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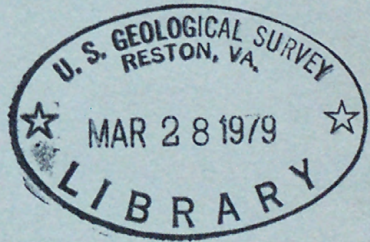
✓ UNITED STATES (DEPARTMENT OF THE INTERIOR)

GEOLOGICAL SURVEY

[Reports - open file series]

PROGRESS REPORT TO THE
ARKANSAS STATE HIGHWAY AND TRANSPORTATION COMMISSION
For year ending September 30, 1978

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Open-File Report 79-523

Prepared in cooperation with the
Arkansas State Highway and Transportation Commission

Little Rock, Arkansas
1979

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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ARKANSAS STATE HIGHWAY AND TRANSPORTATION COMMISSION
For year ending September 30, 1978

By Marion S. Hines

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PROGRESS REPORT TO THE
ARKANSAS STATE HIGHWAY AND TRANSPORTATION COMMISSION
For year ending September 30, 1978

By Marion S. Hines

INTRODUCTION

The economic design of bridges and culverts requires a knowledge of the magnitude and frequency of floods for all size drainage basins. In addition, an analysis of the hydrologic and hydraulic characteristics at specific sites where unusual circumstances exist is a prerequisite to design.

The Arkansas State Highway and Transportation Commission and the U.S. Geological Survey have a mutual interest in flood-frequency and open-channel hydraulics and are therefore cooperating in a program to provide information necessary to meet their objectives.

This report is a summary of the accomplishments of the cooperative program. Included are plans for future work and a brief description of related water-resources programs of the Geological Survey in Arkansas.

OBJECTIVES

The primary objective of the program is to define regional flood-frequency relations for Arkansas, with particular emphasis placed on drainage areas of less than 50 square miles (130 square kilometers).

The secondary objective is to analyze the hydrologic and hydraulic flood-flow characteristics at specific sites as requested by the State Highway and Transportation Department. One of the principal parameters for flood-flow analysis is the drainage area; therefore, the delineation, measurement, and publication of drainage areas are included as a part of the program. In addition, the program includes the documentation of unusual small-area floods.

From time to time, the Highway and Transportation Department and Survey personnel encounter difficult hydraulic and hydrologic problems. The solutions to these problems are made more difficult by unusual channel geometry, embankment slopes, unusual bridges and culverts, and other conditions that do not fit standard computation procedure. The Department and the Survey collaborate in developing procedures for analysis and solution of these problems. Although not a specific part of the cooperative program, the Geological Survey provides data on water resources upon special request by the Highway and Transportation Department.

ACCOMPLISHMENTS

Crest-Stage Stations

The network of 106 crest-stage stations was operated and maintained, resulting in the determination of annual peak stage and discharge at all sites. A summary of annual stages and discharges for the period of record at each station will be supplied the Highway and Transportation Department. An extract of this summary is shown in table 1, which also includes a listing of discontinued stations. The locations of the crest-stage stations are shown on plate 1, along with station-number cross-reference to table 1.

Dual-Digital Stations

During the 1978 fiscal year, work on the rainfall-runoff modeling stations (previously called dual-digital stations) has been intensified, although some delay resulted because of the flash flood in Little Rock on September 13. Many of the rainfall and stage data originally recorded by the dual-digital gages on 16-channel paper tapes have been translated, reformatted, and stored on seven-track magnetic tapes. These data are now being processed for each station and stored in the Survey national computer files as unit rainfall, daily rainfall, and unit discharge.

When sufficient data have been processed for each station, the Survey rainfall-runoff simulation model will be calibrated for that drainage basin. For each basin, successful calibration provides approximate values for hydrologic parameters that govern infiltration, soil-moisture accretion and depletion, and surface runoff. These parametric approximations will then be used along with long-term rainfall data collected at the Little Rock station to synthesize a long-term record of peaks at each "small streams" station. This long-term synthetic record can then be used as input for flood-frequency analyses.

Two dual-digital stations that were being operated in Hot Springs were discontinued in November 1976. Sufficient information has been collected at these sites for a reconnaissance-type comparison between urban- and rural-runoff characteristics.

The periods of record for stations instrumented with dual digitals are shown in table 1.

Table 1.—Period of record of annual peaks at crest-stage gaging stations in Arkansas

Station		Annual peak records (water years)		
Number	Name	Peak stage and discharge	Peak stage only	Continuous stage and rainfall
<i>St. Francis River basin</i>				
07040420	Johnson Creek near Paragould-----	1961-62		
07046530	Ditch No. 42 at Hickman-----	1963-		
07047200	Ditch No. 45 near Lepanto-----	1962-		1969-74
07047820	Murray Creek near Jonesboro-----	1960-		
07047880	Pope Creek tributary at Birdeye-----	1963-		
07047924	Crooked Bayou tributary at State Highway 149, at Hughes.	1963- ¹		
07047925	Crooked Bayou tributary at Hughes----	1962-63		
07047935	Wolf Creek near Cherry Valley-----		1961-62	
<i>White River basin</i>				
07047975	Dog Branch at St. Paul-----	1961- ²		
07047990	West Fork White River tributary near Greenland.	1960- ³		
07048900	Whitener Branch tributary near Spring Valley.	1960- ⁴		
07048940	War Eagle Creek near Witter-----	1963-		
07050200	Maxwell Creek at Kingston-----	1961, 1963-		
07050400	Freeman Branch at Berryville-----	1961-		

See footnotes at end of table, p. 10.

07054400	Charley Creek near Omaha-----	1962-	
07054450	East Sugarloaf Creek tributary near Lead Hill.	1962-	
07055550	Crooked Creek tributary near Dogpatch.	1961- ⁵	1969-74
07055650	Smith Creek near Boxley-----	1963-	1969-74
07055800	Dry Branch near Vendor-----	1962-	
07057300	Dodd Creek tributary near Mountain Home.	1961- ⁵	1969-74
07060600	Band Mill Creek near Brockwell-----	1961-	
07060670	Hughes Creek near Mountain View-----	1961-	
07060710	North Sylamore Creek near Fifty Six. ⁶	1966-	1968-
07060830	Wolf Bayou near Drasco-----	1963-	
07061100	Gibbs Creek at Sulphur Rock-----	1962-	1969-74
07068870	Fourche River tributary at Middlebrook.	1961-	
07069250	Brush Creek near Mammoth Spring-----	1961-	
07069290	Miller Creek near Salem-----	1961, 1963-	1969-74
07072200	Hubble Creek near Pocahontas-----	1961-	
07074200	Dry Branch tributary near Sidney-----	1961- ⁵	
07074250	Reeds Creek near Strawberry-----	1963-	
07074550	Village Creek near O'Kean-----	1961-	
07074855	Cypress Creek tributary near Augusta.	1962-	
07074900	Trace Creek tributary near Marshall--	1961- ⁵	

See footnotes at end of table, p. 10.

Table 1.—Period of record of annual peaks at crest-stage gaging stations in Arkansas—Continued

Station		Annual peak records (water years)		
Number	Name	Peak stage and discharge	Peak stage only	Continuous stage and rainfall
	<i>White River basin—Continued</i>			
07074950	Tick Creek near Leslie-----	1961-		
07075400	Town Branch at Clinton-----		1963	
07075600	Choctaw Creek tributary near Choctaw.	1964-		
07075800	Dill Branch tributary near Ida-----	1964-		
07076630	Key Branch near Searcy-----	1961-		
07076820	Gum Springs Creek near Higginson-----	1961-		1968-70
07076870	Pigeon Roost Creek at Butlerville----	1961-		
07077100	Big Creek near Boydsville-----	1962-		
07077200	Big Creek tributary near Boydsville--	1962-		
07077340	Sugar Creek tributary near Walcott---	1963-		1969-74
07077430	Willow Ditch near Egypt-----	1963-		1969-74
07077680	Threemile Creek near Amagon-----	1961-		
07077860	Boat Gunwale Slash near Holly Grove--	1962-		1969-74
07077920	Big Creek at Goodwin-----	1961-		
07077940	Spring Creek near Aubrey-----	1962-		
07078170	Little LaGrue Bayou tributary near DeWitt.	1961-		

07078210	Tarleton Creek tributary at Ethel----- <i>Arkansas River basin</i>	1963-		
07188900	Butler Creek tributary near Gravette-	1961- ⁵		
07194890	Osage Creek at Cave Springs-----	1963- ⁷		
07195200	Brush Creek tributary near Tontitown.	1959- ⁸		
07195450	Ballard Creek at Summers-----	1963-		
07195800	Flint Creek near Springtown ⁶ -----	1961-		1968-74
07249300	James Fork near Midland-----	1963-		
07249450	Mill Creek at Fort Smith-----	1952, 1960-63		
07249650	Mountain Fork near Evansville-----	1962-		
07249950	Webber Creek tributary near Cedarville.	1962- ⁵		
07252200	North Fork White Oak Creek tributary near Watalula.	1961-		
07254000	Sixmile Creek subwatershed No. 5 near Chismville. ⁸	1960-73		1969-73
07257060	Mikes Creek tributary near Ozone-----	1964-		
07257100	Minnow Creek tributary near Hagarville.	1963- ⁵	1962	1969-74
07257700	McCoy Creek near Dover-----	1961- ¹		
07258200	Pack Saddle Creek tributary near Waldron.	1961- ⁹		1969-73
07260630	Jake Creek near Chickalah-----	1961-		
07260670	Clear Creek tributary at Moreland----		1961	
07260679	East Fork Point Remove Creek tributary near St. Vincent.	1967-		

See footnotes at end of table, p. 10.

Table 1.—Period of record of annual peaks at crest-stage gaging stations in Arkansas—Continued

Station		Annual peak records (water years)		
Number	Name	Peak stage and discharge	Peak stage only	Continuous stage and rainfall
	<i>Arkansas River basin—Continued</i>			
07260680	Pool Hollow Branch near Hattievile--		1962, 1964-66	
07260950	Bettis Creek near Pearson-----		1962	
07261050	Pine Mountain Creek tributary near Damascus.	1961-		1969-74
07261300	Tan-a-hill Creek near Boles-----	1960-		
07261800	Brogan Creek near Rover-----	1963-		
∞ 07263100	Fourche La Fave River tributary near Perryville.	1963- ²	1962	
07263400	Little Maumelle River at Ferndale----	1963-		
07263860	Mile Branch near Tomberlin-----	1963-		1969-74
07263910	Cypress Branch near Jacksonville-----	1961-		
07264100	White Oak Branch near Lonoke-----	1961-		
	<i>Red River basin</i>			
07338700	Twomile Creek near Hatfield-----	1963-		
07339800	Pepper Creek near DeQueen-----	1961- ^{5 9}		
07340200	West Flat Creek near Foreman-----	1962-		
07340530	Mill Slough tributary near Lockesburg.	1963-		
07340600	Browns Creek near Ben Lomond-----		1961-62	

See footnotes at end of table, p. 10.

07341100	Rock Creek near Dierks-----	1961, 1963-	
07341700	Caney Creek near Hope-----	1963-	1969-74
07344320	Mill Creek tributary near Fouke-----	1961-	
07346800	East Fork Kelly Bayou tributary at Kiblah.	1961-	1969-74
07348630	Barlow Branch tributary near McNeil--	1961-	
07355800	Lewis Creek tributary near Mena-----	1961- ⁹	1969-74
07355900	Big Fork tributary at Big Fork-----	1964-	
07356700	Barnes Branch near Mount Ida-----	1961-	
07357700	Glazypeau Creek at Mountain Valley---	1961-	1968-74
07359520	Ouachita River tributary near Malvern.	1962-	
07359750	Little Sugarloaf Creek near Bonnerdale.	1962-	
07360150	Pearson Creek tributary near Dalark--	1961-	1969-74
07361020	Prairie Creek tributary near Kirby---	1963-	
07361180	South Fork Ozan Creek near Ozan-----	1963-	
07361680	Middle Caney Creek tributary near Rosston.	1961- ⁹	
07361780	Bradshaw Creek near Hollywood-----	1962-	
07362050	Ross Creek near Camden-----	1961- ⁹	
07362330	Dunn Creek near Hampton-----	1962-	
07362450	Cooks Creek near Fordyce-----	1962-	
07363050	Holly Creek tributary near Benton----	1962-	

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See footnotes at end of table, p. 10.

Table 1.—Period of record of annual peaks at crest-stage gaging stations in Arkansas—Continued

Station		Annual peak records (water years)		
Number	Name	Peak stage and discharge	Peak stage only	Continuous stage and rainfall
<i>Red River basin—Continued</i>				
07363330	West Fork Big Creek at Sheridan-----	1960, 1963-		
07363430	East Fork Derriousseaux Creek near Pine Bluff.	1961-		
07363450	Varnell Creek near Rison-----	1964-		
07363470	Saline River tributary at Rye-----		1961, 1963	
07364030	L'Aigle Creek tributary near Hermitage.	1963-		
07364070	Bear Creek near Strong-----	1963-		
07364110	Nevins Creek tributary near Pine Bluff.	1961-		1968-74
07364125	Cane Creek at Star City-----	1962-		
07364140	Ables Creek near Tyro-----	1969-74		1969-74
07364165	Upper Cutoff Creek near Monticello---	1963-		
07364260	Hanks Creek near Hamburg-----	1962-		
07364550	Cany Creek tributary near El Dorado--	1961-		1969-74
07367658	Cypress Creek Canal No. 19 tributary near Dumas.	1961- ⁹		
07367665	Wards Bayou tributary at Montrose----	1961-		
07367740	Camp Bayou near Parkdale-----	1963-		1969-74

¹Peak stage in 1963 lower than the index.

²Peak stage in 1962 and 1963 lower than the index.

³Incomplete record in 1962 and 1963.

⁴Peak stage in 1962 and 1965 lower than the index.

⁵Peak stage in 1962 lower than the index.

⁶Continuous-record gaging station equipped with rainfall recorder.

⁷Peak stage in 1964 and 1967 lower than the index.

⁸Peak stage in 1962 and 1966 lower than the index.

⁹Incomplete record in 1961.

Drainage Areas

Drainage areas in the Ouachita River basin in Arkansas are delineated, planimetered, and compiled. The drainage-area report for the Ouachita River basin will be published next fiscal year.

Reports

The following reports were approved and furnished to the Department and a drainage-area report for the Red River basin in Arkansas was published in May 1978.

1. Supplement to Floodflow characteristics of White River at State Highway 1 at St. Charles, Arkansas, by R. C. Gilstrap.
2. Floodflow characteristics of Red River at Index, Arkansas, by R. C. Gilstrap.
3. Floodflow characteristics of Spring River and Straight Lake near Black Rock, Arkansas, by R. C. Gilstrap.
4. Floodflow characteristics of Strawberry River near Strawberry, Arkansas, by R. C. Gilstrap.
5. Floodflow characteristics of Doctors Creek near Charleston, Arkansas, by R. C. Gilstrap.

Many requests for peak flow and stage were answered including:

Q_{25} , Q_{50} , Q_{100} for West Fork Point Remove Creek near Hattieville.

Q_{25} , Q_{50} , Q_{100} for Tyronza River near Wilson.

Q_{50} , Q_{100} for Cane Creek east of Morrison Bluff.

Q_{25} , Q_{50} , Q_{100} for Little Maumelle River near Pinnacle.

On two occasions, Survey personnel assisted Highway Department personnel when 400 pounds of dye was injected into the Arkansas River at East Belt Freeway crossing to determine the flow pattern through the bridge reach.

For informational purposes, the following list of bridge-site studies, referenced to plate 1 by numbers, is included in this annual progress report. The listing is arbitrarily grouped according to the month and year of completion.

- 1 May 1960, L'Anquille River near Wynne, Arkansas, Floodflow characteristics at bridges on U.S. Highway 64
- 2 December 1960, Fourche La Fave River, Floodflow characteristics at bridge site on State Highway 28 near Parks, Arkansas
- 3 October 1962, Sulphur River, Floodflow characteristics of Sulphur River at State Highway 237 near Fouke, Arkansas
- 4 May 1963, Floodflow characteristics of Arkansas River at Interstate Highway 540 at Van Buren, Arkansas
- 5 June 1963, Supplement I to Floodflow characteristics of Arkansas River at Interstate Highway 540 at Van Buren, Arkansas
- 6 June 1965, Supplement II to Floodflow characteristics of Arkansas River at Interstate Highway 540 at Van Buren, Arkansas
- 7 June 1964, Floodflow characteristics of Red River at Interstate Highway 30 at Fulton, Arkansas
- 8 1965, Floodflow characteristics of Caddo River at U.S. Highway 67 and Interstate Highway 30 at Caddo Valley, Arkansas
- 9 October 1965, Floodflow characteristics of Little River and Caney Creek at State Highway 41 near Horatio, Arkansas
- 10 January 1965, Floodflow characteristics of Strawberry River and South Big Creek at State Highways 115 and 117 at Jesup, Arkansas
- 11 July 1965, Floodflow characteristics of Little Missouri River at Interstate Highway 30 near Boughton, Arkansas

- 12 July 1965, Floodflow characteristics of Point Remove Creek at Interstate Highway 40 and U.S. Highway 64 near Morrilton, Arkansas
- 13 March 1965, Floodflow characteristics of Cadron Creek at Interstate Highway 40 near Menifee, Arkansas
- 14 1965, Supplement to Floodflow characteristics of Cadron Creek at Interstate Highway 40 near Menifee, Arkansas
- 15 1966, Floodflow characteristics of South Fork Terre Noire Creek at Interstate Highway 30 near Gurdon, Arkansas (letter report)
- 16 April 1966, Floodflow characteristics of Frog Bayou at Interstate Highway 40 and U.S. Highway 64 at Alma, Arkansas
- 17 March 1966, Floodflow characteristics of Blakely Creek at Interstate Highway 30 and State Highway 84 at Social Hill, Arkansas
- 18 1966, Floodflow characteristics of Ouachita River at proposed relocation of State Highway 4 at Camden, Arkansas
- 19 1967, Supplement I to Floodflow characteristics of Ouachita River at proposed relocation of State Highway 4 at Camden, Arkansas
- 20 1967, Supplement II to Floodflow characteristics of Ouachita River at proposed relocation of State Highway 4 at Camden, Arkansas
- 21 October 1968, Floodflow characteristics of Cache River at State Highway 226 near Cash, Arkansas
- 22 June 1968, Floodflow characteristics of Cypress Bayou at relocation of U.S. Highway 67 at Ward, Arkansas
- 23 March 7, 1969, Administrative memorandum on Floodflow characteristics of Bayou Two Prairie at U.S. Highway 67 near Cabot, Arkansas
- 24 March 7, 1969, Administrative memorandum on Floodflow characteristics of Fourmile Creek at relocated U.S. Highway 67 near Austin, Arkansas (Highway Station 328)

- 25 March 7, 1969, Administrative memorandum on Floodflow characteristics of Fourmile Creek at relocated U.S. Highway 67 near Ward, Arkansas (Highway Station 441)
- 26 March 7, 1969, Administrative memorandum on Floodflow characteristics of Cypress Bayou at relocation of U.S. Highway 67 at Ward, Arkansas, Supplement to report of June 21, 1968
- 27 June 1969, Administrative memorandum on Floodflow characteristics of Caddo River at U.S. Highway 67 and Interstate Highway 30 at Caddo Valley, Arkansas, Supplement to 1965 report
- 28 Cache River near Grubbs at State Highways 14 and 37 (cancelled)
- 29 October 1970, Floodflow characteristics of White River at State Highway 38 at Des Arc, Arkansas
- 30 December 1970, Floodflow characteristics of White River at State Highway 1 at St. Charles, Arkansas
- 31 March 1971, Floodflow characteristics of Rock Creek at Interstate Highway 430 and at Shackelford Road in Little Rock, Arkansas
- 32 August 1971, Floodflow characteristics of St. Francis River floodway at U.S. Highway 63 near Marked Tree, Arkansas
- 33 September 1971, Floodflow characteristics of Jack Bayou at U.S. Highway 67, near Jacksonville, Arkansas
- 34 April 1972, Floodflow characteristics of Mulberry River at Interstate Highway 40, near Mulberry, Arkansas
- 35 May 1972, Floodflow characteristics of Little Creek at State Highway 286, near Conway, Arkansas
- 36 November 1972, Floodflow characteristics of East Fork Horsehead Creek at Interstate Highway 40, near Hartman, Arkansas

- 37 September 1972, Floodflow characteristics of Fourche La Fave River at
State Highway 28, near Bluffton, Arkansas
- 38 April 1973, Floodflow characteristics of White River, at State Highway
122, at Oil Trough, Arkansas
- 39 November 1973, Floodflow characteristics of Rock Creek near Shady
Grove, Arkansas
- 40 April 1974, Floodflow characteristics of White River at U.S. Highway
167 at Batesville, Arkansas
- 41 May 1974, Floodflow characteristics of Straight Slough at State Highway
42, near Birdeye, Arkansas
- 42 October 1974, Floodflow characteristics of Bayou DeView at State High-
way 214 north of Weiner, Arkansas
- 43 November 1974, Floodflow characteristics of Fourche Creek at Interstate
Highway 430 in southwest Little Rock, Arkansas
- 44 November 1974, Floodflow characteristics of Little Missouri River at
State Highway 53 near Whelen Springs, Arkansas
- 45 November 1974, Floodflow characteristics of Rock Creek at State Highway
5 in Little Rock, Arkansas
- 46 January 1975, Supplement to Floodflow characteristics of Rock Creek at
State Highway 5 in Little Rock, Arkansas
- 47 January 1975, Supplement to Floodflow characteristics of White River
at U.S. Highway 167 at Batesville, Arkansas
- 48 February 1975, Floodflow characteristics of Barnes Creek, Turkey Creek,
and Wildcat Creek, at U.S. Highway 65, near Redfield, Arkansas
- 49 April 1975, Floodflow characteristics of June 5, 1974, flood of East
Fork Horsehead Creek at Interstate Highway 40, near Hartman, Arkansas

- 50 April 1975, Floodflow characteristics of Big Creek at State Highway
96 near Lavaca, Arkansas
- 51 June 1975, Floodflow characteristics of Archey Creek along U.S. High-
way 65 at Clinton, Arkansas
- 52 January 1976, Floodflow characteristics of Arkansas River at East
Belt Freeway in Pulaski County, Arkansas
- 53 April 1976, Floodflow characteristics of Illinois River tributary near
Siloam Springs, Arkansas
- 54 June 1976, Floodflow characteristics of Rolling Fork and Union Creek,
northwest of DeQueen, Arkansas
- 55 June 1976, Floodflow characteristics of Little Bear Creek and Bear
Creek at DeQueen, Arkansas
- 56 September 1976, Floodflow characteristics of Black River at proposed
State Highway 37, at Elgin, Arkansas
- 57 February 1977, Supplement to Floodflow characteristics of Little Bear
Creek and Bear Creek at DeQueen, Arkansas
- 58 April 1977, Floodflow characteristics of Mine Creek along the proposed
relocation of State Highways 4 and 27 at Nashville, Arkansas
- 59 July 1977, Supplement to Floodflow characteristics of Mine Creek along
the proposed relocation of State Highways 4 and 27 at Nashville,
Arkansas
- 60 September 1977, Floodflow characteristics of Caddo River at Norman,
Arkansas
- 61 November 1977, Supplement to Floodflow characteristics of White River
at State Highway 1 at St. Charles, Arkansas
- 62 February 1978, Floodflow characteristics of Red River at U.S. Highways
59 and 71 at Index, Arkansas

- 63 February 1978, Floodflow characteristics of Spring River and Straight Lake (State Highway 361) near Black Rock, Arkansas
- 64 May 1978, Floodflow characteristics of Strawberry River near Strawberry, Arkansas
- 65 June 1978, Floodflow characteristics of Doctors Creek (State Highways 60 and 252) near Charleston, Arkansas

PROGRAM PLANS FOR YEAR ENDING SEPTEMBER 30, 1979

The primary objective of the Highway Program next year will be to process rainfall and stage-discharge records from the rainfall-runoff sites (previously called dual-digital stations) for use in the U.S. Geological Survey rainfall-runoff model. The regressions developed by this model will be used to synthesize peak-flow data from historic rainfall data. Work will begin on updating the Statewide flood-frequency analysis.

The crest-stage-gage network will be operated and maintained throughout the year. Particular effort will be made to make current-meter discharge measurements to verify stage-discharge relations in the range of shifting control or where defined by indirect measurements of discharge.

Small-area floods will be documented when the rate of runoff and (or) damages are of a magnitude to justify collection and analysis of appropriate data and the preparation of reports.

Drainage-area report preparation will be completed for the Ouachita River basin.

Verification of hydraulic computations will be made at the request of the Highway and Transportation Department.

RELATED WATER RESOURCES DIVISION PROGRAMS

The Highway and Transportation Department's primary need is for information on surface-water hydraulics and hydrology. However, the Survey, in cooperation with the Arkansas Geological Commission and Federal agencies, also collects and compiles related information on the quantity and quality of surface and ground water in Arkansas. Knowledge of ground-water conditions or chemical characteristics of surface or ground water in certain areas may be useful to the Department. Should the need develop, such information is available in the office of the Survey in Little Rock.

In addition to the cooperative highway program, the Survey conducts other related surface-water investigations, including the hydrologic-data-collection network of daily-discharge stations on many streams in Arkansas. This program provides valuable streamflow data which can be utilized by the Department. In particular, the collection of peak-flow data on many streams, generally having drainage areas larger than those in our crest-stage network, are useful to the Highway Program. The daily-streamflow information determined for gaging stations is published annually in the report "Water Resources Data for Arkansas." These data have been analyzed by computer to provide statistical summaries of high mean flow, low mean flow, and duration of daily flow. Although this information seldom has been used by the Highway and Transportation Department, there may be times when the flow characteristics of a stream may have a direct effect on the design or in the schedule for construction of foundation works.

The Survey, in cooperation with State and Federal agencies, is collecting peak-stage data at the following discontinued regular-gaging stations. This information will be useful in future flood-frequency investigations.

<u>Station number</u>	<u>Station name</u>
07049000	War Eagle Creek near Hindsville
07050500	Kings River near Berryville
07068890	Fourche River above Pocahontas
07069000	Black River at Pocahontas
07195000	Osage Creek near Elm Springs
07249500	Cove Creek near Lee Creek
07251500	Frog Bayou at Rudy
07256500	Spadra Creek at Clarksville
07257500	Illinois Bayou near Scottsville
07260000	Dutch Creek near Waltreak
07349430	Bodcau Creek near Stamps
07356500	South Fork Ouachita at Mount Ida
07361200	Ozan Creek near McCaskill
07365900	Three Creeks near Three Creeks

Last year about 20 flood-prone-area maps were prepared and copies will be supplied the Highway and Transportation Department. Copies of flood maps (listed on p. 21) are available in the Little Rock offices of the Geological Survey and the Arkansas Geological Commission. Each map covers an area of either 7½ minutes or 15 minutes of latitude and longitude.

Additional flood-prone information is available for the following areas in reports by the U.S. Corps of Engineers:

Arkadelphia, Arkansas--Ouachita River

Atkins, Arkansas--White Oak Creek and tributaries

Batesville, Arkansas--White River, Polk Bayou, and Miller Creek

Benton, Arkansas--Saline River and tributaries

Camden, Arkansas--Ouachita River

Corning, Arkansas--Black River, Corning Lake, and Cypress Creek

Danville, Arkansas--Petit Jean River and tributaries

DeWitt, Arkansas--Little LaGrue Bayou, Holt Quetermous and Price
Branches

Fayetteville, Arkansas--West Fork White River, Town, Mud, Scull, and
Clear Creeks

Fort Smith, Arkansas--Arkansas River and tributaries--Part I

Fort Smith, Arkansas--Arkansas River and tributaries--Part II

Fort Smith, Arkansas--Mill Creek

Harrison, Arkansas--Crooked Creek and tributaries

Hot Springs, Arkansas--Ouachita River and tributaries

Jacksonville, Arkansas--Bayou Meto and tributaries

Jonesboro, Arkansas--Big Creek, Lost Creek, Christian Creek, and
Whiteman's Creek

Little Rock, Arkansas--Fourche Creek and tributaries--Part I

Little Rock, Arkansas--Arkansas River and tributaries--Part II

Little Rock, Arkansas--Arkansas River and tributaries--Part III

Magnolia, Arkansas--Big Creek, Nations Creek, and tributaries
Malvern, Arkansas--Ouachita River and tributaries
Morrilton, Arkansas--Arkansas River and tributaries
Mountain Home, Arkansas--Hicks Creek and tributaries
Mulberry, Arkansas--Mulberry and Little Mulberry Creeks
Newport, Arkansas--White River and Village Creek
North Little Rock, Arkansas--Arkansas River
North Little Rock, Arkansas--Tributaries to Faulkner Lake
North Little Rock, Arkansas--Dark Hollow
Ozark, Arkansas--Arkansas River and Gar Creek
Paragould, Arkansas--Eight Mile Creek, vicinity of Paragould
Pine Bluff, Arkansas--Arkansas River and tributaries--Part I
Pine Bluff, Arkansas--Arkansas River and tributaries--Part II
Pocahontas, Arkansas--Black River, Town and Mansker Creeks
Pulaski County, Arkansas--Arkansas River and tributaries--Part I
Pulaski County, Arkansas--Arkansas River and tributaries--Part II
Russellville-Dardanelle, Arkansas--Arkansas River and tributaries
Searcy, Arkansas--Little Red River and tributaries
Texarkana, Arkansas-Texas--Days Creek and tributaries
Walnut Ridge-Hoxie, Arkansas--Village Creek and tributaries
West Memphis, Arkansas--Fifteen Mile Bayou and tributaries
Wynne, Arkansas--Caney Creek Lateral No. 5, Turkey Creek and
tributaries

FLOOD-PRONE AREA MAPS NOW AVAILABLE
 (All quadrangles are 7.5' unless otherwise indicated)

Agnos	Des Arc East	Keevil	Pine City
Alexander	DeValls Bluff	Kensett	Pocahontas
Alicia 15'	DeValls Bluff NE	Kingsland	Ponca
Alma	DeValls Bluff SE	Latour 15'	Portland
Amagon		Lavaca	Potter
Amity	Edmondson 15'	Leslie	Prague
Arkadelphia	El Dorado 15'	Lewisville	Prairie Grove
Ashdown East		Lonoke 15'	Prescott East
Ashdown West	Fayetteville	Lonsdale	Prescott West
Atkins	Felsenthal 15'	Lonsdale NE	Princedale 15'
Augusta 15'	Fletcher Lake	Madison	
Auvergne	Fordyce	Magnolia	Ravenden
	Foreman	Malvern 15'	Ravenden Springs
Barling	Forrest City	Mammoth Spring	Ravenden Springs SE
Batesville	Fort Smith	Manila 15'	Reydell
Beebe	Fouke	Mandeville	Rob Roy
Benton	Fouke NE	Marianna 15'	Pussellville East
Bentonville North	Fouke SE	Marked Tree 15'	Russelville West
Bentonville South	Fountain Lake	Marmaduke 15'	
Bethesda	Fourche	Marshall	Salem 15'
Big Flat	Fulton	Maumee	Sheridan
Blytheville 15'		Mayflower	Sitka
Board Camp	Gainesville 15'	McAlmont	Smackover
Booneville 15'	Georgetown	McGehee 15'	Snowball 15'
Boswell	Gleason	McRae	Sonora
Boxley	Glenwood 15'	Mena	South Fort Smith
Brinkley	Goosepond Mt.	Monroe	Springdale
Bryant	Gregory	Monticello North	Spring Lake
Buckner	Gregory SW	Monticello South	Stuart
Buffalo City	Grubbs	Morrilton East	Stuttgart North
	Guion	Morrilton West	Stuttgart South
		Moscow	Sylamore
Cades	Hardy	Mountainburg	
Caddo Valley	Harrison	Mt. Ida 15'	Taylor
Calico Rock	Hartford	Mt. Judea 15'	Tilton 15'
Camden	Hartman	Mt. Pleasant	Tuckerman
Camp	Hasty	Mulberry	Turner
Carthage	Haynes	Murray	
Cecil	Hindsville	Nashville	Van Buren
Clarendon 15'	Holla Bend	Newark	
Clarksville	Holly Grove	New Blaine	Waldo
Clinton	Homan	Newport	Waldron 15'
Coal Hill	Hope	Norfolk	Walnut Ridge 15'
Concord	Horseshoe Lake 15'	Norfolk Dam South	Warm Springs
Conway	Houston	North Little Rock	Western Grove
Cord	Hunter 15'		West Memphis
Cornerstone	Huntington		Wheeler
Corning		Osceola 15'	Williford
Cotton Plant		Ozark	Wilmot
Cozahoma	Imboden	Paris	Wynne 15'
Crocketts Bluff		Park Grove	
	Jacksonport	Park Place 15'	Yellville
Dalton	Jacksonville	Pastoria 15'	
Deckerville 15'	Jasper	Piggott 15'	
Dee 15'	Judsonia	Pine Bluff NW	
Delaware			
DeQueen			

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