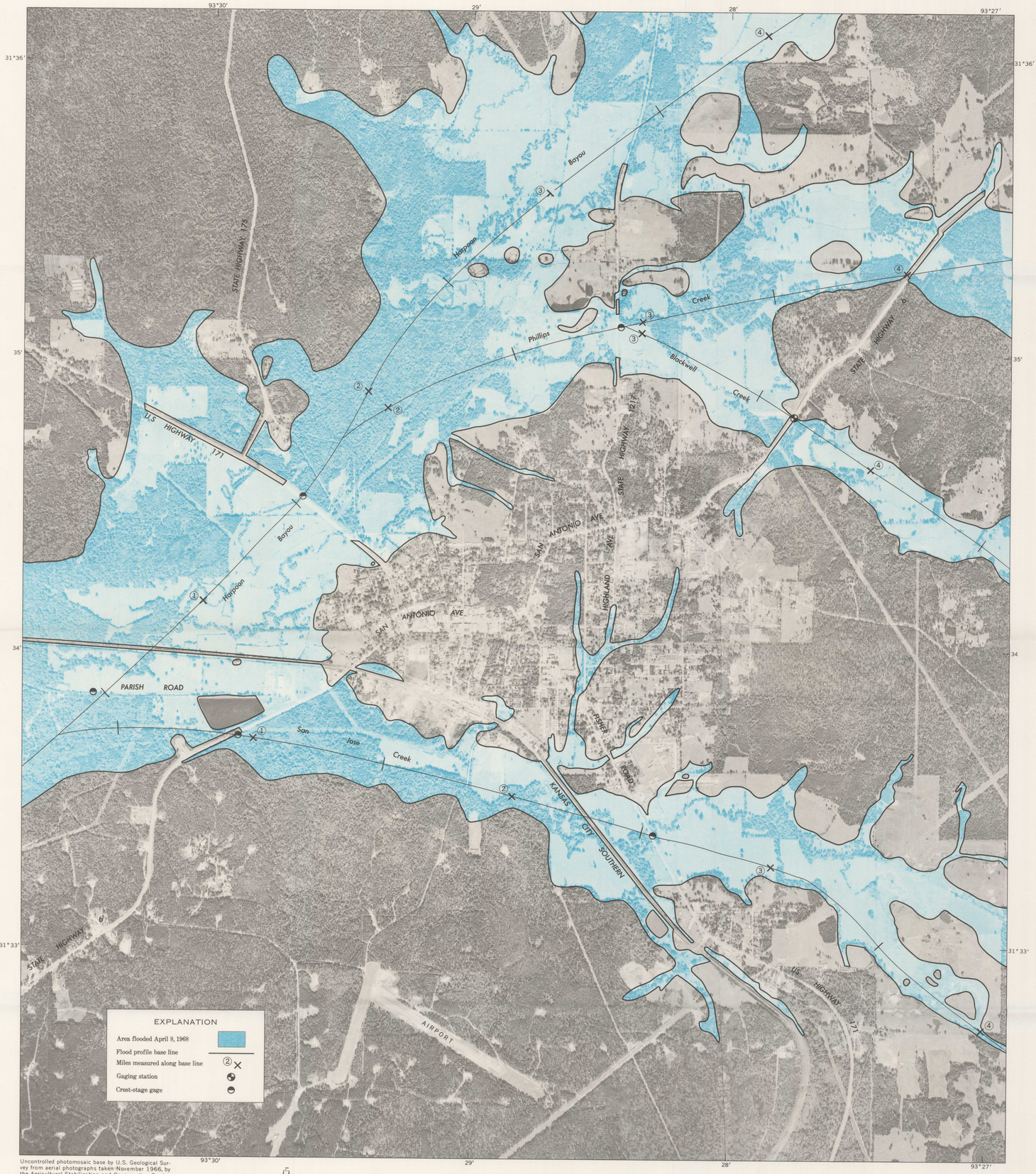
PREPARED IN COOPERATION WITH THE
STATE OF LOUISIANA
LOUISIANA DEPARTMENT OF PUBLIC WORKS



Uncontrolled photomosaic base by U.S. Geological Survey from aerial photographs taken November 1966, by the Agricultural Stabilization and Conservation Service of the U.S. Department of Agriculture

TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1970

APPROXIMATE SCALE
0 ½ 1 MILE
0 .5 1 KILOMETER

AREA OF THIS REPORT

FLOOD OF APRIL 1968 AT MANY, LOUISIANA

On April 8–9, 1968, an almost stationary line of thunderstorms from 50 to 75 miles wide produced torrential rains in the northern half of Louisiana. The greatest rainfall of the storm, 12.48 inches, fell in the Many area and caused flooding in and around Many. The approximate area of inundation caused by the four streams that surround Many—Harpoon Bayou, Phillips Creek, Blackwell Creek, and San Jose Creek—is shown on a photomosaic map. Most of the flooded area was under water for less than 24 hours. Greater floods are possible, but no attempt has been made to show their probable overflow limits.

This report presents hydrologic data that can be used to evaluate the extent and frequency of flooding that affect the economic development of flood plains in the Many area. It will aid individuals, government agencies, and others responsible for solving existing flood problems. The report will also be useful for preparing building and zoning regulations, locating waste disposal facilities, and developing recreational areas.

Cooperation and acknowledgment.—The preparation of this flood inundation map is a part of an investigative program financed through a cooperative agreement between the Louisiana Department of Public Works and the U.S. Geological Survey.

Aerial photographs of the Many area were furnished by the Agricultural Stabilization and Conservation Service of the U.S. Department of Agriculture. A photomosaic was prepared and enlarged, from aerial photographs, by the U.S. Geological Survey, Washington, D.C.

Acknowledgment is made to the many residents of Many for their cooperation.

Flood heights.—The height of a flood at a gaging station is usually stated in terms of gage height, or stage, which is the height of the water surface above a selected datum plane, or gage datum. Elevations are given in feet above mean sea level. The gaging stations shown on the map are listed in the following table.

Stream gages in the vicinity of Many

Gages	Type of gage[1]	Gage datum (feet above mean sea level)	Drainage area (square miles)
Harpoon Bayou:			
at Parish Road, west of Many	C	193.30	— —
at U.S. Highway 171, at Many	C	198.96	[2]41.6
Blackwell Creek:			
at State Highway 6, at Many	R	224.12	3.16
Phillips Creek:			
at State Highway 1217, at Many	C	210.68	17.9
San Jose Creek:			
at State Highway 6, at Many	C	199.39	10.8
at U.S. Highway 171, at Many	C	219.86	6.82

[1] C, crest-stage gage; R, water-stage recorder.
[2] During floods, but 22.7 square miles during low and medium flows.

The elevation and year of occurrence of each flood that exceeded a 212-foot elevation on Harpoon Bayou and a 235-foot elevation on Blackwell Creek are shown on figures 1 and 2, respectively. These figures depict the erratic time interval between major flood events.

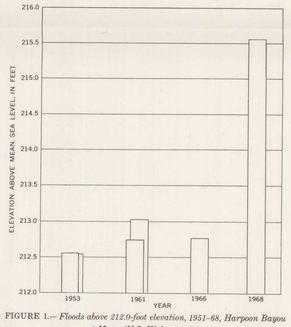


FIGURE 1.—*Floods above 212.0-foot elevation, 1951–68, Harpoon Bayou at Many (U.S. Highway 171).*

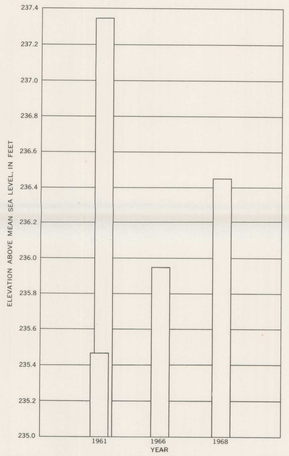


FIGURE 2.—*Floods above 235.0-foot elevation, 1960–68, Blackwell Creek at Many (State Highway 6).*

In addition to these elevations, table 1 shows the maximum discharge in cubic feet per second (cfs).

TABLE 1.—*Floods on Harpoon Bayou and Blackwell Creek at Many, La.*

Flood elevations recorded at the U.S. Geological Survey crest-stage gage on Harpoon Bayou and the streamflow station on Blackwell Creek at Many, La. Overflow limits for the 1968 flood are shown on the map.

Date of flood	Maximum elevation (feet above mean sea level)	Maximum discharge (cubic feet per second)
Harpoon Bayou at U.S. Highway 171		
May 17, 1953	212.57	5,700
June 29, 1953	212.56	5,700
Jan. 7, 1961	212.75	6,380
Sept. 13, 1961	213.09	7,850
Feb. 9, 1966	212.81	6,650
Apr. 8, 1968	215.57	23,800
Blackwell Creek at State Highway 6		
Jan. 7, 1961	235.44	594
Sept. 13, 1961	237.32	865
Feb. 9, 1966	235.94	657
Apr. 8, 1968	236.45	740

Flood frequency.—Frequency of floods on Harpoon Bayou at U.S. Highway 171 and at the regular gaging station on Blackwell Creek at State Highway 6 was derived from records available since 1951 and 1960, respectively. Records of peak elevation and discharge of annual floods are available for both stations. The relation between flood discharge and frequency of occurrence for the two stations is shown on figures 3 and 4. The relation between flood elevation and frequency is dependent on the relation of flood elevation to discharge, which is affected by changes in physical conditions of stream channels and constrictions. The relation between frequency and flood elevation for Harpoon Bayou and Blackwell Creek is shown on figures 5 and 6, respectively. These curves are based on channel conditions existing in 1968.

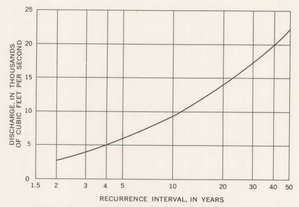


FIGURE 3.—*Frequency of flood discharges on Harpoon Bayou at Many (U.S. Highway 171).*

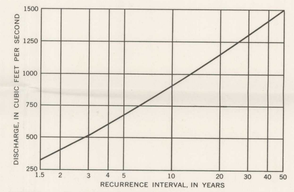


FIGURE 4.—*Frequency of flood discharges on Blackwell Creek at Many (State Highway 6).*

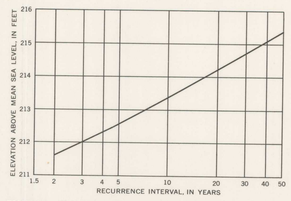


FIGURE 5.—*Frequency of flood elevation on Harpoon Bayou at Many (U.S. Highway 171).*

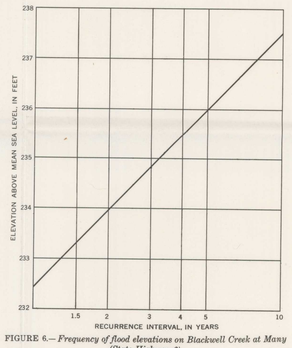


FIGURE 6.—*Frequency of flood elevations on Blackwell Creek at Many (State Highway 6).*

Longer records and future changes in channel conditions may define somewhat different flood-frequency curves. Extrapolation of the curves beyond the limits shown is not recommended.

Recurrence interval.—The recurrence interval of a flood event is the average interval of time within which a given flood will be equaled or exceeded once. Frequency of floods may also be stated in terms of probability of occurrence (virtually the reciprocal of the recurrence interval for floods greater than the 10-year flood). For example, a 25-year flood would have 1 chance in 25 of being equaled or exceeded in any 1 year.

The relation between recurrence interval, flood height, and discharge is shown in the following table for Harpoon Bayou at U.S. Highway 171 and Blackwell Creek at State Highway 6.

The flood of April 8, 1968, for which the inundated area has been delineated on the map, has an estimated recurrence interval of more than 50 years for Harpoon Bayou at Highway 171 and 6 years for Blackwell Creek at Highway 6.

A discharge of 6,180 cubic feet per second was measured at Phillips Creek at State Highway 6 during the flood of April 8, 1968. Although this is not a peak, recurrence interval of more than 50 years was estimated for this discharge. The estimate was obtained from the report "Floods in Louisiana, Magnitude and Frequency" (Sauer, 1964).

It is emphasized that recurrence intervals are average figures—the average number of years that will elapse between occurrences of floods that equal or exceed a given magnitude. The fact that a major flood is experienced in one year does not reduce the probability of that flood being exceeded in the next year or the next week.

Recurrence interval (years)	Harpoon Bayou at U.S. Highway 171		Blackwell Creek at State Highway 6	
	Elevation above mean sea level (feet)	Discharge (cubic feet per second)	Elevation above mean sea level (feet)	Discharge (cubic feet per second)
50	215.4	22,200	(a)	1,500
25	214.5	15,700	(a)	1,240
10	213.4	9,380	237.6	910
5	212.6	6,000	236.0	675
2	211.6	2,700	234.0	410

(a) Stage-discharge relation not available above a 10-year recurrence interval.

Flood profiles.—The profiles of the water surface along Harpoon Bayou, Phillips Creek, Blackwell Creek, and San Jose Creek, drawn from high-water marks left by the flood of April 8, 1968, are shown on figure 7.

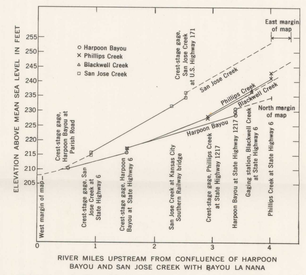


FIGURE 7.—*Profiles of flood of April 8, 1968, on Harpoon Bayou, and Phillips, Blackwell, and San Jose Creeks.*

The actual stream miles are not used as a base for plotting the flood profiles because the channels are extremely sinuous. Therefore, stream miles are shown on a relatively straight base line drawn to conform to the general direction of the valley floodflow. The initial point (mile 0) is arbitrarily set at the low-water confluence of Harpoon Bayou and San Jose Creek with Bayou La Nana (not shown on the map). Distances in miles used for profiles on figure 7 correspond to those marked along the base line on the flood map. Distances are marked along the base line at ½-mile intervals. Abrupt changes in the profiles shown at most highway crossings indicate the difference in water-surface elevations at the upstream and downstream side of the bridges during the peak of the flood.

At Phillips Creek at Many on State Highway 6, the highway traverses the flood plain at an angle of 40° from normal. The flood-peak elevation at the south abutment of the main-channel bridge was higher than at the north abutment and could not be determined near the center where the elevation was measured for the discharge measurement. Therefore, the peak elevation of 241 feet measured at the south abutment is used to determine the area of flooding.

Additional data.—Other information pertaining to floods in the Many area can be obtained at the office of the U.S. Geological Survey, Baton Rouge, La., and from the following published reports.

Chow, Ven Te, 1950, Discussion of annual floods and the partial-duration flood series, by W. B. Langbein: Am. Geophys. Union Trans., v. 31, p. 939–941.

Langbein, W. B., 1949, Annual floods and the partial-duration flood series: Am. Geophys. Union Trans., v. 30, p. 879–881.

Sauer, V. B., 1964, Floods in Louisiana, magnitude and frequency, 2d ed.: Louisiana Depart. Highways, 402 p.

U.S. Geological Survey, 1959, Floods of April-June 1953 in Louisiana and adjacent States: U.S. Geol. Survey Water-Supply Paper 1320-C, p. 155–320.

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D.C.—1970—W69510

FLOOD OF APRIL 1968 AT MANY, LOUISIANA

By
Alfred S. Lowe

1970

For sale by U.S. Geological Survey, price 50 cents