

Supporting Nature-Based Solutions to Water Quality and Climate Impacts

Brazil Delegation March 21, 2023

Our Motivation in Maryland



6 states and DC in watershed

 The Chesapeake Bay is the largest Estuary in the United States & 3rd largest in the world.

64,000 square mile watershed

51 billion gallons daily freshwater flow

~200 miles long

11,684 miles of shoreline (more than entire U.S. west coast!)

50% flow from Atlantic (salt & freshwater mix)

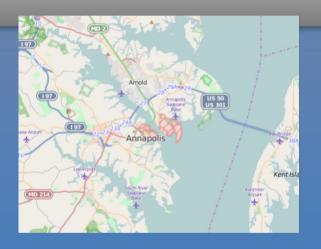
Pollution Issues



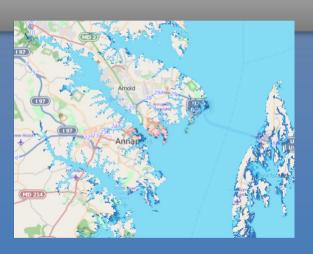


Climate trends

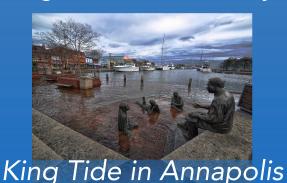




0-2 ft sea level rise



- Climate change can alter where species live and how they interact, which could fundamentally transform current ecosystems.
- Impacts on one species can ripple through the food web and affect many organisms in an ecosystem.



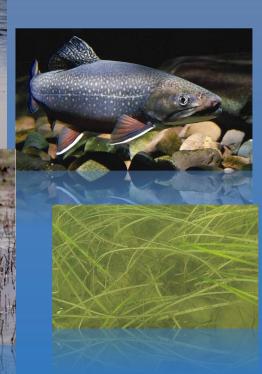
Fells Point after Isabel (2003)

What's at stake?









- The Bay supports 3,600+ species of plants and animals including 348 species of finfish and 173 species of shellfish.
- Nearly 1 million waterfowl winter on the Bay approximately
 1/3 of the Atlantic coast migratory population.

What's at stake?



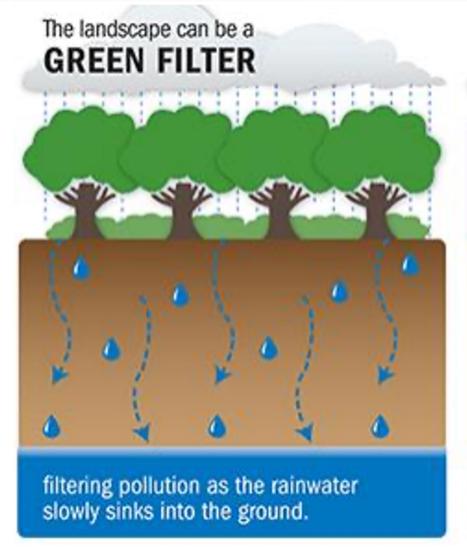


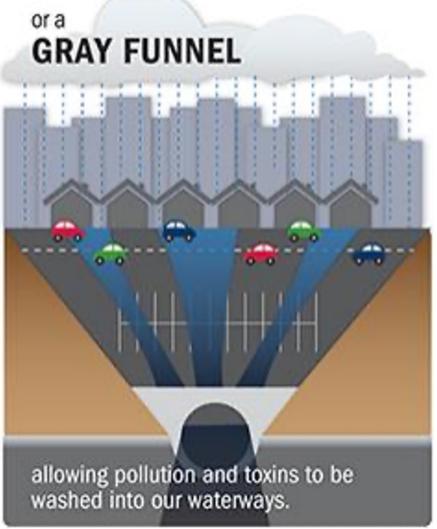




- There are more than 700 public access points on the Bay and its tributaries.
- Many economists have valued the Bay at over \$1 trillion related to fishing, tourism, property values, and shipping activities.









Maryland leadership wants to **mimic nature** to the greatest extent practicable in their restoration efforts.

Nature-based projects are designed with an understanding of local ecology in order to become stronger as vegetation is established, enhance infiltration and denitrification, provide native habitat and withstand intense storm events



Grey infrastructure **deteriorates** over time.



Nature-based solutions **become stronger** over time.





Strategy of regulatory, financial and technical assistance actions to shift from traditional grey infrastructure to green, nature-based infrastructure.

Green Infrastructure

Gray Infrastructure



Key Regulatory Actions:

- Total Maximum Daily Load
 - Limits the amount of pollution that the state can deliver to the Chesapeake Bay
- Municipal Separate Sewer Stormwater System (MS4)
 - requires local jurisdictions to manage stormwater to reduce pollution and decrease flooding
 - Retrofitting existing stormwater management
- Watershed Implementation Plans
 - Roadmap for how the Bay jurisdictions, in partnership with federal and local governments, will achieve the Chesapeake Bay pollution reductions.
 - Agricultural sector loads addressed here



Key State Fund Sources

- Chesapeake and Atlantic Coastal Bays Trust Fund
 - Gasoline & rental car tax revenue
 - Reduce non-point source pollution
- Bay Restoration Fund
 - "flush" tax
 - Reduce point source pollution through waste water treatment plant and septic system upgrades



Technical Assistance

Watershed Assistance Collaborative











- Government Agency Staff
 - Including Soil Conservation District Staff
- Local Watershed Organizations and Riverkeeper Network

Steps to Success



Step 1: Watershed Assessments

- Jurisdictions and watershed organizations perform assessments of local waterways to determine best plan of action and pollution hot spots. <u>Results</u> <u>in priority list of projects.</u>
- Maryland funded this with federal and state sources (gasoline and rental car tax and license plate revenue)

Step 2: Planning, Design & Build

- Jurisdictions and watershed organizations engage ecological engineering firms in planning and designing nature-based solutions to address threats.
- Maryland funded this with federal and state sources (gasoline and rental car tax and license plate revenue)

Step 3: Adaptive Management & Maintenance

- Jurisdictions and watershed organizations continually manage the sites to ensure efficacy and maintain as needed or required.
- This is generally funded by the local jurisdictions in Maryland

Competitive Grant Program Requirements



Money provided through reimbursable grants

Progress reports and invoices are due on a quarterly schedule

Projects must start construction within 12 months

Most grant terms are 2-3 years

Chesapeake & Atlantic Coastal Bays Trust Fund



- Goal: Build the most effective, cost-efficient non-point source pollution projects
- Reduce nitrogen, phosphorus and sediment loads to the Chesapeake Bay
- Projects are evaluated on:
 - Cost-efficiency (cost to reduce one kilo of nutrient)
 - Geographic targeting
 - Readiness to proceed (shovel-ready)

Chesapeake and Atlantic Coastal Bays



Trust Fund



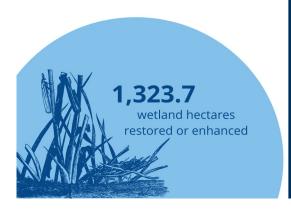


39,421 volunteers and students engaged

90.76

kilometers of stream restored

656.4 riparian hectares planted





53 innovative technologies supported

Resilience Through Restoration Grant Program



- Goal: Use nature-based designs to protect communities, ecosystems and economies from climate change impacts
- Select projects based on vulnerability, targeted resiliency areas, level of community engagement, project readiness and status and broader ecosystem services
- \$15 million dollar initial investment from General Obligation Bonds (municipal bonds)

Conservation Finance Act (CFA)



Key takeaways:

- New ways to support restoration in a time of great need
- Pay for success financing
 - Reduces public risk
 - Prioritizes least-cost projects
- Opportunity to prioritize co-benefits
 - Environmental justice
 - Resilience
- Defines key concepts:
 - Green Infrastructure
 - Blue Infrastructure (first in the country)
 - Environmental Outcomes

Pay for Success

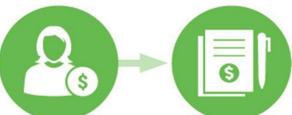


In CFA, Pay for Success Contracting is defined as

"means a performance-based procurement method through which a unit contracts with an organization to deliver services or commodities in exchange for payment based on the achievement of outcomes."

Environmental outcome: a commodity that is modeled or directly measured as a single, quantifiable, and certified unit of improvement to the environment





Investors with social and environmental goals invest in specialized restoration companies



for Proposals
defines
outcomes that
trigger
payments



Winning company or its subcontractors find, plan and complete restoration



Gov't verifies environmental and social outcomes from projects



Gov't pays contractor agreed upon rates for verified outcomes



Private restoration company po back its investors





Agriculture - Before







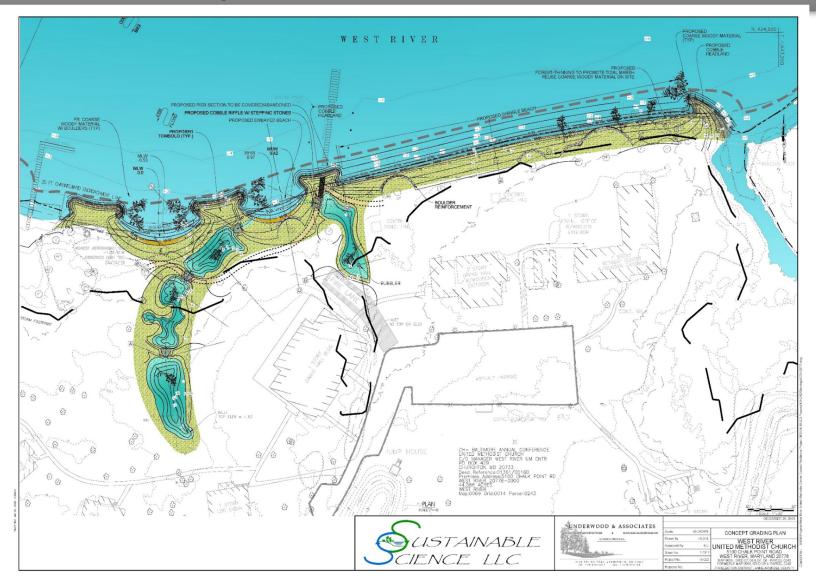
Shoreline Infrastructure - Before





Shoreline Infrastructure - Proposed







Shoreline Infrastructure - After





Fish Passage - Before





Fish Passage - Before











Thank You



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