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Floods on Yahara River,
Lake Mendota to Lake Kegonsa

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Abstract and Index

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11. Abstract:
The profile and an approximate outline of the flooded area for the regional (100-year) flood has been determined for a 21.3-mile reach of the Yahara River, Dane County, Wisconsin, from State Highway 113 at the head of Lake Mendota downstream to the dam at the outlet of Lake Kegonsa. The reach consists principally of lake surface, which results in large amounts of flood-storage volume. The regional-flood profile ranges from 1.7 feet to 3.1 feet above normal low-water elevation.

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# FLOODS ON YAHARA RIVER, LAKE MENDOTA TO LAKE KEGONSA, DANE COUNTY, WISCONSIN

## Press Release

A report evaluating flood potential of the Yahara River has just been issued. Prepared by the U.S. Geological Survey in cooperation with the Dane County Regional Planning Commission and the Wisconsin Department of Natural Resources, the flood-inundation study shows the computed water-surface elevations for the regional (100-year) flood in a partially urbanized reach from State Highway 113 at the head of Lake Mendota downstream to the dam at the outlet of Lake Kegonsa.

The reach consists principally (70 per cent) of lake surface, hence flood-storage volume is considerable and there is a flattening effect on flood peaks. Regional-flood elevations range from 851.7 feet msl (above mean sea level) at Lake Mendota to 844.7 feet msl at Lake Kegonsa. Flood elevations are 1.7 feet to 3.1 feet higher than normal low-water elevations.

Areas inundated by the regional flood are determined by transferring the computed water-surface elevations to a map having 10-foot contour intervals.

A principal value of the report is its usefulness to persons planning the use of flood plains and shorelands and especially to Dane County officials who are concerned with flood-plain zoning regulations.

# FLOODS ON YAHARA RIVER
# LAKE MENDOTA TO LAKE KEGONSA
# DANE COUNTY, WISCONSIN

By Barry K. Holmstrom and Carl L. Lawrence

The Dane County Regional Planning Commission is establishing standards for flood-plain and shoreland zoning regulations. These standards require evaluation of the flood potential of many streams in Dane County.

This report provides evaluation of flood potential for the Yahara River in the 21.3 - mile, partly urbanized, reach from State Highway 113 to the dam at the outlet of Lake Kegonsa. The reach is principally lake surface, only 30 percent consisting of connecting channels between five lakes. The lakes, in downstream order, are Mendota, Monona, Waubesa, Mud, and Kegonsa. They have a combined surface area of 29.0 square miles.

Prepared by the U.S. Geological Survey in cooperation with the Dane County Regional Planning Commission and the Wisconsin Department of Natural Resources, this flood-inundation study shows the computed water-surface elevations and defines the areal limits of inundation for the regional flood.



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The regional flood is defined by the Wisconsin Department of Natural Resources (1968, p. 94) as a flood having an average frequency of occurrence of once in 100 years and "which is representative of large floods known to have occurred generally in Wisconsin and reasonably characteristic of what can be expected to occur on a particular stream."

The flood elevations in the study reach range from 1.7 to 3.1 feet higher than the normal summer elevations (sheet 1). This small increase can be attributed to the large amount of storage in the study reach created by the five lakes and surrounding marshes.

This report will be useful to persons planning the use of flood plains and shore lands, and especially to Dane County officials who are concerned with flood-plain zoning regulations.

Additional information on the data in this report can be obtained from the U.S. Geological Survey, Water Resources Division, 1815 University Avenue, Madison, Wisconsin, 53706.


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## RIVER PROFILES

Regional flood.--A water-surface profile of the regional flood is shown on sheet 1. It was determined by stage-frequency computations at Lake Mendota, Lake Monona, and the U.S.G.S. gaging station on the Yahara River at McFarland, Wis. The regional-flood elevation of Lake Kegonsa was determined from step-backwater computations on the Yahara River in the reach from the power dam at Stoughton to the dam at the outlet of Lake Kegonsa. The profile was the basis for constructing the flood maps (sheets 2-6).

Normal elevation.--A normal summer-level profile is shown to indicate the magnitude of flood rise at any point. It is based on "normal" elevations at the lakes, as legally set by the Wisconsin Department of Natural Resources.


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## INUNDATED AREA

Flood maps (sheets 2-6) show the flood plain near the Yahara River and the shoreland near the five lakes that would be inundated by the regional flood. Flood boundaries were located by interpolating between 10-foot contour lines on U.S.G.S. topographic maps or 2-foot contour lines on maps provided by the City of Madison, and by field surveys.

Depth of flooding at any site can be estimated by subtracting the ground elevation from the flood-profile elevation (sheet 1) at the same river mileage. To aid the user in this estimation, regional-flood elevations are indicated on the flood map. Approximate ground elevations can be determined by interpolating between the contour lines on the map. More accurate depths of flooding can be obtained if ground elevations are determined by leveling from a point of known elevation to the site of interest.



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At significant tributaries to the Yahara River system approximate inundation limits have been shown upstream to the nearest bridge opening above the mouth. Upstream from these points flood levels are influenced by the physical and hydrologic character of the particular tributary basin. Flood-inundation reports are being prepared for several of these basins, namely, Sixmile Creek, Spring Creek, Pheasant Branch, Starkweather Creek, and Nine Springs Creek.

In a few cases the flood boundary line crosses a contour line where the regional flood profile is flat. Here the land surface has been filled to bring it above flood elevation.


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## REFERENCE CITED

Wisconsin Department of Natural Resources, 1968, Wisconsin administrative code, rules of Department of Resource Development: Madison, Wis., chap. RD 16, p. 87-101.



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