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Fluvial-Sediment Characteristics of the Kansas River
at Wamego, Kansas, 1957-70

By
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Prepared by the U.S. Geological Survey in cooperation
with the Kansas Water Resources Board

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ABSTRACT

Fluvial-sediment samples have been collected from the Kansas River at Wamego from 1957-70 by the U.S. Geological Survey in cooperation with the Kansas Water Resources Board. During this period, the stream-runoff pattern of the basin has been altered by constructions of Tuttle Creek and Milford Reservoirs.

An analysis of data shows that the reduction of suspended sediment discharge has been significant as a result of reservoir storage. However, the particle-size distribution of fluvial sediment has not been appreciably altered.

INTRODUCTION

The Kansas Water Resources Board has been concerned with possible changes in the discharge and particle size of fluvial sediment in the Kansas River at Wamego as a result of multi-purpose reservoir construction (fig. 1). Storage was begun in Tuttle Creek Reservoir March 15, 1962, and

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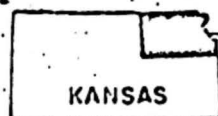
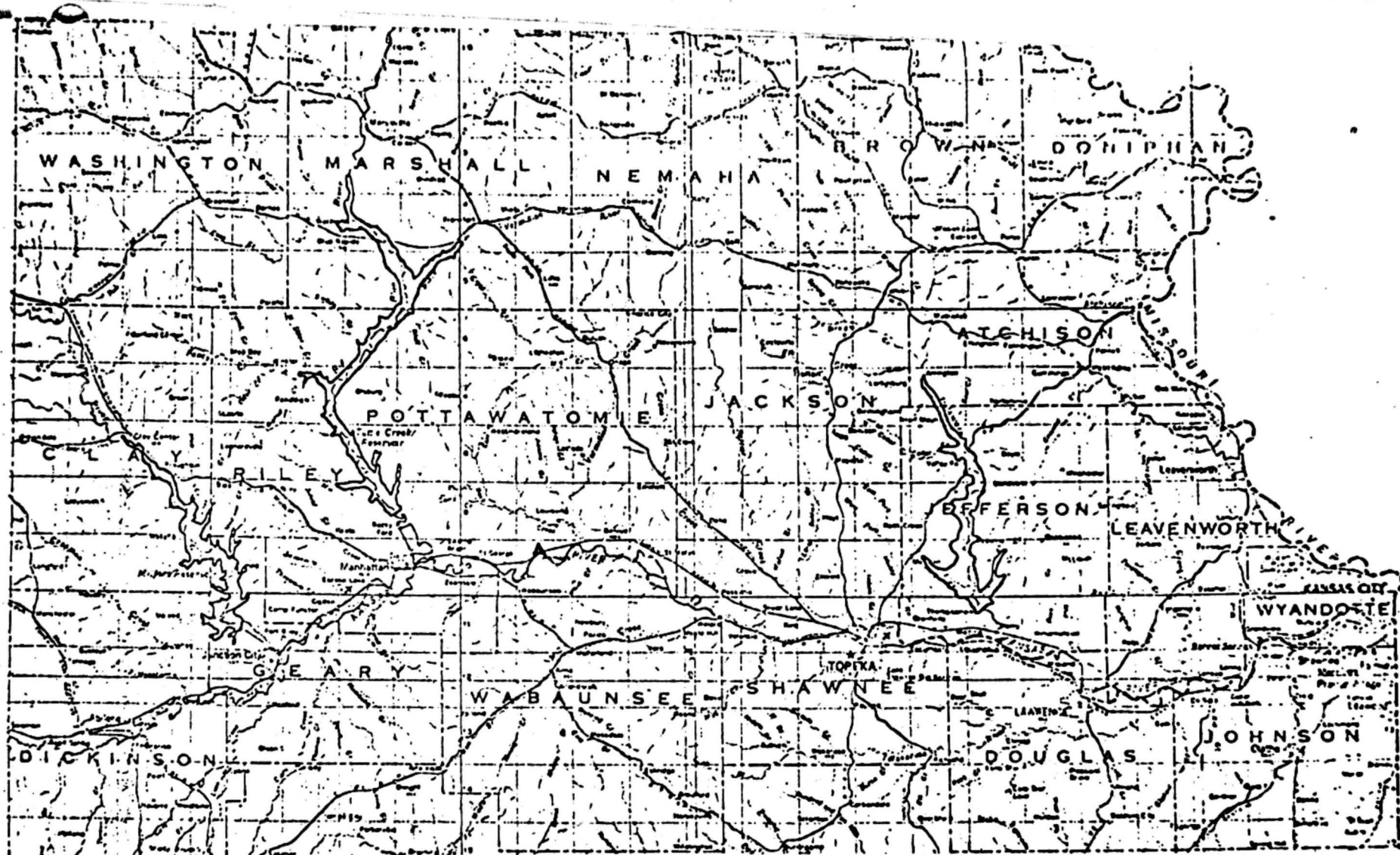
in Milford Reservoir on January 16, 1967. The water-year periods 1958-61, 1962-66, and 1967-70 provide a basis for comparison of sediment characteristics. The results of sample analyses from water years 1958-70 are plotted to show the relation of daily suspended sediment discharge to water discharge. The particle-size distribution of suspended sediment and of bed material are also shown.

FLUVIAL SEDIMENT

The movement of sediment through any given stream cross section is complicated by the interrelation of numerous variables. Sediment movement is dependent on the width, depth, velocity, energy gradient, temperature, and turbulence of the stream; on the size, density, shape, and cohesiveness of particles in the banks and bed of the stream system; and on the geology, meteorology, topography, soils, subsoils, and vegetal cover of the drainage area. Data on turbulence, basin topography, and the rate, amount, and distribution of precipitation in a basin are especially difficult to relate to sediment characteristics.

Figure 1.--Map of Kansas River Basin showing location of reservoirs and station at Wamego.

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Area of this report

Index map

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Sediment-sampling station at Wamego

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Figure 1.--Map of Kansas River Basin showing location of reservoirs and station at Wamego.

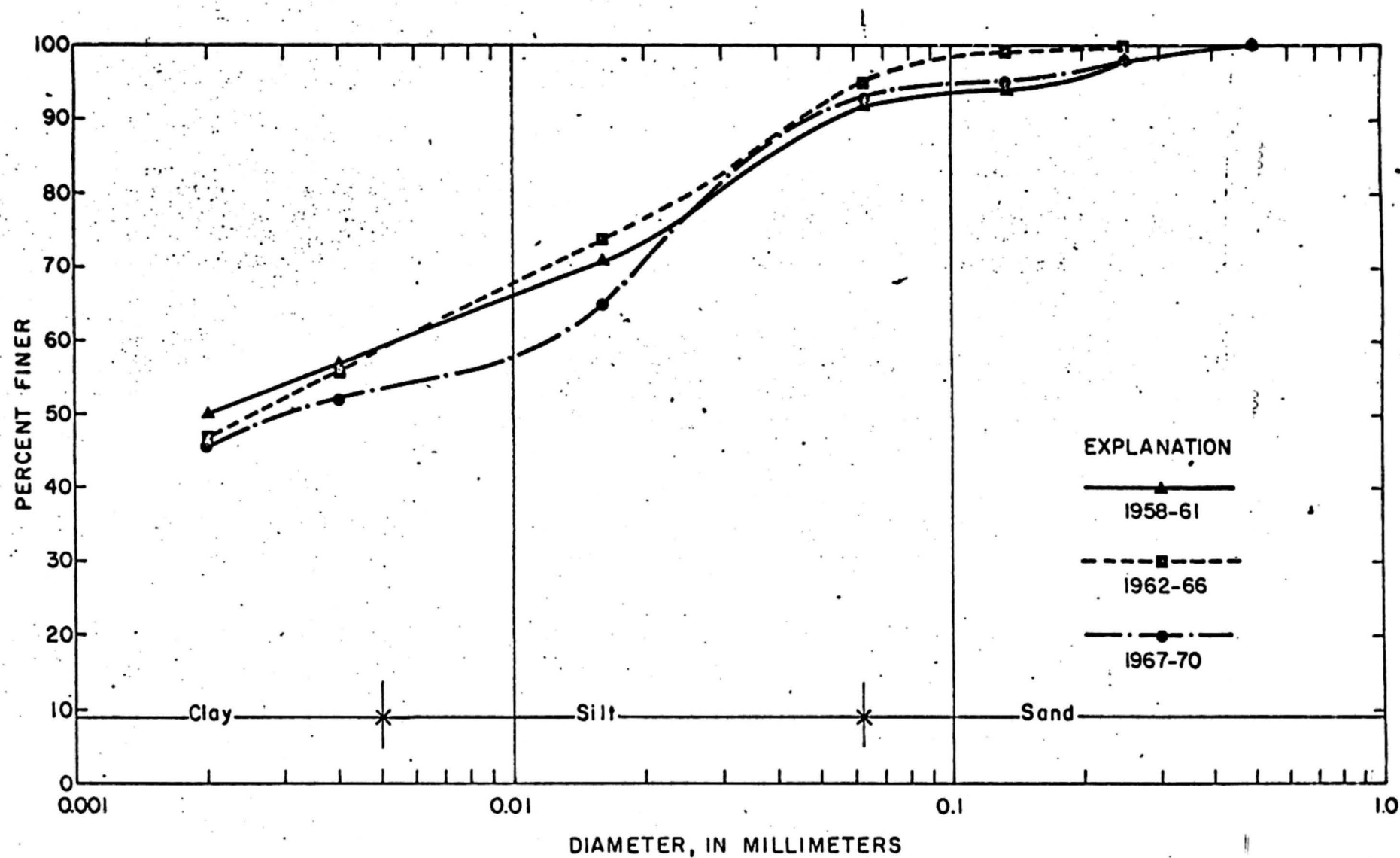


Figure 3.--Particle-size distribution of suspended sediment, Kansas River at Hamero.

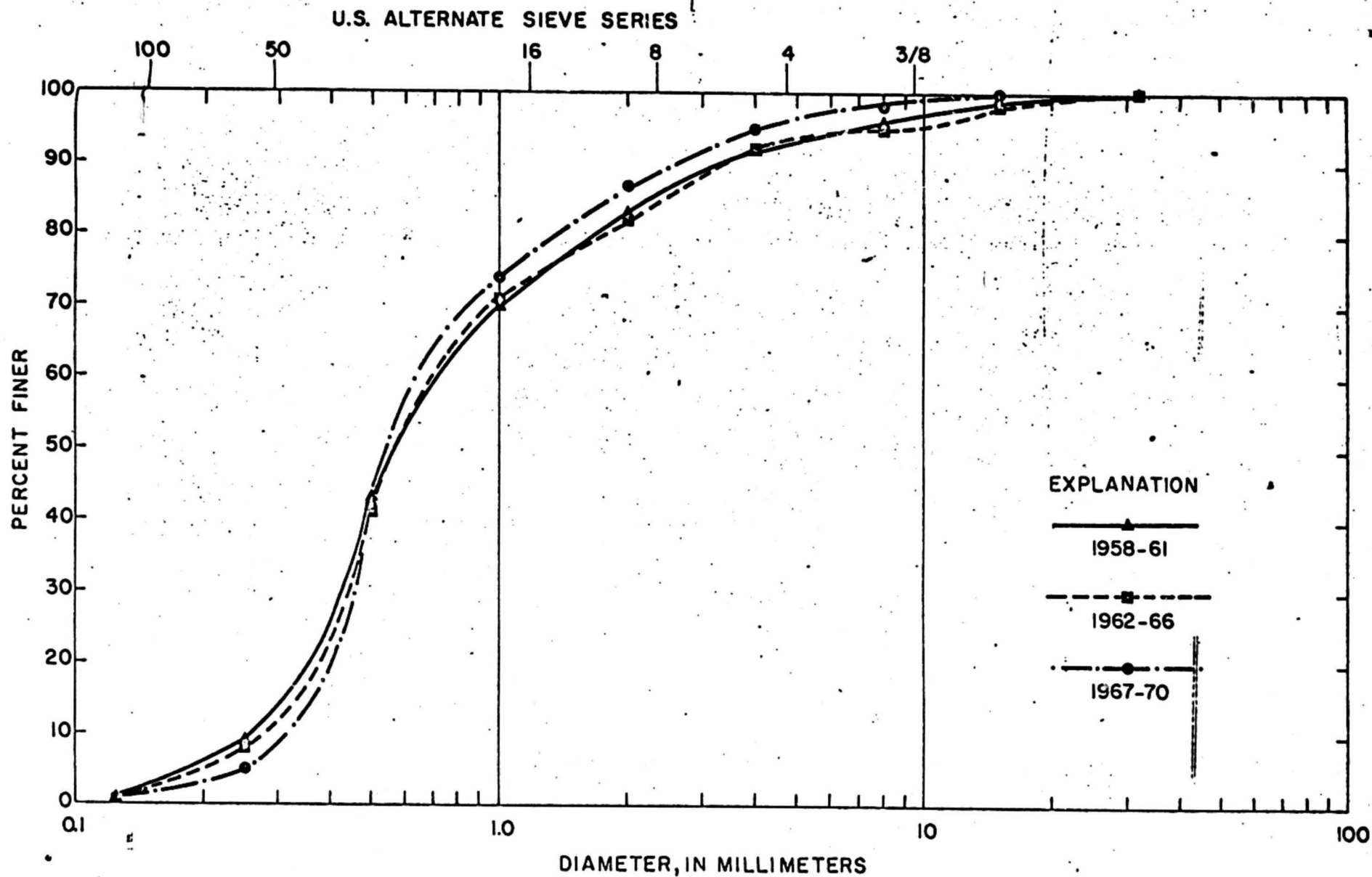


Figure 4.--Particle-size distribution of bed material, Kansas River at Wamego.

SUMMARY

In summary, the records show that the reservoirs have significantly reduced the discharge of suspended sediment at Wamego, but the particle sizes of suspended sediment and bed material have not changed enough to indicate any definite trend.

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