Regenerative Stream Conveyance (RSC) Frequently Asked Questions (FAQ)

1. *One of the reported benefits of these restoration projects is that they reduce pollutants, particularly nutrients and sediment. Does using them constitute in-stream stormwater management?*

While it is true that researchers from the University of Maryland have documented nutrient and sediment reductions from RSC projects at a variety of locations in Anne Arundel County, none of these projects were undertaken as part of a set of "stormwater management" obligations. "Stormwater management" is the set of regulatory obligations associated with managing the runoff of new development, which the state of Maryland requires developers to do on the uplands of their site. When these projects have been done in concert with new development, as was the case at Central Sanitation, stormwater management requirements were met through upland practices with the stream/wetland undertaken as a voluntary resource improvement. Additionally, it should be noted that properly functioning, non-tidal, tributary systems provide water quality benefits, such as sediment trapping and incorporation, as well as de-nitrification. These restoration projects aim to provide water quality improvements as ancillary benefits to their primary goal of aquatic ecosystem improvement.

2. *These systems look more like wetlands than streams. Are they a conversion of existing aquatic systems?*

The answer to this question depends on the site. In some cases, this type of restoration involves conversion of areas with upland characteristics to wetlands, in others, enhancement of existing wetlands, and in some other cases, modification of an incised, single-thread ditch to a broad, shallow flow interrupted by plant stems and abundant organic matter.

The other aspect to keep in mind is that many of these restoration sites have already been subject to a significant conversion. Evidence points to the fact that most of these tributary systems in the piedmont and coastal plain were – in the pre-colonial period – characterized by broad, shallow, stream valley-wide, flowing wetland complexes, and this restoration technique mimics that type of system to a large degree.

3. *This restoration method seems relatively new. How extensively has it been monitored?*

Actually, the first, large-scale RSC project was completed in Anne Arundel County in 2001, and has been in place for over a decade. Since that time, over two dozen additional projects employing this method have been installed. Several of the sites, most notably Howard's Branch (on the Severn River) and Wilelinor (on the South River), have been studied extensively by the University of Maryland for sediment and nutrient reduction. Both projects in stream valleys and in ephemeral channels/eroding gullies have been found to significantly reduce sediment and nutrient pollution, both by locking existing sediments in place and trapping, incorporating, and processing pollutants moving through the system during baseflow and storm flow.

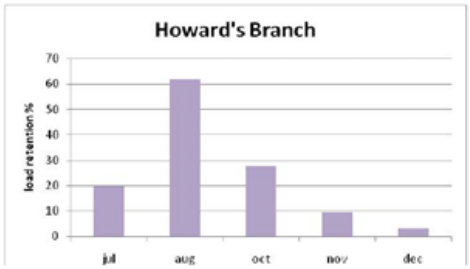
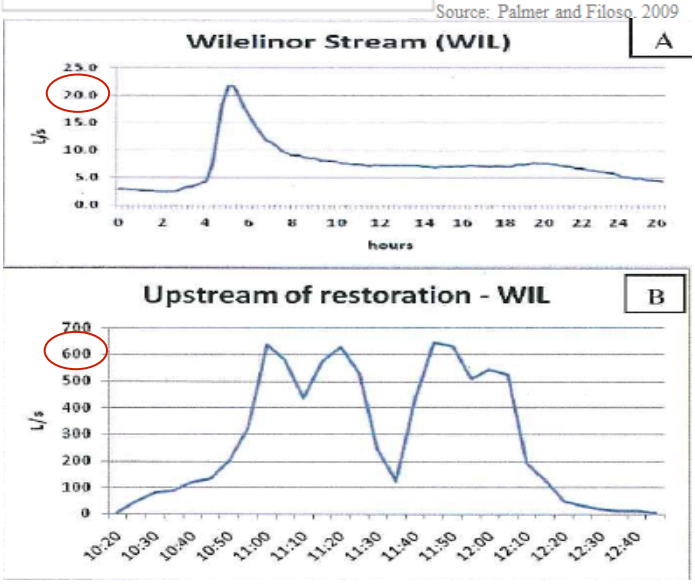


Figure 32. Percent load reduction of TN in the restored reach of Howard's Branch during five different storm events.

Figure 34. Percent load reduction of TSS in the restored reach of Howard's Branch during five different storm events.

Source: Palmer and Filoso, 2009



A limited amount of biological monitoring has been conducted on these systems by the Maryland Department of Natural Resources, who found significant fish abundance at both Howard's Branch and Wilelinor post-restoration, where, at least in the case of Howard's Branch, no fish existed prior to restoration and seven species were present after restoration. Additionally, studies by the Maryland Herpetological Society have documented an increased amphibian population at Howards Branch.

4. *How do these projects hold up long-term, and what sorts of maintenance do they require?*

The structural features of these projects – the riffle, weir grade controls – are designed to safely convey the 100-year storm, while at the same time maximizing baseflow. Like almost every environmental restoration project they require some adaptive management, particularly in the years immediately following installation and before project vegetation becomes established. Movement of materials (e.g., cobble) and encroachment of invasive plants should be monitored in the immediate post-restoration years, and community involvement in additional native planting should be encouraged, but generally these projects have suffered fewer large-scale failures than alternative restoration methodologies.

The Severn Riverkeeper www.severnriverkeeper.org

The South River Federation www.southriverfederation.net