GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF THE ENVIRONMENT, WATERSHED PROTECTION DIVISION

Pope Branch Regenerative Stormwater Conveyance Design-Build

Washington, DC

from top: After restoration; Initial conditions with deep gully and exposed sewer pipe

Along with stabilizing degraded stormwater outfalls and providing water quality improvements using native material, this design-build project will be a showcase for urban stormwater management within Washington, DC.

For this design-build project for the District Department of the Environment, Biohabitats created regenerative storm water conveyance systems at three highly unstable, hillside areas. The goal of the project was to provide stable conveyance and water quality treatment along two ditches on the steep slopes of the Pope Branch Park stream valley and at another location in a nearby neighborhood park.

This project included the restoration of three very steep large gullies originating from road runoff. Two of these projects were restored using the regenerative stormwater conveyance approach, which delivers an estimated 90% Total Suspended Solids (TSS), 60% Thermal Pollution (TP), and 50% Total Nitrogen (TN) reception for the drainage area served. These projects involved grading the gullies and either filling them with a sand and mulch mix and creating a stable, non-erosive flow path over top of the sand fill using a repeating series of boulder and cobble grade controls and pools. This reduces the energy of the stormwater and provides a non-erosive conveyance path for stormwater runoff. One of the three projects, involved creation of an urban park Low Impact Development (LID) structure that creates a water feature in the park for the high frequency, low volume runoff events and ties back into an existing stormdrain for the infrequent large flows.

This involved using a curb cut and modified inlet structure to capture water from street runoff, directing this flow to a created novel stream channel with riffles and pools underlain by a carbon-rich sand bed. Small high frequency storms enter the stream, soak into the sand bedded channel, and either infiltrate or are delivered via an underdrain or surface inlet to an underground nalgene-like storage container which decants into the stormdrain system. Larger flows are directed to the stormdrain system via the novel stream and a surface inlet at the end of the stream.

Biohabitats designed approximately 500 linear feet of ephemeral streams that will also serve as stormwater conveyance channels. Native vegetation along the channels will provide additional stability and habitat. The newly created channels will provide stable conveyance of storm flows and beneficial impacts to habitat and water quality in this highly urban stream system.

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Biohabitats
800.220.0919
www.biohabitats.com