



International Erosion Control Association

3001 S. Lincoln Avenue, Suite A, Steamboat Springs, CO 80487

phone: 970 879 3010 fax: 970 879 8563 email: ecinfo@ieca.org web: <http://www.ieca.org/>

-- News Release --

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For Immediate Release

Contact: Bill Bucher

Phone: 406-433-5210

Email: bbucher@maximusa.com

**Technical Paper Describing Design of
Montana Stream Restoration Project
Earns Recognition for Excellence in Erosion Control**

Steamboat Springs, Colo. – A report describing engineering design procedures for restoring life to a contaminated stream has been honored with an international award for its contribution to the erosion control industry. The procedures are applied to an example project, which uses clean, imported backfill materials to construct completely new streambanks and the adjacent flood plain.

The design methods are presented in a technical paper titled, *Channel Remediation and Restoration Design for Silver Bow Creek, Butte, Montana*. The work is part of a U.S. Environmental Protection Agency Superfund project, which is being directed by the Montana Department of Environmental Quality.

The report has received the 2004 Most Distinguished Technical Paper Award from the International Erosion Control Association. The award is given to one paper, prepared for the IECA Annual Conference, which contributes most significantly to advancing erosion control knowledge. It recognizes concise, clear technical writing that presents innovative solutions to erosion control problems.

One of several annual IECA Environmental Excellence awards, it will be presented to Bill Bucher, senior engineer, Maxim Technologies, Helena, Mont., and Gary Wolff, senior engineer, Ayres Associates, Inc., Fort Collins, Colo., at the annual IECA conference in Dallas, Tex., Feb. 22, 2005. They are co-authors of the paper along with Larry Cawlfeld, senior engineer, Maxim Technologies

The stream restoration project involved a 25-mile long stretch of Silver Bow Creek, between Butte and Anaconda, Mont. The work required total removal of the

existing stream channel and floodplain, where waste from more than 100 years of mining activities had contaminated soils to a depth of 1 yard or more.

“The project presented an opportunity to reconstruct a natural channel based on geomorphic and hydraulic principles using an essentially blank slate,” write the authors.

The primary goals of the remediation and restoration design were to develop a naturally-functioning, stable channel that could transport water and sediment, protect existing roads, bridges and other infrastructure and establish and protect aquatic habitat. The design methods presented in their paper apply to other similar stream restoration projects involving a highly-disturbed river system, the authors note. The project allowed them to combine individual design methods, which have been developed and applied elsewhere in the past, into one systematic approach for stream restoration.

The engineers based their restoration design on their analysis of the existing stream in terms of such characteristics as geomorphology, hydrology, hydraulics and sediment transport. Their design addressed a number of channel and floodplain issues including desired channel capacity, cross-sectional geometry of the stream, stream bed materials, the vertical stability of the channel and the lateral stability of the streambanks.

Among the features of the design:

- The cross sectional geometry of the channel varies to replicate natural stream features, including riffles, pools and runs.
- To maintain natural functions, the channel is designed to deform over time within acceptable limits, while preventing severe bank erosion. This includes the use of soil lifts wrapped in coir fabric and rock bank toes to stabilize the outside of bends until vegetation can provide permanent stabilization. Where needed to protect existing infrastructure, the banks are armored with rock riprap to withstand a 100-year flood.
- The floodplain is designed to slope towards the reconstructed channel so that the stream flow will return to the main channel following any flooding without scouring new channels in the floodplain. The design also includes shallow water wetlands to enhance wildlife habitat.

The IECA, founded in 1972, is a non-profit professional organization with members in 39 countries around the world who are dedicated to minimizing accelerated soil erosion

This is the 14th year of the annual IECA Environmental Excellence Awards program.

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