



Providing Quality Engineering For Our Water Resources Since 2002

Overview/Description

Regenerative stormwater conveyance (RSC) is a series of step-pools atop a sand media bed. RSCs **convey, manage, AND treat** stormwater runoff from impervious areas.

Benefits of using RSC

- Convey 100-yr storm within the RSC
- Reduce sediment and nutrients from runoff
- Least cost when compared to other treatment and conveyance options (see next page)
- Reduce/eliminate downstream retention needs
- Match predevelopment peak AND volume discharges, even in tight clay soils
- Provide opportunities for meeting additional social or ecological project goals

Potential Applications

- Repair for eroding ditches
- In-line treatment and conveyance reduces land needed for stormwater management
- Safe conveyance for slopes up to 50%
- Provides safe tie-in to receiving waters at downstream end of channel or outfall
- Sites with space limitations (i.e. along roadways)
- Applications when natural aesthetics, educational, or recreational opportunities are desired



Before



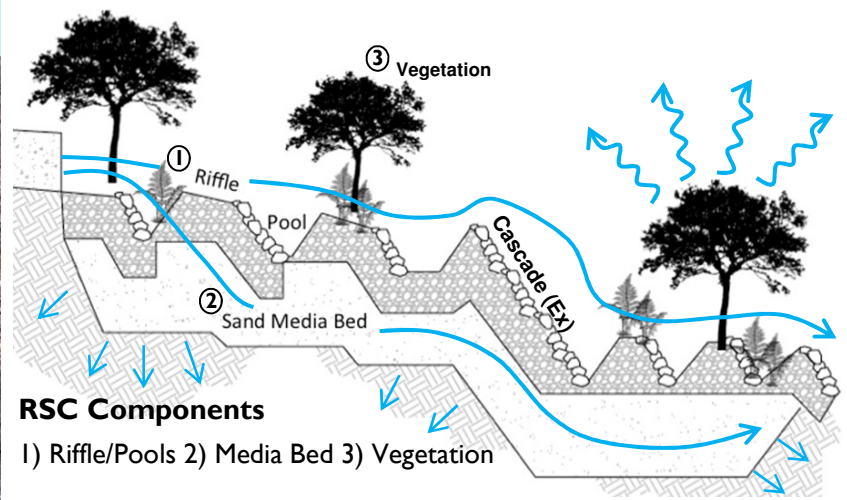
After



Before



After



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Client

Homeowners of a residential property receiving runoff from 13 ac of neighborhood development

Project

Find a sustainable, aesthetically-pleasing alternative to a riprap channel for gully stabilization throughout the length of the property

Overview

Stormwater Solutions Engineering, LLC designed the **FIRST** known RSC in the Midwest. RSCs use a series of pools to slow runoff velocities, promote infiltration into groundwater, and provide a stable, ecologically beneficial channel for storm conveyance. Installation will occur in 2015.

Concerns/Challenges

- High flows through the upstream culverts cause drainage ditch incision up to 5 feet deep
- Erosive velocities move riprap further down the 150-ft drainage ditch
- Boundary constraints to avoid disturbing established tree roots, existing retaining walls, and residential structures
- Desire for aesthetically-pleasing and cost-effective design solution

Actions Addressing Challenges

- SSE designed an RSC with a forebay and 7 pools in series to retain runoff, slow velocities, and reduce erosive peak flows
- Threshold cobble bed size was reduced from 12-in riprap to 5-inch coarse cobble by using the RSC design approach
- Planting plan along the RSC was carefully integrated into homeowners' current landscape
- Use of local materials provided by Illinois DOT reduced the overall material cost

Existing Channel Conditions



Proposed RSC Design for Residence



Costs for Conveyance and Filtration BMPs

	150' RSC	150' RipRap	Biofiltration for 1-yr Event ¹
Const. Est. ³	\$15,698	\$33,382	\$67,576 ²
Land Cost	\$17,700	\$13,275	\$71,703
Total	\$33,398	\$46,657	\$139,279

¹ 12,153 sf of biofiltration area required

² 18" of engineered soil

³ Materials, construction, design, and 10% contingency



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