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Local TMDL Implementation:
Thinking Outside the "Black Box"

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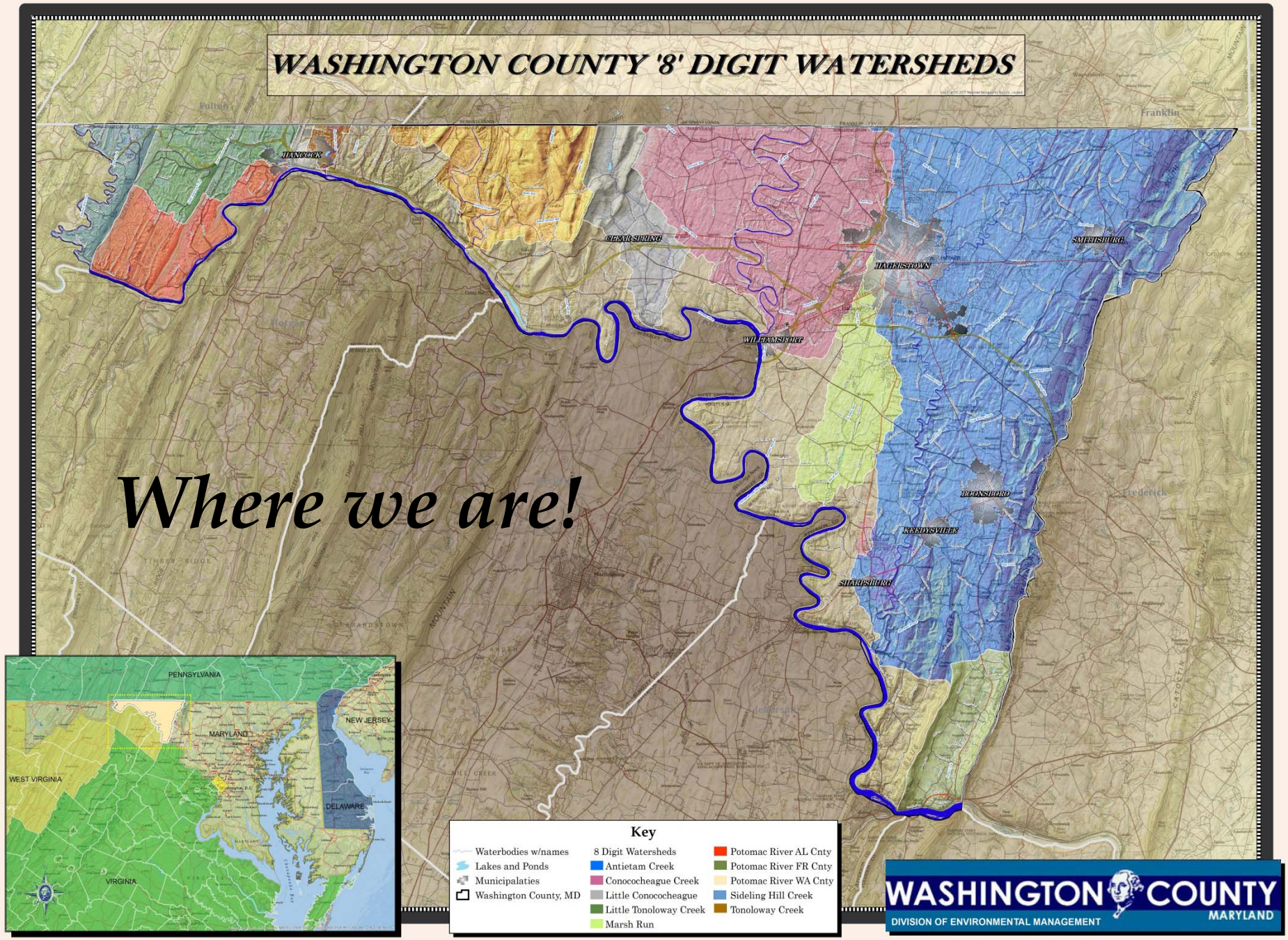
WASHINGTON COUNTY '8' DIGIT WATERSHEDS
Where we are!
HANCOCK
CLEAR SPRING
WILLIAMSPORT
HAGERSTOWN
SMITHSBURG
BOONSBORO
KEEDYSVILLE
SHARPSBURG
PENNSYLVANIA
NEW JERSEY
MARYLAND
WEST VIRGINIA
DELAWARE
VIRGINIA
Key
Waterbodies w/names
Lakes and Ponds
Municipalaties
Washington County, MD
8 Digit Watersheds
Antietam Creek
Conococheague Creek
Little Conococheague
Little Tonoloway Creek
Marsh Run
Potomac River AL Cnty
Potomac River FR Cnty
Potomac River WA Cnty
Sideling Hill Creek
Tonoloway Creek
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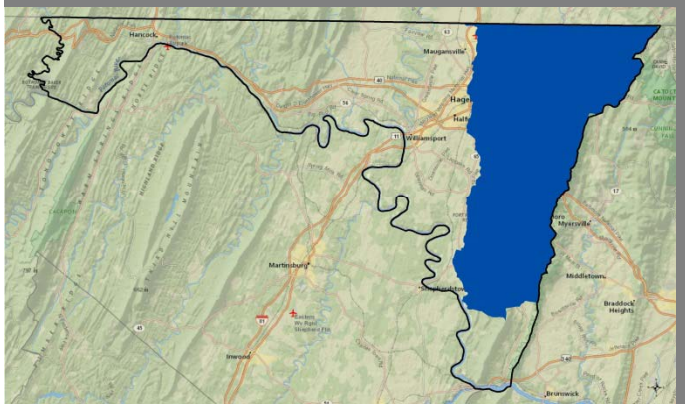
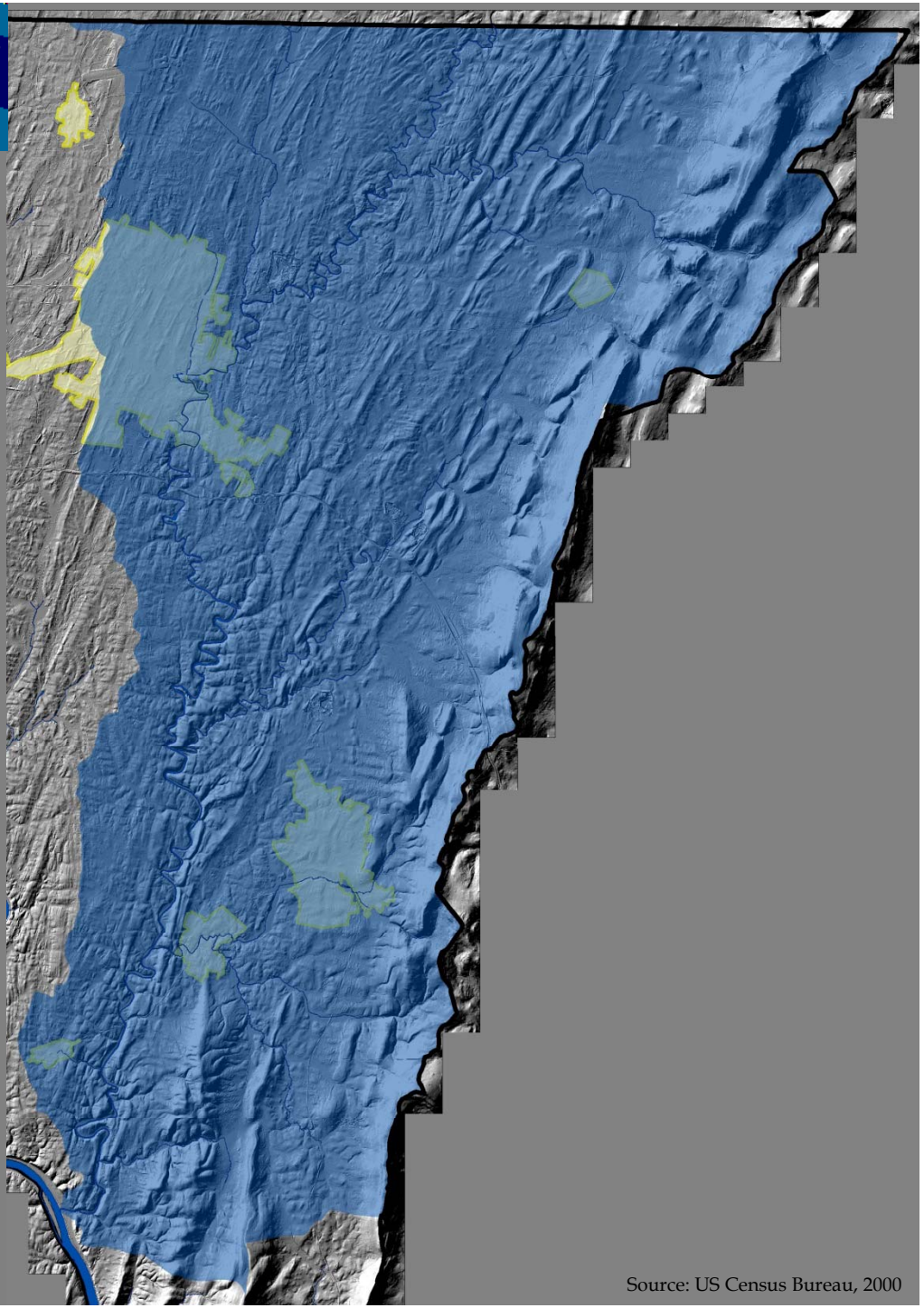
- Total area: 290[2] Miles
- Total area in Wash Co: 185.5[2] Miles
- Total Length of stream: 54 miles
- Total length in Wash Co: 42 Miles
- Sub-Watersheds: 19, with some extending north into PA
- Approx. Population: 82,000
- Landuse
  - 31% Forest
  - 28% Cropland
  - 27% Urban
  - 14% Pasture





Source: US Census Bureau, 2000

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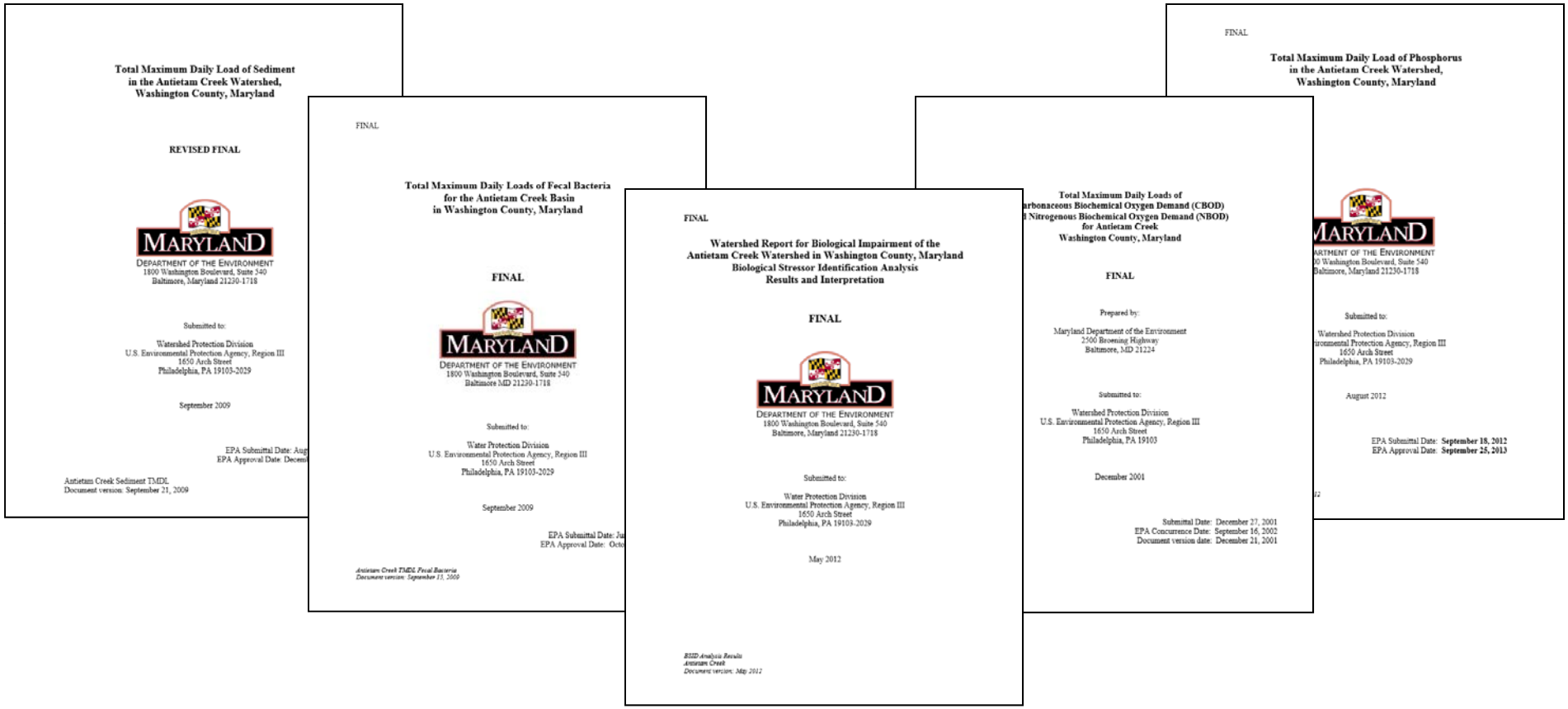

Small Library of TMDLs

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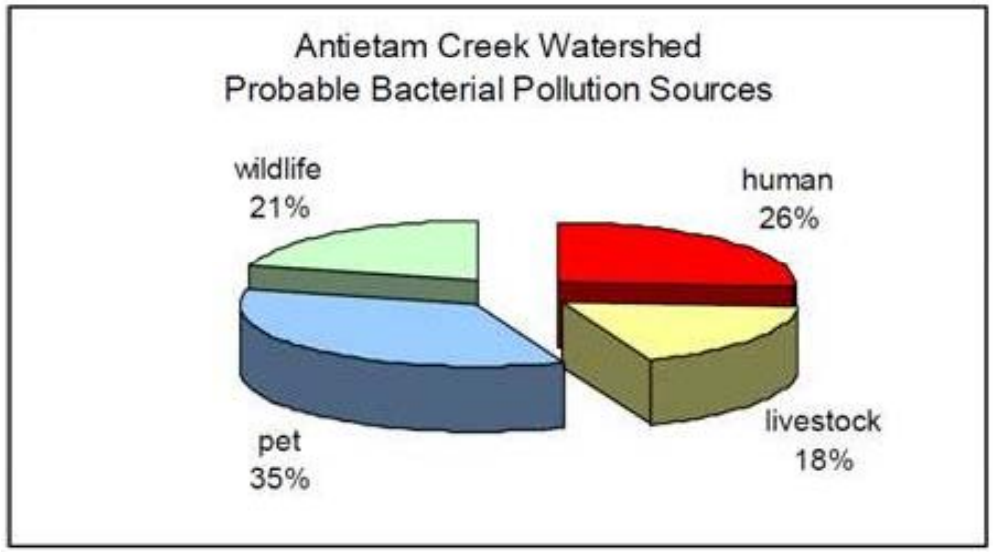
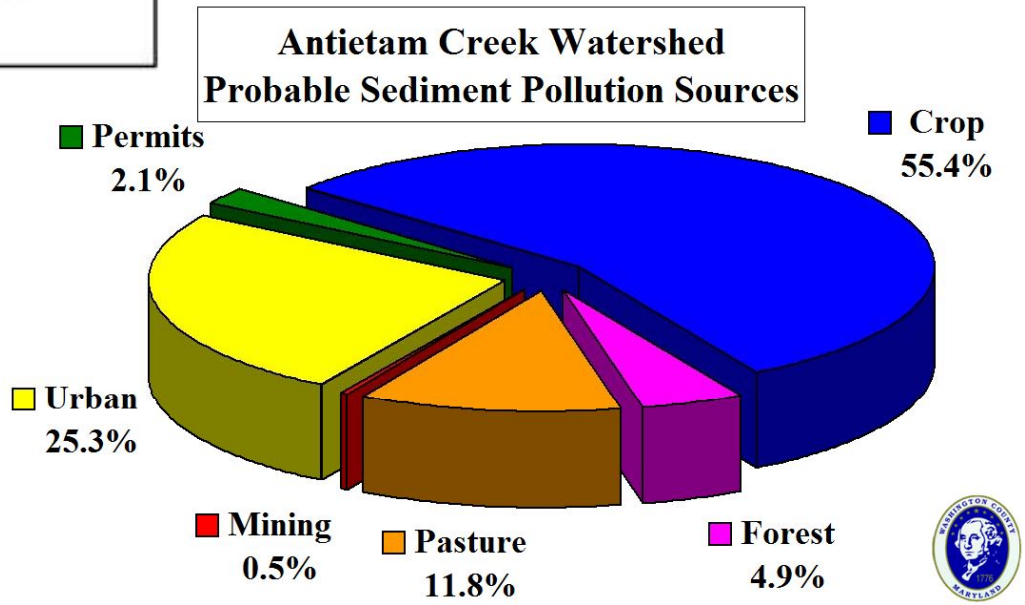
- DEVELOPED TO ADDRESS LOCAL, SEDIMENT AND FECAL COLIFORM TMDL'S
- LOCALLY DRIVEN, SUPPORTED BY STATE AND LOCAL PARTNERS, WASHINGTON COUNTY, MDE CVI AND ACWA WERE KEY
- GRANT FUNDING PROVIDED BY MDE, 319 PROGRAM AND WASHINGTON COUNTY
- LEAD AGENCY WAS SOIL CONSERVATION DISTRICT



What are the issues?

Point & Non-Point



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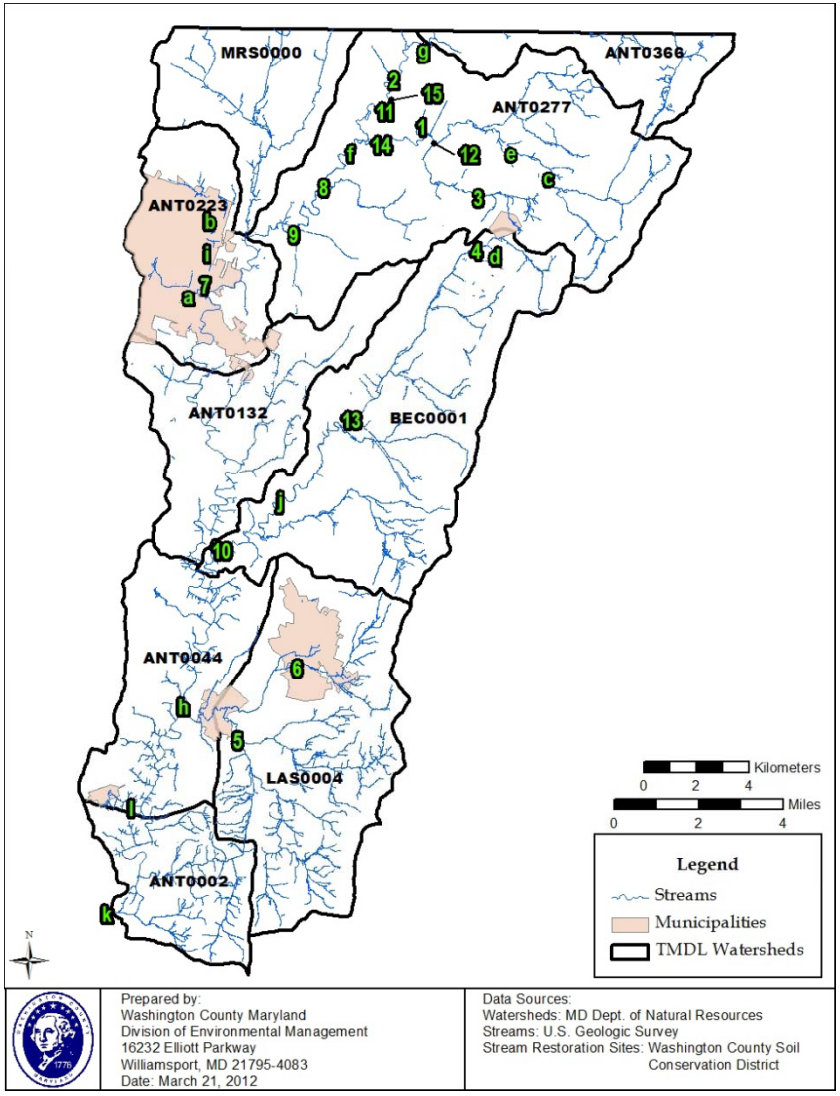

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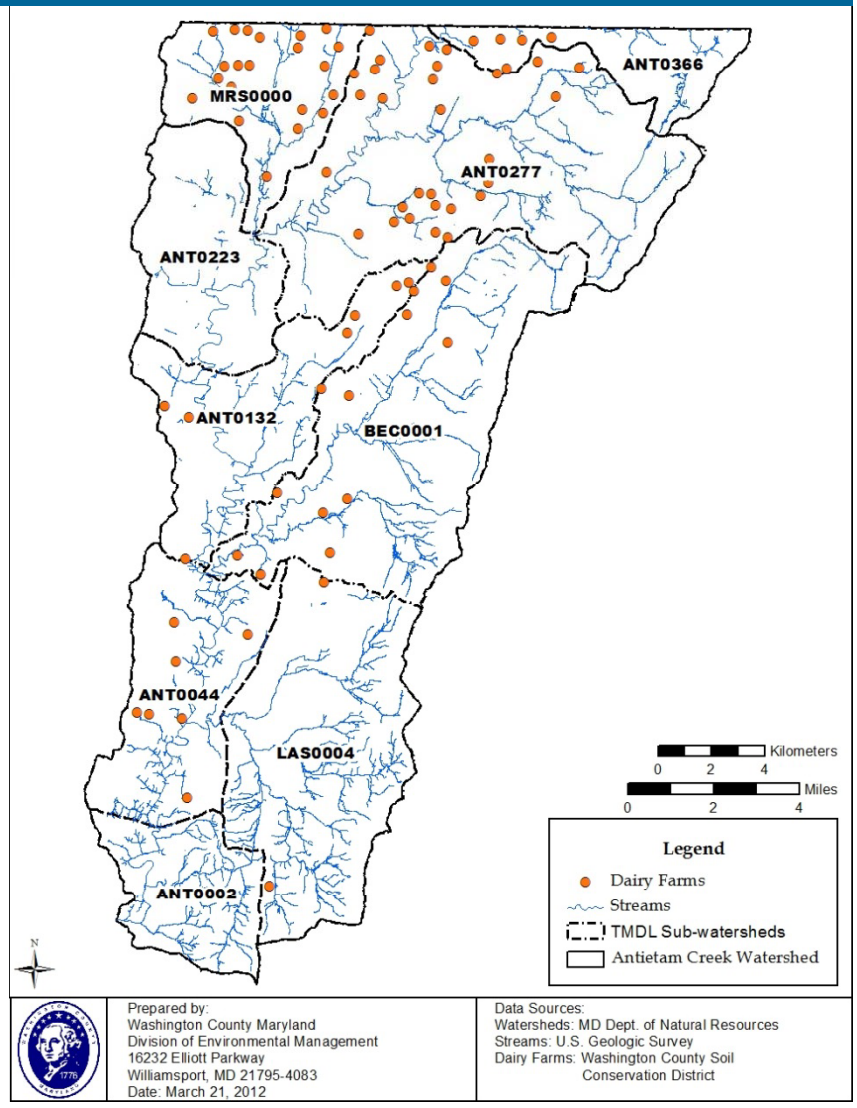

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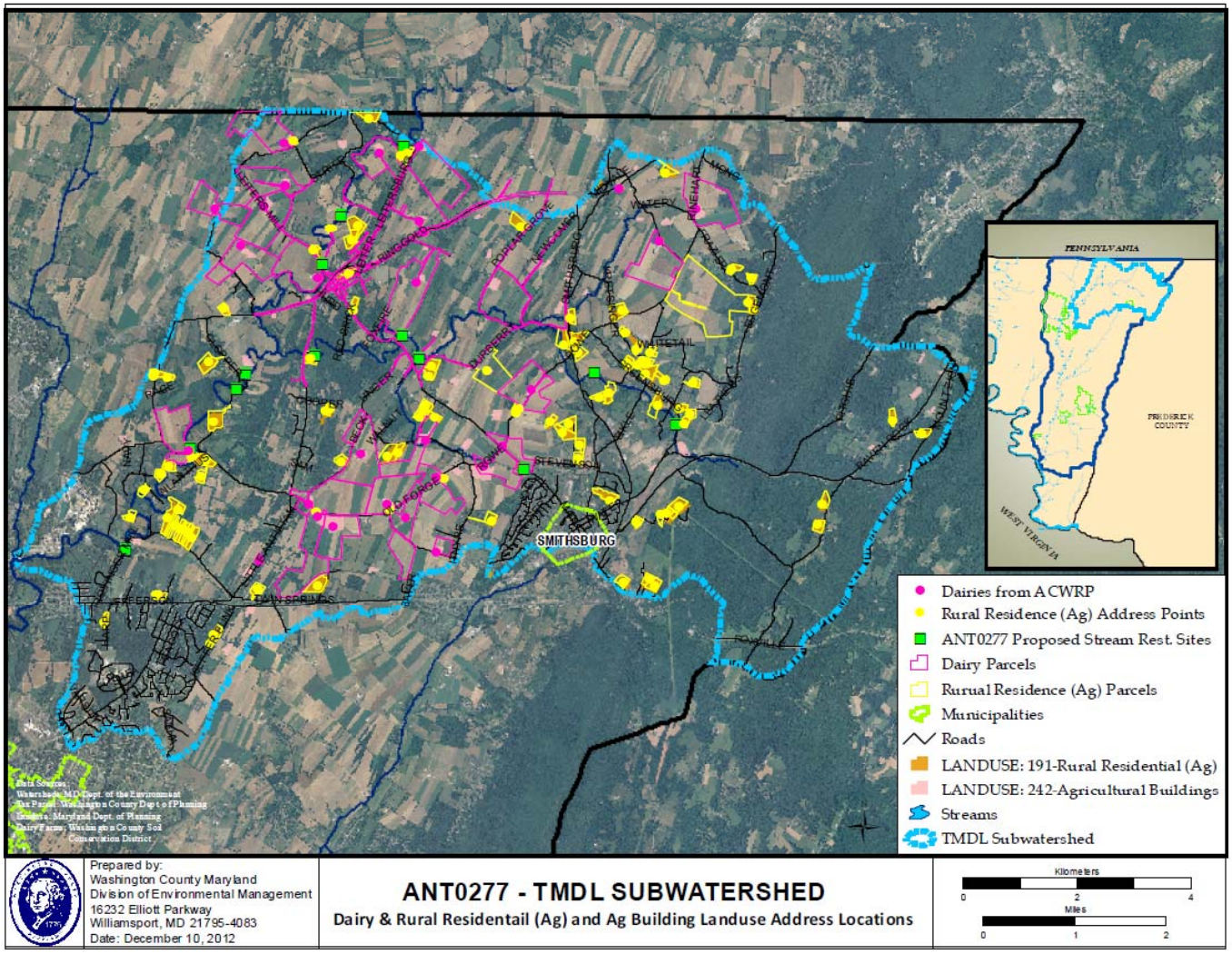
What that looks like: Dairy Farms & Ag Parcels based on the TMDL subwatershed ranking to guide planning efforts.



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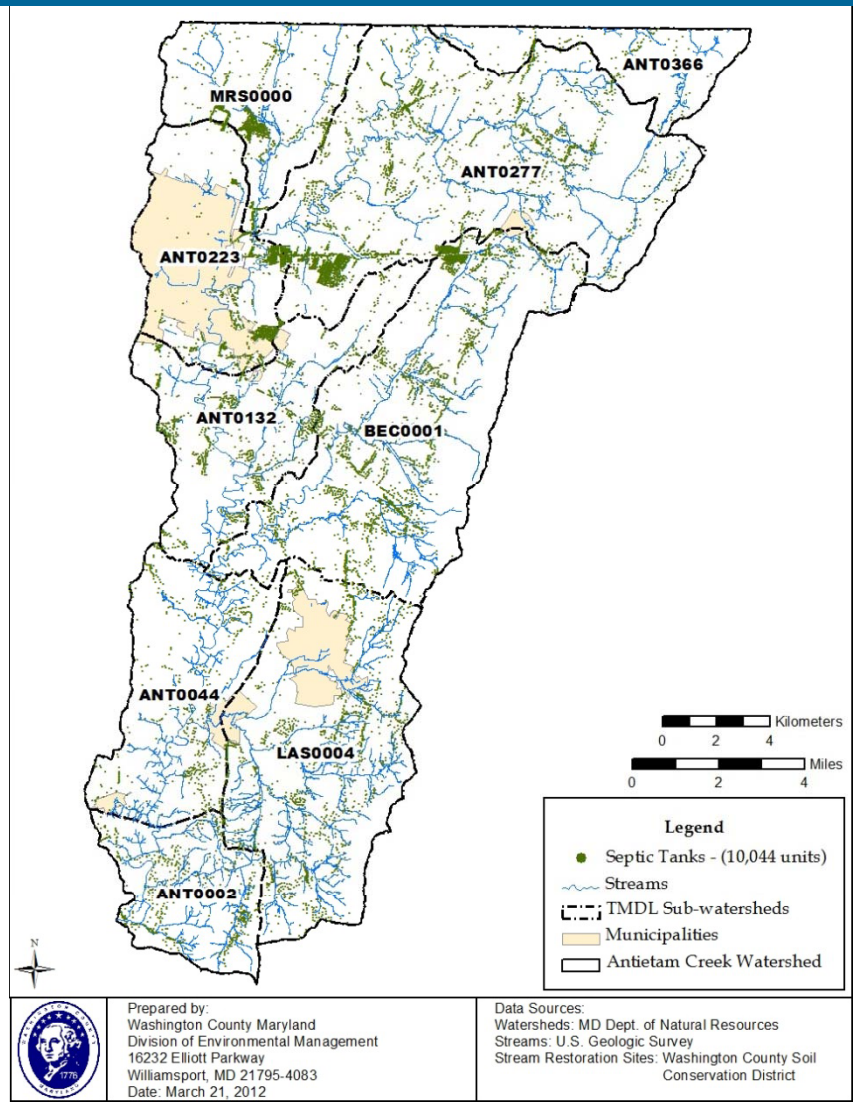
Septic Tanks within the Watershed

(Beginning to enter the "Blackbox" elements of water quality.)

Held meetings with Septic Pumping Providers

Looking at innovative methods to capture volunteer pumping and encourage more



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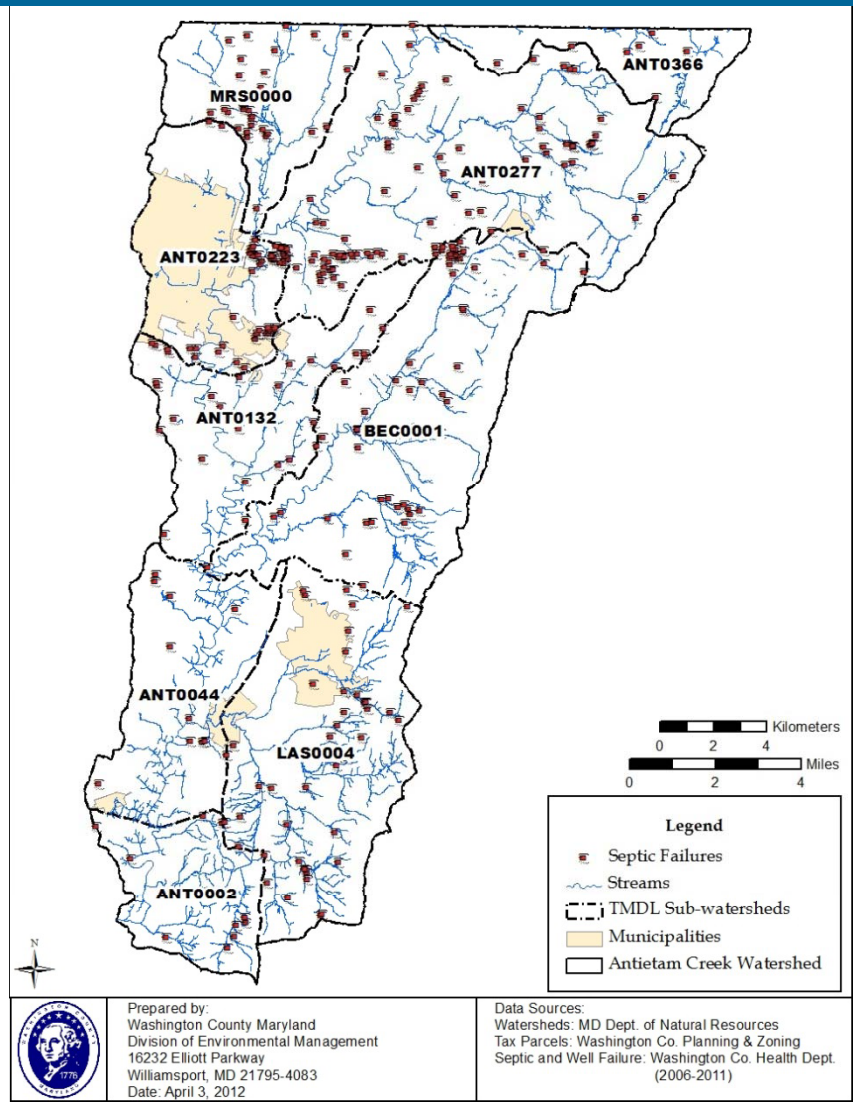
Septic Failures & Replacements

Gathered data from County Government for known replacements and upgrades based on permits and Health Dept reporting and mapped to look for patterns to drive planning.



- Cost of Plan Development

– 319 GRANT-	$29,265
– WASH CO. -	$19,510
– SCD (IN KIND)-	$7,920
– TOTAL	$56,695

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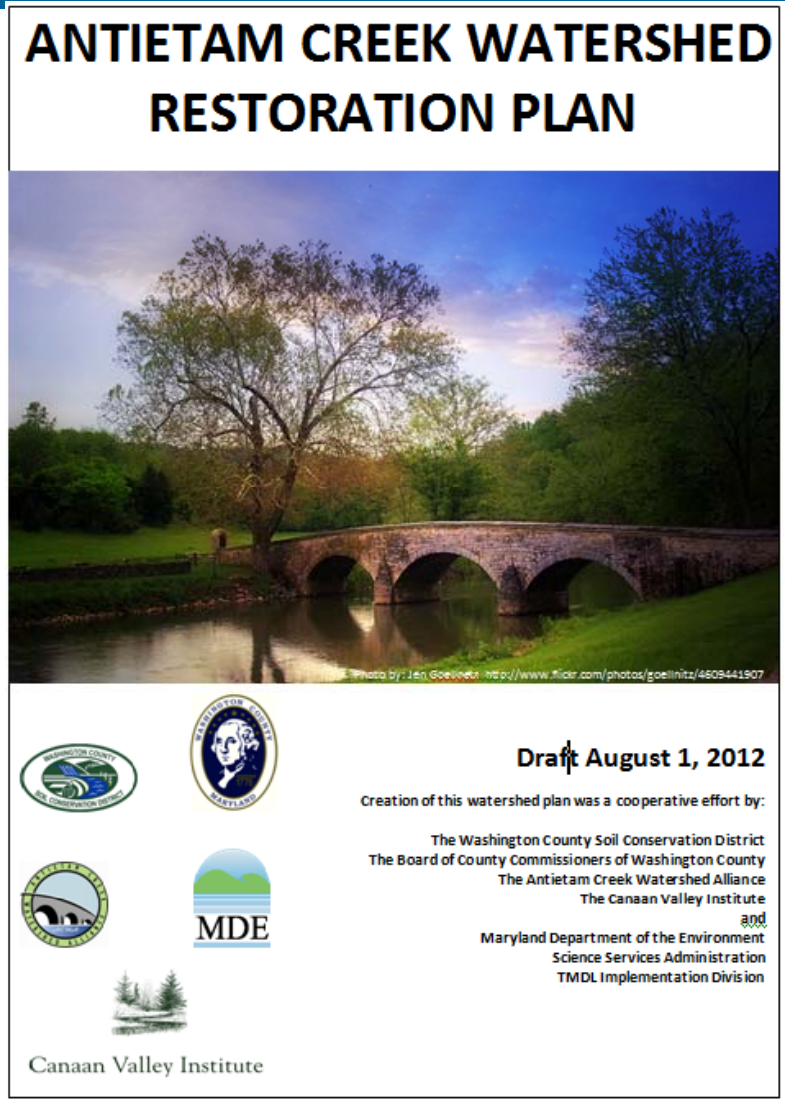
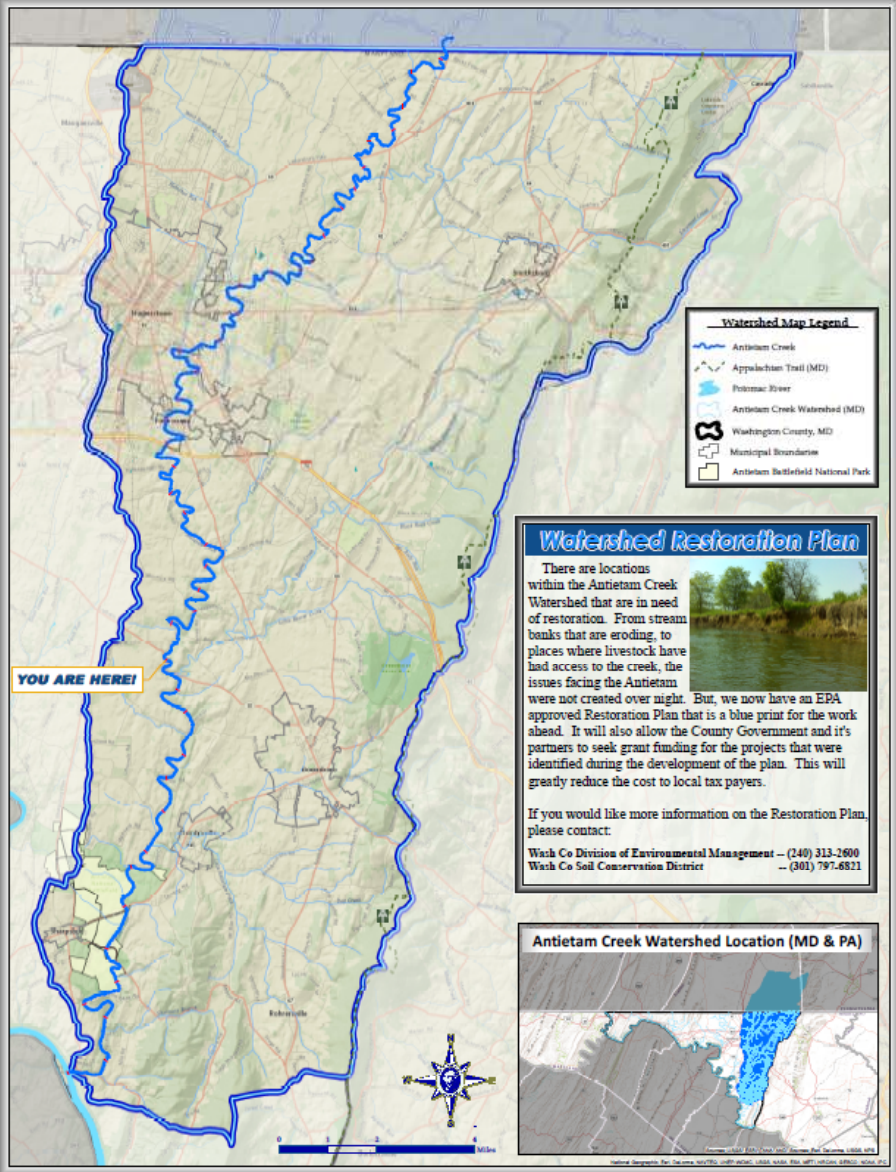
PLAN ACTION ITEMS FOR PHASE I

- OUTREACH AND EDUCATION
  - INFORMATION KIOSKS- 10 KIOSKS
  - PET WASTE CAMPAIGN
  - LANDOWNER IMPLEMENTATION OUTREACH
  - COMMUNITY EVENTS
  - WATERSHED AND WIP SPECIFIC PUBLICATIONS
- UTILIZE EXISTING OUTREACH MATERIALS





ANTIETAM CREEK WATERSHED

What is a Watershed? *It is an area of land that all drains to the same water body*

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The County Government, working with the Soil Conservation District, Antietam Creek Watershed Alliance and others, has developed a "Watershed Restoration Plan" for the Antietam. This plan is focused on restoring the Antietam Creek in a fiscally and ecologically responsible way.

The Antietam Creek

A Historical and Modern Treasure Right Here in Washington County

No other creek across our nation has a name that is as recognizable as the Antietam Creek. Along these banks, bridges, and surrounding fields, the U.S. suffered its bloodiest day of combat in our history. This horrific battle in 1862 earned this creek a place in our history books. Since then, the Antietam Creek has become a valued piece of our landscape and local culture. Many County residents have enjoyed floating or fishing this creek or have marveled at the stone bridges that cross it.

The headwaters of the Antietam Creek originate in Pennsylvania's Michaux State Forest. The East Branch and the West Branch join just north of the Mason-Dixon Line to form the main stem of the Antietam. As it flows its almost 43 miles in MD to the Potomac, the Antietam cuts through forests, farm fields, pastures, towns, and backyards where excessive runoff causes water quality concerns. These pollutants can have an impact on everything from fish habitat to drinking water. Fortunately, none of these problems are irreversible! Protecting and conserving our water resources for future generations is everyone's job. So what can we do?!

- **Clean up after your pets and dispose of waste properly**
- **Do not litter - Please help us keep the creek and the watershed clean and beautiful**
- **If you have a septic tank, have it pumped every three years**
- **Have your yard's soil tested before you apply fertilizer because excess nutirents will runoff and cause algae blooms**
- **Plant trees and shrubs along stream banks**
- **Install rain barrels or rain gardens at your home to capture and use rain water so it doesn't runoff to our streams**

PROJECT PARTNERS

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First one!

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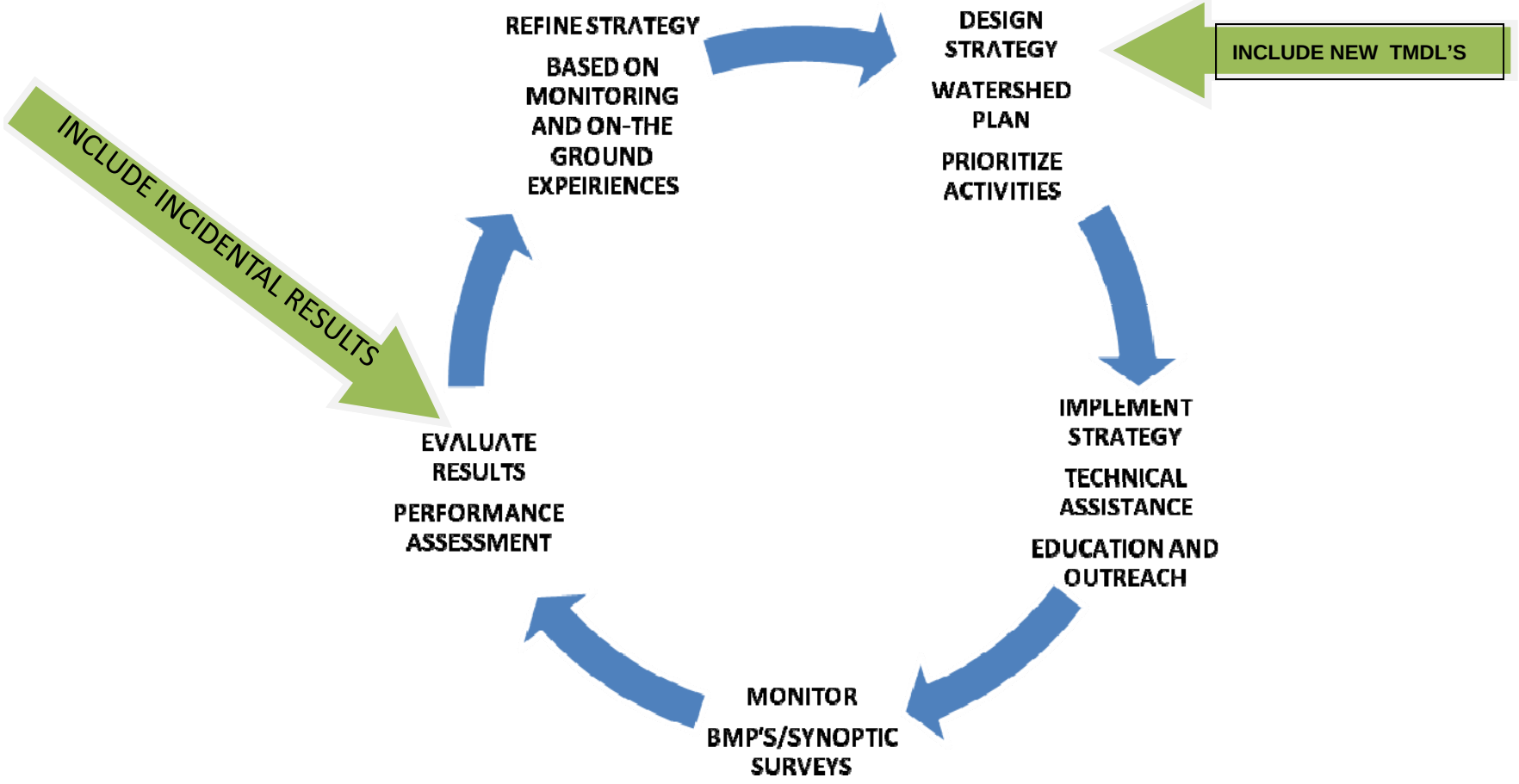
Adaptive Management



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Antietam TMDLs

Fecal Bacteria

- Fecal bacteria are microscopic single-celled organisms (primarily fecal coliform and fecal streptococci) found in the wastes of warm-blooded animals.
- It is difficult, time-consuming, and expensive to test directly for the presence of a large variety of pathogens, so water is usually tested for coliforms and fecal streptococci instead.
- The presence of fecal contamination is an indicator that a potential health risk exists for individuals exposed to this water.

The Challenges

Fecal Bacteria Sources (or "Blackboxes"):

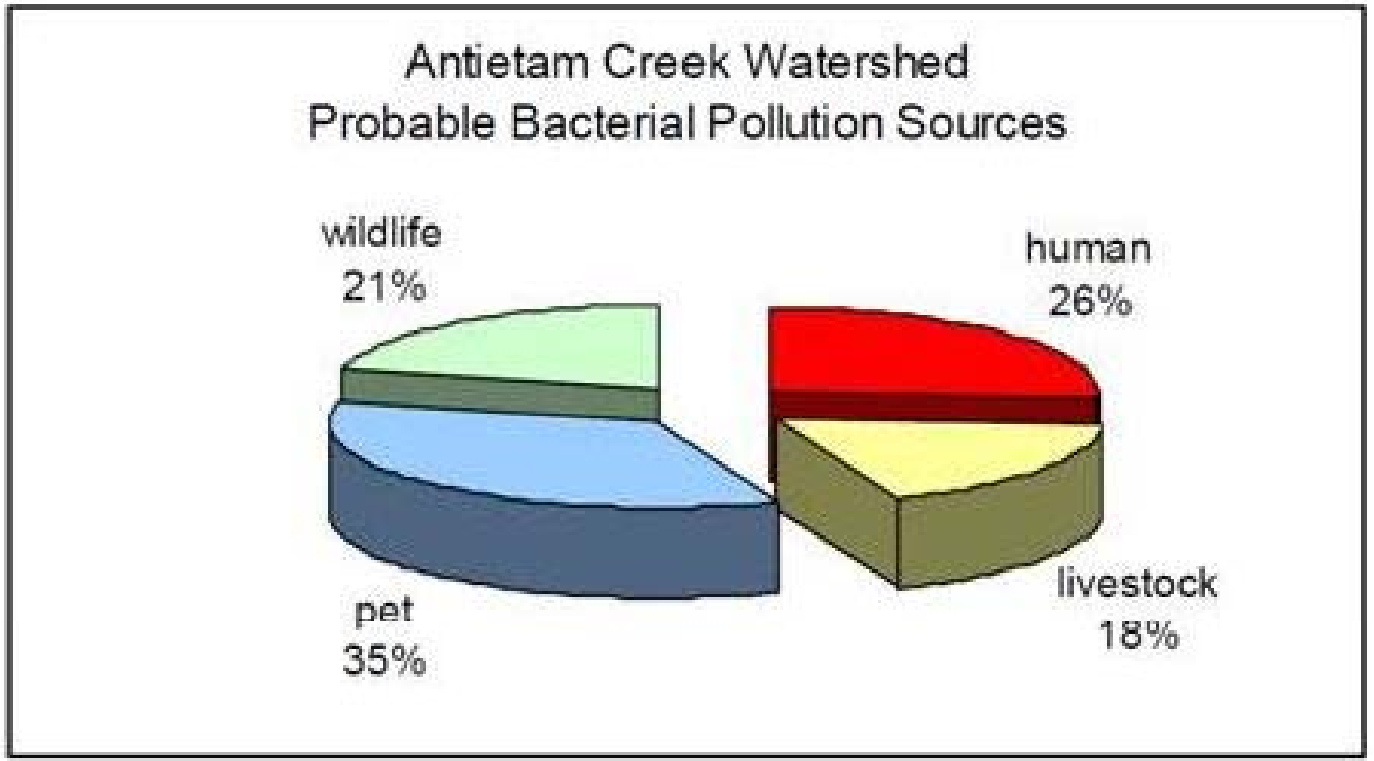

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Image credit: http://www.hallsservall.com/overflowingseptic.jpg
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Chesapeake Bay TMDL
Limits are set on nutrient & sediment pollution that can come from the watershed states.

↓

Maryland WIP
The state was given a pollution allocation and distributed it to the Counties. Each County was tasked with developing a WIP that lays out their plan to reduce nutrient & sediment pollution.

↓

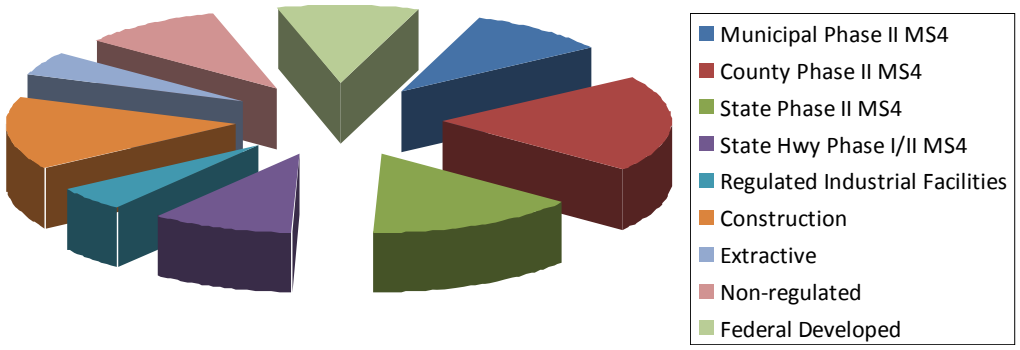
Washington County WIP
The County received its pollution allocation from the state already divided into 4 sectors

Waste Water	Septic Tanks	Urban (SW)	Ag.

And each sector's pollution allocation was divided the into subsectors. For example:

We all know the WIP
We all know TMDLs
We all know the Black Box

Urban/Stormwater pollution "allocations" for the different subsectors



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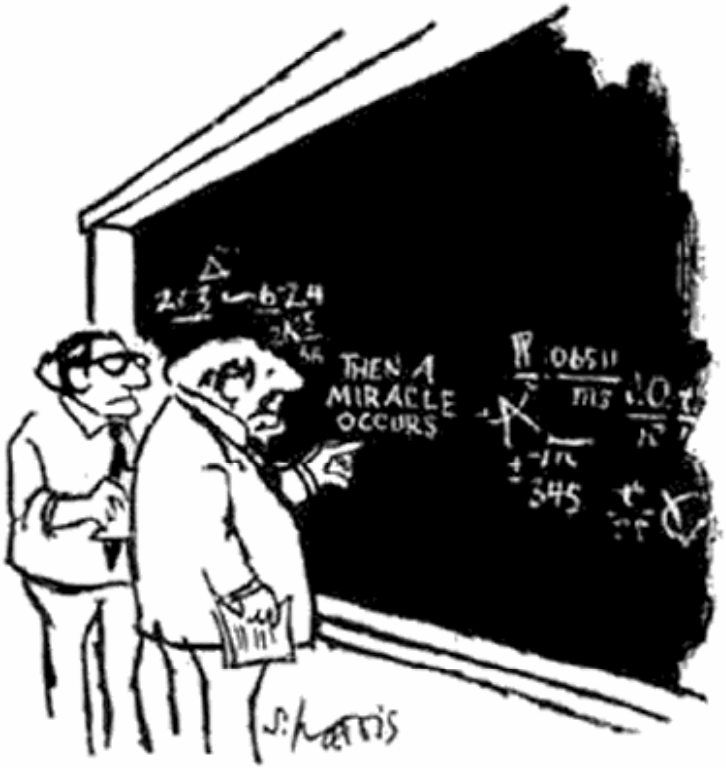
What is a "Black Box?"

Input → BLACK BOX → Output

It is, by definition, an unknown.

We sometimes deal with…



http://www.cineversity.tv/artist/The%20Unknown/bio/The%20Unknown.jpg

http://1.bp.blogspot.com/-snYUDgUVwss/Tbc6PSbGVsI/AAAAAAAABgc/s-8oE_Ca59k/s1600/then-a-miracle-occurs-cartoon.png

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Pet Waste is an unknown.

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How do you reduce the impact of Pet Waste?

- Legislation?
- Asking nicely?
- Peer Pressure?
- Providing an informed public with the tools to solve the issue?

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THE ANTIETAM CREEK IS FOR EVERYONE!

Whether you're a beginner or experienced paddler, new to the sport or long time angler, the Antietam offers more than 42 miles of opportunity to experience the historic and peaceful nature of this creek.

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PETSMART gives back

GRAND OPENING CELEBRATION

Through a partnership with PetSmart, Washington County is proud to announce the opening of 70 pet waste stations in seven County parks. The following parks will now be open to pets:

- Camp Harding Park - Big Pool
- Chestnut Grove Park - Keedysville
- Devils Backbone Park - Boonsboro
- Mt. Tammany Park - Williamsport
- Piper Lane Park - Hagerstown
- Pleasant Valley Park - Rohrersville
- Woodland Way Park - Hagerstown
- +7 Municipal Parks

Pet Friendly. Park Friendly. People Friendly.

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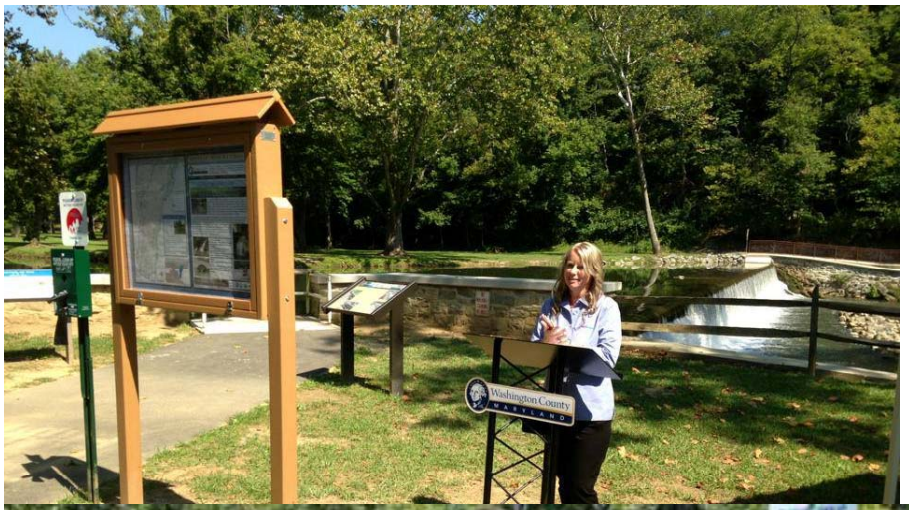

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So, until pets can take care of themselves, it is up to us to actively work to reduce the amount of fecal bacteria entering our waterways. And the public spaces are a great place to start.

Be innovative and let them tell you NO!

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Thank you! Questions?

Image credit: http://rlv.zcache.com/happy_water_drop_cartoon_character_postcard-d239833107350780300 8ss_325.jpg