DESIGN, PERMIT, CONSTRUCT
STEP-POOL STORMWATER CONVEYANCE PROJECT
CECIL COUNTY CENTRAL LANDFILL, MARYLAND

WHM Solutions, Inc. (WHM) was retained by Cecil County Public Works to serve as the lead entity responsible for the design, permitting and construction efforts associated with the Step-Pool Stormwater Conveyance (SPSC) system. WHM assembled several groups to assist in the design, permitting and implementation phases of the project that included; Underwood & Associates who assisted in the design of the regenerative storm channel; BAI Group, Inc. who contributed the permitting and construction monitoring of the regenerative step-pool system; and Aquatic Resource Restoration Company which is the contractor for the construction of the SPSC system.

BEFORE

DURING

AFTER

The primary goal of project is to demonstrate the effectiveness of Step-Pool Stormwater Conveyance Channel (SPSC) to reduce turbidity of problem clay soils that generate colloidal sediments. The SPSC that is capable of passively removing suspended colloidal clay from stormwater and promoting infiltration of water into the subsoils. The SPSC is comprised of numerous step pools planted with hydrophytic vegetation that provides retention, a filtration, and infiltration process that decrease stormwater runoff and turbidity. The outcome is improved water quality to the receiving stream that confluences into the Chesapeake Bay within four miles.

A key component of the SPSC design included the use of a pervious media comprising of sand and organic materials (e.g. wood chips, etc.) which serves as a major component of the system to remove suspended sediment in the storm water. As the water passes through the SPSC media and dissipates into the sub surface soil horizon or into the next down gradient pools.

This innovative approach has been demonstrated with much success as a post construction stormwater facility with wide success. This project however is the first of its kind to use SPSC to treat stormwater from construction activities. The long term water quality benefits are currently being studied for the project. The preliminary results show many water quality improvements that are expected to increase over time as the site vegetation matures.