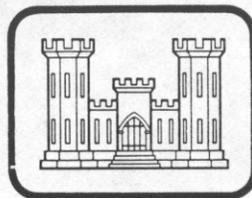


POTAMOLOGY INVESTIGATION
MISSOURI RIVER
RULO, NEBRASKA TO MOUTH

**U. S. ARMY ENGINEER DISTRICT, KANSAS CITY
CORPS OF ENGINEERS KANSAS CITY, MISSOURI**



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**U. S. ARMY ENGINEER DIVISION, MISSOURI RIVER
CORPS OF ENGINEERS
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CONCLUSIONS

Changes in the channel characteristics of the Missouri River are primarily a result of natural causes, construction of the six mainstem dams, and construction of the Missouri River Bank Stabilization and Navigation Project.

The reach from Rulo, Nebraska, to the Mouth was shortened 40 miles, from a length of 538 miles in 1890 to 498.06 miles in 1960. This change has been due to channel realignments and natural and manmade cutoffs. The greatest percentage of change in length occurred in the reaches Rulo to St. Joseph and Kansas City to Waverly.

A large number of structures were constructed during the 1930's and after 1950. Construction during the 1930's consisted primarily of long pile dikes extending across sandbars and revetments along the outside of bends. Construction after 1960 was in the refinement stage and consisted mostly of short dikes, dike extensions, and revetment realignments placed along bank accretions.

The water surface slope appears to have increased during the period from 1890 to 1910 throughout the river. However, due to the rapidly changing channel conditions which existed at that time, the recorded slope data is not considered to be consistent or reliable. The water surface slope increased between 1950 and 1958 throughout the entire reach of river. From 1958 to date (1978), the slope has stayed fairly constant. This increase

might be attributed to construction of channel cutoffs and channel realignments in the early 1950's. The slope of the reach between Waverly and Hermann has been fairly constant, possibly due to the constant length of this reach throughout the period of record.

Regulation of the six mainstem dams upstream from Yankton, South Dakota, provided a more even distribution of flow throughout the year. After the dams became operational, there has been a more constant discharge throughout the year, with higher discharges during the winter season and less peak flows during the summer months. However, flows in the lower reaches are still influenced considerably by local runoff and high flows from tributaries.

The reduction in suspended sediment load is attributed to the construction of mainstem and tributary dams, stabilization of the riverbanks, and better farming practices. The increase in number of bank stabilization structures throughout the project has limited bank erosion and has contributed to the decrease in sediment load.

Because construction is still continuing on the bank stabilization project, the river will continue to adjust itself to these induced changes. Because of the alluvial nature of the Missouri River and because it is influenced by uncontrolled tributary inflows, the erosion and deposit process will continue to occur and the Missouri River will always be in a dynamic state, continuously changing its various characteristics. The many changes that have occurred in the Missouri River in the past will continue to have a great impact on the river in the years to come.