

Facts About: Alternative Practices

Regenerative Step Pool Storm Conveyance and Outfall Stabilization

Regenerative step pool storm conveyance (RSPSC) and outfall stabilization are both alternative stormwater best management practices (BMPs) that help reverse the impacts of erosion, prevent further erosion, and improve stormwater conveyance.

Regenerative Step Pool Storm Conveyance

Regenerative step pool storm conveyance (RSPSC) practices are a series of cascading shallow pools that hold and filter sediments through an underlying media of sand and wood chips. These practices convey and treat stormwater as well as convert storm flow to groundwater flow. Stormwater runoff flows into these pools so that materials settle out and runoff seeps into groundwater. Some of the runoff filters down through the media and some cascades down the pools. RSPSC systems are used for retrofitting stormwater conveyance channels that are unstable or degraded. These practices perform similarly to micro-scale filtration practices like micro-bioretenion. When used as part of stream restoration practices, they stabilize stream channels and banks.



Degraded stream channel



Regenerative step pool storm conveyance

Outfall Stabilization

Outfall stabilization typically involves repairing localized areas of erosion below a storm drain pipe. Urbanization and more impervious surfaces lead to higher volumes of stormwater runoff. This can damage a storm drain outfall, which is the location where the storm drain discharges into a stream or river. Outfall stabilization is typically achieved through using stone media or vegetation. Erosion below a storm drain can increase the sediment in a stream, and outfall stabilization helps prevent this.



Outfall before stabilization



Outfall stabilized with step pools

Pollutant Removal Efficiencies

Although step pool storm conveyance systems are alternative practices, they perform much like a micro-scale filtration practice, so the pollution removal efficiencies for micro-bioretenion can be applied.

- Sediments 80%
- Phosphorus 66%
- Nitrogen 56% (as part of a system of environmental site design practices)

More Information

For more specific information on how regenerative step pool storm conveyance, outfall stabilization, and alternative BMPs can be used for restoration, go to “Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated, Guidance for National Pollutant Discharge Elimination System Stormwater Permits”