Updated Regional Flood Frequency Equations for Small, Rural, Unregulated Watersheds in Kansas

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Introduction

This report presents new regional flood frequency equations intended to replace the Extended Rational and Three Variable Regression equations introduced in K-TRAN: KU-06-4, *Flood Frequency Relationships for Small Watersheds in Kansas* (McEnroe, Young, & Rome, 2007). This update was necessitated by the publication of new National Weather Service (NWS) rainfall frequency estimates for the Midwest in *NOAA Atlas 14 Volume 8* (Perica et al., 2013).

Example of a Small Watershed in Kansas

Project Description

This report presents one set of regional regression equations to replace both the Extended Rational Method and Three Variable Regression Methods. The Extended Rational and the Three Variable Regression equations have the same three inputs: drainage area, mean annual precipitation, and rainfall intensity. The two sets of equations produce very similar results.

Project Results

The equations presented in this report incorporate current rainfall frequency and mean annual precipitation data, as well as current flood frequency estimates, and were developed using the best available regional regression techniques. The authors recommend adoption of these equations in subsequent editions of the KDOT *Design Manual*.

Project Information

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