

THE CHESAPEAKE BAY, SOUTH RIVER, AND FUTURE OF THE RESOURCE



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SOUTH RIVER FEDERATION



Where in the World?



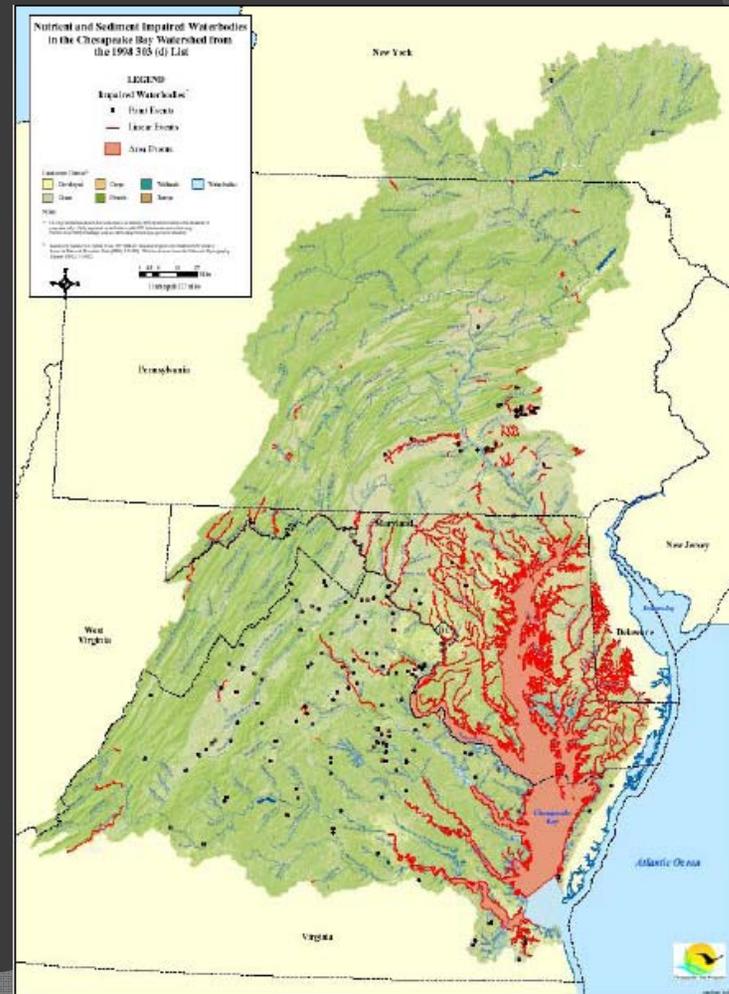
The Chesapeake Bay



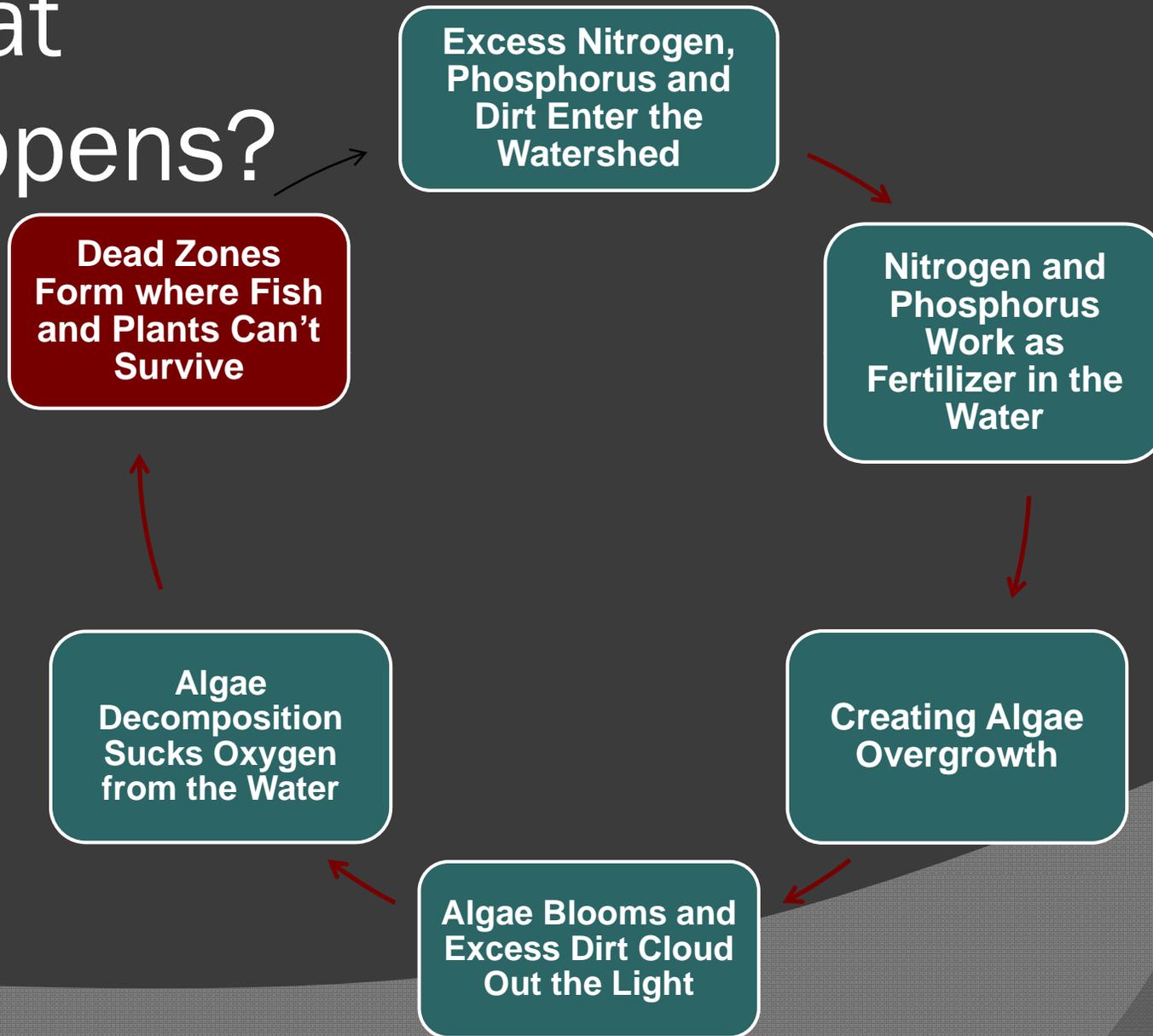
- The largest estuary in North America.
- The watershed, or drainage basin, is 166,000 km².
- The watershed includes 6 states and the District of Columbia.
- It contains 18,700 km of shoreline.
- Approximately 17 million people live in the watershed.

The State of the Bay

90% of the Bay does not currently meet water quality standards.



What Happens?



The Washington Post

Alarming 'dead zone' grows in the Chesapeake



(Ricky Carioti/THE WASHINGTON POST) - Mike Kirschner and his son Zachary, 10, of Bel Air, Md., fish below the Chesapeake Bay Bridge in Annapolis, Md.



Chesapeake Bay dead zone could be the largest ever

by Sarah Laskow 26 Jul 2011 11:07 AM





CHESAPEAKE
BAY
OFFICIAL
STORM SEWER
OF THE EAST

SEEMS
TO BE WORKING
AS DESIGNATED.

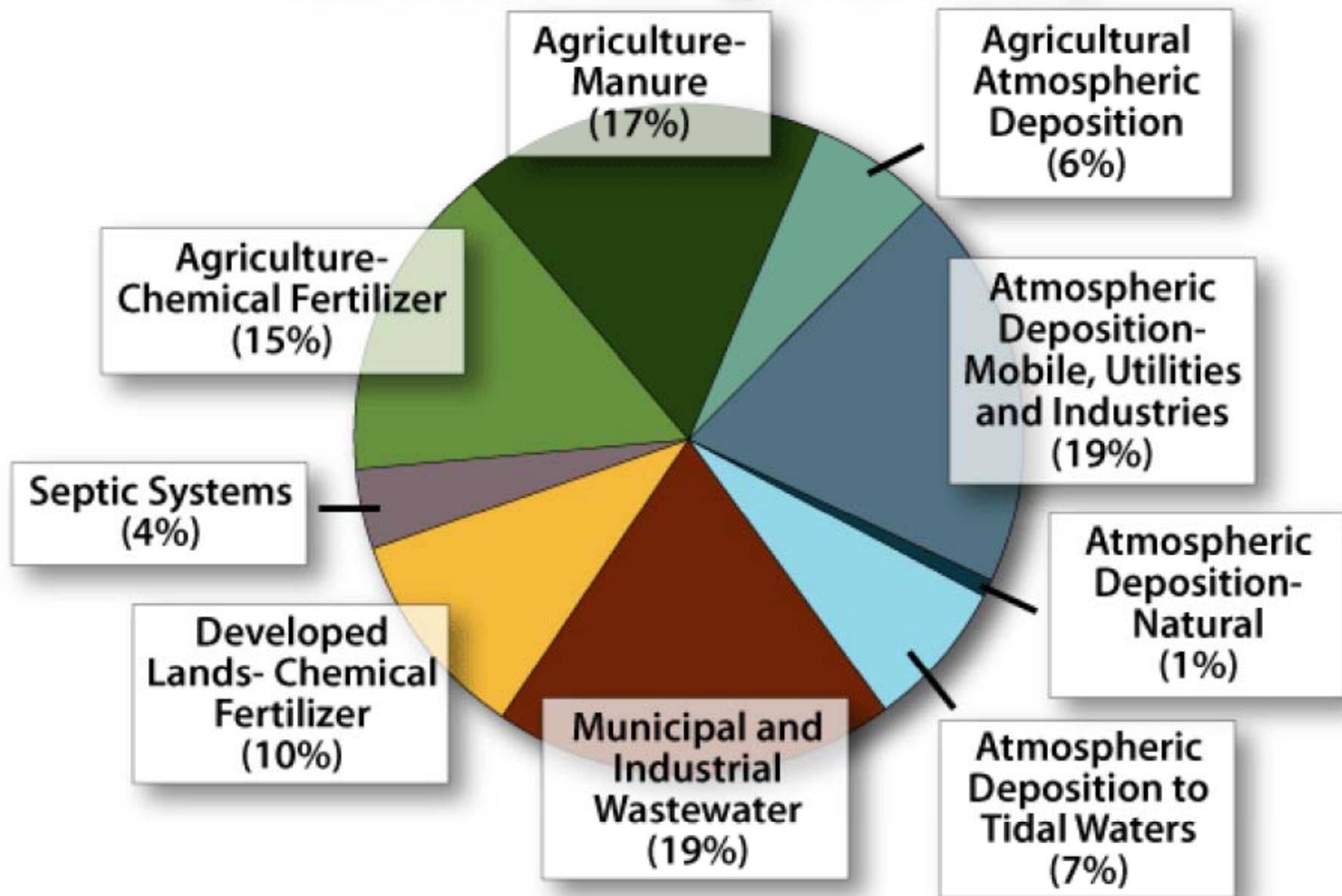
POST
HURRICANE
GARBAGE
MAT

TOLES

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DEFINING
MOMENT. —

Sources of Nitrogen to the Bay



Note: Does not include loads from the ocean or tidal shoreline erosion. Wastewater loads are based on measured discharges; other loads are based on an average-hydrology year using the Chesapeake Bay Program Watershed Model Phase 4.3 (Chesapeake Bay Program Office, 2009). Values do not add up to 100% due to rounding.



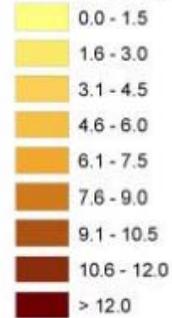


All Sources of Total Nitrogen

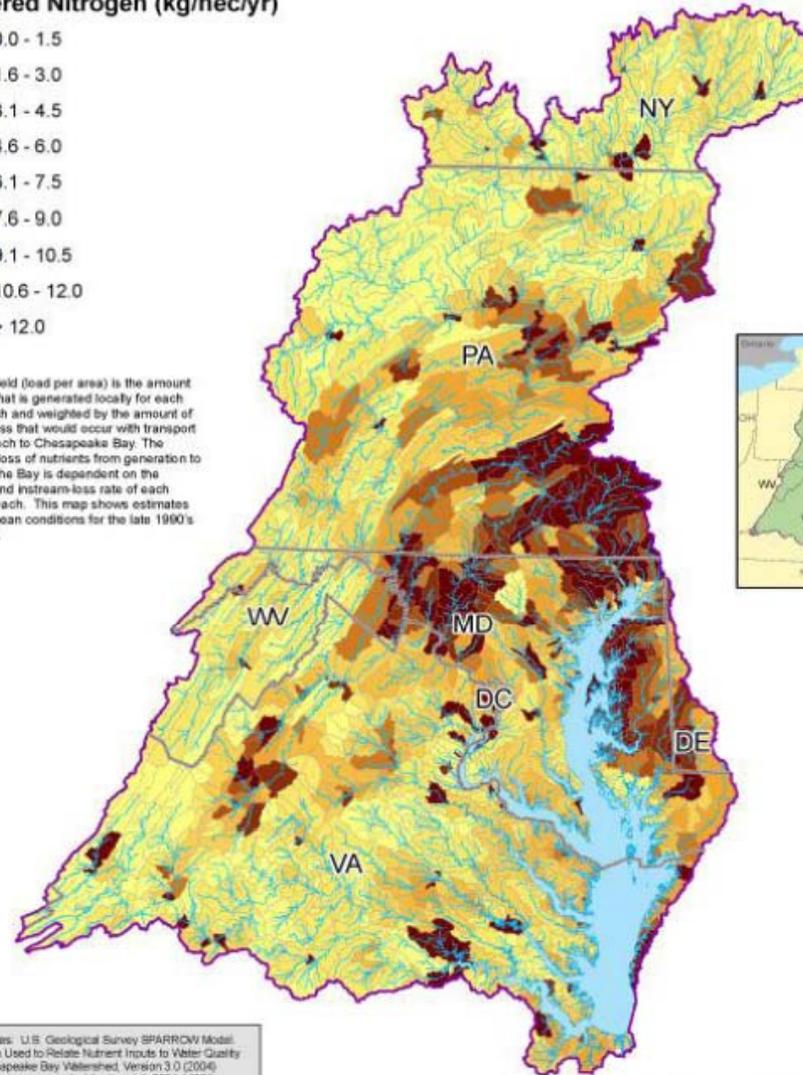
Delivered Yield to the Chesapeake Bay



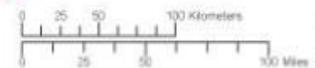
Delivered Nitrogen (kg/hectare/yr)



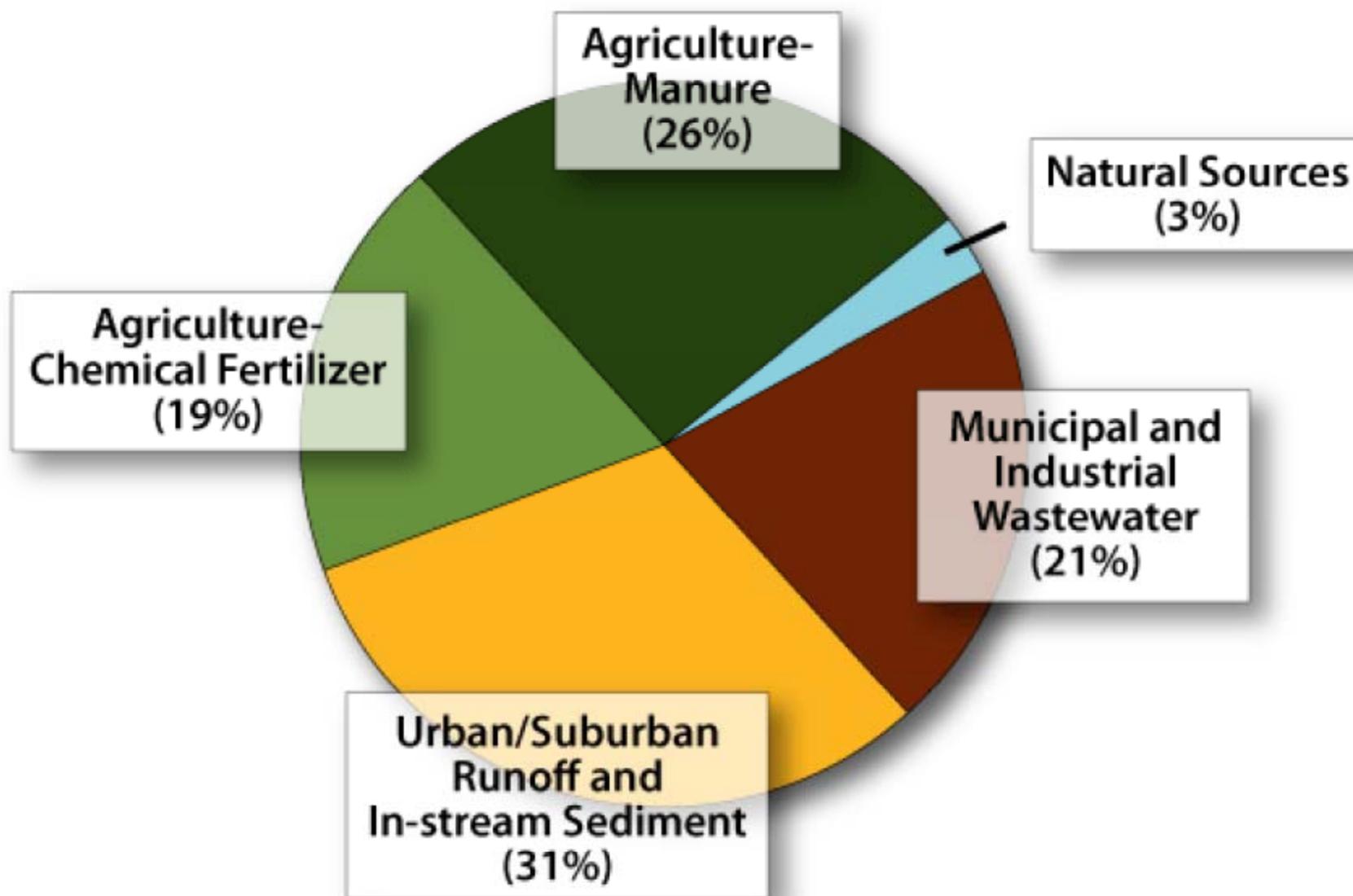
Delivered yield (load per area) is the amount of nutrient that is generated locally for each stream reach and weighted by the amount of in-stream loss that would occur with transport from the reach to Chesapeake Bay. The cumulative loss of nutrients from generation to delivery to the Bay is dependent on the traveltime and in-stream loss rate of each individual reach. This map shows estimates based on mean conditions for the late 1990's time period.



Data Sources: U.S. Geological Survey SPARROW Model; Digital Data Used to Relate Nutrient Inputs to Water Quality in the Chesapeake Bay Watershed, Version 3.0 (2004) (<http://hd.water.usgs.gov/publications/ofr-2004-1433/>)
For more information, visit www.chesapeakebay.net
Disclaimer: www.chesapeakebay.net/farmofuse.htm



Sources of Phosphorus to the Bay



Note: Does not include loads from the ocean or tidal shoreline erosion. Wastewater loads are based on measured discharges; other loads are based on estimates. Source: Chesapeake Bay Program, Watershed Model Phase 4.3 (Chesapeake Bay Program Office, 2001)

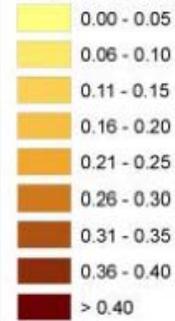


All Sources of Total Phosphorus

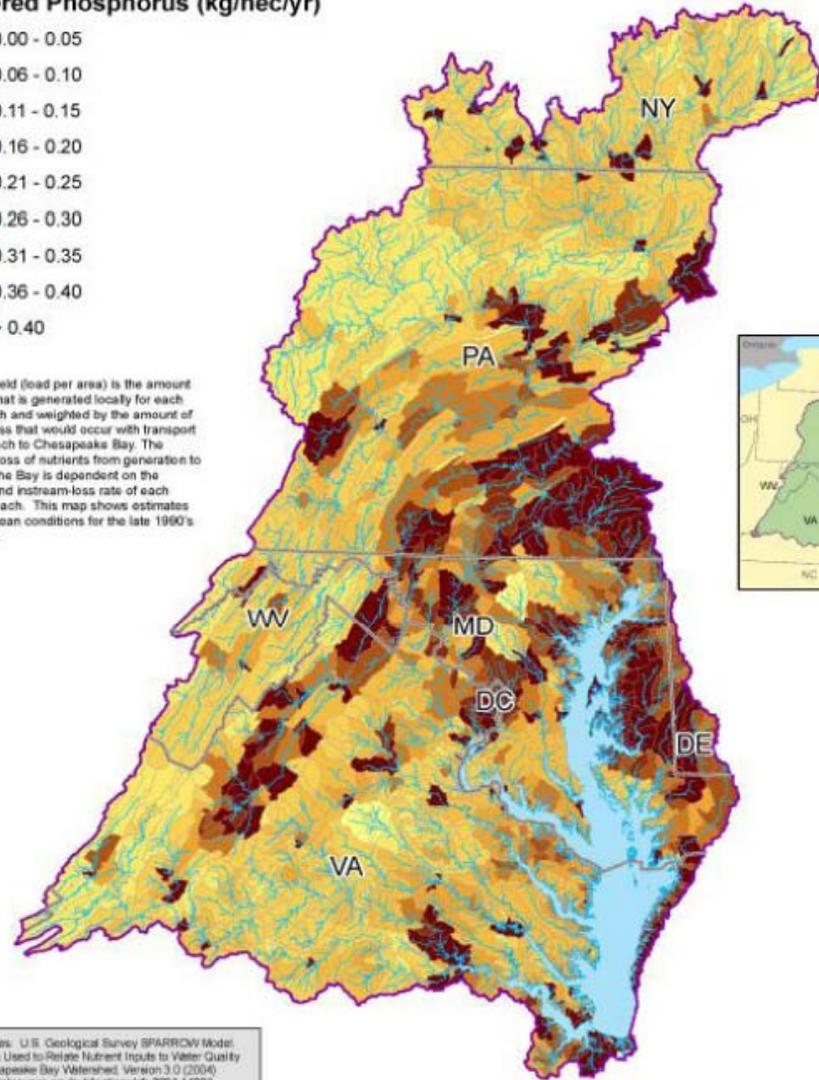
Delivered Yield to the Chesapeake Bay



Delivered Phosphorus (kg/hect/yr)



Delivered yield (load per area) is the amount of nutrient that is generated locally for each stream reach and weighted by the amount of in-stream loss that would occur with transport from the reach to Chesapeake Bay. The cumulative loss of nutrients from generation to delivery to the Bay is dependent on the traveltime and in-stream loss rate of each individual reach. This map shows estimates based on mean conditions for the late 1990's time period.



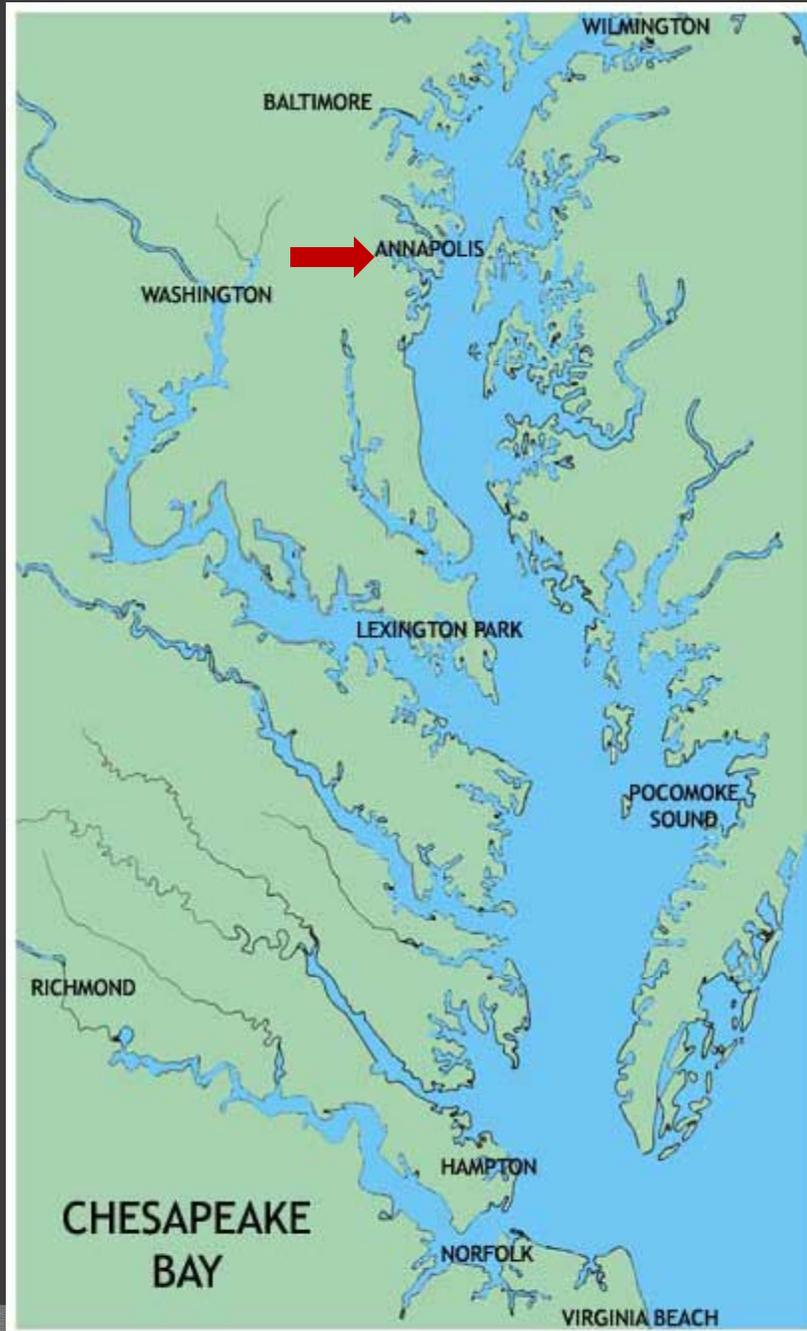
Data Sources: U.S. Geological Survey SPARRROW Model; Digital Data Used to Relate Nutrient Inputs to Water Quality in the Chesapeake Bay Watershed, Version 3.0 (2004) (<http://md.water.usgs.gov/publications/04-2004-1433/>)

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Created by JW, 2/13/05

UTM Zone 18N, NAD 83



The South River

- The watershed, or drainage basin, is 170 km².
- The watershed is contained entirely within Anne Arundel County, Maryland.
- Approximately 60,000 people live in the watershed.



The mission of the South River Federation is to protect, preserve, restore and celebrate the South River and its interdependent living community.

The State of the South River

2011 South River Scorecard




south river
federation

SUMMARY OF RESULTS

WATER QUALITY INDICATORS SCORE	CHANGE
Water Clarity	2 ▲
Dissolved Oxygen	6 ▲
Total Nitrogen	7 ▼
Total Phosphorus	1 ▼
Chlorophyll a, Spring	2 ▲
Chlorophyll a, Summer	0 NO CHANGE
Underwater Grasses	0 NO CHANGE
HUMAN HEALTH	SCORE CHANGE
Bacteria	7 ▼







TMDLs (Total Maximum Daily Loads)

- Think of it as a “recommended annual intake” of pollution required by the Clean Water Act.
- Based on models created by EPA.
- Theoretically, no new loads should be allowed to a waterway unless:
 - The waterway is de-listed for impairments.
 - There is a plan in place for de-listing.

Nutrition Facts

Serving Size 1 tsp. (0.5g)
Servings Per Container 550

Amount Per Serving

Calories 0

% Daily Value*

Total Fat 0g **0%**

Sodium 0mg **0%**

Total Carbohydrate less than 1g **0%**

Protein 0g

Not a significant source of calories from fat, saturated fat, trans fat, cholesterol, dietary fiber, sugars, vitamin A, vitamin C, calcium and iron.

*Percent Daily Values are based on a 2,000 calorie diet.

INGREDIENTS: Nitrogen, Phosphorus,
& Sediment

Deal with Existing Loads.....

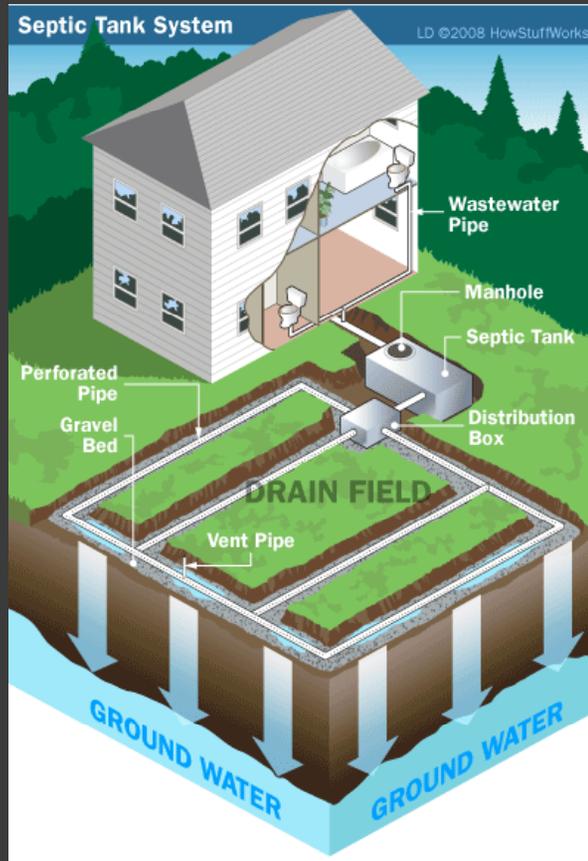
- Retrofit, retrofit, retrofit!
- Anne Arundel County, MD has devised a 3-pronged strategy:

- Point Source Load Reductions (i.e., Wastewater Plant Upgrades)



Total Cost Countywide: \$ 270,000,000
(€1,999,555)

- Convert select septics to sewer, pocket treatment plants, or de-nitrifying septic.



- In the case of Edgewater Beach, septic to sewer conversion would reduce annual nitrogen loads from 2,934 lbs/year to 283 lbs/year. (1,331 kg to 128 kg)
- Cost per household, ~\$32,000 (€23,698)

Total Cost Countywide: \$ 758,900,000
(€562,023,126)

- Undertake massive stream restoration

Total Cost:
\$816,700,000
(€604,828,419)



Grand Total

+\$1,845,600,000

(€1,362,117,396)

Agricultural Best Management Practices



Winter wheat drilled into soybeans following harvest.



Nutrient Trading (Offsets)



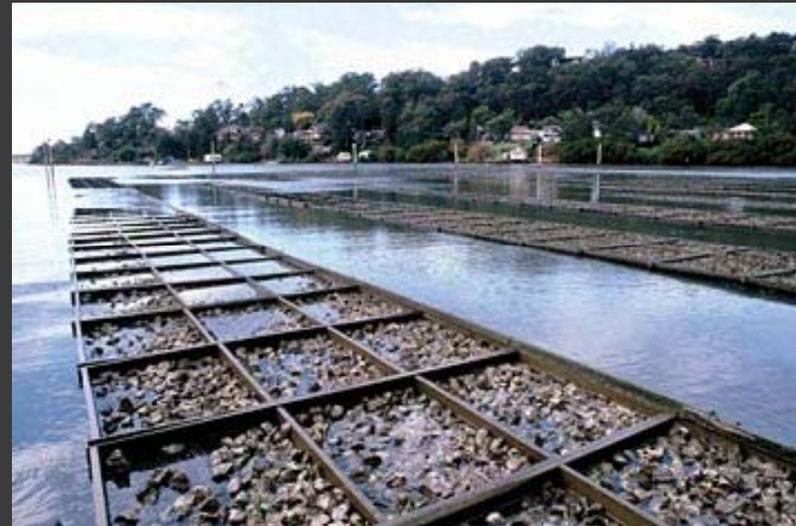
Permanent Forest Conservation Easements



Septic to Sewer Conversion



Wetland Restoration



Oyster Aquaculture?

Political Climate

O'Malley thanks voters, says no new taxes next year

ELECTION 2010

Maryland Gov. Martin O'Malley (D) said his reelection Tuesday was "a humbling honor" and reiterated that he has no plans to propose any tax increases in the bill he must submit to the legislature in January.

Leopold sweeps into second term

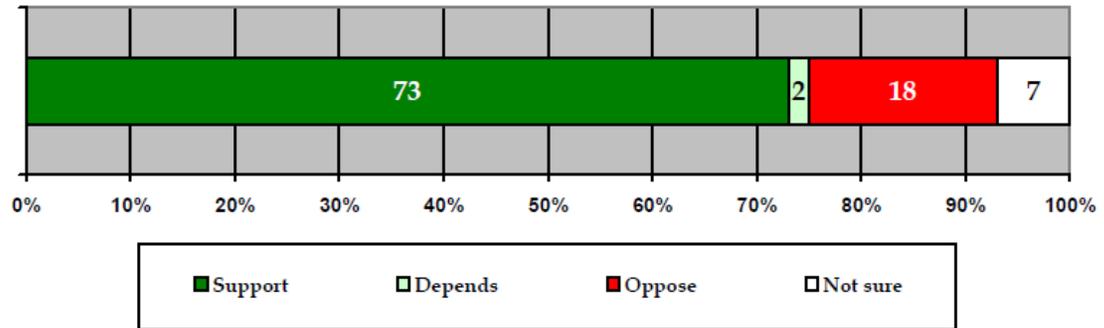
Pledges good environmental policy, low taxes and balanced budget

By ERIN COX, Staff Writer

Published 11/03/10



Support for a Monthly Stormwater Fee
Impact of Knowing the Fee is Statewide, Locally-Directed, and Creates Jobs



"If you knew that counties all across the state were enacting this new fee at the same time, that the money you pay would be put to work right in your own community, and that it would create jobs in engineering and construction, would you be likely to support or oppose it?"

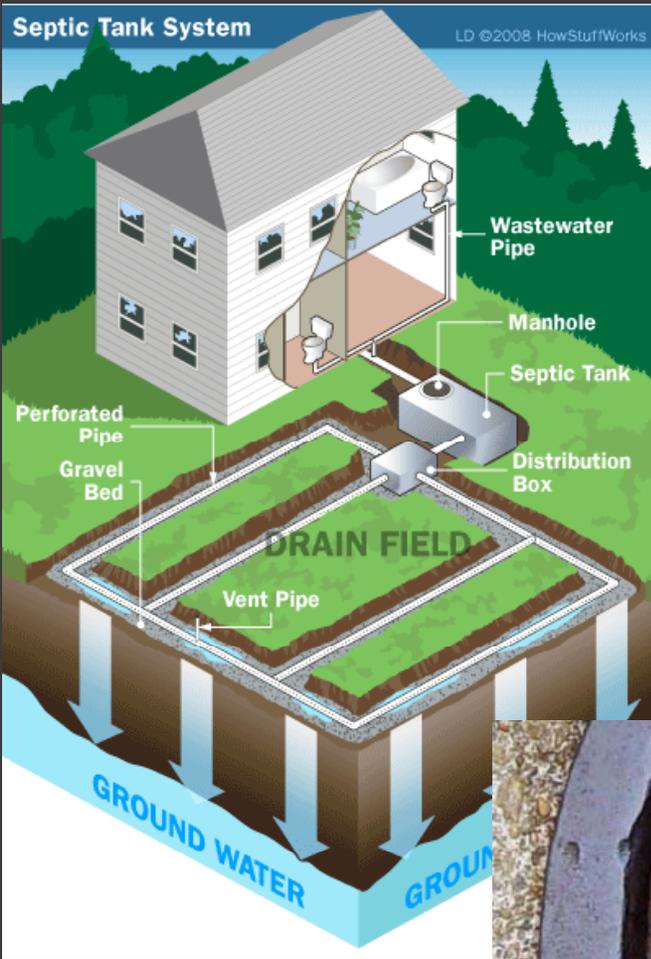
What is the Federation Doing?











Victory in 2011!
Bay Restoration
Fund Expansion

HB 57/SB 539



Working in the Legislatures to Find the Resources for Restoration







Thank You

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TMDLs, WIPS, and Alphabet Soup

- What are they?
- What do they mean?
- What will they do?



Draft South River TMDLs

Impairment	Existing Load (2009)	Target Load
Nitrogen	261,616 lbs (118,667 kg)	225,236 lbs (102,165 kg)
Phosphorus	19,710 lbs (8,940 kg)	9,540 lbs (4,327 kg)
Sediment	3,030,327 lbs (1,374,533 kg)	1,903,612 lbs (863,463 kg)

- **What do these numbers mean?**

- As an example, Edgewater Beach – Sunny Section, a community of 153 homes on old septic systems is estimated to contribute about ~3,000 lbs (1,360 kg) of nitrogen to the river on an annual basis. There are about 5,500 septic systems in the South River watershed.
- A dump truck full of dirt contains about 20,000 lbs (9,071 kg) of sediment.
- 2,000 lbs (907 kg) of soil contain about 1.5 lbs (.7 kg) of phosphorus and 4.5 lbs (2 kg) of nitrogen.

So What Do We Do About It?

- WIPs (Watershed Implementation Plans)

- Phase 1 – States enumerate broad strategies and mechanisms for implementation (Submitted and approved to US EPA in December 2010).
- Phase 2 – Local governments detail specific steps and projects they will undertake to achieve load reduction goals, with accompanying information on how they will be implemented (A roadmap to TMDL compliance). Anne Arundel County is one of two in the state that are part of a pilot effort to do this early (Required by fall 2011).



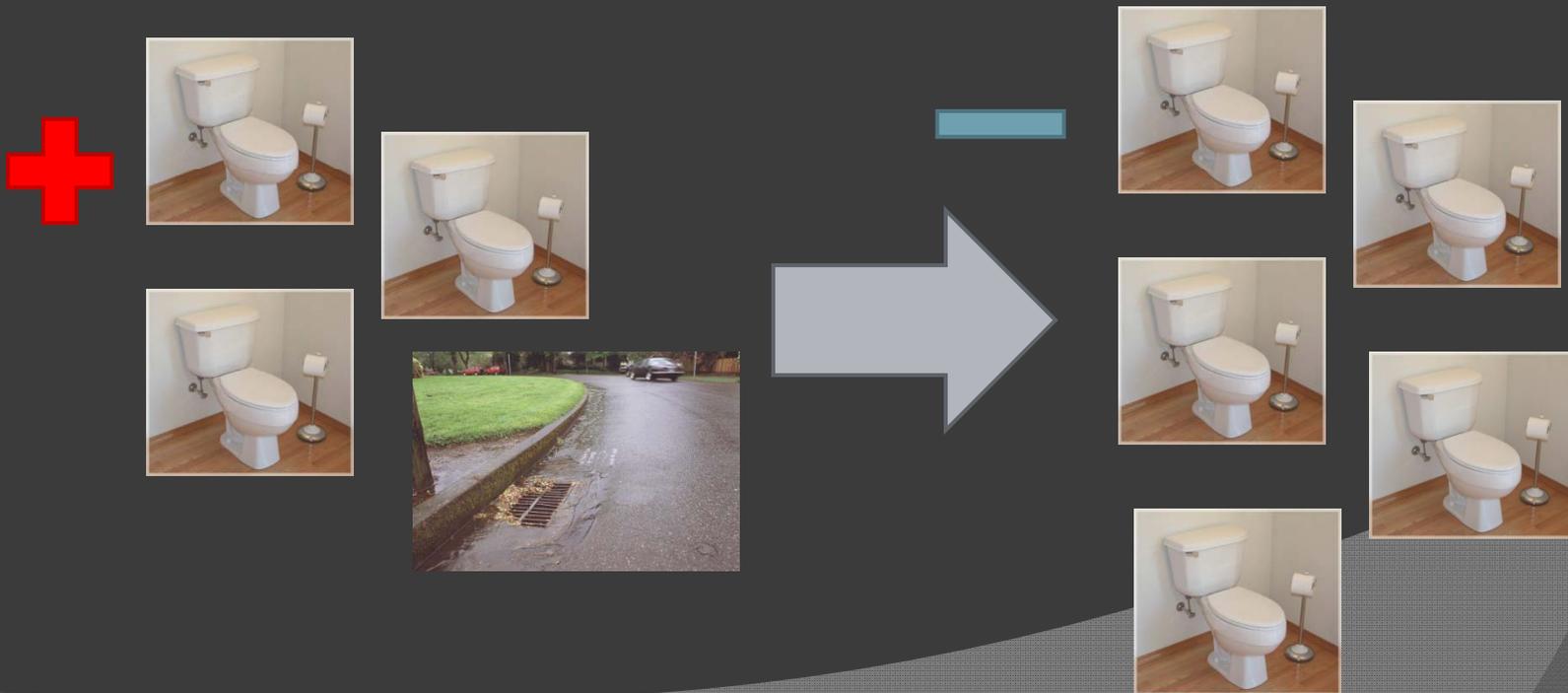
So What Does this Mean for Us?

- We have to have no new, net pollutant loads
 - New stormwater regulations passed in 2010
 - Use environmental site design (infiltration) practices to treat the 1-year storm (2.7" or 6.9cm), and safely convey stormwater to a stable outfall.



Where New Loads Are Created.....

- Work with stakeholders to create a local trading system where new stormwater, wastewater, and other loads are offset with a net improvement requirement.



How on Earth Will We Pay for This?



- Largely by ourselves, most likely.
- Implementation of the septic strategic plan could be funded through a surcharge on sewer rate payers, paired with additional expenditures from the Bay Restoration Fund (i.e., “Flush Tax”).
- A local stormwater utility – A dedicated source for stormwater retrofits funded by a fee on impervious surfaces.