Summary of Floods in the United States During 1955

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1455–B

Prepared in cooperation with Federal, State, and local agencies

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Prepared under the direction of J. V. B. WELLS *.Chief Surface Water Branch*

FLOODS OF 1955

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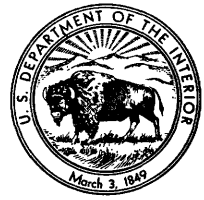

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ABSTRACT

Floods in the United States during 1955 caused damage which has been exceeded only by the floods of July 1951 in Kansas and Missouri.

A destructive series of floods occurred in the Northeastern States in five periods during August–October 1955 and covered the area from New England to North Carolina. A second series of floods of extreme magnitude began in the Western States in December 1955 and continued on into January 1956, covering California (with the exception of about the southern one-fourth) the western part of Nevada, the southwestern part of Oregon, and west-central Idaho. Another flood of great magnitude occurred in May in the Arkansas River basin of Colorado and New Mexico.

In addition to these major floods many smaller but significant ones occurred in widely scattered areas throughout the United States at various times during 1955. These floods are described in chronologic order in this summary chapter.

INTRODUCTION

This summary assembles into a single volume information relative to all known severe floods, whether local or of wide areal extent, during 1955 in the United States. Water-Supply Paper 1455–A describes in detail the floods of May 1955 in the Arkansas River basin in Colorado and New Mexico.

"Floods of August–October 1955, New England to North Carolina" has been published as Water-Supply Paper 1420, and "Floods of December 1955–January 1956 in the far-western States" will be published as Water-Supply Paper 1650.

The areas for which flood reports have been prepared for 1955 are shown on figure 13. The areas covered by the three special flood reports are crosshatched and the areas for the other floods reported in this summary chapter are solid. The month in which each flood occurred is indicated, thereby giving the location and the time distribution of floods during the year.

The floods in this summary chapter were selected as being uncommon hydrologic events in which large areas were affected, great amounts of damage resulted, or extreme discharges or stage occurred.

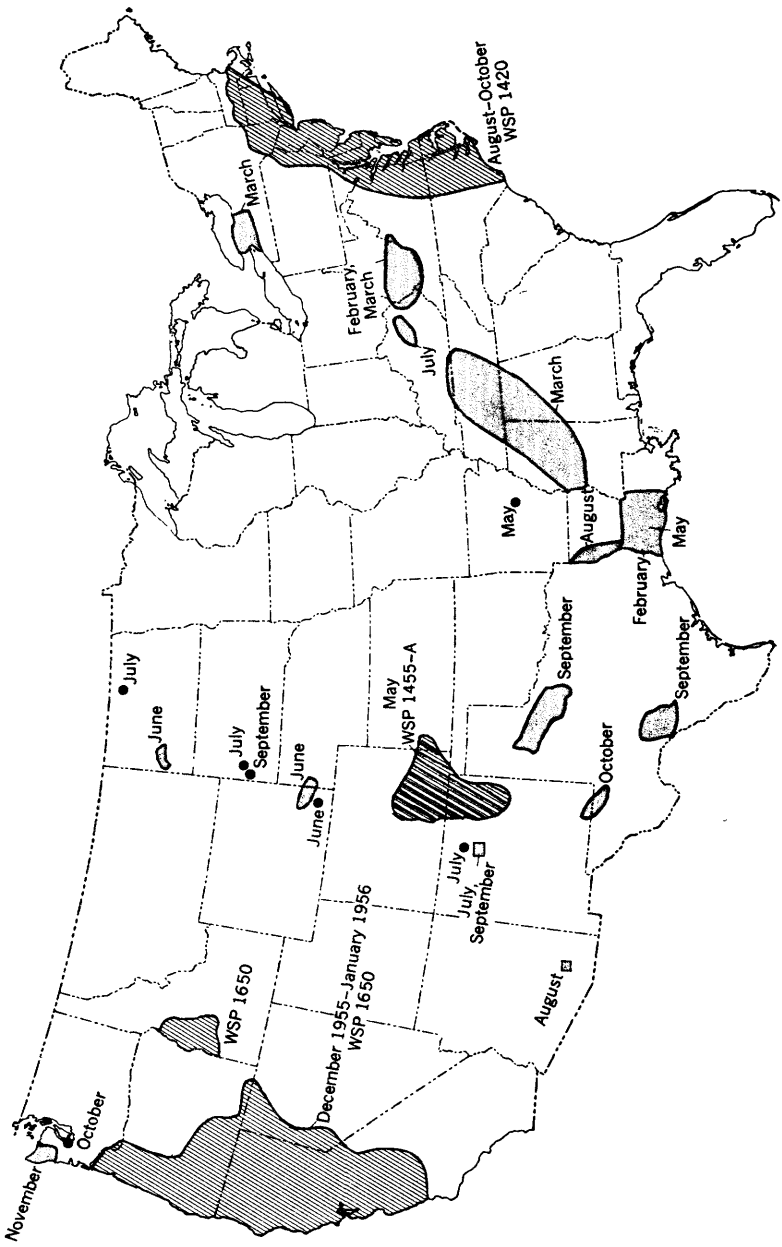

FIGURE 13.—Map of the United States showing location of flood areas of 1955 for which reports were prepared. Line pattern indicates those areas for which special reports were written.

The continuing investigation of surface-water resources in the areas covered by this report is performed by the Geological Survey in cooperation with State agencies, the Corps of Engineers, the Bureau of Reclamation, and other Federal and local agencies. Some data in this report was taken from U.S. Weather Bureau publications.

The collection of basic data, the computations, and the preparation of text were done by the district offices of the U.S. Geological Survey in whose district the floods occurred.

DETERMINATION OF FLOOD STAGES AND DISCHARGES

The peak stages and discharges at gaging stations and at miscellaneous sites are taken from data which are regularly obtained and compiled in the ordinary procedure of surface-water investigation by the Geological Survey.

The usual method of determining stream discharges at gaging stations is by the application of a stage-discharge rating to the recorded stage. The rating is defined by current-meter measurements through as much of the range of stage as possible. The peak discharge at a station may be above the range of the stage-discharge rating so short extensions of the rating may be made by logarithmic extrapolation, by velocity-area studies, or by use of other measurable hydraulic factors.

Peak discharges at gaging stations which are greatly above the range of the rating, and peak discharges at miscellaneous sites are commonly determined by various methods of indirect measurement at the site. A general description of these indirect methods can be found in Water-Supply Paper 888. Water Supply Papers 773–E, 796–G, and 816 contain more detailed descriptions with illustrated examples.

During major floods adverse conditions often make it impossible to obtain current-meter measurements at some sites in which case peak discharges are measured by indirect methods based on detailed surveys of selected channel reaches.

EXPLANATION OF DATA

The floods described in this report are given in chronological order. Because of the different characteristics of the floods and the varying amounts of information available, no consistent form is used in reporting each event.

The data presented include: (a) a description of the storm, the flood, and flood damage; (b) a map of the flood area showing the location of flood-determination points and for some floods the location of precipitation stations or isohyets; and (c) rainfall data and flood-peak stages and discharges of the streams affected.

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In general, rainfall amounts are included in the description of the flood. When considerable rainfall data are available, they are presented in tabular form and show daily or storm totals. These totals may also be shown directly on the map. For a few floods where sufficient data are available to determine the pattern and distribution of rainfall, an isohyetal map is presented.

A tabular summary of peak stages and discharges is given for each flood unless the number of stations in the report is small, in which case the information is included in the description.

SUMMARY OF FLOODS OF 1955

FLOODS OF FEBRUARY 5–9 IN SOUTHERN LOUISIANA

Heavy rains fell over Louisiana February 4–6, centering on a general northeast line from the southwestern tip of Louisiana to the southwestern tip of Mississippi (fig. 14). Floods occurred in several basins in the southern part of the State, principally in the Mermentau

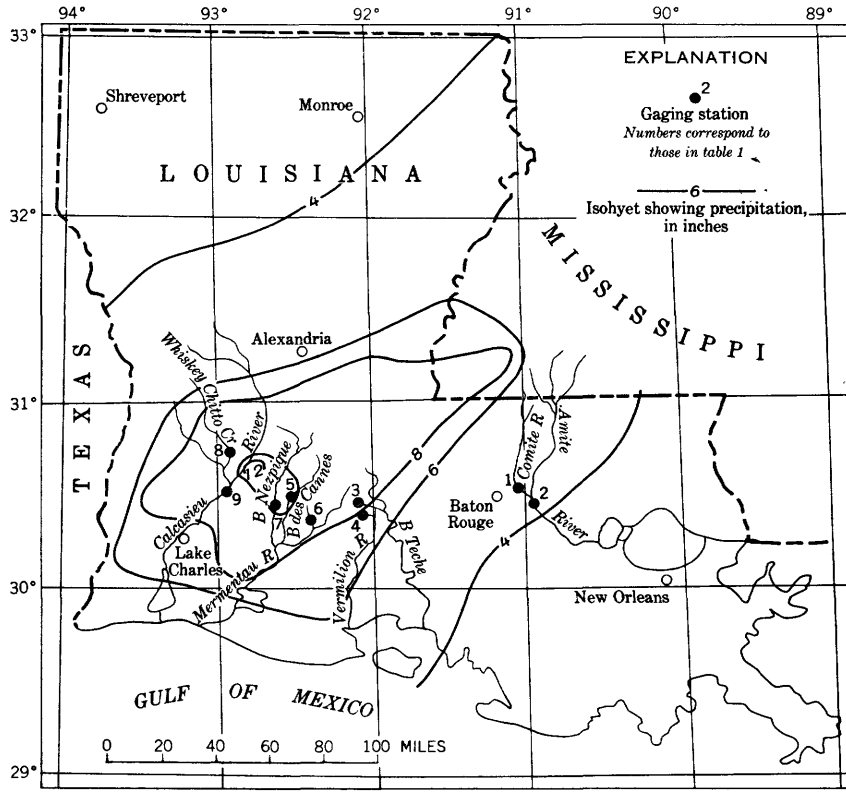

FIGURE 14.—Map of flood area showing location of flood-determination points and isohyets for February 5–9. Floods of February 5–9 in southern Louisiana.

basin. A few homes were flooded and several highways were under water for short periods. Damages were relatively small.

The heaviest rainfall reported for the 3-day period was at the Oberlin, La., fire tower where 12.31 inches of rain was measured. The frequency of this storm, based on the average of the Lake Charles and Cheneyville frequency curves, is about 40 years.[1] More than 8 inches of rain fell during this period on an area of more than 6,000 square miles (fig. 14).

Bayou Nezpique near Basile, and Bayou des Cannes near Eunice reached their second highest stage since their periods of record began in 1938 (table 1), and were exceeded only by the floods of May 1953. A flood-frequency curve for this area, prepared by J. S. Cragwall, Jr.,[2] and based on the period 1926–50, shows the ratio of the 25-year flood to the mean annual flood as 2.0. The ratio of the February 1955 flood to the mean annual flood on Bayou Nezpique near Basile was 4.6 whereas that of the maximum peak during the period of record (1938–55) to the mean annual flood was 5.7. In Bayou des

TABLE 1.—*Summary of flood stages and discharges, February 5–9 in southern Louisiana*

[Each station in this table has 1, 2, or 3 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record; and the third pertains to the maximum flood of which knowledge is available outside the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Mississippi River delta:						
1	Comite River near Comite, La.	332	1944–55	Feb. 7, 1955	22.45	9,090	27.4
				May 19, 1953	25.64	20,500	61.7
2	Amite River near Denham Springs, La.	1,330	1938–55	Feb. 9, 1955	26.49	24,600	18.5
				May 20, 1953	32.46	67,000	50.4
				Mar. 15, 1921	35.4		
3	Bayou Carencro near Sunset, La.	37.1	1943–55	Feb. 5, 1955	16.14	3,720	100
				Mar. 13, 1947	17.10	4,220	114
4	Bayou Bourbeau at Shuteston, La.	19.0	1942–55	Feb. 5, 1955	10.67	2,000	105
				Jan. 13, 1947	10.8	2,840	149
	Mermentau River basin:						
5	Bayou des Cannes near Eunice, La.	131	1938–55	Feb. 7, 1955	21.21	10,200	77.9
				May 20, 1953	22.36	11,900	90.8
6	Long Point Gully near Crowley, La.	25.7	1949–55	Feb. 6, 1955	14.45	2,370	92.2
				May 16, 1953	14.48	2,410	93.8
7	Bayou Nezpique near Basile, La.	527	1938–55	Feb. 7, 1955	[1] 31.74	28,700	54.5
				May 20, 1953	34.39	35,800	67.9
	Calcasieu River basin:						
8	Whiskey Chitto Creek near Oberlin, La.	510	1939–55	Feb. 7, 1955	20.32	14,800	29.0
				May 18, 1953	32.8	144,000	282
				June 1886	[2] 25.7		
9	Calcasieu River near Kinder, La.	1,700	1922–25 1938–55	Feb. 8, 1955	20.80	40,100	23.6
				May 19, 1953	32.00	182,000	107

[1] Occurred Feb. 8, 1955.
[2] Maximum stage known prior to May 18, 1953.

[1] Louisiana Department of Public Works, 1952, Louisiana rainfall, intensity, duration, frequency data and depth, area, duration data: Louisiana Dept. Public Works.

[2] Cragwall, J. S. Jr., 1952, Floods in Louisiana, magnitude and frequency: Louisiana Dept. Highways.

Cannes the ratio of the Feburary 1955 flood to the mean annual flood was 2.0 whereas that of the maximum peak during the period of record (1938–55) to the mean annual flood was 2.3.

Peak discharges of other streams in the area had recurrence intervals up to 8 years.

FLOODS OF FEBRUARY 27 TO MARCH 7 IN KENTUCKY AND WEST VIRGINIA

Flooding in eastern Kentucky, western West Virginia, and the head waters of Levisa Fork in Virginia (fig. 15) was caused by heavy general rains which fell from February 26 to March 6 in the basins of the Kanawha, Guyandot, and Big Sandy Rivers, and in the headwaters of the Licking River. Precipitation was heaviest in the Big Sandy River basin.

Two storms occurred during the flood period. The first storm, February 26 to March 1, produced an average of about 4 inches of precipitation in the Big Sandy River basin. Precipitation was less during the second storm period, March 4–6 (table 2).

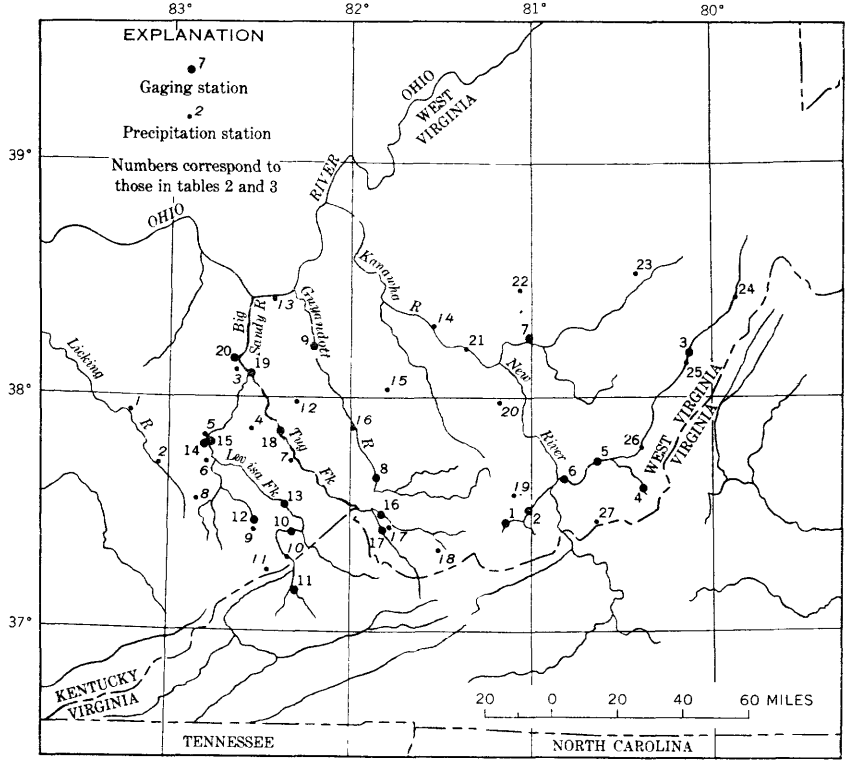

FIGURE 15.—Map of flood area showing location of flood-determination points and precipitation stations. Floods of February 27 to March 7 in Kentucky and West Virginia.

TABLE 2.—*Rainfall, in inches, at Weather Bureau stations, February 26 to March 6 in Kentucky and West Virginia*

Station		Total rainfall	
No.	Place	Feb. 26–Mar. 1	Mar. 4–6
	Kentucky:		
1	West Liberty	2. 94	2. 38
2	Salyersville	4. 86	4. 13
3	Louisa	2. 99	2. 70
4	Inez	3. 51	2. 72
5	Paintsville	3. 47	3. 00
6	Dewey Dam	3. 91	3. 55
7	Laura	4. 24	2. 57
8	Allen	4. 55	2. 77
9	Pikeville	5. 20	2. 53
10	Elkhorn City	2. 70	2. 02
11	Ashcamp	4. 29	2. 35
	West Virginia:		
12	Cabwaylingo State Forest	2. 90	4. 55
13	Huntington	2. 26	2. 43
14	Charleston	2. 70	3. 26
15	Madison	2. 80	2. 58
16	Logan	3. 48	3. 11
17	Iaeger	4. 52	2. 85
18	Gary	4. 15	2. 45
19	Flat Top	4. 48	3. 11
20	Oak Hill	2. 19	2. 66
21	London Locks	2. 27	2. 87
22	Clay	2. 56	2. 39
23	Webster Springs	2. 15	2. 69
24	Arborvale	1. 17	2. 54
25	Buckeye	1. 33	2. 42
26	Lewisburg	2. 45	2. 68
27	Lindside	2. 26	2. 14

The greatest peak discharges during the flood period occurred at 9 stations after the first storm and at 11 stations after the second storm (table 3). In general, however, the two rises were of about equal magnitude. The discharge volumes from the storms were unusually large.

In the Big Sandy River basin maximum discharges occurred in Johns Creek at Meta, Ky., Panther Creek near Panther, W. Va., and Big Sandy River at Louisa, Ky. At Louisa the stage of 52.61 feet at a former site and datum was about 4 feet higher than any since at least 1908. Stages at stations on Levisa Fork approached but did not exceed previous maxima. At many stations in the Kanawha and Guyandot River basins the peak discharges during the flood exceeded or almost equalled the previous maximum discharges during the period of gaging-station operation.

Several lives were lost in Kentucky, and flooding rendered many highways impassable in eastern Kentucky and southwestern West Virginia. The Weather Bureau reported damage in the flood area to be many millions of dollars.

TABLE 3.—*Summary of flood stages and discharges, February 27 to March 7 in Kentucky and West Virginia*

[Each station in this table has 2 or 3 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record; and the third pertains to the maximum flood of which knowledge is available outside the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Kanawha River basin:						
1	Camp Creek near Camp Creek, W. Va.	32.0	1946–55	Feb. 28, 1955	5.80	2,660	83.1
				Feb. 14, 1948	5.84	2,720	85.0
2	Bluestone River near Pipestem, W. Va.	363	1950–55	Feb. 28, 1955	13.86	14,900	41.0
				May 20, 1953	10.66	7,080	19.5
3	Greenbrier River at Buckeye, W. Va.	540	1929–55	Mar. 5, 1955	14.19	24,400	45.2
				Feb. 5, 1932	17.5	41,500	76.9
4	Second Creek near Second Creek, W. Va.	80.8	1945–55	Mar. 6, 1955	7.75	4,680	57.9
				Feb. 14, 1948	7.10	3,980	49.3
5	Greenbrier River at Alderson, W. Va.	1,357	1895–1955	Mar. 6, 1955	16.76	44,400	32.7
				Mar. 14, 1918	22.0	77,500	57.1
6	Greenbrier River at Hilldale, W. Va.	1,625	1936–55	Mar. 6, 1955	20.50	47,800	29.4
				Feb. 22, 1953	20.50	47,800	29.4
				Mar. 18, 1936	[1] 21.85	60,800	37.4
7	Peters Creek near Lockwood, W. Va.	40.6	1945–55	Mar. 5, 1955	9.92	4,430	109
				Aug. 4, 1947	10.25	4,700	116
	Guyandot River basin:						
8	Guyandot River at Man, W. Va.	762	1928–55	Feb. 28, 1955	20.19	34,600	45.4
				Mar. 3, 1934	19.11	[2] 40,000	52.5
9	Guyandot River at Branchland, W. Va.	1,226	1915–22, 1928–55	Mar. 1, 1955	[3] 42.57	36,200	29.5
				Jan. 29, 1918	39.24	36,900	30.1
				Probably 1907	[1] 44	43,500	35.5
	Big Sandy River basin:						
10	Levisa Fork at Fishtrap, Ky.	386	1938–55	Feb. 27, 1955	20.74	19,500	50.5
				Jan. 7, 1946	22.82	23,000	59.6
				1929	[1] 26.5		
11	Russell Fork at Haysi, Va.	286	1926–55	Mar. 6, 1955	14.63	23,100	80.8
				Mar. 23, 1929	18.5	34,500	121
12	Levisa Fork at Pikeville, Ky.	1,237	1937–55	Mar. 7, 1955	39.05	43,100	34.8
				Jan. 8, 1946	42.90	50,300	40.7
				February 1862	[1] 52		
13	Johns Creek near Meta, Ky.	55.7	1941–55	Feb. 27, 1955	14.28	4,480	80.4
				Feb. 13, Mar. 5, 1948.	13.14	4,350	78.1
				1939	13.6		
14	Paint Creek at Staffordsville, Ky.	101	1950–55	Mar. 6, 1955	15.27	3,480	34.5
				Sept. 20, 1950		11,700	116
				Mar. 22, 1952	24.11	11,700	116
				July 5, 1939	25		
15	Levisa Fork at Paintsville, Ky.	2,143	1915–16, 1928–55	Mar. 1, 1955	41.36	53,900	25.2
				Feb. 4, 1939	42.15	62,300	29.1
				1862	46.6		
16	Tug Fork at Litwar, W. Va.	502	1930–55	Mar. 6, 1955	14.90	23,000	45.8
				Mar. 25, 1935	19.0	27,600	55.5
17	Panther Creek near Panther, W. Va.	30.8	1946–55	Mar. 6, 1955	8.98	4,200	136.
				Feb. 13, 1948	7.47	1,700	55.2
18	Tug Fork near Kermit, W. Va.	1,185	1934–55	Feb. 28, 1955	40.6	44,600	37.6
				Feb. 3, 1939	35.9	34,400	29.0
				Prior to 1915	[1] 43.3		
19	Big Sandy River at Louisa, Ky.	3,870	1938–47, 1948–55	Mar. 2, 1955	[4] 46.36	89,400	23.1
				Feb. 5, 1939	[5] 48.0	85,000	22.0
				Apr. 3, 1908	[5] 48.4		
20	Blaine Creek at Yatesville, Ky.	217	1915–18, 1938–55	Mar. 6, 1955	21.0	8,800	40.6
				Feb. 4, 1939	26.55	15,500	71.4
				Prior to 1915	[1] 27.6		

[1] Maximum known.
[2] Observed.
[3] Affected by backwater from Ohio River.
[4] 52.61 feet at former site and datum.
[5] At former site and datum.

FLOODS OF MARCH 1–2 IN WESTERN NEW YORK

Heavy rain and thundershowers swept into western New York (fig. 16) on February 27 and continued until March 1. Unseasonably high temperatures accompanied the storms which resulted in increased runoff from melting snow. At most places the rain was heaviest on March 1 (table 4).

The floods were notable for two reasons: (a) the relatively large area affected, and (b) the new maximum peaks of record at four gaging stations having from 16 to 44 years of record (table 5). However, the flood was characterized by relatively quiet inundation of flat-sloped valleys, with little structural damage. Damage consisted primarily of flooded cellars, inundated roads, and scattered debris; some banks were eroded and some roads caved in. Probably the areas hardest hit were Warsaw, Seneca Falls, Canandaigua, and Holcomb where large sections of communities suffered from flooded cellars and inundated streets. According to the March 1, 1955 ussue of "The Buffalo News" the Arcade and Attica Railroad was forced to halt operations when heavy rains washed part of a gravel bank onto the tracks at Johnsonburg.

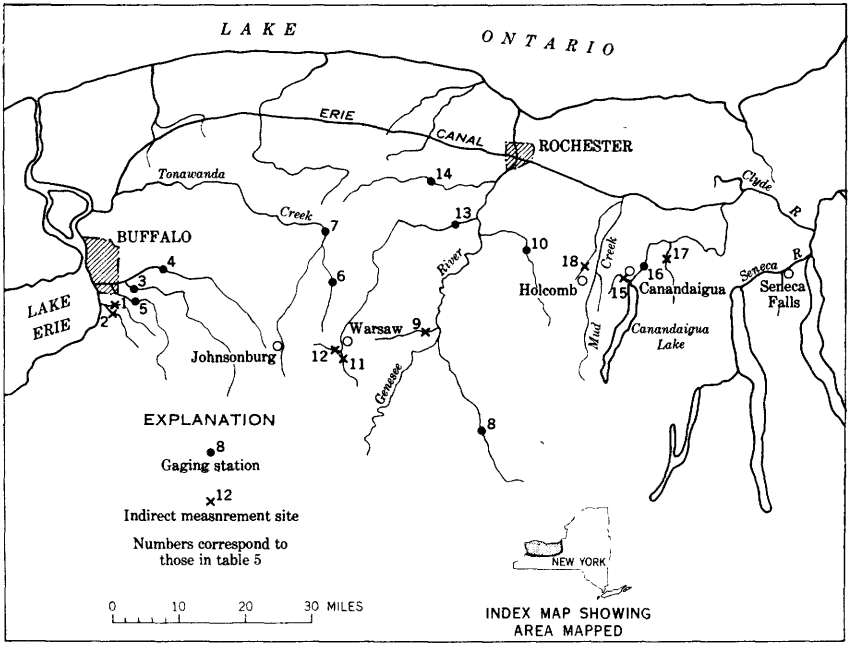

FIGURE 16.—Map of flood area showing location of flood-determination points. Floods of March 1 and 2 in western New York.

TABLE 4.—*Daily precipitation at selected rain-gage stations in western New York, February 27 to March 1*

[From Weather Bureau records]

Station	Rainfall (inches)			
	Feb. 27	Feb. 28	Mar. 1	Total
Auburn Water Works	0. 30	0. 06	0. 91	1. 27
Avon	. 03	. 47	1. 32	1. 82
Batavia	. 38	. 82	. 25	1. 45
Bristol Springs	. 06	. 47	1. 29	1. 82
Buffalo WB Airport	. 56	. 09	. 86	1. 51
Canandaigua, 3S	------	. 32	2. 02	2. 34
Cayuga lock 1	------	. 71	1. 67	2. 38
Churchville	------	. 42	. 81	1. 23
Clyde lock 26	------	. 20	. 89	1. 09
Elma	. 54	. 08	1. 18	1. 80
Garbutt	------	. 42	. 90	1. 32
Geneva	. 04	. 46	1. 39	1. 89
Hemlock	. 01	. 59	1. 50	2. 10
Linden	. 40	------	. 97	1. 37
Lockport, 2 NE	. 65	------	1. 02	1. 67
Macedon	. 24	. 34	. 88	1. 46
Mays Point lock 25	------	. 38	1. 57	1. 95
Mount Morris, 2W	. 64	------	1. 44	2. 08
Newark	------	. 46	. 80	1. 26
Ovid	------	. 50	. 83	1. 33
Penn Yan	. 55	------	. 83	1. 38
Rochester WB Airport	. 42	. 08	. 87	1. 37
South Wales Emery Park	. 18	. 46	2. 45	3. 09
Stafford	------	. 44	. 96	1. 40
Warsaw, 5 SW	. 06	. 59	2. 22	2. 87
Waterloo	. 03	. 42	1. 62	2. 07

FLOODS OF MARCH 20–22 IN MISSISSIPPI, ALABAMA, AND TENNESSEE

On March 20 and 21, heavy precipitation totaling as much as 11 inches in some places fell in about 24 hours over a long narrow oval-shaped area extending northeastward from northeast Louisiana, across north Mississippi and the northwestern corner of Alabama, through middle Tennessee to southern Kentucky. The storm period was preceded by several days of unstable climatic conditions that produced as much as 2 inches of rainfall over much of the same area.

Major floods that equaled or exceeded the previously established maximum stages and discharges of long standing occurred in several river basins. Damage was extensive over much of the flood area. Direct damage to highways, railroads, farmland, and residential property in Mississippi alone was estimated to have been more than $4 million.

Precipitation during March 20–21 covered about 85,000 square miles (fig. 17) in amounts ranging from 3 to 11 inches. Maximum amounts along the axis of the storm were 11.07 inches at Pontotoc,

TABLE 5.—*Summary of flood stages and discharges, March 1–2 in western New York*

[Each station in this table has 1 or 2 entries listed under maximum floods; the first pertains to the flood being reported on and the second pertains to the maximum flood previously known during the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Streams tributary to Lake Erie:						
1	Smoke Creek at Lackawanna, N.Y.	13.0	----------	Mar. 1,1955	--------	2,330	179
2	South Branch Smoke Creek at Lackawanna, N.Y.	13.6	----------	-----do-------	--------	2,120	156
3	Buffalo Creek at Gardenville, N.Y.	145	1938–55	-----do-------	9.43	13,000	89.7
				Mar. 17,1942	[1] 11.90	11,500	79.3
4	Cayuga Creek near Lancaster, N.Y.	93.3	1938–55	Mar. 1,1955	9.59	7,900	84.6
				Mar. 17,1942	[1] 12.36	7,480	80.2
5	Cazenovia Creek at Ebenezer, N.Y.	136	1940–55	Mar. 1,1955	13.82	13,500	99.3
				Mar. 17,1942	13.11	11,200	82.4
	Streams tributary to Niagara River:						
6	Little Tonawanda Creek at Linden, N.Y.	22.0	1912–55	Mar. 1,1955	14.83	2,460	112
				Apr. 22,1916	14.6	2,400	109
7	Tonawanda Creek at Batavia, N.Y.	172	1944–55	Mar. 2,1955	13.44	5,240	30.5
				Mar. 29,1950	[2] 13.85	5,530	32.1
	Streams tributary to Lake Ontario:						
8	Canaseraga Creek near Dansville, N.Y.	153	1910–12, 1915–55	Mar. 1,1955	10.66	3,990	26.1
				July 23,1940	13.1	8,830	57.7
9	Beards Creek at Leicester, N.Y.	12.4	----------	Mar. 1,1955	--------	2,260	182
10	Honeoye Creek at Honeoye Falls, N.Y.	197	1945–55	-----do-------	5.99	3,790	19.2
				Mar. 28,1950	6.42	4,630	23.5
11	Oatka Creek near Warsaw, N.Y.	22.0	----------	Mar. 1,1955	--------	1,760	80
12	Stony Creek near Warsaw, N.Y.	8.03	----------	-----do-------	--------	1,080	134
13	Oatka Creek at Garbutt, N.Y.	208	1945–55	Mar. 2,1955	7.97	5,310	25.5
				Mar. 29,1950	8.52	6,080	29.2
14	Black Creek at Churchville, N.Y.	123	1945–55	Mar. 2,1955	6.19	1,780	14.5
				Mar. 28,1950	8.83	4,750	38.6
15	Sucker Brook at Canandaigua, N.Y.	5.54	----------	Mar. 1,1955	--------	546	98.6
16	Canandaigua Lake Outlet at Chapin, N.Y.	199	1939–55	-----do-------	4.10	820	4.1
				Mar. 17,1942	4.64	1,100	5.5
17	Rocky Run near Clifton Springs, N.Y.	11.6	----------	Mar. 1,1955	--------	610	52.6
18	Fish Creek near Holcomb, N.Y.	4.20	----------	-----do-------	--------	516	123

[1] Occurred Mar. 9, 1942; result of ice jam.
[2] Occurred Apr. 6, 1947.

Miss., 10.38 inches at Sarepta, Miss., 10.32 inches at Bruce, Miss., and 10.12 inches at Iron City, Tenn.

Precipitation began about 4 p.m. on March 20, and ended about 4 p.m. on March 21. Heaviest precipitation fell during two periods separated by a 4-hour interval (fig. 18).

Floods reached unprecedented stages and discharges in the upper Yazoo and Tombigbee River basins in Mississippi, and along some

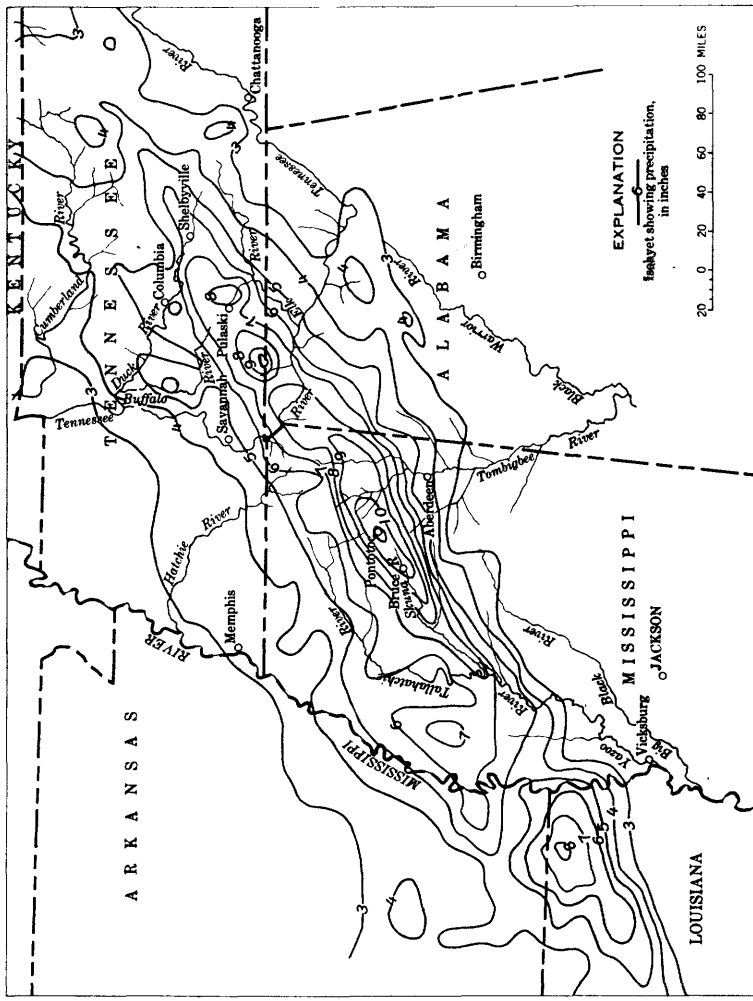

FIGURE 17.—Map of flood area showing total rainfall, March 20-21, Mississippi, Alabama, and Tennessee.

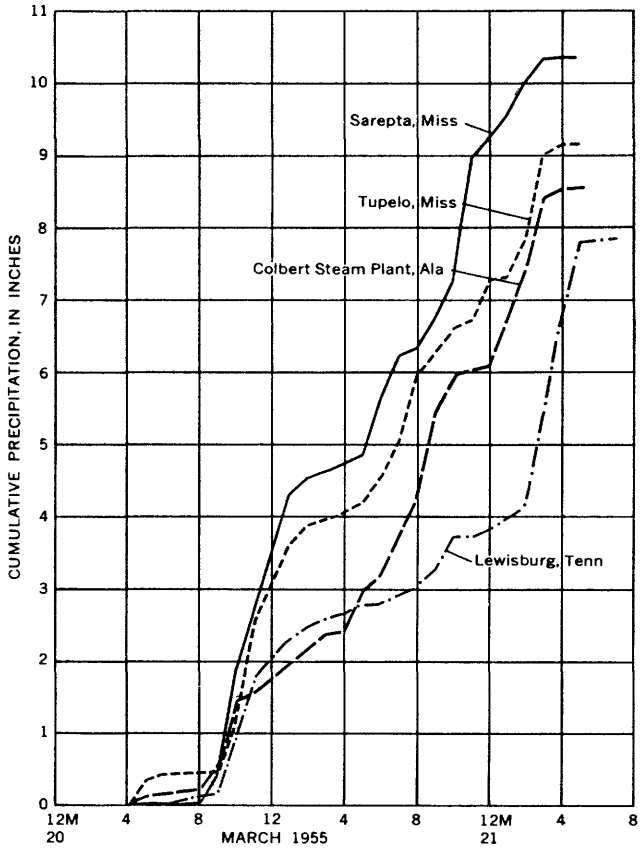

FIGURE 18.—Cumulative precipitation for selected stations, March 20–21.

tributary streams to the Tennessee River in the area of heaviest precipitation below Guntersville, Ala. The location of sites where peak stage and discharge were determined is shown on figure 19.

The flood on the Skuna River was the highest known to local residents. At Etta, Miss., the Tallahatchie River exceeded all floods of a record dating from 1936. The stage of the flood of February 1948, generally considered the outstanding flood since 1892 throughout north Mississippi, was exceeded by 0.6 foot.

In the Tombigbee River basin above Aberdeen, Miss., the flood was outstanding. On Mackys Creek near Dennis, Miss., where the record began in 1938, a stage of 28.44 feet was reached, whereas the previous recorded maximum was 22.08 feet in February 1948. At Fulton, on East Fork Tombigbee River where records are available since 1928, a peak stage of 25.75 feet occurred, more than 3 feet higher than the previous maximum of February 1948. The peak discharge of West

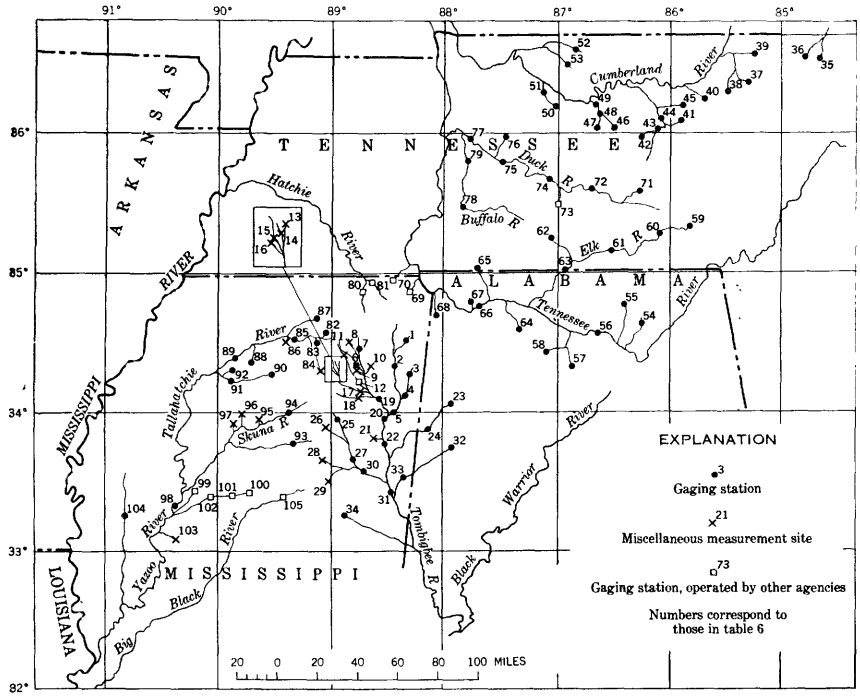

FIGURE 19.—Map of flood area showing location of flood-determination points. Floods of March 20–23 in Mississippi, Alabama, and Tennessee.

Fork Tombigbee River at Nettleton, Miss., was nearly three times the previous maximum, and the stage exceeded the maximum stage previously known, that of December 24, 1926, by 1.4 feet. At Amory, below the junction of the East and West Forks, the Tombigbee River reached a stage nearly 2 feet higher than that of February 1948. The March 1955 flood was the highest since at least 1892; for example, at Aberdeen the peak stage was 42.40 feet, the highest since 1892, when a stage of 44.8 feet occurred.

In the Tennessee River basin, the March 1955 flood on Big Rock Creek at Lewisburg, Tenn., reached a stage of 17.62 feet—exceeding the stages for the floods of June 1939 and March 1902. At Cypress Creek near Florence, Ala., the March 1955 flood reached the highest stage, 29.9 feet, since the record began in 1934. This exceeded the previous maximum by 10.7 feet and, according to old residents, was higher than the floods of 1927, 1902, and 1897.

Richland Creek near Pulaski, Elk River near Prospect, and Shoal Creek at Iron City (all in Tennessee) produced the greatest discharges since records began 20 to 30 years ago, and their stages were the highest since 1902.

In the Cumberland River basin four small streams had maximum peak stages and discharges of record. However, with the exception of Roaring River near Hilham, Tenn., the records for those streams are less than 13 years. At Hilham, the stage and discharge exceeded the previous maximum (flood of January 1946) of a record that dates from 1932. In general, the total rainfall over the basin was about 4 inches, and flooding on the larger streams was notable but not outstanding. Most of the peak stages were less than those of the 1948, 1946, 1939, and 1929 floods.

The rainfall pattern, concentrated into two separate periods, is reflected by the discharge hydrographs (fig. 20) for Cane Creek near New Albany, Miss. (drainage area 22.2 square miles), and Big Rock Creek at Lewisburg, Tenn. (drainage area 24.9 square miles). The hydrographs show two peaks only 15 hours apart—a characteristic of many small streams in the flood area. In general, the storm produced a single peak at sites having drainage areas larger than 50 square miles (fig. 21).

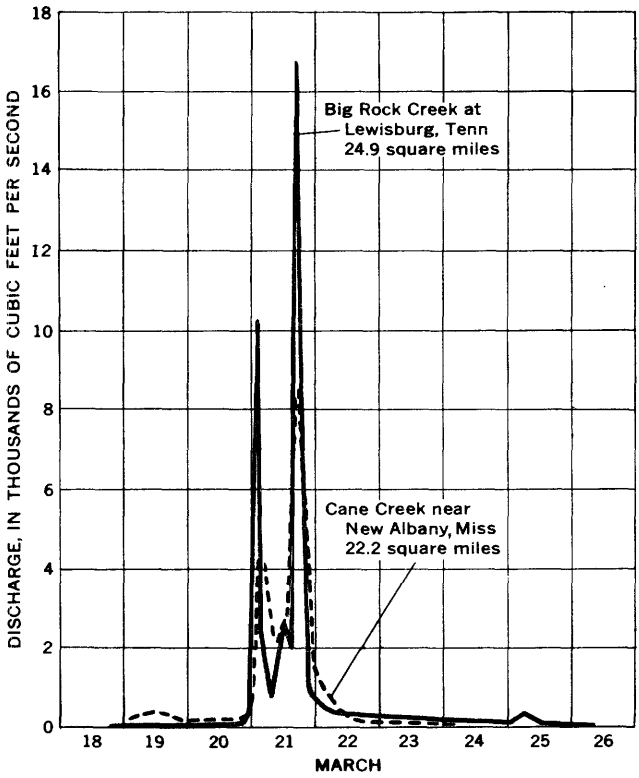

FIGURE 20.—Graphs of discharge at selected gaging stations.

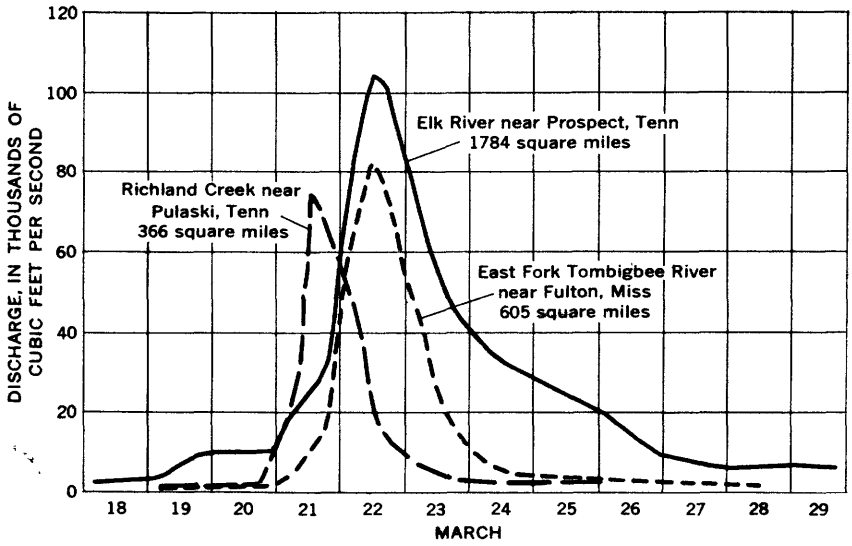

FIGURE 21.—Graphs of discharge at selected gaging stations.

A summary of flood stages and discharges for selected stations in the flood area is given in table 6. The site numbers correspond to those shown on figure 19.

The peak stage and discharge at additional sites, and more detailed data regarding rainfall, runoff, and flood damage may be obtained from the following publications:

"North Mississippi floods of March 1955," Open-file release 3, Jackson District, Water Resources Division, Geological Survey, Jackson, Miss.

"Floods of March 1955 in western part of Tennessee River basin," Tennessee Valley Authority, Knoxville, Tenn.

FLOODS OF APRIL 12–15 IN SOUTHERN MISSISSIPPI AND ADJACENT AREAS

Moderate to heavy rains occurred during April 8–11 in southeastern Mississippi, southwestern Alabama, and the Florida parishes in Louisiana. These were mostly slow general rains which did little damage, but they soaked the ground and prepared it for high rates of runoff from the more intense rains that came on April 12–13.

The April 12–13 rains fell over the entire area and were record-breaking in some parts. The record 24-hour rainfall in Alabama—20.00 inches at Elba on March 15, 1929—was exceeded by the 20.33 inches which fell on April 13, 1955, at the Courtalds Rayon Plant, 15 miles north of Mobile. The rarity of this storm is shown by recurrence-interval studies, contained in Weather Bureau technical paper 29, which indicate that the 100-year 24-hour storm at Mobile is about 13 inches. Several precipitation measurements north and northwest

TABLE 6.—*Summary of flood stages and discharges, March 20–23 in Mississippi, Alabama, and Tennessee*

[Each station in this table has 1, 2, or 3 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record; and the third pertains to the maximum flood of which knowledge is available outside the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Mobile River basin:						
1	Mackys Creek near Dennis, Miss.	66	1938–55	Mar. 21, 1955	28.44	13,000	197
				Feb. 13, 1948	22.08	3,520	53.3
2	East Fork Tombigbee River near Fulton, Miss.	605	1928–55	Mar. 22, 1955	25.75	82,200	136
				Feb. 14, 1948	22.24	47,700	78.9
3	Bull Mountain Creek at Tremont, Miss.	120	1943–55	Mar. 21, 1955	11.28	----------	--------
				Mar. 29, 1951	9.65	13,500	112
4	Bull Mountain Creek near Smithville, Miss.	335	1940–55	Mar. 22, 1955	17.18	----------	--------
				Mar. 29, 1951	15.48	26,700	79.7
5	East Fork Tombigbee River at Bigbee, Miss.	1,194	1945–55	Mar. 21 or 22, 1955	25.7	----------	--------
				Feb. 15, 1948	24.92	52,800	44.2
6	Oldtown Creek at Tupelo, Miss.	112	1944–46, 1951–55	Mar. 21, 1955	27.72	23,100	206
				Mar. 28, 1944	24.34	12,600	112
				Jan. 3, 1951	26.01	----------	--------
7	Euclatubba Creek at Saltillo, Miss.	19.7	1951–55	Mar. 21, 1955	14.61	6,190	314
				Mar. 22, 1953	13.48	3,480	177
				Jan. 3, 1951	13.65	----------	--------
8	Five Mile Creek at Saltillo, Miss.	1.31	----------	Mar. 21, 1955	8.58	728	555
9	Hodges Creek at Tupelo, Miss	.097	----------	-----do	5.05	127	1,310
10	Cow Pike Pass near Tupelo, Miss.	.137	----------	-----do	9.56	160	1,170
11	Gunners Creek near Tupelo, Miss.	.089	----------	-----do	17.98	151	1,700
12	Coonewah Creek at Shannon, Miss.	55.6	1939–40, 1951–55	-----do	18.70	18,100	326
				Dec. 26, 1951	18.24	----------	--------
13	Cotton Gin Branch near Tupelo, Miss.	.233	----------	Mar. 21, 1959	17.88	195	837
14	Cedartree Branch near Pontotoc, Miss.	.158	----------	-----do	22.12	93	589
15	Dry Creek near Tupelo, Miss.	1.39	----------	-----do	17.57	975	701
16	Shell Creek near Tupelo, Miss.	.195	----------	-----do	17.18	149	764
17	Chiwapa Creek at Shannon, Miss.	136	1951–52	-----do	16.40	48,600	357
				Dec. 26, 1951	13.59	12,000	88.2
				Mar. 28, 1951	13.95	----------	--------
18	Willgo Creek near Shannon, Miss.	4.60	----------	Mar. 21, 1955	16.65	1,390	302
19	West Fork Tombigbee River near Nettleton, Miss.	617	1939–55	Mar. 22, 1955	[1] 33.88	151,000	24.5
				Feb. 14, 1948	----------	56,300	91.2
				Mar. 28, 1944	31.18	----------	--------
				Dec. 24, 1926	32.5	----------	--------
20	Tombigbee River near Amory, Miss.	1,941	1937–55	Mar. 22, 1955	----------	126,000	64.9
				Mar. 23, 1955	34.47	----------	--------
				Feb. 14, 1948	32.55	89,100	--------
21	Mattubby Creek near Aberdeen, Miss.	91	1951–55	Mar. 21, 1955	93.61	7,830	86.0
				Dec. 26, 1951	93.66	7,980	87.7
				January 1937	96.4	----------	--------
22	Tombigbee River at Aberdeen, Miss.	2,210	1928–55	Mar. 23, 1955	42.40	106,000	48.0
				Feb. 15, 1948	42.04	97,000	43.9
				Apr. 20, 1892	[2] 44.8	----------	--------
23	Buttahatchee River below Hamilton, Ala.	284	1950–55	Mar. 21, 1955	22.1	17,200	60.6
				Mar. 29, 1951	26.3	24,200	85.2
24	Buttahatchee River near Sulligent, Ala.	472	1939–55	Mar. 22, 1955	14.7	16,800	35.6
				Jan. 8, 1946	16.4	33,000	69.9
25	Chookatonchee Creek near Egypt, Miss.	170	1951–55	Mar. 21, 1955	11.23	28,300	166
				Feb. 21, 1953	9.09	15,700	92.4
				Mar. 28, 1951	10.47	----------	--------
26	Houlka Creek near Houston, Miss.	32.3	----------	Mar. 21, 1955	17.09	8,450	262

See footnotes at end of table.

TABLE 6.—*Summary of flood stages and discharges, March 20–23 in Mississippi, Alabama, and Tennessee*—Continued

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Mobile River basin—Con.						
27	Chookatonchee Creek near West Point, Miss.	514	1943–55	Mar. 23, 1955	21.44	35,600	69.3
				Mar. 29, 1951	23.55	45,800	89.1
28	Line Creek near Maben, Miss.	6.5	1951–55	Mar. 21, 1955	18.38	1,600	246
				Dec. 20, 1951	17.78	1,430	220
29	Trim Cane Creek near Starkville, Miss.	39.6	1952–55	Mar. 21, 1955	23.50	6,380	161
				Dec. 23, 1951	26.9	10,900	275
30	Tibbee River near Tibbee, Miss.	928	1928–30, 1939–55	Mar. 23, 1955	28.14	38,300	41.3
				Mar. 29, 1951	30.82	75,200	81.0
				December 1926	31.5		
31	Tombigbee River at Columbus, Miss.	4,490	1900–12, 1928–55	Mar. 25, 1955	37.47	117,000	26.1
				Jan. 7, 1949	39.32	148,000	33.0
				Apr. 8, 1892 [3]	[3] 44.1		
32	Luxapalila Creek near Fayette, Ala.	127	1945–55	Mar. 22, 1955	10.8	4,280	32.7
				Jan. 5, 1949	13.8	9,910	78.0
33	Luxapalila Creek at Steens, Miss.	309	1943–47, 1949–55	Mar. 23, 1955	14.31	4,140	13.4
				Mar. 30, 1951	18.55	12,700	41.1
				Jan. 6, 1949	19.2		
34	Noxubee River near Brooksville, Miss.	440	1940–42, 1944–55	Mar. 25, 1955	17.84	3,300	7.5
				Mar. 29, 1951	23.88	55,000	125
	Cumberland River basin:						
35	New River at New River, Tenn.	383	1934–55	Mar. 22, 1955	27.83	32,900	85.9
				Feb. 3, 1939	33.58	44,300	116
				Mar. 23, 1929 [4]	41.2		
36	Clear Fork near Robbins, Tenn.	278	1930–55	Mar. 22, 1955	14.34	19,400	69.8
				Feb. 3, 1939	18.5	34,000	122
37	East Fork Obey River near Jamestown, Tenn.	204	1943–55	Mar. 21, 1955	24.83	26,900	132
				Feb. 13, 1948	27.20	28,300	139
38	West Fork Obey River near Alpine, Tenn.	108	1942–55	Mar. 21, 1955	16.30	15,100	140
				Jan. 7, 1946	15.56	14,000	130
39	Wolf River near Byrdstown, Tenn.	105	1943–55	Mar. 22, 1955	9.06	14,000	133
				Jan. 7, 1946	8.94	13,300	127
40	Roaring River near Hilham, Tenn.	70.8	1932–55	Mar. 22, 1955	9.39	5,550	78.4
				Jan. 7, 1946	9.28	5,460	77
41	Calfkiller River below Sparta, Tenn.	178	1940–55	Mar. 22, 1955	20.97	11,000	61.8
				Jan. 5, 1949	25.80	14,600	82
42	Barren Fork near Trousdale, Tenn.	132	1932–55	Mar. 21, 1955	16.55	29,900	226
				Feb. 13, 1948	16.99	32,000	242
43	Collins River near McMinnville, Tenn.	624	1925–55	Mar. 22, 1955	31.72	47,500	76.1
				Mar. 23, 1929	39.1	75,300	121
44	Caney Fork near Rock Island, Tenn.	1,640	1911–24, 1925–55	Mar. 22, 1955	25.30	89,700	54.7
				Mar. 23, 1929	40.6	210,000	128
45	Falling Water River near Cookeville, Tenn.	73.3	1932–55	Mar. 22, 1955	23.65	5,420	73.9
				Feb. 3, 1939	23.10	5,130	70.0
				June 28, 1928	24.1	5,630	77
46	East Fork Stones River near Lascassas, Tenn.	264	1951–55	Mar. 22, 1955	34.07	21,300	80.7
				Dec. 8, 1951	31.70	19,200	73
47	West Fork Stones River near Murfreesboro, Tenn.	119	1932–55	Mar. 21, 1955	21.97	34,400	289
				Feb. 13, 1948	22.73	38,000	319
				March 1902	25.0		
48	Stones River near Smyrna, Tenn.	552	1925–55	Mar. 22, 1955	37.14	46,300	83.9
				Feb. 13, 1948	41.03	54,100	98
				March 1902	43.4		
49	Stones River above Donelson, Tenn.	834	1939–55	Mar. 22, 1955	52.98	49,900	59.8
				Feb. 14, 1948	58.46	68,700	82.4
				March 1902	59.6	73,000	88
50	Harpeth River at Belleview, Tenn.	404	1920–29, 1932–55	Mar. 22, 1955	22.18	28,900	71.5
				Feb. 13, 1948	24.34	40,000	99
51	Harpeth River near Kingston, Tenn.	687	1925–55	Mar. 22, 1955	27.99	41,500	60.6
				Jan. 7, 1946	32.20	60,000	87
52	Red River near Adams, Tenn.	678	1920–55	Mar. 22, 1955	27.87	17,600	26.0
				Jan. 23, 1937	37.5	42,000	62
53	Sulphur Fork Red River near Adams, Tenn.	185	1939–55	Mar. 22, 1955	18.12	8,900	48.1
				Mar. 22, 1952	22.75	13,200	75
				June 1934	25.1		

See footnotes at end of table.

TABLE 6.—*Summary of flood stages and discharges, March 20–23 in Mississippi, Alabama, and Tennessee*—Continued

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Tennessee River basin:						
54	Paint Rock River near Woodville, Ala.	320	1935–55	Mar. 22, 1955	17.9	9,640	30.1
				Dec. 28, 1942		31,300	97.8
				Jan. 5, 1949	20.8		
55	Flint River near Chase, Ala.	342	1930–55	Mar. 22, 1955	17.8	20,200	59.1
				Jan. 21, 1954	25.0	42,000	123
				September 1929	25.0	42,000	123
56	Tennessee River at Whitesburg, Ala.	25,610	1924–55	Mar. 24, 1955	16.6	173,000	6.8
				Jan. 1, 1927		283,000	11.1
				March 1867	31.4		
57	Flint Creek near Falkville, Ala.	86.3	1952–55	Mar. 21, 1955	14.6	6,100	70.7
58	West Fork Flint Creek near Oakville, Ala.	87.6	1952–55	Mar. 22, 1955	20.3	3,180	36.3
59	Elk River near Pelham, Tenn.	65.6	1951–55	do	11.35	3,680	56.1
				Jan. 21, 1954	12.00	4,520	68.9
60	Elk River at Estill Springs, Tenn.	282	1920–55	Mar. 21, 1955	12.10	7,520	26.7
				Mar. 23, 1929	20.2	22,900	81
61	Elk River above Fayetteville, Tenn.	827	1934–55	Mar. 22, 1955	23.65	25,000	30.2
				Jan. 5, 1949	27.14	35,500	43
62	Richland Creek near Pulaski, Tenn.	366	1934–55	Mar. 21, 1955	27.49	75,000	205
				Feb. 13, 1948	24.58	42,600	116
				1902	27.5		
63	Elk River near Prospect, Tenn.	1,784	1904–8, 1919–55	Mar. 22, 1955	38.96	104,000	58.3
				Feb. 14, 1948	38.17	100,000	56
64	Big Nance Creek at Courtland, Ala.	166	1935–40, 1945–55	Mar. 22, 1955	20.27	7,160	43.1
				Jan. 7, 1950	22.60	12,300	74
65	Shoal Creek at Iron City, Tenn.	348	1925–55	Mar. 21, 1955	27.22	132,000	380
				Feb. 13, 1927	23.4	65,000	187
66	Tennessee River at Florence, Ala.	30,810	1871–55	Mar. 22, 1955	25.7	326,000	10.6
				Mar. 19, 1897	32.5	444,000	14.4
67	Cypress Creek near Florence, Ala.	209	1934–53	Mar. 21, 1955	29.9	50,000	239
				Mar. 20, 1951	19.20	25,100	
				Mar. 28, 1902	25.0		
68	Bear Creek at Bishop, Ala.	667	1926–32, 1933–55	Mar. 22, 1955	22.0	37,000	55.5
				Dec. 26, 1926	22.0	32,000	48
69	Yellow Creek at Doskie, Miss.	143	1938–55	Mar. 22, 1955	11.59	18,000	126
				Feb. 13, 1948	11.84	19,000	133
70	Chambers Creek at Kendrick, Miss.	21.1	1939–55	Mar. 21, 1955	8.78	4,480	212
71	Duck River below Manchester, Tenn.	107	1934–55	Mar. 22, 1955	17.87	25,100	235
				Feb. 13, 1948	18.93	30,000	280
72	Duck River near Shelbyville, Tenn.	481	1934–55	Mar. 22, 1955	32.84	37,900	78.8
				Feb. 13, 1948	36.40	62,400	131
73	Big Rock Creek at Lewisburg, Tenn.	24.9	1954–55	Mar. 21, 1955	17.62	16,700	671
74	Duck River at Columbia, Tenn.	1,208	1904–8, 1920–55	Mar. 23, 1955	44.78	46,500	38.5
				Feb. 14, 1948	51.75	61,100	51
75	Duck River at Centerville, Tenn.	2,048	1919–55	Mar. 22, 1955	32.05	68,800	33.6
				Feb. 14, 1948	37.58	97,700	48
76	Piney River at Vernon, Tenn.	193	1925–55	Mar. 21, 1955	15.52	18,600	96.4
				Dec. 21, 1926	16.5	32,500	168
77	Duck River above Hurricane Mills, Tenn.	2,557	1925–55	Mar. 23, 1955	26.39	76,900	30.1
				Feb. 14, 1948	30.70	122,000	48
78	Buffalo River near Flat Woods, Tenn.	447	1920–55	Mar. 22, 1955	30.45	66,300	148
				Feb. 13, 1948	32.0	90,000	201
79	Buffalo River near Lobelville, Tenn.	707	1927–55	Mar. 23, 1955	20.43	58,000	82.0
				Feb. 14, 1948	23.76	100,000	141
	Hatchie River basin:						
80	Hatchie River near Walnut, Miss.	270	1947–55	Mar. 22, 1955	30.70	23,200	85.9
				July 23, 1953	30.40	21,700	80.4
81	Tuscumbia River near Corinth, Miss.	277	1949–55	Mar. 22, 1955	15.70	27,100	97.8
				Mar. 29, 1951	14.2	15,200	54.9

See footnotes at end of table.

TABLE 6.—*Summary of flood stages and discharges, March 20–23 in Mississippi, Alabama, and Tennessee*—Continued

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Yazoo River basin:						
82	Cane Creek near New Albany, Miss.	22.2	1939–41 1950–55	Mar. 21, 1955 May 22, 1939 July 21, 1953	9.08 ——— 8.45	8,680 5,700 ———	391 257 ———
83	Hell Creek near New Albany, Miss.	27.3	1939, 1941–42, 1951–55	Mar. 21, 1955 Jan. 17, 1939	17.32 16.73	3,210 3,600	118 132
84	Brushy Creek near Pontotoc, Miss.	4.42	———	Mar. 21, 1955	19.57	2,160	489
85	Tallahatchie River at Etta, Miss.	526	1936–55	Mar. 22, 1955 Feb. 13, 1948	29.32 28.70	79,000 59,500	150 113
86	Fice Creek near Etta, Miss.	9.1	1952–55	Mar. 21, 1955 Jan. 21, 1954	12.23 11.20	3,360 850	369 93.4
87	North Tippah Creek near Ripley, Miss.	20.0	1939–42, 1951–55	Mar. 21, 1955 July 21, 1953	12.10 13.63	2,420 ———	121 ———
88	Clear Creek near Oxford, Miss.	9.30	1939–41, 1950–55	Mar. 20, 1955 May 27, 1954	11.02 11.04	3,700 2,960	398 318
89	Tallahatchie River at Sardis Dam, Miss.	1,545	1940–55	Mar. 30, 1955 June 24, 1946	——— ———	[5] 950 [5] 5,780	——— ———
90	Yocona River near Oxford, Miss.	262	1946–55	Mar. 21, 1955 Mar. 29, 1951	23.72 23.10	44,100 24,400	168 93.1
91	Yocona River at Enid Dam, Miss.	560	1928–55	Mar. 30, 1955 Feb. 14, 1948	——— ———	[5] 1,350 36,300	——— 64.8
92	Long Creek near Courtland, Miss.	65.0	1940–42, 1951–55	Mar. 21, 1955 May 28, 1954	22.39 25.02	20,700 38,300	318 589
93	Yalobusha River at Calhoun City, Miss.	305	1950–55	Mar. 22, 1955 Mar. 29, 1951	14.19 15.22	21,900 23,000	71.8 75.4
94	Skuna River at Bruce, Miss.	254	1947–55	Mar. 21, 1955 Mar. 29, 1951	24.11 21.62	61,400 17,800	242 70.1
95	Durden Creek near Coffeeville, Miss.	1.97	———	Mar. 21, 1955	16.61	1,040	528
96	Cypress Creek near Coffeeville, Miss.	22.3	1941–42	Mar. 21, 1955 Dec. 27, 1941	24.72 13.39	8,150 2,760	365 124
97	Perry Creek near Torrance, Miss.	21.2	———	Mar. 21, 1955	29.20	15,000	709
98	Yazoo River at Greenwood, Miss.	7,450	1908–12, 1928–55	Mar. 26, 1955 Jan. 19, 1932 1882	30.36 40.10 [6] 41.2	[5] 22,700 72,900 ———	 9.79 ———
99	Teoc Creek at Teoc, Miss.	33	———	Mar. 21, 1955	———	8,830	268
100	Thompson Creek near McCarley, Miss.	13.9	1950–55	——do—— Mar. 27, 1951	12.72 12.96	3,710 4,170	267 300
101	Big Sand Creek at Carrollton, Miss.	74.1	1951–55	Mar. 21, 1955 Dec. 20, 1951	16.11 17.64	17,200 15,800	232 188
102	Big Sand Creek at Valley Hill, Miss.	110	1946–55	Mar. 21, 1955 Apr. 11, 1947	14.90 21.91	22,000 33,000	200 300
103	Fannegusha Creek near Howard, Miss.	103	1953–55	Mar. 21, 1955	138.01	12,000	117
104	Sunflower River at Sunflower, Miss.	767	1935–55	Mar. 26, 1955 Jan. 15–17, 1946 Jan. 16, 1946	25.42 ——— 27.43	5,910 7,700 ———	7.7 100 ———
	Big Black River basin:						
105	Big Black River near Kilmichael, Miss.	549	1936–55	Mar. 22, 1955 Mar. 29, 1951	13.82 17.23	11,000 37,300	20.0 67.9

[1] Maximum since at least 1892.
[2] At site 1.3 miles upstream.
[3] At site 1,100 feet upstream.
[4] At old Weather Bureau gage 1,200 feet upstream, and at datum 3.41 feet higher.
[5] Affected by regulation of reservoirs.
[6] Caused by overflow from Mississippi River.

of Mobile indicated that more than 19 inches fell over a considerable area. The Weather Bureau measured 11.56 inches of rainfall in 4 hours at the Mobile Airport; this figure exceeded the previous short-term record at that station. The highest intensity at a recording gage

in Mississippi was 3.63 inches in 1 hour which fell at Tylertown—6.10 inches fell in 16 hours. The 1-hour intensity of the rain at Tylertown was of a magnitude comparable to a 50-year storm according to Weather Bureau studies.

There were several centers of torrential rainfall. In Mississippi the precipitation extremes—10.14 inches at Merrill and 1.27 inches at White Sand, which are only 55 miles apart—indicate that the concentrated centers of rainfall did not cover large areas (fig. 22).

The intensity of the rain in concentrated areas caused extreme floods in small streams and medium-high stages on large streams. Very few discharge data are available for past floods on small streams, but rainfall comparisons indicate that this flood was probably among the greatest known.

Peak discharges are given in this report for 6 gaging stations in Mississippi, 4 in Louisiana, 2 in Alabama, and for many miscellaneous sites.

The floods on small streams in the flood area reached unusually high stages and discharges. The flood stages on Ten Mile and Silver Creeks near Columbia, Miss., came within half a foot of the highest stage since the flood of April 1900. In Louisiana maximum peak discharges occurred in the Comite River near Olive Branch and in the Amite River near Darlington. The ratio of the 25-year flood at Darlington to the mean annual flood is about 2.5, while the ratio of the peak discharge of the April flood to the mean annual flood was about 3.2.

The highest known peak discharge was 2,420 cfs (cubic feet per second) per square mile from a drainage area of about 0.04 square mile in the vicinity of Columbia, Miss. (table 7); the peak discharge from 4.15 square miles in Norton Creek at Saraland, Ala. was 1,450 cfs per square mile.

Damage to county-Federal, State, and Federal highways in Mississippi was estimated by the Mississippi Highway Department to have exceeded $1.25 million. Damage to county roads near Mobile was estimated to have been $356,000. Traffic was detoured at several points because of inundations or washouts causing loss of money and time due to extra gasoline used, excess travel time, delays in deliveries, and general inconvenience. A 200-foot section of railroad track was washed out in Alabama.

Agricultural losses were great. Overflow onto croplands necessitated reseeding of many fields. Other losses of which no monetary value can be directly determined were caused by erosion of soil, deposition of sand on croplands by overflow water, delay in planting, and leaching of soil.

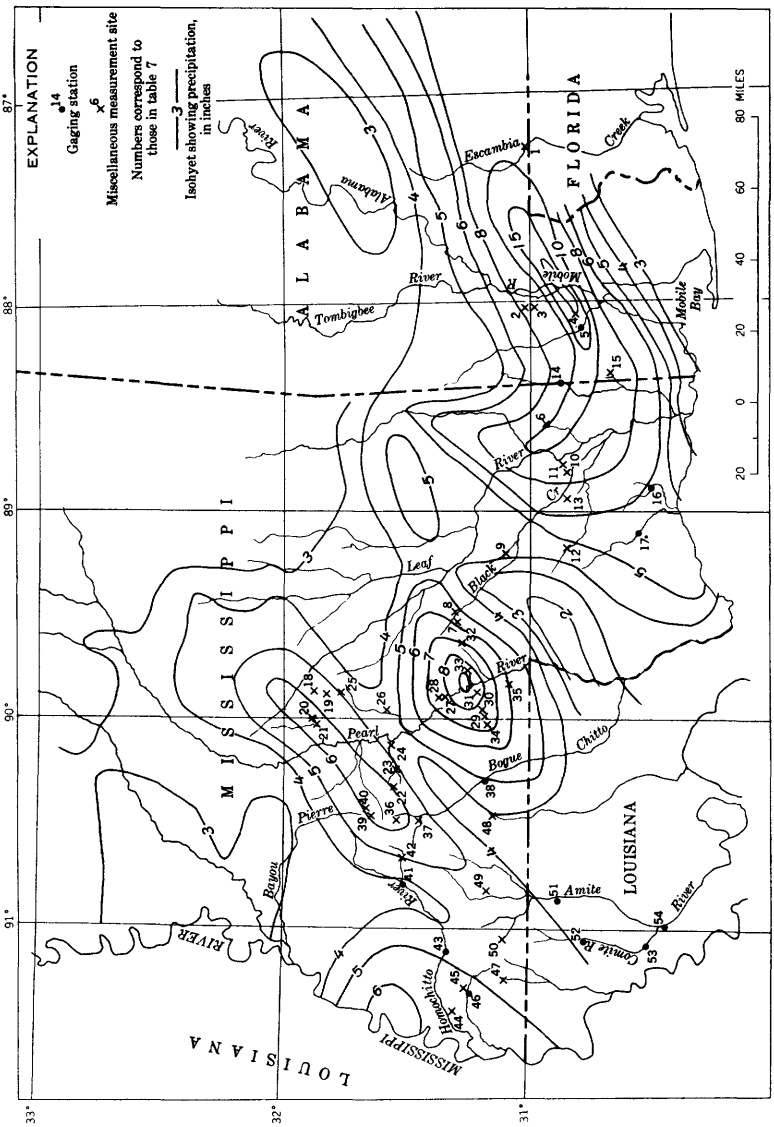

FIGURE 22.—Map of flood area showing location of flood-determination points and isohyets for April 12-13. Floods of April 12-15 in southern Mississippi and adjacent areas.

TABLE 7.—*Summary of flood stages and discharges, April 12–15 in southern Mississippi and adjacent areas*

[Each station in this table has 1, 2, or 3 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record; and the third pertains to the maximum flood of which knowledge is available outside the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Escambia River basin:						
1	Escambia Creek at Flomaton, Ala.	325	1938–55	Apr. 14, 1955	19.4	42,400	129
				Sept. 27, 1939	19.3	41,400	127
				Mar. 29, 1929	25.9	----------	--------
	Mobile River basin:						
2	Sister Creek near Mt. Vernon, Ala.	4.11	----------	Apr. 13, 1955	--------	4,110	1,000
3	Coal Creek near Axis, Ala.	16.7	----------	-----do--------	--------	5,160	309
4	Norton Creek at Saraland, Ala.	4.15	----------	-----do--------	--------	6,030	1,450
5	Chickasaw Creek near Whistler, Ala.	124	1951–55	-----do--------	25.4	42,000	339
				Apr. 26, 1953	11.96	1,920	15.5
	Pascagoula River basin:						
6	Big Creek near Lucedale, Miss.	22.1	1951–55	Apr. 12, 1955	92.45	----------	--------
				May 19, 1952	88.22	----------	--------
7	Andys Creek near Hattiesburg, Miss.	.732	----------	Apr. 12, 1955	11.23	1,370	1,870
8	Blown Pine Ditch near Hattiesburg, Miss.	1.79	----------	-----do--------	12.10	2,260	1,260
9	Walls Creek near Brooklyn Miss.	22.3	1951–55	-----do--------	96.44	4,160	187
				Dec. 4, 1953	98.09	6,460	290
10	Mosquito Branch near Benndale, Miss.	.215	----------	Apr. 12, 1955	8.26	314	1,460
11	Thief Creek at Benndale, Miss.	1.10	----------	-----do--------	17.93	1,950	1,770
12	Red Creek near Wiggins, Miss.	153	1951–55	-----do--------	139.29	5,300	34.6
				Dec. 4, 1953	144.65	8,400	54.9
				July 7, 8, 1916	[1]153.0	----------	--------
13	Andersons Branch near Lucedale, Miss.	.793	----------	Apr. 12, 1955	8.09	1,050	1,320
14	Escatawpa River near Wilmer, Ala.	506	1945–55	Apr. 14, 1955	23.25	23,900	47.2
				Nov. 28, 1948	24.0	35,000	69.2
15	Big Creek near Tanner Williams, Ala.	107	----------	Apr. 13, 1955	--------	[2]25,800	241
	Tchoutacabouffa River basin:						
16	Tuxachanie Creek near Biloxi, Miss.	89.6	1925–55	-----do--------	19.48	7,000	78.1
	Biloxi River basin:						
17	Biloxi River at Wortham, Miss.	98.3	1925–55	-----do--------	19.33	7,460	75.9
	Pearl River basin:						
18	Boggans Ditch near Mendenhall, Miss.	.944	----------	Apr. 12, 1955	6.89	764	809
19	Baking Powder Draw near Prentiss, Miss.	.838	----------	-----do--------	4.18	323	385
20	Barrets Branch near Pinola, Miss.	.912	----------	-----do--------	13.64	1,200	1,320
21	Big Creek near Pinola, Miss.	44.0	1948–55	-----do--------	27.39	7,170	163
				Jan. 7, 1950	27.29	6,950	158
22	Fair Oak Springs Ditch near Brookhaven, Miss.	.108	----------	Apr. 12, 1955	6.18	120	1,110
23	Small Pine Ditch near Monticello, Miss.	.164	----------	-----do--------	6.39	213	1,300
24	Brodies Draw near Monticello, Miss.	.179	----------	-----do--------	5.36	172	961
25	Goines Draw near Prentiss, Miss.	.345	----------	-----do--------	6.82	402	1,170
26	Plum Ditch near Prentiss, Miss.	.227	----------	-----do--------	7.18	211	930
27	Sagebrush Draw near Columbia, Miss.	.040	----------	-----do--------	4.27	68	1,700
28	Sweetgum Ditch near Columbia, Miss.	1.93	----------	-----do--------	10.10	980	508
29	Cattle Draw near Columbia, Miss.	1.66	----------	-----do--------	7.09	1,100	663

See footnotes at end of table.

TABLE 7.—*Summary of flood stages and discharges, April 12–15 in southern Mississippi and adjacent areas*—Continued

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Pearl River Basin—Continued						
30	Elmers Draw near Columbia, Miss.	.913	----------	Apr. 12, 1955	12.21	1,150	1,260
31	Silver Creek at Foxworth, Miss.	36.8	1951–55	----do----------	22.6	----------	----------
				Dec. 4, 1953	11.31	----------	----------
32	Tung Tree Ditch near Columbia, Miss.	.0397	----------	Apr. 12, 1955	7.00	96	2,420
33	Stewarts Branch near Columbia, Miss.	1.32	----------	----do----------	9.61	1,800	1,360
34	Kokomo Draw at Kokomo, Miss.	1.26	----------	----do----------	8.43	1,320	1,050
35	Ten Mile Creek near Columbia, Miss.	39.9	1951–55	----do----------	19.0	11,300	283
				Dec. 4, 1954	12.41	----------	----------
36	Bogue Chitto near Brookhaven, Miss.	30.0	1951–55	Apr. 13, 1955	18.52	----------	----------
				May 18, 1953	18.02	----------	----------
37	Big Creek at Bogue Chitto, Miss.	55.2	1951–55	Apr. 13, 1955	27.06	10,600	192
				May 18, 1953	22.97	5,200	94.2
38	Bogue Chitto near Tylertown, Miss.	502	1944–55	Apr. 14, 1955	32.08	38,700	77.1
				Jan. 7, 1950	33.5	45,700	91.0
	Bayou Pierre basin:						
39	Dry Draw near Brookhaven, Miss.	.203	----------	Apr. 12, 1955	9.30	460	2,270
40	Parkside Ditch near Brookhaven, Miss.	.121	----------	----do----------	5.76	180	1,490
	Homochitto River basin:						
41	Homochitto River at Eddiceton, Miss.	180	1938–55	Apr. 13, 1955	14.67	23,400	130
				Mar. 29, 1939	[3] 16.37	30,900	172
42	McCall Creek at Lucien, Miss.	60	1951–55	Apr. 13, 1955	89.44	----------	----------
				May 18, 1953	89.02	----------	----------
43	Homochitto River at Rosetta, Miss.	750	1951–55	Apr. 13, 1955	35.62	57,200	76.3
				May 4, 1953	36.03	59,400	79.2
				Mar. 31, 1949	37.8	----------	----------
44	Observers Draw near Doloroso, Miss.	.222	----------	Apr. 12, 1955	8.98	387	1,740
	Buffalo River basin:						
45	Browns Creek near Wilkinson, Miss.	.895	----------	----do----------	7.26	1,030	1,150
46	Buffalo Bayou near Woodville, Miss.	182	1942–55	Apr. 13, 1955	16.09	39,400	216
				Mar. 2, 1948	16.2	39,900	219
	Thompson Creek Basin:						
47	Moores Branch near Woodville, Miss.	.214	----------	Apr. 12, 1955	10.32	416	1,940
	Mississippi River delta:						
48	Little Tangipahoa River at Magnolia, Miss.	40	1951–55	Apr. 13, 1955	21.07	----------	----------
				Aug. 22, 1953	21.12	----------	----------
49	Tanyard Creek at Liberty, Miss.	8.7	1951–55	Apr. 13, 1955	94.31	----------	----------
				May 3, 1953	89.57	----------	----------
50	Sandy Draw near Centerville, Miss.	.285	----------	Apr. 12, 1955	8.66	467	1,640
51	Amite River near Darlington, La.	580	1950–55	Apr. 13, 1955	18.18	55,700	96.0
				Mar. 30, 1951	16.05	31,600	54.5
52	Comite River near Olive Branch, La.	149	1942–55	Apr. 13, 1955	20.45	14,400	96.6
				May 18, 1953	[4] 20.6	13,300	89.3
53	Comite River near Comite, La.	332	1944–55	Apr. 15, 1955	23.07	10,900	32.8
				May 19, 1953	25.64	20,500	61.7
54	Amite River near Denham Springs, La.	1,330	1938–55	Apr. 15, 1955	32.08	54,300	40.8
				May 20, 1953	32.46	67,000	50.4
				Mar. 15, 1921	35.4	----------	----------

[1] Maximum stage known since about 1880.
[2] Furnished by J. B. Converse and Co., Mobile, Ala.
[3] Occurred May 17, 1953.
[4] Occurred Feb. 6, 1943.

More detailed reports of these floods were prepared separately by the Jackson and Montgomery district offices of the Geological Survey. "Floods of April 1955 in southwestern Alabama" was released as an open-file report. "South Mississippi floods of April 1955" was pre-

pared in cooperation with the Mississippi Geological Survey and the Mississippi Highway Department and released as open-file release 4. These reports may be examined in the respective district offices or in Washington, D.C.

FLOODS OF MAY 18–20 IN COLORADO AND NEW MEXICO

Floods of great magnitude in southeastern Colorado and northeastern New Mexico resulted from heavy rains during May 17–20. The maximum total rainfall reported was 13.59 inches at Lake Maloya, N. Mex., of which most fell on May 19. The magnitude of this flood exceeded all other floods since that of June 1921 on the Arkansas River above the mouth of the Purgatoire River. The peak discharges on all Purgatoire River gaging stations exceeded previous maxima of record. The peak discharge on the Canadian River in New Mexico was the greatest since 1942.

Streamflow was generally deficient in this area for several months before the flood and was close to an alltime low and there was no storage in John Martin Reservoir. In the 2-month period before the flood the Weather Bureau stations at Trinidad and Pueblo, Colo., and at Lake Maloya, N. Mex., recorded total precipitation of slightly more than 1 inch at each place.

Three centers of high precipitation occurred in the flood area (fig. 23): (a) Lake Moraine, Colo., 7.76 inches; (b) Rye, Colo., 9.92 inches; and (c) Lake Maloya, N. Mex., 13.59 inches. Another center of high precipitation occurred east of the flood area at Ulysses, Kans., where 8.79 inches was recorded. Much of the precipitation at higher elevations was in the form of snow.

Rainfall in the Arkansas River basin above Canon City (drainage area, 3,117 square miles) was light and the peak discharge in Arkansas River at Canon City was only 1,140 cfs. Runoff from the heavy rain on the headwaters of the tributaries below Canon City caused the peak discharge to increase to 11,100 cfs in the Arkansas River near Pueblo (drainage area, 4,686 square miles). Runoff from the heavy rain on the upper parts of the St. Charles and the Huerfano River basins increased the peak discharge to 40,200 cfs at Nepesta (drainage area, 9,345 square miles). Lighter rain in the Apishapa River basin increased the peak discharge to 50,000 cfs at La Junta (drainage area, 12,210 square miles). Little runoff was contributed below La Junta. The runoff volume downstream at Las Animas (drainage area, 14,417 square miles) was about equal to that at La Junta although the peak discharge had decreased to 44,000 cfs.

The heaviest rain in the flood area occurred in the upper tributaries of the Purgatoire and Canadian Rivers. The Purgatoire River reached flood conditions from Valdez to its mouth. At Trinidad the

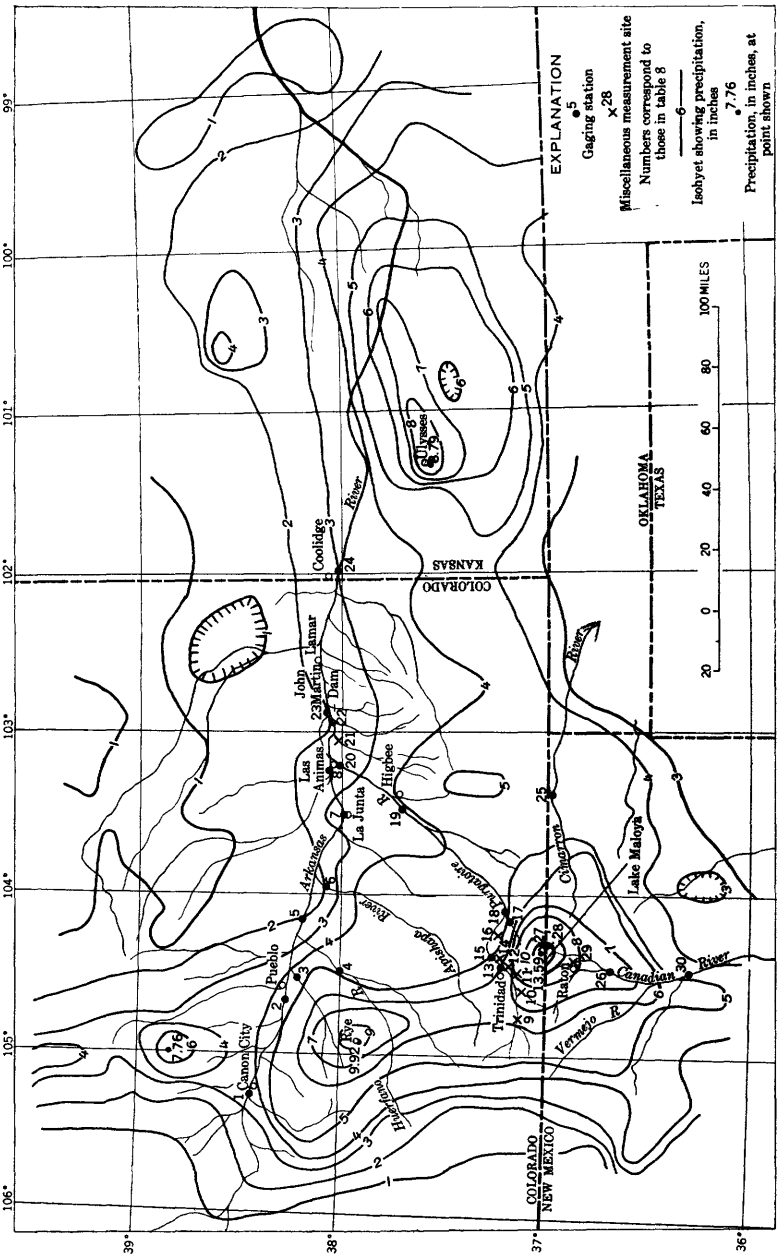

FIGURE 23.—Map of flood area showing location of flood-determination points and isohyets for May 17–20. Floods of May 18–20 in Colorado and New Mexico.

stage of the 1955 flood (discharge, 28,000 cfs) was 0.7 foot higher than that of the September 30, 1904, flood (discharge, 45,400 cfs; maximum known since at least 1859). Heavy tributary inflow in the Trinidad-Higbee reach added to the flood crest so that at Ninemile Dam near Higbee the peak discharge was 80,000 cfs. By the time the peak reached the mouth it had decreased to 70,000 cfs.

The entire flood runoff of the Arkansas River above Las Animas and that of the Purgatoire River was impounded in John Martin Reservoir. The peak inflow rate was about 90,000 cfs while a regulated peak release of only 630 cfs occurred 4 days later. All discharge in the Arkansas River below John Martin Reservoir was runoff from the drainage area below the dam. Near Coolidge (drainage area, 25,410 square miles of which about 6,500 square miles are below the dam) the peak discharge was 13,200 cfs. A comparison of discharges at gaging stations on the Purgatoire River and on the Arkansas River above and below John Martin Reservoir is shown in figure 24. Representative peak discharges in the flood area are shown in table 8.

Flood damage was concentrated along the main stem of the Arkansas River between Pueblo and John Martin Reservoir, along the Purgatoire River from Weston to Alfalfa and from Ninemile Dam to the mouth, and along Raton Creek in Colorado from Morley to the mouth. Two people lost their lives and 2,800 people evacuated their homes. Cattle were drowned and railroads and highways were severely damaged. The amount of damage was estimated by the Corps of Engineers to have been more than $4 million.

More detailed information and data on this flood is presented in Water-Supply Paper 1455-A, "Floods of May 1955 in Colorado and New Mexico."

FLOODS OF MAY 20–23 IN SOUTHWESTERN LOUISIANA

Heavy rain fell in southwestern Louisiana on May 20 on a west-east line from Singer to Oakdale (fig. 25). The heaviest recorded amount was 12.59 inches at Singer (table 9). Highways in the vicinity of DeQuincy were closed and some damage to secondary roads and small bridges was reported.

The flood was the highest in 10 years of record at the Beckwith Creek and Hickory Branch gaging stations (table 10). A flood-frequency curve for this area prepared by Cragwall [3] is defined for a 25-year period (1926–50) which shows the ratio of the 25-year flood to the mean annual flood to be 2.0. The ratios of the May 1955 flood peaks to the mean annual flood peaks were 2.4 on Beckwith Creek

[3] Cragwall, J. S., Jr., 1952, op. cit.

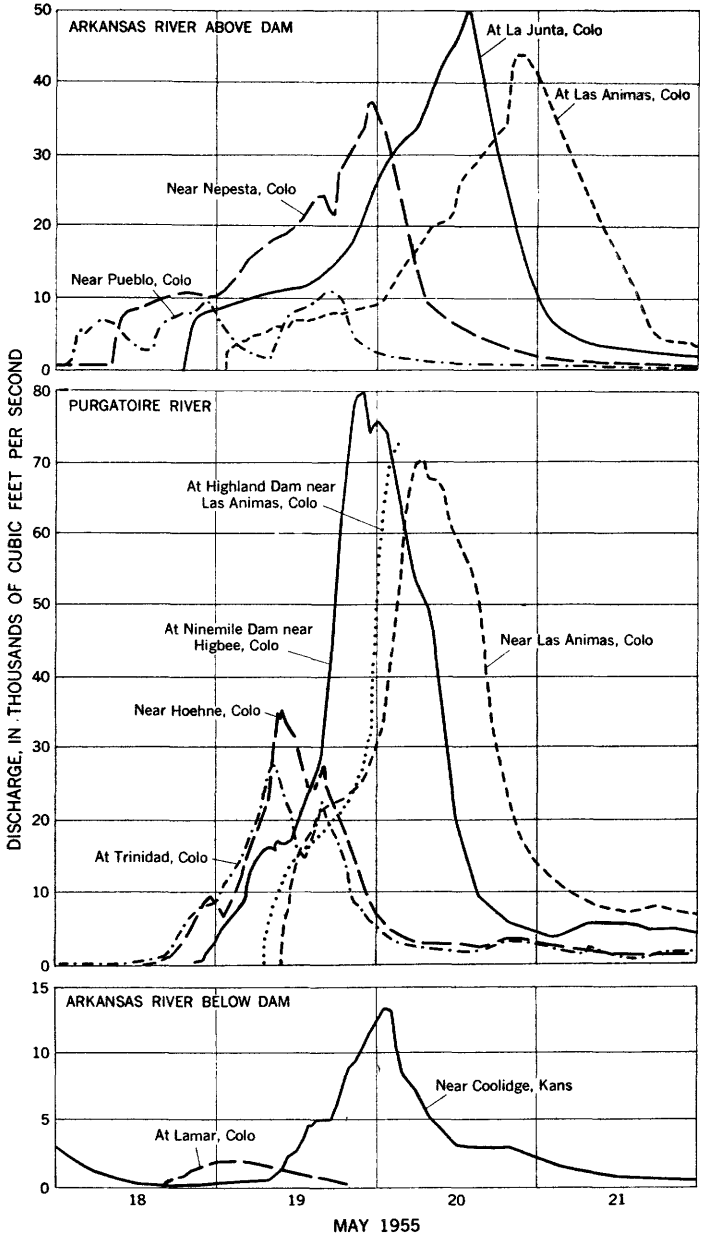

FIGURE 24.—Discharge hydrographs of Arkansas and Purgatoire Rivers, May 18-21.

TABLE 8.—*Summary of flood stages and discharges, May 18–20 in Colorado and New Mexico*

[Each station in this table has 1, 2, or 3 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record; and the third pertains to the maximum flood of which knowledge is available outside the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Arkansas River basin:						
1	Arkansas River at Canon City, Colo.	3,117	1888–1955	May 18, 1955	2.13	1,140	0.37
				Aug. 2, 1921	[1] 10.7	19,000	6.10
2	Arkansas River near Pueblo, Colo.	4,686	1885–87, 1889, 1894–1955	May 19, 1955	7.18	11,100	2.37
				June 3, 1921	[1] 24.66	103,000	22.0
3	St. Charles River near Pueblo, Colo.	468	1941–55	May 19, 1955	7.53	20,600	44.0
				July 26, 1950	9.20	17,600	37.6
				June 3, 1921	----------	56,000	120
4	Huerfano River below Huerfano Valley Dam, near Undercliffe, Colo.	1,673	1938–55	May 19, 1955	11.04	15,600	9.32
				July 26, 1950	[2] 14.2	[2] 25,000	14.9
5	Arkansas River near Nepesta, Colo.	[3] 9,345	1897–1904, 1906–12, 1913–55	May 19, 1955	8.05	40,200	--------
				June 4, 1921	----------	180,000	19.3
6	Apishapa River near Fowler, Colo.	1,125	1922–25, 1939–55	May 19, 1955	16.70	17,000	15.1
				Aug. 22, 1923	----------	[4] 83,000	73.8
7	Arkansas River at La Junta, Colo.	[3] 12,210	1889, 1893–95, 1903, 1908, 1912–55	May 20, 1955	14.2	50,000	--------
				June 4, 1921	[5] 18.4	200,000	--------
8	Arkansas River at Las Animas, Colo.	[3] 14,417	1939–55	May 20, 1955	15.03	44,000	--------
				Apr. 25, 1942	12.58	23,600	--------
9	Purgatoire River above Lorencito Canyon, near Weston, Colo.	381	----------	May 19, 1955	----------	1,790	4.70
10	Long Canyon near Sopris, Colo.	104	----------	do	----------	9,650	92.8
11	Raton Creek at Starkville, Colo.	60.5	----------	do	----------	9,400	155
				Apr. 23, 1942	----------	[6] 5,580	--------
12	Grasmack Arroyo near Trinidad, Colo.	3.6	----------	May 19, 1955	----------	820	228
13	Purgatoire River at Trinidad, Colo.	795	1895–99, 1905–12, 1915–55	do	14.35	28,000	35.2
				Apr. 23, 1942	13.85	27,000	34.0
				Sept. 30, 1904	13.6	[7] 45,400	57.1
14	Gray Creek near Trinidad, Colo.	16.0	----------	May 19, 1955	----------	1,960	122
15	Purgatoire River near Hoehne, Colo.	857	1954–55	do	13.97	35,000	40.8
				July 22, 1954	7.34	5,920	6.91
				Sept. 30, 1904	----------	(7)	--------
16	Frijole Creek near Alfalfa, Colo.	80	1954–55	May 19, 1955	13.3	6,400	80.0
				July 22, 1954	17.23	13,500	169
17	San Francisco Creek near Alfalfa, Colo.	160	1954–55	May 19, 1955	13.00	15,500	96.9
				July 22, 1954	14.40	26,300	164
18	Purgatoire River near Alfalfa, Colo.	1,320	1905–7, 1924–28, 1951–55	May 19, 1955	28.9	41,900	31.7
				July 22, 1954	27.6	37,800	28.6
19	Purgatoire River at Ninemile Dam near Higbee, Colo.	2,900	1924–55	May 19, 1955	17.7	80,000	27.6
				Sept. 15, 1934	14.3	45,000	15.5
				July 23, 1954	----------	----------	--------
20	Purgatoire River near Las Animas, Colo.	3,503	1889, 1922–31, 1948–55	May 20, 1955	15.0	70,000	20.0
				July 21, 1927	[8] 8.80	49,000	14.0
				Oct. 1, 1904	----------	(8)	--------
21	Rule Creek near Caddoa, Colo.	435	1941–46	May 19, 1955	17.15	4,680	10.8
				June 28, 1943	11.30	1,720	3.95
				June 1949	20.05	11,600	26.7
22	John Martin Reservoir at Caddoa, Colo.	----------	1943–55	May 31, 1955	3837.88	[9] 244,300	--------
				July 3, 1948	3835.70	[9] 244,700	--------
23	Arkansas River below John Martin Reservoir, Colo.	[3] 18,917	1938–55	May 24, 1955	2.31	[10] 630	--------
				Apr. 24, 1942	[1] 10.46	[10] 40,000	--------
24	Arkansas River near Coolidge, Kans.	[3] 25,410	1903, 1950–55	May 20, 1955	8.08	[10] 13,200	--------
				May 15, 1951	10.67	[10] 60,000	--------
25	Cimarron River near Guy, N. Mex.	545	1942–55	May 19, 1955	19.1	7,660	14.1
				Oct. 5, 1954	20.50	8,500	15.6

See footnotes at end of table.

TABLE 8.—*Summary of flood stages and discharges, May 18–20 in Colorado and New Mexico*—Continued

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Arkansas River basin—Con.						
26	Canadian River near Hebron, N. Mex.	229	1946–55	May 19, 1955	10.40	6,860	30.0
				Aug. 16, 1953–1942	[11] 11.6 26	5,250	22.9
27	Chicorica Creek above Lake Maloya, near Sugarite, N. Mex.	9.3	----------	May 18, 1955	----------	2,450	263
28	Chicorica Creek below Lake Maloya, N. Mex.	26	1945–51	do	7.8	2,230	85.8
				Aug. 7, 1948	3.25	----------	----------
29	Raton Creek at Raton, N. Mex.	14.4	----------	May 18, 1955	----------	817	56.7
30	Canadian River near Taylor Springs, N. Mex.	2,853	1940–55	May 19, 1955	18.68	24,500	8.59
				Apr. 23, 1942	24.17	37,400	13.1
				Sept. 29, 1904	----------	[8]	----------

[1] At different site and datum.
[2] Maximum known since at least 1900.
[3] Part of drainage area *noncontributing*.
[4] Caused by failure of Apishapa Dam, about 31 miles upstream.
[5] Datum then in use.
[6] At site 2 miles downstream.
[7] Maximum known since at least 1859.
[8] Maximum known.
[9] Contents in acre-feet.
[10] Affected by regulation.
[11] Occurred Aug. 24, 1951, affected by backwater.

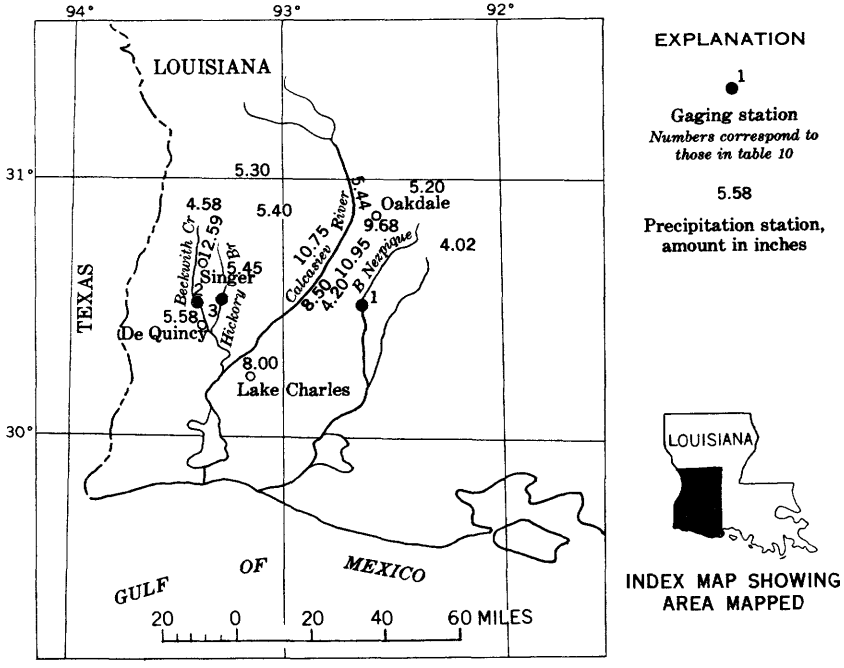

FIGURE 25.—Map of flood area showing location of flood-determination points and rainfall amounts, May 20. Floods of May 20–23 in southwestern Louisiana.

TABLE 9.—*Rainfall, in inches, at Weather Bureau stations, May 20 in southwestern Louisiana*

Station	Total rainfall	Station	Total rainfall
Singer	12. 59	Longville	5. 45
Oberlin fire tower	10. 95	Elizabeth	5. 44
Mittie	10. 75	Sugartown	5. 40
Oakdale	9. 68	Camp Polk	5. 30
Kinder	8. 50	Meridian fire tower	5. 20
Hecker	8. 00	DeRidder	4. 58
DeQuincy	5. 58	Basile	4. 20
		Ville Platte	4. 02

TABLE 10.—*Summary of flood stages and discharges, May 20–23 in southwestern Louisiana*

[Each station in this table has two entries listed under maximum floods; the first pertains to the flood being reported on and the second pertains to the maximum flood previously known during the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Mermentau River basin:						
1	Bayou Nezpique near Basile, La.	527	1938–55	May 23, 1955	27. 26	17, 600	33. 7
				May 20, 1953	34. 39	35, 800	67. 9
	Calcasieu River basin:						
2	Beckwith Creek near DeQuincy, La.	148	1945–55	May 21, 1955	24. 45	13, 800	93. 2
				May 19, 1953	23. 23	10, 600	71. 6
3	Hickory Branch at Kernan, La.	82. 2	1945–55	May 20, 1955	27. 83	6, 850	83. 3
				May 19, 1953	26. 26	6, 080	74. 0

near DeQuincy, and 2.8 on Bayou Nezpique near Basile. The maximum peak discharge (35,800 cfs) during the period of record (1938–55) on Bayou Nezpique which occurred May 20, 1953, was 5.7 times the mean annual flood. The recurrence interval for the flood in Hickory Branch at Kernan was about 14 years.

Peak discharge for other gaging stations in this general area was generally less than the mean annual flood.

FLOODS OF JUNE 25 IN CHUGWATER CREEK, WYO.

Heavy rain and hail began falling about 4 p.m., June 25, in an area extending from Chugwater to a few miles south, and 15 or 20 miles up Chugwater Creek, causing great floods in that area (fig. 26).

Dry Creek, a tributary entering Chugwater Creek just upstream from the town of Chugwater, had a peak discharge of 2,660 cfs from a drainage area of 5.5 square miles, at a point 5 miles upstream from its mouth. The peak discharge in Chugwater Creek was measured at a point 0.3 mile below the discontinued gaging-station site. The peak discharge, at about 9 p.m., was 13,400 cfs (gage height was 11.64 feet,

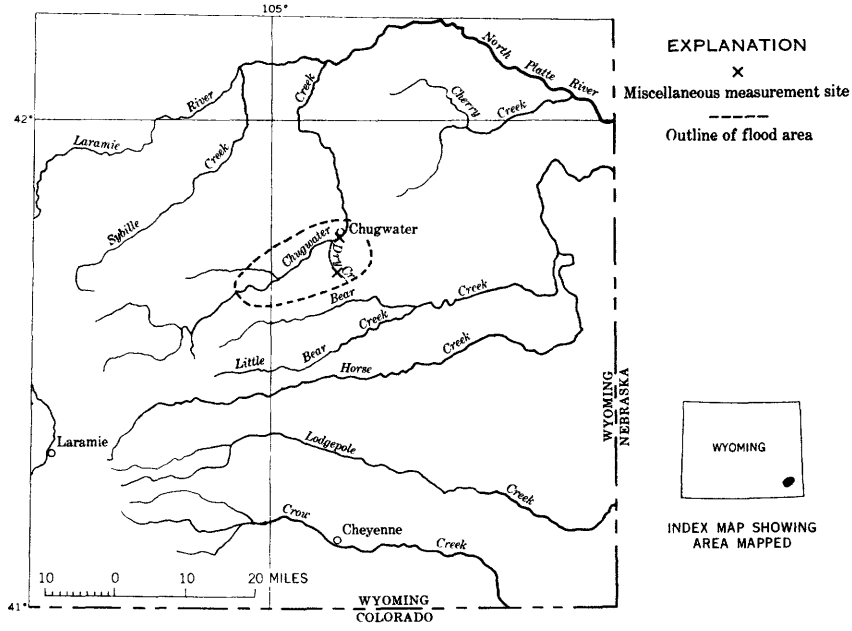

FIGURE 26.—Map of flood area showing location of flood-determination points. Floods of June 25 in Chugwater Creek, Wyo.

at the discontinued site) from a drainage area of about 380 square miles. The former station had been operated during 1911–21, and 1938–40, and the maximum discharge during these periods was 350 cfs (gage height, 4.5 feet) on September 4, 1915.

Long-time residents considered this flood to have been the greatest in their memory. Floodwaters flowed over and damaged the railroad and the highway south of Chugwater. Several ranch homes and a few buildings in the town were flooded.

FLOODS OF JUNE 26 IN SOUTHWESTERN NORTH DAKOTA

Heavy rainfall occurred June 26 in the southwestern part of North Dakota and caused flooding in small drainage basins in the Medora-Fryburg area (fig. 27). At Amidon, Slope County, 4.40 inches of precipitation fell in about 3 hours and hailstones the size of golf balls were reported. Other Weather Bureau stations reported from 1 to 5 inches of rain which flooded fields and washed away several small bridges. Cabins at the Lutheran Badlands Bible Camp were flooded. South of Fryburg and Medora, farmers estimated from water collected in containers that more than 5 inches of rain fell.

All county bridges over Norwegian Creek west of U.S. Highway 85 were overtopped. A pilot flying over the Little Missouri River south of Medora reported that all its flow was coming from the tributaries

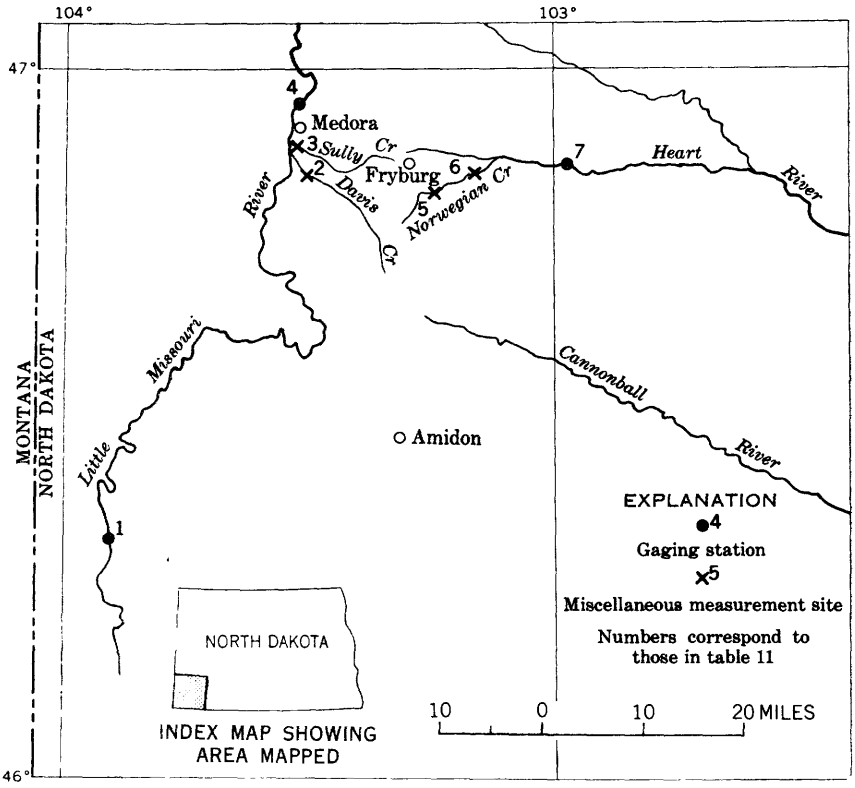

FIGURE 27.—Map of flood area showing location of flood-determination points. Floods of June 26 in southwestern North Dakota.

east of the river. Flood discharges at 3 gaging stations and at 4 miscellaneous sites are listed in table 11.

The flow of the Little Missouri River was only slightly affected at Marmarth and the peak discharge at Medora was about two times the mean annual flood. Two miscellaneous sites on tributaries to the Little Missouri River had peak discharges of high recurrence intervals.

The peak discharges at two miscellaneous sites on Norwegian Creek, a headwater tributary to the Heart River, were also of a very high recurrence interval but when the flood crest reached the Heart River gaging station near South Heart the discharge was about equal to the mean annual flood.

It is impossible to assign recurrence intervals to the peak discharges at the miscellaneous sites but apparently they were very high.

An open-file flood-frequency report covers the area affected by the flood.[4] Lack of information of flood flows on small drainage areas

[4] McCabe, John A., and Crosby, Orlo A., 1959, Floods in North and South Dakota, frequency and magnitude: Geological Survey open-file rept.

limits the lower ends of the mean annual flood curve (fig. 28) and extrapolation to the small drainage areas of the miscellaneous sites could result in serious error and should not be attempted. The peak discharges of the miscellaneous sites have been plotted on the graphs associated with their area merely for comparison with curves of designated recurrence intervals for larger drainage areas.

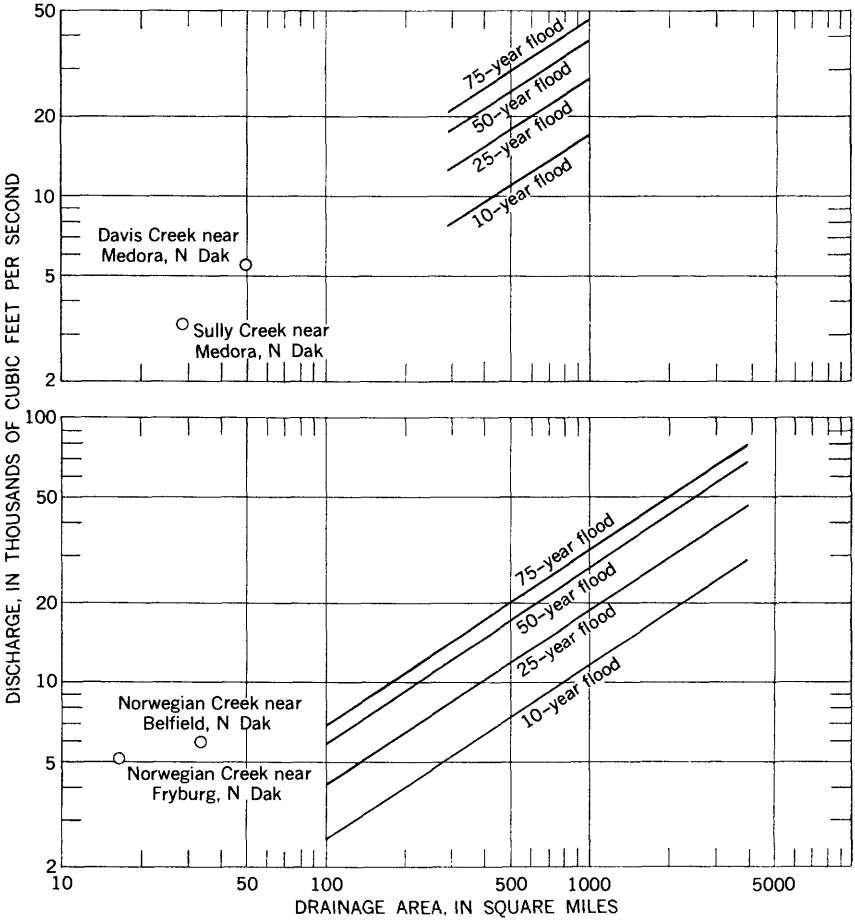

FIGURE 28.—Relation of peak discharge to 10-, 25-, 50-, and 75-year floods.

FLOODS OF JUNE 26–27 IN NORTH PLATTE RIVER BASIN, WYOMING AND NEBRASKA

Several storm centers of heavy precipitation occurred on June 26 along the North Platte River and caused flooding in the river and in its tributaries, from Lake Guernsey, Wyo., to below Scottsbluff, Nebr. (fig. 29). The Corps of Engineers, Soil Conservation Service, Bureau

TABLE 11.—*Summary of flood stages and discharges, June 26 in southwestern North Dakota*

[Each station in this table has 1 or 2 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record.]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Little Missouri River basin:						
1	Little Missouri River at Marmarth, N. Dak.	4,570	1938-55	June 27, 1955 Mar. 23, 1947	5.80 [1] 23.4	2,550 45,000	0.56 9.85
2	Davis Creek near Medora, N. Dak.	51.8	----------	June 26, 1955	--------	5,480	106
3	Sully Creek near Medora, N. Dak.	29.5	----------	-----do-------	--------	3,270	111
4	Little Missouri River at Medora, N. Dak.	6,190	1903-08, 1921-24, 1928-34, 1945-55	June 27, 1955 Mar. 23, 1947	13.90 20.5	25,600 65,000	4.13 10.5
	Heart River basin:						
5	Norwegian Creek near Fryburg, N. Dak.	16.7	----------	June 26, 1955	--------	5,170	310
6	Norwegian Creek near Belfield, N. Dak.	33.8	----------	-----do-------	--------	5,860	173
7	Heart River near South Heart, N. Dak.	315	1946-55	June 28,1955 Apr. 6, 1954	16.12 21.73	1,910 5,030	6.06 16.0

[1] Occurred Mar. 31, 1952 (backwater from ice).

of Reclamation, and Weather Bureau obtained precipitation data which were used to draw the isohyets on figure 29. The maximum rainfall reported for June 26 was 9.5 inches near Whalen, Wyo.

Practically all the flow in the North Platte River came from below Guernsey Reservoir; the release from the reservoir was 500 cfs during the time of the peak at the station downstream. The most unusual rates of runoff occurred on the tributary streams near Guernsey; the peak discharge in the North Platte River below Whalen, Wyo., (22,000 cfs) was the greatest during the period of record which began in 1909. Molly Fork, which enters about 2 miles below this point, had a peak discharge of 14,000 cfs from a drainage area of 7 square miles. The main-stem peak was reduced by channel and valley storage so that by the time it reached the Wyoming-Nebraska State line the peak discharge was 11,500 cfs (table 12).

Overbank flow onto hay and pasturelands occurred along the main stem, and a total of about 12,000 acres of land was inundated. Floodflow in Whalen Canyon and County Line Draw caused a small amount of damage at U.S. Highway 26 crossings. The floodflow in Cottonwood Draw destroyed or severely damaged sections of U.S. Highway 26, an Interstate Canal flume, and the Chicago, Burlington and Quincy Railroad bridge. Floodflow of Molly Fork destroyed a canal and railroad crossings. Damage to irrigation canals from washouts and from overflow into the canals occurred throughout the area. Runoff

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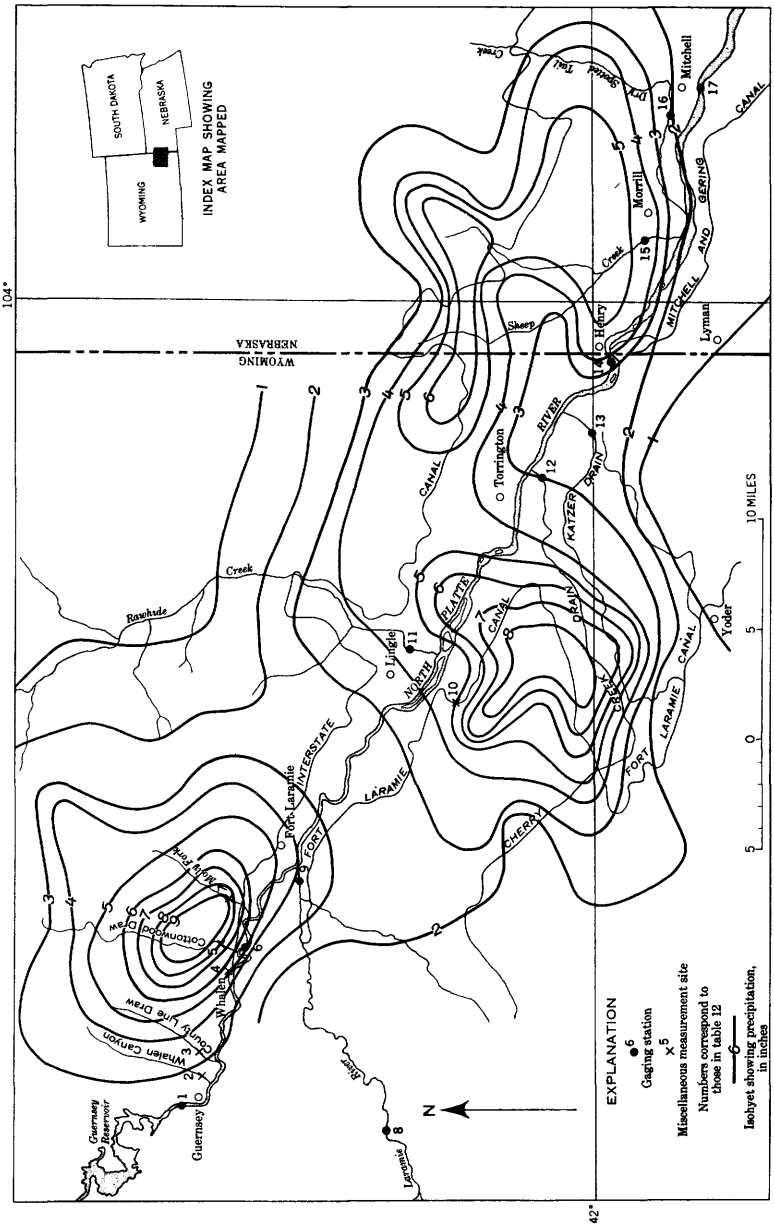

FIGURE 29.—Map of flood area showing location of flood-determination points and isohyets for June 26. Floods of June 26-27 in North Platte River basin Wyoming and Nebraska.

TABLE 12.—*Summary of flood stages and discharges, June 26–27 in North Platte River basin, Wyoming and Nebraska*

[Each station in this table has 1, 2, or 3 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record; and the third pertains to the maximum flood of which knowledge is available outside the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Platte River basin:						
1	North Platte River below Guernsey Reservoir, Wyo.	16,200	1900–55	June 26, 1955	3.78	[1] 3,600	--------
				June 2 or 3, 1908	[2] 11.5	30,000	--------
2	Whalen Canyon near Guernsey, Wyo.	27.2	----------	June 26, 1955	--------	5,390	198
3	County Line Draw near Guernsey, Wyo.	5.83	----------	-----do--------	--------	2,820	484
4	North Platte River at Whalen Dam, Wyo.	16,200	----------	-----do--------	--------	7,640	--------
5	Cottonwood Draw near Guernsey, Wyo.	103	----------	-----do--------	--------	21,600	210
6	North Platte River at recorder station below Whalen, Wyo.	16,300	1909–55	-----do--------	9.85	22,000	--------
				June 3, 1909	--------	[3] 19,900	--------
7	Molly Fork near Fort Laramie, Wyo.	7.00	----------	June 26, 1955	--------	14,000	2,000
8	Laramie River near Uva, Wyo.	4,480	1952–55	-----do--------	6.02	2,270	--------
				July 31, 1953	4.21	615	--------
9	Laramie River near Fort Laramie, Wyo.	4,600	1915–55	June 27, 1955	7.45	2,940	--------
				June 6, 1917	--------	[3] 4,280	--------
10	Sand Draw under Fort Laramie Canal, Wyo.	1.9	----------	June 26, 1955	--------	1,300	684
11	Rawhide Creek near Lingle, Wyo.	510	1928–55	-----do--------	7.46	734	1.44
				Sept. 7, 1946	11.76	3,970	7.78
12	Cherry Creek Drain near Torrington, Wyo.	[4] 356	1935–55	June 27, 1955	10.31	2,420	6.80
				June 10, 1941	9.58	1,040	2.92
13	Katzer Drain near Henry, Nebr.	[5] 46.7	1928–55	June 27, 1955	12.71	975	20.9
				May 19, 1938	[2] 9.47	1,230	26.4
14	North Platte River at Wyoming-Nebraska State line	22,100	1929–55	June 27, 1955	5.92	11,500	--------
				June 2, 1929	[2] 6.04	17,900	--------
15	Sheep Creek near Morrill, Nebr.	----------	1931–55	June 27, 1955	6.52	413	--------
				Aug. 2, 1932	6.75	([6])	--------
16	Dry Spotted Tail Creek at Mitchell, Nebr.	----------	1948–55	June 27, 1955	6.67	1,670	--------
				June 24, 1951	7.55	2,010	--------
17	North Platte River at Mitchell, Nebr.	24,300	1930–55	June 28, 1955	8.29	10,600	--------
				June 1, 1935	[7] 6.79	11,000	--------
				June 17, 1921	--------	[3] 23,600	--------

[1] Release from reservoir reduced to 500 cfs at 5 p.m., June 26.
[2] Site and datum then in use.
[3] Daily.
[4] About 7 square miles probably not contributing to surface runoff.
[5] About 8 square miles probably not contributing to surface runoff.
[6] Discharge not determined; break in Interstate Canal.
[7] Occurred June 25, 1947.

from small drainage areas and overflow from the Interstate Canal, combined with poor drainage toward the river, caused serious flooding in Fort Laramie, Wyo. Torrington, Wyo., and Henry, Nebr., were greatly damaged by sidehill runoff.

FLOOD OF JULY 6 IN BOTTINEAU AREA, NORTH DAKOTA

A flood due to intense rains on July 6 occurred on tributaries to Oak Creek near Bottineau (fig. 30). The Weather Bureau gage at Bottineau recorded 3.38 inches while residents east of Bottineau reported greater amounts. One farmer measured 4.8 inches in a small

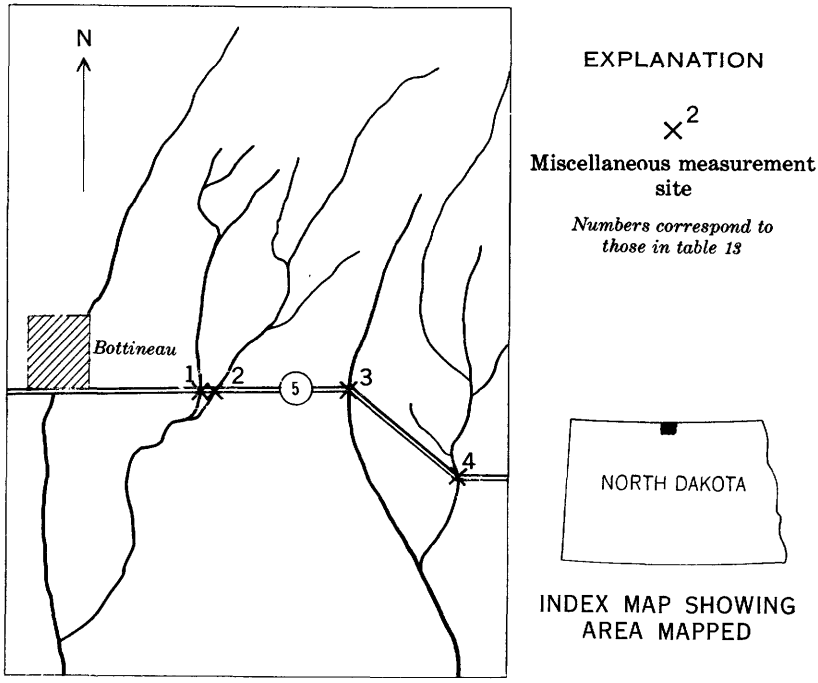

FIGURE 30.—Map of flood area showing location of flood-determination points. Floods of July 6 in Bottineau area, North Dakota.

rain gage. The drainage area of these sites was near the center of heaviest rainfall.

There are no gaging stations in the flood area but indirect measurements of peak discharge were made at 4 miscellaneous sites (table 13). No previous discharge measurements had been made at these sites, so the magnitude of the July 6 peak discharges cannot be compared with former peak discharges; however, they apparently had a high recurrence interval.

An open-file flood-frequency report includes the area affected by this flood.[5] Flood-frequency curves applicable to the area of the miscellaneous sites show the relation of discharges to 10-, 25-, 50-, and 75-year floods (fig. 31) but the curves are defined for drainage areas of 100 or more square miles. The curves of figure 31 cannot be accurately extrapolated to the small drainage areas of the four sites, and recurrence intervals cannot be directly determined. However, the position of the four points on the figure indicate that these flood discharges were rare occurrences.

The peak discharge at station 4 (table 13),which has a drainage area of 7.7 square miles, is equal to the discharge of a 75-year flood from

[5] McCabe, John A., and Crosby, Orlo A., 1959, op. cit.

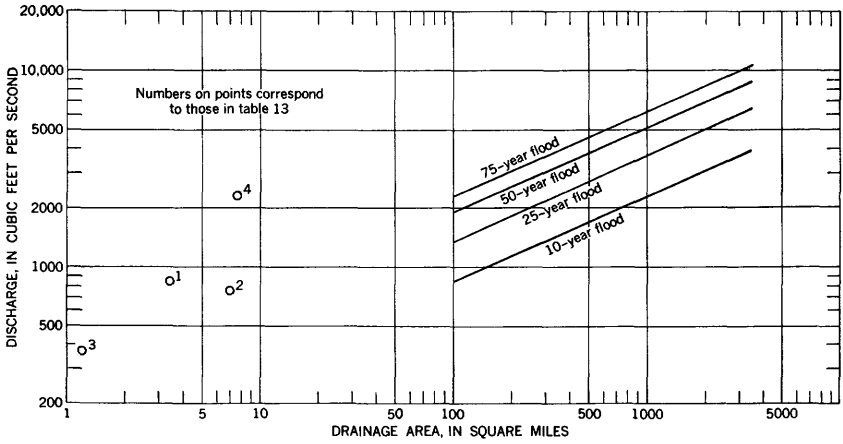

FIGURE 31.—Relation of peak discharge to 10-, 25-, 50-, and 75-year floods.

a drainage area of 100 square miles in the same area. The peak discharge at station 1, which has a drainage area of 3.4 square miles, is about equal to that of a 10-year flood from a drainage area of 100 square miles in the same area.

TABLE 13.—*Summary of flood stages and discharges, July 6 in Bottineau area, North Dakota*

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Oak Creek basin:						
1	Oak Creek tributary near Bottineau, N. Dak.	3.4	----------	July 6, 1955	--------	851	250
2	Oak Creek tributary near Bottineau, N. Dak.	7.0	----------	-----do-------	--------	761	109
3	Oak Creek tributary near Bottineau, N. Dak.	1.2	----------	-----do-------	--------	373	311
4	Oak Creek tributary near Bottineau, N Dak.	7.7	----------	-----do-------	--------	2,330	303

FLOODS OF JULY 8–9 IN KENTUCKY

Severe thunderstorms occurred on July 7–8 in Garrard County northeast of Lancaster, and near Frankfort and Morehead (fig. 32).

Storm activity was greatest in Sugar Creek basin, a tributary of the Kentucky River. There were no rainfall stations in the immediate area, and a "bucket survey" was made which indicated that rain exceeded 5¾ inches at a point in the Sugar Creek basin north of Lancaster. Some residents said that the storm lasted only 2½ hours on July 8. Table 14 lists daily precipitation amounts at Weather

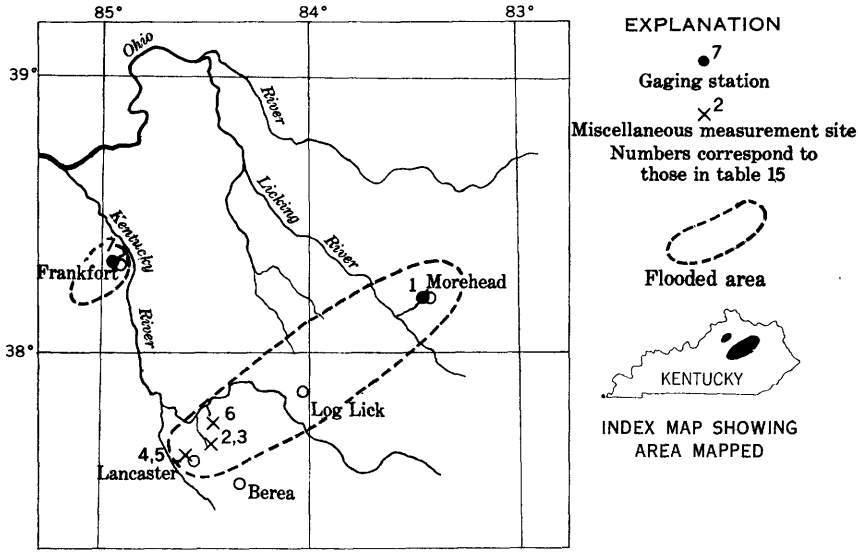

FIGURE 32.—Map of flood area showing location of flood-determination points. Floods of July 8-9 in Kentucky.

Bureau stations in the general area and "bucket-survey" amounts in the immediate area.

Table 15 lists 5 indirect determinations of peak discharge at sites in Sugar Creek basin, and peak discharges at 2 gaging stations outside the basin. The spotty thunderstorm activity was also heavy in Flat Creek basin, another tributary of the Kentucky River, and in the Licking River basin near Morehead. The maximum discharge, for a short period of record, occurred at the Flat Creek gaging station. At 5 of the 7 stations listed in table 15 peak discharges exceeded 1,000 cfs per square mile. The recurrence intervals of these floods were extremely high.

The damage along Sugar Creek and on the steep hillsides in the basin was great. Many cultivated fields were scoured to bedrock, and loose rock from streams was deposited several feet deep on fields and roads adjacent to Sugar Creek. Much of the bottom land was rendered unusable for cultivation. Several farm buildings and small steel bridges were destroyed, and one life was lost. No estimate of monetary damage was available.

FLOODS OF JULY 27 AT ALBUQUERQUE, N. MEX.

Heavy rains during the night of July 26–27 in Albuquerque and over the adjacent mesa and mountainous areas (fig. 33) resulted in high discharges in the arroyos flowing westward from the Sandia Mountains into the Rio Grande. Several of these arroyos empty

onto the flood plain along the river and an area of about 20 square blocks was inundated to a maximum depth of 3 feet. Twelve adobe houses were destroyed and about 225 others were damaged. Household goods and furnishings, and stock, equipment, and merchandise in business establishments also received some damage. In addition, irrigation canals and ditches were damaged. There was no loss of life.

TABLE 14.—*Rainfall, in inches, at Weather Bureau stations, July 7–9 in Kentucky*

Station	Total rainfall
Kentucky River basin:	
Berea (college)	4.96
Berea (waterplant)	1.53
Frankfort	2.42
Lancaster	3.52
Log Lick	4.25
Licking River basin:	
Morehead	3.26

Rainfall data collected by a "bucket survey" in the Sugar Creek flood area is as follows:

Locality	Total rainfall (inches)
R.E.A. substation, Lancaster	3.52 (in 2½ hours)
Poor Ridge Road at Jacks Hunter Branch north of Lancaster	5¾ (overflowed)
Eugene Clark Farm north of Lancaster	5
Lancaster-Richmond Pike, 1 mile east of Lancaster	4

The last three readings were from small test-tube type rain gages, maximum capacity 5¾ inches.

TABLE 15.—*Summary of flood stages and discharges, July 8–9 in Kentucky*

[Each station in this table has 1, 2, or 3 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record; and the third pertains to the maximum flood known outside the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Licking River basin:						
1	Triplett Creek at Morehead, Ky.	47.5	1941–55	July 9, 1955	13.00	16,200	341
				Sept. 21, 1950	13.10	16,700	352
				July 1939	18.9	----------	----------
	Kentucky River basin:						
2	Back Creek near McCreary, Ky.	14.2	----------	July 8, 1955	--------	8,270	582
3	Long Branch at McCreary, Ky.	4.65	----------	-----do--------	--------	6,090	1,310
4	Sugar Creek at Kentucky Highway 39 near Lancaster, Ky.	6.77	----------	-----do--------	--------	9,470	1,400
5	Sugar Creek near Lancaster, Ky.	15.9	----------	-----do--------	--------	17,100	1,080
6	Scotch Fork near Buckeye, Ky.	10.4	----------	-----do--------	--------	12,400	1,190
7	Flat Creek near Frankfort, Ky.	5.60	1951–55	-----do--------	10.60	7,100	1,250
				Mar. 22, 1952	6.77	3,460	617

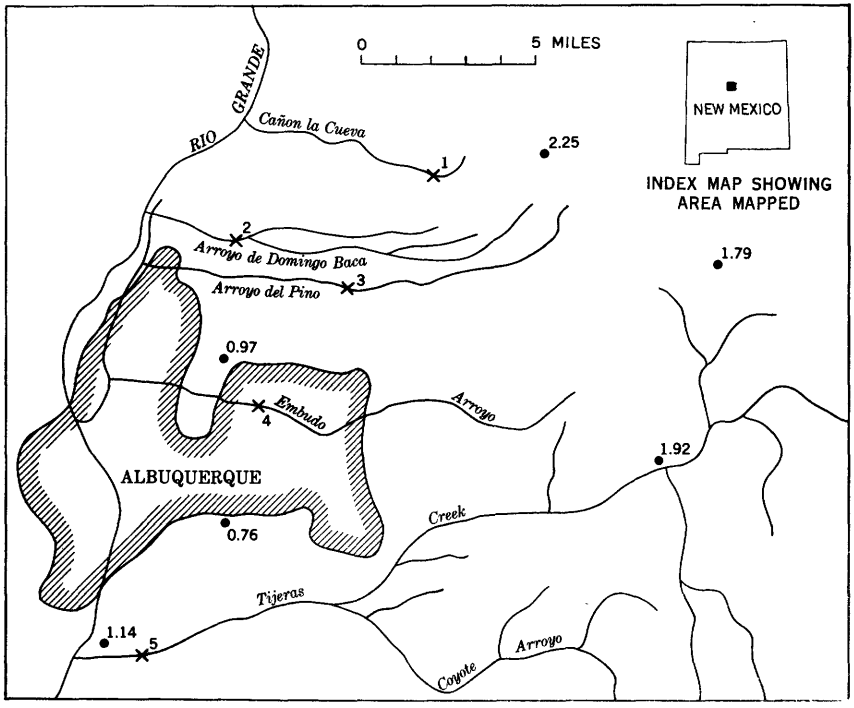

FIGURE 33.—Map of flood area showing location of flood-determination points and total rainfall, July 26–27. Floods of July 27 at Albuquerque, N. Mex. Miscellaneous measurement sites shown by × (numbers correspond to those in table 16); solid dots are precipitation gage sites showing amount, in inches.

Most of the precipitation occurred between 3 and 6 a.m. on July 27. Rain totals ranged from 0.56 inch at one observation point in Albuquerque to 2.25 inches at the crest of the Sandia Mountains (Sandia Crest) 15 miles northeast of the city. The Weather Bureau reported that average rainfall at 9 stations within the city limits amounted to 1.18 inches. Total amounts of precipitation for the storm period are shown at several points on the map of the flood area (fig. 33).

The affected arroyos were ungaged except for Tijeras Arroyo just south of the city where a crest-stage gage has been in operation since 1952. Slope-area measurements of peak discharges were obtained on several of the ungaged streams (table 16 and fig. 33). The storm produced a very minor peak at the gaging station on the Rio Grande at Albuquerque.

FLOODS OF JULY 28 IN CASTLE CREEK BASIN, SOUTH DAKOTA

Floods occurred July 28 on part of Castle Creek basin in the Black Hills. As much as 5 inches of rain fell in 2 hours in the storm center 6.5 miles southwest of Rochford. The floods destroyed 11 recently built U.S. Forest Service bridges in the area and a large amount of

TABLE 16.—*Summary of flood stages and discharges, July 27 at Albuquerque, N. Mex.*

[Each station in this table has 1, 2, or 3 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record; and the third pertains to the maximum flood of which knowledge is available outside the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Rio Grande basin:						
1	Canon la Cueva near Albuquerque, N. Mex.	2.6	----------	July 27, 1955	--------	1,940	746
2	Arroyo de Domingo Baca near Albuquerque, N. Mex.	8.1	----------	-----do-----	--------	977	121
3	Arroyo del Pino near Albuquerque, N. Mex.	6.0	----------	-----do-----	--------	1,150	192
4	Embudo Arroyo at Albuquerque, N. Mex.	28.6	----------	-----do-----	--------	2,290	80.1
5	Tijeras Creek near Albuquerque, N. Mex.	133	1952–55	Sept. 21, 1929	--------	2,490	87.1
				July 27, 1955	3.89	2,000	15.0
				Aug. 12, 1953	2.76	1,280	9.62
				1952	4.0	2,200	16.5

road grade along Castle Creek between Deerfield Reservoir and Mystic (fig. 34).

The isohyets on figure 34 are based on data from Weather Bureau and Forest Service precipitation stations, from unofficial rain gages, and from information given by residents.

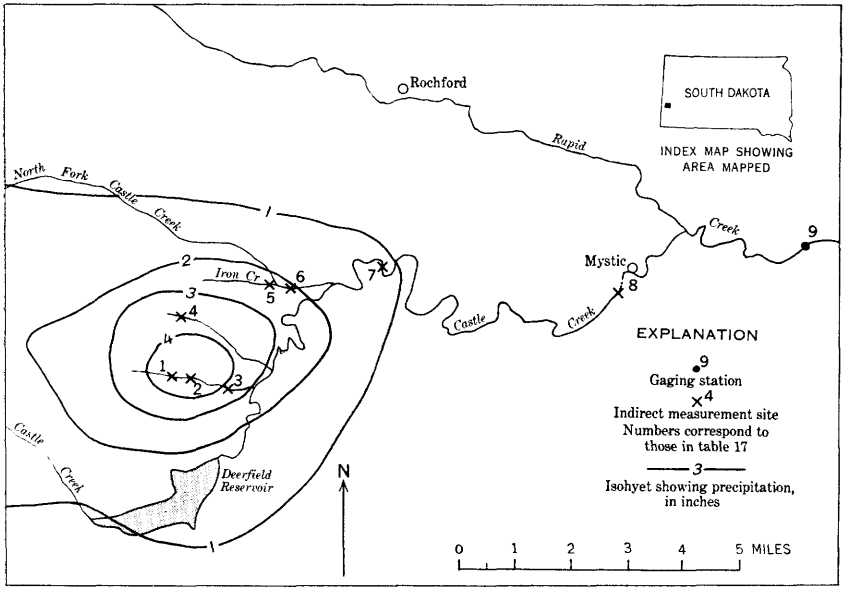

FIGURE 34.—Map of flood area showing location of flood-determination points and isohyets for July 28. Floods of July 28 in Castle Creek basin, South Dakota.

The discharge of Castle Creek from 95 square miles of drainage area above Deerfield Reservoir was small and the discharge from the reservoir during the flood was only 3 cfs. One gaging station, Rapid Creek above Pactola Reservoir at Silver City, was appreciably affected by the floodflow; indirect measurements of peak discharge were made at eight miscellaneous sites (table 17). The gaging station was established in October 1953, and as no previous discharge measurements had been made at the miscellaneous sites, the magnitude of the July 28 peak discharges cannot be compared to former peak discharges at these sites. However, the peaks had a high recurrence interval.

An open-file flood-frequency report includes the area affected by this flood.[6] The flood-frequency curves applicable to the flood area show the relation of discharges to floods of selected recurrence intervals (fig. 35).

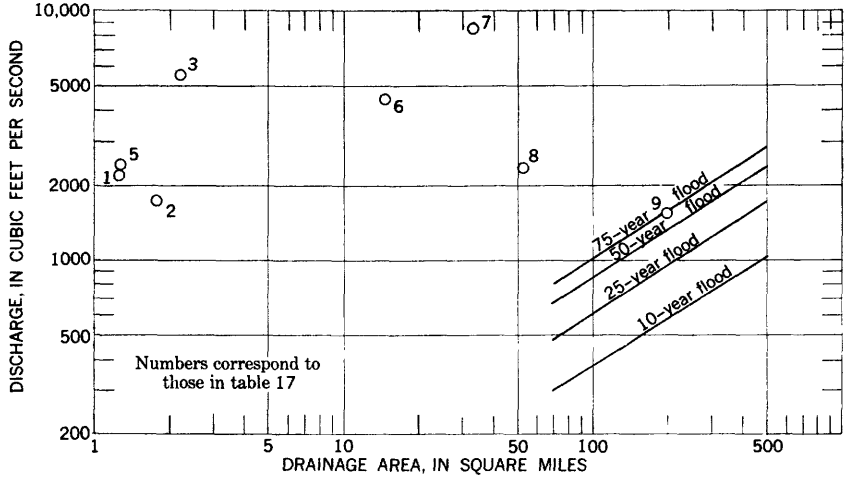

FIGURE 35.—Relation of peak discharge to 10-, 25-, 50,- and 75-year floods.

The curves are defined for drainage areas of 70 square miles or more and cannot be accurately extrapolated to the small drainage areas of the miscellaneous sites, so recurrence intervals cannot be directly determined. However, the positions of points 1–3 and 5–9 on the graph indicate that the peak discharges at all these stations were rare occurrences.

The peak discharge at the gaging station had a recurrence interval of about 75 years. It is impossible to assign recurrence intervals to the peak discharges at the miscellaneous sites but they were extremely high. Figure 35 shows that the peak discharges of stations

[6] McCabe, John A., and Crosby, Orlo A., op. cit.

1 and 5, with drainage areas of 1.25 square miles each, were equal to those of a 75-year flood from a drainage area of about 350 square miles. The peak discharges of stations 3, 6, and 7 were much greater than those defined by the 75-year curve at a drainage area of 500 square miles.

TABLE 17.—*Summary of flood stages and discharges, July 28 in Castle Creek basin, South Dakota*

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Castle Creek basin:						
1	Castle Creek Tributary near Rochford, S. Dak.	1.25	----------	July 28, 1955	--------	2,190	1,750
2	Castle Creek Tributary near Rochford, S. Dak.	1.75	----------	July 28, 1955	--------	1,720	983
3	Castle Creek Tributary near Rochford, S. Dak.	2.20	----------	July 28, 1955	--------	5,620	2,560
4	Castle Creek Tributary near Rochford, S. Dak.	.0192	----------	July 28, 1955	--------	98.9	5,150
5	Iron Creek near Rochford, S. Dak.	1.25	----------	July 28, 1955	--------	2,410	1,930
6	North Fork Castle Creek near Rochford, S. Dak.	14.6	----------	July 28, 1955	--------	4,490	308
7	Castle Creek near Rochford, S. Dak.	[1] 32.6	----------	July 28, 1955	--------	8,500	261
8	Castle Creek at Mystic, S. Dak.	[1] 52.2	----------	July 28, 1955	--------	2,360	45.2
9	Rapid Creek above Pactola Reservoir at Silver City, S. Dak.	[1] 197	1953–55	July 28, 1955	8.90	1,520	7.7

[1] Excludes drainage area above Deerfield Dam. During flood, flow of Castle Creek from Deerfield Dam was only 3 cfs.

FLOODS OF JULY 31 AT POJOAQUE, N. MEX.

Heavy precipitation on the western slopes of the Sangre de Cristo Range north of Santa Fe on July 31 caused high rates of runoff on Rio Nambe and Pojoaque Creek. The location of the storm center is not known, but it probably was near the headwaters of Rio Nambe. Heavy runoff occurred at Chupadero sometime during the summer and was probably part of this flood. The peak discharge on Rio Tesuque near Santa Fe was negligible and a peak of only 206 cfs occurred on Santa Cruz River at Cundiyo (drainage area, 86 square miles).

Weather Bureau precipitation gages within a 35-mile circle centered at Nambe recorded a maximum precipitation of only 0.26 inch, at Nambe.

Slope-area measurements of peak discharge were made at the site of the abandoned gaging station on Rio Nambe near Nambe, where a crest-stage gage is now being operated, and on Pojoaque Creek about half a mile upstream from the bridge on U.S. Highway 285 at Pojoaque (fig. 36). The Pojoaque site is about a quarter of a mile upstream

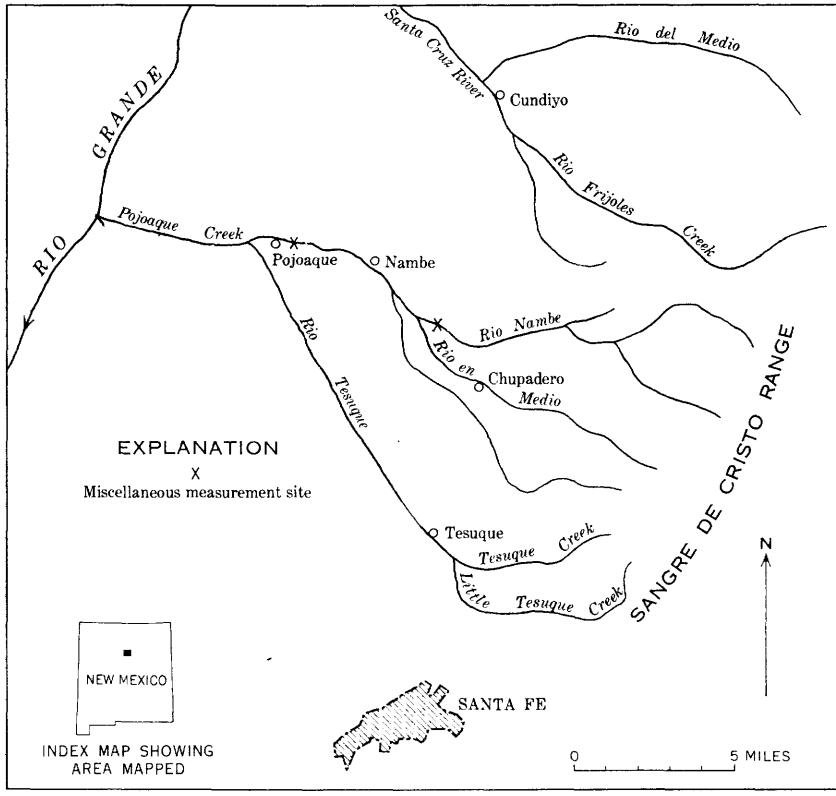

FIGURE 36.—Map of flood area showing location of flood-determination points. Floods of July 31 at Pojoaque, N. Mex.

from the site of the former gaging station of Nambe Creek at Pojoaque Bridge near Nambe. The recurrence intervals of these peaks are high.

On Rio Nambe (drainage area, 37 square miles) the July 31, 1955, peak discharge (5,580 cfs) was 2.7 times the previous maximum discharge (2,050 cfs in August 1954) in 25 years of record. The peak stage of the 1955 flood exceeded that of the 1954 flood by 1.5 feet.

On Pojoaque Creek (drainage area, 92 square miles) the July 31, 1955, peak discharge (11,000 cfs) was 2.3 times the previous maximum discharge (4,700 cfs on July 15, 1938) in a period of record from 1936 to 1941. The peak stage on the 1955 flood exceeded that of the 1938 flood by 3.0 feet.

FLOODS OF AUGUST 3 IN THE TUCSON AREA, ARIZONA

Thunderstorms were widespread over Arizona during August 1955 and local flooding was reported from practically every section of the State. An outstanding flood occurred on August 3 in the area surrounding Tucson (fig. 37).

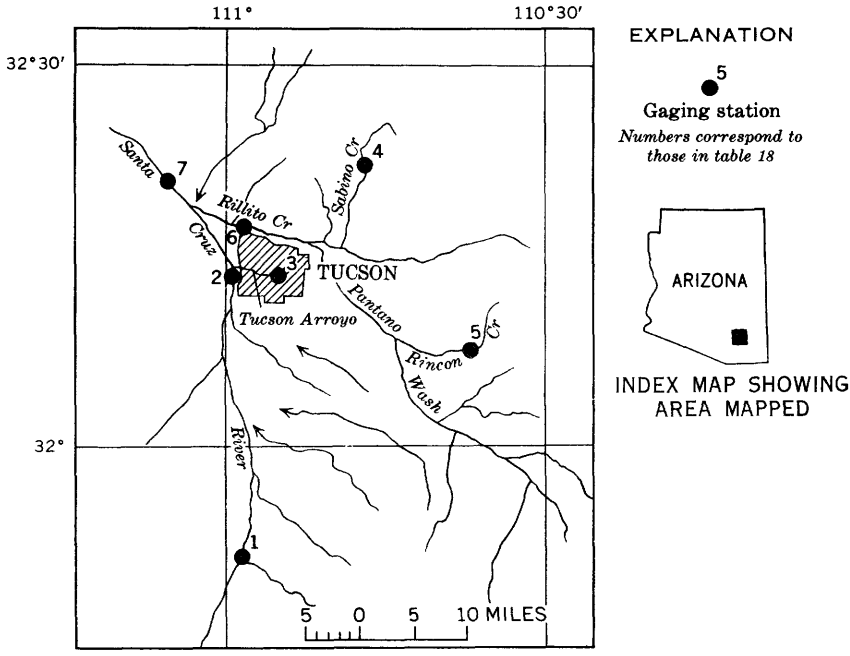

FIGURE 37.—Map of flood area showing location of flood-determination points. Flood of August 3 in the Tucson area, Arizona.

Precipitation occurred over the entire flood area on this day but varied greatly in amounts recorded at different precipitation stations. The total precipitation for the day, in the area extending from the south edge of Tucson south for 25 to 30 miles along the Santa Cruz River, ranged from 2 to 2.5 inches. The Weather Bureau reported 2.28 inches of rain at the Tucson Airport for August 3, which exceeded the previous maximum 1-day rainfall of 1.50 inches in 1943.

Only a moderate rise occurred at the gaging station on the Santa Cruz River at Continental, but as a result of inflow below this point the floodflow increased rapidly as it proceeded downstream (table 18). Many acres of farmland were inundated several miles north of Continental and thousands of dollars worth of crops were destroyed. More than $10,000 damage was done to the Tucson water system when the banks of the river were eroded and the water mains were exposed and washed out. The peak discharge for the station on Santa Cruz River at Tucson was the highest since 1940, and was the fourth highest since 1915.

Floods occurred in south Tucson and trapped many vehicles in flooded streets, but the central residential and business districts received only light precipitation and runoff was slight—the peak discharge of Tucson Arroyo at Vine Avenue was only 8.9 cfs.

TABLE 18.—*Summary of flood stages and discharges, August 3 in the Tucson area, Arizona*

[Each station in this table has two entries listed under maximum floods; the first pertains to the flood being reported on and the second pertains to the maximum flood previously know during the period of record.]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Santa Cruz River basin:						
1	Santa Cruz River at Continental, Ariz.	1,662	1940–46	Aug. 3, 1955	5.68	4,000	2.4
			1951–55	Aug. 5, 1954	10.10	14,600	8.8
2	Santa Cruz River at Tucson, Ariz.	2,207	1905–55	Aug. 3, 1955	9.58	10,900	4.9
				Dec. 23, 1914	-------	15,000	6.8
3	Tucson Arroyo at Vine Avenue, Tucson, Ariz.	(1)	1944–55	Aug. 3, 1955	3.31	8.9	[2].56
				July 24, 1948	9.9	4,100	[2] 175
4	Sabine Creek near Tucson, Ariz.	35.5	1932–55	Aug. 3, 1955	6.55	2,000	56.4
				Mar. 23, 1954	8.43	5,110	144
5	Rincon Creek near Tucson, Ariz.	44.8	1952–55	Aug. 3, 1955	9.90	8,250	184
				Aug. 19, 1954	6.50	2,160	48.2
6	Rillito Creek near Tucson, Ariz.	918	1908–55	Aug. 3, 1955	5.4	7,010	76.4
				Sept. 23, 1929	-------	24,000	261
7	Santa Cruz River at Cortaro, Ariz.	3,503	1939–47	Aug. 3, 1955	9.90	16,600	4.7
			1950–55	Aug. 14, 1940	-------	17,000	4.9

[1] 23.4 square miles, 1945–53; 15.9 square miles, 1954–55.
[2] From effective drainage area.

Heavy precipitation, as much as 2 inches for the day, in the Santa Catalina Mountains to the north and in the Rincon Mountains to the east caused flooding of Sabine Creek and of Rincon Creek near Tucson. Flow from these headwater tributaries caused bankfull flow in Rillito Creek.

The peak discharge from Rillito Creek reached the Santa Cruz River within a few minutes of the time at which the peak discharge in the Santa Cruz River arrived at the mouth of Rillito Creek. The combining of these two peaks resulted in the greatest discharge since 1940 at the gaging station on Santa Cruz River at Cartaro and caused extensive crop damage on adjacent farmlands.

FLOODS OF AUGUST 3–5 IN WESTERN LOUISIANA

Heavy rains fell in western Louisiana during August 2–4 causing small streams to overflow and flood some highways in the area. The heaviest rainfall reported for this period was at Mansfield where 10.94 inches was measured. More than 6 inches fell on an area about 150 miles long and 20 miles wide (fig. 38).

A flood-frequency curve for this area (Cragwall, 1952)[7] is defined for a 25-year period (1926–50) which shows the ratio of the 25-year flood to the mean annual flood to be 2.0. On Bayou Anacoco near Leesville and near Rosepine the ratios of the August 1955 floods to the mean annual floods were 3.4 and 3.6 respectively. The maxi-

[7] Cragwall, J. S. Jr., 1952, Floods in Louisiana, magnitude and frequency: Louisiana Dept. of Highways.

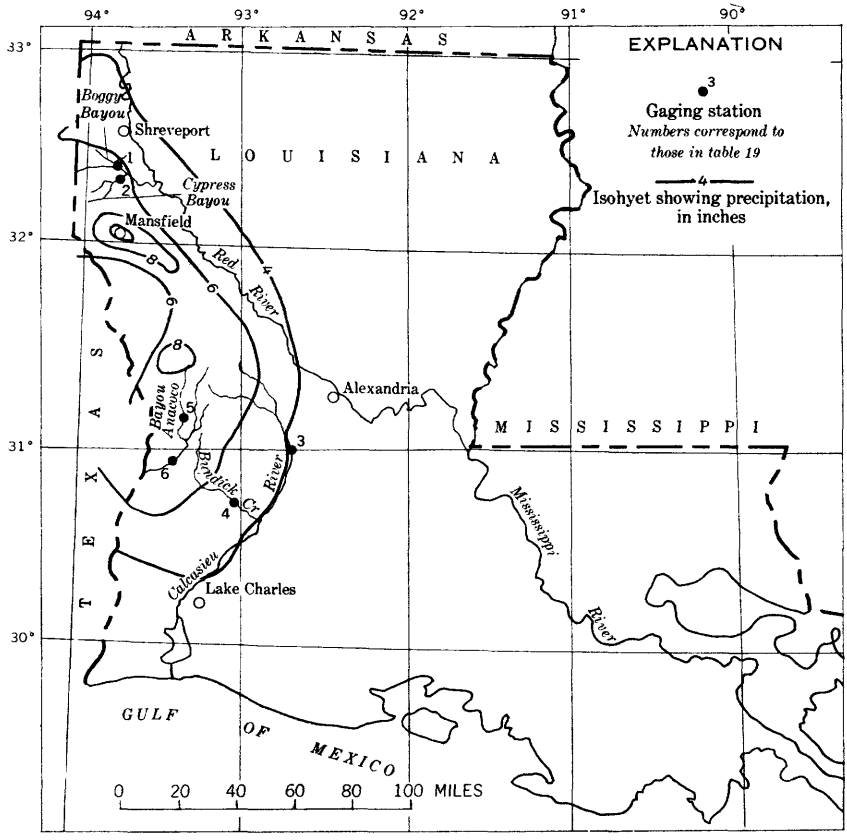

FIGURE 38.—Map of flood area showing location of flood-determination points and isohyets for August 2–Floods of August 3–5 in western Louisiana.

mum peaks during the short period of record were 5.5 times and 6.4 times the mean annual flood, respectively.

At the Cypress Bayou gaging station, a new maximum discharge for the period of record (1938–55) was obtained (table 19). The order of magnitude was more than 25 years at Bundick Creek near Dry Creek. At other gaging stations the order of magnitude was much less.

FLOODS OF AUGUST–OCTOBER, NEW ENGLAND TO NORTH CAROLINA

Damaging floods occurred in five periods, in overlapping areas from North Carolina to New England during August–October.

The floods were outstanding in four ways: (a) The large area flooded (fig. 39)—a band about 200 miles wide parallel to the Atlantic coastline from North Carolina to Massachusetts; (b) the great loss of life and extensive damage—about 200 lives lost and about $500 million

TABLE 19.—*Summary of flood stages and discharges, August 3–5 in western Louisiana*

[Each station in this table has 2 or 3 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record; and the third pertains to the maximum flood of which knowledge is available outside the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Red River basin:						
1	Boggy Bayou near Keithville, La.	79	1938–55	Aug. 4, 1955	18.67	6,840	86.6
				Jan. 5, 1946	20.2	14,800	187
				1933	26.7		
2	Cypress Bayou near Keithville, La.	66	1938–55	Aug. 3, 1955	13.62	23,700	359
				Jan. 5, 1946	13.32	14,700	223
				1933	18.0		
	Calcasieu River basin:						
3	Calcasieu River near Glenmora, La.	499	1943–55	Aug. 5, 1955	16.93	20,600	41.3
				May 19, 1953	21.55	59,900	120
4	Bundick Creek near Dry Creek, La.	238	1939–55	Aug. 4, 1955	19.03	17,600	73.9
				May 19, 1953	23.67	37,000	155
	Sabine River basin:						
5	Bayou Anacoco near Leesville, La.	114	1948–55	Aug. 3, 1955	17.64	16,500	145
				Apr. 29, 1953	19.39	26,200	230
6	Bayou Anacoco near Rosepine, La.	366	1951–55	Aug. 4, 1955	25.24	36,200	98.9
				May 19, 1953	28.38	64,300	176

in property damage; (c) the degree to which previous records were exceeded—new maxima of discharge for the period of record occurred at 231 of the 492 active and discontinued gaging stations and crest-stage stations; (d) the distribution of rainfall was such that the greatest floods were predominant on the smaller streams.

Hurricane Connie entered North Carolina on August 12 on a northerly track across Virginia, Maryland, Pennsylvania, and New York, causing a maximum rainfall of 15.15 inches during August 11–16 at Slide Mountain, N.Y. Hurricane Connie not only caused severe floods but also left saturated soil which contributed greatly to the much more disastrous floods caused by hurricane Diane. Diane entered North Carolina on August 17, curved northward across central Virginia and Maryland, continued eastward across the extreme southeast corner of Pennsylvania, across central New Jersey, and then headed out to sea on a line parallel to the coastline of Connecticut and Rhode Island. To the left of the hurricane track a maximum rainfall of 19.75 inches occurred during August 17–20 at Westfield, Mass. Of the 287 gaging stations and crest-stage stations in the August 18–19 flood area, 129 showed discharges which exceeded the previous maxima of record.

In eastern North Carolina periods of heavy rains centering around September 3 and 11 caused some flooding, and the additional rains produced by hurricane Ione, which entered North Carolina at Morehead City on September 19, caused extremely severe floods. Peak

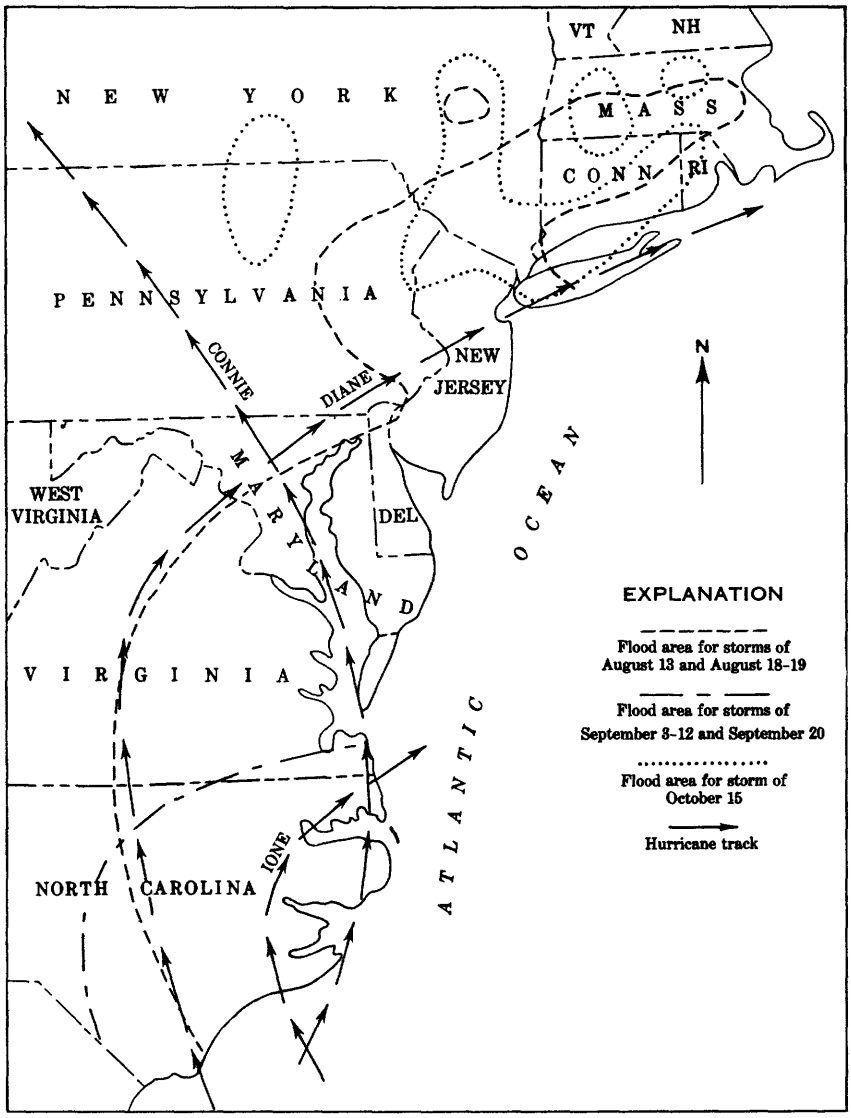

FIGURE 39.—Map of flood area showing track of hurricanes. Floods of August–October, New England to North Carolina.

discharges exceeded the previous maxima of record at 45 of the 53 stations in the flood area.

Three periods of excessive rainfall in October produced a record monthly total of 25.27 inches at West Shokan, N.Y., and caused severe flooding in New York and in southern New England. The New York State average for October of 8.16 inches greatly exceeded

the previous October record of 6.43 inches and also established an all-month average, exceeding the former average by 0.25 inch.

The most notable peak discharges during the five flood periods occurred in the August 18–19 flood. Little River at Buffumville, Mass., had a peak discharge of 8,340 cfs from 27.7 square miles, which was 6.2 times the previous maximum in 17 years of record and 28.5 times the mean annual flood. Owing to failure of a dam upstream Cady Brook at Southbridge, Mass., had a peak discharge of 2,190 cfs per square mile from 12 square miles. Powdermill Brook near Westfield, Mass., had a peak discharge of 2,300 cfs per square mile from 2.5 square miles. Many peak discharges were more than twice the previous maxima. Peak discharges on Naugatuck River near Thomaston, Conn., and on Bush Kill at Shoemakers, Pa., exceeded the previous maxima of record more than fourfold in 26 years of record and in 48 years of record, respectively.

Many outstanding peak discharges occurred during the August floods (table 20).

The following tabulation shows 492 gaging stations, discontinued gaging stations, and crest-stage stations in the flood area broken down into groups to show the number of stations at which each storm produced the maximum discharge during the 3-month period, and to show the number of stations at which new maxima of record were established for each flood. The 231 stations at which new peak discharges were recorded had periods of record ranging in length from 2 to 53 years.

Date of flood, 1955	*Flood area*	*Maximum during 3 months*	*Stations reporting a new maximum of record*
Aug. 13	Coastal areas, North Carolina to Long Island.	73	30
Aug. 18–19	Virginia to Massachusetts	287	129
Sept. 3–12	Coastal areas, North Carolina	17	11
Sept. 20	Coastal plain, North Carolina	36	34
Oct. 15	New York-Connecticut and scattered areas.	79	27
Total		492	231

All five floods are described in detail in Water-Supply Paper 1420, "Floods of August–October 1955, New England to North Carolina."

FLOODS OF SEPTEMBER 24–25 NEAR GOLDEN, N. MEX.

Heavy thunderstorms occurred during the afternoon and evening of September 24 in the Albuquerque area. Maximum precipitation recorded for the storm was 2.80 inches at Golden, northeast of Albuquerque in the north-south valley between Sandia Mountain on the west and the Ortiz and San Pedro Mountains on the east. The line

TABLE 20.—*Peak discharges during August, New England to North Carolina*

State and stream	Drainage area (sq mi)	Maximum discharge (cfs)	Cfs per sq mi
Massachusetts:			
Powdermill Brook near Westfield	2.50	5,740	2,300
Lamberton Brook near West Brookfield	4.47	4,140	926
Stage Brook near Russel	5.21	4,910	942
Dickinson Brook near Granville	6.42	5,750	896
West Branch Farmington River near New Boston	92.0	34,300	373
Westfield River at Woronoco	[1] 189	61,500	325
Connecticut:			
Valley Brook near West Hartland	7.20	8,260	1,150
West Branch Salmon Brook at West Granby	11.7	10,500	897
East Branch Salmon Brook at North Granby	13.2	14,300	1,080
Salmon Brook near Granby	60.6	40,000	660
Naugatuck River near Thomaston	71.9	41,600	579
Still River at Robertsville	84.4	44,000	522
West Branch Farmington River near Riverton	128	57,200	447
Naugatuck River near Waterbury	138	75,900	550
West Branch Farmington River at Riverton	216	101,000	468
Naugatuck River at Naugatuck	246	106,000	431
Farmington River near Collinsville	360	140,000	389
Housatonic River at Gaylordsville	994	51,800	52.1
Connecticut River at Hartford	10,480	210,000	20.0
New York:			
Bashbish Creek at Copake Falls	15.8	10,800	684
Delaware River near Barryville	[1] 1,652	130,000	78.7
Delaware River at Port Jervis	3,076	233,000	75.7
New Jersey:			
Delaware River at Montague	3,480	250,000	71.8
Delaware River at Belvidere	4,535	273,000	60.3
Delaware River at Riegelsville	6,328	340,000	53.8
Delaware River at Trenton	6,780	329,000	48.5
Pennsylvania:			
Wallenpaupack Creek at South Sterling	14.3	22,200	1,550
East Branch Wallenpaupack Creek at Greentown	33.9	33,300	982
Pocono Creek near Stroudsburg	37.7	22,400	594
Brodhead Creek at Anglomink	124	72,200	582
Brodhead Creek at Minisink Hills	259	68,800	266
Lehigh River at Walnutport	889	77,800	87.5

[1] Area above reservoir not included.

of the storm was in a general northeast-southwest direction, and apparently passed through Tijeras Canyon between Sandia Mountain and the Manzano Mountains. The path of the storm as indicated on the location map (fig. 40), was fairly narrow.

Heavy rainfall, which began at Albuquerque at 7 p.m., broke all previous records at the Kirtland Air Base Weather Bureau station for precipitation rates during periods of 5 to 30 minutes. The storm total was 1.92 inches, of which 0.50 inch fell in 5 minutes, 0.85 inches in 10 minutes, 1.10 inches in 15 minutes, and 1.23 inches in 30 minutes.

The Weather Bureau reported that at several points in Albuquerque floodwaters were 4 feet deep in the streets as heavy flows swept down the arroyos leading into the city from Sandia Mountain to the east. No lives were lost in the storm area although several people stranded in automobiles by the floodwaters were forced to wade through water 3 or 4 feet deep to reach safety.

A small bridge across Canada de las Narrias north of Cedar Grove was destroyed. Several spans and a part of the left approach of the bridge on New Mexico Highway 10 at Los Cerrillos were also de-

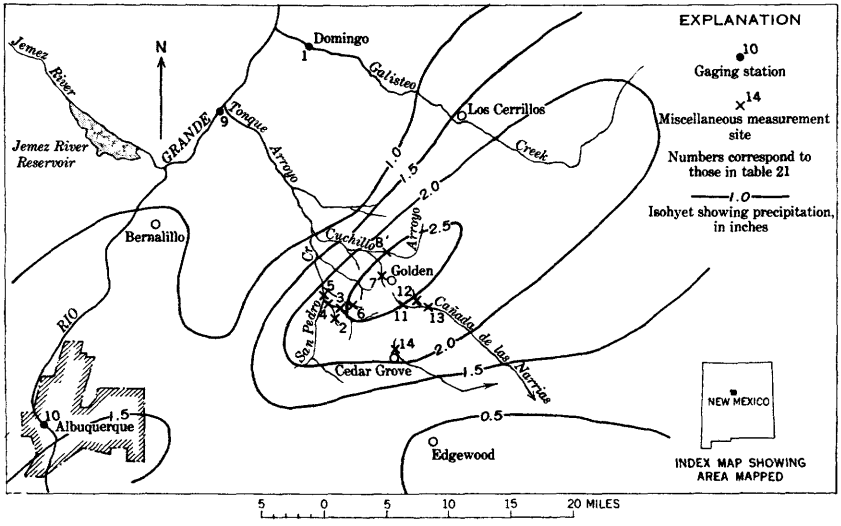

FIGURE 40.—Map of flood area showing location of flood-determination points and isohyets for September 24. Floods of September 24-25 near Golden, N. Mex.

stroyed. There was some damage to culverts and dips in the Golden-San Pedro Creek area.

A discharge of 19,600 cfs on Galisteo Creek at Domingo was the highest recorded since the record began in 1941. The peak discharge of 10,800 cfs was the maximum recorded at the crest-stage gage on San Pedro Creek near Golden since the gage was installed in 1953 and it exceeded the previous maximum which occurred in 1938. The maximum peak discharge in the storm area was 2,990 cfs per square mile from a drainage area of 0.92 square mile (table 21). Heavy runoff occurred on the east slopes of the Ortiz and San Pedro Mountains which form a part of the western border of Estancia Valley, a closed basin.

TABLE 21.—*Summary of flood stages and discharges, September 24–25 near Golden, N. Mex.*

[Each station in this table has 1 or 2 entries listed under maximum floods; the first pertains to the flood being reported on and the second pertains to the maximum flood previously known during the period of record.]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Rio Grande basin:						
1	Galisteo Creek at Domingo, N. Mex.	640	1941–55	Sept. 25, 1955 July 17, 1953	12.1 ----	19,600 13,000	30.6 20.3
2	San Pedro Creek tributary 1 (upper) near Golden, N. Mex.	2.82	----	Sept. 24, 1955	----	2,400	851
3	San Pedro Creek tributary 1A near Golden, N. Mex	.92	----	----do----	----	2,750	2,990
4	San Pedro Creek tributary 1 (lower) near Golden, N. Mex.	4.21	----	----do----	----	2,950	701
5	San Pedro Creek near Golden, N. Mex.	45.2	1953–55	----do----	12.45	10,800	239
6	San Pedro Creek tributary 2 near Golden, N. Mex.	.90	----	Sept. 24, 1955	----	962	1,070
7	Cuchillo Arroyo at Golden, N. Mex.	1.4	----	----do----	----	987	705
8	Cuchillo Arroyo tributary near Golden, N. Mex.	12.9	----	----do----	----	2,000	155
9	Rio Grande at San Felipe, N. Mex.	16,100	1930–55	Sept. 25, 1955 June 26, 1937	8.76 11.13	17,400 27,300	1.08 1.70
10	Rio Grande at Albuquerque, N. Mex.	17,440	1942–55	Sept. 25, 1955 Apr. 24, 1942	6.84 [2] 7.0	7,960 25,000	.46 1.43
11	Canada de las Narrias (upper) near San Pedro N. Mex.	1.53	----	Sept. 24, 1955	----	2,220	1,450
12	San Lazarus Gulch near San Pedro, N. Mex.	.58	----	----do----	----	950	1,640
13	Canada de las Narrias (lower) near San Pedro, N. Mex.	5.71	----	----do----	----	4,830	846
14	Estancia Valley tributary at Cedar Grove, N. Mex.	1.21	----	----do----	----	1,140	942

[1] Peak discharge during period of record was less than 1,000 cfs.
[2] Occurred July 18, 1953.

FLOODS OF SEPTEMBER 24–25 IN NUECES RIVER BASIN, TEXAS

Rain in large amounts and of severe intensity fell during September 23–25 over the extreme upper end of the Nueces River basin, the upper end of the South Llano drainage (in the Colorado River basin), and the eastern part of the Devils River basin (tributary to the Rio Grande). The area within the 4-inch isohyets is that north of a line from Laguna to Brackettville, to Carta Valley, and to Comstock (fig. 41).

There were three centers of rainfall concentration within this area. A 10-inch center northeast of Brackettville and west of Laguna contributed to the flood on the West Nueces River. A 15-inch center north of Carta Valley and west of Rock Springs produced runoff mostly in the Dry Devils River, but contributed some flow to the

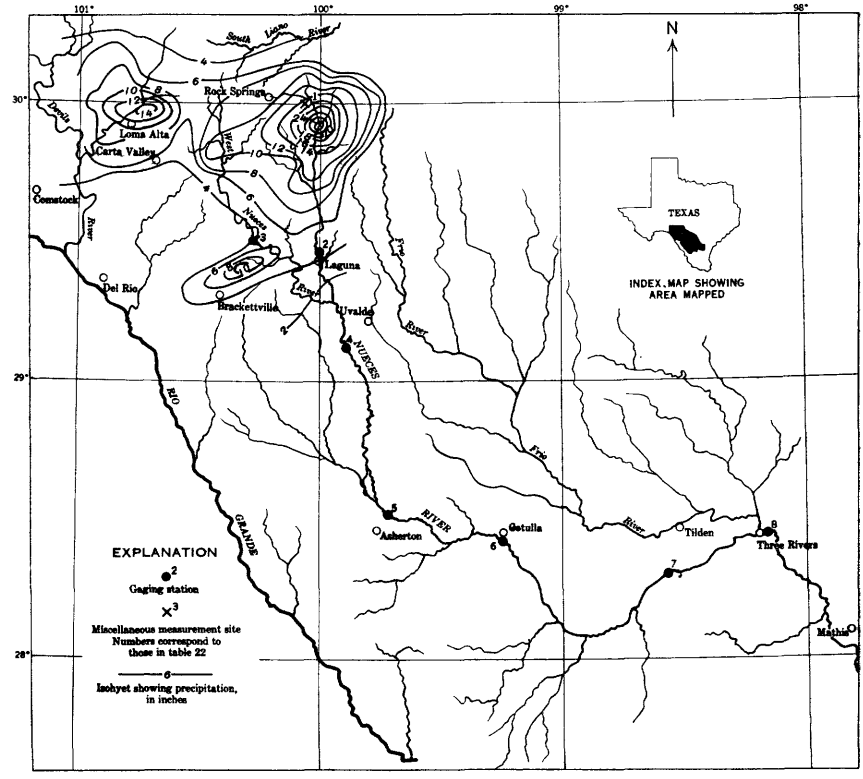

FIGURE 41.—Map of flood area showing location of flood-determination points and isohyets for September 23–25. Floods of September 24–25 in Nueces River basin, Texas.

upper tributaries of the West Nueces River. A 24-inch center on the Nueces River, at the mouth of Hackberry Creek southeast of Rock Springs, was the principal contributor to the Nueces River flood. Most of the rain fell during the night of September 23 and the morning of September 24.

Peak discharges and stages were determined at eight sites (fig. 41). A slope-area measurement of peak flow was made on Hackberry Creek about 8 miles above its mouth where the drainage area is 62 square miles. The peak discharge was 53,400 cfs about 3 to 4 a.m., September 24. A resident stated that this flood was the largest known, with possible exception of the flood of 1935. The heaviest rainfall in the Hackberry Creek basin occurred downstream from the point of measurement. A much larger peak discharge probably occurred in the lower reach of the creek.

At the gaging station on the Nueces River at Laguna, the flow had been about 30 cfs for several days prior to September 24. A small rise in the early morning of September 24 reached a peak discharge

of 2,720 cfs at 5 a.m., declined to 1,040 cfs at 7 a.m., and then began to rise very rapidly. Between 9 and 9:30 a.m. the stage of the river rose 16 feet and the discharge increased from 5,430 to 110,000 cfs. the peak discharge of 307,000 cfs was reached at 11 a.m. after which it declined rapidly, dropping below 100,000 cfs by 4 p.m. (fig. 42). The peak discharge at the Laguna station exceeded by 85,000 cfs the maximum discharge previously recorded since the establishment of the station in 1923, and was the greatest known flood for at least 101 years.

The peak discharge at the site of the discontinued gaging station on the West Nueces River near Brackettville was 150,000 cfs. During 1939–50, the period of gaging-station operation, the maximum discharge of 51,000 cfs occurred in June 1948. However, on June 14, 1935, a peak in excess of 500,000 cfs occurred which was the greatest flood known.

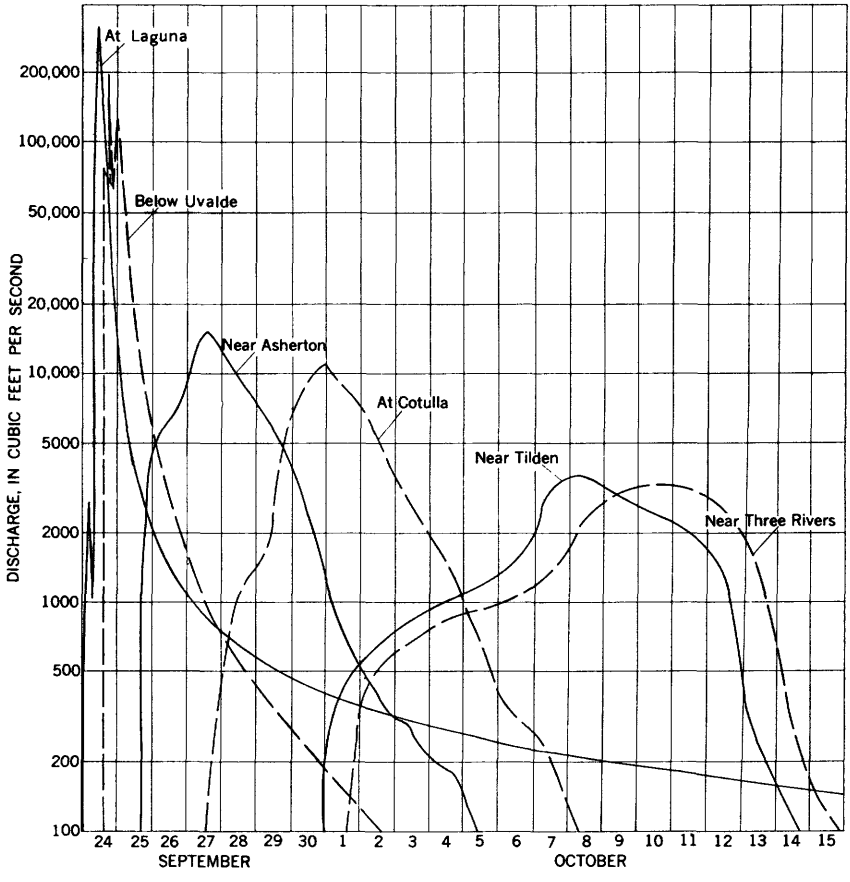

FIGURE 42.—Discharge hydrographs for Nueces River stations.

The West Nueces River empties into the Nueces River 14 miles downstream from the Laguna gaging station and 15 miles upstream from the Uvalde station. Despite the contribution of the West Nueces, the peak discharge of 189,000 cfs at the Uvalde station was 118,000 cfs less than the Laguna discharge. A second peak of 128,000 cfs at Uvalde occurred 6 hours after the first and higher peak. The two peaks at Uvalde resulted from the difference in times required for the arrival of the water which passed Laguna, and that which was contributed by the West Nueces River.

Between Uvalde and Asherton, the next gaging station 78 miles downstream, the flood peak flattened to 15,100 cfs. From Asherton to Cotulla (52 miles) the peak was reduced to 10,900 cfs; at Tilden, 95 miles downstream from Cotulla, it was down to 3,570 cfs; and at Three Rivers, 38 miles downstream from Tilden, the peak was 3,360 cfs. The peak was reduced from 307,000 cfs at Laguna to 3,360 cfs at Three Rivers—a reduction of 98.9 percent in 292 miles (see table 22).

Figure 42 shows the discharge hydrographs for all gaging stations on the Nueces River from Laguna to Three Rivers.

The most notable feature of the Nueces River flood was the loss of an extremely large volume of water as the flood progressed downstream. The volume of flow was decreased 82 percent—from about 242,700 acre-feet, the flow at Laguna plus estimated contribution by the West Nueces, to 42,690 acre-feet at Three Rivers. Part of this loss was doubtless due to evaporation and transpiration, but probably the greatest loss was by seepage into the ground. The Nueces River crosses the Balcones fault zone just upstream from the Uvalde station, which accounts for much of the loss between Laguna and Uvalde. Base flow was greater immediately after the flood than it was before.

The flood volumes and losses for each station are shown in the following tabulation. The periods were selected to cover all identifiable flood runoff, and ended when the streams returned to base flow.

Flood volumes and losses on the Nueces River

Gaging station	Period used to compute volume, 1955	Volume of flow (acre-ft)	Major Inflow (acre-ft)	Loss or gain from preceding station (acre-ft)	Accumulative loss (acre-ft)
Laguna	Sept. 24–Oct. 11	162, 700	[1] Est. 80, 000	-------	-------
Uvalde	Sept. 24–Oct. 11	147, 400	-------	−95, 300	95, 300
Asherton	Sept. 25–Oct 12	78, 840	-------	−68. 560	163, 860
Cotulla	Sept. 27–Oct. 14	65, 990	-------	−12, 850	176, 710
Tilden	Sept. 30–Oct. 17	42, 130	-------	−23, 860	200, 570
Three Rivers	Oct.1–18	42, 690	-------	+560	200, 010

[1] West Nueces River.

TABLE 22.—*Summary of flood stages and discharges, September 24–25 in Nueces River basin, Texas*

[Each station in this table has 1, 2, or 3 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record; and the third pertains to the maximum flood of which knowledge is available outside the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Nueces River basin:						
1	Hackberry Creek near Rock Springs, Tex.	62	----------	Sept. 24, 1955	--------	53,400	862
2	Nueces River at Laguna, Tex.	764	1923–55	----do----	[1] 29.95	307,000	402
				July 13, 1939	26.40	222,000	291
				June 1913	[2] 29.00	----------	--------
3	West Nueces River near Brackettville, Tex.	700	1939–50	Sept. 24, 1955	--------	150,000	214
				June 25, 1948	20.95	51,000	72.8
				June 14, 1935	[3] 48.0	([4])	--------
4	Nueces River below Uvalde, Tex.	1,947	1939–55	Sept. 24, 1955	[5] 21.13	189,000	97.2
				July 13, 1939	19.25	89,000	45.7
				June 14, 1935	[6] 40.4	[7] 616,000	316
5	Nueces River near Asherton, Tex.	4,082	1939–55	Sept. 27, 1955	29.64	15,100	3.70
				Sept. 2, 1944	30.40	24,000	5.88
				June 17, 1935	33.0	----------	--------
6	Nueces River at Cotulla, Tex.	5,260	1923–55	Sept. 20, 1955	18.25	10,900	2.07
				June 18, 1935	[8] 32.4	82,600	15.7
7	Nueces River near Tilden, Tex.	8,192	1942–55	Oct. 8, 1955	17.23	3,570	.44
				Oct. 11, 1946	26.46	57,500	7.02
8	Nueces River near Three Rivers, Tex.	15,600	1915–55	Oct. 10, 1955	15.78	3,360	.22
				Sept. 18, 1919	46.0	85,000	5.45

[1] 32.7 feet from floodmarks. Maximum stage known since at least 1854.
[2] About; probably the highest since at least 1903.
[3] Maximum stage known; at site 0.6 mile upstream from gage site.
[4] Discharge at a point 33 miles upstream from gage, 580,000 cfs; at point 24 miles downstream from gage, 536,000 cfs.
[5] 24.61 feet, from floodmarks.
[6] Maximum stage known since at least 1836.
[7] At site 4.5 miles upstream.
[8] Maximum stage known since 1899.

FLOODS OF SEPTEMBER 25–28 IN UPPER BRAZOS RIVER BASIN, TEXAS

Excessive rains fell over the upper Brazos River watershed on September 24 and 25. Most of this rain fell in less than 24 hours and ended about noon on September 25. In addition to the regular Weather Bureau rainfall stations, supplemental rainfall data at 48 points were obtained by "bucket" survey. The storm was widespread over the area (fig. 43), but there were small areas of heavy local rainfall in which precipitation totaled from 10 to 15 inches. The largest of such areas surrounded Justiceburg and extended to the northeast and to the north; smaller areas of high rainfall were near Aspermont, Fort Griffin, Newcastle, and Breckenridge. The heaviest rain occurred west of Justiceburg where 15 inches was recorded.

Streamflow records at 7 gaging stations and measurement of peak discharge at 1 miscellaneous site were obtained in the flood area (table 23).

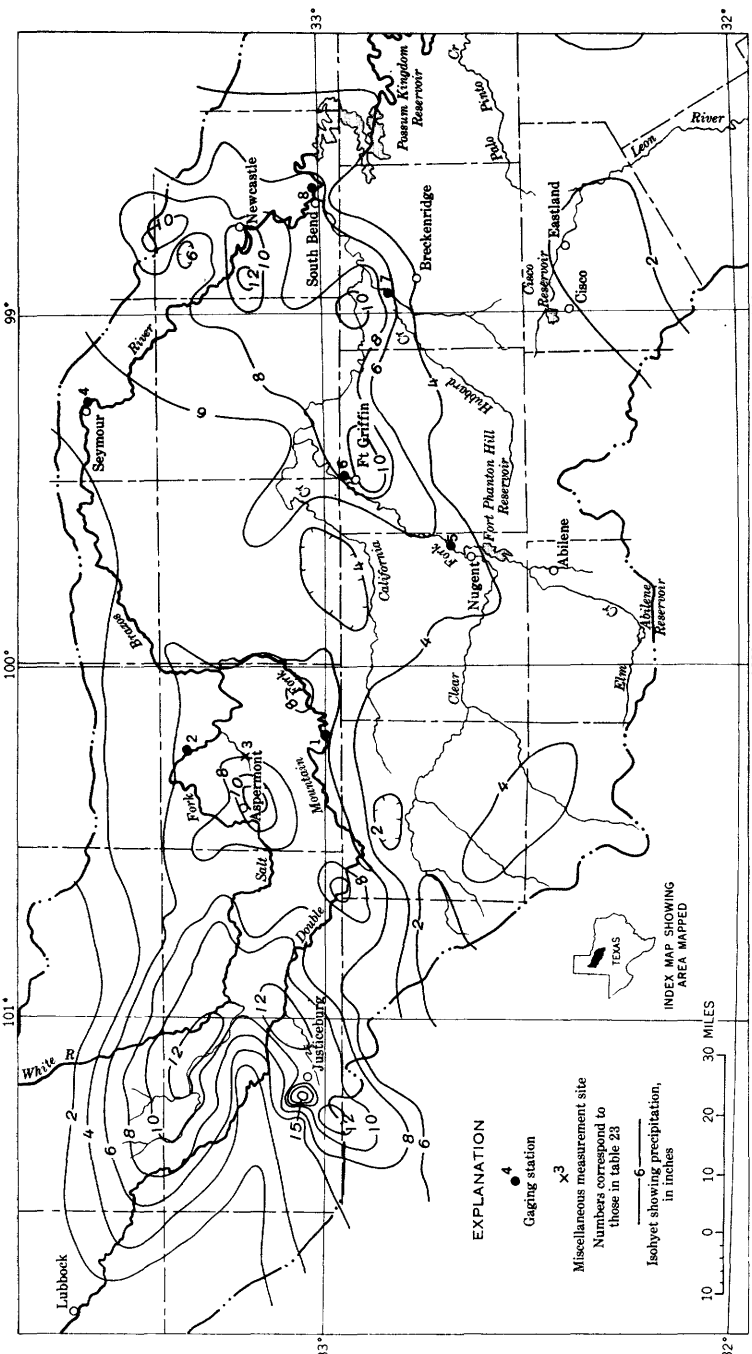

FIGURE 43.—Map of flood area showing location of flood-determination points and isohyets for September 24–25. Floods of September 25–28 in upper Brazos River basin, Texas.

Discharge hydrographs for four selected stations (fig. 44) show the progress of the peak downstream. The first peak of the Brazos River near South Bend was evidently caused by local runoff (from heavy rainfall between Seymour and South Bend) and tributary inflow just upstream from the South Bend station. The second peak was the flood wave in the Brazos River main stem as it progressed downstream.

The site for the miscellaneous measurement on Ku Creek (3½ miles northwest of Aspermont at U.S. Highway 83) was chosen as representative of the area because the soil in the basin, which ranges from sandy loam to sand, is typical of small stream basins in the Texas rolling plains.

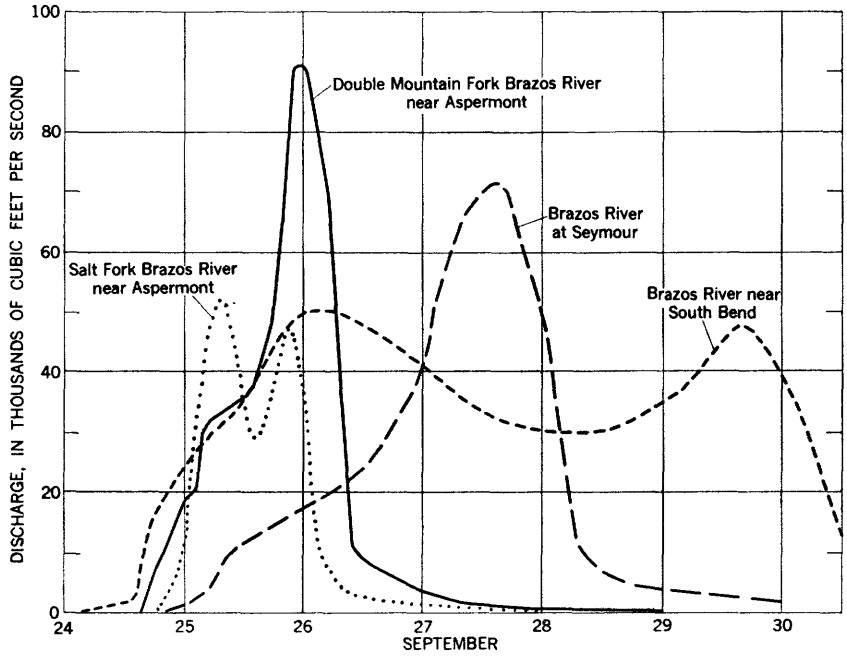

FIGURE 44.—Discharge hydrographs for selected stations in the Brazos River basin.

FLOODS OF OCTOBER 2–4 IN PECOS RIVER BASIN, TEXAS

Two storms, one during September 22–27 and the other during October 2–5, caused flooding on the Pecos River and tributaries in the area near the New Mexico-Texas State line (fig. 45). The rain-gage coverage of the area is poor, and no rainfall records are available in the Delaware River or the Salt (Screwbean) Draw basins, where the greatest amounts of rain caused the record-breaking peaks of October 2.

TABLE 23.—*Summary of flood stages and discharges, September 25–28 in upper Brazos River basin, Texas*

[Each station in this table has 1, 2, or 3 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record; and the third pertains to the maximum flood of which knowledge is available outside the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Brazos River basin:						
1	Double Mountain Fork Brazos River near Aspermont, Tex.	1,510	1923–34 1939–55	Sept. 26, 1955 Oct. 15, 1926	27.50 18.14	[1] 91,400 52,000	60.5 34.4
2	Salt Fork Brazos River Near Aspermont, Tex.	2,060	1923–25 1939–55	Sept. 25, 1955 Dec. 1913	14.92 14.4	52,200 ----------	25.3 --------
3	Ku Creek near Aspermont, Tex.	3.15	----------	Sept. 25, 1955	--------	[2] 3,000	952
4	Brazos River at Seymour, Tex.	5,250	1923–55	Sept. 28, 1955 Oct. 16, 1926	[3] 21.00 15.16	71,200 95,400	13.6 18.2
5	Clear Fork Brazos River at Nugent, Tex.	2,220	1924–55	Sept. 27, 1955 Sept. 8, 1932 1876	12.68 27.05 30.0	4,740 47,000 ----------	2.14 21.2 --------
6	Clear Fork Brazos River at Fort Griffin, Tex.	3,974	1923–55	Sept. 25, 1955 Sept. 10, 1932 1900	31.24 35.09 38.0	17,200 33,600 ----------	4.33 8.46 --------
7	Hubbard Creek near Breckenridge, Tex.	1,087	1955	Sept. 25, 1955 July 20, 1953	31.38 [4] 33.0	11,200 ----------	10.3 --------
8	Brazos River near South Bend, Tex.	12,360	1938–55	Sept. 26, 1955 May 4, 1941 1876	28.73 27.35 36.2	50,500 87,400 ----------	4.08 7.07 --------

[1] Maximum known since at least 1899.
[2] Greatest known in at least 50 years.
[3] Flood in about 1906 reached about same stage.
[4] Maximum stage known since at least 1925.

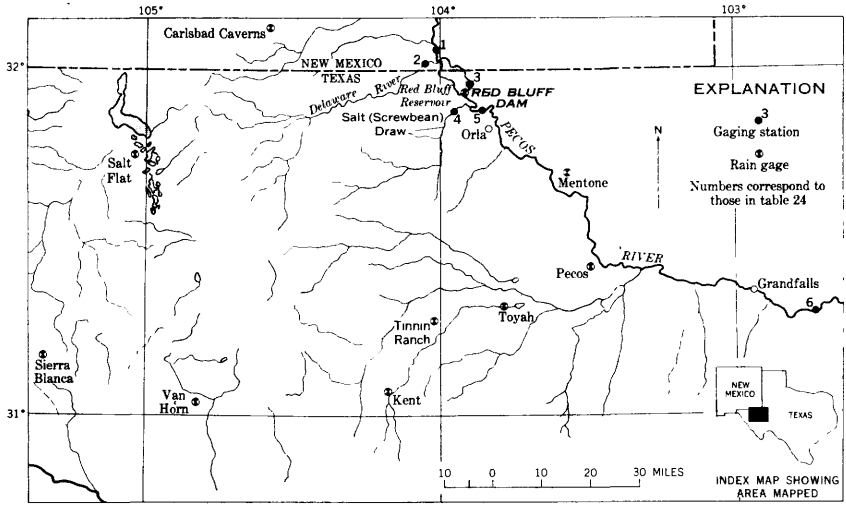

FIGURE 45.—Map of flood area showing location of flood-determination points and precipitation stations. Floods of October 2-4 in the Pecos River basin, Texas.

The following tabulation shows total amounts of rainfall at all stations in the area for which records are available:

Rain gage	Total rainfall, in inches	
	Sept. 22–27, 1955	Oct. 2–5, 1955
Carlsbad Caverns	2. 53	3. 11
Salt Flat	1. 22	2. 01
Sierra Blanca	0	1. 34
Van Horn	. 58	1. 93
Kent	. 10	1. 30
Tinnin Ranch	2. 45	1. 42
Toyah	1. 15	. 97
Pecos	2. 55	. 56
Mentone	3. 79	. 51
Red Bluff Dam	. 75	2. 08

Much greater amounts than are shown in the above tabulation must have fallen in the Delaware River and Salt (Screwbean) Draw basins to have caused the peak flows which occurred in October. No "bucket" survey was made, so no detailed data on rainfall are available.

Peak discharge of the Pecos River above Red Bluff Reservoir was not uncommonly large, and more than 70,000 acre-feet of the flood-flow from the Pecos and Delaware Rivers was retained in the reservoir (fig. 46). Thus, only moderate peaks resulted in the Pecos River below the dam (table 24).

TABLE 24.—*Summary of flood stages and discharges, October 2–4 in Pecos River basin, Texas*

[Each station in this table has two, entries listed under maximum floods; the first pertains to the flood being reported on and the second pertains to the maximum flood previously known during the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Pecos River basin:						
1	Pecos River at Red Bluff, N. Mex.	19, 540	1937–55	Oct. 4, 1955	[1] 13. 16	6, 480	----
				May 24, 1941	28. 3	52, 600	----
2	Delaware River near Red Bluff, N. Mex.	689	1912–13, 1914–15, 1937–55	Oct. 2, 1955	27. 0	81, 400	118
				June 27, 1938	18. 0	34, 600	50. 3
3	Red Bluff Reservoir	20, 720	1937–55	Oct. 14, 1955	2814. 8	[2] 93, 000	----
				Sept. 27–28, 1941	2846. 2	[2] 352, 000	----
4	Salt (Screwbean) Draw near Orla, Tex.	464	1939–40, 1943–55	Oct. 2, 1955	26. 1	40, 600	87. 6
				Apr. 17, 1952	13. 93	4, 070	8. 79
5	Pecos River near Orla, Tex.	21, 300	1937–55	Oct. 2, 1955	13. 30	8, 050	----
				Sept. 29, 1941	20. 74	23, 700	----
6	Pecos River below Grandfalls, Tex.	27, 820	1921–26, 1939–55	Oct. 7, 1955	5. 17	234	----
				Oct. 2, 1941	20. 98	22, 000	----

[1] Occurred October 2.
[2] Contents in acre-feet.

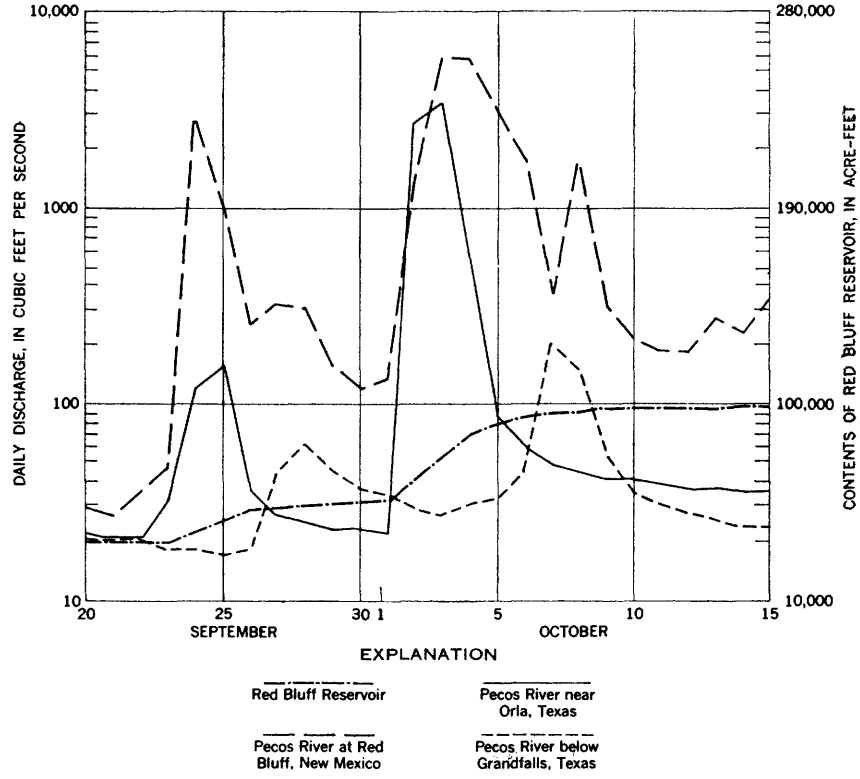

FIGURE 46.—Daily discharge hydrographs for Pecos River and graph of contents for Red Bluff Reservoir.

On October 2 the Delaware River reached a stage about 9 feet higher than the previous maximum stage known in at least the last 44 years. The peak discharge of 81,400 cfs was nearly 2½ times greater than the previous maximum. The gaging station on the Delaware River was destroyed by the flood so it was necessary to determine the peak stage from floodmarks.

An unprecedented flood occurred in Salt (Screwbean) Draw on October 2. The peak discharge was 40,600 cfs, and the peak stage was more than 12 feet above the previous maximum for the period of record of the Orla gage. Residents state that earlier floods have reached stages of 18 or 19 feet, which would be 7 or 8 feet lower than the 1955 flood. The Orla gage was severely damaged.

Figure 47 shows daily discharge hydrographs for the Delaware River and Salt (Screwbean) Draw.

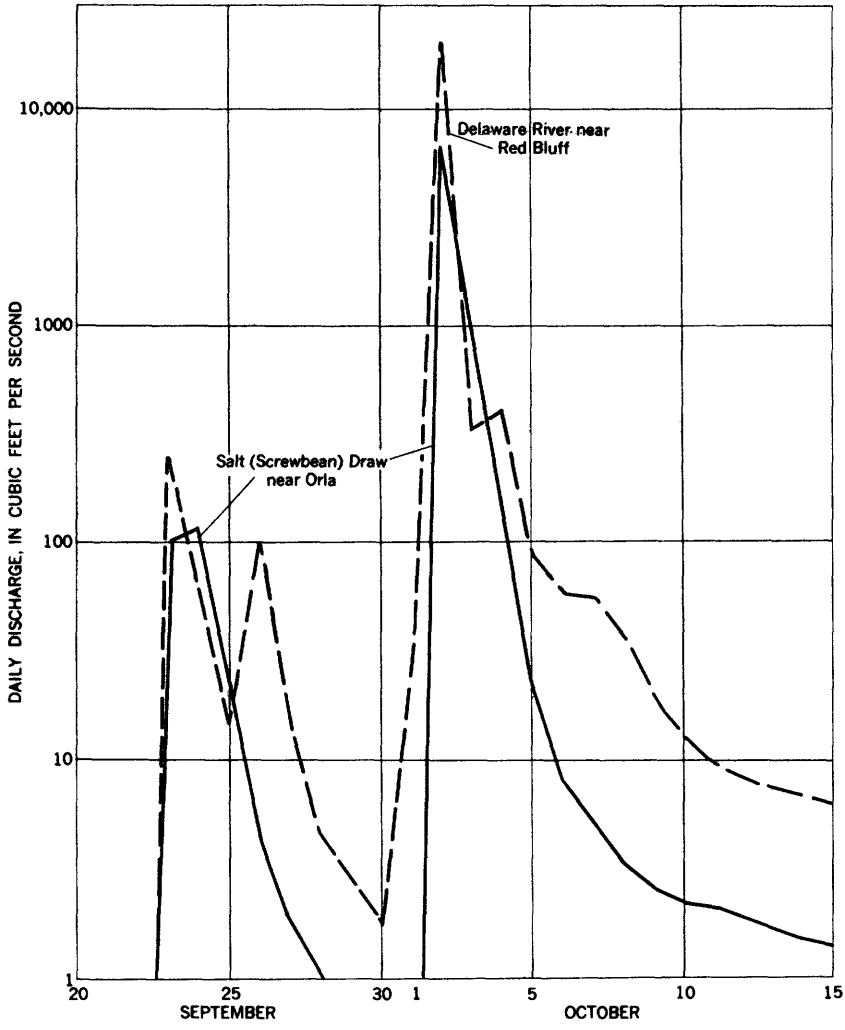

FIGURE 47.—Daily discharge hydrographs for Delaware River and Salt (Screwbean) Draw.

FLOODS OF OCTOBER 25 IN THE NISQUALLY RIVER, WASH.

Heavy rains fell on the high, snow-covered south slope of Mount Rainier in Mount Rainier National Park and caused a severe flood in the Nisqually River (fig. 48) on October 25. The storm began at 4 a.m. October 24, and 5.51 inches of rain had fallen at Paradise Inn (altitude 5,600 feet), by 12:15 p.m. October 25; 3.26 inches had fallen at Longmire (altitude 2,760 feet) by 8:30 a.m. October 25. An outstanding feature of the flood, which was observed, was the great surges of discharge. Within 1 hour, at least 6 huge surges, 15 to 20 feet high, composed of ice, rock, and water passed the highway bridge

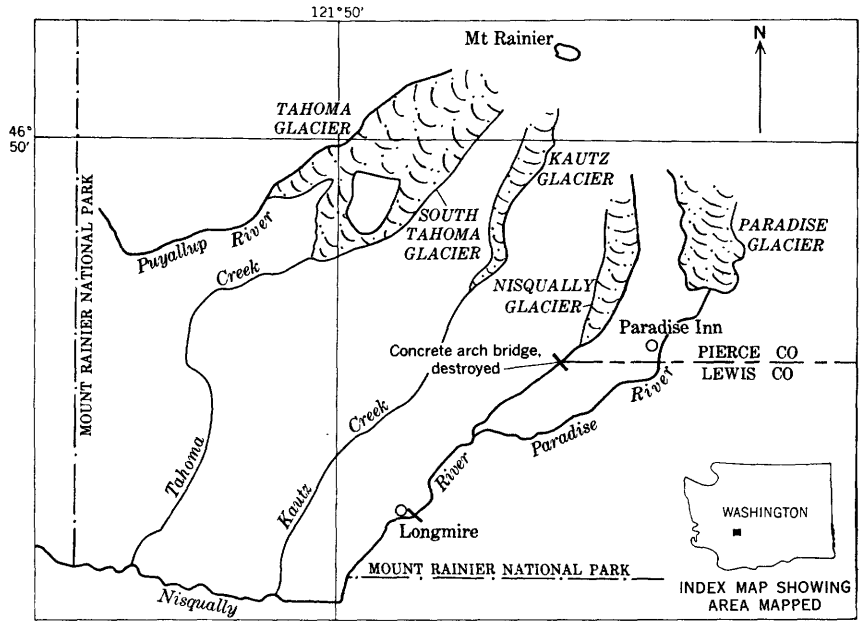

FIGURE 48.—Map showing location of flood area. Flood of October 25 in Nisqually River, Wash.

site about 0.85 mile downstream from the terminus of the Nisqually Glacier and destroyed the concrete arch bridge. The velocity of these surges was great enough to move boulders which were estimated by a park ranger to weigh from 80 to 100 tons. In addition to the concrete arch bridge a log bridge was destroyed; and roads, campgrounds, and powerlines were damaged in Mount Rainier National Park.

A flood of unknown magnitude destroyed a concrete bridge at the same site in 1935. The drainage area above this point is 6.5 square miles.

A slope-area measurement at Longmire, about 4 miles downstream from the glacier, showed a peak discharge of 20,000 cfs from a drainage area of about 20 square miles.

FLOODS OF NOVEMBER 3–4 ON THE OLYMPIC PENINSULA, WASH.

Heavy rains fell on the Olympic Peninsula during November 2–4 causing record or near-record peaks on many streams in the area (fig. 49).

No precipitation gages are located high on the mountains but Weather Bureau stations at lower altitudes showed heavy catches for November 2–4 as listed in the following tabulation.

	Station	Total rainfall (inches)		Station	Total rainfall (inches)
A.	Aberdeen 20 NNE	11.73	E.	Elwah Ranger Station	6.81
B.	Quinault Ranger Station	12.97	F.	Sequim	3.40
C.	Spruce	13.34	G.	Quilcene 2 SW	5.10
D.	Forks	12.28	H.	Cushman Dam	12.58

The greatest 1-day rain occurred at Forks where 8.85 inches fell on November 3. The heaviest concentrations of rain were, in general, on the southwest part of the peninsula where a runoff of 322 cfs per square mile occurred from the 69.5-square-mile area of Wynoochee River above Save Creek near Aberdeen.

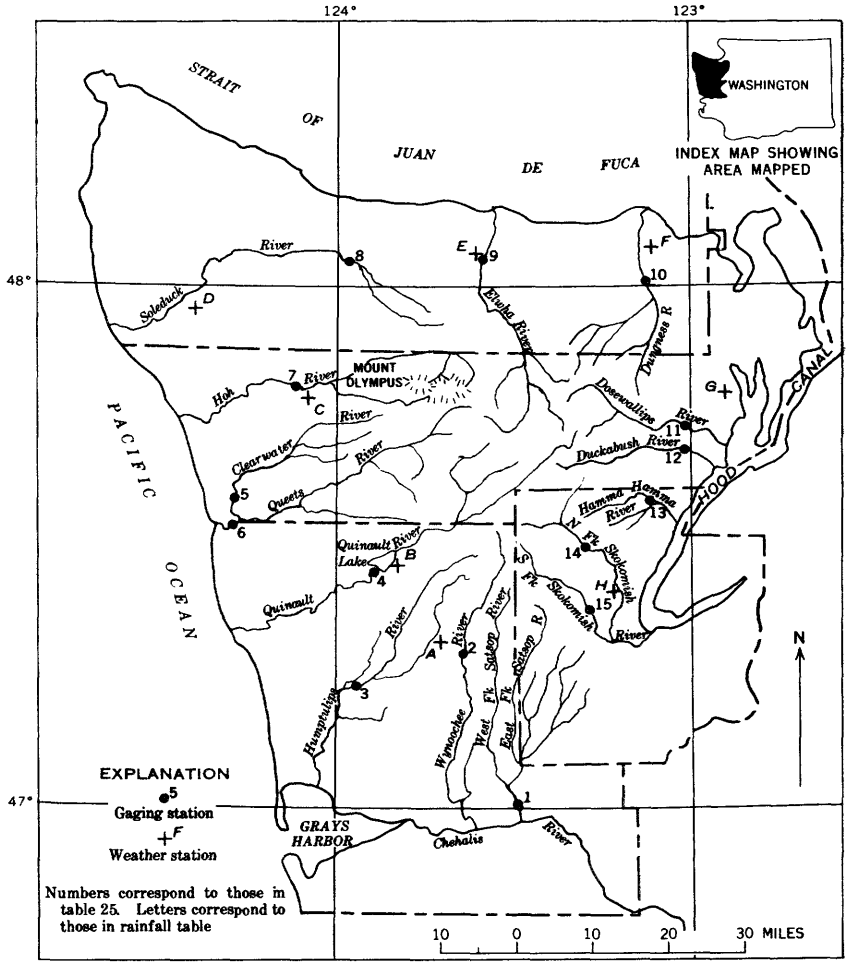

FIGURE 49.—Map of flood area showing location of gaging stations and precipitation stations. Flood of November 3-4 on Olympic Peninsula, Wash.

Most of the gaging stations in the flood area have a long period of record. The peak discharge of three of these long-term stations was the maximum during the period of record and many of the others had near-record peaks. The peak discharge in Quinalt River at Quinalt Lake was almost 20 percent greater than the previous maximum during 44 years of record (table 25).

Several homes were flooded at Amanda Park on Quinalt Lake and some roads and bridges were damaged in other areas. Most of the streams were confined to rather deep channels so serious damage did not occur.

TABLE 25.—*Summary of flood stages and discharges, November 3–4 on the Olympic Peninsula, Wash.*

[Each station in this table has 2 or 3 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record; and the third pertains to the maximum flood of which knowledge is available outside the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Chehalis River basin:						
1	Satsop River near Satsop, Wash.	290	1929–55	Nov. 3, 1955	35.14	27,800	95.9
				Jan. 22, 1935	38.9	46,690	161
2	Wynoochee River above Save Creek near Aberdeen, Wash.	69.5	1925–55	Nov. 3, 1955	16.53	22,400	322
				Nov. 18, 1954	15.83	20,400	294
	Humptulips River basin:						
3	Humptulips River near Humptulips, Wash.	130	1933–35, 1942–55	Nov. 3, 1955	11.09	25,000	192
				Jan. 22, 1935	12.7	33,000	254
	Quinault River basin:						
4	Quinault River at Quinault Lake, Wash.	264	1911–22, 1924–55	Nov. 4, 1955	20.51	50,200	190
				Nov. 27, 1949	18.60	42,300	160
				Nov. 1909	22	52,600	199
	Queets River basin:						
5	Clearwater River near Clearwater, Wash.	140	1932, 1937–55	Nov. 3, 1955	21.53	37,400	267
				Nov. 18, 1954	19.92	32,600	233
				Jan. 1935	20.1	30,400	217
6	Queets River near Clearwater, Wash.	445	1931–55	Nov. 3, 1955	25.99	118,400	266
				Jan. 22, 1935	27.0	130,400	293
	Hoh River basin:						
7	Hoh River near Spruce, Wash.	208	1926–55	Nov. 3, 1955	19.70	33,600	161
				Nov. 26, 1949	22.2	38,700	186
	Quillayute River basin:						
8	Soleduck River near Fairholm, Wash.	83.8	1917–21, 1933–55	Nov. 3, 1955	14.25	18,000	215
				Nov. 26, 1949	16.42	23,500	280
	Elwha River basin:						
9	Elwha River at McDonald Bridge near Port Angeles, Wash.	269	1897–1901, 1918–55	Nov. 3, 1955	20.91	21,400	79.5
				Nov. 18, 1897	14.5	41,600	155
	Dungeness River basin:						
10	Dungeness River near Sequim, Wash.	156	1923–30, 1937–55	Nov. 3, 1955	7.28	6,750	43.3
				Nov. 27, 1949	7.3	6,820	43.7
	Dosewallips River basin:						
11	Dosewallips River near Brinnon, Wash.	93.5	1931–55	Nov. 3, 1955	8.26	8,050	86.1
				Nov. 26, 1949	9.92	13,200	141
	Duckabush River basin:						
12	Duckabush River near Brinnon, Wash.	66.5	1910–11, 1938–55	Nov. 3, 1955	8.39	5,800	87.2
				Nov. 26, 1949	10.06	8,960	135
	Hamma Hamma River basin:						
13	Hamma Hamma River near Eldon, Wash.	51.3	1951–55	Nov. 3, 1955	6.58	4,980	97.0
				Nov. 19, 1954	6.53	4,280	83.5
	Skokomish River basin:						
14	North Fork Skokomish River below Staircase Rapids near Hoodsport, Wash.	58.1	1924–55	Nov. 3, 1955	10.00	13,600	234
				Nov. 5, 1934	14.4	27,000	465
15	South Fork Skokomish River near Potlatch, Wash.	65.6	1923–32, 1946–55	Nov. 3, 1955	16.80	17,800	271
				Nov. 26, 1949	17.75	19,300	294

FLOODS OF DECEMBER 21–24 IN FAR-WESTERN STATES

A series of intense rains which began December 15 and continued into January 1956 covered about two-thirds of California, one-half of Oregon, one-third of Nevada and Idaho, and minor areas in Washington (fig. 50), and caused floods of extremely great magnitude. The streams were at flood stage for about the last half of December. In all but a few areas the storm of December 21–24 produced the greatest floods of the month, and at nearly all stations the peaks for these floods exceeded those in January 1956.

The storms reflected the effect of the combination of a moist unstable airmass, strong west-southwest winds, and mountain ranges oriented nearly at right angles to the flow of air. An unusual feature of the storms was the persistence of the strong flow of moist air. The major storm, during December 21–24, was accompanied by high temperatures and high wind velocities. As a result, a large amount of snow which had accumulated at high altitudes was melted. This snowmelt, added to the heavy rainfall at lower altitudes, caused recordbreaking runoff in the streams draining the Sierra Nevada, and in Idaho and Washington.

Flood runoff in unregulated streams exceeded any previously recorded throughout much of the area (table 26). Peaks on the Carson River in Nevada were nearly twice as great as those of the previous record flood of 1950, as also were the peaks on the Kaweah River which overflowed and flooded Visalia, Farmersville, and Three Rivers, Calif. The peak discharge of 425,000 cfs in the Klamath River near Klamath, Calif. was almost 1½ times that of the previous maximum during the period of record and was exceeded only by the legendary floods of 1861–62. The peak discharge in the upper Boise River equaled the maximum during 45 years of record, and that in the lower Rogue River was as great or greater than any in 65 years. The peak discharge in many of the unregulated tributaries in the Willamette River basin were about equal to any previously recorded.

Stages and discharges are given in table 26 for selected stations which have a long period of record in areas of intense flooding.

Flood-damage figures were compiled for the entire flood period—December 1955–January 1956 (table 27). Virtually all the damage resulted from the December storms, and these figures can be used as an indication of the regional distribution of flood damage during December.

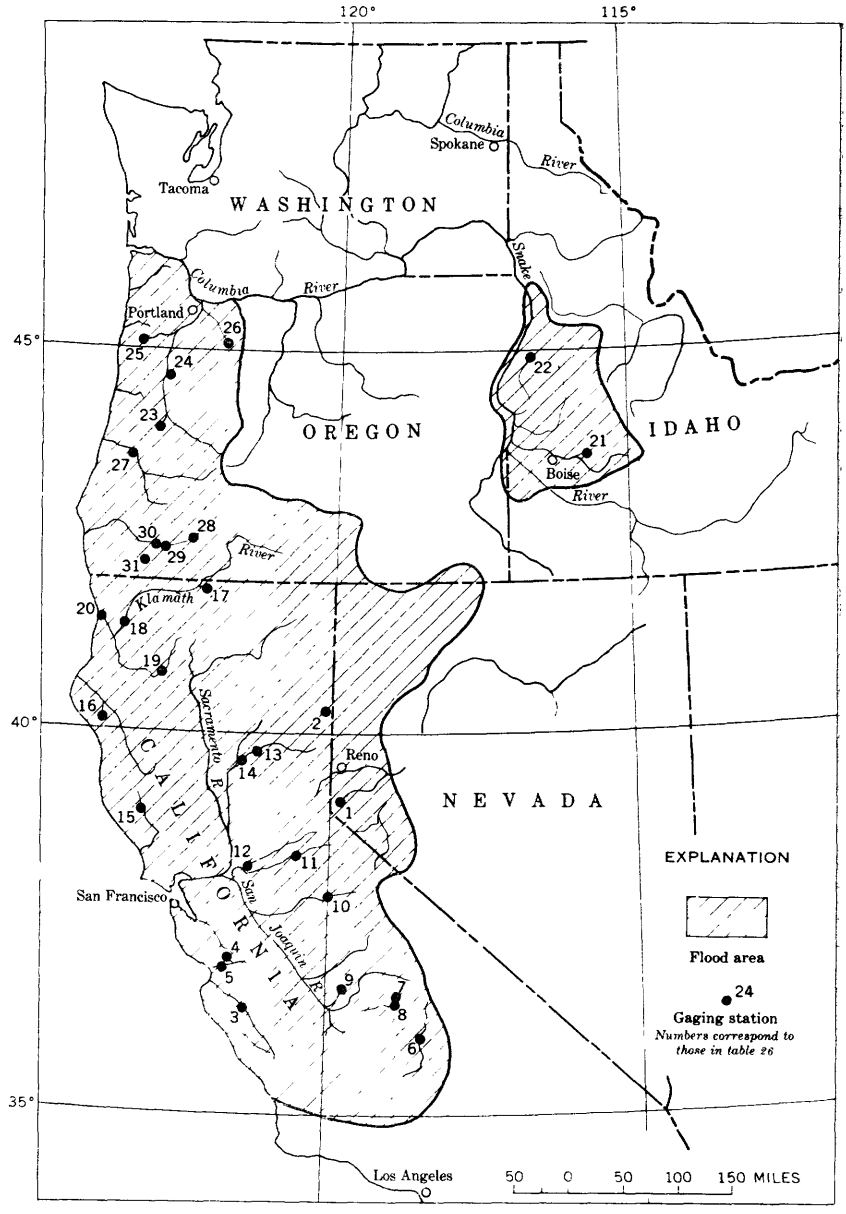

FIGURE 50.—Map of flood area showing location of flood-determination points. Floods of December 21–24 in far-western States.

More than one-third of the total damage and more than half of the deaths occurred in the Sacramento Valley. The greatest concentration of damage and deaths occurred in the Yuba City area

TABLE 26.—*Summary of flood stages and discharges, December 21–24 in far-western States*

[Each station in this table has 1, 2, 3, or 4 entries listed under maximum floods; the first pertains to the flood being reported on; the second pertains to the maximum flood previously known during the period of record; and the third and fourth pertain to the maximum floods of which knowledge is available outside the period of record]

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Humboldt-Carson Sink basin:						
1	Carson River near Carson City, Nev.	876	1939–56	Dec. 24, 1955	15.0	30,000	34.2
				Nov. 22, 1950	11.40	15,500	17.7
	Warner Lakes basin:						
2	Camas Creek near Lakeview, Oreg.	63	1912–14, 1944–56	Dec. 22, 1955	5.15	1,630	25.9
				Apr. 28, 1952	4.24	660	10.5
	Salinas River basin:						
3	Arroya Seco near Soledad, Calif.	241	1901–56	Dec. 23, 1955	14.30	27,700	115
				Feb. 21, 1917, Nov. 25, 1926	-------	22,000	91.3
	Pajaro River basin:						
4	Uvas Creek near Morgan Hill, Calif.	30.2	1930–56	Dec. 23, 1955	14.3	10,300	341
				Dec. 11, 1937	13.70	8,630	286
5	Pajaro River near Chittenden, Calif.	1,188	1939–56	Dec. 24, 1955	32.46	24,000	20.2
				Apr. 4 or 5, 1941	26.2	11,100	9.34
	Kern River basin:						
6	Kern River near Kernville, Calif.	865	1912–56	Dec. 23, 1955	17.55	27,200	31.4
				Nov. 19, 1950	17.50	27,000	31.2
	Tulare Lake basin:						
7	North Fork Kaweah River at Kaweah, Calif.	128	1910–56	Dec. 23, 1955	14.1	21,500	168
				Nov. 19, 1950	10.85	9,150	71.5
8	Kaweah River near Three Rivers, Calif.	520	1903–56	Dec. 23, 1955	22.24	80,700	155
				Nov. 19, 1950	19.5	52,000	100
	San Joaquin River basin:						
9	Fresno River near Knowles, Calif.	132	1911–13, 1915–56	Dec. 23, 1955	11.52	13,300	101
				Nov. 19, 1950	9.31	8,540	64.7
10	Middle Tuolumne River at Oakland Recreation Camp, Calif.	71.0	1916–56	Dec. 23, 1955	11.1	4,920	69.3
				Nov. 19, 1950	10.45	3,450	48.6
11	Middle Fork Mokelumne River at West Point, Calif.	67.2	1911–56	Dec. 23, 1955	8.98	4,320	64.3
				Nov. 18, 1950	7.70	2,820	42.0
12	Cosumnes River at McConnell, Calif.	730	1943–56	Dec. 23, 1955	46.26	54,000	74.0
				Nov. 21, 1950	44.89	21,900	30.0
				Feb. 23, 24, 1936	45.94	----------	-------
	Sacramento River basin:						
13	Middle Fork Feather River near Merrimac, Calif.	1,078	1951–56	Dec. 23, 1955	21.2	62,000	57.5
				Jan. 9, 1953	15.06	25,900	24.0
				Dec. 10, 1937	19.4	----------	-------
14	Feather River at Bidwell Bar, Calif.	1,353	1911–56	Dec. 23, 1955	25.5	104,000	76.9
				Dec. 11, 1937	24.0	93,000	68.7
	Russian River basin:						
15	Russian River near Hopland, Calif.	362	1936–56	Dec. 22, 1955	27.00	45,000	124
				Feb. 28, 1940	[1] 26.12	34,100	94.2
				December 1937	30.0	----------	-------
	Eel River basin:						
16	South Fork Eel River near Miranda, Calif.	537	1940–56	Dec. 22, 1955	42.7	173,000	322
				Dec. 27, 1945	27.73	73,200	136
	Klamath River basin:						
17	Fall Creek at Copco, Calif.	20	1928–56	Dec. 22, 1955	4.35	875	43.8
				Jan. 7, 1948	3.22	350	17.5
18	Klamath River at Somesbar, Calif.	8,480	1927–56	Dec. 22, 1955	59.4	202,000	23.8
				Jan. 18, 1953	49.7	137,000	16.2
				Feb. 21, 1927	50.8	141,000	16.6
19	Trinity River at Lewiston, Calif.	727	1911–56	Dec. 22, 1955	27.3	71,600	98.5
				Feb. 28, 1940	[2] 21.1	40,300	55.4
20	Klamath River near Klamath, Calif.	12,100	1910–26, 1950–56	Dec. 22, 1955	49.7	425,000	35.1
				Jan. 18, 1953	43.67	297,000	24.5
	Boise River basin:						
21	Boise River near Twin Springs, Idaho.	830	1911–56	Dec. 23, 1955	8.31	10,300	12.4
				May 17, 1927	8.30	10,300	12.4
	Weiser River basin:						
22	Weiser River at Tamarack, Idaho.	36.5	1936–56	Dec. 22, 1955	7.17	1,320	36.2
				Mar. 27, 1940	-------	775	21.2

See footnotes at end of table.

TABLE 26.—*Summary of flood stages and discharges, December 21–24 in far-western States*—Continued

No.	Stream and place of determination	Drainage area (sq mi)	Period of record	Maximum floods			
				Date	Gage height (feet)	Discharge	
						Cfs	Cfs per sq mi
	Willamette River basin:						
23	Long Tom River near Noti, Oreg.	88	1935–56	Dec. 22, 1955	20.17	6,990	79.4
				Jan. 28, 1954	18.56	5,400	61.4
24	Calapooya River at Albany, Oreg.	372	1940–56	Dec. 22, 1955	22.12	32,700	87.9
				Jan. 8, 1948	[3] 25.5	24,900	66.9
25	Willamina Creek near Willamina, Oreg.	65	1934–56	Dec. 21, 1955	11.65	7,760	119
				Feb. 17, 1949	10.25	6,380	98.2
				Mar. 31, 1931	12	8,200	126
26	Clackamas River above Three Lynx Creek, Oreg.	479	1909–13, 1921–56	Dec. 21, 1955	15.06	34,100	71.2
				Mar. 31, 1931	15.5	34,800	72.7
	Umpqua River basin:						
27	Umpqua River near Elkton, Oreg.	3,683	1905–56	Dec. 22, 1955	45.6	218,000	59.2
				Oct. 30, 1950	44.2	208,000	56.5
				1861	45.5	----------	----------
	Rogue River basin:						
28	Rogue River above Prospect, Oreg.	332	1908–12, 1923–56	Dec. 22, 1955	10.01	16,600	50.0
				Dec. 28, 1945	8.4	11,900	35.8
29	Rogue River at Dodge Bridge, near Eagle Point, Oreg.	1,210	1938–56	Dec. 22, 1955	12.90	75,000	62.0
				Jan. 18, 1953	11.08	44,600	36.9
30	Rogue River at Raygold, near Central Point, Oreg.	2,020	1905–56	Dec. 22, 1955	23.1	110,000	54.5
				Feb. 21, 1927	24.8	110,000	54.5
				Winter 1861–62	32	----------	----------
				February 1890	27.5	----------	----------
31	Applegate River near Applegate, Oreg.	480	1938–56	Dec. 21, 1955	18.00	47,600	99.2
				Jan. 18, 1953	15.60	29,100	60.6

[1] Occurred January 21, 1943.
[2] Occurred January 7, 1948
[3] Occurred January 2, 1943 (backwater from Willamette River).

TABLE 27.—*Flood damage and loss of life, December 1955–January 1956*

[Damage from compilation by Corps of Engineers]

Region	*Flood damage (dollars)*	*Deaths*
Great Basin	3,992,000	0
Central-coastal California	27,383,300	9
San Joaquin Valley	29,580,000	2
Sacramento Valley	66,010,000	40
North-coastal California	43,368,200	16
West-central Idaho	[1] 1,445,000	0
Willamette Valley	8,667,870	2
Coastal Oregon	9,328,700	3
Total	189,775,070	72

[1] From Corps of Engineers, U.S. Forest Service, and Idaho Department of Highways.

where a levee failure on the Feather River caused damage estimated at more than $41 million and 38 persons were drowned.

A special flood report, Water-Supply Paper 1650, will be published and will cover: precipitation during the period, the floods, flood damage, data on stages and discharges at stream-gaging stations and miscellaneous sites, summarized peak stages and discharges, flood-crest profiles, storage regulation, and previous floods at selected sites.

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UNITED STATES DEPARTMENT OF THE INTERIOR

STEWART L. UDALL, *Secretary*

GEOLOGICAL SURVEY

Thomas B. Nolan, *Director*

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[The letters in parentheses preceding the titles designate separately published chapters]