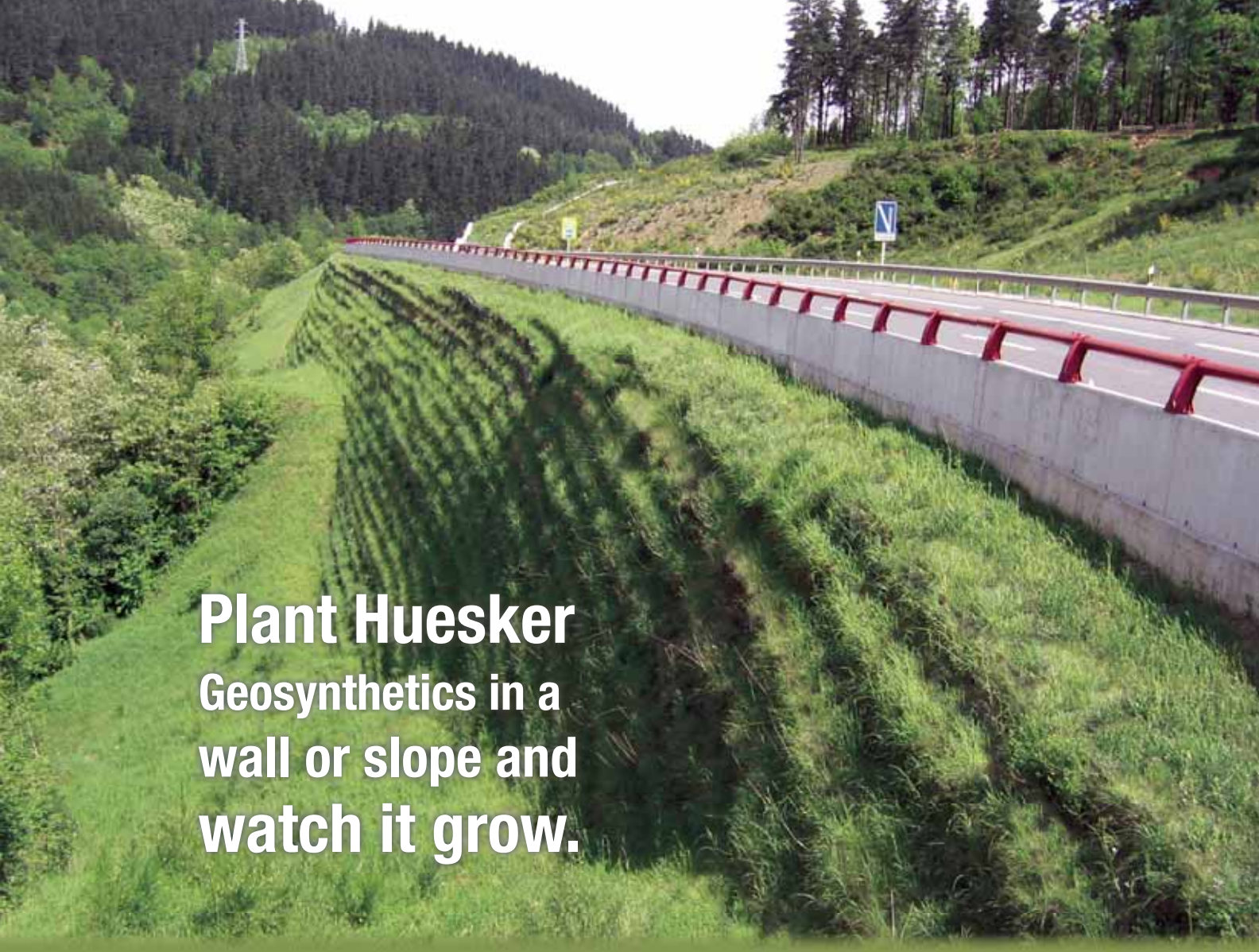

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Innovative Uses for Compost BMP Sees Growth

by Britt Faucette, Ph.D., CPESC, LEED AP

THE compost filter sock, originally developed for construction site perimeter control, has recently found its way into more green building and ecosystem sensitive applications. The compost filter sock is made almost exclusively from organic, recycled materials located within the same bioregion where they are utilized which not only reduces transportation and associated green gas emissions, but also means theses products are often indeed a product of the natural landscape systems where they are employed - where native flora and fauna are already adapted to them.

Protecting Endangered Species

The Upper Etowah River Alliance, headquartered in Canton, GA, a northern suburb of Atlanta, recently designed and built a Low Impact Development (LID) education and demonstration facility on the banks of the Etowah River in partnership with The Nature Conservancy, and the Coca Cola Company. This section of the Etowah River is widely known as part of the only remaining habitat for the Etowah Darter (*Etheostoma etowahae*) and the Cherokee Darter (*Etheostoma scotti*), both listed endangered species. The Upper Etowah River Alliance and its partners were interested in educating professionals and the public on sustainable stormwater management design and best management practices (BMPs) that can help protect the river water quality and darter habitat. The site includes a series of bioretention and rainwater collection systems, porous pavement, coir fiber channel matting, drought tolerant native plant species, and compost filter socks. The compost filter socks are being used to filter surface runoff from the landscape before entering the river; as a filtration barrier around the parking lot to reduce

This site is being used as a model for training stormwater professionals on green infrastructure and LID design and management practices, and how these strategies are being directly employed to save the endangered darters.

Upper Etowah River Alliance Low Impact Development (LID) Education and Demonstration Facility. Below: Compost filter sock used to filter stormwater before discharge into endangered species habitat section of the Etowah River.

Compost sock sediment trap at Delta Ridge Residential Development in Delta, PA.

pollutants exiting the parking area; as a vegetated scour apron at a culvert pipe outfall; and as check dam/filtration structures in a swale flowing directly to the river. This site is being used as a model for training stormwater professionals on green infrastructure and LID design and management practices, and how these strategies are being directly employed to save the endangered darters. Says Diane Minick, Watershed Director of the Upper Etowah River Alliance, "The compost filter sock is an integral part our LID demonstration site and plays a significant role in protecting the river water quality and darter habitat by physically, chemically, and biologically filtering site stormwater runoff before it enters the river."

Ohio State University Design Tool

In an effort to make the compost filter socks more design friendly, research engineers at The Ohio State University (OSU) recently completed research evaluating the water flow through rates of silt fence and compost filter socks. Typically, spacing and drainage area allowance requirements for sediment barriers are based on predicted storm runoff from a state determined design storm event, typically a 24 hour event for a 2 or 10 year return period. Researchers determined that although sediment removal efficiencies were similar for silt fence and compost filter socks, baring failures, water and sediment-laden water flow through rates were on average 50% faster for the compost filter sock. Researchers concluded that new design spacing and drainage area requirements must be created for the compost filter sock since runoff flow through rates are greater and less runoff water is impounded. As part of the second phase of their research, engineers created a user friendly Design Tool for the compost filter socks so plan developers and designers can chose the correct size of filter sock based on their site, soil, and rainfall-runoff conditions. As state environmental agencies revise and reprint their erosion and sediment control and/or stormwater management manuals, utilizing this tool to develop design charts for the compost filter sock, based on their specific state design storms and typical site conditions can be extremely helpful.

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Pennsylvania DEP

The Pennsylvania Department of Environmental Protection (PA DEP) is currently using the Ohio State University Design Tool. The PA DEP recently approved a variety of new compost based erosion and sediment control best management practices for their new Erosion and Sediment Control BMP Manual to be released in the winter of 2009. New BMPs include compost blankets used for erosion control, compost filter berms, compost sock sediment traps, and compost filter socks for sediment perimeter control. The OSU Design Tool was utilized to determine the correct slope length requirements for compost filter socks used in sediment control applications based on Pennsylvania DEP design storm requirements. The new BMP has been approved for use in high quality and exceptional value watersheds, the highest BMP designation according to the new PA DEP manual.

A New BMP: Sediment Trap Socks

The new compost sock sediment trap BMP uses a pyramid stacked configuration and is used in place of earthen sediment traps and in drainage areas that exceed the maximum allowance for wire backed super silt fence. The maximum allowable drainage area for the compost sock sediment trap is 5 acres. Jonathan Hunt of River Valley Landscapes, Inc., a contractor working at Delta Ridge Residential Development at Delta, PA, says, "We installed 10 compost sock sediment traps on this project. By using this BMP instead of earthen sediment traps we were able to expedite the site development process and get to post-construction requirements faster, which means a huge savings. By our estimates these new traps cost roughly half what it would cost for a conventional earthen sediment trap." In addition, this BMP reduces the necessary land area footprint for construction, as it functions by flow-through filtration and sediment deposition, whereas the earthen sediment traps only function by runoff impoundment and sediment deposition. This allows for a smaller trap structure

since 100% of the runoff is not impounded. Hunt added, "In some areas where we have used the new traps we were able to convert them to post-construction water

"In some areas where we have used the new traps we were able to convert them to post-construction water quality BMPs, as they are excellent for removing other pollutants from runoff, such as nutrients, harmful bacteria, metals, and hydrocarbons."

quality BMPs, as they are excellent for removing other pollutants from runoff, such as nutrients, harmful bacteria, metals, and hydrocarbons. By specifying them with vegetation, they will become part of the landscape and help designers obtain water quality credits."

NPDES Stormwater Permit Compliance

Compost materials have been used for decades to remediate contaminated soils. Recent research by the USDA Agricultural Research Service (ARS) has shown that compost filter socks can filter some of the same pollutants found in contaminated soils typically found in stormwater. The USDA ARS has been working with private industry to also develop new, all-natural additives that are blended into the compost filter sock to specifically increase the removal efficiency and capacity for heavy metals, coliform bacteria, nitrogen and phosphorus, and oil/grease and fuels often found in stormwater runoff. The City of Chattanooga has been successfully utilizing this technology for the last two years along with many industrial stormwater permit holders in the region. **L&W**

For more information on compost stormwater management best management practices contact Dr. Britt Faucette, Ph.D., CPESC, LEED AP, at (678)592 7094, or brittf@filtrexx.com.