FLOOD OF MAY 27-28, 1954, IN PANOLA AND LAFAYETTE COUNTIES, MISSISSIPPI

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Water Resources Division
U. S. Geological Survey
Jackson, Miss.

MARCH
~~JANUARY~~ 1955

SS-48

OPEN FILE RELEASE NO. 2

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FLOOD OF MAY 27-28, 1954, IN PANOLA AND LAFAYETTE COUNTIES, MISSISSIPPI

by W. H. Goines

INTRODUCTION

As a result of heavy rains during the late afternoon and night of May 27, 1954, record-breaking floods occurred on small streams in Panola and Lafayette Counties. All flooding was in rural areas, and no loss of life was reported. The Agriculture Stablization Committees at Sardis and at Oxford estimated the crop and soil losses in Panola County as $400,000, and in Lafayette County as $25,000. The total damage to county roads and State highways was estimated to be in excess of $25,000.

The purpose of this report is to present rainfall information and more detailed runoff data than are found in the regular water Supply Papers. The report contains a summary of peak discharges at 10 miscellaneous sites and a detailed record of discharge at the gaging station Clear Creek near Oxford, Miss.

Field investigation incident to this report were conducted by members of the District Office, U. S. Geological Survey, Jackson, Miss., I. E. Anderson, District Engineer.

RAINFALL

During the late afternoon and night of May 27, 1954, heavy rains of cloudburst intensity covered parts of Panola and Lafayette Counties. A field reconnaissance made May 30-31, 1954, revealed that the heaviest rainfall occurred in the headwaters of Long Creek in Panola County.

Soon after the storm an extensive search was made by Geological Survey engineers for rainfall information, as there were no official Weather Bureau precipitation stations in the area of heaviest rainfall. Thirty-seven measurements were made in cans, tubs, washpots, or other vessels. A tabulation of these measurements is given in table 1. Although such measurements may not be highly accurate, they may be used with confidence when several such measurements in the same locality are found to be in agreement. These measurements indicated a maximum rainfall of 10 inches, and statements by local people indicated that the bulk of the rain fell between 7 p.m. and midnight. This is verified by the two recording rain gage charts from Sardis and Enid Dams, which are reproduced on figure 1.

Figure 2 is an isohyetal map based on the 37 measurements which are listed in table 1 and the following rainfall information from Weather Bureau stations for May 27, 1954:

Batesville	0.69 inches
Water Valley	1.00 inches
Sardis Dam	2.88 inches
Enid Dam	3.46 inches
University(Oxford)	3.70 inches
Abbeville	4.03 inches

METEOROLOGIC CONDITIONS

The following is quoted from a letter dated Dec. 29, 1954 from George V. Fish, Meteorologist in charge, Weather Bureau, Jackson, Miss.

TABLE 1.

Miscellaneous measurements of rainfall, May 27, 1954

No.	Latitude (to nearest minute)	Longitude (to nearest minute)	Rainfall (inches)	Storm period
1	34°26'	89°29'	4	---
2	34°27'	89°34'	5.0	4 p.m. to 12
3	34°25'	89°34'	6.0	---
4	34°16'	89°35'	1.7	during night
5	34°16'	89°35'	2.1	during night
6	34°16'	89°37'	4.0	---
7	34°21'	89°38'	3.4/	10 p.m. to 11 p.m.
8	34°21'	89°39'	4	---
9	34°21'	89°39'	4	---
10	34°26'	89°39'	3.2	---
11	34°19'	89°40'	8.2	---
12	34°25'	89°43'	4	-- ---
13	34°20'	89°43'	6.8	Bulk of rain 7:30 to 10:30 p.m.
14	34°14'	89°44'	6.1	---
15	34°11'	89°44'	3.5	---
16	34°19'	89°45'	6.4	8 p.m. to 11 p.m.
17	34°22'	89°46'	4.8	7:30 p.m. to 10:30 p.m.
18	34°21'	89°46'	6	---
19	34°20'	89°46'	8.5	8 p.m. to 11 p.m.
20	34°16'	89°46'	6.7	---
21	34°13'	89°46'	10.0	6:30 p.m. to 9:30 p.m.
22	34°17'	89°47'	8.0	---
23	34°17'	89°47'	9.7/	Bulk of rain 7:30 p.m. to 9:30 p.m.
24	34°12'	89°47'	9.6/	7 p.m. to 10 p.m.
25	34°20'	89°48'	6.2	7:30 p.m. to 10 p.m.
26	34°18'	89°51'	6.8	---
27	34°16'	89°51'	6.1 /	----
28	34°15'	89°51'	6.7	during night
29	34°12'	89°51'	9.6	---
30	34°19'	89°52'	4.2	---
31	34°17'	89°52'	7.1	7 p.m. to 9 p.m.
32	34°16'	89°52'	5.6	7 p.m. to 9 p.m.
33	34°13'	89°52'	7	6:30 p.m. to 11:30 p.m.
34	34°12'	89°53'	5.2	5 p.m. to during night
35	34°15'	89°54'	3.9	during night
36	34°12'	89°54'	3.6	---
37	34°15'	89°55'	1.6	during night

/ Container overflowed, and rainfall may be in excess of the amount indicated.

Figure 1.- Graph of cumulative rainfall, May 27, 1954.

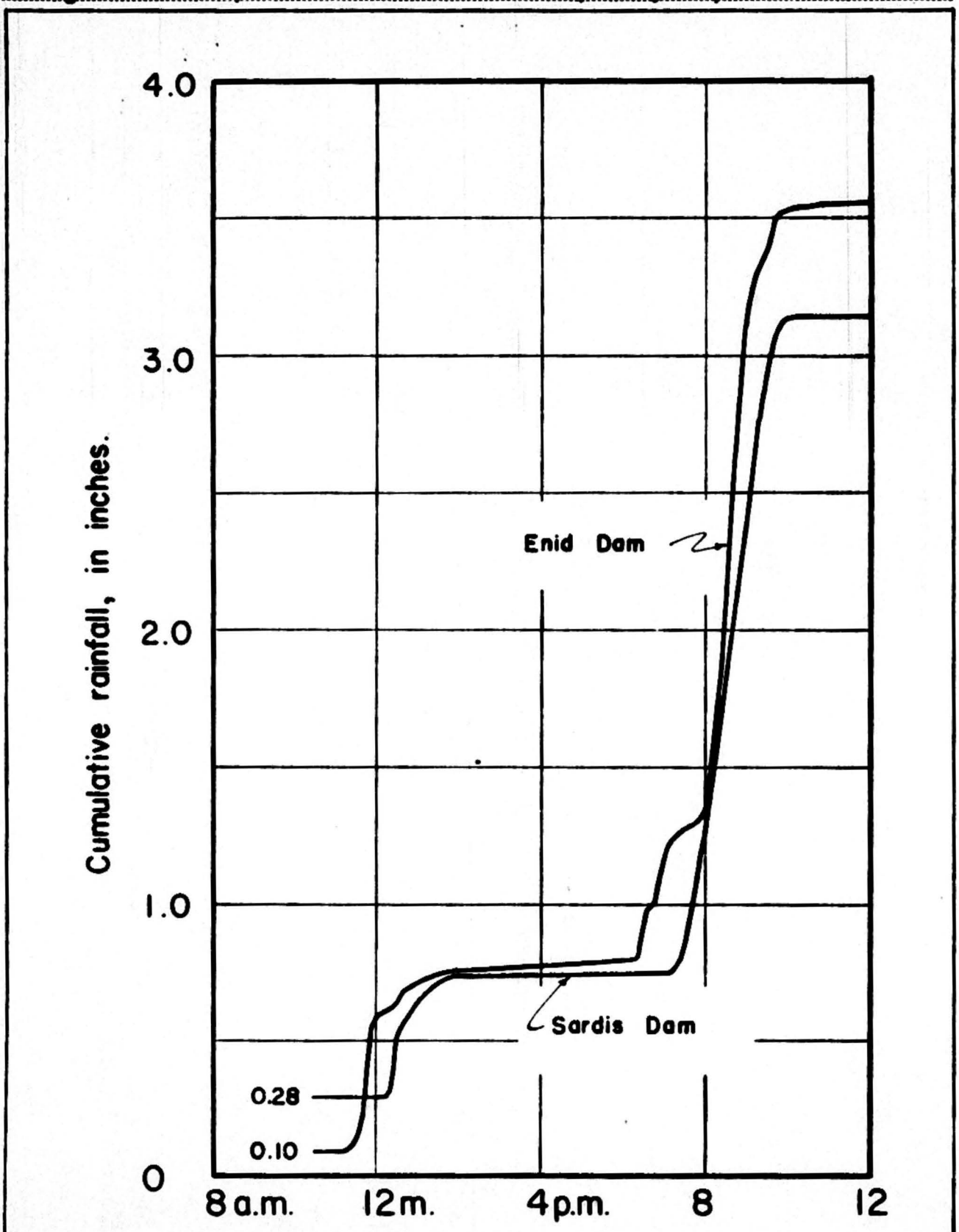

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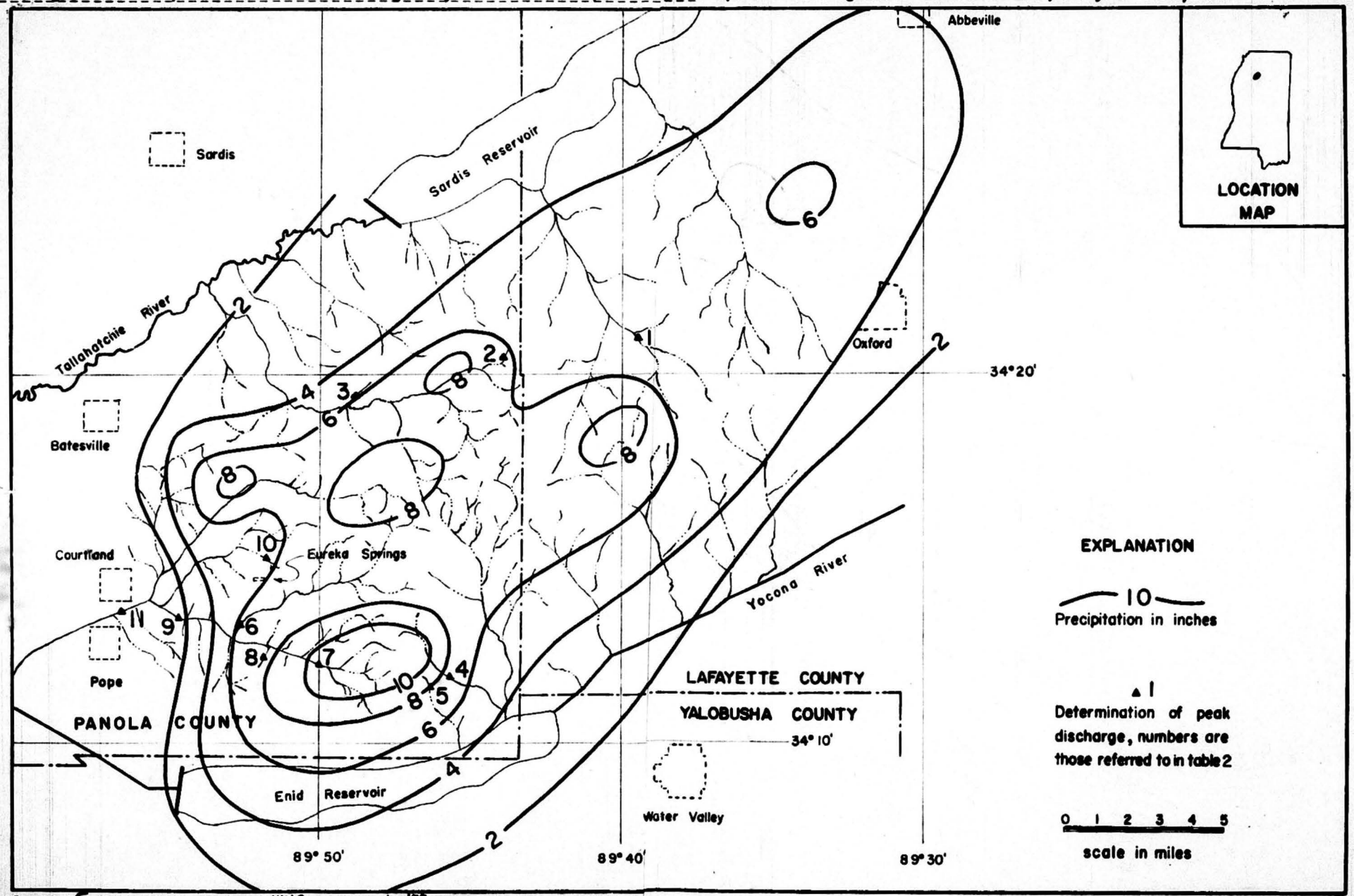
Figure 2.- Map of flood area showing isohyetal lines and places where peak discharges were determined, May 27-28, 1954.



Sheet No. 5 of ..... Sheets. Prepared by W.H.G. Date Jan. '55 Checked by ..... Date .....

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"The radiosonde and rawinsonde observations at the nearest reporting points were analyzed to determine the upper air stream-flow, its thermal structure, stability and moisture distribution. As a result, it appears that the following factors were present over the area of maximum precipitation, and that they contributed materially to the observed results:

There was a deep current of warm moist air directed up-slope over an isentropic surface that had its crest over the area of maximum precipitation. The observation time approximated the time of the excessive precipitation ending. This up-slope flow provided for the rapid condensation necessary for production of precipitation and the amounts of moisture vapor available for condensation were of the same order that have produced similar effects elsewhere, notably at Tylertown, Miss., in August 1953. In general, the study high-lights the desirability of greater refinement through greater density of observational rawinsonde and radiosonde observational stations, both for accuracy of studies such as this, and for the establishment of the analysis on a microanalysis scale over local areas where such occurrences may be inferred from the existing data, but can seldom be defined within the desirable limits by weather forecasters within the scope of present upper air data."

DISCHARGE RECORDS

Indirect determinations of peak discharge were made at locations shown on figure 2. Results of these determinations are given in table 2.

Figure 3 is a graph showing these peak discharges, in cfs per square mile, plotted against the corresponding drainage areas. Such a diagram is helpful in comparing the relative size of the flood in streams draining basins of different size. Although the size of a drainage basin is important it is only one of the many factors that influence the magnitude of the runoff.

Owing to the high intensity of rainfall and relatively steep slopes of the drainage basins, the rises were flashy. This was verified by statements of local residents and by the discharge hydrograph for Clear Creek near Oxford which is shown as figure 4.

TABLE 2: Maximum discharges, May 27-28, 1954.

Map number on Figure 2	Streams and place of determination	Drainage area (square miles)	Maximum discharge		Method of determination
			cfs	cfs per sq.mile	
1	Clear Creek, lat 34°21', long. 89°40', 1½ miles upstream from Hudson Creek, and 8.3 miles west of Oxford, Miss.	9.30	2,960	320	Rating curve.
2	Dry Traywick Branch, lat 34°20'40", long. 89°44'00", 0.7 mile upstream from Hotophia Creek, and 12.5 miles southwest of Oxford, Miss.	0.27	403	1,490	Flow through culvert.
3	Central Creek, lat 84°19'23", long. 89°48'40", 0.4 mile upstream from Hotophia Creek, and 8.0 miles east of Batesville, Miss. ← Hotophia	1.07	~~414~~ —	~~390~~ —	Contracted opening. Results not used.
4	Flowers Creek, lat 34°12', long. 89°45', 7 miles southeast of Eureka Springs, Miss.	2.59	3,280 ~~3,050~~	1,270 ~~1,210~~	Contracted opening.
5	Rowsey Creek, lat 34°12', long. 89°46', 6 miles southeast of Eureka Springs, Miss.	1.00	1,390 ~~1,360~~	1,390 ~~1,360~~	Contracted opening.
6	Long Creek, lat 34°13'00", long. 89°52'30", 0.6 mile upstream from Caney Creek, and 1.7 miles southwest of Eureka Springs, Miss.	~~1.20~~ 12.8	19,500	1,520	Slope-area.

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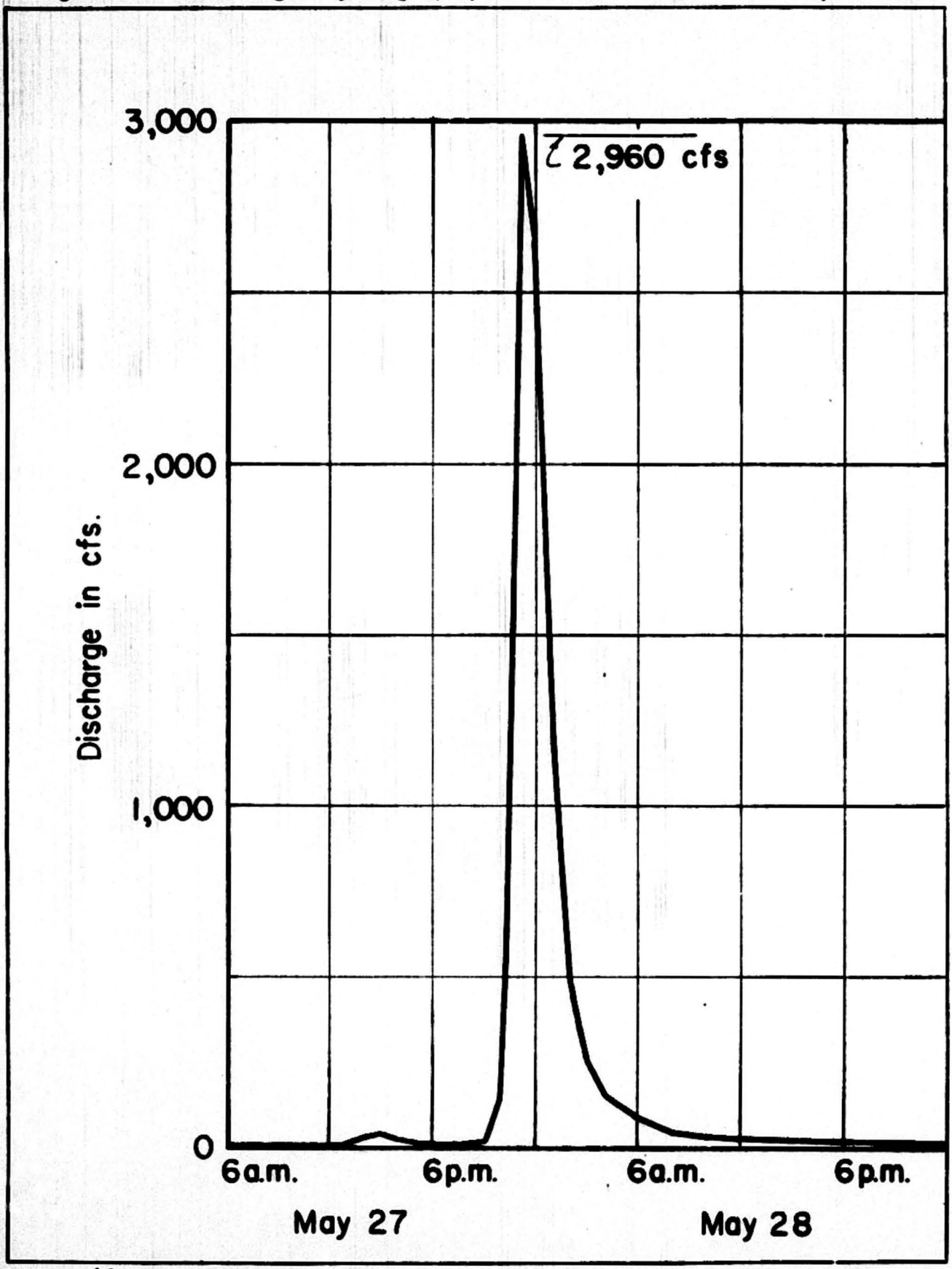
Figure 4.- Discharge hydrograph, Clear Creek near Oxford, Miss.



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FLOOD HISTORY

Long Creek Basin

The May 1954 flood exceeded any flood that has occurred on Long Creek in the past 100 years. The following information bears this out:

R. C. Mathis, Illinois Central Railroad bridge inspector of Memphis, Tenn., stated that on Long Creek near Courtland the highest floods prior to 1954 occurred in 1907 and 1911, and that these floods were about the same height. He also stated that the creek was dredged about 20 years ago and that the flood of May 1954 was the highest to his knowledge.

S. R. Williford is a farmer who lives on the left bank just upstream from U. S. Highway 51 crossing over Long Creek near Courtland; his house was built about 1924. May 28, 1954 was first time flood water was in the house. At 1 a.m. there was no water on floor of house, at 2 a.m. water was 14 inches deep, by 3 a.m. water was out of house.

L. F. Hentz, a 60 year old farmer, owns land on Long Creek near Pope. Hentz stated that his grandfather settled there about 1860 and that his father was born there in 1862. Hentz does not remember his father ever mentioning a flood that approached the flood of May 28, 1954, and to best of his knowledge this flood was the highest since at least 1860.

Powhatan H. Carpenter, a 69 year old farmer and storekeeper at Eureka Springs, stated that his grandfather settled there in 1848. To the best of Carpenter's knowledge the flood of May 27, 1954 was the highest on Long Creek since at least 1848. About 1859 a mill (flour, grits, etc.) was built on Long Creek, just south of Eureka Springs. Carpenter remembers hearing the flood water getting into the mill at

one time (date unknown but at least 70 years ago and probably prior to 1880). The mill burned about 1890 and at present there are no remains of the mill. Carpenter visited the site of the mill about a day or two after the May 27, 1954 flood, floodmarks indicated that water had been several feet deep at the mill site and Carpenter believes that water was several feet higher on May 27, 1954 than during the flood prior to 1880.

Guy Bright, a 75 year old farmer who lives at Eureka Springs, was born there and has lived on Caney Creek or Long Creek all of his life. His family settled there about 1860. Bright stated that the flood of May 27, 1954 on Long Creek or Caney Creek was the highest to his knowledge.

Carpenter and Bright both indicated that the flood peak on Long Creek occurred prior to midnight on May 27, 1954. Carpenter stated that early on May 28 Long Creek was back within its banks.

Victor Gee, a 70 year old farmer who lives on the banks of Long Creek near Eureka Springs, stated that the flood of May 27, 1954 was the highest to his knowledge. Before the flood of May 27, 1954, he does not remember flood water ever reaching the edge of a spring which is used for drinking water. Floodmarks indicated that during this flood water was 2 to 2½ feet deep at the spring.

Dry Traywich Branch near Oxford, Miss. →

R. T. Traywick, a farmer about 60 years old, stated that the flood of May 27, 1954 was the highest to his knowledge.

Flowers Creek near Eureka Springs, Miss. →

A farmer appearing to be 50 years old, stated that he had lived in

this vicinity all ~~of~~ his life and had farmed in the Flowers Creek bottom for the past 14 years, and that the flood of May 27, 1954 was the highest to his knowledge.

Anthony Ditch near Eureka Springs, Miss.

A Mr. B Burns, a farmer, stated that on May 27, 1954 all creeks in this area were the highest he had seen in the 43 years he has lived here.

Clear Creek near Oxford, Miss.

Stream flow records are available for the periods January 1939 to July 1941 and February 1950 to date. The flood of May 27, 1954 is the highest of record.