Twin Creek	i Near Arrovneau	. 0.0	. 1747 04	1	1	<b>t</b>	
:	:	: Springs.	• • •	1 1911-14		1 0 750	:	
19	Waterman Canyon	do	4.6	1919-61	2.6	2,350	Do.	
-7	Creek.	1	:	•		:	:	

\* See pl. 1 for location. \*\* Indeterminate.

NOTE .-- Above data are from records published in the U.S. Geological Survey Water Supply Papers.

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## STATIONS SHOWN ON PLATE 7

Larger Floods - The Lytle Creek Intake Structure was not designed to detain or attenuate floodwaters. No storage is dedicated for flood control and no reservoir routings were done in the original design. The structure solely diverts flows into the two improved downstream channels, the West and East Branch.

Current standards for dam construction require that a hypothetical probable maximum flood (PMF) be routed through the project to ensure its adequacy against overtopping. This standard was not used for this diversion structure, however, the possible occurence of larger-than-design floods was accounted for by providing gate settings for the West Branch tainter gate that controls outflow to channel capacity for as long as possible. The wider East Branch Channel has more space (100 ft wide channel compared to 40 ft for the West Branch Channel) in the freeboard allowance of 2 ft to pass larger-thandesign flows. The Intake Structure could pass 133 percent of the SPF peak flow before being overtopped.