OPTIONS TO PROMOTE URBAN WATERSHED RESILIENCE

URBAN STORMWATER WORKGROUP

NOVEMBER 16, 2021

AGENDA AND OBJECTIVES

Goals:

- Very quick recap of October meeting
- Coastal Plain Rising Waters Workshop
- White Paper Overview
- Survey Results
- Decision on Priority Recommendations

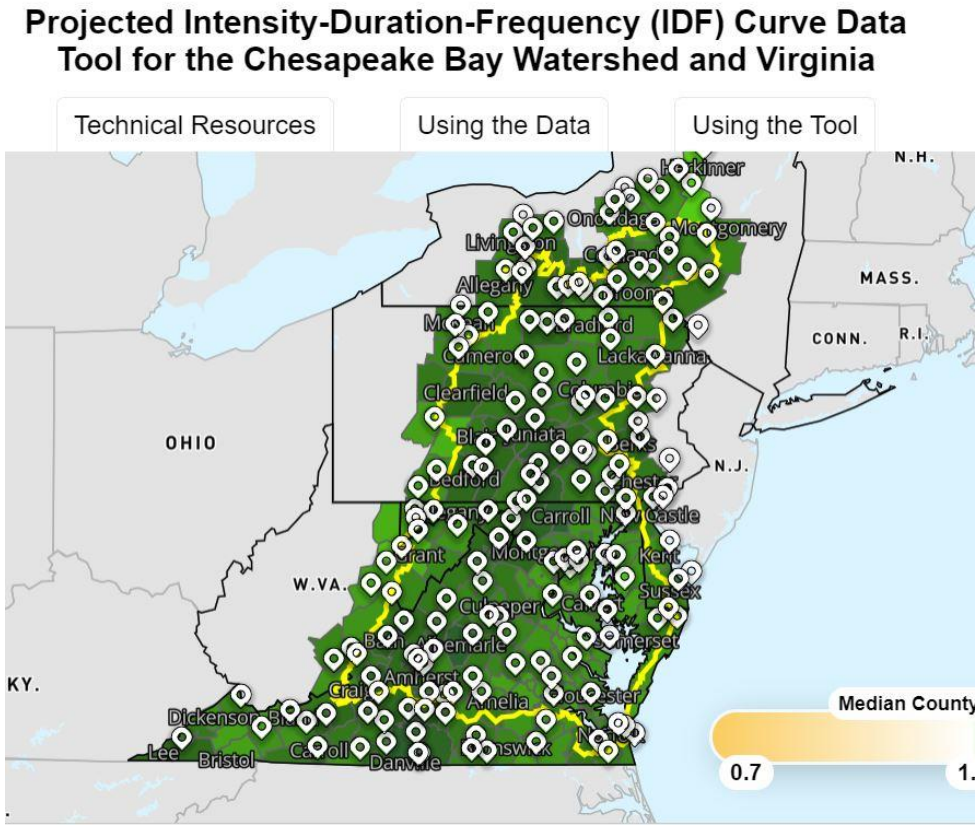
OCTOBER MEETING REFRESH

"Looking Back"

- Virginia Tech Synthesis of Climate Impacts on BMPs
- CSN Reports on Stormwater BMP Vulnerability Analysis
- RAND and Tetra Tech Climate Change-Informed IDF Curves

"Looking Ahead"

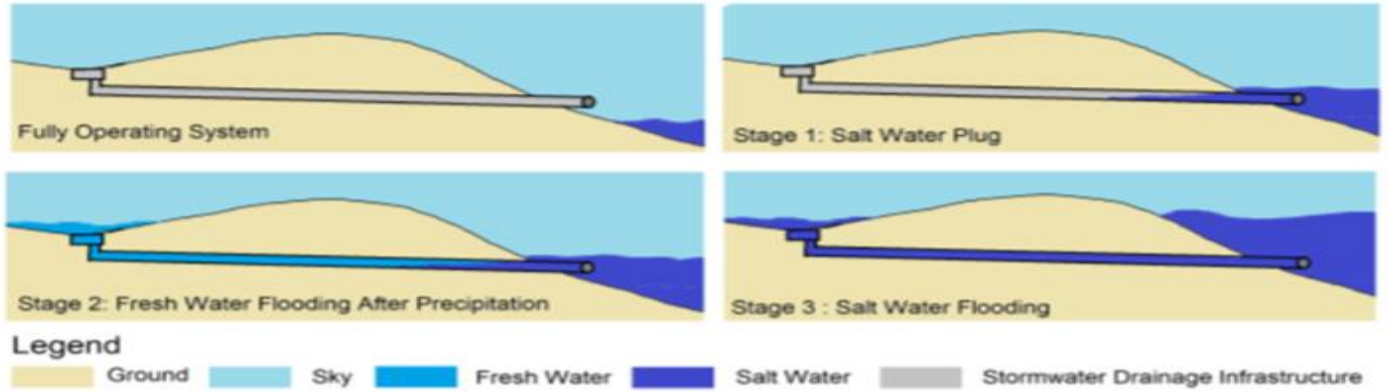
- Resilient Stream Restoration Design Considerations
- Resilient Stormwater BMP Design
- Case Studies and Next Steps for Implementing Resilient Design Principles
- Floodplain Management and Climate Change



COASTAL RISING WATERS WORKSHOP

- One-Two Day Workshop in 2022
- Unique issues of coastal communities have been under-addressed in stormwater resources to-date
- Discuss specific tools and resources to help coastal local governments

Figure 2.5: Stages of stormwater drainage failure due to sea-level rise. Graphic by Emily Niederman, Stetson University.



SOME POSSIBLE TOPICS

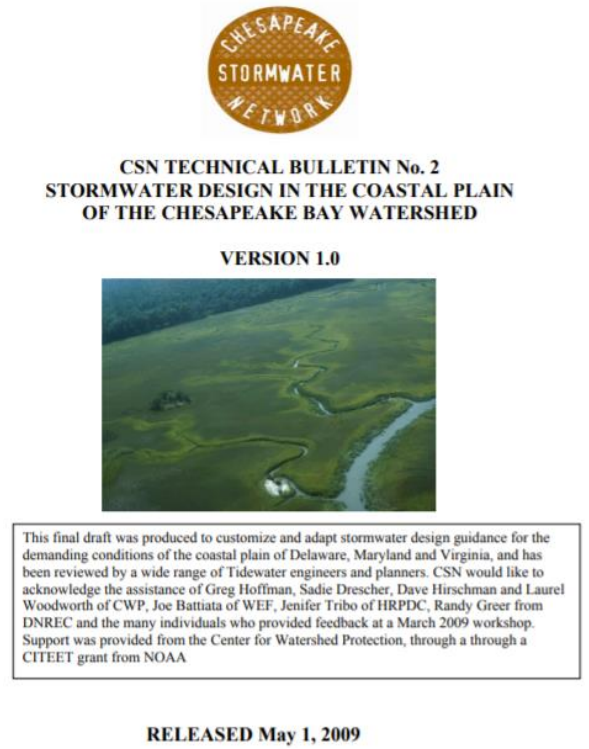
Coastal-Plain specific impacts and adaptions for common stormwater practices

New vegetation guidance for coastal plan BMPs

Impacts and Research needs for new and existing tidal BMPs:

- Shoreline management
- Tidal wetland restoration
- Coastal buffer zones

Vulnerability assessments tailored to convergent risks



CSN TECHNICAL BULLETIN No. 2
STORMWATER DESIGN IN THE COASTAL PLAIN
OF THE CHESAPEAKE BAY WATERSHED

VERSION 1.0

This final draft was produced to customize and adapt stormwater design guidance for the demanding conditions of the coastal plain of Delaware, Maryland and Virginia, and has been reviewed by a wide range of Tidewater engineers and planners. CSN would like to acknowledge the assistance of Greg Hoffman, Sadie Drescher, Dave Hirschman and Laurel Woodworth of CWP, Joe Battiata of WEF, Jenifer Tribo of HRPDC, Randy Greer from DNREC and the many individuals who provided feedback at a March 2009 workshop. Support was provided from the Center for Watershed Protection, through a through a CITEET grant from NOAA

RELEASED May 1, 2009

REQUEST

- Volunteers for a steering committee for the workshop (4-5 volunteers is a target)
  - Help with: agenda design, speaker identification, and venue hosting
  - Commitment: approx. 2-3 planning calls and a few email exchanges during program development, plus participation in the workshop

WHITE PAPER:

OPTIONS TO PROMOTE URBAN WATERSHED RESILIENCE

OPTION 1: MOST VULNERABLE NEIGHBORHOODS

Option 1 at a Glance	
CVA: Most Vulnerable Neighborhoods	
Product	Technical memo outlining the most cost-effective desktop GIS methods to analyze subwatershed factors that elevate future flooding risks for individual neighborhoods. The memo would also recommend more detailed modeling and mapping protocols for the most vulnerable neighborhoods to mitigate those risks.
CBP Lead	CSN/USWG/LGAC
Key Partners	State floodplain management agencies, local flood Managers
Process to Develop	Convene panel of flood mapping and local GIS experts
Scope of Effort	Year, if it goes well
New/Existing Funds?	One or possibly two CVAs can be handled w/ existing funds
Priority Votes	

OPTION 2: MOST VULNERABLE MUNICIPAL ASSETS

Option 2 at a Glance	
CVA: Most Vulnerable Municipal Assets	
Product	Technical memo that outlines desktop GIS methods for identify which specific municipal properties, operations, assets and utilities most vulnerable to future flooding damages. The memo will then outline more specific site investigations to mitigate risk for the most vulnerable municipal assets and utilities.
CBP Lead	CSN/USWG/LGAC
Key Partners	Large and small municipalities
Process to Develop	Convene panel of flood mapping and local GIS experts
Scope of Effort	Year, if it goes well
New/Existing Funds?	One or possibly two CVAs can be handled w/ existing funds
Priority Votes	

OPTION 3: MOST VULNERABLE PONDS

Option 3 at a Glance	
CVA: Most Vulnerable Ponds	
Product	Technical memo outlining desktop methods and field inspections to identify which ponds in the local inventory are most vulnerable to failure from extreme storms (e.g., update to the *Pond Protocol*). The memo would also include guidance on how to estimate costs to retrofit the most vulnerable ponds.
CBP Lead	CSN/USWG/LGAC
Key Partners	Dam safety agencies, large and small MS4s, SCDs
Process to Develop	Convene panel of pond and dam safety experts and Ms4 GIS experts
Scope of Effort	Year, if it goes well
New/Existing Funds?	One or possibly two CVAs can be handled w/ existing funds
Priority Votes	

OPTION 4: MOST VULNERABLE HABITATS

Option 4 at a Glance	
CVA: Most Vulnerable Habitats	
Product	Workshop to scope out a technical memo describing cost-effective GIS desktop methods to identify most vulnerable habitats. The methods would analyze specific subwatershed and stream corridor factors that might influence future habitat conditions, and provide guidance on more specific investigations to craft restoration/mitigations strategies to protect the vulnerable habitats
CBP Lead	SHWG/FWG/WWG and Habitat GIT (CSN liaison)
Key Partners	State and local resource agencies/conservation NGOs, local governments
Process to Develop	Convene panel of habitat and Ms4 GIS experts to develop the habitat assessment protocols
Scope of Effort	2 years
New/Existing Funds?	Would require new funding and staffing from other parts of CBP
Priority Votes	

OPTION 5: STATE-WIDE CLIMATE INFORMED DESIGN SUPPLEMENTS

Option 5 at a Glance	
State-wide Climate Informed Stormwater Design Supplement	
Product	State Stormwater Design Supplement
CBP Lead	No CBP lead, as this is a state prerogative, but perhaps Bay states can coordinate efforts through Management Board
Key Partners	Key stormwater stakeholders in each state including local governments
Process to Develop	Leave process to individual Bay states
Scope of Effort	Multi-year, depending on the scope of engineering changes
New/Existing Funds?	N/A
Priority Votes	

OPTION 6: UPDATE LOCAL STORMWATER DESIGN SPECS

Option 6 at a Glance	
Update Local Stormwater Design Specs to Promote Practice Resiliency	
Product	Series of practice-specific design specifications that locals can adapt to improve their resiliency
CBP Lead	CSN/USWG
Key Partners	State stormwater agencies, local stormwater managers, CBLP, BMP research community
Process to Develop	Expert workshop to define spec issues, CSN to craft draft specs, and solicit external review
Scope of Effort	Multi-year project
New/Existing Funds?	Some seed money available for the first few, but thereafter, new funds would be needed.
Priority Votes	

OPTION 7: DECISION SUPPORT TOOL TO CHOOSE LOCAL RESILIENCE THRESHOLDS

Option 7 at a Glance	
Decision Support Tool to Choose Local Resilience Thresholds	
Product	Creation of a local decision support tool to improve local capability to select the most-cost effective risk thresholds for each class of their infrastructure
CBP Lead	CRG, USWG, LGAC, other
Key Partners	Municipal stakeholders and technical contractor
Process to Develop	Expert scoping workshop followed by technical guidance
Scope of Effort	At least 18 months?
New/Existing Funds?	New Funds
Priority Votes	

OPTION 8: GUIDANCE OF RETROFITTING PONDS AND FLOODPLAINS

Option 8 at a Glance	
Guidance of Retrofitting Ponds and Floodplains	
Product	Assess the best engineering/restoration options to improve the flood control functions of ponds, buffers and floodplains
CBP Lead	SHWG/FWG/WWG and Habitat GIT (CSN liaison)
Key Partners	State and local resource agencies/conservation NGOs, local governments
Process to Develop	Convene panel of experts to develop guidance
Scope of Effort	1 to 2 Years
New/Existing Funds?	Would require new funding and staffing from other parts of CBP
Priority Votes	

OPTION 9: RESILIENCY CHECKUP: REVIEW OF LOCAL CODE AND ORDINANCES

Option 9 at a Glance	
Resiliency Checkup: Review of Local Codes and Ordinances	
Product	Series of webcasts targeted toward local planners/engineers and a "Codes and Ordinances Worksheet (COW)" flood resilience checkup document.
CBP Lead	CSN, LGAC, Others?
Key Partners	FEMA, Bay State floodplain management agencies, MASFM and other professional associations
Process to Develop	Work with floodplain managers to provide local governments the best choices to make. Do webcasts and checkup document
Scope of Effort	Could be done over a year
New/Existing Funds?	Webcast portion could be done w/ existing funds, checkup documents would require new funds
Priority Votes	

POLL RESULTS (N=26)

By weighted Avg:

1. Update Local Stormwater Design Specs (3.68)
2. Decision Support Tool to Choose Optimum Design Storms (3.64)
3. State-Wide Climate Informed Design Supplement (3.58)
4. Most Vulnerable Neighborhoods (3.58)
5. Most Vulnerable Municipal Assets (3.27)
6. Codes and Ordinances Review (3.20)
7. Most Vulnerable Habitats (3.17)
8. Retrofitting Ponds and Floodplains (3.08)
9. Most Vulnerable Ponds (2.86)

POLL RESULTS USWG ONLY (N=11)

By weighted Avg:

1. Decision Support Tool to Choose Optimum Design Storms (3.82)
2. Most Vulnerable Neighborhoods (3.45)
3. Update Local Stormwater Design Specs (3.36)
4. Retrofitting Ponds and Floodplains (3.36)
5. Most Vulnerable Municipal Assets (3.27)
6. Codes and Ordinances Review (3.27)
7. State-Wide Climate Informed Design Supplement (3.18)
8. Most Vulnerable Ponds (2.80)
9. Most Vulnerable Habitats (2.78)

THE STATE VS LOCAL DIFFERENCE

- State Agency Responses (N=7)
- Local Gov Responses (N=9)

Option 2 MVMA: Most Vulnerable Municipal Assets

	1 = I DO NOT FEEL THIS OPTION IS A PRIORITY AT ALL	2 = I WOULD LIKE TO SEE THIS OPTION EVENTUALLY, BUT IT IS NOT A PRIORITY	3 = I WOULD LIKE THIS TO BE DONE IN THE NEXT 5 YEARS	4 = THIS IS A HIGH PRIORITY AND SHOULD BE RECOMMENDED TO THE CBP FOR ACTION	5 = THIS IS A TOP PRIORITY AND SHOULD BE PURSUED ASAP	TOTAL	WEIGHTED AVERAGE
tate rnment cy	0.00% 0	28.57% 2	57.14% 4	14.29% 1	0.00% 0	41.18% 7	2.86
ocal rnment county,	0.00% 0	20.00% 2	20.00% 2	60.00% 6	0.00% 0	58.82% 10	3.40

Option 9: Resiliency Checkup: Review of Local Code and Ordinances

	1 = I DO NOT FEEL THIS OPTION IS A PRIORITY AT ALL	2 = I WOULD LIKE TO SEE THIS OPTION EVENTUALLY, BUT IT IS NOT A PRIORITY	3 = I WOULD LIKE THIS TO BE DONE IN THE NEXT 5 YEARS	4 = THIS IS A HIGH PRIORITY AND SHOULD BE RECOMMENDED TO THE CBP FOR ACTION	5 = THIS IS A TOP PRIORITY AND SHOULD BE PURSUED ASAP	TOTAL	WEIGHTED AVERAGE
Q2: State government agency	14.29% 1	42.86% 3	28.57% 2	0.00% 0	14.29% 1	41.18% 7	2.57
Q2: Local government (ex. county, city, township, regional commission)	0.00% 0	11.11% 1	33.33% 3	33.33% 3	22.22% 2	52.94% 9	3.67

Option 8: Retrofitting Ponds and Floodplains to Enhance Flood Control Functions.

	1 = I DO NOT FEEL THIS OPTION IS A PRIORITY AT ALL	2 = I WOULD LIKE TO SEE THIS OPTION EVENTUALLY, BUT IT IS NOT A PRIORITY	3 = I WOULD LIKE THIS TO BE DONE IN THE NEXT 5 YEARS	4 = THIS IS A HIGH PRIORITY AND SHOULD BE RECOMMENDED TO THE CBP FOR ACTION	5 = THIS IS A TOP PRIORITY AND SHOULD BE PURSUED ASAP	TOTAL	WEIGHTED AVERAGE
Q2: State government agency	14.29% 1	28.57% 2	42.86% 3	14.29% 1	0.00% 0	41.18% 7	2.57
Q2: Local government (ex. county, city, township, regional commission)	0.00% 0	11.11% 1	33.33% 3	55.56% 5	0.00% 0	52.94% 9	3.44

OTHER INITIATIVES SUGGESTED

- Public outreach to enhance understanding of and support for ongoing public investment by highlighting projects in place.
- Urban heat, and how stormwater practices (GI, trees) could help address
- Review of coastal retreat strategies. A regional version of dutch dialogues
- Development of a cost-benefit analysis (or similar decision-support tool) to determine when enhanced O&M efforts or capital improvements/retrofits are most appropriate for municipal and state-owned assets.

WHERE DOES THAT LEAVE US AS A STARTING PLACE?

- Overall/USWG Top 3:
  - Decision Support Tool to Choose Optimum Design Storm
  - Update Local Stormwater Design Specs
  - Most Vulnerable Neighborhoods
- Local Gov Top 3:
  - Decision Support Tool to Choose Optimum Design Storm
  - Codes and Ordinances Resilience Checkup
  - Update Local Stormwater Design Specs
- Does anything fall off the list?
  - Most Vulnerable Ponds
  - Most Vulnerable Habitats

DISCUSSION

- Would you like to make a case for/against any of the options?
- Is there anything missing that should be on the table?
- Thoughts on the best way to advance these recommendations when there are a lot of priorities?