

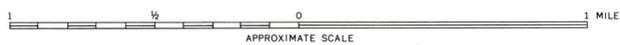


Photograph by the Ohio Department of Highways

AERIAL VIEW OF FLOODED MOUNT VERNON, OHIO, JANUARY 22, 1959



Aerial photomosaic was assembled from photographs furnished by the U. S. Department of Agriculture



KOKOSING RIVER FLOOD AREA

This photomosaic shows the area covered by the 1959 flood on Kokosing River, Dry Creek, and Center Run. Blue represents approximate area flooded Jan. 21, 1959. Indicated flood height is for the Tilden Avenue Bridge gaging station on Kokosing River.

| STAGE (FEET) | ELEVATION ABOVE MEAN SEA LEVEL (FEET) | DATE OF FLOOD |
|--------------|---------------------------------------|---------------|
| 18.19 | 1002.35 | Jan. 21, 1959 |

FLOODS ON THE KOKOSING RIVER, DRY CREEK, AND CENTER RUN, AT MOUNT VERNON, OHIO, IN 1959

This atlas shows the approximate areas inundated by the Kokosing River and its tributaries, Dry Creek and Center Run, at Mount Vernon, Ohio, during the flood of January 1959, the greatest flood on the Kokosing River since at least 1881. This flood is a historic fact and is shown on a photomosaic base in order to record the inundated flood area in graphical form. Greater floods are possible, but no attempt has been made to show their probable overflow limits. Protective works built after the flood of January 1959 can reduce the frequency of flooding in the area but will not necessarily eliminate all 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 plane. Water-surface elevations shown are feet above mean sea level datum. Gage heights or stages at the gaging station on Kokosing River at Tilden Avenue Bridge can be converted to elevations above mean sea level by adding 984.16 feet.

Gage height and year of occurrence of each annual flood (highest peak discharge each year) above the 15-foot stage at the gaging station on the Kokosing River at Millwood, about 19 miles downstream from the Tilden Avenue gaging station at Mount Vernon, are shown in figure 1. The Millwood gaging station record is used here because it is much longer than that at Mount Vernon. The 15-foot stage was exceeded 13 times in 39 years of record (fig. 1) and the erratic occurrence of floods is evident. Although floods above a 15-foot stage occurred on the average of about three per decade on the Kokosing River, only one was experienced in some decades, whereas five occurred during the period 1932-41 and also during the period 1940-49.

Thus, a so-called "20-year" flood would have 1 chance in 20 of being equalled or exceeded in any year, or a "25-year" flood would have 1 chance in 25 of being equalled or exceeded in any year.

The general relationship between recurrence interval and flood height for the Kokosing River at the Tilden Avenue gaging station (fig. 2) is tabulated below.

| Recurrence interval (years) | Elevation above mean sea level (feet) |
|-----------------------------|---------------------------------------|
| 50 | 999.4 |
| 30 | 999.1 |
| 20 | 998.8 |
| 10 | 998.1 |
| 5 | 997.1 |
| 3 | 996.1 |

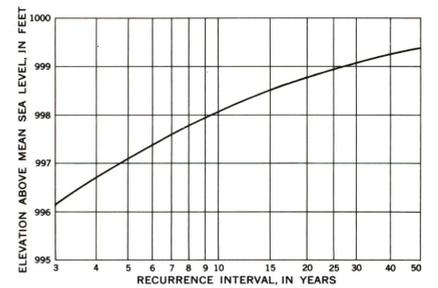


FIGURE 2.—FREQUENCY OF INTERVALS ABOVE ELEVATION 996 FEET ON KOKOSING RIVER AT MOUNT VERNON, OHIO

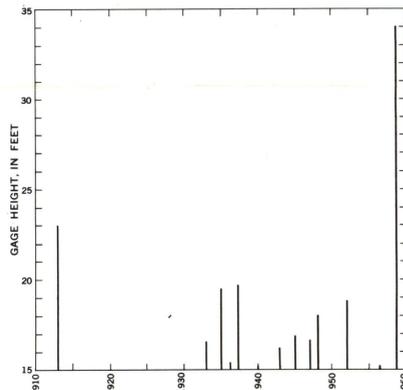


FIGURE 1.—ANNUAL FLOODS ABOVE 15-FOOT STAGE ON KOKOSING RIVER AT MILLWOOD, OHIO, 1913, 1922-59

Flood frequency.—Frequency of flooding on Kokosing River has been derived from the short term record (since 1954) at the U. S. Geological Survey gaging station at the Tilden Avenue Bridge, 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 curve is extrapolated beyond the limit shown. Frequency of flooding on Dry Creek and Center Run 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 equalled or exceeded in any year.

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, at Mount Vernon, a flood that reaches a 999.1-foot elevation at the Tilden Avenue Bridge is said to have a 30-year recurrence interval. However, because of the erratic nature of flood occurrence, the 999.1-foot elevation may not be reached in any one 30-year period, or it may be reached more than once.

Flood profiles.—Profiles of the water surface, constructed from marks left by the flood of January 1959, are shown in figure 3. 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. Profiles of floods corresponding to other flood heights can be plotted on this diagram, generally parallel to those shown. 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 Mount Vernon, Ohio may be obtained at the office of the U. S. Geological Survey, 1509 Hess Street, Columbus, Ohio, and from the following published reports: U. S. Geological Survey, 1959, Floods of January-February 1959 in Ohio: U. S. Geol. Survey Circ. 418. Ohio Department of Natural Resources, Division of Water, 1959, Floods in Ohio, Magnitude and Frequency: Bull. 32.

Flood profile data were furnished by the city of Mount Vernon and by the Ohio Department of Natural Resources, Division of Water.

The flood map was prepared by Frederick H. Ruggles, Jr., the flood frequency relations were developed by William P. Cross, and the explanatory text was written by George W. Edelen, Jr.

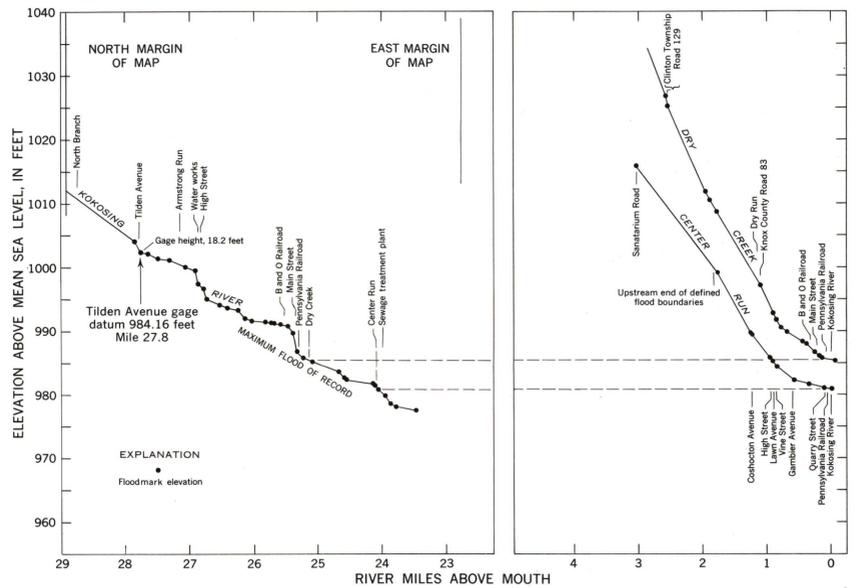


FIGURE 3.—JANUARY 1959 FLOOD PROFILES OF KOKOSING RIVER, DRY CREEK, AND CENTER RUN

EXPLANATION

- 26 + River miles measured upstream from mouth
- Flood limit 1959



INDEX MAP OF OHIO