



FLOODS AT SPRINGFIELD, OHIO, IN 1913 AND 1959

This map shows the approximate areas inundated by the Mad River, Buck Creek, and Beaver Creek, at Springfield, Ohio, during the floods of March 1913 and January 1959. The area flooded Jan. 21, 1959, by the Detroit, Toledo, and Ironton Railroad Ditch, which enters Buck Creek near the intersection of Arnett Road and Burnett Road in the northeast part of Springfield, is also shown. These floods are historic facts and are shown on a topographic map base in order to record the flood hazard in graphical form. Greater floods are possible but no attempt has been made to show their probable overflow limits on this map. The 1913 flood on the Mad River is the greatest flood known since the arrival of the white man about 150 years ago. The flood of February 1929 on Buck Creek was greater than the floods of either 1913 or 1959, but the extent of inundation in 1929 has not been determined. Levees have been constructed and major changes have been made in the location and alignment of the Mad River channel upstream from Springfield, since the 1913 flood. In some areas along Buck Creek and Beaver Creek, levees have been built and the topography of the flood plain has been changed since 1913. Protective works built after the flood of January 1959 can reduce the frequency of flooding in the area but will not necessarily eliminate future flooding. New highways and other cultural changes made after the flood of 1959 may influence the inundation pattern of future floods.

**Flood height.**—The height of a flood at a gaging station is usually stated in terms of the gage height or stage, which is the elevation of the water surface above a selected datum. Water surface elevations shown on this map are in feet above mean sea level datum. Gage heights or stages at the gaging stations in the Springfield area can be converted to elevations above mean sea level by adding the gage height to the appropriate datum of gage listed below:

Gaging station	Datum of gage above mean sea level (feet)
Mad River (near Lower Valley Pike Bridge)	881.42
Buck Creek (at Plum Street Bridge)	906.85

Gage height and year of each annual flood (highest peak discharge each year) above the 11-foot stage on Mad River at the gaging station near Lower Valley Pike Bridge, are shown in figure 1. The 11-foot stage was exceeded 17 times in 47 years of record (fig. 1). Although floods above an 11-foot stage occurred on the average of about three per decade, only two were experienced in some decades, whereas seven occurred during the period 1945-52. The erratic occurrence of floods is evident.

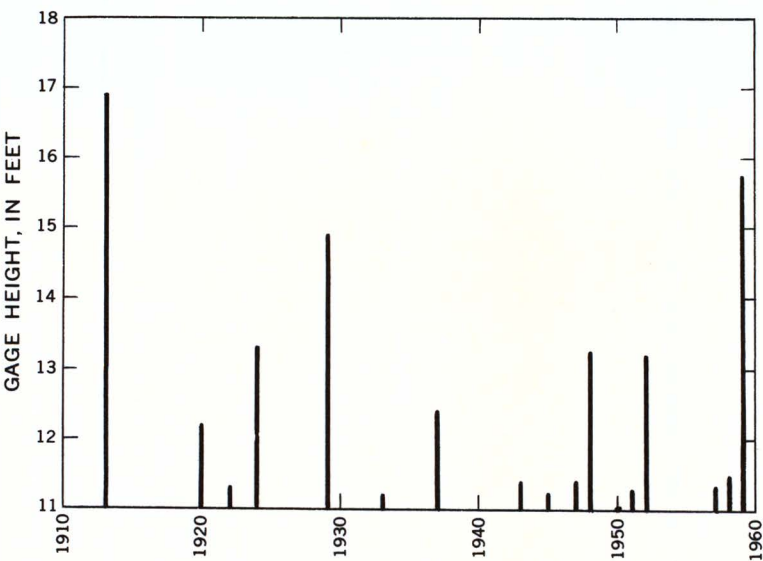
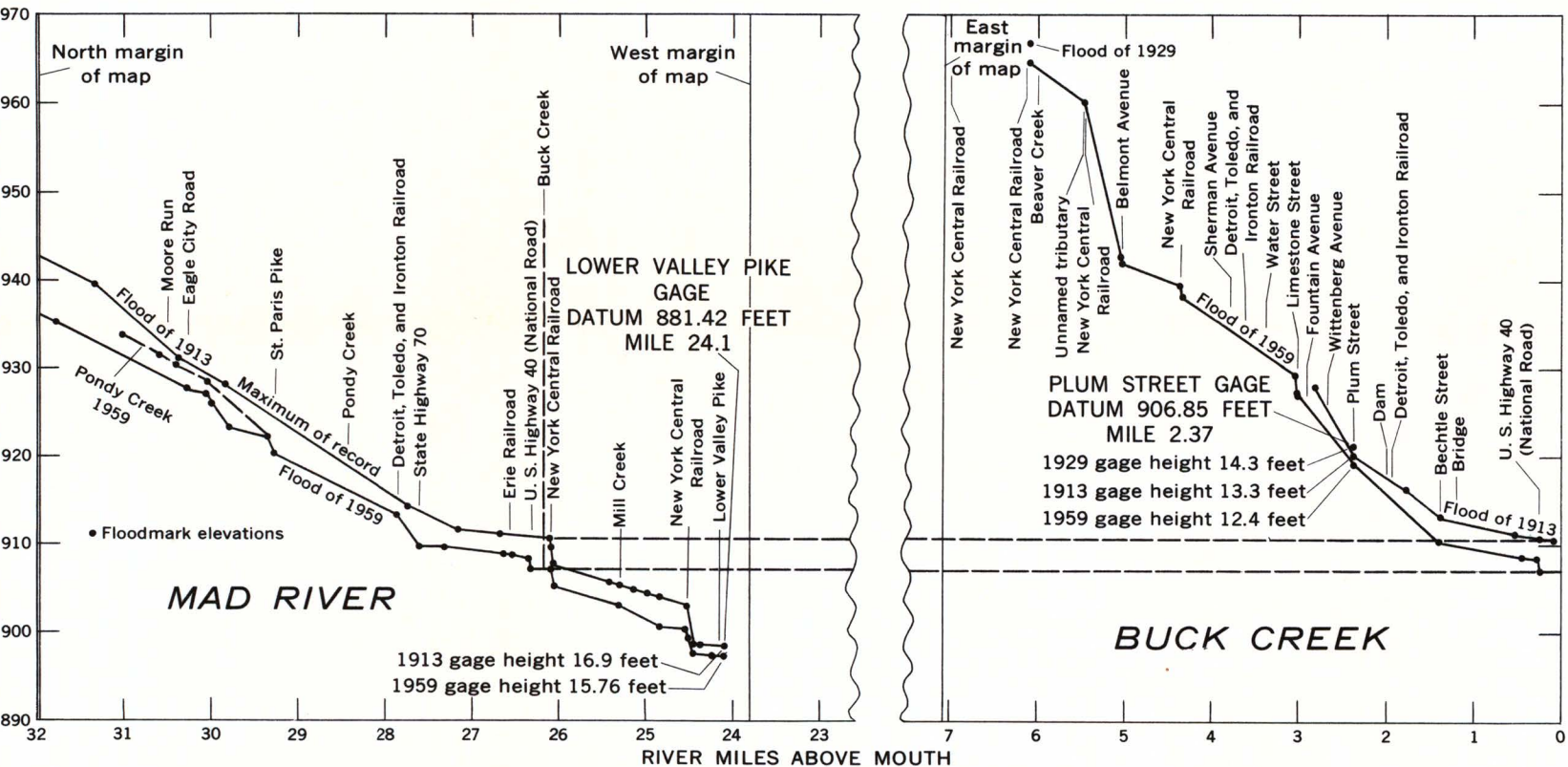


FIGURE 1.—ANNUAL FLOODS ABOVE 11-FOOT STAGE ON MAD RIVER NEAR SPRINGFIELD, OHIO, 1913-59

**Flood frequency.**—Frequency of flooding on Mad River and on Buck Creek has been derived from the records at the U. S. Geological Survey gaging stations combined with the regional flood-frequency relation for all streams in Ohio outside the Maumee River basin. Large errors may result if the flood frequency curves are extrapolated beyond the limits shown. Frequency of flooding on Beaver Creek has not been determined.

**Recurrence intervals.**—As applied to flood events, recurrence interval is the number of years, on the average, that will elapse between occurrences of floods that equal or exceed a specific flood height. It is inversely related to the chance of a specific flood being equaled or exceeded in any year. Thus a so-called "20-year" flood would have 1 chance in 20 of being equaled or exceeded in any year, or a "25-year" flood would have 1 chance in 25 of being equaled or exceeded in any year. The general relationship between recurrence interval and flood height for gaging stations on Mad River and Buck Creek (fig. 2) is tabulated below:

Estimated recurrence interval (years)	Elevation above mean sea level (feet)	
	Mad River (near Lower Valley Pike Bridge)	Buck Creek (at Plum Street Bridge)
50	895.4	917.9
25	894.9	917.1
15	894.4	916.6
10	894.1	916.1
5	892.5	914.4



Flood heights are those recorded at U. S. Geological Survey gaging stations.

Mad River (near Lower Valley Pike Bridge)			Buck Creek (at Plum Street Bridge)		
Date of flood	Stage (feet)	Elevation above mean sea level (feet)	Date of flood	Stage (feet)	Elevation above mean sea level (feet)
Mar. 25, 1913	16.9	898.3	Feb. 26, 1929	14.3*	921.2
Jan. 21, 1959	15.76	897.18	Mar. 25, 1913	13.3	920.2
Feb. 26, 1929	14.9*	896.3	Jan. 21, 1959	12.4	919.2

\*Overflow limits of 1929 flood not determined.

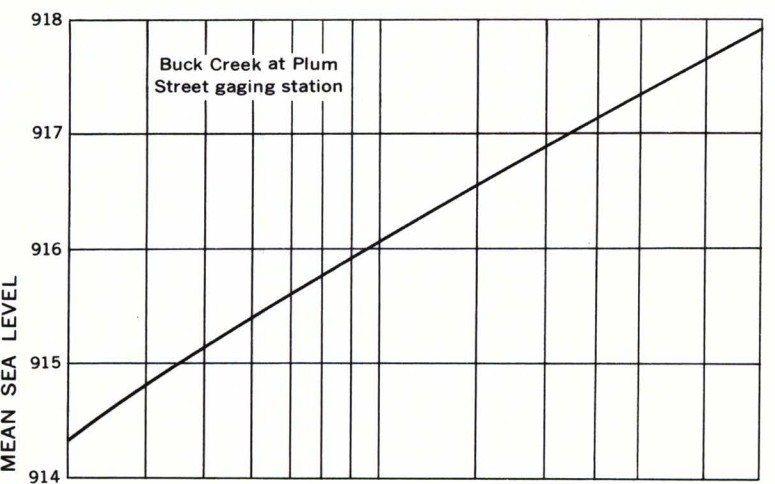


FIGURE 2.—FREQUENCY OF FLOODS ON MAD RIVER AND BUCK CREEK AT SPRINGFIELD, OHIO

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 certain flood height. Thus, on Buck Creek, a flood that reaches a 917.1-foot elevation at the Plum Street Bridge is said to have 25-year recurrence interval. However, because of the erratic nature of flood occurrence, the 917.1-foot elevation may not be reached in any one 25-year period, or it may be reached more than once.

**Flood profiles.**—Profiles of the water surface along Mad River and Buck Creek, constructed from marks left by the floods of March 1913 and January 1959 are shown in figure 3. The January 1959 flood profile in the reach of Pondy Creek which flows along the right (west) edge of the Mad River flood plain, is also shown. Flood water in the downstream reach of Pondy Creek combines with overflow from Mad River during extreme floods. Profiles of floods corresponding to other flood heights can be plotted on this diagram generally parallel to those shown.

The abrupt changes in the profiles, shown at some street locations, indicate the difference in water-surface elevations at the upstream and downstream sides of bridges. Base lines for the profiles are located generally along the thalwegs except in the meandering reach of Mad River between river miles 25 and 28, where a centerline approximately parallel to the valley is used. River miles above the mouth, used for the profiles in figure 3, are also marked along the streams on the flood inundation map.

**Additional data.**—Other information pertaining to floods at Springfield, Ohio, may be obtained at the office of the U. S. Geological Survey, 1509 Hess Street, Columbus, Ohio, and from the following published reports:

Floods of January-February 1959 in Ohio, U. S. Geological Survey Circular 418.

Floods in Ohio, Magnitude and Frequency, State of Ohio Department of Natural Resources, Division of Water, 1959, Bulletin 82.

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