

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY



SUPPLEMENT  
TO  
FLOODS IN THE  
UPPER DES MOINES RIVER BASIN, IOWA

Prepared in cooperation with the  
HIGHWAY RESEARCH BOARD  
HIGHWAY DIVISION  
IOWA DEPARTMENT OF TRANSPORTATION

Open-File Report 79-1486

Iowa City, Iowa  
September 1979

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INTRODUCTION  
Purpose and Scope

Data on the East Fork Des Moines River for the August 1979 flood between river miles 330.4 and 408.8 is being published as a supplement to the report "Floods in the Upper Des Moines River basin, Iowa" (Schwab, 1970). Elevation profiles of the 1979 flood, along with previously published profiles, are shown in figures 2-4.

FLOOD OF AUGUST 1979

The flood of August 1979 on the East Fork Des Moines River was caused by general rains which occurred almost daily for a week preceding the flood peak. Rainfall amounts were usually in the range of 1 to 2 inches with locally heavier amounts of 3 to 4 inches in the headwaters of the basin.

Elevation profiles of the 1979 flood upstream from mile 338 exceeded previously profiled floods in the reach of the stream covered in this report.

The peak discharge at Algona on August 23, 1979 was 11,000 cubic feet per second (cfs) compared to 11,400 cfs for the April 1965 flood. However, the elevation for the August 23 flood was two feet higher. The elevation-discharge relationship for the floods at the downstream side of Highway 169 in Algona is shown in figure 1. The difference in the relationship between the floods can probably be attributed to the very dense vegetation along the

channel and in the flood plain at the time of the August 1979 flood. The 1965 flood occurred in early spring when vegetation was at a minimum.

The peak discharge at the Dakota City gaging station on August 24, 1979 was 13,300 cfs (elevation 1060.42 feet) compared to the April 1965 flood of 15,700 cfs (elevation, 1061.8 feet).

A pictorial record of the flood in the city of Algona is recorded in the August 27, 1979 (Vol 79-No. 35) issue of the Kossuth County Advance weekly newspaper.

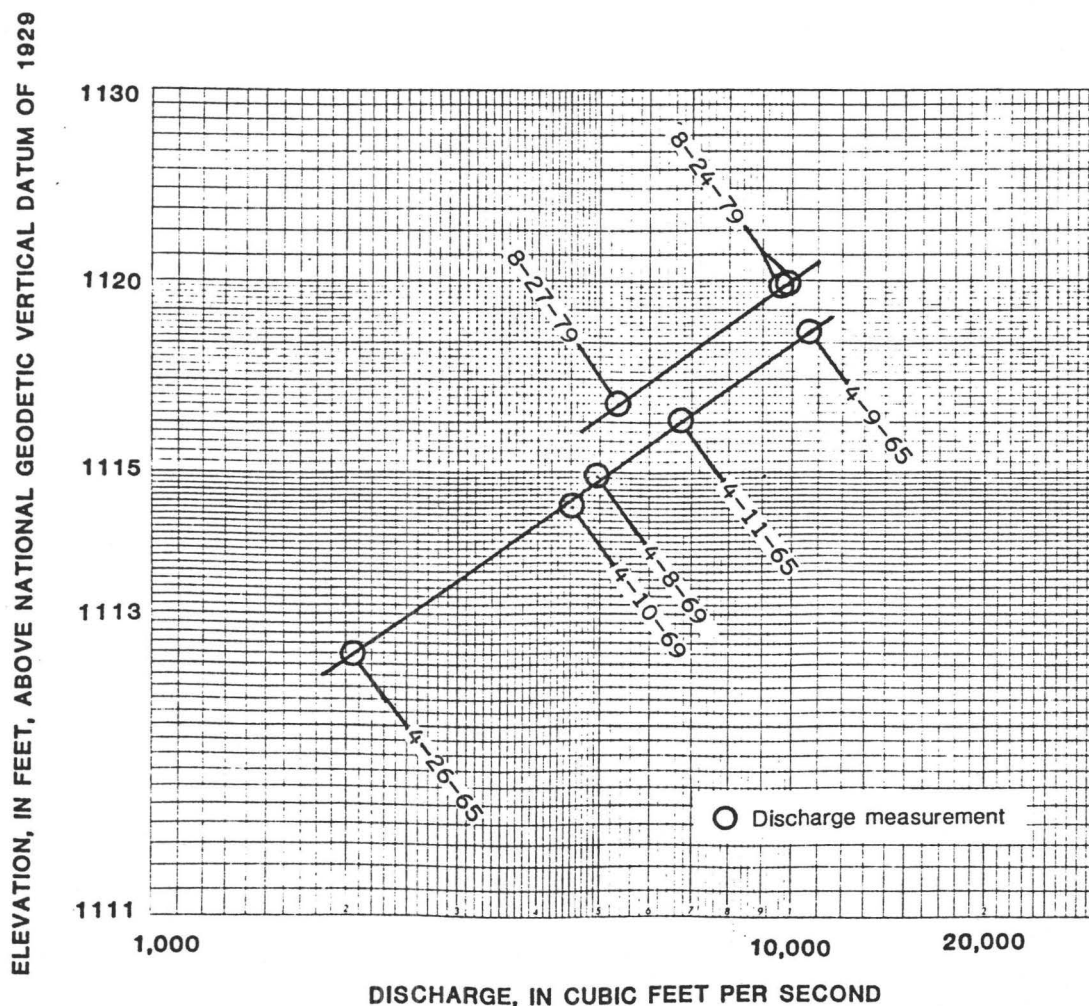


Figure 1. Elevation-discharge relationship at downstream side of Highway 169 bridge in Algona, Iowa.

## PROFILES

Elevations for the August 1979 flood were obtained at all bridges where bench marks were available. Many county bridges have been replaced with new structures since the 1969 flood resulting in the loss of established bench marks. The estimated elevations at these bridges are shown with dashed lines in figures 2-4.

## FLOOD FREQUENCY

The 25- and 50-year flood discharge shown in the report by Schwob (1970) have been superseded by more recent flood-frequency studies. Iowa Natural Resources Council Bulletin 11 (Lara 1973) and U.S. Water Resources Council Bulletin no. 17A (1977) outline methods that are currently used for determining flood magnitude-frequency relationships.

## REFERENCES

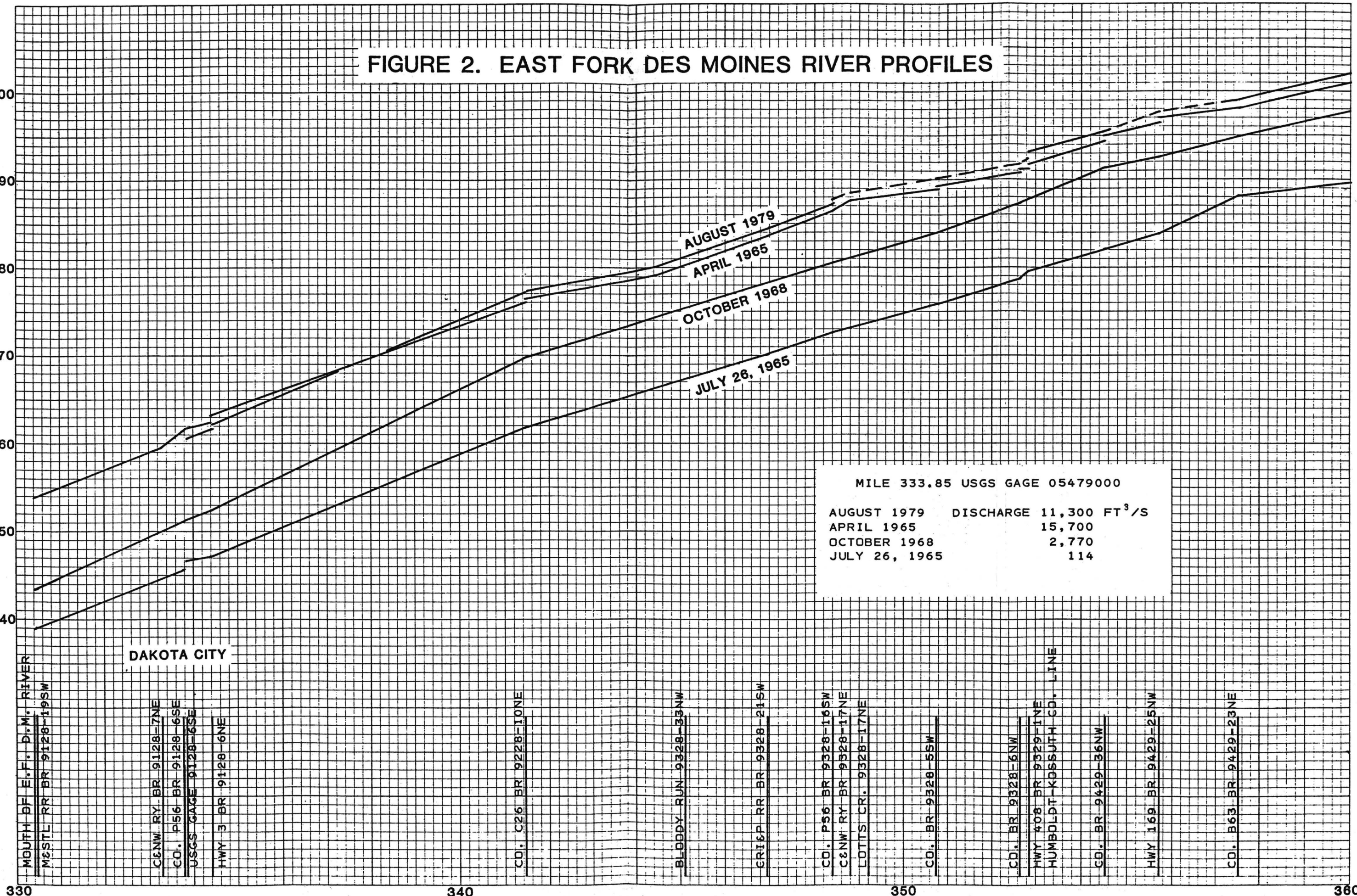
- Kossuth County Advance, Algona, Iowa, Algona Publishing Company, vol. 79-no. 35.
- Lara, O. G., 1973, Floods in Iowa: Technical manual for estimating their magnitude and frequency: Iowa Natural Resources Council Bulletin no. 11, 40 p.
- Schwob, H. H., 1970, Floods in the Upper Des Moines River basin, Iowa: U.S. Geological Survey Open-File Report, 49 p.
- U.S. Water Resources Council, 1977, Guidelines for determining flood flow frequency: Hydrology Committee Bulletin no. 17A.



FIGURE 2. EAST FORK DES MOINES RIVER PROFILES

ELEVATION, IN FEET, ABOVE NATIONAL GEODETIC VERTICAL DATUM OF 1929

DISTANCE, IN MILES, UPSTREAM FROM MOUTH OF DES MOINES RIVER



330

340

350

360

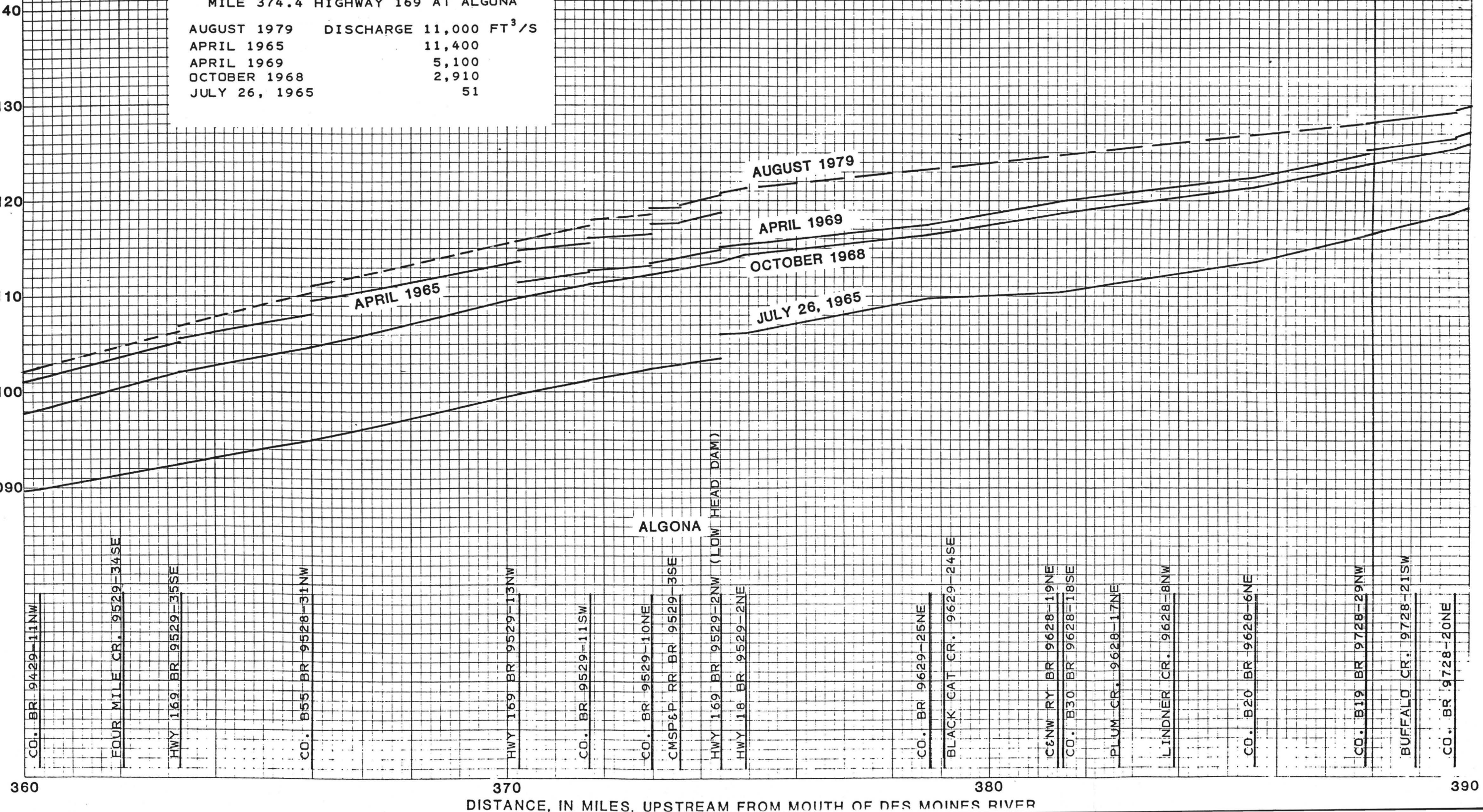


# FIGURE 3. EAST FORK DES MOINES RIVER PROFILES

ELEVATION, IN FEET, ABOVE NATIONAL GEODETIC VERTICAL DATUM OF 1929

MILE 374.4 HIGHWAY 169 AT ALGONA

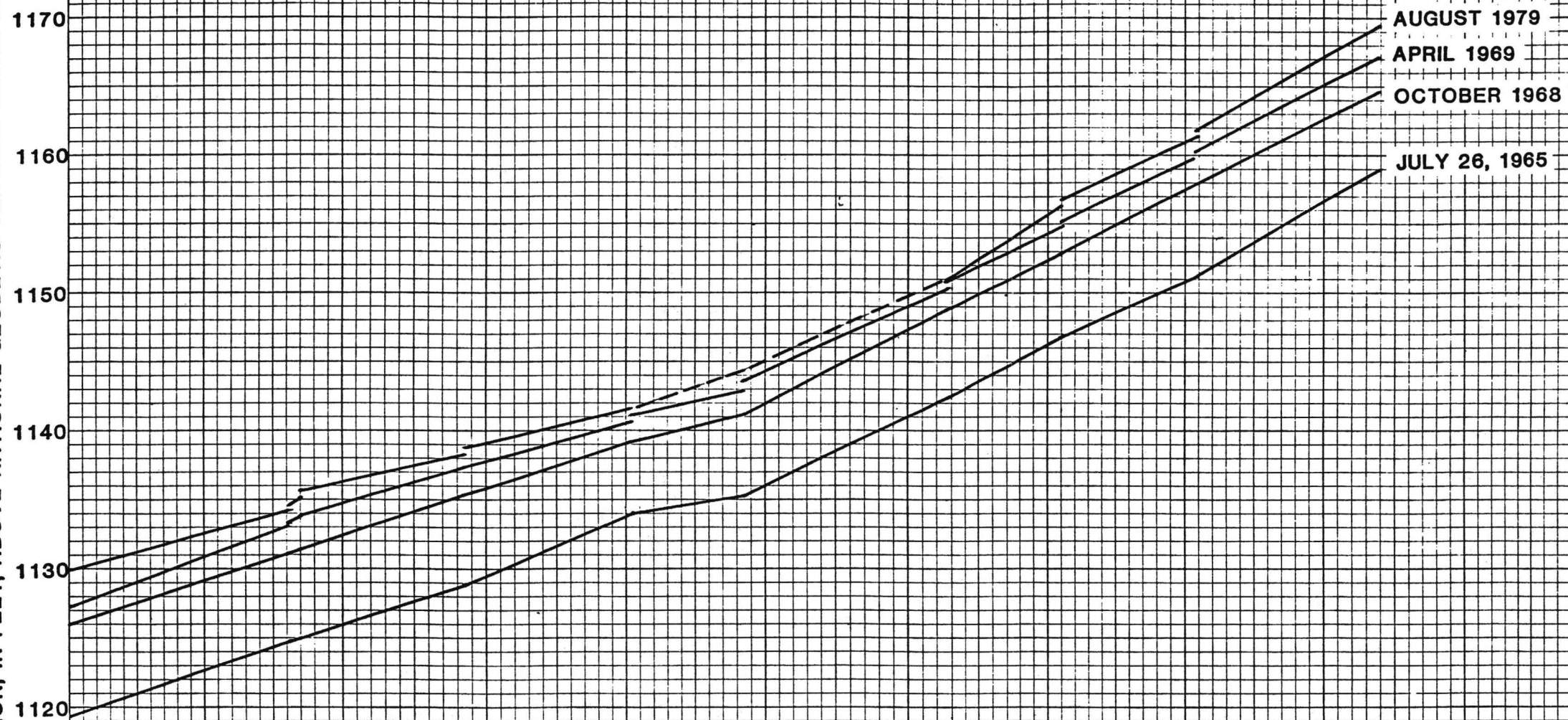
AUGUST 1979	DISCHARGE 11,000 FT <sup>3</sup> /S
APRIL 1965	11,400
APRIL 1969	5,100
OCTOBER 1968	2,910
JULY 26, 1965	51





ELEVATION, IN FEET, ABOVE NATIONAL GEODETIC VERTICAL DATUM OF 1929

FIGURE 4. EAST FORK DES MOINES RIVER PROFILES



CO. P44 BR 9728-7NW  
CO. B14 BR 9729-12NE  
MUD CR. 9729-1NE  
C&NW RY BR 9829-36NW  
HWY 169 BR 9829-36NW  
CO. BR 9829-26NW  
CO. BR 9829-22SW  
CO. BR 9829-20NW  
CO. A42 BR 9829-19NW  
CO. BR 9830-13SW  
CO. P20 BR 9830-10SW

390

400

410

DISTANCE, IN MILES, UPSTREAM FROM MOUTH OF DES MOINES RIVER