RETROFIT PANEL RECOMMENDATIONS

Presented to the

WQGIT

August 13, 2012

The Expert Panel

Panelist	Affiliation
Ray Bahr	Maryland Department of the Environment
Ted Brown	Biohabitats, Inc.
LJ Hansen	City of Suffolk, VA
Joe Kelly	Pennsylvania Department of Environmental Protection
Jason Papacosma	Arlington, VA
Virginia Snead	Virginia Department of Conservation and Recreation
Bill Stack	Center for Watershed Protection
Rebecca Stack	District Department of the Environment
Steve Stewart	Baltimore County

The Process

- Approved by USWG in April
- Conditionally approved by WTWG in May
- USWG response in June
- Technical memo resubmitted to WTWG in July
- WTWG approved memo in August 1
- Seeking Final approval from WQGIT today

Key panel outcomes

- More retrofit options = more opportunities to get credit!
- Simple to use method for determining pollutant removal!
- Reporting and verification procedures are flexible and can be adapted to align with existing state reporting requirements.
- Not a "one size fits all" approach

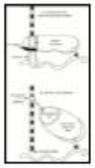
Retrofit Categories

A. New Retrofit Facilities

1. Near Existing Stormwater Outfalls
2. Within the Conveyance System
3. Adjacent to Large Parking Lots
4. Green street retrofits
5. On-site LID retrofits

Figure 1. Examples of New Retrofit Facilities and their Potential Applications

New retrofit facilities provide stormwater treatment in places that treatment did not previously occur. There are many opportunities for new retrofit facilities in the urban landscape. Some common examples are listed below.



Near Existing Stormwater Outfalls

Within the Existing Stormwater Conveyance System

Adjacent to Large Parking Lots

Green Street Retrofits

On-Site LID Retrofits

Retrofit Categories

B. Existing BMP Facilities

1. BMP Conversions:
2. BMP Enhancements:
3. BMP Restoration:

EXISTING RETROFITS

BMP CONVERSION

- Retrofits of older stormwater ponds
- Rehabilitating failed infiltration practices
- Adding Bioretention/Filtering to Ponds

EXISTING RETROFITS

BMP ENHANCEMENT

- Utilize the original stormwater treatment mechanism
- Improve removal by increasing storage volume or hydraulic residence time

EXISTING RETROFITS

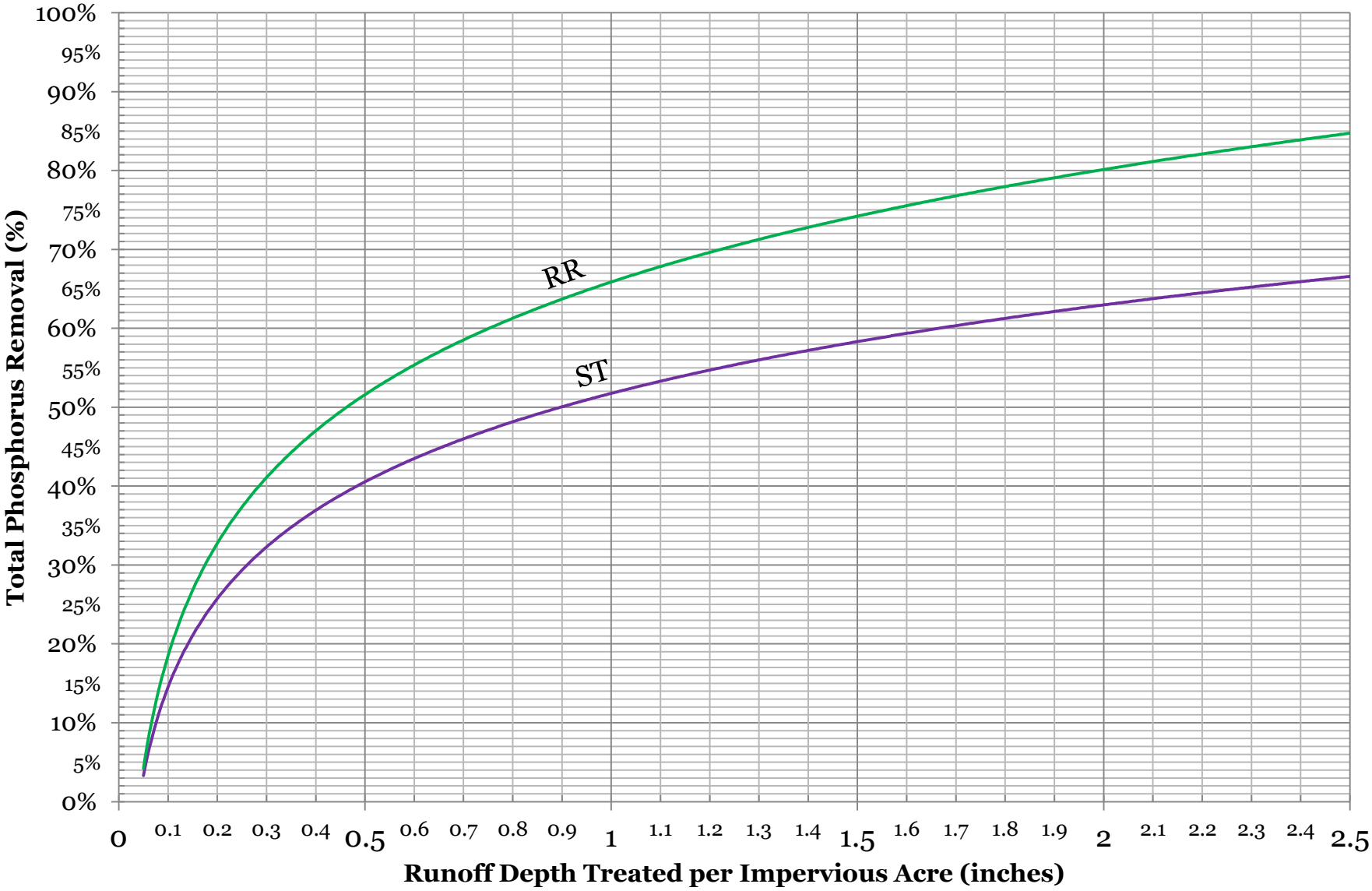
BMP RESTORATION

- Major maintenance upgrades of existing BMPs constructed prior to Jan 1, 2006
- 4 types allowed:
  1. Major Sediment Cleanouts
  2. Vegetative Harvesting
  3. Filter Media Enhancements
  4. Complete BMP Rehab

Protocol for determining retrofit removal rates

- Each retrofit has its own unique removal rate based on the amount of runoff it treats and the degree of runoff reduction it provides
- Extensive review of current BMP performance research (Appendix A)
- Developed a series of retrofit removal rate adjustor curves

Total Phosphorus Removal for RR and ST Stormwater Retrofit Practices



Runoff Reduction (RR) Practices

Site Design/Non-Structural Practices

- Landscape Restoration/Reforestation
- Riparian Buffer Restoration
- Rooftop Disconnection (aka Simple Disconnection to Amended Soils, to a Conservation Area, to a Pervious Area, Non-Rooftop Disconnection)
- Sheetflow to Filter/Open Space* (aka Sheetflow to Conservation Area, Vegetated Filter Strip)
- All Non-structural BMPS – Chapter 5 of the 2006 Pennsylvania Stormwater BMP Manual

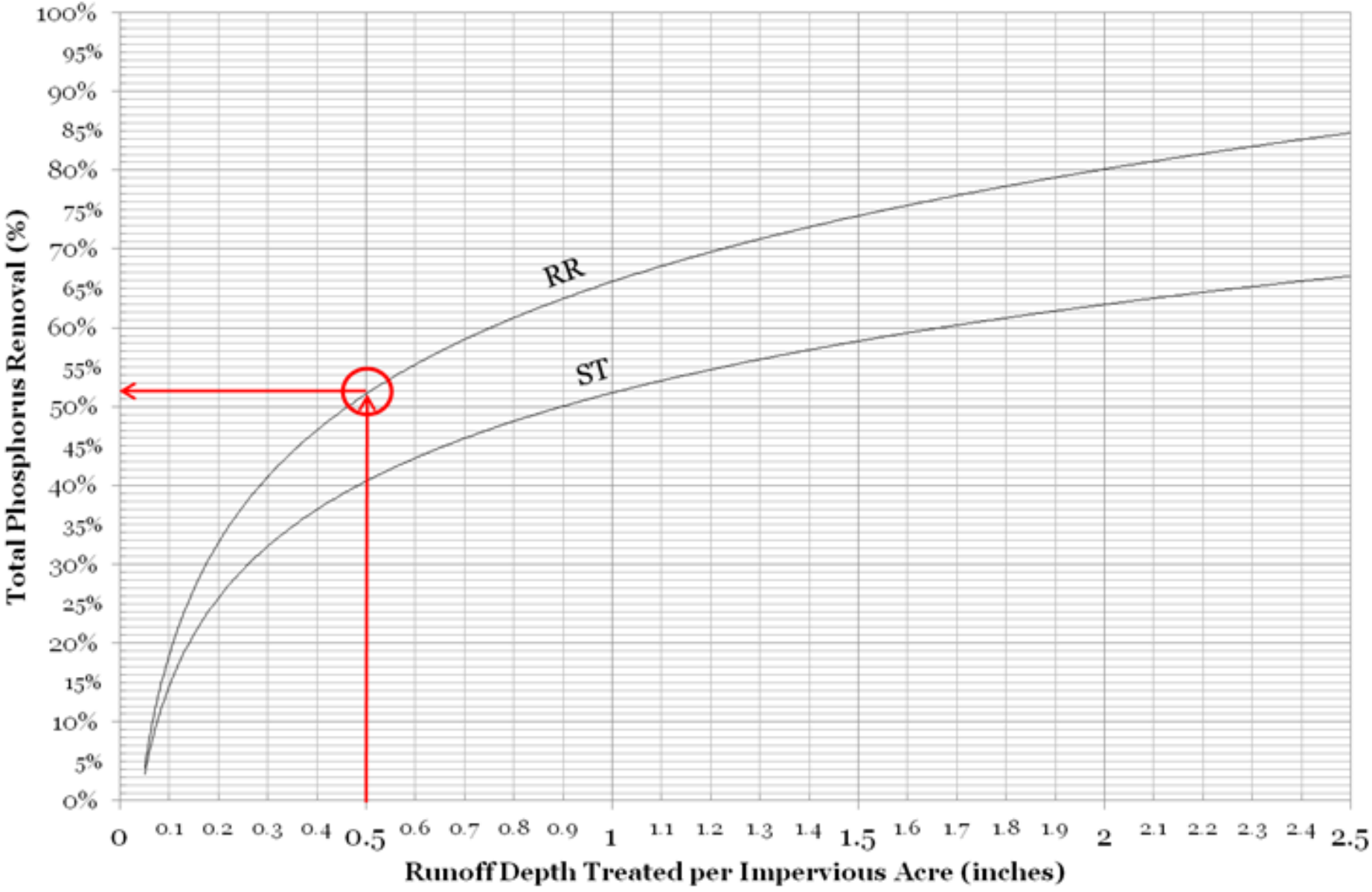
Practices

- All ESD practices in MD 2007
- Bioretention or Rain Garden (Standard or Enhanced)
- Dry Swale
- Expanded Tree Pits
- Grass Channels (w/ Soil Amendments, aka Bioswale, Vegetated Swale)
- Green Roof (aka Vegetated Roof)
- Green Streets
- Infiltration (aka Infiltration Basin, Infiltration Bed, Infiltration Trench, Dry Well/Seepage Pit, Landscape Infiltration)
- Permeable Pavement (aka Porous Pavement)
- Rainwater Harvesting (aka Capture and Re-use)

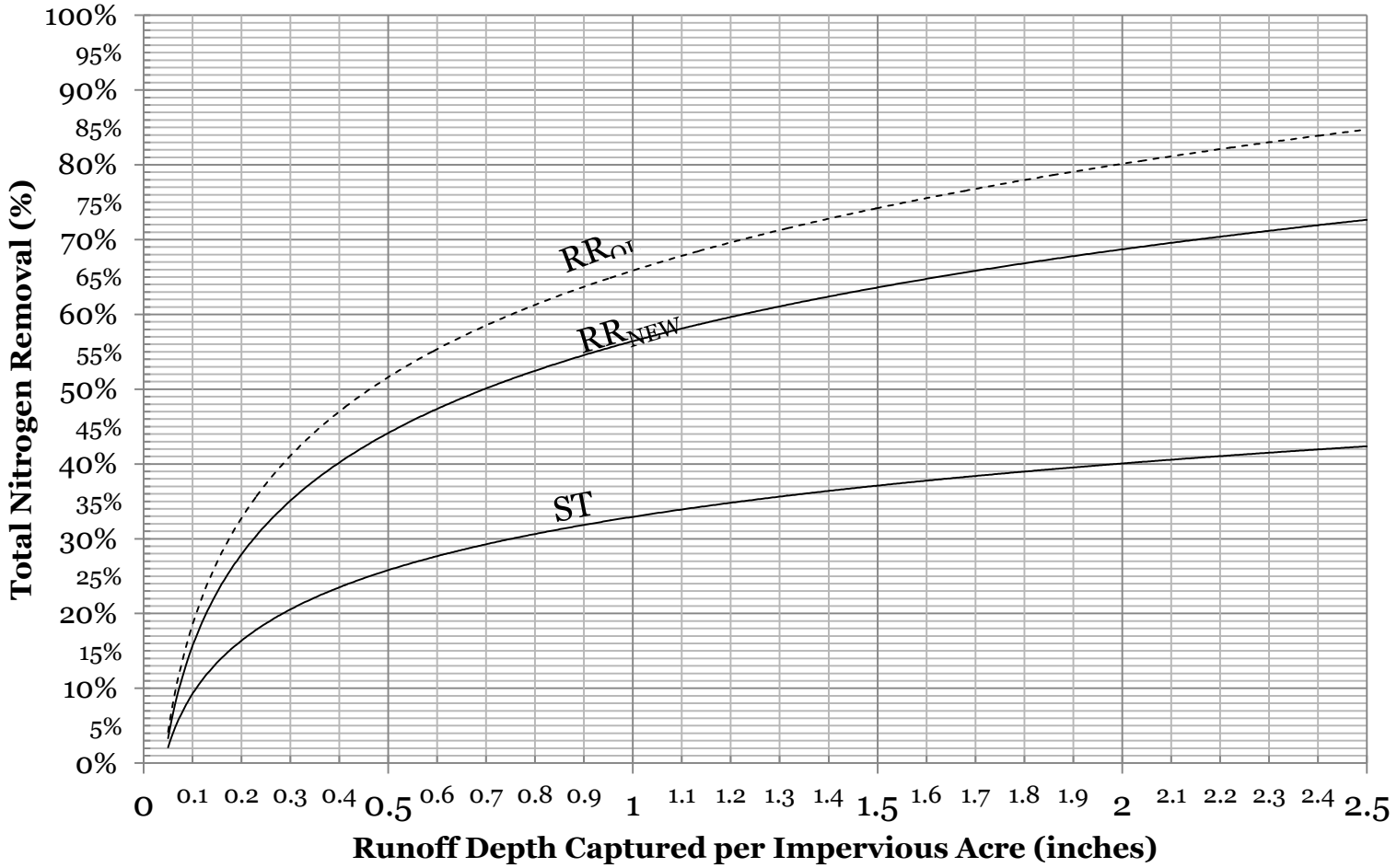
Stormwater Treatment (ST) Practices

- Constructed Wetlands
- Dry Extended Detention Ponds
- Filtering Practices (aka Constructed Filters, Sand Filters, Stormwater Filtering Systems)
- Proprietary Practices (aka Manufactured BMPs)
- Wet Ponds (aka Retention Basin)
- Wet Swale

Total Phosphorus Removal for RR and ST Stormwater Retrofit Practices

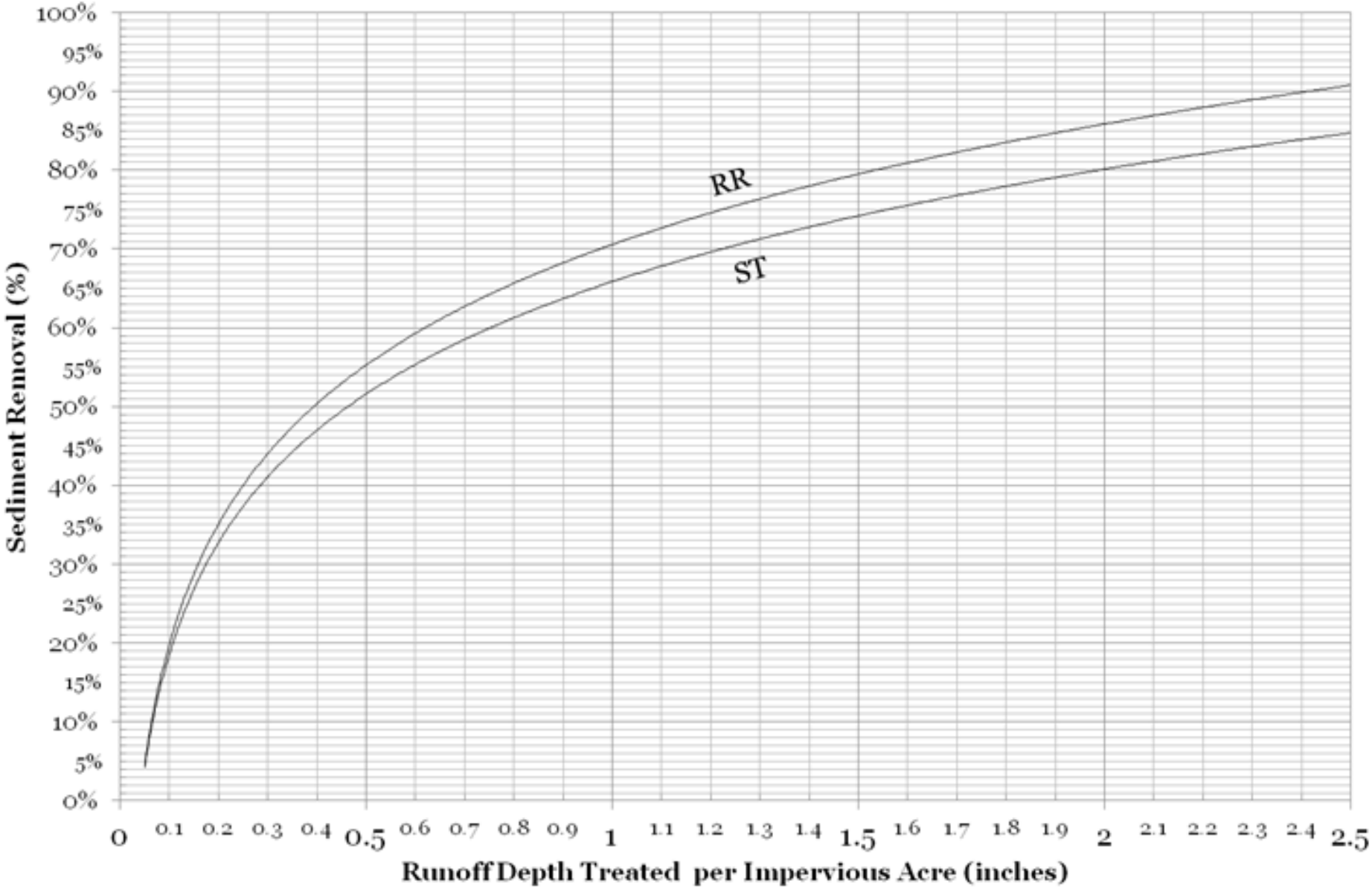


Total Nitrogen Removal for RR and ST Practices



The N curve was reduced based on WTWG feedback on groundwater nitrate loss from runoff reduction practices

Sediment Removal for RR and ST Stormwater Retrofit Practices



Accountability

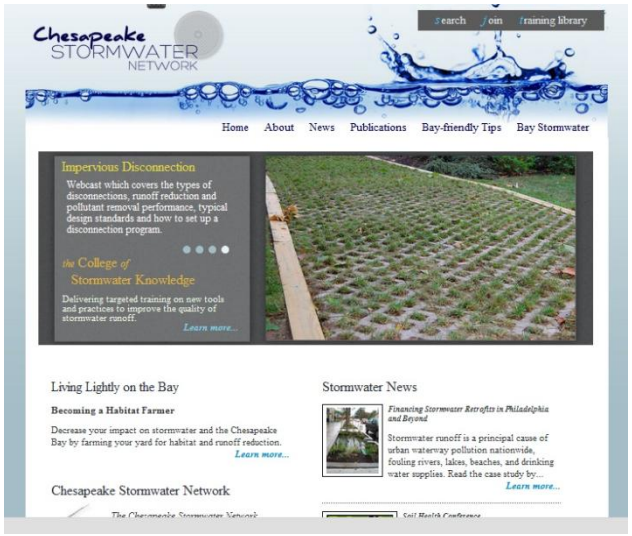
1. Duration of Retrofit Removal Rate:
   - 10 yrs MAX
     - Can be renewed based on field performance inspection
   - 5 yrs for on-site LID
     - Can be renewed upon visual inspection
2. No Double Counting!
   - Rate cannot be used if retrofit is an offset for new development
3. Initial Verification of Performance
   - Installed to design standards, functioning properly

Accountability

4. Local Reporting
   - Check with the State stormwater agency!!
   - Panel recommendations on what to submit
   - Aggregate data okay
5. Local Recordkeeping
   - More extensive record keeping
   - For the lifetime of the retrofit
6. Ongoing Field Verification
   - Inspection every 10 years
   - If facility not performing to original design, will have up to 1 year to take corrective maintenance
   - Renewal of removal rates if corrective maintenance occurs

Next Steps??

- Get the info out to the people who need it….
- Add to CBP and CSN **websites**
- Bay-wide **webcast** planned for Fall 2012
- Retrofit **workshop** planned for Fall 2012



PERFORMANCE STANDARDS EXPERT PANEL RECOMMENDATIONS

Presented to the

WQGIT

August 13, 2012

The Expert Panel

Panelist	Affiliation
Stewart Comstock	Maryland Department of the Environment
Scott Crafton	Virginia Department of Conservation and Recreation
Randy Greer	Delaware Department of Natural Resources and Environmental Control
Peter Hill	District of Columbia Department of the Environment
Dave Hirschman	Center for Watershed Protection
Shoreh Karimpour	New York Department of Environmental Conservation
Fred Rose	Fairfax County Department of Environmental Protection
Ken Murin/Jennifer Orr	Pennsylvania Department of Environmental Protection
Sherry Wilkins	West Virginia Department of Environmental Protection

Key Elements of Panel Recommendations

- Not 1 universal removal rate for a diverse set of practices
- Unitization approach allows for comparison of the each state's unique EP
- Simple method to determine removal rates for each unique BMP
- Relatively simple reporting requirements for localities and states
- Flexible reporting, tracking and verification process that can align well with existing programs
- Improved methods for verification and performance to ensure pollutant removal occurring and will improve the health of the Bay

Performance Standards by State

- In last 5 years, each State has revised regulations to improve the performance of stormwater practices.
- All of the Sates have increased the volume of runoff treated on-site and encourage/require the use of runoff reduction and ESD practices.
- Each State has unique regulations, performance standards, compliance models and design criteria (Table 1)

Engineering Parameters

- State-specific compliance spreadsheets many of which created by CSN and/or CWP will give you a site-specific EP

Site Data

Site Name:	

Site Information

Indicate Post-Development Land Cover

Cover Type	Area (acres
Natural Cover	
Compacted Cover	
Impervious Cover	
Total	0.00

Rv Coefficients

Land Cover Type	Rv
Natural Cover	0.00
Compacted Cover	0.25
Impervious Cover	0.95

Land Cover Summary

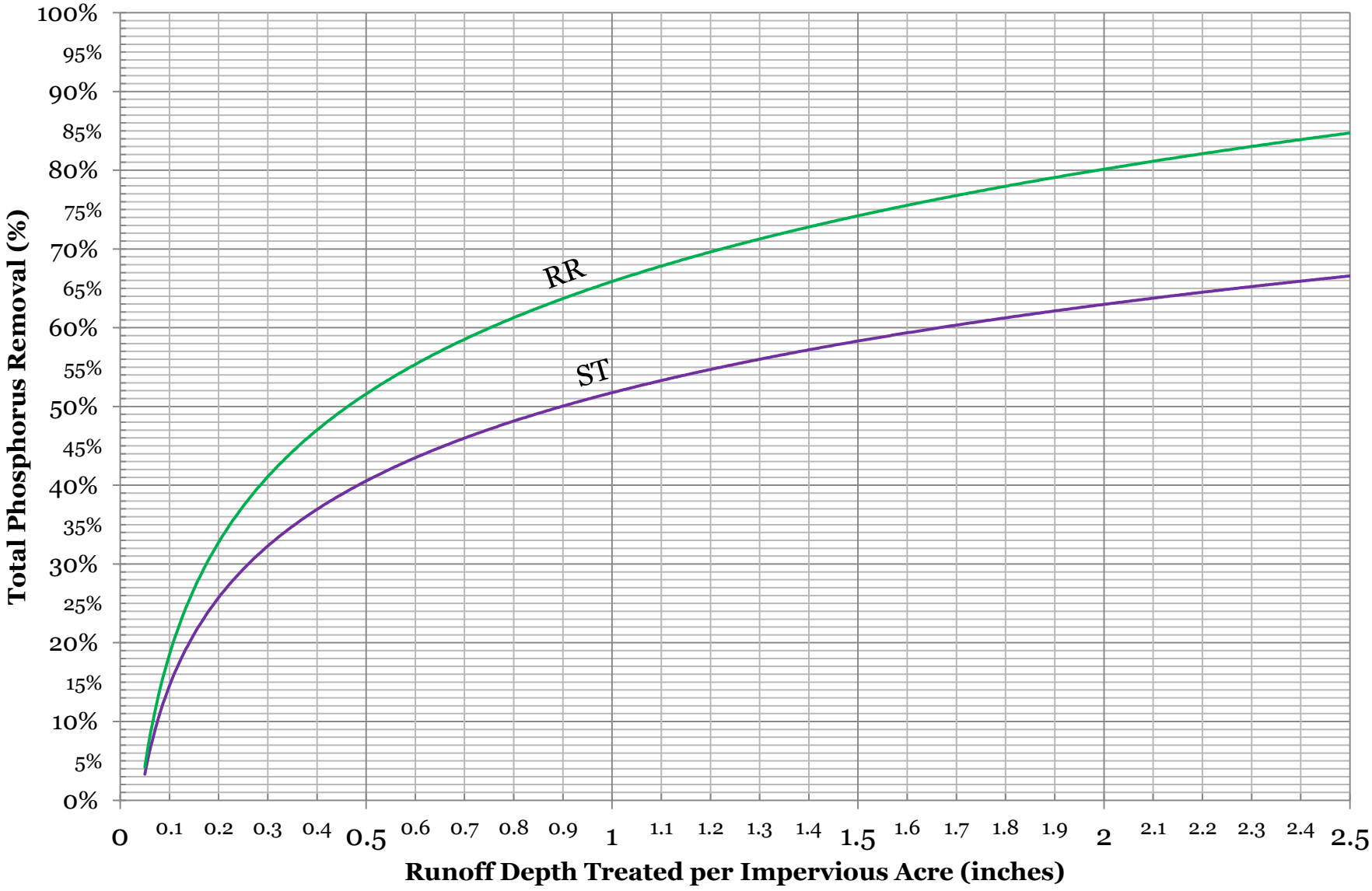
% Natural Cover	#DIV/0!
% Compacted Cover (acres)	#DIV/0!
% Impervious Cover	#DIV/0!
Site Rv	**#DIV/0!**

Is Site a Federal Facility?	No
Regulatory Rain Event for Retention (inches)	1.2
Stormwater Retention Volume, SWRv (cubic feet)	**#DIV/0!**

Removal Rates

- Same method as retrofit expert panel
- BMP removal rates are a function of runoff depth captured and the amount of stormwater treatment (ST) or runoff reduction (RR) achieved by the practice

Total Phosphorus Removal for RR and ST New Development Practices



Notes

- When a mix of practices is used, designers should use the curve based on the largest single practice or the practice the provides the majority of treatment
- Again, the removal rates are applied to the entire site area
- The reporting unit is the entire treated area of the site

Baseline Load

- Not necessary to report
- Load reduction computed by CBWM
- Localities *only* report the removal rate from the curves and the total treated acres for each project

Ease of Use

- Local governments need only to report*:
  - Number of acres treated under new performance standard
  - Acreage of non-complying projects
- State governments can report in a way that aligns with existing BMP reporting systems
- Should make life a bit easier on both local and state agencies

*Localities should check with their state stormwater agency on specific data to report

REDEVELOPMENT

- Redevelopment standards apply to sites with existing untreated impervious cover
- States are moving toward more stringent redevelopment requirements
- Differs across the states

Redevelopment Protocol

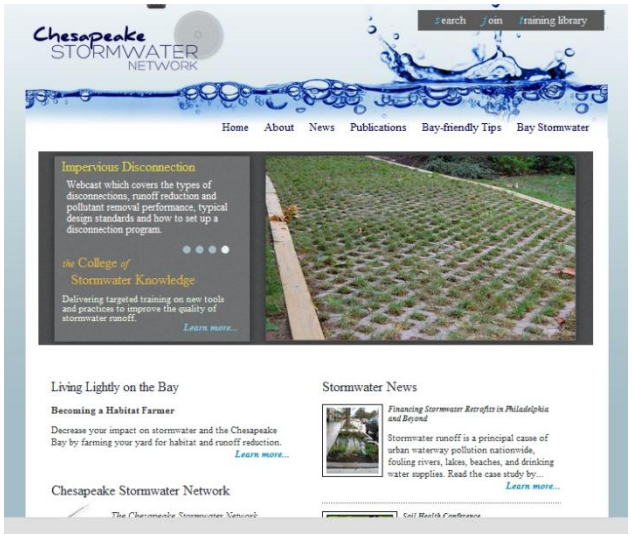
- Applies to redevelopment projects that meet the new redevelopment standards from 2010 and beyond
- Requires that designers confirm project is properly classified as redevelopment and not served by preexisting stormwater treatment practices
- Report Impervious Cover acreage treated and corresponding removal rates to state. IS A CREDIT

Accountability

1. Basic Reporting Unit
2. State BMP Reporting Systems
3. Local Reporting to the State
4. Initial Verification
5. Local Record-Keeping
6. Non-conforming Projects
7. Periodic Inspections
8. Downgrading
9. Non-MS4s
10. Offsets and Mitigation

Next Steps??

- Get the info out to the people who need it….
- Add to CBP and CSN **website**
- CSN to share report with Network of over 2300 Bay-wide stormwater professionals
- State-specific webcasts under CBSTP
- Redevelopment webcast



Update on Urban Fertilizer Management Expert Panel

- Effect of Recent State-wide Fertilizer P Bans
- Effect of Local Outreach Programs on Reducing N and P from Lawns
- State WIPs apply UNM to 46% of pervious land in watershed by 2025
- Panel has drafted recommendations, expect to go send them to USWG in October 2012

Update on Stream Restoration Panel

- Panel has reached technical consensus
- CSN and CWP writing up final technical recommendations
- Expect to submit to USWG in October or November
- Will need to get input from other GITs

Other Urban Expert Panels

- Enhanced E&S Controls: Launched in July, 2012
- Elimination of Illicit Discharges: Launched in July 2012
- Street Sweeping: Reconvene in Fall, 2012)
- Floating Treatment Wetlands: Launch in early 2013
- Algal Turf Scrubbers: Recommendation to WQGIT in Fall, 2012.