TMDLs in the Valley and across Virginia

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POP QUIZ

1. What federal law protects water quality?
2. What Virginia legislation requires clean-up plans for “dirty waters” and expands geographic coverage of monitoring?
3. Which of the following fish are endemic to the Shenandoah Valley (and Virginia in general): Brown Trout, Rainbow Trout, Brook Trout

Discussion Topics

- What is a TMDL?
- TMDL and IP Review
- Elements of Successful TMDLs
- Discussion Topics?

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SIC SEMPER TYRANNIS

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What is a TMDL?

- **Total Maximum Daily Load** – the amount of pollution a waterbody can take in and still maintain water quality standards
  - "Pollution Diet"
  - Mandated by Section 303(d) of the federal Clean Water Act

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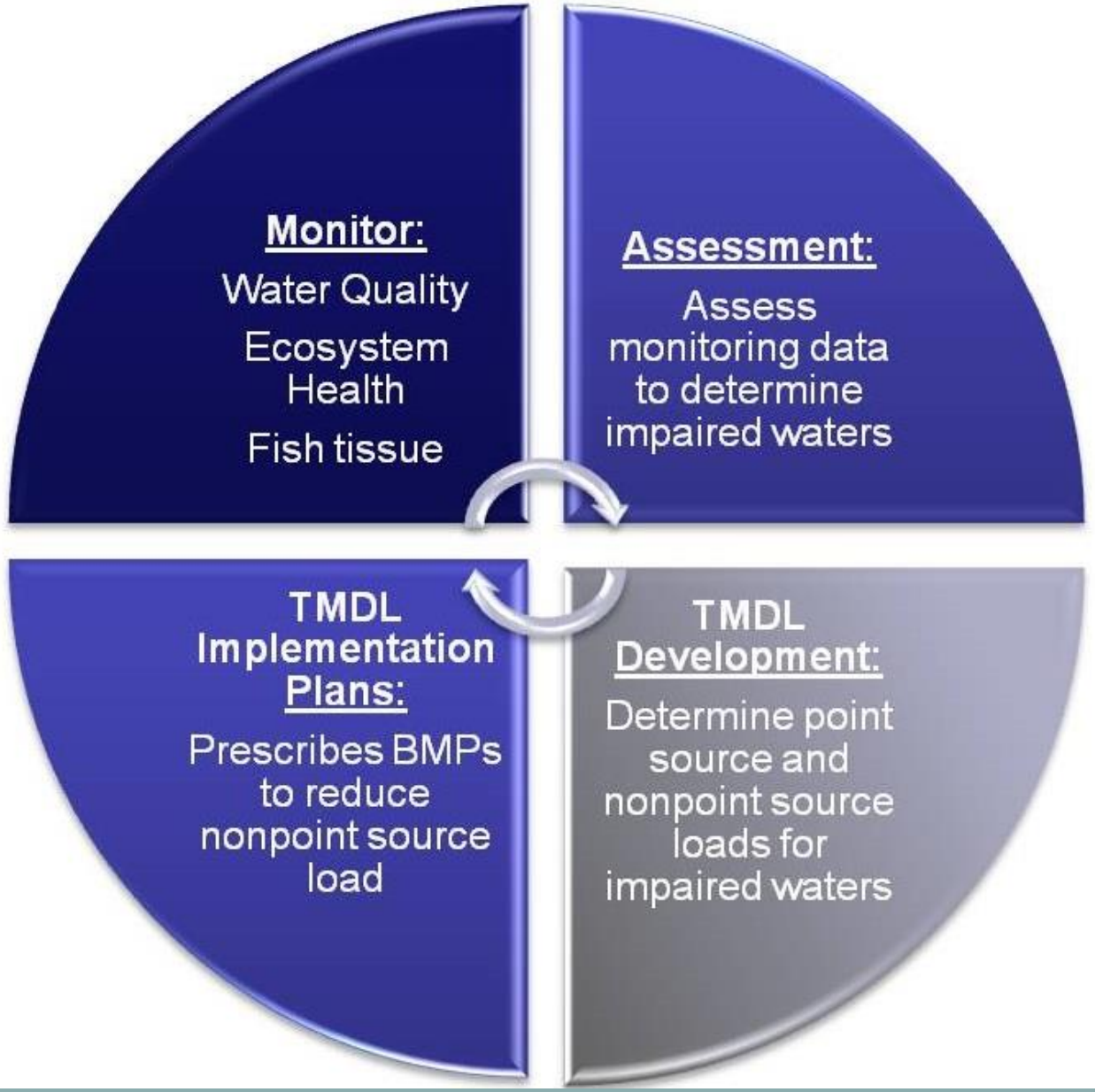
CONTINUING PLANNING PROCESS

TMDL Development Process



The Goal

Clean Water

The Process

TMDL

Study

- Identifies sources of pollution
- Calculates amounts from each source
- Sets maximum pollutant load
- Estimates necessary pollutant reductions to meet water quality standards

Implementation Plan

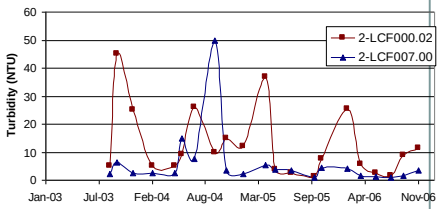
Identifies permit controls or best management practices needed to make necessary pollutant reductions

Implementation

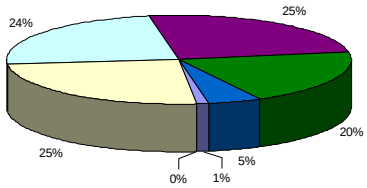
Water quality standards met

Water quality standards not met

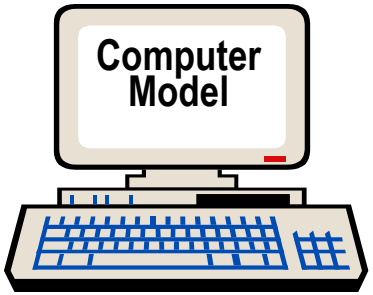
What are the Goals of the Study?



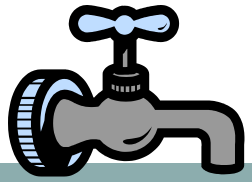
- Identify Pollutants
- Identify Sources



- Calculate Loads
- Model Water Quality



- Estimate Reductions



Total
Maximum
Daily
Load

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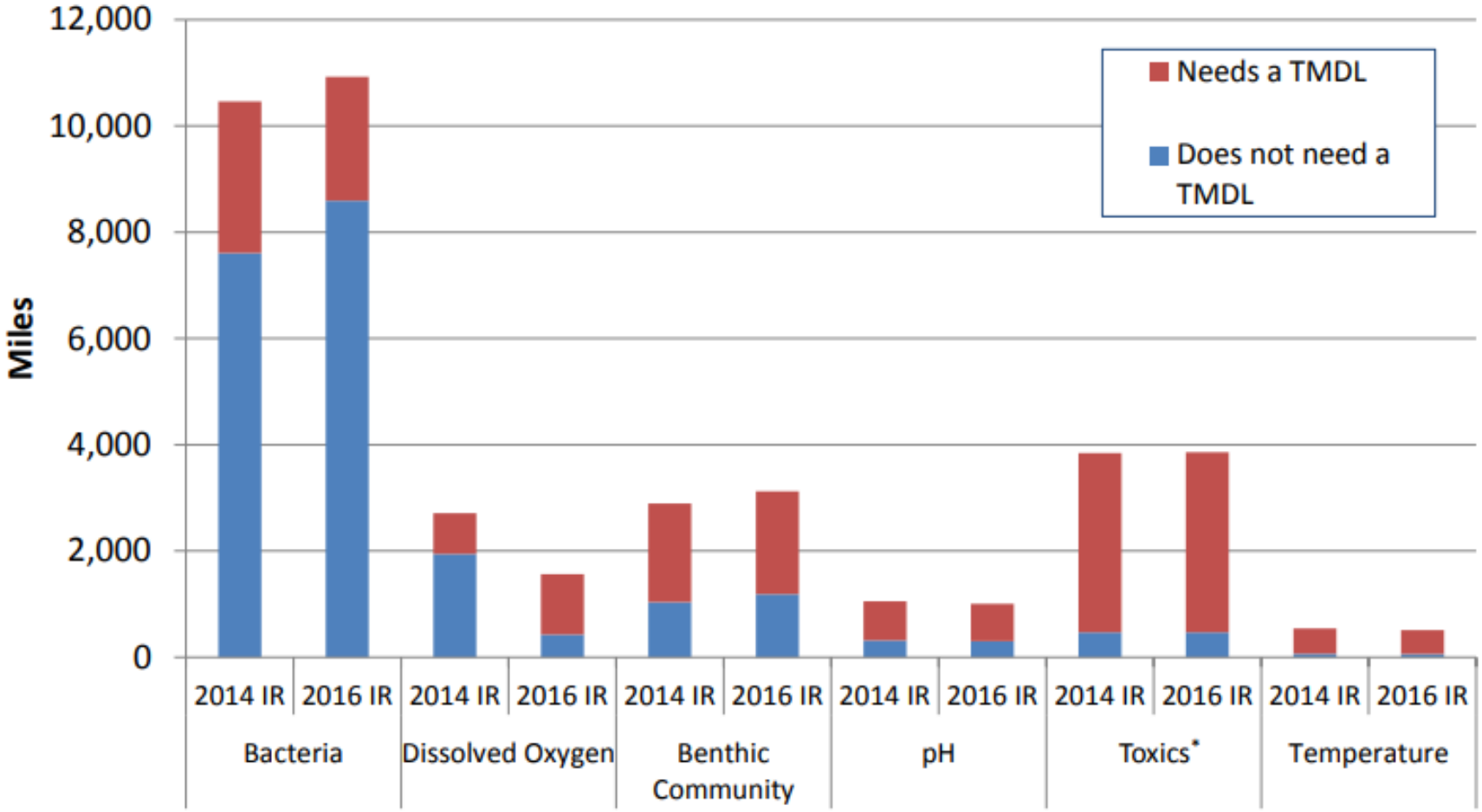
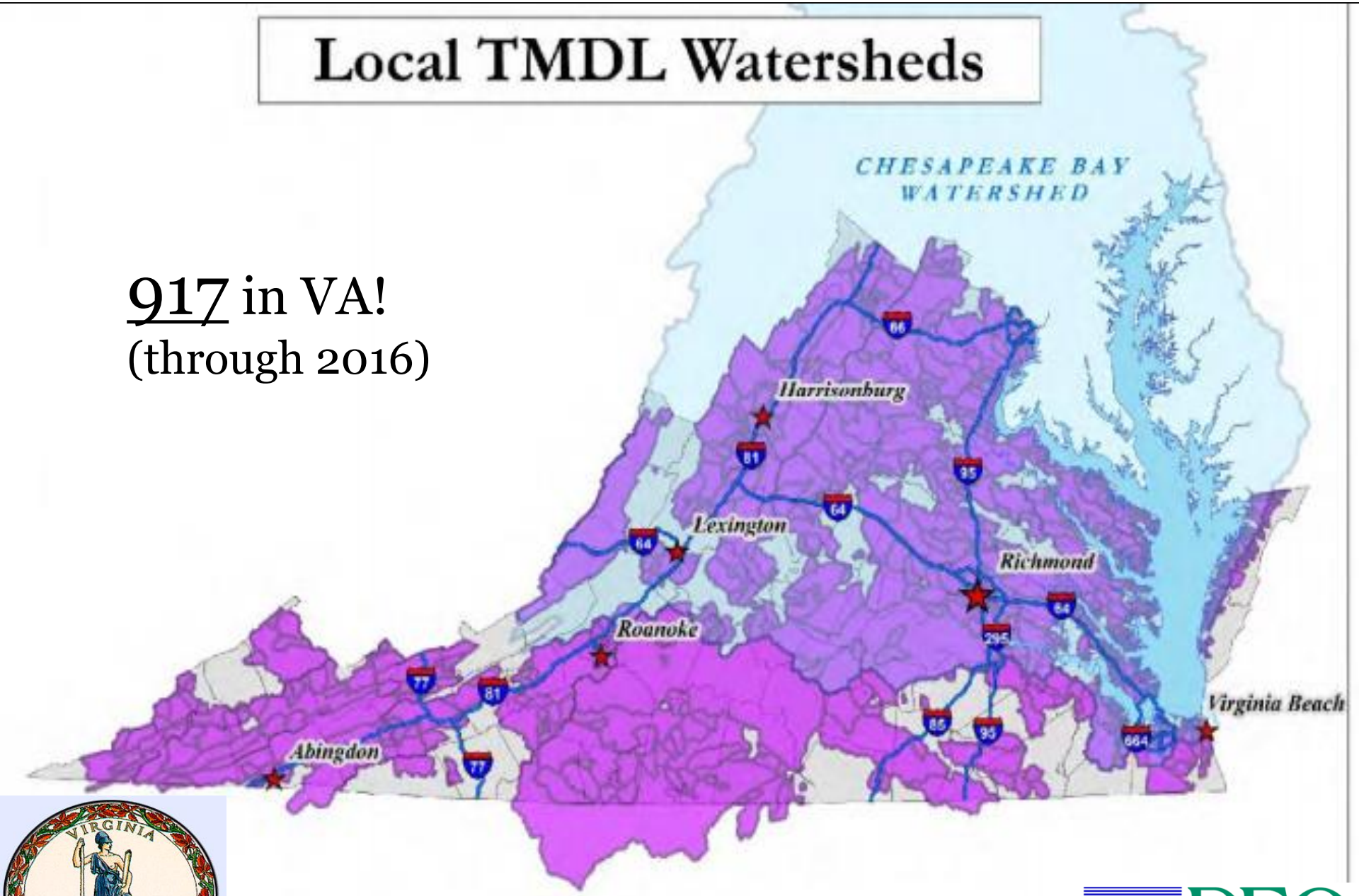
Summary of Impaired Rivers



* The overwhelming majority of toxics impairments in rivers, lakes and estuaries are due to exceedances of thresholds for PCBs and Mercury in fish tissue.

Local TMDL Watersheds



<u>917</u> in VA!
(through 2016)

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TMDL Implementation Plan

- TMDL IP – the next step in the TMDL process
  - Required in Virginia by WQMIRA (1997) – Charged DEQ to "develop and implement a plan to achieve fully supporting status for impaired waters"
  - Sets out a plan for the pollutant reductions called for in the TMDL
  - 83 completed through 2016
    - Addressing 429 impairments

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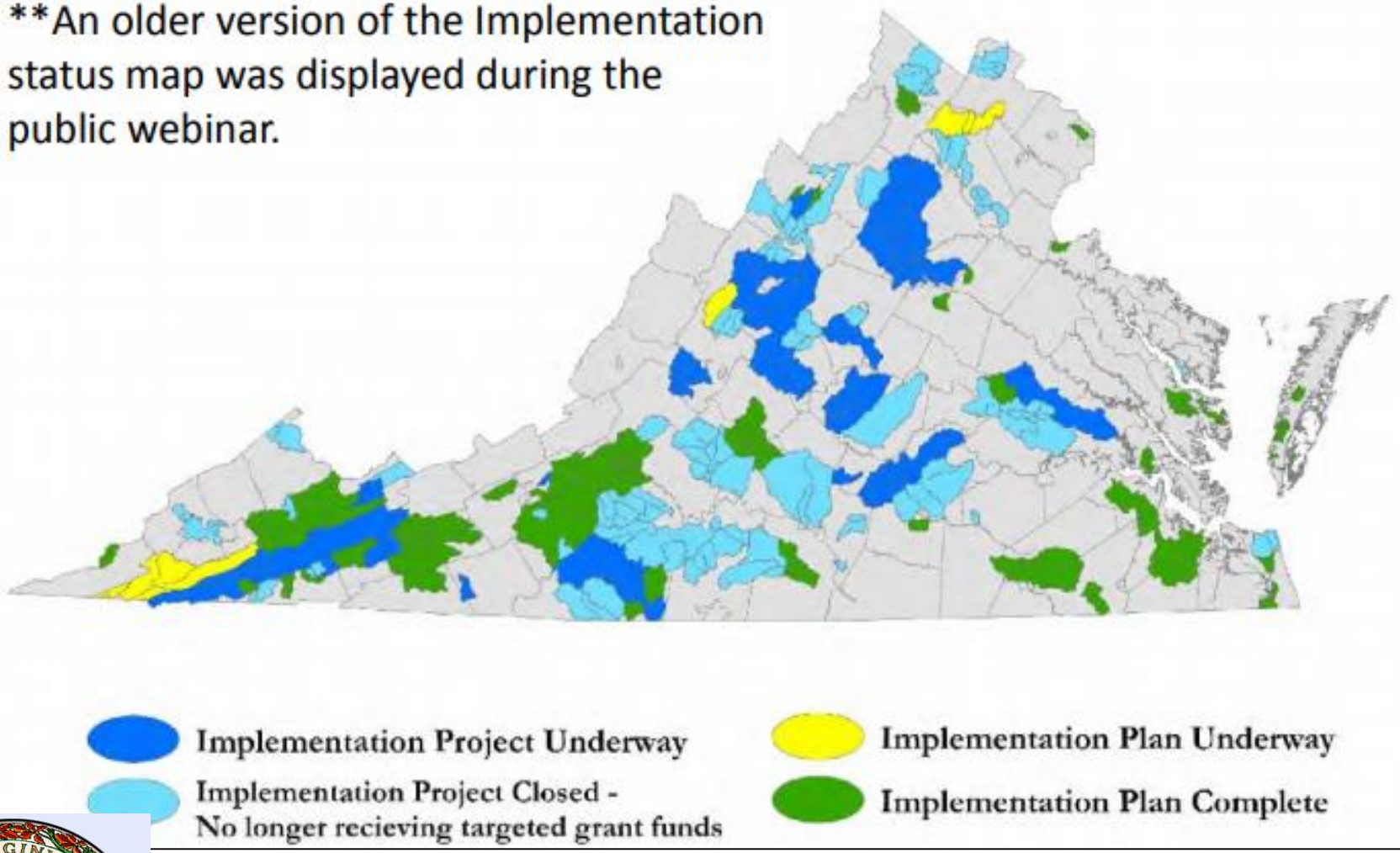
TMDL Implementation Watersheds

**An older version of the Implementation status map was displayed during the public webinar.



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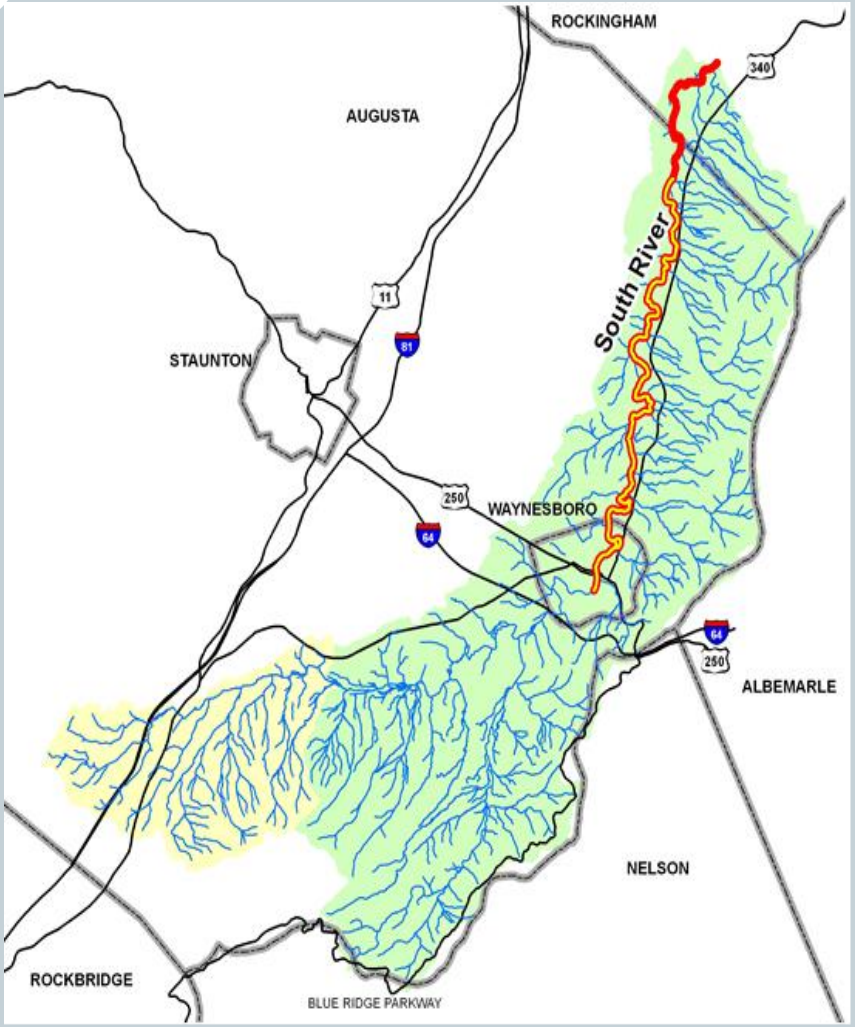
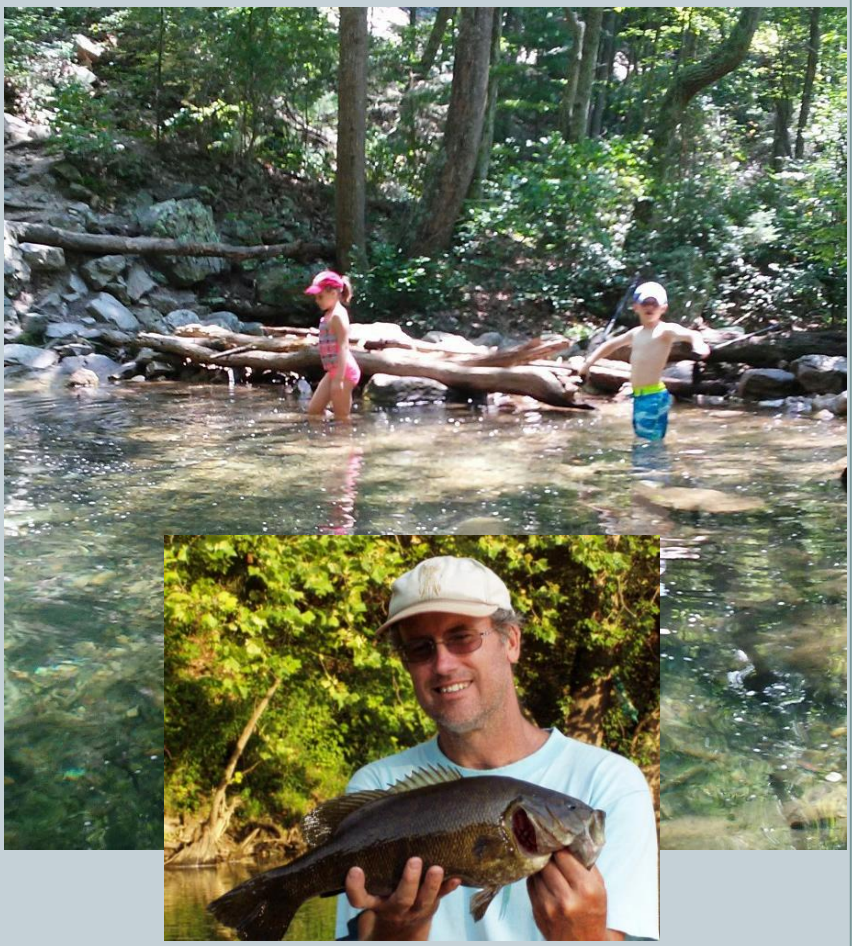
South River TMDLs and IPs

- South River Impairments
  - Mercury in Fish Tissue
  - Bacteria
  - Aquatic life (benthic)
- South River TMDLs
  - Mercury (2010)
  - E. Coli + Sediment +Phosphorus (2009)
- South River IPs
  - E. Coli + Sediment +Phosphorus (2012)



Goal of the TMDL Process

- Restoration of designated use and attainment of water quality standards
- Return to full support of the recreational use and aquatic life statuses
  - "Swimmable" and "Fishable"

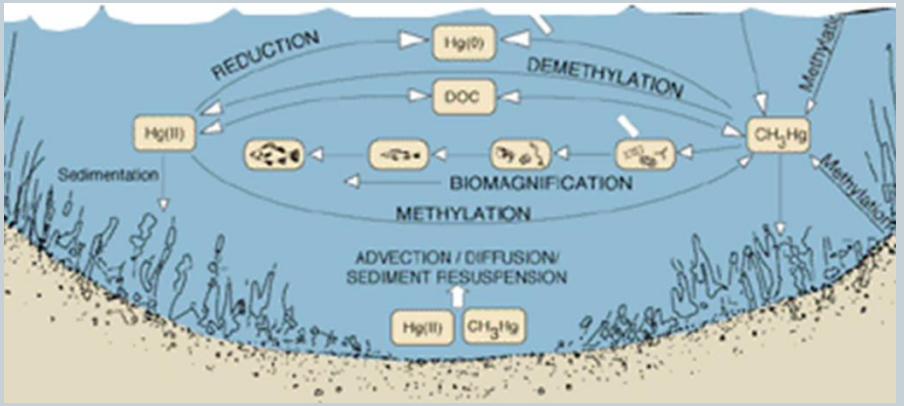


Elements of Successful TMDLs

- Based in Good Science
- Make reductions meaningful
- Involve the Community
- Build a Foundation

Elements of Successful TMDLs

- Based in Good Science
  - Understand the impairment
  - Collect all pieces of relevant data and information regarding the watershed
  - Characterize accurately and completely the sources of pollution



Elements of Successful TMDLs

- Making reductions meaningful
  - And effective!

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Table 3. Bacteria Allocation Scenarios for Hat Creek.

Scenario	E. Coli Loading Reduction (%)							% Violation of *E. coli* Standard	
					Residential				
	Livestock DD*	Cropland	Pasture	Straight Pipes	Failing Septic Systems	Other	Wildlife DD*	Geo. Mean	Instanta-neous
Baseline	0	0	0	0	0	0	0	42%	29%
01	100	100	100	100	100	100	0	8%	2%
02	100	100	100	100	100	100	35	0%	1%
03	99	90	90	100	100	0	35	0%	1%
04	90	10	10	100	100	0	0	17%	9%
05	85	40	40	100	100	0	0	17%	10%
06	80	70	70	100	100	0	0	17%	10%

*DD - direct deposit

TMDL Allocation (never violates the Monthly Geometric Mean Standard)

Stage 1 Implementation Option (violates the Instantaneous Standard less than 10.5% of the time)

Table 4. Bacteria Allocation Scenarios for Rucker Run.

Scenario	E. Coli Loading Reduction (%)							% Violation of *E. coli* Standard	
					Residential				
	Livestock DD*	Cropland	Pasture	Straight Pipes	Failing Septic Systems	Other	Wildlife DD*	Geo. Mean	Instanta-neous
Baseline	0	0	0	0	0	0	0	28%	24%
01	100	100	100	100	100	100	0	4%	2%
02	100	100	100	100	100	100	20	0%	2%
03	99	55	55	100	100	0	20	0%	5%
04	85	10	10	100	100	0	0	13%	10%
05	80	30	30	100	100	0	0	15%	10%
06	75	50	50	100	100	0	0	17%	10%

*DD - direct deposit

TMDL Allocation (never violates the Monthly Geometric Mean Standard)

Stage 1 Implementation Option (violates the Instantaneous Standard less than 10.5% of the time)

Elements of Successful TMDLs

- Involving the community
  - Inviting stakeholders groups
  - Utilizing existing Social Capital
  - Cementing trust and respect
  - Recognizing work already in progress
  - Identifying and capitalizing on common interests and goals

Elements of Successful TMDLs

- Building a Foundation
  - Successful TMDLs
  - Successful IPs
  - Grant Opportunities
  - Implementation

    (ie –cows out of the creek, trees in the ground, biocharr absorbing Hg, etc.)

Water Quality improvement

Discussion Topics

- Lessons learned?
- Virginia Priorities
- Communicating and translating technical data to a non-technical audience

THANK YOU!

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