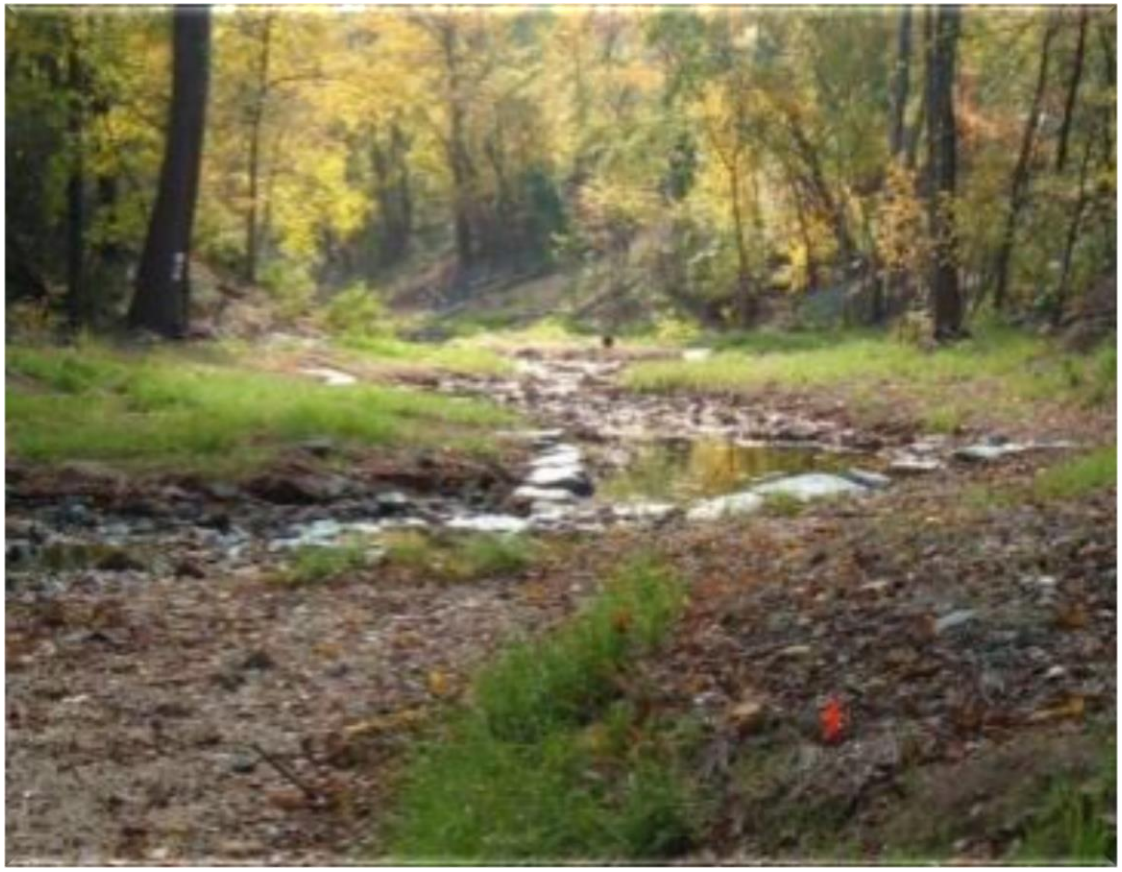

Revisiting Stream Restoration EPR: An Update for the USWG

Tom Schueler and David Wood

Chesapeake Stormwater Network

March 19

USWG Meeting

Revisiting Stream Restoration: 2018/2019

The USWG formed four groups to revisit the stream restoration EPR

- Group 1: Verifying Stream Restoration Practices
- Group 2: Crediting Outfall Stabilization Practices
- Group 3: Establishing Standards for Applying Protocol 1 (Prevented Sediment)
- Group 4: Adjusting Protocol 2/3 to Capture Floodplain/Stream Reconnection

65 outstanding stream experts

(and a few divas)

Group 1 (Verification)		
Name	Affiliation	E-mail
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Group 3		
Name	Affiliation	E-mail Address
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Group 2. Outfall Stabilization Crediting Group		
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Table 4. Roster for Group 4 (Adjusting Protocols for Floodplain Reconnection)		
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Greg Noe	USGS	gnoe@usgs.gov
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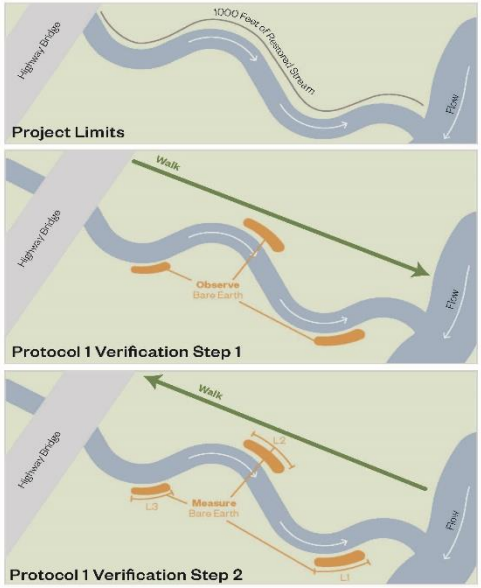
Group 1: Verifying Stream Restoration Projects

Focus: Develop a system to cost-effectively verify individual projects every five year

Status: Expect to finish up in April

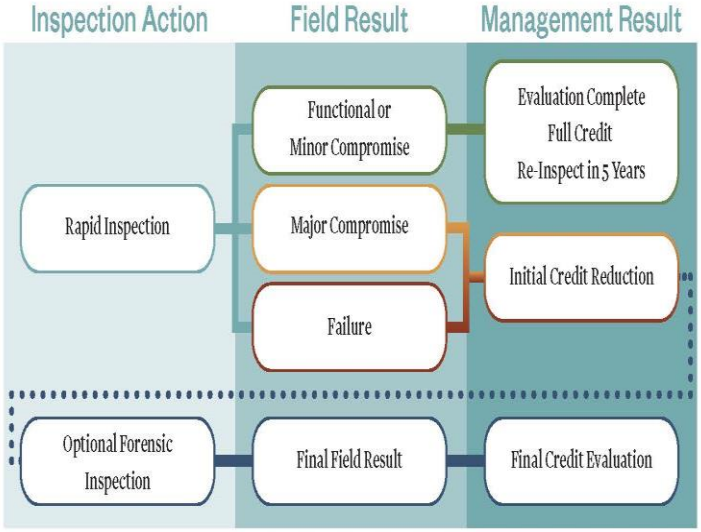
Product: Memo on methods, with visual indicators

Visual Indicators to Inspect for Stream Projects



Defining Loss of Pollutant Reduction Function for Protocol 1	
Criteria for Loss	**Key Visual Indicators**
Evidence of bank or bed instability such that the project delivers more sediment downstream than designed,	• Severe bank undercutting (bare earth exposed) • Incising bed (bed erosion evident) • Flanking or downstream scour of channel structures • Failure or collapse of bank armoring practices

Status	% Failing *
Functioning	**0 to 10% of reach**
Showing Major Compromise	**20 to 40% of reach**
Project Failure	**50% or more of reach**



Group 2: Crediting Outfall Restoration Projects

Focus: Decide whether to establish a new crediting protocol for this class of projects

Status: Expect to finish up in April or May

Product: New Protocol "5" along with supporting technical memo

Eroding Outfalls as an Urban Sediment Delivery Hotspot

Outfall Restoration Practices

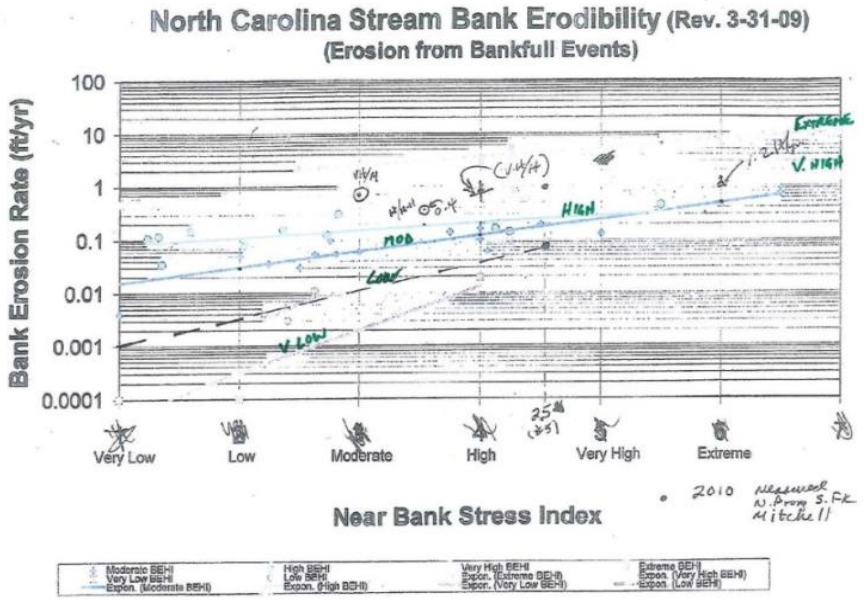
Stone step pools below outfall: courtesy Anne Arundel County DPW

Group 3:
Revisiting the Prevented Sediment Protocol

Focus: Agreement on best practices for applying the protocol in the field and office, and setting limits on the degree of armoring allowed

Status: Expect to finish up in May or June

Product: Technical memo with revised protocol and incentives for better on-site data collection



Bulk Density	(lbs/ft^3)
Expert Panel Report Case Study Example (Schueler and Stack 2014)	125
Carroll County Average of 5 sites and 39 samples	56
James Madison University Arboretum, Virginia (Mumaw 2015)	80
Paxton Creek, PA range of 9 samples	67 - 76
Case Study Projects in North Carolina (Doll et al. 2018)	52 - 88

Three Armoring Categories

Non-Creditable Armoring	***Creditable w/ Limits***	***Creditable Armoring***
• Concrete retaining walls • Gabions • Dumped rip-rap • Sheet piling/planking • Block walls • Geogrid/concrete/gabion mattresses • Non-biodegradable soil stabilization mats/systems	• Angular riprap stone installed for bank protection • Imbricated rip rap • Berm/pool cascades • Boulder revetments	• Rocks used for localized toe protection • Root-wad revetments? • Any soft-armoring bioengineering practices such as live stakes, coir logs etc. • Riffle weir series


Imbricated Rip-Rap
Flow

Group 4: Floodplain Reconnection and Hyporheic Exchange (Protocol 2 and 3)

Focus: updating the protocols to reflect new research and design approaches for this class of projects

Status: Still in research phase, expected to run to Fall, 2019

Product: Technical memo and possibly revised protocols 2 and 3

Sediment and nutrient dynamics in the floodplain

Courtesy of Greg Noe, USGS

Streambank erosion and floodplain deposition dominate the watershed sediment budget, especially in urban areas

High erosion rates

Long term storage

Photo Credit: G. Noe, USGS

CBP STREAM FEEDBACK LOOP

Photo Credit: Severn Riverkeeper

- Extensive state and EPA involvement in all four groups
- Expect extensive additional review and comment at USWG phase
- Goal is to compile an updated guidance document for crediting stream restoration projects by end of 2019