



KEELS CREEK STREAMBANK RESTORATION

FLOODING THREATENS EXISTING UTILITIES

The excessive storms experienced in early 2011 and 2012 left the banks of Keels Creek, located southeast of Eureka Springs, eroded significantly near the Carroll-Boone Water Districts (CBWD) 36-inch transmission line. The CBWD serves the cities of Eureka Springs, Berryville, Green Forest, Harrison as well as numerous small towns, communities and rural water districts in Carroll and Boone Counties.

CLIENT:

Carroll-Boone Water District

COST: \$196,900

COMPLETED: 2012

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At one area of the creek, the bank had eroded to within 3 to 4 feet of the CBWD transmission line. Due to the emergency nature of the project, MWY took a “design build” approach to mitigate the crisis. Working with Corps of Engineers, Arkansas Natural Resources Commission, Arkansas Department of Environmental Quality and Environmental Consulting Operations, permits were acquired and a design plan was formulated.

Mitigation of the streambank consisted of removal of existing creek gravel to create pools to slow the flow of water in the creek, constructing a Longitudinal Peak Stone Toe Protection (LPSTP) structure to “armor” the streambank as well as Bendway Weirs and engineered rock riffles to help channel the flows within the creek away from the embankment. Improvements also included the planting of Willow Trees within the LPSTP structure and in the creek bed to assist in the mitigation of water velocities in Keels Creek. Sycamore Trees were also used in certain areas along the streambank to create a more natural erosion barrier and to help mitigate possible future erosion.



TURTLE CREEK STREAMBANK RESTORATION

UTILITIES AND WATER RESOURCES PROTECTED

Severe erosion along Turtle Creek, resulted in the endangerment and possible exposure of existing water and sewer utility lines.

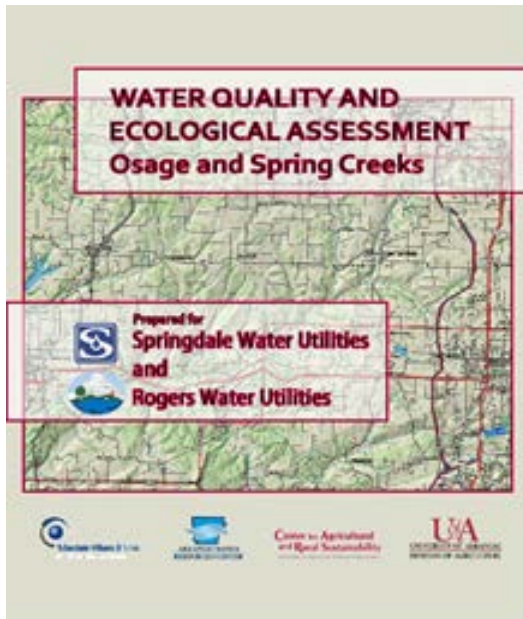
Mitigation included the construction of a Longitudinal Peak Stone Toe Protection (LPSTP) structure, engineered rock riffles, rock vanes, the planting of approximately 300 trees and mulching disturbed areas with a bonded fiber matrix to expedite the establishment of vegetation along the creek bank. The total project site included approximately 2,800 linear feet of creek and streambank restoration, which encompassed approximately 3.0 acres.

To protect the utility lines, approximately 300 linear feet of the LPSTP structure was constructed to “armor” the streambank and prevent future erosion. The engineered rock riffles and the rock vanes were then constructed within the creek bed to assist in maintaining the creek channel flows primarily in the center of Turtle Creek and away from the stream embankment. The planting of 300 trees - River Birch, Black Willow and Bur Oak, along each side of the embankment and the application of the bonded fiber matrix vegetation mixture to the disturbed areas helped stabilize the embankment as well as assist in returning this section of Turtle Creek into its natural riparian state.

CLIENT:
Rogers Water Utility

COMPLETED: 2008

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ECOLOGICAL ASSESSMENT – WATER QUALITY OF ILLINOIS RIVER WATERSHED ALONG WITH OSAGE & SPRING CREEKS EVALUATED

Late 2006 and early 2007, the U.S. Environmental Protection Agency proposed to develop a Total Maximum Daily Load (TDML) for phosphorus for Osage Creek and Spring Creek below the Rogers and Springdale wastewater treatment facilities, respectively. The cities and the Arkansas Department of Environmental Quality (ADEQ) did not believe that adequate background data existed to justify the issuance of TMDLs for phosphorus.

Accordingly, the two cities entered into a contract with McGoodwin, Williams & Yates to provide water quality and ecological assessment of the streams to determine if, in fact, the streams were impaired due to phosphorus and the issuance of TMDLs was justified.

MWY subcontracted the detailed assessment to the University of Arkansas Division of Agriculture. The work was conducted under a work-plan and a quality assurance control plan reviewed and concurred by ADEQ. This Study established that these streams were in fact not impaired due to phosphorus, and in our opinion, did not justify the issuance of TMDLs for phosphorus

Tasked with evaluating water quality and assessing biological conditions in Osage and Spring Creeks in Northwest Arkansas, the team collected and analyzed water quality, benthic macroinvertebrate, fish, and periphyton samples from the two creeks to evaluate the status of attainment of the aquatic life designated use of the streams under Arkansas Pollution Control and Ecology Commission's ADEQ Regulation

This project was designed to evaluate three tiers of impact:

- 1) Above and below wastewater treatment plants of the Cities of Rogers and Springdale, Arkansas
- 2) Sites below wastewater treatment plants compared to reference conditions
- 3) Gradients across stream reaches from upstream to downstream

CLIENT(S)

*Cities of Rogers and Springdale,
Arkansas*

COMPLETED:

April 2007 to December 2009

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