

# GEOMORPHIC ASSESSMENT & CLASSIFICATION OF KANSAS RIPARIAN SYSTEMS

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The project, funded by an Environment Protection Agency wetland protection grant and managed by the Kansas Water Office, began in August 1998 and ended December 31, 2001. The State Conservation Commission is currently managing a second related three-year project, which began January 1, 2002.

## Background

Kansas streams and their associated riparian corridors are one of the state's most vital natural resources. Perennial streams provide a large percentage of the state's population with water for drinking, irrigation, and recreation. Kansas stream corridors are undergoing adjustments and degradation due to land use changes from agriculture and urban development. The cumulative effect of these changes is an increase in chemical and sediment pollution, a decrease in aquatic and terrestrial wildlife habitat, and an increase in property loss due to flooding and erosion.

A stream is a product of its watershed. The watershed's climate, topography, geology, vegetative cover, and land use all combine to determine the physical characteristics of a stream. Stream channel dimension, pattern, and profile along with riparian condition and sediment loads and sources, are measurements used to describe the physical characteristics of a watershed. This type of data was previously unavailable.

In 1998, the Kansas Water Office was awarded a United States Environmental Protection Agency grant for the: *Geomorphic Assessment and Classification of Kansas Riparian Systems*. The purpose of the grant was to collect baseline stream corridor data. This information will enhance our understanding of the function of Kansas stream corridors. The collected data will allow State agency personnel, and others, to begin applying a watershed approach to stream corridor protection and restoration. The current approach is a site specific, or patch in place method for addressing impaired stream corridors.

Although the primary objective of this project was to gather fluvial geomorphology and ancillary data necessary for understanding stream function and proper stream corridor management, additional objectives included:

1. Apply a uniform stream classification system to Kansas watersheds.
2. Contrast physical characteristics of stable versus degrading stream systems throughout the state.
3. Design and implement streambank stabilization and riparian restoration demonstration projects on selected stream reaches.

## **Project Approach**

The predominate factor affecting the physical characteristics of stream corridors is bankfull flow. Bankfull flow is the peak of effective discharge and determines the physical characteristics of a stream channel. It is also described as the incipient point of flooding.

To document the correct elevation of the bankfull flow, data is collected at or near United States Geological Survey stream-flow gaging stations. United States Geological Survey maintains approximately 140 stream-flow gaging stations in Kansas, which collects flow on a continuous basis. By the end of the Kansas Water Office project period, 86 gaging stations were surveyed. Some stations were excluded due to controlled flow conditions immediately upstream of the gaging station (reservoirs).

## **Conclusion**

The main goal of both the Kansas Water Office project (as well as the State

Conservation Commission's current project) is to increase the state's knowledge on stream corridor systems. In return, the knowledge will help us better understand stream processes and develop solutions to repair impaired stream corridors. This knowledge can be brought to bear when a member of the agriculture or urban community is seeking assistance to improve stream corridors. Project information dissemination is an important part of the research effort. We hope that sharing this information will allow others to improve stream conditions and provide them with information for proper stream corridor management.

## **Additional Information**

For more information on the project, you may contact the Kansas Water Office at 1-888-KANWATR; the State Conservation Commission at 785-296-3600; or visit the Kansas Water Office web site:  
[http://kwo.org/Programs/stream\\_classification.htm](http://kwo.org/Programs/stream_classification.htm).