

## STREAM STABILIZATION TECHNIQUES SHARED

On November 27th through the 29th, 2007, the Army Corps of Engineers (ACOE) sponsored a Stream Stabilization Course featuring David Derrick, a well-recognized name in stream stabilization techniques. The co-sponsors of the workshop were North Jersey RC&D, RCE Water Resources Program (including USDA CSREES Regional Water Coordination Program and the New Jersey Sea Grant Extension Program), Princeton Hydro, and the Natural Resources Conservation Service (NRCS).

Mr. Derrick currently holds the position of Research Hydraulic Engineer in the Coastal and Hydraulics Lab of ACOE. Derrick teaches approximately 500-900 people per year on the concepts, purpose, and design of stream stabilization projects based on his professional experiences across the nation. This particular course involved 85 participants from the New Jersey Department of Environmental Protection, private consulting firms, non-profits, conservation districts, and others from New Jersey, New York, Pennsylvania, and even Florida.

The first two days of the course involved presentations on experiences and lessons learned, leading design teams, and the various methods of stream restoration and stabilization. Redirective stream restoration was a focus during the workshop, and techniques such as longitudinal peaked stone toe protection were taught. Stream geomorphology was also a continued underlying focus during these presentations.

The third day of the course included observing the stabilization concepts in-practice. Groups traveled to several ongoing and completed restoration projects in central and northwest New Jersey. In large and small groups, course participants reviewed construction plans, project objectives, results and next steps.

Mr. Derrick hosts several workshops across the country throughout the year. Look for announcements for future workshops in Water Pages or in email announcements from the Water Resources Program.



This stream bank will soon be restored by NRCS with Derrick's leadership.



## WATER RESOURCES FOR SUSTAINABLE COMMUNITIES

The Rutgers Cooperative Extension Water Resources Program (RCE WRP) was contacted by Hillsborough Township to discuss retrofitting stormwater detention basins to improve water quality and decrease maintenance requirements. The RCE WRP was invited to meet with municipal officials, the township planner and the director of public works to discuss potential solutions to these troubled basins. After conducting a site visit, the RCE WRP suggested retrofitting the existing detention basins with bioretention systems. Bioretention systems have a much higher pollutant removal capability than traditional detention basins and typically require much less maintenance.

The RCE WRP recognizes that, like Hillsborough, many of New Jersey's municipalities are suffering from a deteriorating urban infrastructure, as well as increasing environmental state regulations for their municipal separate storm sewer systems (MS4s) from the New Jersey Department of Environmental Protection (NJDEP). Many municipalities do not have the funds to meet the MS4 permitting requirements of regularly maintaining stormwater management facilities. Funds are also being stretched by the municipalities' needs to replace aging infrastructure. The RCE WRP is developing a new program, "Water Resources for Sustainable Communities." The goal of this program is to work with municipalities to improve their water resources infrastructure (and the environment) while reducing maintenance costs to the municipality.

Water Resources for Sustainable Communities can be broken down into four different categories of services: 1) Retrofit Design for Existing Structures, 2) Recommendations on the Maintenance Strategies, 3) Flood Mitigation Strategies, and 4) Wastewater Management.

- The Retrofit Design for Existing Structures service provides municipalities with designs to retrofit their existing stormwater infrastructure to meet MS4

requirements, reduces maintenance costs, improves pollutant removal capability of specific sites or reduces the amount impervious surface for a site.

- The Recommendations on the Maintenance Strategies service conducts a cost analysis of the maintenance strategies that focus on fertilizer and road salt use. The cost analysis will be used to find waste in the strategy and reduce waste to reduce cost. The service also encourages the use of environmentally friendly products such as low phosphorus fertilizers. Flooding from small storms in municipalities can be caused from impoundments in streams and failing stream banks.

- The Flood Mitigation Strategies service investigates the effects of removing impoundments in streams and contributing factors to eroding/failing stream banks. The RCE WRP can design structural or non-structural solutions to flooding from small storms in a municipality.

- The Wastewater Management service recognizes that improper wastewater management has serious impacts on water quality and can result in a public health hazard. The RCE WRP works with municipalities to deal wastewater issues such as combined sewer overflows (CSOs), septic management and education.

The staff of the RCE WRP are all grant-funded, and the program is able to keep costs low by incorporating students into their research and design projects. The RCE WRP has been very successful in the past with receiving grants to work on projects with municipalities, and the program plans to use that experience to work with a greater number of municipalities to build projects and determine new strategies to help meet the needs of water resources management in the 21st century. For more information, contact Sean Walsh, Program Associate at (732) 932-9800 x 6126 or by e-mail at [swalsh@envsci.rutgers.edu](mailto:swalsh@envsci.rutgers.edu).