

# YOUR LOCAL GOVERNMENT AT WORK

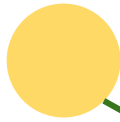


**Erik Michelsen, Deputy Director, AA Co Bureau of  
Watershed Protection and Restoration**

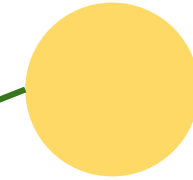
**Jackie Guild, Deputy City Manager, Resilience &  
Sustainability City of Annapolis**

**Michael Stringer, AA Co Office of Planning & Zoning**

Resilience  
Authority

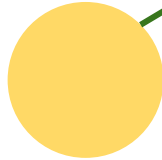


County  
Region  
Plans

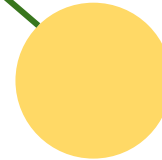


# CLIMATE RESILIENCE

Military  
Installation  
Resilience  
Review

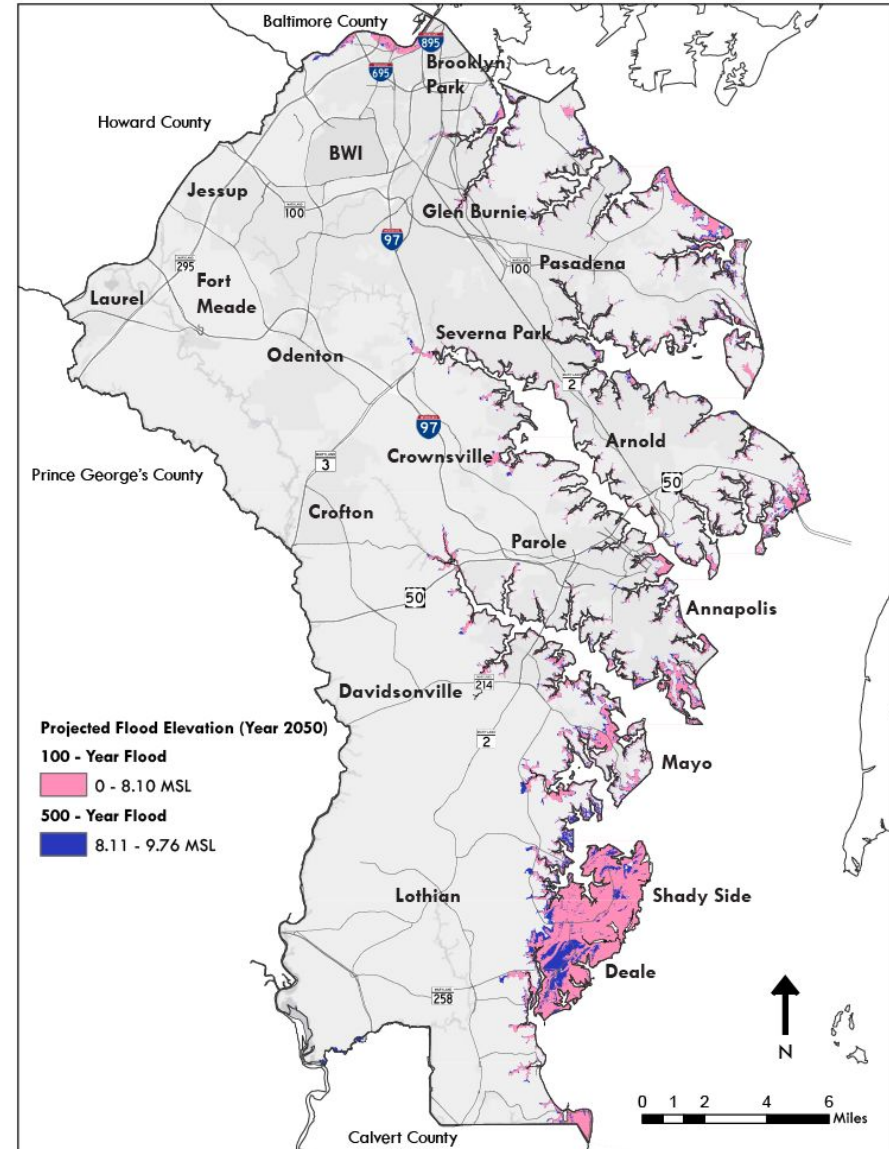


County SLR  
Risk &  
Resilience  
Studies



# CLIMATE CHANGE IMPACTS

- Precipitation Change
- Sea Level Rise
- Excessive Heat Days





# ADVANCING STORMWATER RESILIENCY IN MARYLAND (A-STORM)

- Work with local governments to define “flooding events.”
- Consider updating regulations based on contemporary precipitation estimates.
- Develop updated ESD to the MEP standards.
- Work with local governments to identify frequently flooded areas.
- Develop regulations that would lead to watershed assessments of floodprone watersheds.
- Create a stakeholder group to review and consult on regulations.



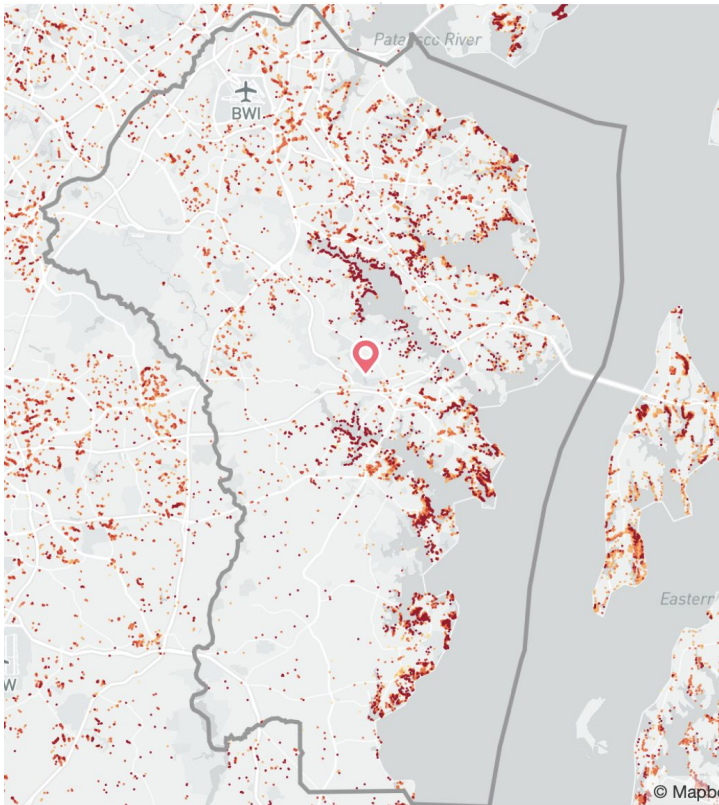
# Flood Factor TM

## SUMMARY

### Flood risk overview for Anne Arundel County

There are **12,349** properties in Anne Arundel County that have **greater than a 26% chance** of being severely affected by flooding over the next 30 years. This represents **6%** of all properties in the county.

In addition to damage on properties, flooding can also cut off access to utilities, emergency services, transportation, and may impact the overall economic well-being of an area. Overall, **Anne Arundel County has a moderate risk of flooding** over the next 30 years, which means flooding is likely to impact day to day life within the community.



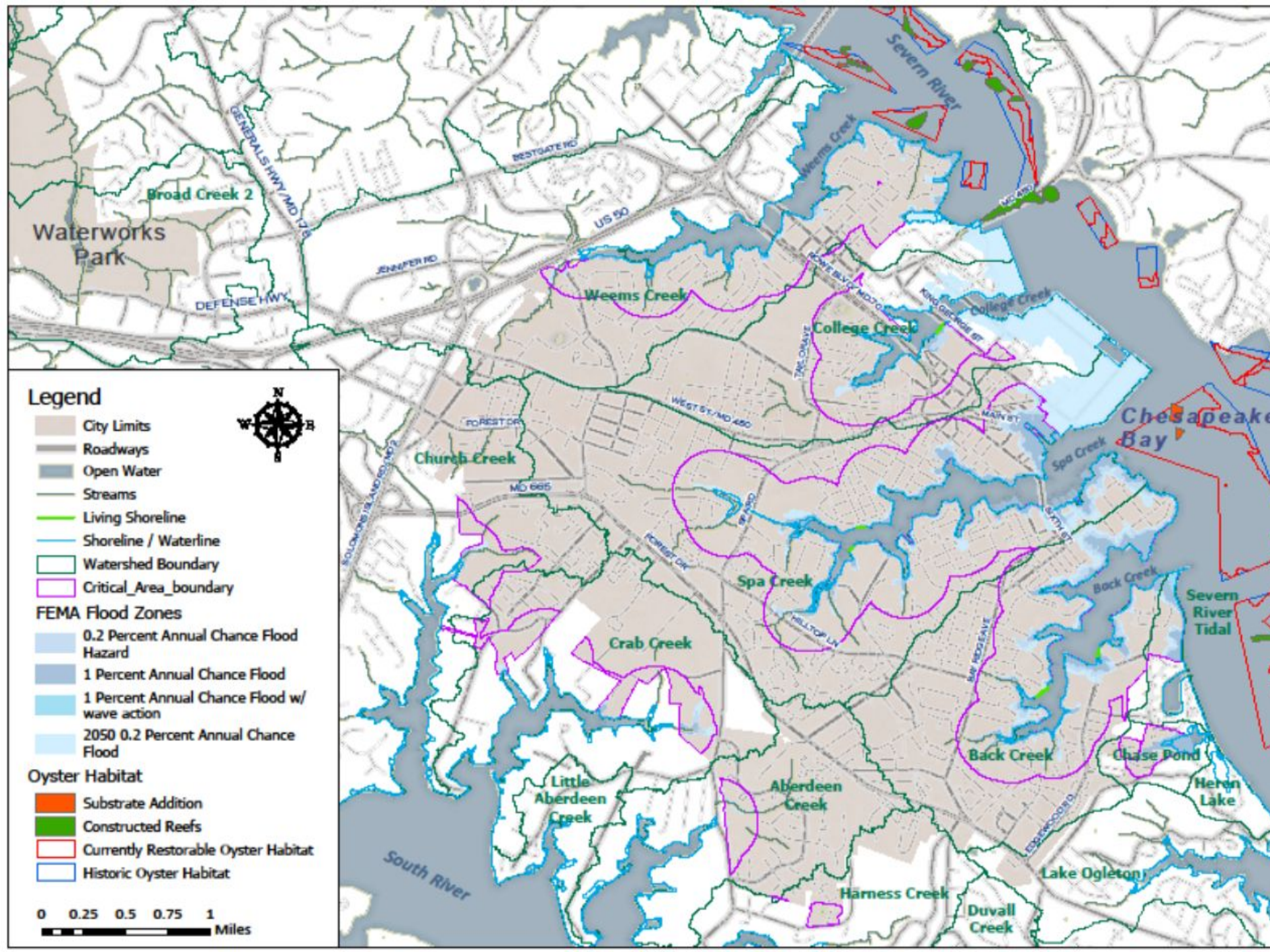




# RESILIENCE AUTHORITY OF ANNAPOLIS AND ANNE ARUNDEL COUNTY

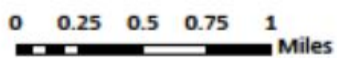
- Purpose: to undertake and support resilience infrastructure projects in the City and County - flood barriers, green spaces, building elevation, stormwater controls
- Director, CFO, 12 members (9 County, 3 City)
- Non-voting Advisors - City and County staff
- Fund projects - bonds, fees for services, grants, P3's, contributions from state, county, city
- First project - City Dock reimagedined
- Other priorities - Shady Side peninsula, roads & bridges





**Legend**

- City Limits
  - Roadways
  - Open Water
  - Streams
  - Living Shoreline
  - Shoreline / Waterline
  - Watershed Boundary
  - Critical Area boundary
- FEMA Flood Zones**
- 0.2 Percent Annual Chance Flood Hazard
  - 1 Percent Annual Chance Flood
  - 1 Percent Annual Chance Flood w/ wave action
  - 2050 0.2 Percent Annual Chance Flood
- Oyster Habitat**
- Substrate Addition
  - Constructed Reefs
  - Currently Restorable Oyster Habitat
  - Historic Oyster Habitat





# Annapolis Harbor High Tide



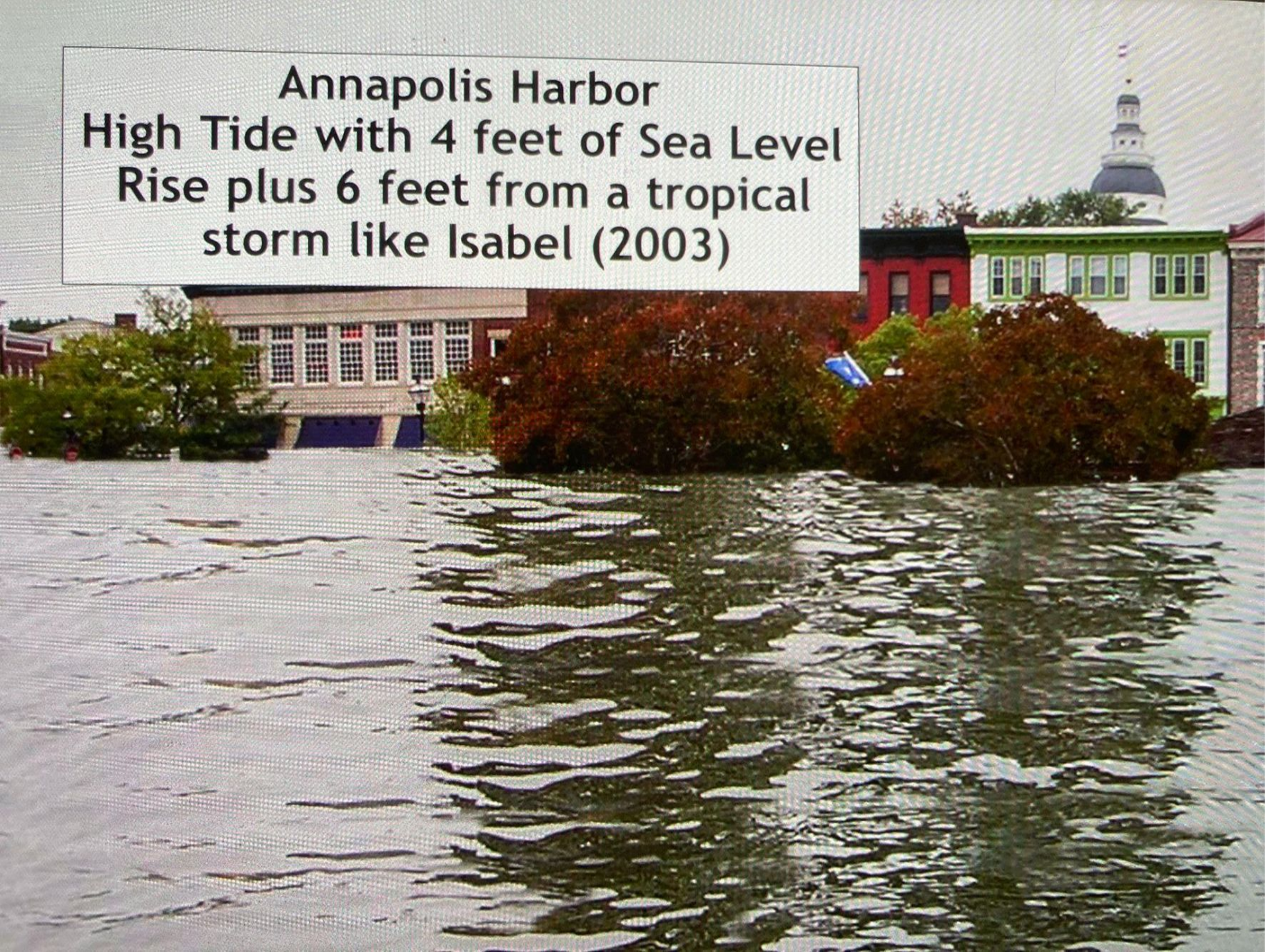


Annapolis Harbor  
High Tide with 4 feet  
of Sea Level Rise





**Annapolis Harbor  
High Tide with 4 feet of Sea Level  
Rise plus 6 feet from a tropical  
storm like Isabel (2003)**









# REIMAGINING CITY DOCK



# MILITARY INSTALLATION RESILIENCE REVIEW (MIRR)

- Effort between Naval Support Annapolis (NSA), Anne Arundel County and City of Annapolis to support mission readiness and the public health and safety of surrounding communities
- Will identify assets, challenges, and priorities; make recommendations to meet threats of climate change
- Transportation focused; also critical infrastructure
- Funded through a DOD grant
- City of Annapolis is project leader
- Stakeholder input, policy and technical committees
- September 2021 - January 2023



# RISK ASSESSMENT AND RESILIENCE PLANS

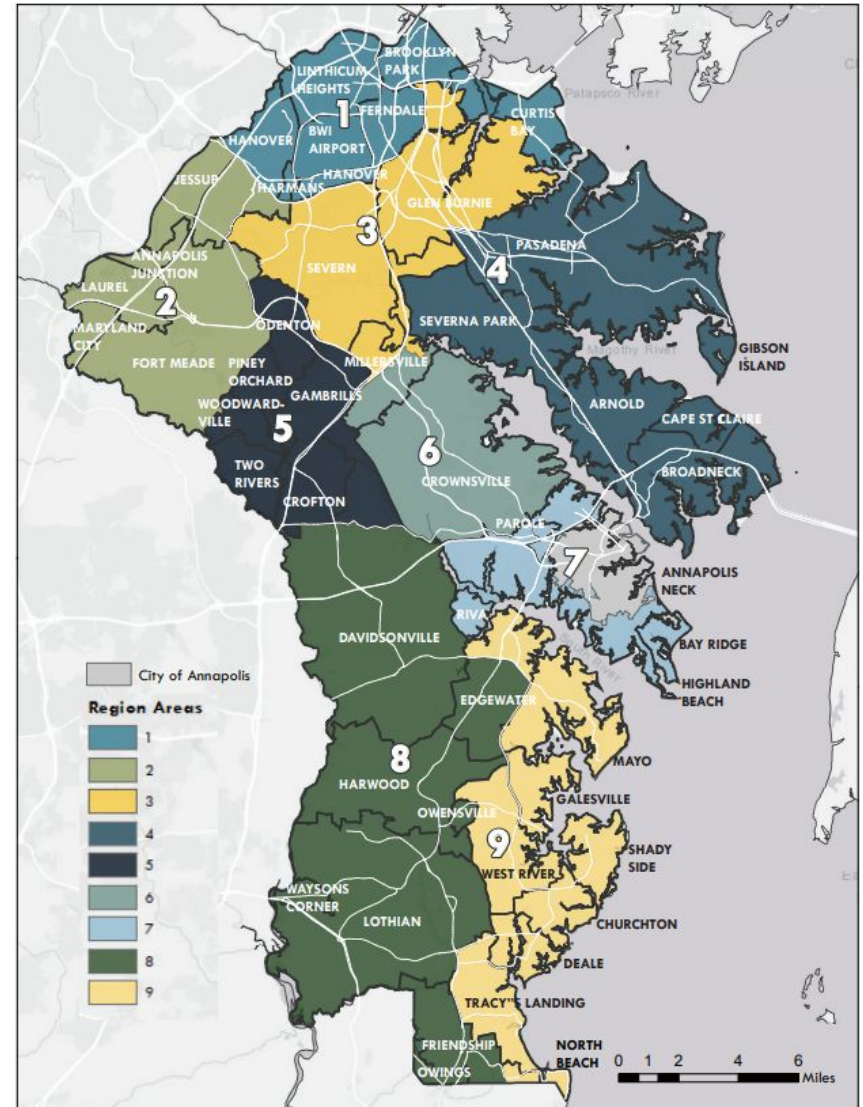




# REGION PLANS

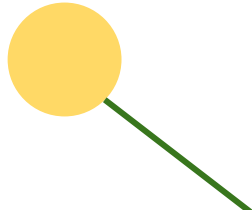
- Region Plans will include an evaluation of community assets and needs, as well as a shared vision for the future.
- Regions 2, 4, and 7 started in 2021

<http://aacounty.org/regionplans>

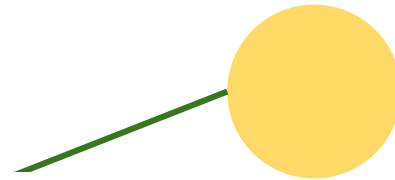


# LAND CONSERVATION

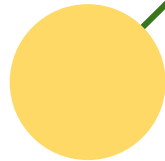
Green  
Infrastructure  
Master Plan



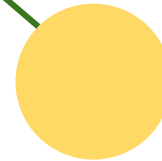
Flood Prone  
Property  
Acquisition



Annapolis  
Comprehensive  
Plan  
Greenways



Land  
Preservation  
Parks &  
Restoration  
Plan



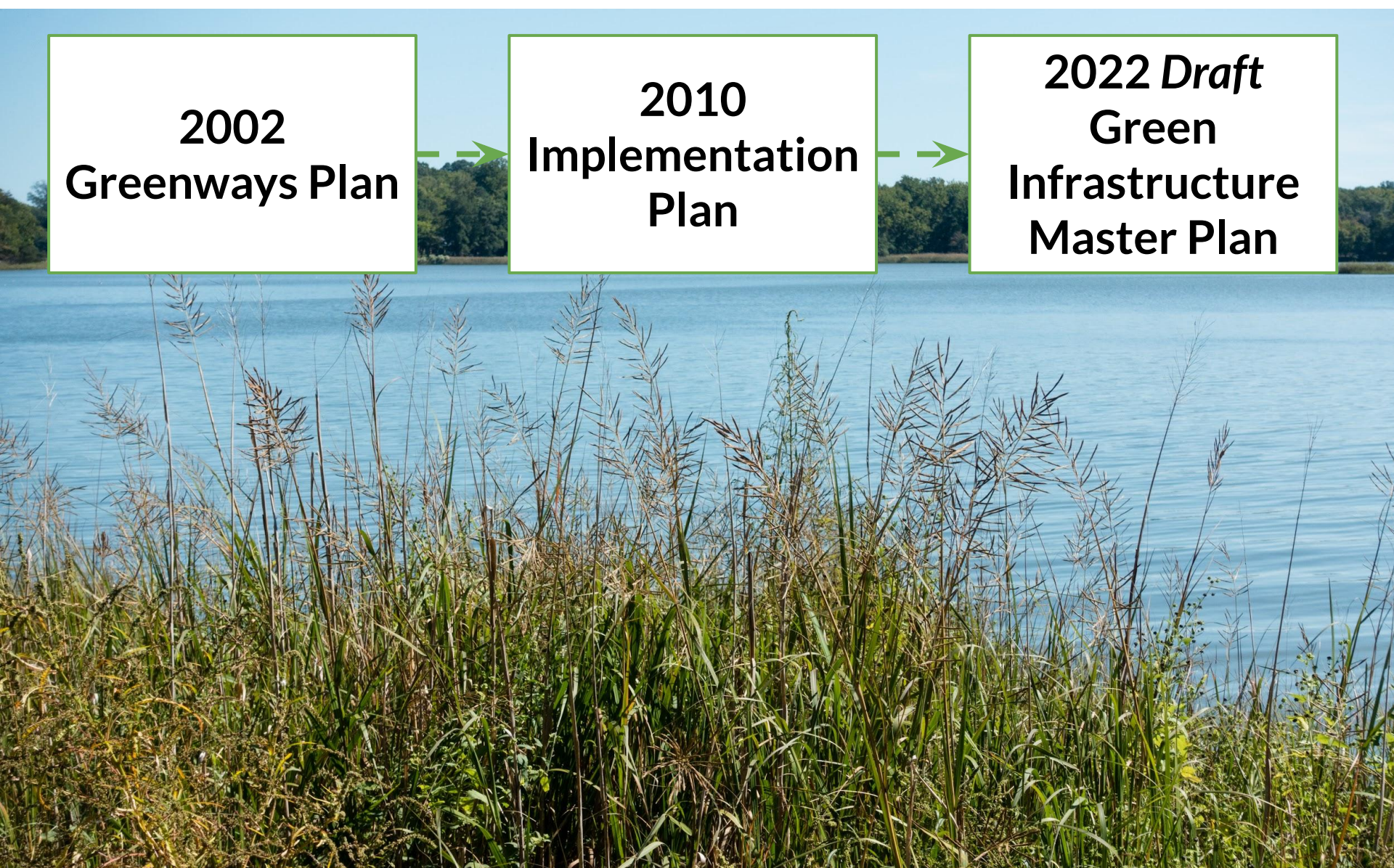


# GREENWAYS TO GREEN INFRASTRUCTURE

**2002  
Greenways Plan**

**2010  
Implementation  
Plan**

**2022 *Draft*  
Green  
Infrastructure  
Master Plan**



## LAND PROTECTED SINCE 2002 GREENWAYS PLAN

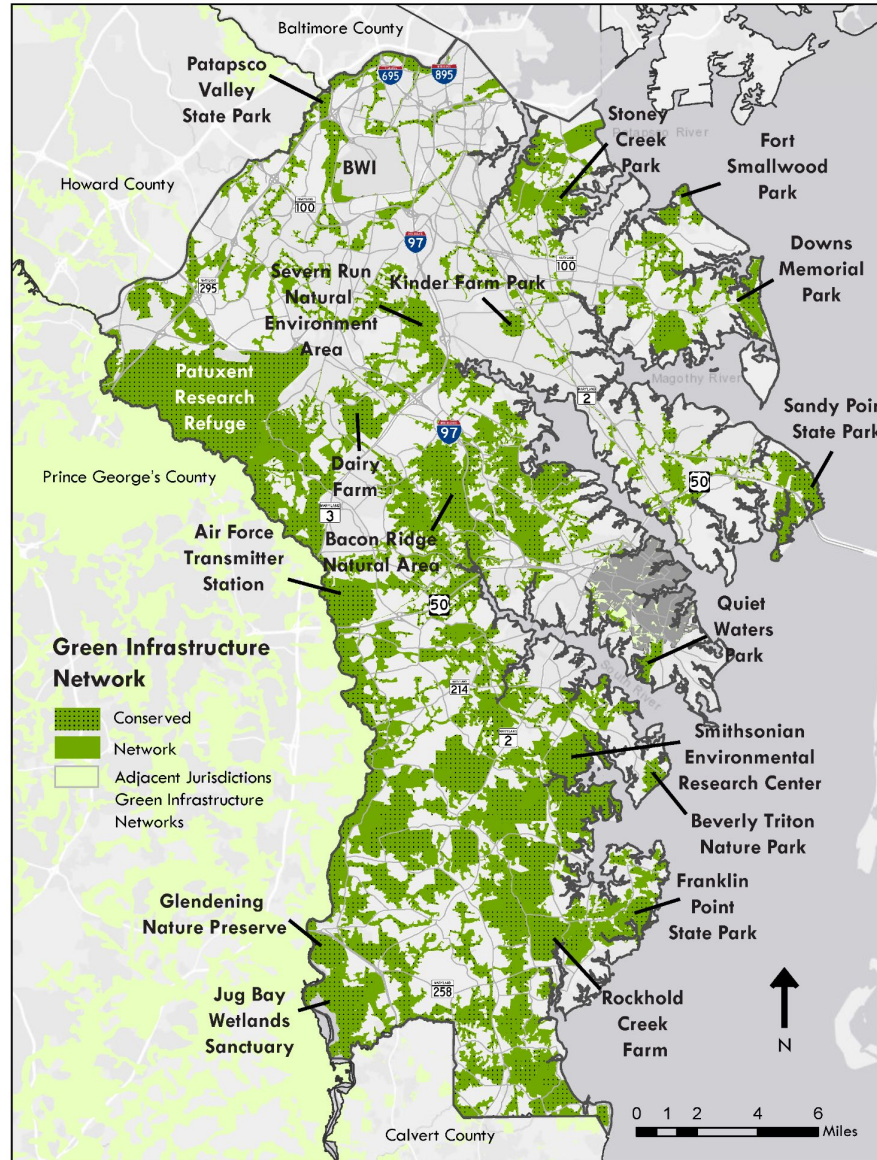
County Buy: 3,500 Acres

Ag Easements: 3,900 Acres

Land Trusts: 1,900 Acres



# GREEN INFRASTRUCTURE NETWORK

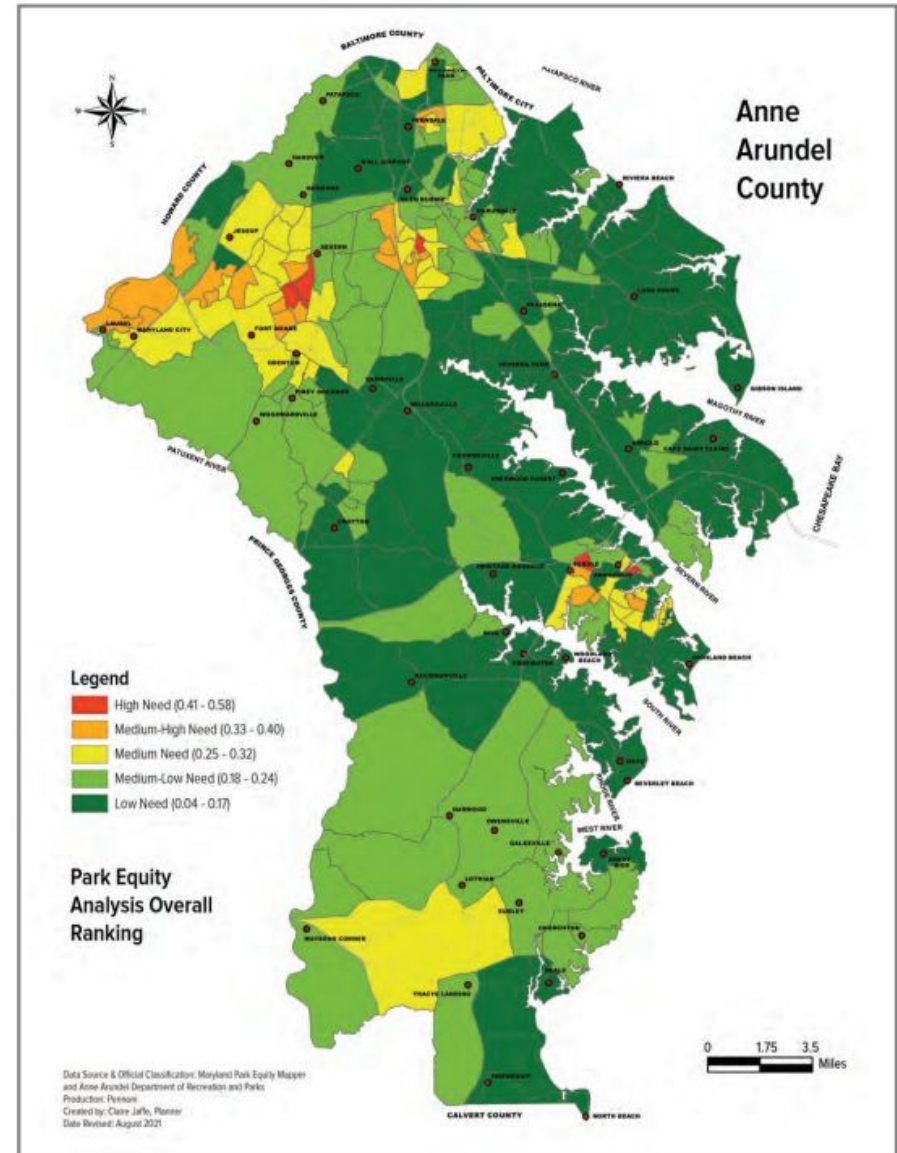




# County Land Preservation Parks & Recreation Plan

- Long Range Master Plan
- 5-Year Update
- Needs Assessment
- Future Projects List
- Public Review

<https://www.aacounty.org/departments/recreation-parks/about-us/lpprp/>



# Conservation in *2040 Annapolis Ahead*

20 Year City Comprehensive Plan

<https://www.annapolis.gov/1446/2040-Comprehensive-Plan>

- Environmental and Sustainability Goals - tree canopy, decreasing carbon footprint, reduce waste to landfill, **watershed stewardship**, **decreasing stormwater runoff**, drinking water and wastewater infrastructure, equity, increasing multi-modal transportation.
- Goal: Merge parks and recreation system with conservation areas and trails to create a Greenway System - map in development.
- Equitable waterfront access by investing in new and improved public spaces and connections to them - Robert Eades Park, Hawkins Cove
- Check out Sections: Sensitive Areas, Transportation, Water Resources, Community Facilities, Land Use
- Future land use map - Environmental Enhancement - bright green

# Floodprone Property Acquisition Program



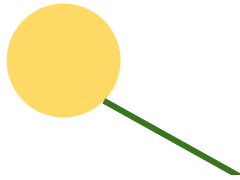
*(Photo courtesy Capital Gazette)*





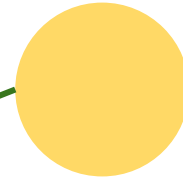


Stream &  
Wetland  
Restoration

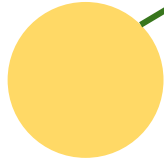


# RESTORATION & WATER QUALITY

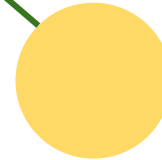
Living  
Shorelines



Stormwater  
Retrofits

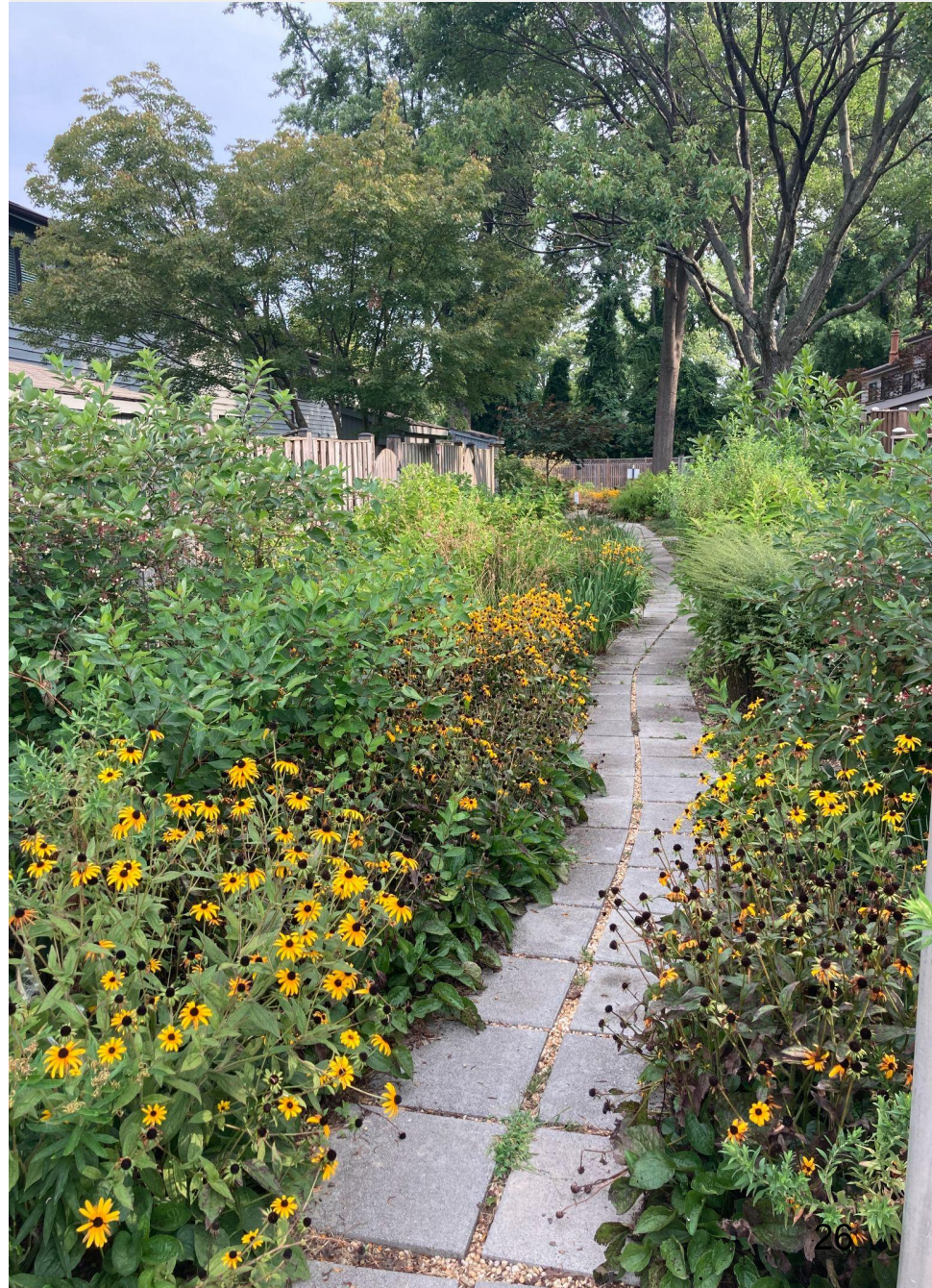


Culvert  
Repairs



# Cedar Ridge Townhomes Stormwater Project

No existing SW controls  
Native, rain gardens  
Pervious materials  
Second alley in design!





# Tecumseh Condos Stormwater Project

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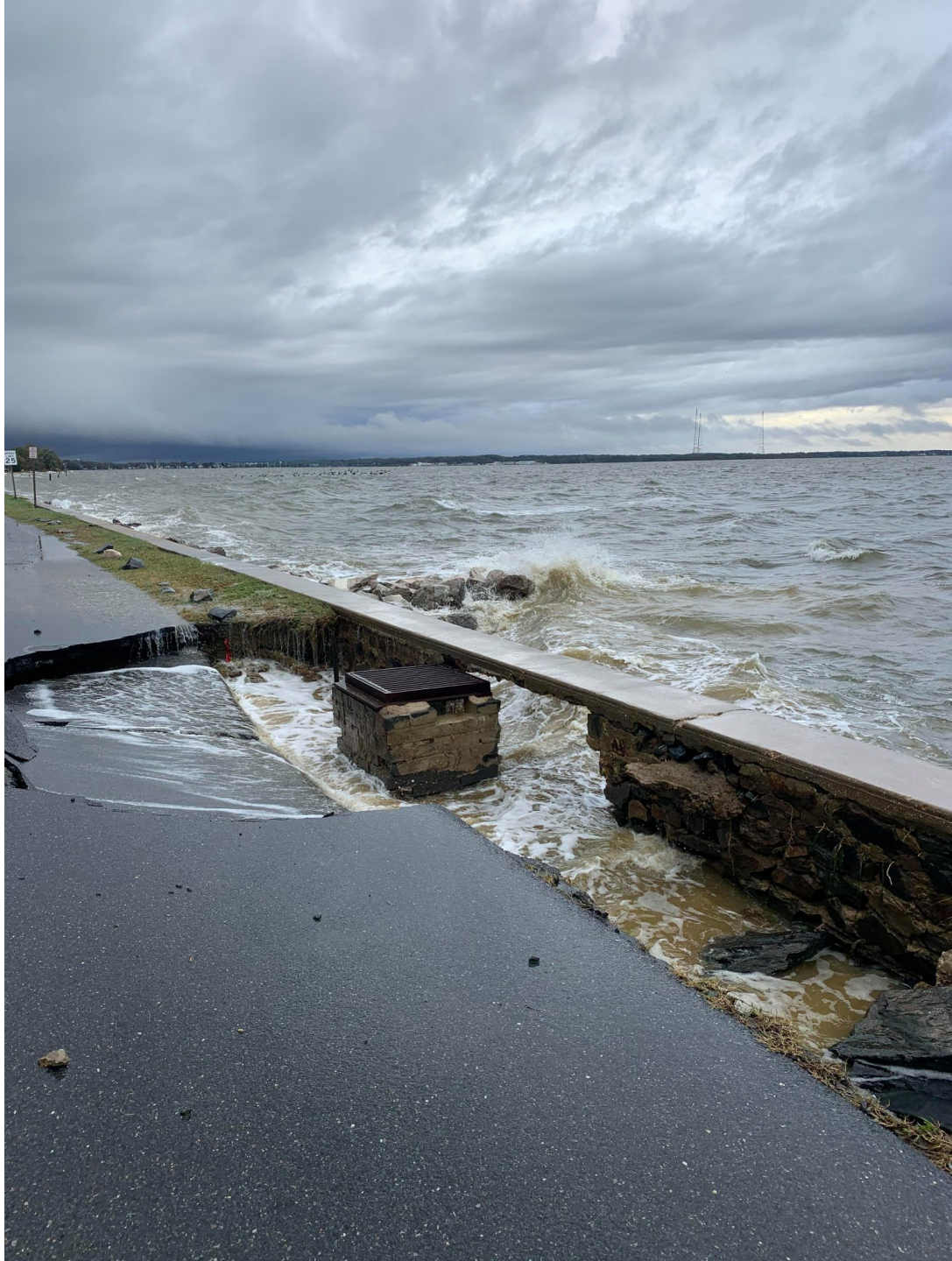


Built in 1968 - over the water!

No stormwater controls

HOA study of parking lot for stormwater retention

Funded thru CBT/City













# STORMWATER POND RETROFIT - COUNTY OFFICE COMPLEX





# DRY POND RETROFIT - SEVERN WATERSHED





# DAIRY FARM ROAD OUTFALL - BEFORE





DAIRY FARM ROAD OUTFALL - AFTER





SUSAN'S BRANCH - BEFORE





SUSAN'S BRANCH - AFTER

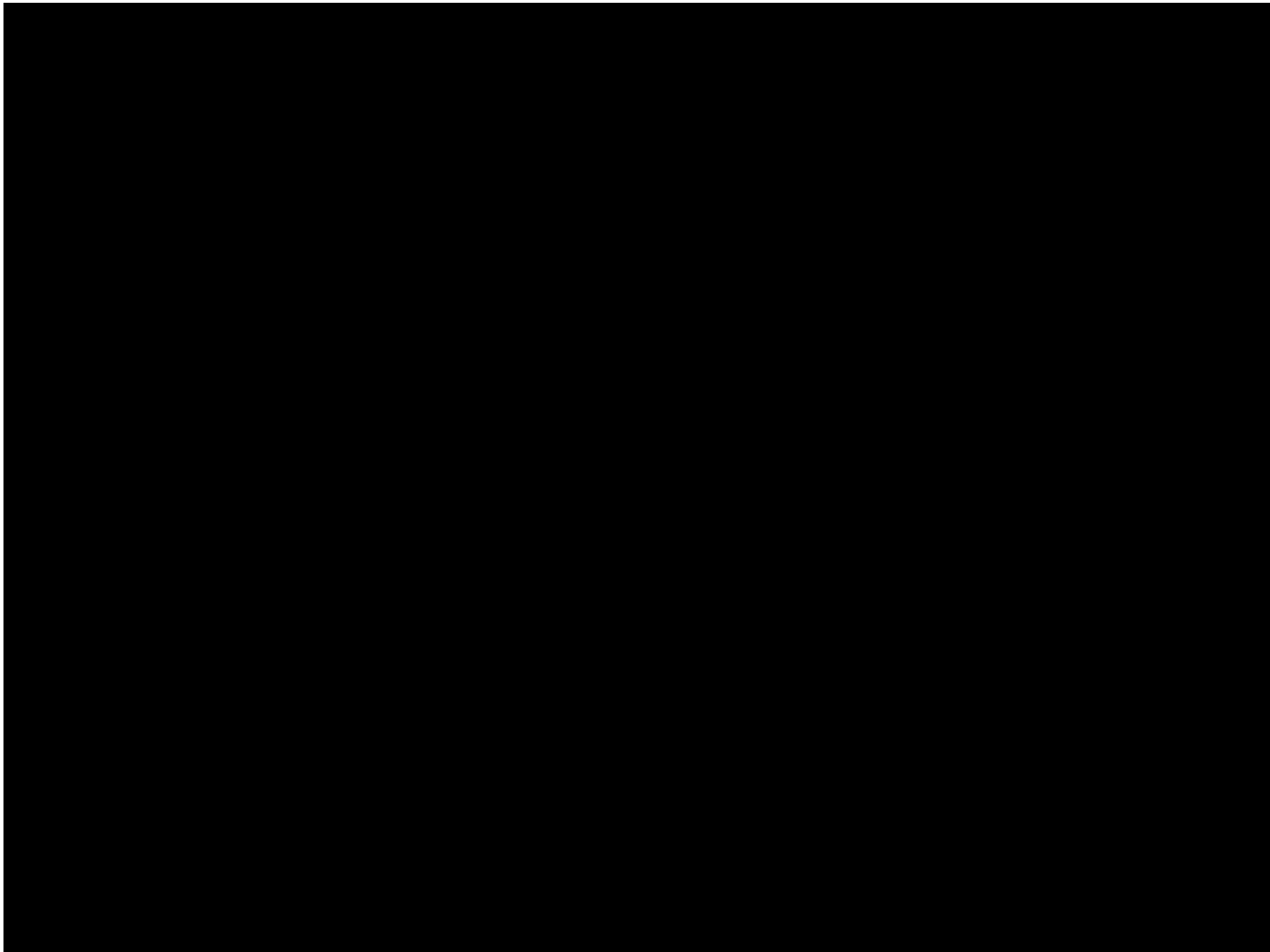




SUSAN'S BRANCH - AFTER











KYLE POINT LIVING  
SHORELINE





HOLLY BEACH FARM LIVING SHORELINE



## I97 - SEPTIC TO SEWER



## HERITAGE HARBOR STREAM





# ULMSTEAD BIORETENTION



# ST. DIXON FARM RSC







CAMP WOODLANDS



# THANK YOU!!!

**Erik Michelsen**, Deputy Director, AA Co Bureau of  
Watershed Protection and Restoration  
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