Trading and Offset of Nutrients (and sediment) in the Chesapeake Bay Watershed

Chesapeake Bay Local Government Advisory Committee Meeting

March 19, 2021

Jeff Corbin

Restoration Systems, LLC

Trade Nutrients? Huh? Wuh?

Driven by TMDL (or pre-TMDL)

- Section 10 (Impl/Adaptive Management)
- Appendix S (offsetting Growth)

Accounting for Growth

- Pt. Sources to Meet Caps
- NPS to Offset New Growth

Trading in 20 Words or Less

- 2 Parties
- Party 1 is over a limit
- Party 2 is under a limit
- Party 2's "underage" is "traded"

The Basics

Integral Components:

- Baseline – sector-specific and tied to TMDL
- Ratios – between sectors, delivery ratios (TMDL "delivered load"), retirement %, sometimes uncertainty ratios
- Protection for Local Water Quality
- Regulatory Driver to create the market

Around the 'Shed

- MD – 2018 Regs (MDE & MDA)
  - Registry (127 entries - redundancy)
  - Mostly POTWs
  - 9 trades to date

- PA – "Very Active" but mostly point-to-point

- DE, WV, NY – No "program", but eligible on a case-by-case

- DC – Water QUANTITY Program

** EPA Fact Sheets Coming!


In the beginning…

2005
"The Bill"

(40 Patrons)

"providing a foundation for establishing market-based incentives to ***help achieve the Chesapeake Bay Program's nonpoint source reduction goals"***

B. Waste load allocations required by this section to offset new or increased delivered total nitrogen and delivered total phosphorus loads shall be acquired in accordance with this subsection.

1. Such allocations may be acquired from one or a combination of the following:

a. Acquisition of all or a portion of the waste load allocations from one or more permitted facilities in the same tributary;

b. Acquisition of nonpoint source load allocations through the use of best management practices acquired through a public or private entity acting on behalf of the land owner. Such best management practices shall achieve reductions beyond those already required by or funded under federal or state law, or the Virginia tributaries strategies plans, and shall be installed in the same tributary in which the new or expanded facility is located and included as conditions of the facility's individual Virginia Pollutant Discharge Elimination System permit; or

Good Intentions

Focused on meeting Point Source caps

Nonpoint Sources were intended to help address future growth

$$$ Tremendously successful…on the Point Source side of things

Supply ≠ Demand

The “Save” for Nonpoint Source Trading

2009 – VA Stormwater Management Act – Nutrient Offsets

- VSMP Regs/Permits
- Perpetual Credits – Driven by TMDL Cap

2011
- Stringent Driver (0.41 lbs. P/acre/yr) - P is the “keystone”
- Threshold on Use Amounts (10 lbs/5 acres/75% on-site)

Very Successful

- ~~92~~ **273** Banks Approved/Pending – Most Land Conversion Banks/Streams
- ~~5748~~ >**10,000**/ Phosphorus Credits Released
- 3374 (2017) Credits Sold
- >$60-80 Million Market

Example - Land Conversion

https://www.youtube.com/watch?v=ucBFVeq-vds&t=46s

Example - Land Conversion

Wildwood Farm in Appomattox County

First Private Nutrient Bank Certified by DEQ

Land Conversion (approx 110 acres – out of **900 total**)

Declaration of Covenants

Kept the Farm Farming!

Generates:

- 376 Pounds of N reduction per year
- **101 Pounds of P** reduction per year

Example - Innovative Practice

Example - Innovative Practice

Cranston's Mill Pond in James City County

Blown out 50-acre mill pond dam/spillway

4500-acre watershed before tidal waters

Extensive Baseline Requirements

Annual Nutrient Capture:

- 1655 pounds of N
- 752 pounds of P

BUT…

…this is not what the intent of the original trading law was

"establishing market-based incentives ***to help achieve the Chesapeake Bay Program's nonpoint source reduction goals****"*

--- get agriculture to baseline…and beyond

--- aggregate/bundle BMP reductions = credit

--- do it via a market-based process

Additional Tweaks

MS4s (2012)

- Compliance with waste load allocations established as effluent limitations. Also used for meeting Bay TMDL goals (point or nonpoint source credits)
- MS4 may also enter into agreements with other MS4s within same locality or same or adjacent 8-digit HUC to meet the sum of their waste load allocations
- DEQ approval of MS4 use of credits needed (compliance plan)

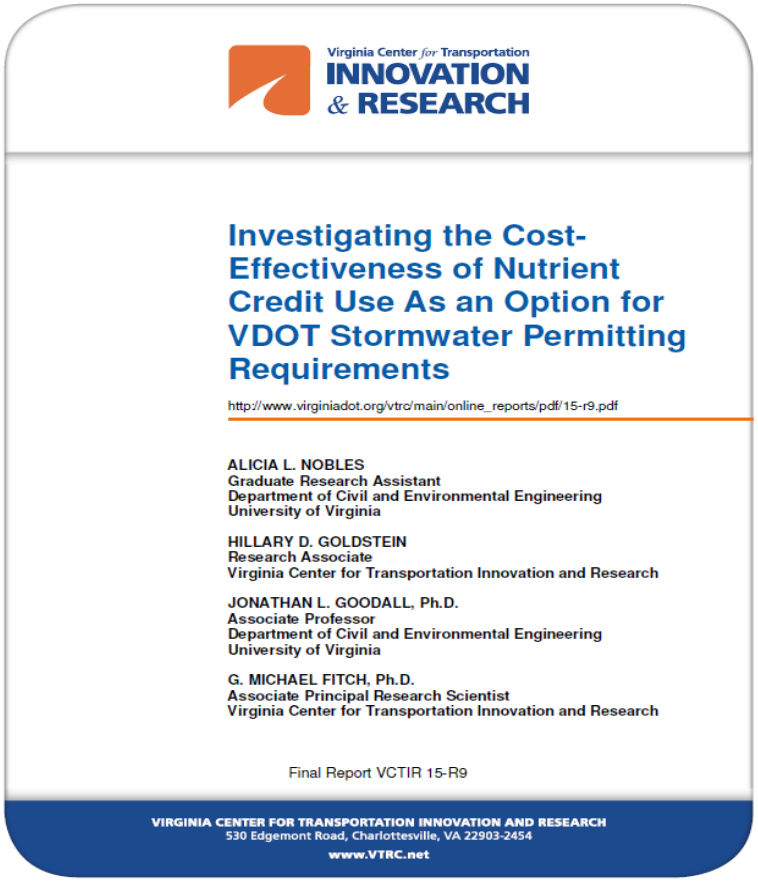
Southern Rivers (2016)

Sediment for MS4s (2016)

Credit Buyers

- Developers (including institutions)
- VDOT
- MS4s

In the hypothetical scenario where VDOT's participation in the WQT program was allowed in lieu of VDOT's construction of nine BMPs, VDOT would have realized a cost savings of 5% to 75%, with **an average cost savings of 51%.** These results suggest that **participating in WQT at current market rates in lieu of constructing onsite structural BMPs is an economically feasible solution for VDOT to manage stormwater quality**.



Virginia Center for Transportation
INNOVATION & RESEARCH

Investigating the Cost-Effectiveness of Nutrient Credit Use As an Option for VDOT Stormwater Permitting Requirements

http://www.virginiadot.org/vtrc/main/online_reports/pdf/15-r9.pdf

ALICIA L. NOBLES
Graduate Research Assistant
Department of Civil and Environmental Engineering
University of Virginia

HILLARY D. GOLDSTEIN
Research Associate
Virginia Center for Transportation Innovation and Research

JONATHAN L. GOODALL, Ph.D.
Associate Professor
Department of Civil and Environmental Engineering
University of Virginia

G. MICHAEL FITCH, Ph.D.
Associate Principal Research Scientist
Virginia Center for Transportation Innovation and Research

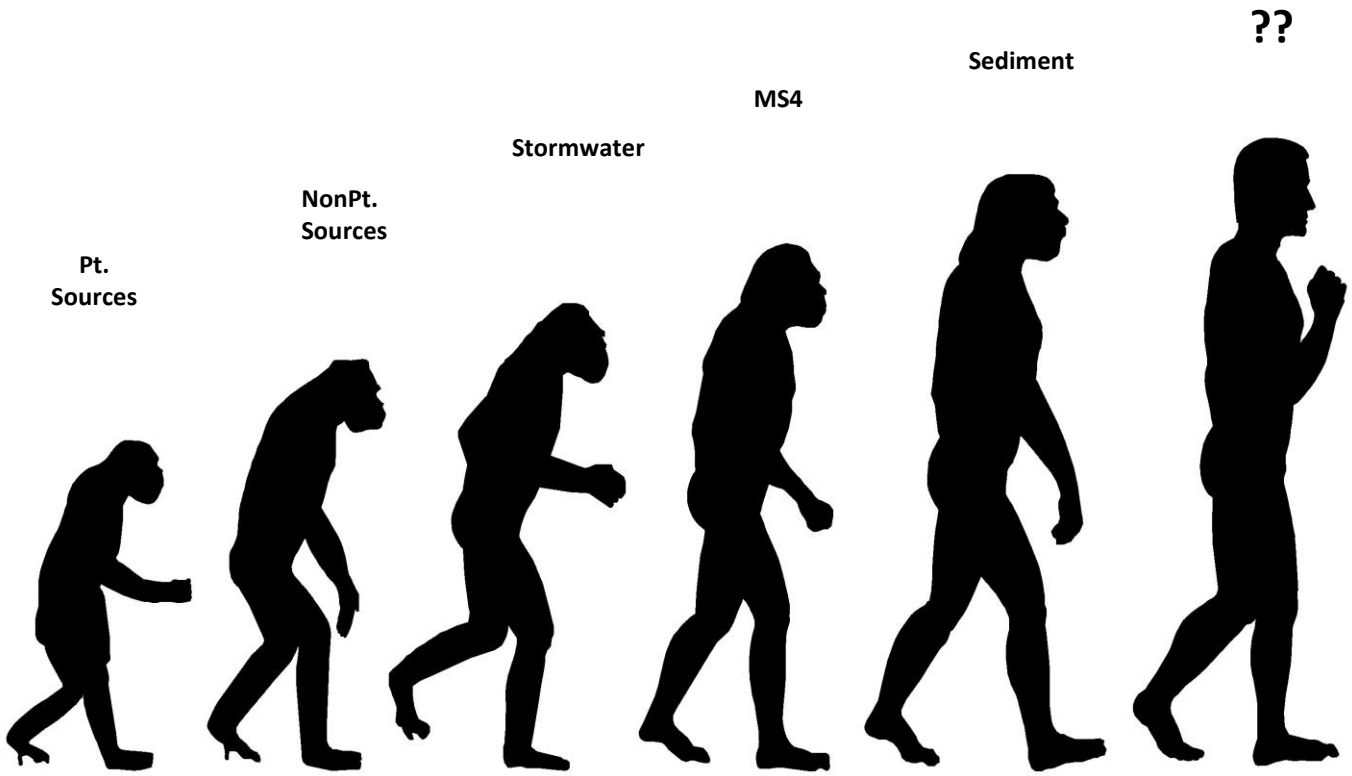
Final Report VCTIR 15-R9

VIRGINIA CENTER FOR TRANSPORTATION INNOVATION AND RESEARCH
530 Edgemont Road, Charlottesville, VA 22903-2454
www.VTRC.net

Recent Game Changers

- Land Use Conversion Rates (2020)
- Certification Regulations (8 Years!)
  - Local Water Quality Protection (!Guidance!)
  - TMDL Tool
  - HUC Hierarchy (12/10/8)
  - 5% Credit Retirement
  - Financial Assurance – similar to 404 Stream Program
- Transparency - Credits Tracked in RIBITS

What's Next?



Call me crazy…

Lagging Bay Restoration Goals

Wetlands

Riparian Buffers

Stream Restoration

TMDL Nutrients Reduction Targets

Climate Change – Additional Reductions Needed

Conowingo Dam – Additional Reductions Needed

…it's time think broadly and comprehensively

How to use private $ to help meet Bay restoration goals?

Example – Riparian Buffers

- Prioritize/Incentivize Banks in Riparian Zones
- Prioritize/Incentivize Multiple Tree Species
- Stacking of Credits – Nutrients/Carbon/Species

New Uses for Credits

Use the VA Nutrient Offset Fund

- State buys credits
- Allocate as needed
- MD is already doing it!! – Clean Water Commerce Act – NOT Ag lands

Issue “Full Service” RFPs for Nutrient Reductions

- MD State and Several Counties (AACo saving > 50%) already doing this
- VDOT RFPs
- Hugely Successful in NC
- State Level? Locality Level?

Use Credits for Enforcement (currently allowed!)

- N, P, Sediment
- Require > 2:1 to ensure environmental improvement

Questions?