

PREP



Pollution Reduction Efforts for the Potomac

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Presentation Overview

1. Team's Mission Statement and Objective
2. Watershed Characteristics
3. Watershed History and Governance
4. Major Pollution Issues
5. PREP's Goal and Strategy
 - a. Sewage
 - b. Agriculture
 - c. Stormwater
6. Conclusion and Recommendations

PREP - Pollution Reduction Efforts for the Potomac

Mission Statement:

Reduce upstream pollution loads to the Washington Region of the Potomac River by the year 2030.

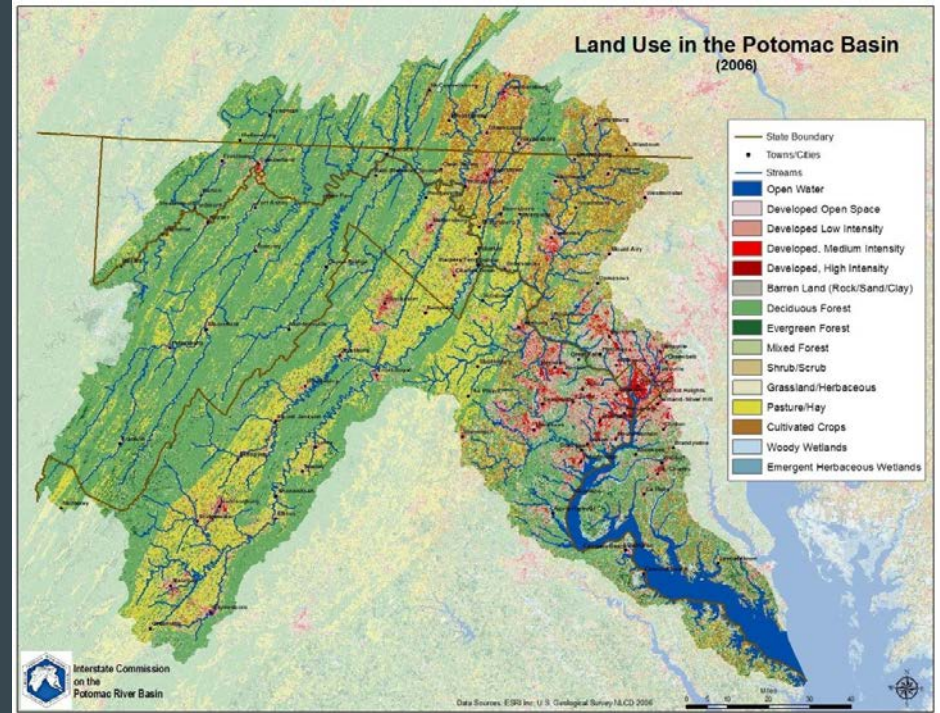
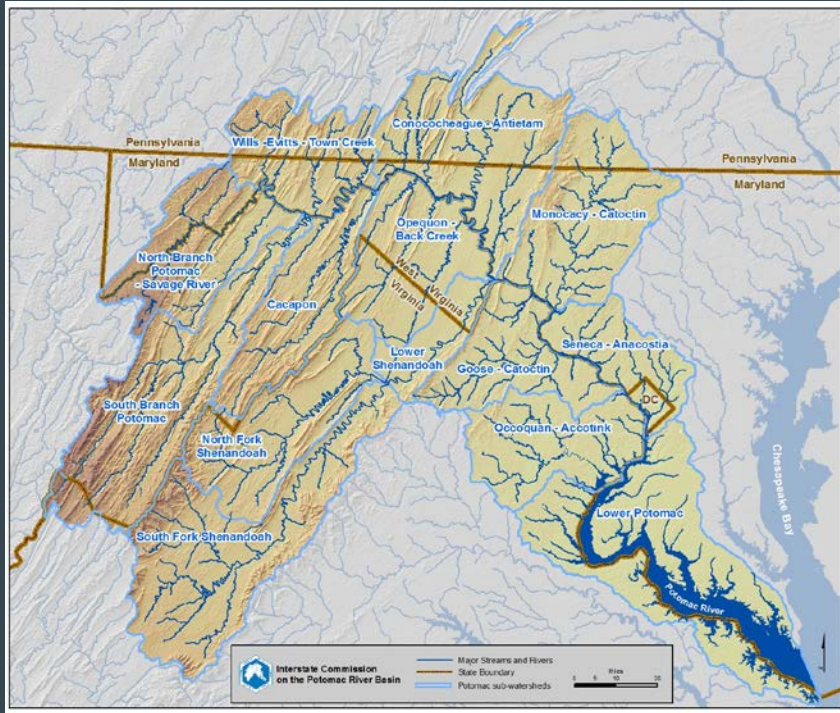
PREP Objectives:

Concentrating on sewage discharge, agricultural inputs, and stormwater piping issues:

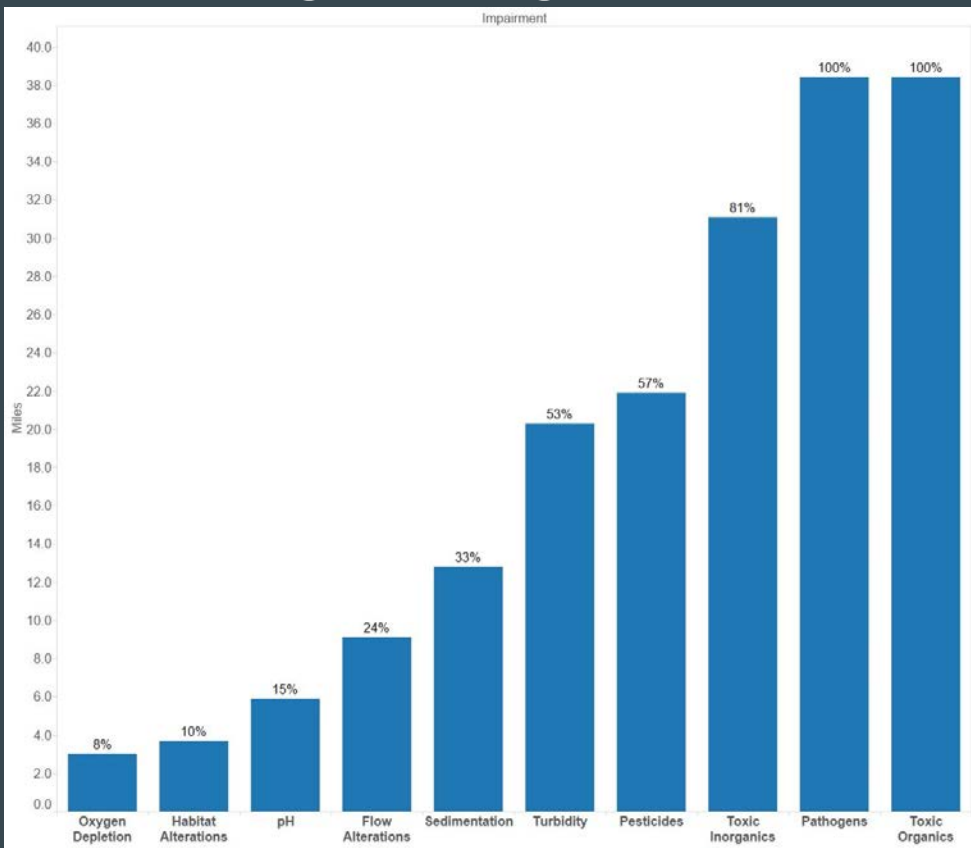
- Introduce holistic land management practices

- Require water quality standards for all influents

Potomac River - Watershed Characteristics



Washington Region of Potomac - Water Quality Data



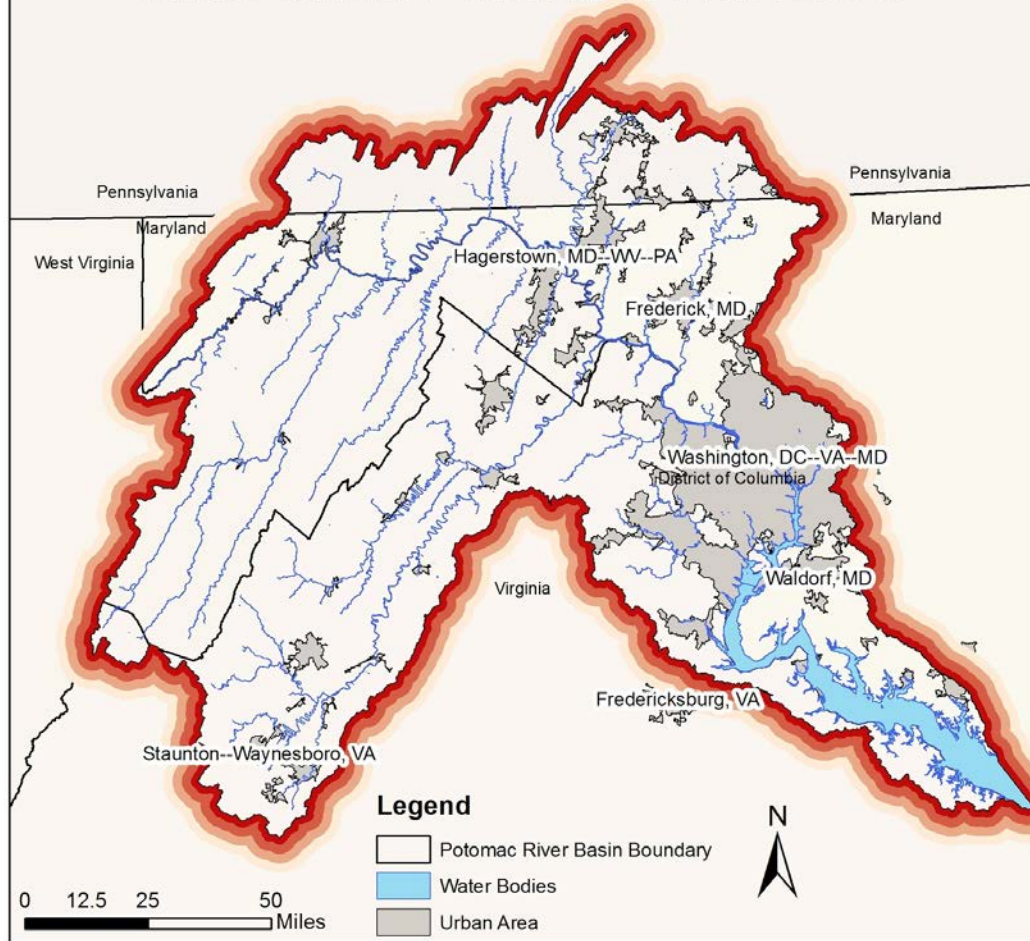
Impairment	Cause	Percentage
Habitat Alterations	Alteration in stream-side or littoral vegetative covers	8%
	Physical substrate habitat alterations	2%
Oxygen Depletion	BOD	4%
	DO saturation	8%
pH	pH	15%
Flow Alterations	Flow Regime Alterations	24%
Sedimentation	Embeddedness	1%
	TSS	33%
Turbidity	Turbidity	53%
Pathogens	E. coli	28%
	Fecal Coliform	72%
Toxic Organics	PAHs	54%
	PCBs	100%
Toxic Inorganics	Arsenic	56%
	Chlorine, Residual	2%
	Copper	72%
	Lead	25%
	Mercury	25%
	Zinc	72%
Pesticides	Chlordane	55%
	DDD	42%
	DDE	42%
	DDT	51%
	Dieldrin	57%
	Heptachlor epoxide	57%



History and Governance



Cities within Potomac River Basin



- 4 States
- Capital
- 7 cities > 40 square miles



History and Governance

- 1810, first sewer system in Washington
- 1894, unfit for bathing, drinking, and cooking (US Public Health)
- 1940, Interstate Commission on the Potomac River Basin
- 1976, largemouth bass reappeared and pleasure boats rediscovered
- 1978, CO-OP Low Flow Allocation Agreement
- 1982, CO-OP Water Supply Coordination Agreement

Potomac - Pollution Challenges

1. Sewage Discharge

- a. Local wastewater treatment plants have been working to improve their discharge since the 60's
- b. High levels of contaminants like ammonium and organic nitrogen have contributed to serious nutrient loading issues in the Potomac
- c. Lots of progress thus far, but continued progress is needed

2. Agriculture Inputs

- a. Fertilizers that are nutrient rich, nitrogen & phosphorus, enter local waterways
- b. Livestock manure also a factor for pollution
- c. Nutrients from fertilizers can also leach into groundwater sources, posing a drinking water concern

3. Stormwater Piping

- a. DC's topography is predispositioned for flooding, especially around historic and government sites
- b. A combined sewer system limits the amount of discharge the system can handle
- c. Increased urbanization creates more runoff and less infiltration

PREP - Sewage Discharge Strategy

Consider a Cap-and-Trade policy among all local discharge sources to ensure wastewater effluent contributions are minimal

Increase the partnership of multiple levels of government to fund further ability to reduce concentrations of COC

Explore better methods of river sampling to ensure reliability of water quality data

PREP - Agricultural Input Strategy

Propose methods for which farmers can minimize the application of fertilizers to fields

Monitor fertilizer levels if possible to reduce application in areas where nutrients are in an acceptable range

Increase management of livestock manure

Plant more natural buffers around fields

Especially fields that neighbor bodies of water

Includes: Trees, Shrubs and Grasses

Continue to educate the public to ensure awareness of the problems and those who are at stake

PREP - Stormwater Piping Strategy

Continue the National Capital Planning Commission's Flood & Stormwater plans

Increase scrutiny of development in floodplains

Update FEMA maps every 5 years, include tidal flooding

Develop emergency flood plans with ACOE and local governments

Revise every 3 years, include 50 year storm events and smaller

Explore community centered green stormwater infrastructure

Conclusions and Recommendations

Increased legislation and regulation for water quality in the Potomac is necessary for improved overall health

Consistent monitoring and measurements are needed to ensure that water quality data is accurate and up to date

New and/or improved methods are required to reduce contaminant loads from entering waterways

Funding and increased awareness are essential for the restoration of the Potomac

References

History: http://cdn.knightlab.com/libs/timeline3/latest/embed/index.html?source=1pF_QXJn2hQ2MVU9iSyJVq-J1xkcGamZzEQUEcYVnm7o&font=Playfair&lang=en&height=650

General Info:

<http://www.potomacriver.org/potomac-basin-facts/>

Washington Region Water Quality Info:

http://www.mwcog.org/environment/water/downloads/Potomac%20WQ%20factsheet_January%202014.pdf

Nutrient Loading in Potomac River Basin

<http://pubs.usgs.gov/circ/circ1166/circ1166.pdf>

History and Pollution Issues

<http://www.thehoya.com/pollution-persists-potomac-river/>

Potomac Flow Analysis

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.364.8025&rep=rep1&type=pdf>

Interstate Commission on the Potomac River Basin :

<http://www.potomacriver.org/>

Agricultural Pollution

http://earthjustice.org/our_work/cases/2013/defending-the-clean-water-act-against-agricultural-pollution

Nutrient Pollution

<https://www.epa.gov/nutrientpollution>

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