

AMC AND NRCS RAINFALL-RUNOFF MODELS

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Abstract: The Natural Resources Conservation Service (NRCS) in South Dakota is studying the relationship between antecedent moisture conditions used in NRCS rainfall-runoff models and measured rainfall-runoff in South Dakota. Antecedent-moisture-condition equations for application in NRCS rainfall-runoff models will be developed for South Dakota. Approximately 123 sites with measured data will be used in this study. The sites will be divided into drainage area groups of less than 2000 acres and between 2000 and 6400 acres.

Rainfall flows and volumes will be computed using NRCS rainfall-runoff models including the National Engineering Field Manual, Chapter 2 (EFM-2) and Technical Release 20 (TR20) for selected sites in South Dakota and compared with measured hydrologic data from the U.S. Geological Survey and National Weather Service. Curve Numbers used in the NRCS models will be computed to correspond with measured flows, volumes, and rainfall amounts. A regression analysis then will be done of Curve Numbers corresponding to antecedent moisture conditions and computed Curve Numbers corresponding to measured data. The antecedent moisture condition will be documented using watershed rainfall records in order to compare with the regression results.

Optionally, a comparison will be done of USGS 2, 5, 10, 25, 50, and 100-year statistically generated peak flows between peak flows generated using NRCS models. Rainfall volumes that produced USGS 2, 5, 10, 25, 50, and 100-year flows will be compared with rainfall volumes from NWS 24-hour storms.