



USDA-CSREES 2007 National Water Quality Conference

Geomorphic Stream Assessment and Monitoring: Little Arkansas River, KS

In January of 2006 we began establishment of five monitored stream reaches in the tributaries of the Little Arkansas River of central Kansas. By April of 2006 we had completed initial survey of all five reaches (average 1200' in length) as well as the installation of monitoring equipment. Baseline measures of these monitored reaches involved stream channel dimensions, pattern, and profile allowing stream classification following Rosgen (1996). Additional parameters were measured or predicted according to Rosgen Level III protocol (2005) in order to show departure from stable or reference conditions, to reveal current stream state, and to predict future trend(s) for the stream channels. This USDA, CSREES project is aimed at measurement and subsequent modeling of sediment sources, transport, and deposition within the agricultural watersheds that supply the Little Arkansas River. The particular concern of the geomorphic stream channel assessment work is to predict and the measure sediment contributions from stream banks and beds. Measurements of lateral migration or stream bank erosion (erosion pins) and bed scour (scour chains) should yield sediment sizes and volumes contributed by the monitored reaches on an annual basis. These measures will be added to measures of sediment yield from overland flow and ephemeral gullies to produce a comprehensive sediment profile for the targeted watersheds. This presentation briefly recounts our measurement methods, including longitudinal profiles, cross-sections of riffles and pools, pattern measures such as sinuosity and radius of curvature, as well as predictions of bank erosion rates (BEHI, Rosgen 2001) and bed load entrainment and transport. We also report on our first year of data collection, as well as our cooperative efforts with landowners and other stakeholders in the sub-watersheds of the Little Arkansas River. Finally, we address our long term goals for prediction, measurement and modeling of streambank erosion for Midwestern streams and rivers.

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