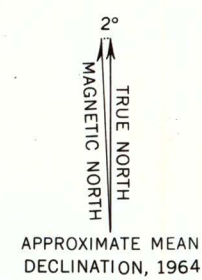


#### EXPLANATION

- Area flooded January 22, 23, 1959
- Boundary of 1959 flood
- River mile measured upstream from mouth



APPROXIMATE MEAN DECLINATION, 1964

#### SCIOTO RIVER AND PAINT CREEK FLOOD DATA

Tabulated below are flood data recorded at the U.S. Geological Survey gaging station on Scioto River and at the Mead Corporation gage on Paint Creek. Flood discharges on Paint Creek were not determined. Overflow limits for only the 1959 flood are shown on the map

Scioto River at Chillicothe (500 feet downstream from Bridge Street)				Paint Creek at Chillicothe (South Paint Street Bridge)		
Date of flood	Stage (feet)	Elevation above mean sea level (feet)	Discharge (cubic feet per second)	Date of flood	Stage (feet)	Elevation above mean sea level (feet)
March 24, 1898	31.3	625.3	-----	1937	(1/)	(1/)
March 26, 1913	39.8	633.8	280,000	1945	22.1	616.1
January 23, 1937	27.7	621.7	101,000	April, 1948	21.2	615.2
January 23, 1959	32.5	626.5	144,000	January 22, 1959	20.7	614.7

(1/) About one-half foot higher than that of 1945

#### FLOODS ON SCIOTO RIVER AND PAINT CREEK AT CHILLICOTHE, OHIO, IN 1959

Hydrologic data pertaining to the extent and frequency of flooding along the Scioto River and Paint Creek in the vicinity of Chillicothe, Ohio, are presented in this atlas. The map and flood data provide a technical basis for making land-use decisions designed to minimize flood damages. No recommendations or suggestions for land-use regulations are made and no solutions of existing flood problems are proposed.

The approximate area inundated by the flood of January 22, 23, 1959, is shown on a topographic map to record the flood hazard in graphical form. Greater floods are possible but no attempt has been made to define their probable overflow limits. The flood of January 1959, although reduced somewhat by storage in reservoirs upstream, was the highest on the Scioto River since the flood of March 26, 1913. The 1913 flood was the greatest since at least 1800. Future protective works may reduce the frequency of flooding in the area but will not necessarily eliminate flooding. The inundation pattern of future floods may be affected by new highways, bridges, different levee conditions, and other cultural changes.

**Cooperation and acknowledgment**—The preparation of this flood map is a part of an investigative program financed through a cooperative agreement between the Ohio Department of Natural Resources, Fred E. Morr, director, and the U.S. Geological Survey, Thomas B. Nolan, director.

Data for the 1959 flood profile were furnished by the Ohio Department of Natural Resources, by the Corps of Engineers, U.S. Army, and by the City of Chillicothe.

The 1913 flood profile of the Scioto River was obtained from the 1916 report, "Flood Relief for Scioto Valley" to the Franklin County Conservation District, and used with the permission of Alvord, Burdick, and Howson, Consulting Engineers, Chillicothe, Ohio.

Gage-height record for Paint Creek at the South Paint Street bridge was furnished by the Mead Corporation, Chillicothe, Ohio.

The explanatory text was written by George W. Edelen, Jr., the flood boundaries were defined by Frederick H. Ruggles, Jr., and the flood-frequency relation was derived by William P. Cross, Geological Survey.

**Flood height**—The height of a flood at a gaging station usually is stated in terms of the gage height or stage, which is the elevation of the water surface above a selected datum plane. Elevations shown on the map are in feet above mean sea level. Gage heights or stages at the U.S. Geological Survey gaging station on Scioto River, located on the right (south) bank about 500 feet downstream from Bridge Street, can be converted to elevations above mean sea level by adding 594.0 feet.

Gage height and year of each annual flood (highest momentary peak discharge in each calendar year) that exceeded elevation 617 feet at the Bridge Street gaging station on Scioto River at Chillicothe during the period 1898, 1908-60, are shown in figure 1. The irregular

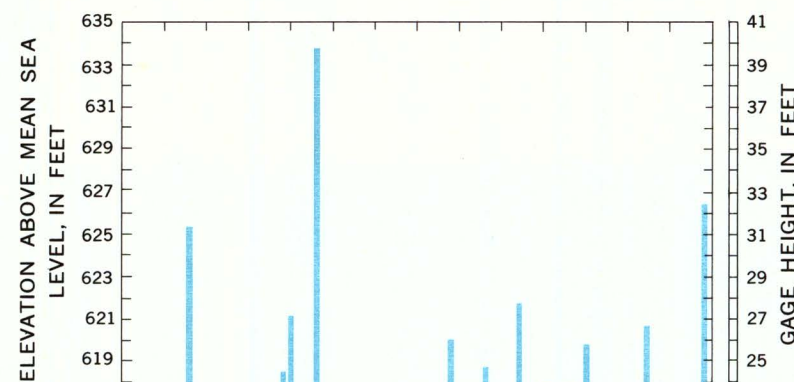


FIGURE 1.—Annual floods above 617-foot elevation, 1898, 1908-60, on Scioto River at Chillicothe (downstream from Bridge Street).

occurrence of floods is evident. Floods above 617-foot elevation occurred 13 times in the 54 years of record, an average of about one flood each 4 years. Although no flood of this magnitude occurred in 41 of the years, 4 floods were greater than elevation 617 feet during the 8-year period 1909-16.

**Flood discharge**—The rate of discharge of a stream is the volume of flow that passes a specific location in a given period of time. Peak discharge is the maximum value of the discharge reached during a flood. Discharge rates usually are expressed in units of cubic feet per second (cfs).

**Regulation**—Upstream from Chillicothe, the flow of Scioto River is subject to regulation by the following reservoirs:

Reservoir	Stream	Beginning of operation
Griggs	Scioto River	1905
O'Shaughnessy	Scioto River	1924
Delaware	Olentangy River	1951
Hoover	Big Walnut Creek	1954

The three water-supply reservoirs, Griggs, O'Shaughnessy, and Hoover, do not include flood storage capacities in their designs and their effects on flood peaks at Chillicothe are negligible. The effect of the Delaware Reservoir on annual flood peaks at Chillicothe is usually small, but was substantial during the January 1959 flood.

On Paint Creek, flow from about 10 percent of the drainage area has been subject to regulation by the Rocky Fork Reservoir since 1952.

**Flood frequency**—Frequency of flooding on the Scioto River at Chillicothe has been derived for conditions of natural flow without the effect of reservoir storage. The frequency derivation is based on records from the U.S. Geological Survey gaging station located downstream from Bridge Street, combined with a regional flood-frequency relation for all streams in Ohio except those in the Maumee River basin. The relation between stage and frequency is dependent on the relation of stage to discharge, in which the stage-to-discharge relation is affected by changes in physical conditions of channels and constrictions. The frequency curve shown in figure 2 is based on channel conditions existing in 1959. Large errors may result if the flood-frequency curve is extrapolated beyond the limits shown. Frequency of flooding on Paint Creek has not been derived.

**Recurrence intervals**—As applied to flood events, recurrence interval is the number of years, on the average, within which a given flood height will be equaled or exceeded once. It is inversely related to the probability of a specific flood being equaled or exceeded in any one year. Thus a 20-year flood would have 1 chance in 20, or a 5-percent chance, of being equaled or exceeded in any one year.

The general relation between recurrence interval and both flood height and flood discharge at the Bridge Street gaging station on Scioto River at Chillicothe (fig. 2) is tabulated below:

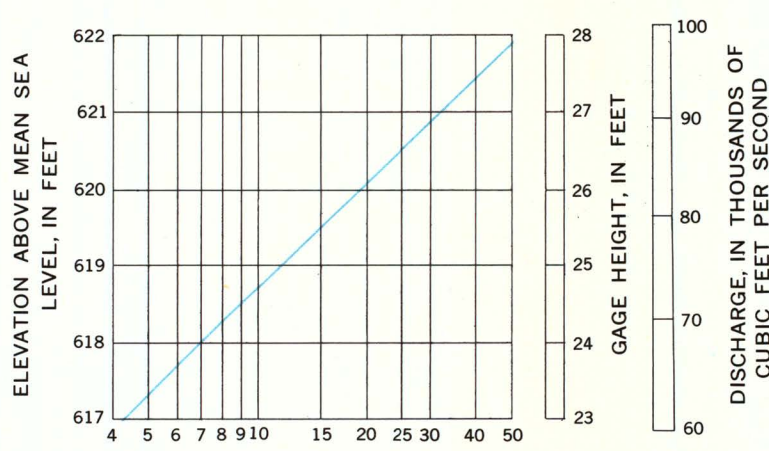


FIGURE 2.—Frequency of floods above 617-foot elevation on Scioto River at Chillicothe (downstream from Bridge Street)

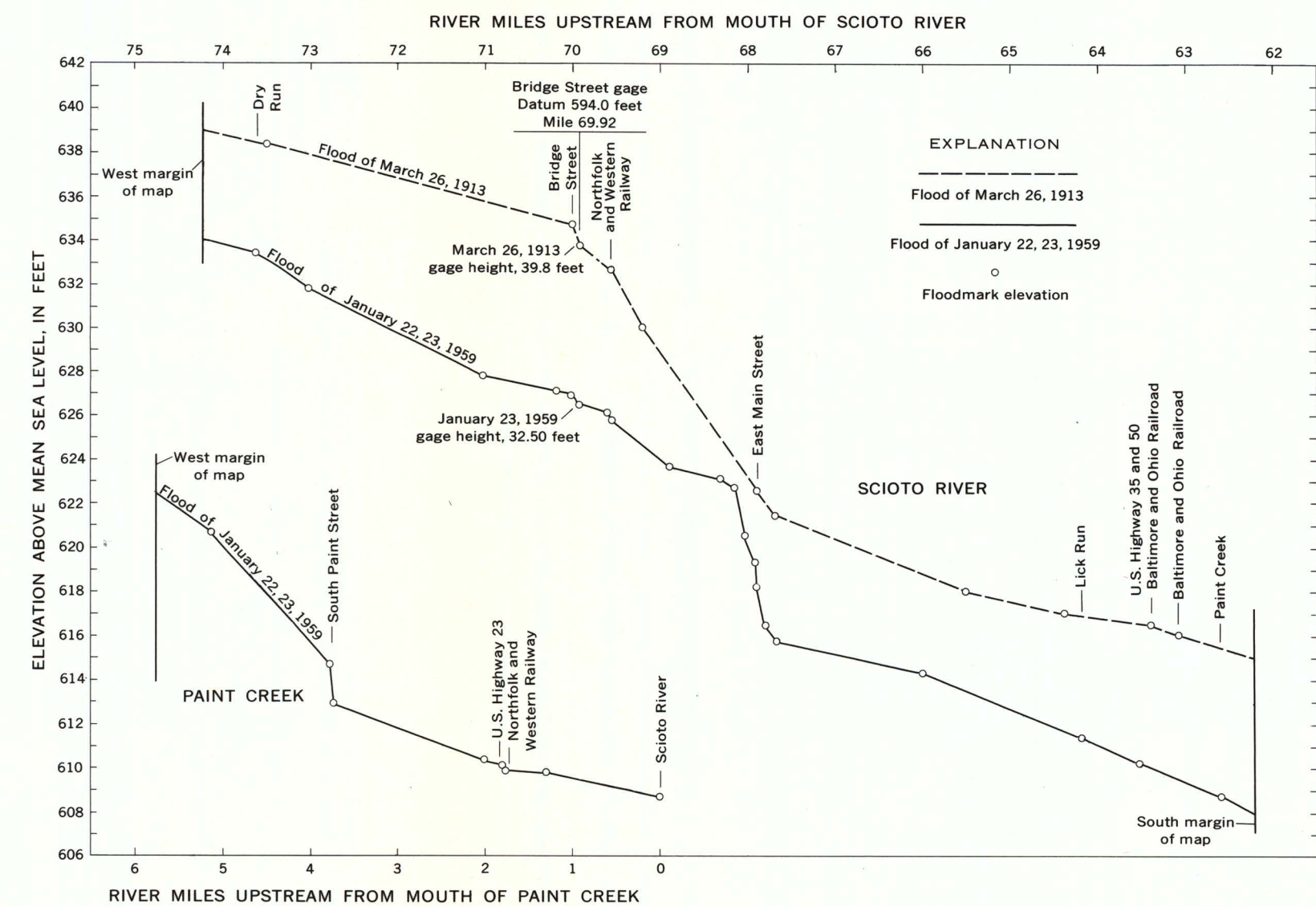


FIGURE 3.—Profiles of floods on Scioto River and Paint Creek

#### FLOODS AT CHILLICOTHE, OHIO

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