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Supplementary Notes


15. Abstract

The purpose of this research is to analyze the flowline data and relate it to the degradation of the river bed at bridge locations in the river. This information may then be used to replace or rehabilitate those bridges that experienced severe degradation.

This report evaluates channel degradation in 252-mile reach of Arkansas River in Oklahoma. In this study, the 252 mile river length is divided into two Reaches: Reach 1- Kaw Lake to Keystone Dam, and Reach 2- Keystone Dam to Webbers Falls Dam. The flowlines of Arkansas River in Oklahoma were observed for a long-term period. In Reach-1, river station (RS) 3 shows the maximum degradation of 3 feet in 30 years from 1963 to 1993. Similarly, in Reach-2, RS 16, located 7 miles downstream of Webbers Falls Dam shows the maximum degradation of 12 feet in 28 years. On the other hand, channel aggradation of 3.50 feet is observed at RS 1 in Reach-1. The study of river-bed elevation change elucidates that the Arkansas River is not stable for 80.5 miles below Keystone Dam.

The I-40 bridge located at RS 16 (Bridge Key b17051) has experienced a degradation degradation of 12.2 feet in 32 years. When this bridge is replaced in replacement cycle, it is recommended that a detailed hydraulic and geotechnical analysis be performed before reconstruction.

It is recommended that degradation of tributaries is evaluated to determine the structures where flowline is severely degrading in Arkansas River basin.


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