





# **Sand Branch Benthic TMDL Study**

## **Seventh Technical Advisory Committee Meeting**

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April 25, 2024

# Agenda

- Meeting Objectives and Project Updates
- Addressing Total Phosphorus
- Update on Total Suspended Solids (TSS) TMDL
- Stakeholder Presentation
- Next Steps



## Meeting Objectives

- Share project updates since last Technical Advisory Committee (TAC) meeting.
- Present and solicit feedback on the proposed approach for Total Phosphorus.
- Present status on TSS TMDL and solicit feedback.
- Chantilly Crushed Stone, LLC to present their concerns and solicit feedback
- Provide an overview of next steps for development of the TSS TMDL and Total Dissolved Solids (TDS) TMDL

# TMDL Development Process



## Characterize the Watershed

- Evaluate data on land use, soils, hydrology, ecoregion, etc.



## Conduct a Pollutant Source Assessment

- Identify point (permitted) and nonpoint (unpermitted) sources
- Identify existing pollutant loads



## Establish the TMDL endpoint

- Identify a numeric value/threshold that meets applicable water quality criteria



## Identify the TMDL Condition and Needed Pollutant Reductions

- Model baseline and projected conditions to identify a scenario (loads) that attains the TMDL endpoint
- Calculate the pollutant reduction needed (the difference between the baseline and TMDL condition)

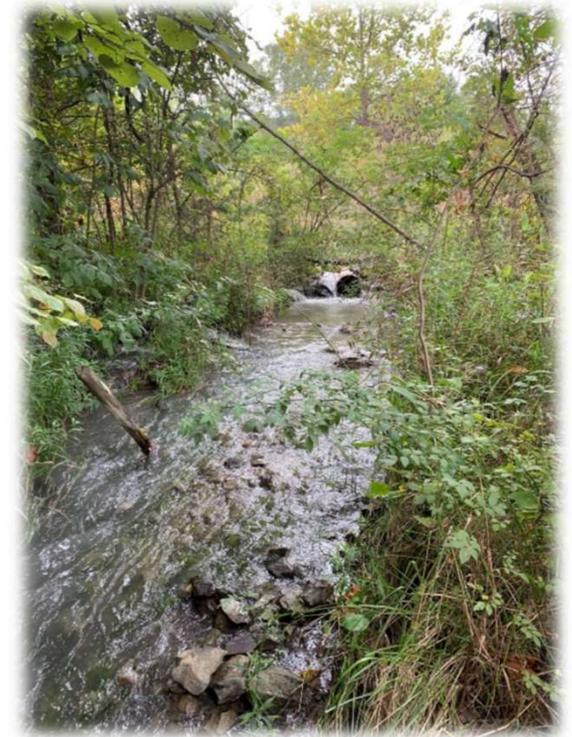


## Allocate the TMDL to Pollutant Sources

- Assign pollutant load allocations to point and nonpoint sources to achieve reductions needed to meet the TMDL
- Include an allocation for future growth (FG) in WLA and a margin of safety (MOS)

# Project Updates

- Model Updates
  - Evaluated potential hydrologic differences between “Pasture” and “Fallow”.
  - Reviewed in-channel processes as modeled in HSPF.
- Revisions to Point Sources
  - Construction General Permits
    - Updated to reflect existing permits in the watershed
    - Updated impervious area for H&M Properties (VAR10Q588)
  - VPDES Individual Permit for Loudoun Composting Facility (VA0091430) - Terminated





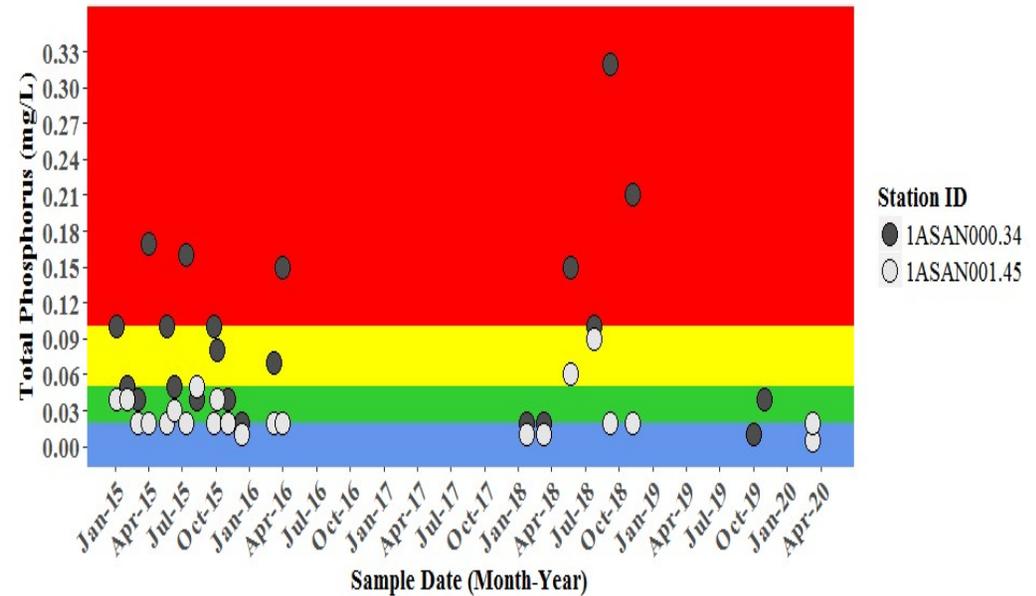
# Addressing Total Phosphorus

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Margaret Dannemann  
Water Planning and Assessment Supervisor  
Virginia Department of Environmental Quality

# Total Phosphorus

- TP identified as a stressor at the downstream station (1SAN000.34), not the upstream station (1SAN001.45)
- Significant change in permitted sources in the watershed
- Co-benefits from TSS TMDL and Chesapeake Bay TMDL address remaining sources.
- **Conclusion:** TMDL for TP not being pursued.



# Discussion

- Any questions?





# Total Suspended Solids (TSS) TMDL Update

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Margaret Dannemann  
Virginia DEQ

## Total Maximum Daily Load (TMDL)

A **TMDL** is the total amount of a pollutant a waterbody can receive and still meet the water quality criteria for that pollutant

$$\text{TMDL} = \text{WLA}^* + \text{LA} + \text{MOS}$$

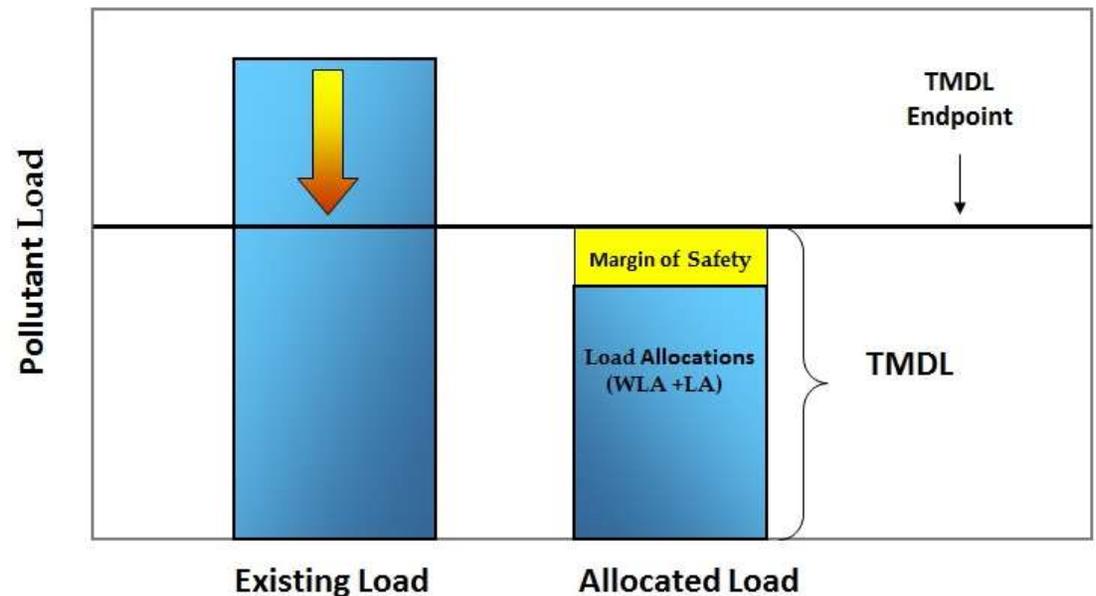
Where:

WLA = Wasteload Allocation

\*includes FG = Future Growth

LA = Load Allocation

MOS = Margin of Safety



# AllForX Approach

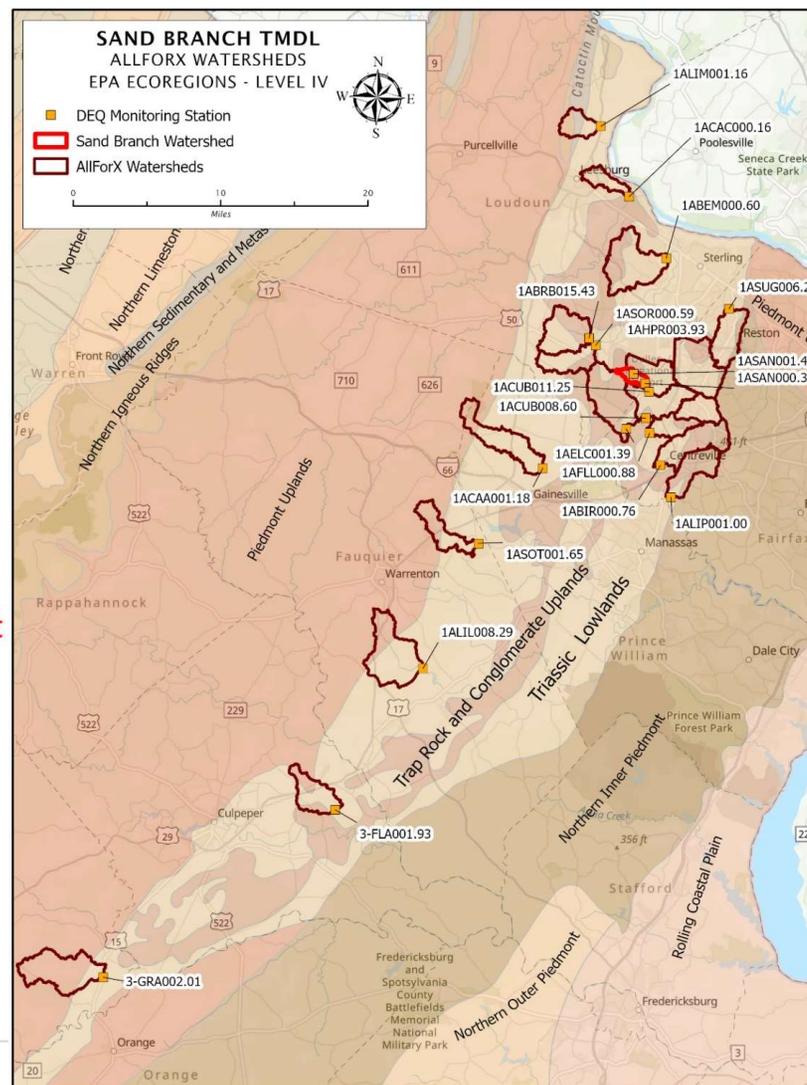
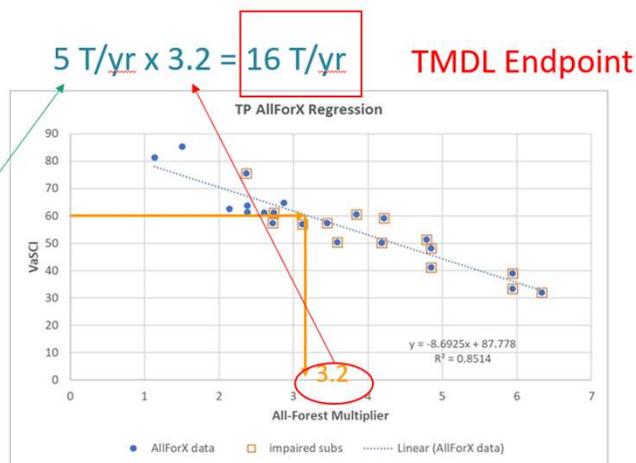
- Used widely in Virginia since 2014
- Does not rely on a single reference condition or watershed
- Robust approach that compares the site to a range of similar watersheds



50 T/yr



5 T/yr



## Existing TSS Loads

- Loading rate for permitted sources based on:
  - MS4: runoff co-efficients for land cover types.
  - Construction General Permits: average acres annually.
  - Other permitted sources: effluent monitoring data.

Sediment Source	Loading Rate	Existing Load
	lb/ac/yr TSS	lb/yr TSS
Open Water (4.8 ac)	9.2	44
Developed Pervious (38.0 ac)	1,234	46,920
Barren (7.5 ac)	5,249	39,590
Forest (210.2 ac)	301	63,250
Turf (70.5 ac)	1,549	109,200
Fallow (14.6 ac)	1,911	27,920
Developed Impervious (79.1 ac)	1,790	141,500
Impervious External (108.9)	1,790	194,900
<b>Non-point Source Subtotal</b>		<b>623,300</b>
Loudoun MS4 (74.4 ac)		135,100
VDOT MS4 (16.2 ac)		27,000
Construction General Permits (54.5 ac)		286,100
ISW Permits		7,837
NMMM General Permits		24,440
Concrete Products GP's		2,144
Domestic Sewage Permits		91
Loudoun Composting		2,462
<b>Point Source Subtotal</b>		<b>485,200</b>
<b>TOTAL</b>		<b>1,109,000</b>
<i>(TMDL Target = 349,400 lb/yr)</i>		

## CGP Discussion

- Acreage used to represent a typical amount of active construction in the watershed in a given year.
- Currently 5 active permits in the watershed.
- One permit represents 36.5 acres of the total 54.5 acres.

Sediment Source	Loading Rate	Existing/ Allocated Load
	lb/ac TSS	lb/yr TSS
Open Water (4.8 ac)	9,231	44,30
Developed Pervious (38.0 ac)	1,234	46,920
Barren (7.5 ac)	5,249	39,590
Forest (246.7 ac)	300.9	74,240
Turf (70.5 ac)	1,549	109,200
Fallow (14.6 ac)	1,911	27,920
Developed Impervious (79.1 ac)	1,790	141,500
Impervious External (108.9)	1,790	194,900
<b>Non-point Source Subtotal</b>		<b>634,300</b>
Loudoun MS4 (74.4 ac)	N/A	135,100
VDOT MS4 (16.1 ac)	N/A	27,000
Construction General Permits (18.0 ac)	N/A	94,460
NMMM General Permits	N/A	24,440
ISW Permits	N/A	7,837
Concrete Products GP's	N/A	214
Domestic Sewage Permits	N/A	91.38
Loudoun Composting	N/A	2,462
<b>Point Source Subtotal</b>		<b>293,600</b>
<b>TOTAL</b>		<b>927,900</b>
<i>(TMDL Target = 349,400 lb/yr)</i>		



# Discussion

- Questions on existing loads?
- MS4s and Concrete GPs -  
Comments on being aggregated?
- Annual average acreage for  
Construction GPs in the watershed.





# Stakeholder Presentation

Chantilly Crushed Stone, LLC

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# Meeting Wrap-up

## Next Steps

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Virginia Department of Environmental Quality



## Next Steps

- TSS TMDL and TDS TMDL
  - Prepare allocation scenarios.
  - Present proposed allocation scenarios and solicit feedback.
  - Draft report.
  - Solicit feedback on draft report.

# Questions?

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