

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

SUPPLEMENT TO

FLOODFLOW CHARACTERISTICS OF THE ARKANSAS RIVER AT EAST BELT FREEWAY,  
IN PULASKI COUNTY, ARKANSAS



Open-File Report 78-225

Prepared in cooperation with the  
ARKANSAS STATE HIGHWAY COMMISSION

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By J. L. Patterson



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ARKANSAS STATE HIGHWAY COMMISSION

Little Rock, Arkansas  
February 1978

SUPPLEMENT TO  
ADMINISTRATIVE MEMORANDUM ON  
FLOODFLOW CHARACTERISTICS OF THE ARKANSAS RIVER AT EAST BELT FREEWAY,  
IN PULASKI COUNTY, ARKANSAS  
(dated January 30, 1976)

Prepared by

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April 15, 1976

Subsequent to receipt of Administrative Memorandum of January 30, 1976, regarding floodflow characteristics of the Arkansas River at East Belt Freeway, the Arkansas State Highway Department requested the U.S. Geological Survey to make an additional study of floodflow characteristics of the standard-project flood (design flood) of 625,000 ft<sup>3</sup>/s (cubic feet per second).

The proposed bridge length of 4,190 ft for this study is virtually the same as the shortest bridge length analyzed in the previous study and extends from highway station 270+40, on the right (south) bank, to station 312+30, on the left (north) bank. The size and location of some piers have been changed and the two 40-foot bridge-protection cells have been eliminated.

The large spoil embankment on the north bank will not be a factor in this study because the highway embankment will extend the full length of the existing spoil embankment.

Preliminary studies by the Little Rock District Corps of Engineers, considering existing and proposed encroachments on the flood plain, indicate slightly different elevations for discharges of the 50- and 100-year floods and the standard-project flood listed in the memorandum of January 30, 1976. The 50-year flood (430,000 ft<sup>3</sup>/s) will occur at an elevation of about 244.0 ft; the 100-year flood (480,000 ft<sup>3</sup>/s), at an elevation of about 245.3 ft; and the standard-project flood, at an elevation of about 248.6 ft.

The design flood of 625,000 ft<sup>3</sup>/s for a bridge length of 4,190 ft will have a mean velocity of 7.1 ft/s and will occur at an elevation of about 248.6 ft at the downstream side of the bridge. The resulting backwater will be about 0.5 ft.

On the north bank two small road fills (John S. Ott fills), one just upstream and one just downstream from the proposed highway embankment, cause a slight amount of backwater, probably about 0.2 to 0.3 ft for the design flood. If these fills remain in place, the backwater of the John S. Ott fills and the highway embankment will not be directly accumulative (0.5 ft + 0.2 or 0.3 ft). The Ott fill will probably not add more than about 0.1 ft of backwater to the 0.5 ft caused by the highway embankment.



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