

Sand Seepage Wetland Design as a Stormwater BMP

Joe Berg, Biohabitats
jberg@biohabitats.com



~ 30 ac

Pineview Ln

Old Church Rd

W Prospect Ave

St. An Rd

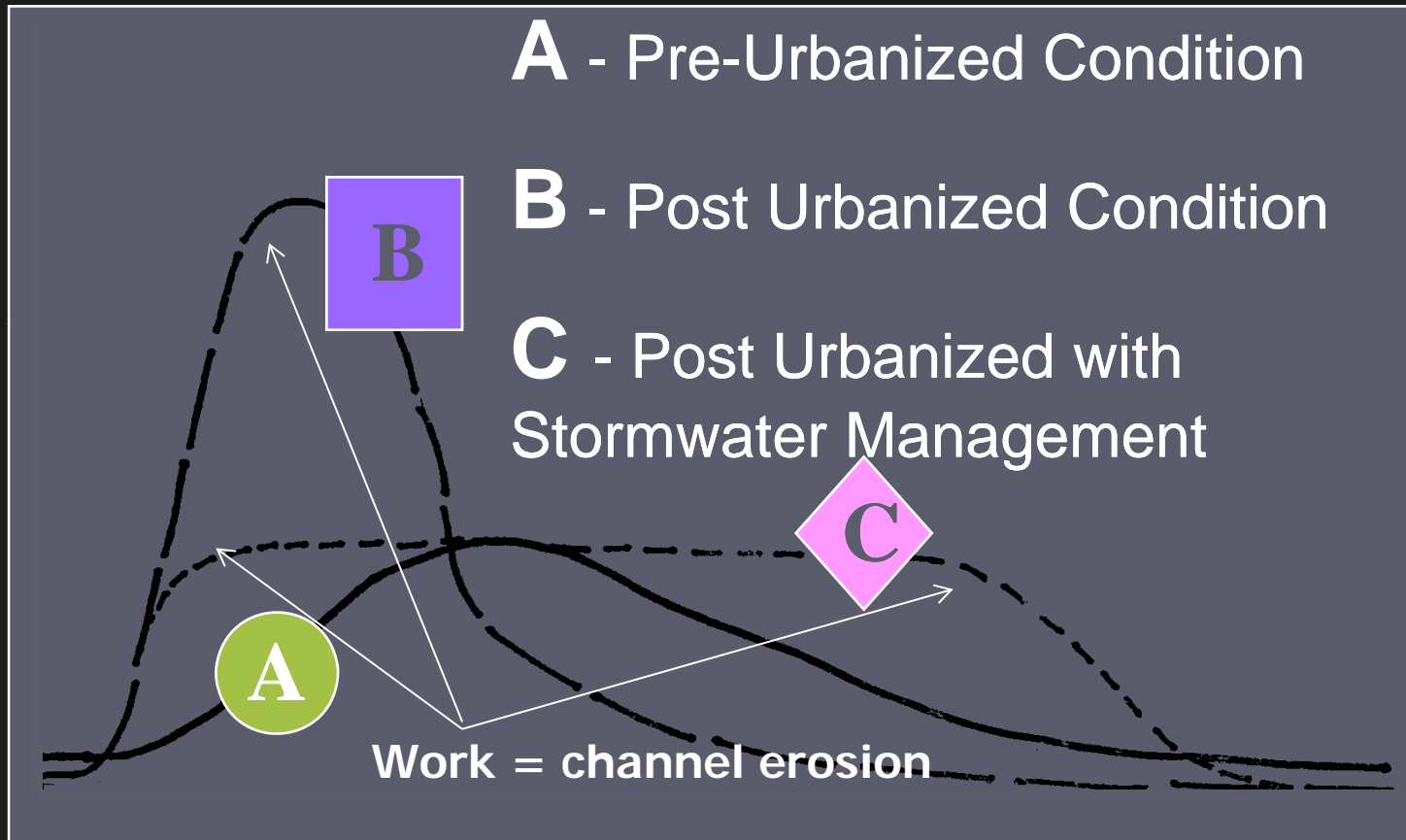
Meadowark Way



Headwall

URBAN HYDROGRAPH

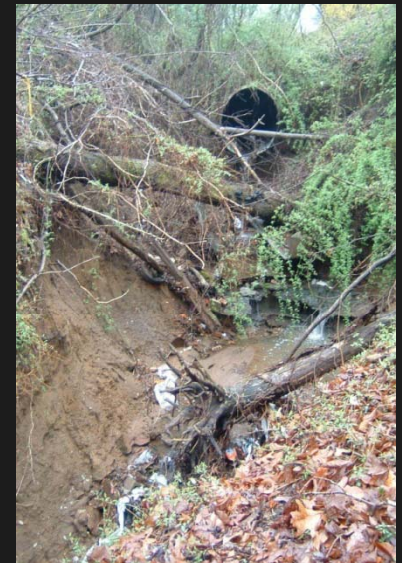
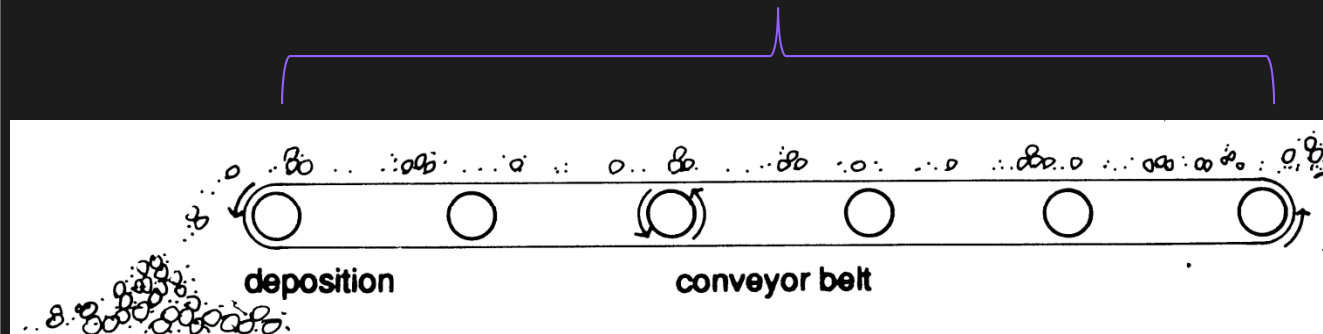
DISCHARGE (cfs)



TIME (hours)

Our Broken Stream Systems Function as Major Sources & Conveyors of Sediment & Nutrients

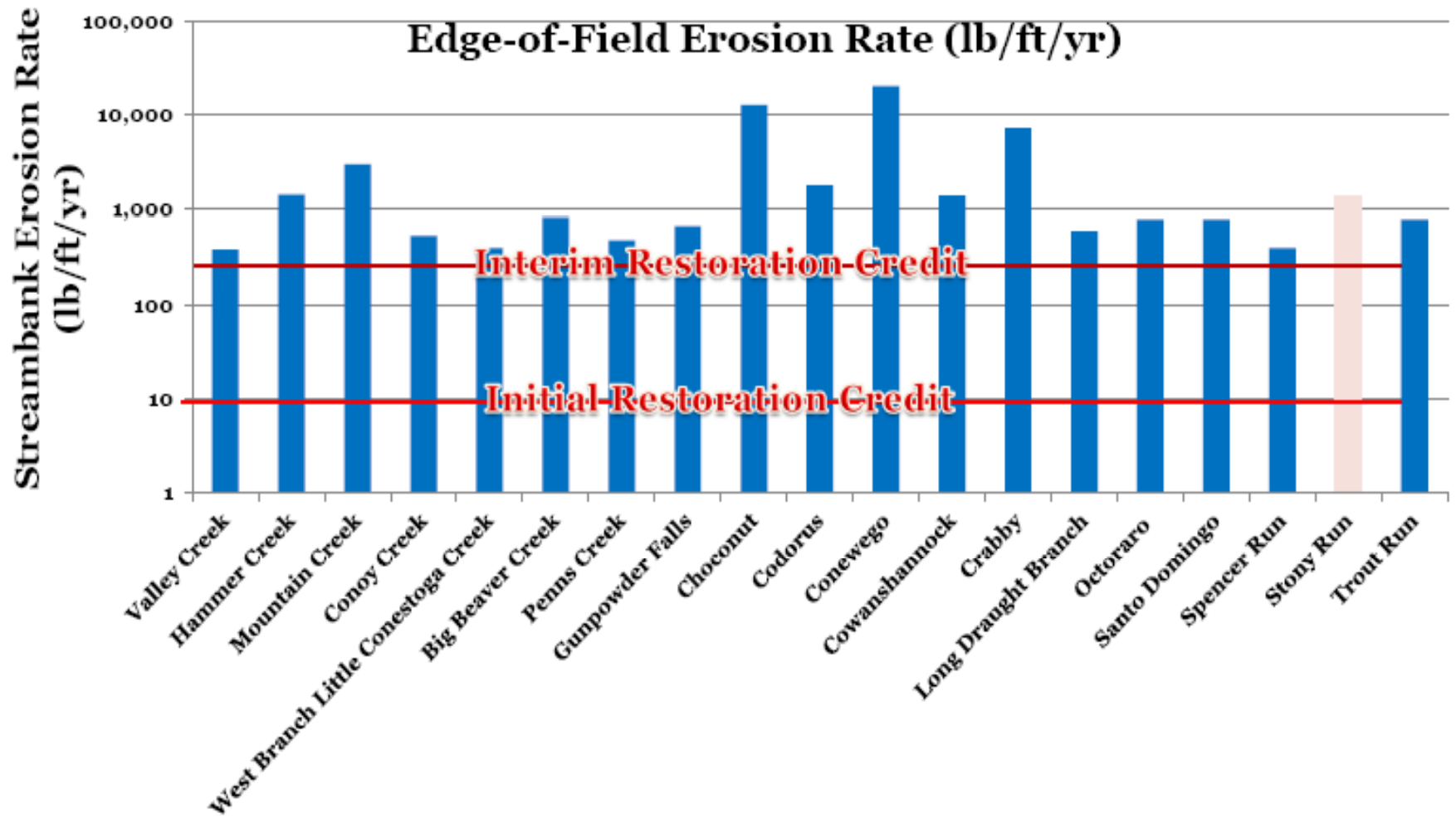
Zone of Erosion/Transport



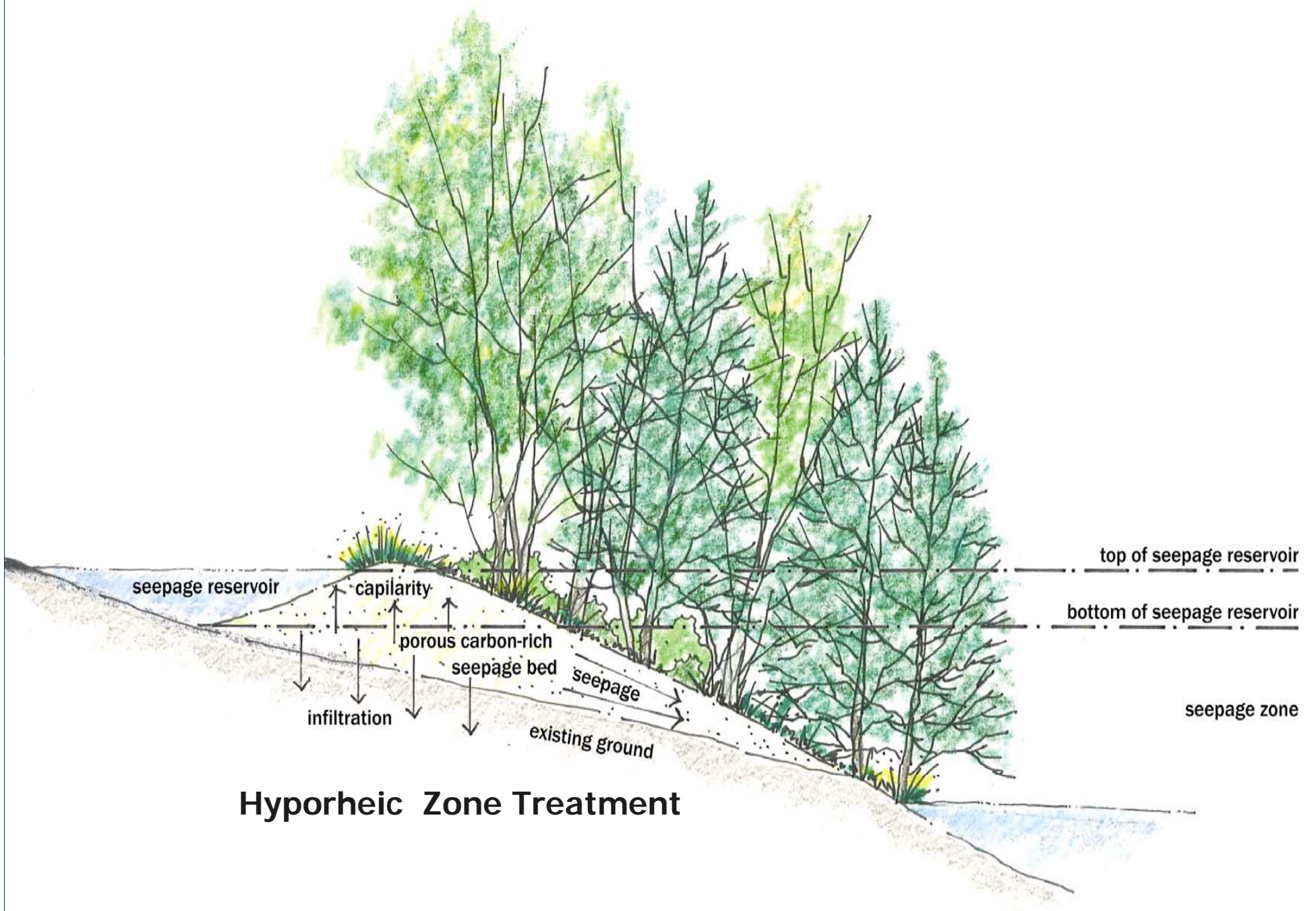
Zone of Deposition

Adapted from Kondolf, M. (1997). Environmental Management, 21, 533-551.

Why a Universal Restoration Credit Doesn't Make Sense (CWP Literature Review)



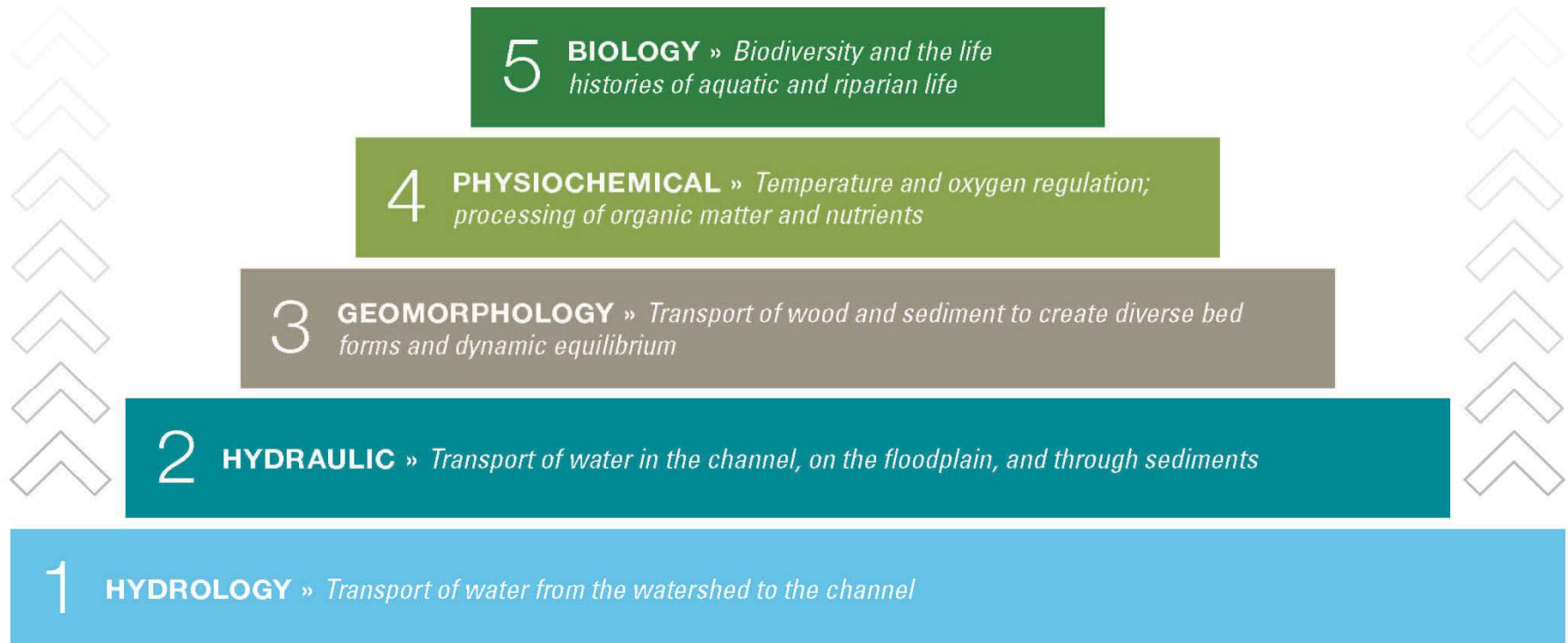
Source: Expert Stream Panel Report, Stack 2013



Hyporheic Zone Treatment

Stream Functions Pyramid

A Guide for Assessing & Restoring Stream Functions » OVERVIEW

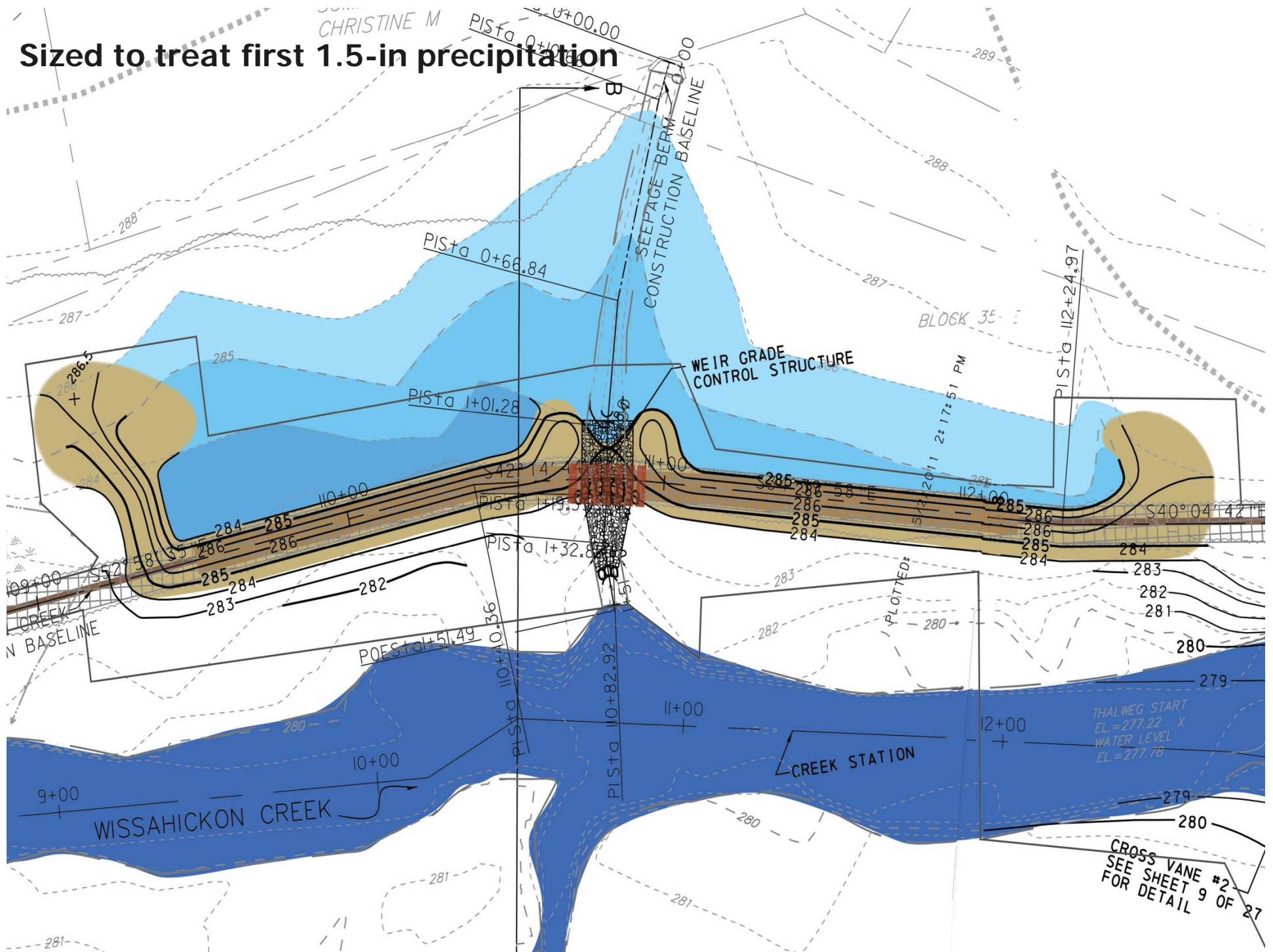




Sand seepage bed

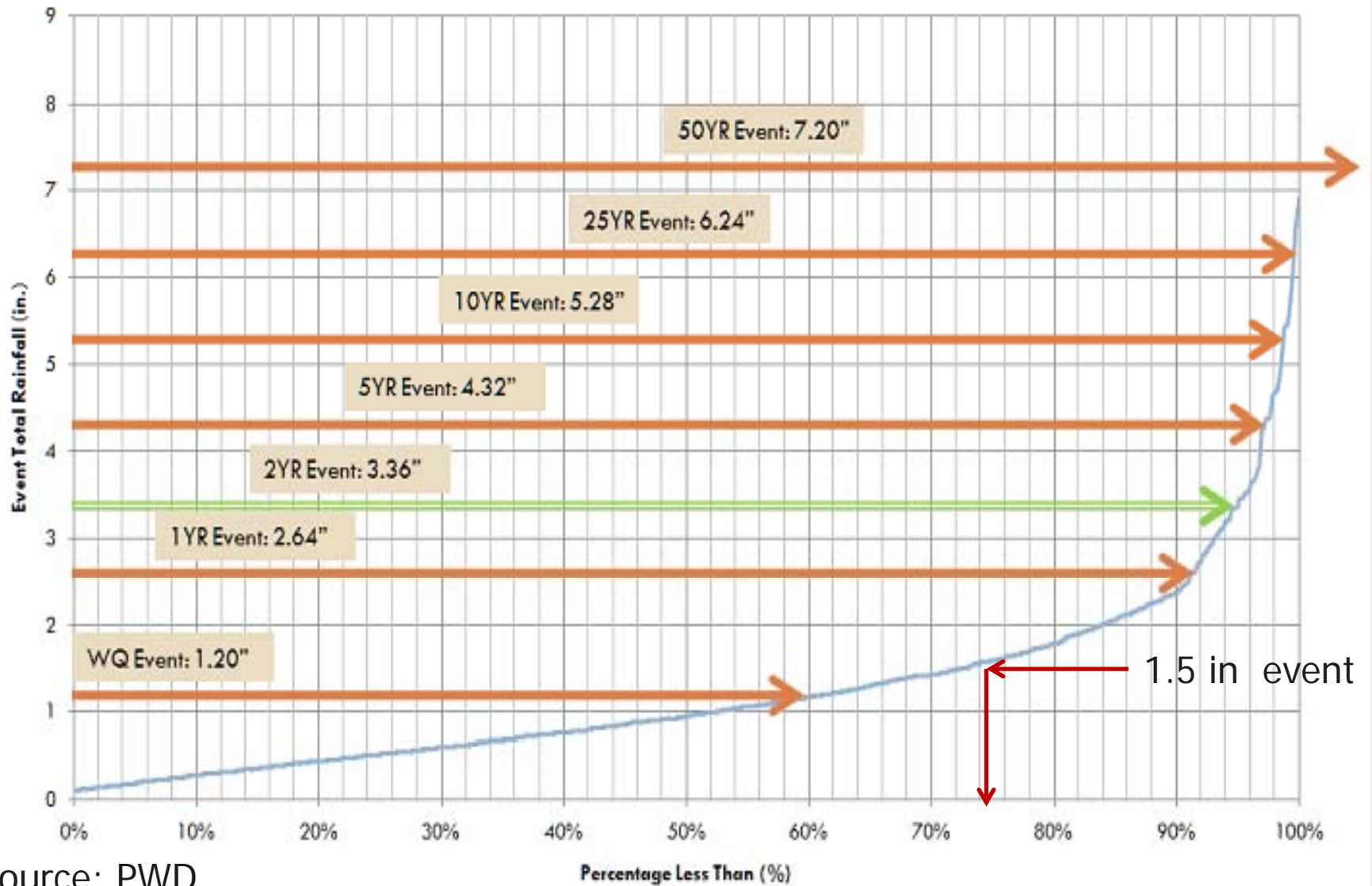


Sized to treat first 1.5-in precipitation



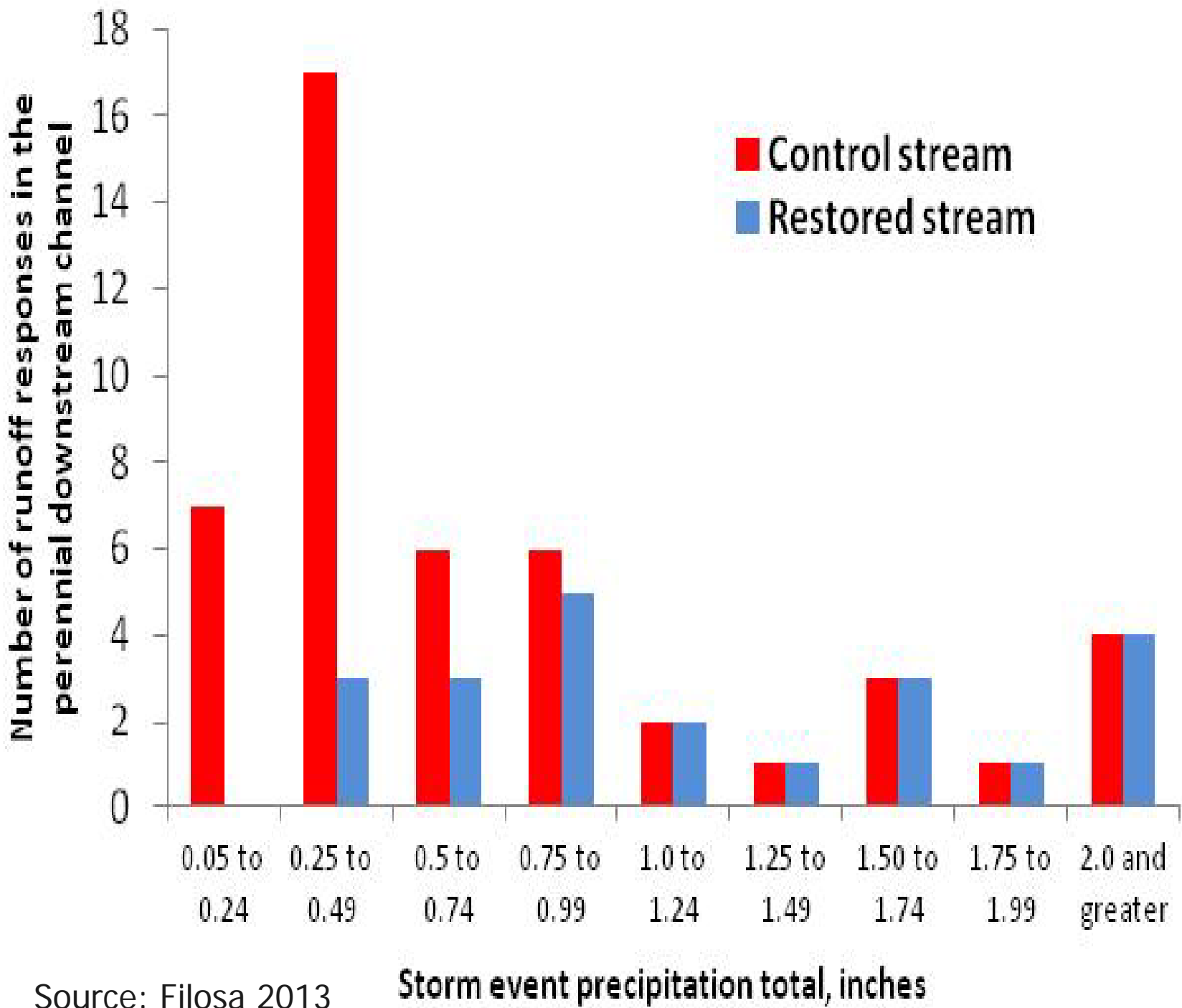
Cumulative Distribution Plot

Event Rainfall Volume - 4 Hour Minimum Interevent Time Philadelphia International Airport (Hourly Data) 1948 - 2011



Source: PWD



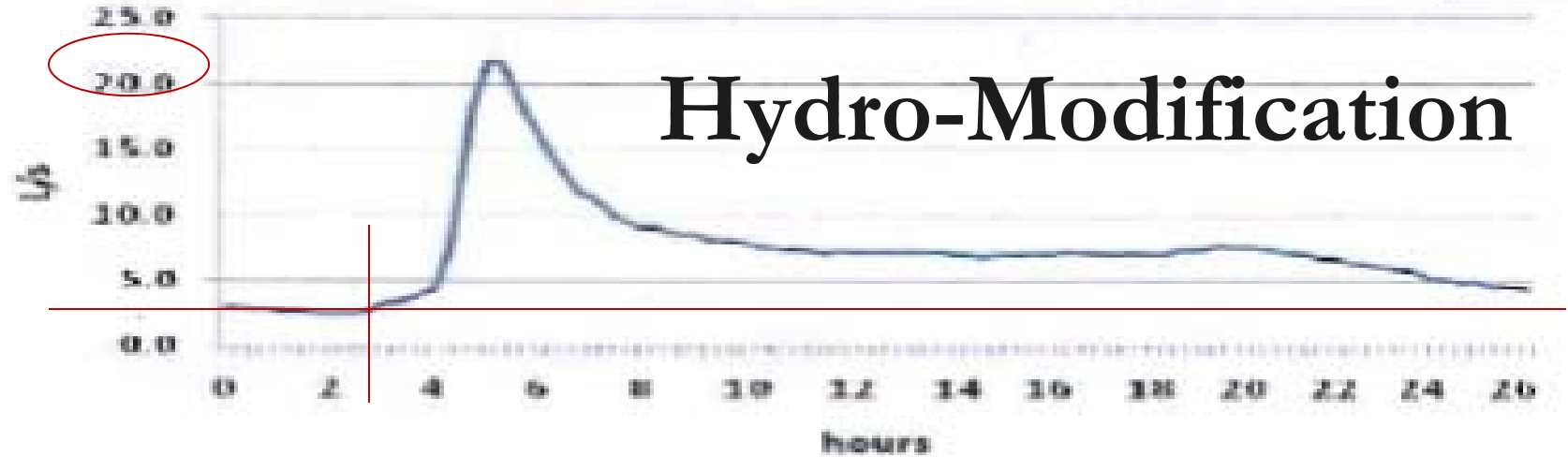


Source: Filosa 2013

Storm event precipitation total, inches

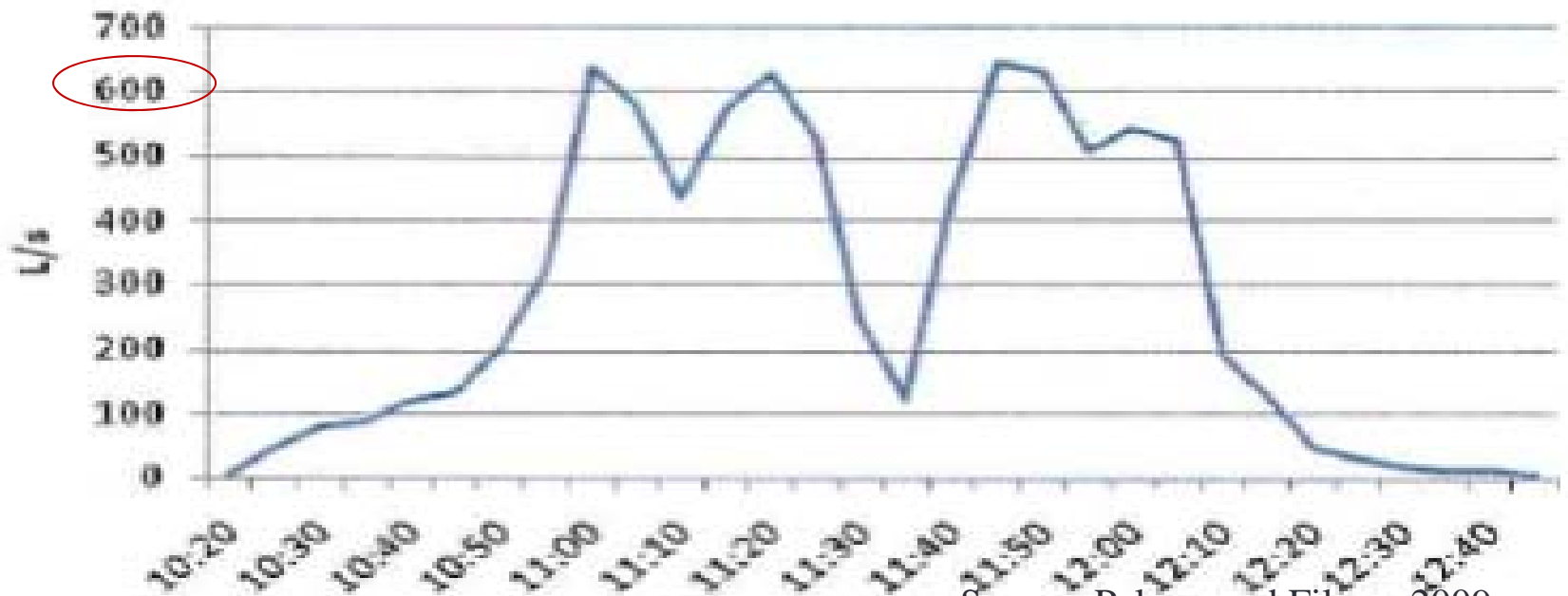
Wilelinor Stream (WIL)

A



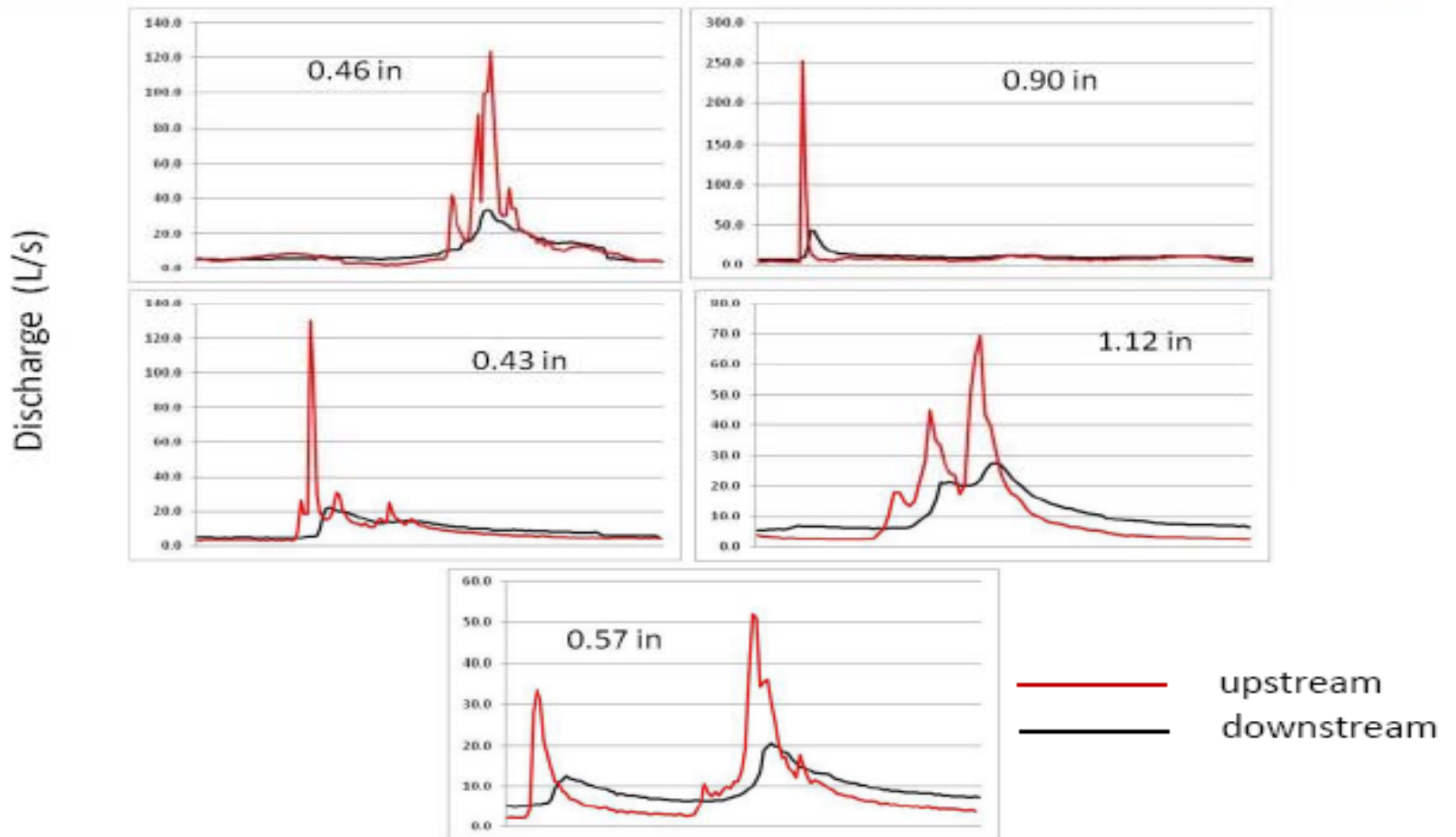
Upstream of restoration - WIL

B



Source: Palmer and Filoso, 2009

Hydrographs during individual storms WILELINOR



Source: Solange Filoso, University of Maryland

Howard's Branch

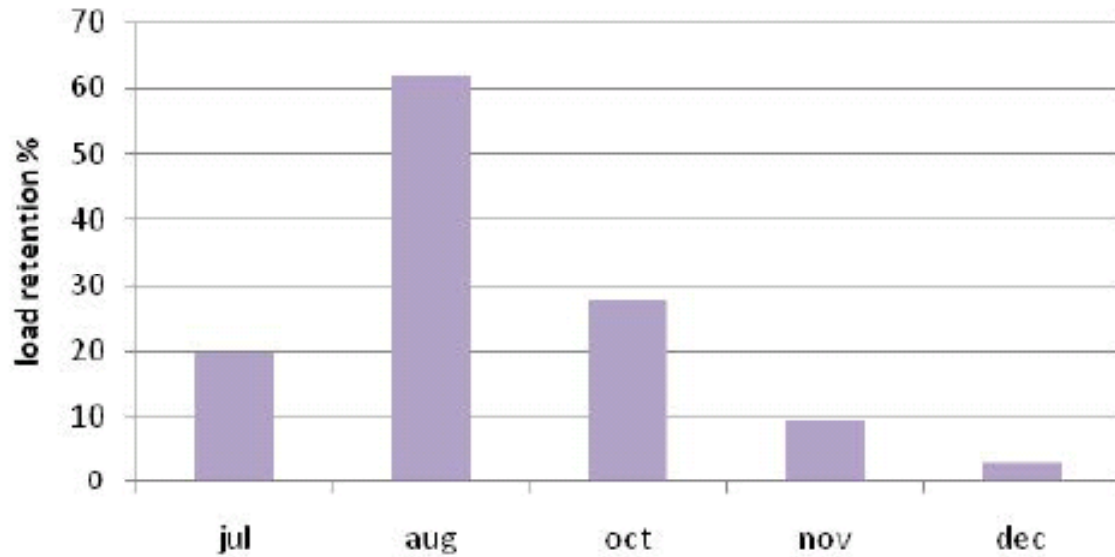


Figure 32. Percent load reduction of TN in the restored reach of Howard's Branch during five different storm events.

Howard's Branch

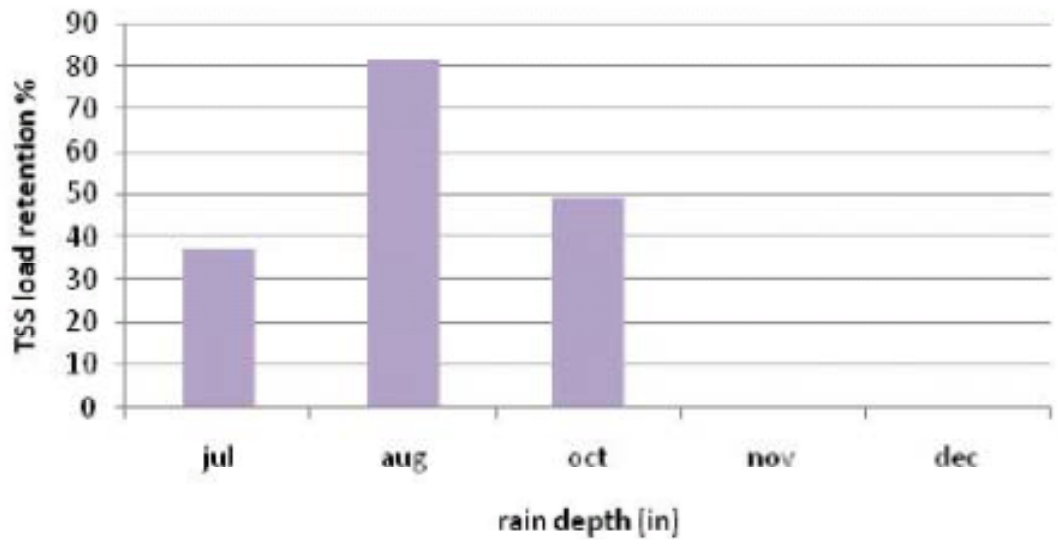


Figure 34. Percent load reduction of TSS in the restored reach of Howard's Branch during five different storm events.



Reference System? Beaver Dam Complex

A photograph of a pond in a wooded area. The pond is filled with water lilies, including large green leaves and several white flowers. The water is dark and reflects the surrounding trees and foliage. The background is filled with tall grasses and thin tree trunks. The word "Questions?" is overlaid in white text in the center of the image.

Questions?