

# *Weather It Together* Data Management and Communication



**Michael Baker**  
INTERNATIONAL



# Overview

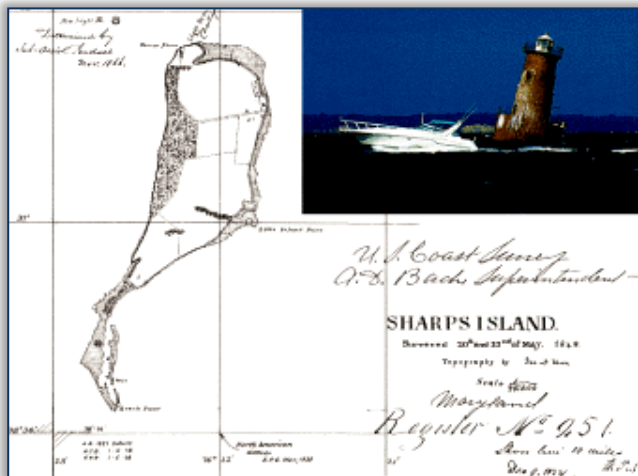
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- *Introduction to Weather It Together*
- *Weather It Together Data Collection*
- *Weather It Together Data Management & Integration*
- *Weather It Together Data Dissemination*

# Weather It Together

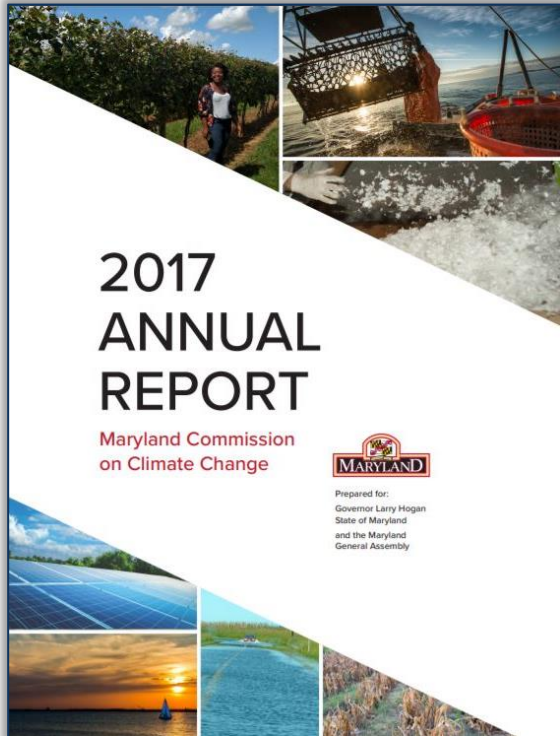


# Chesapeake Bay at Risk



Within the next 100 years, sea level rise is estimated to reach 44 inches. To date, 13 islands have been lost in the Chesapeake.

# Maryland: A State at Risk



# National Landmarks at Risk

Annapolis has experienced the greatest increase in nuisance flooding in the past 50 years (925%) with a current average of 39.3 days per year. In the next 50 years, nuisance flooding will be a daily occurrence.



# Weather It Together



Jan. 30th

Francis Scott Key Auditorium  
St. John's College

Free!

**ANAPOLIS PREPARES FOR RISING SEAS - HISTORY MEETS THE FUTURE**

Event Sponsored by:

Mayor Michael Pantelides invites you to a free public lecture by John Englander, noted oceanographer, author and President of the International Sea Level Institute to hear how the global impacts of sea level rise will impact Annapolis and the greater Chesapeake region. Mr. Englander will discuss why Annapolis is leading the way in planning for the protection of cultural assets and working with state and federal partners to Weather It Together.

Saturday, January 30, 2016  
Francis Scott Key Auditorium, St. John's College  
60 College Avenue, Annapolis, Maryland

4 pm Lecture  
5 pm Reception and Book Signing  
FREE and OPEN to the Public!

Please RSVP to [hispres@annapolis.gov](mailto:hispres@annapolis.gov) or call Shari Phippen at 410/263-7961

Thank You to Our Supporting Partners

Additional Support Provided by:

John Englander is the first in a series of lectures scheduled for 2016 in celebration of Preservation50 - the official event recognizing the 50th Anniversary of the passage of the National Historic Preservation Act of 1966, and the reason we have a federal-certified historic preservation program in Annapolis.

“What is most compelling about the Annapolis model is that [public engagement] is always included as they move through the different stages of plan development -- that's really the takeaway: the City has managed to create and implement a meaningful, successful public engagement process.”

*Jen Sparenberger  
Resilience Manager  
MD Dept. of Planning*

# FEMA Hazard Mitigation Planning



## Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning

State and Local Mitigation Planning How-To Guide

FEMA 386-6 / May 2005



*Hazard mitigation planning is the process of determining how to reduce or eliminate the loss of life and property damage resulting from natural and manmade hazards.*

1. Organizing efforts to develop a mitigation plan;
2. Identifying hazards and assessing losses;
3. Setting mitigation priorities & goals; writing the plan;
4. Implementing the mitigation plan.



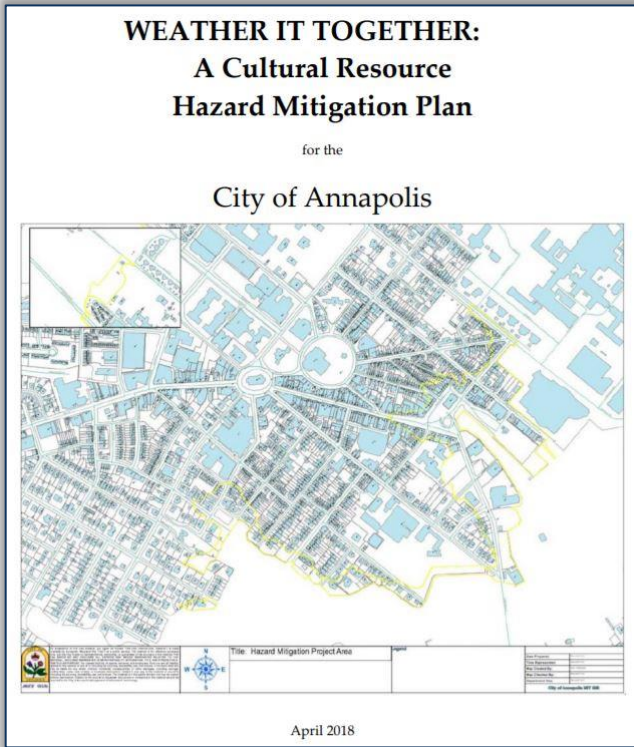
# Consider Adaptation Strategies - USACE



# Set Priorities



# Write & Implement the Plan



- Implement a public awareness & engagement program
- Lead building resilience
- Develop a disaster response and recovery plan to build back better
- Align land use, economic development & environmental regulations
- Fund public improvements and incentivize private investment

# *Weather It Together – Data Driven*



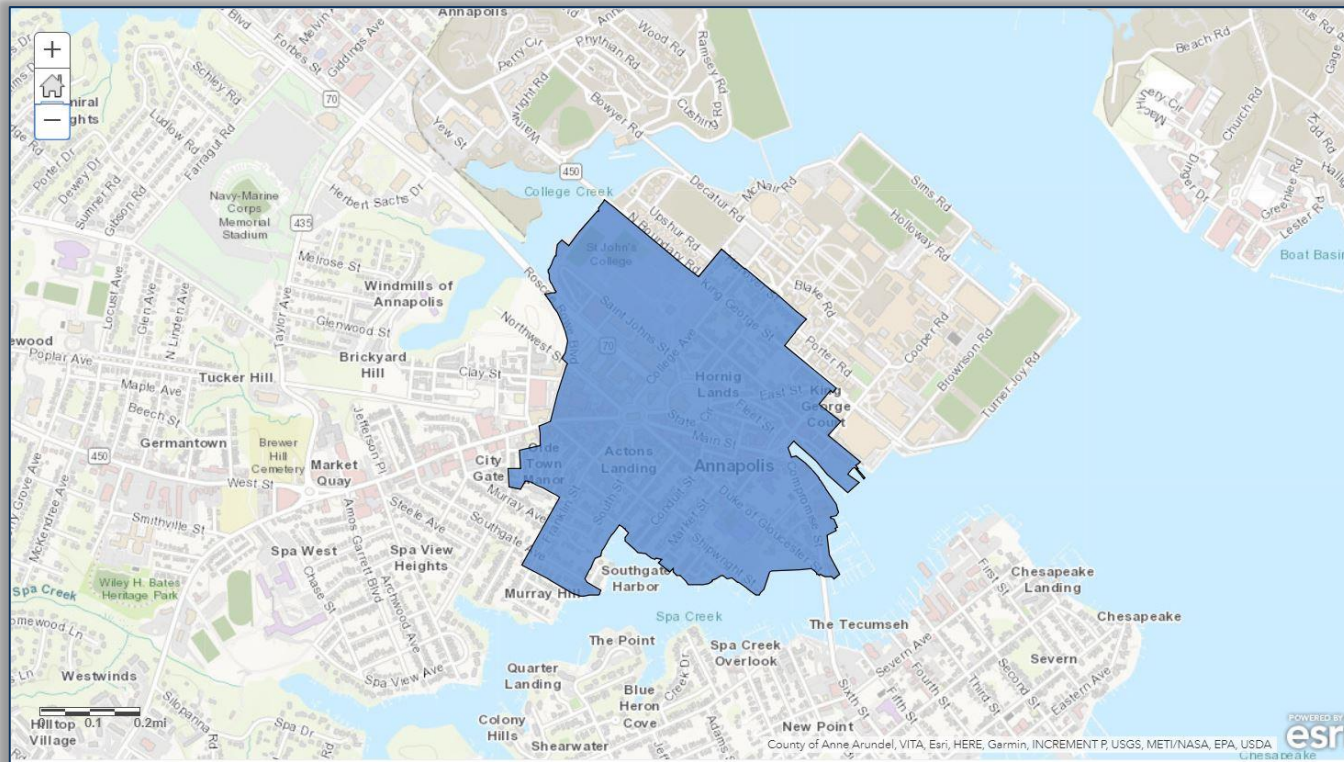
**1. Data Collection**

**2. Data Management & Integration**

**3. Data Dissemination**

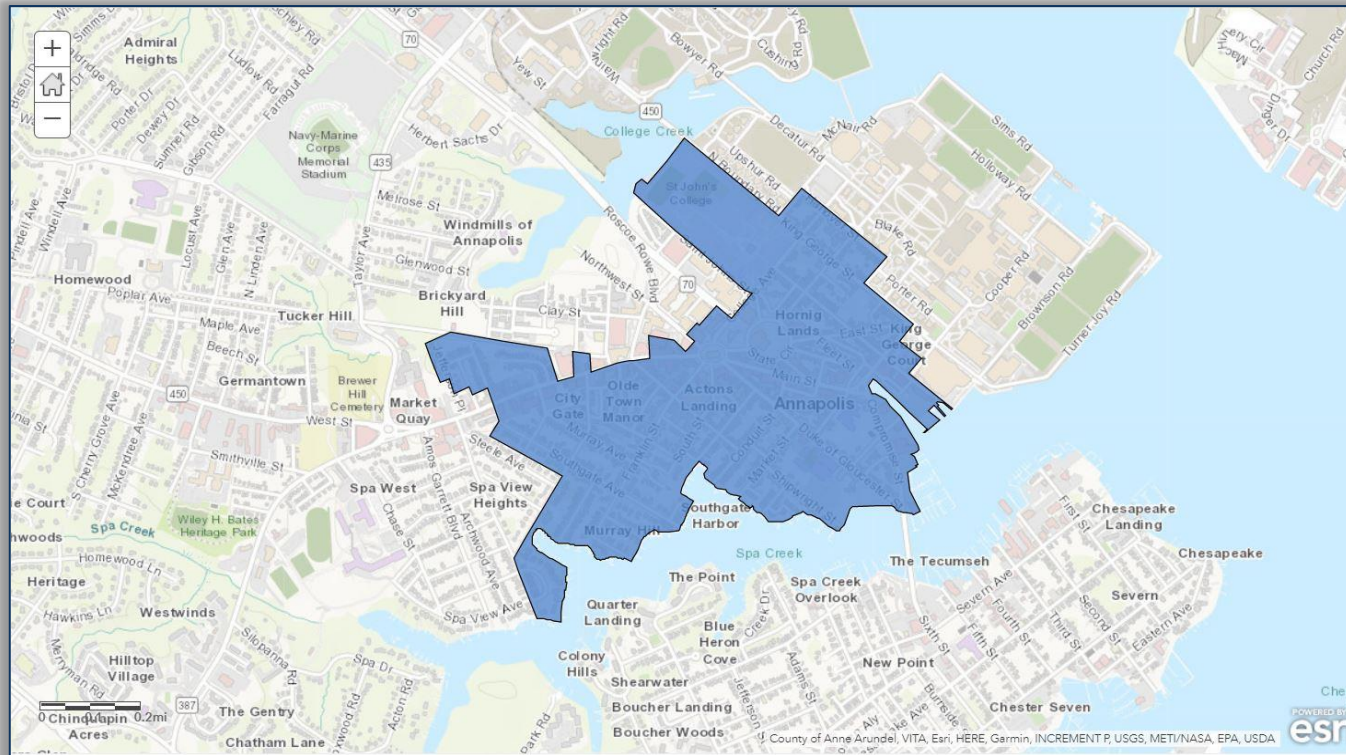
# *Data Collection*

# Annapolis Historic District



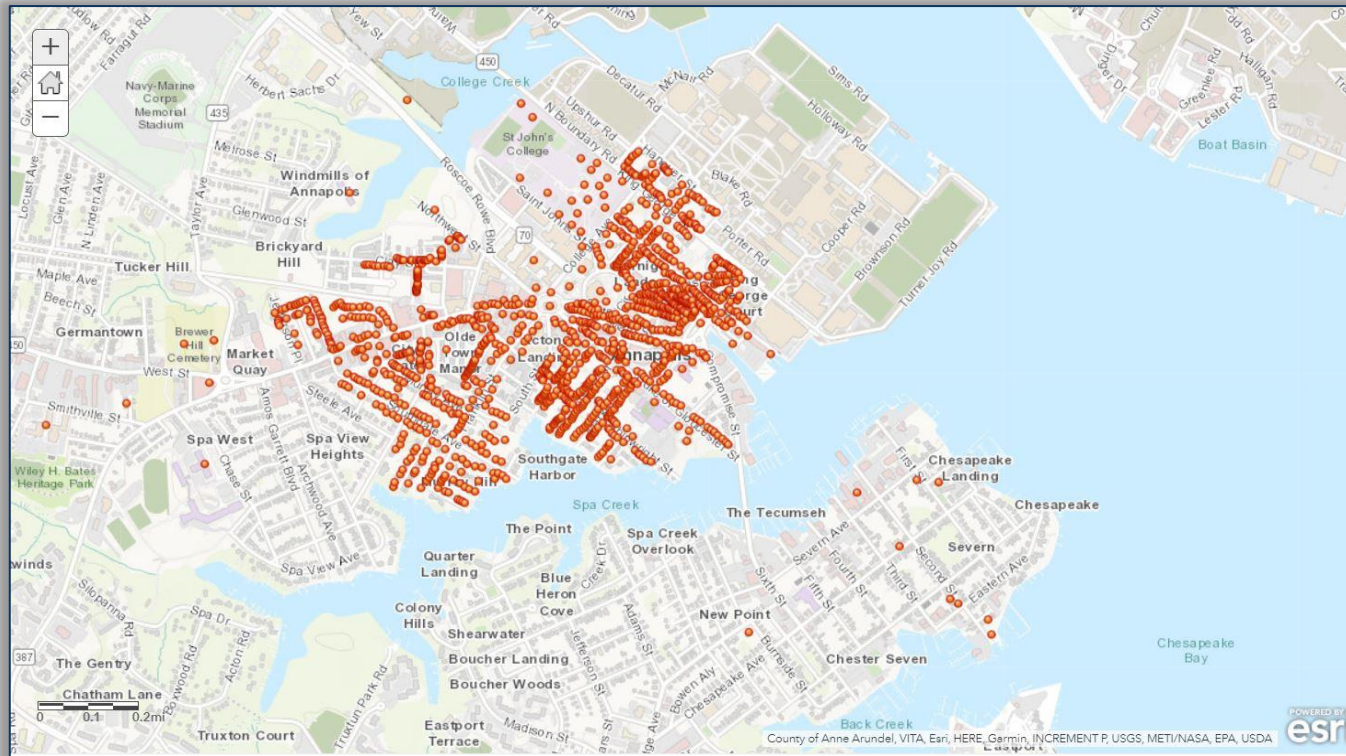


# National Register District





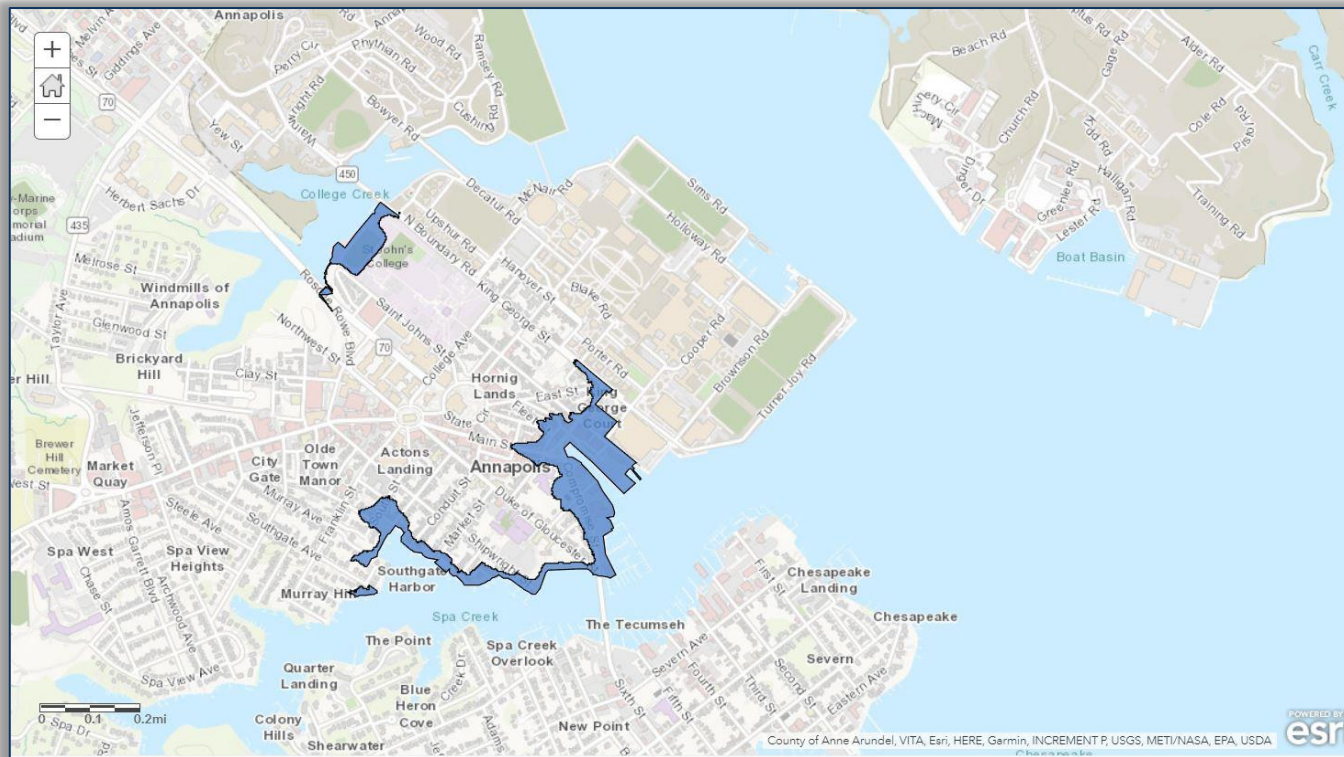
# Historic Properties



# 1% and 0.2% Annual Chance Floodplain



# 10 ft Inundation



# Community Input – Planning Charrettes



# University of Florida – Envision Heritage



# *Data Management & Integration*

# Annapolis GIS Maven



**City of Annapolis**

Overview | Members

**City of Annapolis**

Subscription ID: 2600277262

System health: [View details](#)  
✓ All systems operational

**Administrative contacts** [View all](#)

Shawn Wampler

**Newest members** [View all members](#)

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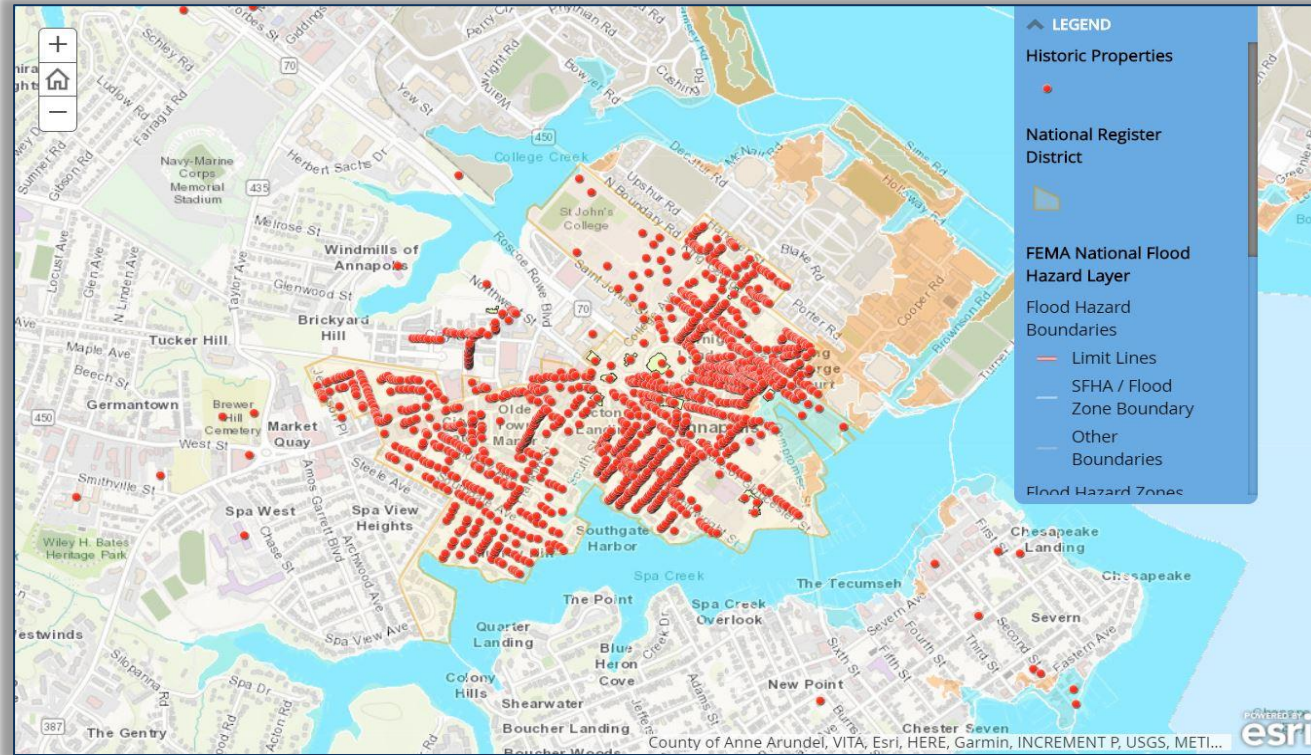
- Annapolis Sustainable Comm...** by ekborchers  
Created: Sep 19, 2018  
Updated: Nov 5, 2018  
View Count: 3
- Capital Improvement Projects...** by dentarthurdent74  
Created: Aug 5, 2013  
Updated: Oct 31, 2018  
View Count: 399
- GHD Delivery Map** by vswampler  
Created: Mar 2, 2016  
Updated: Oct 30, 2018  
View Count: 784
- OVERDOSES 2015 - October ...** by vswampler  
Created: Feb 19, 2018  
Updated: Oct 25, 2018  
View Count: 247

# Historic Districts

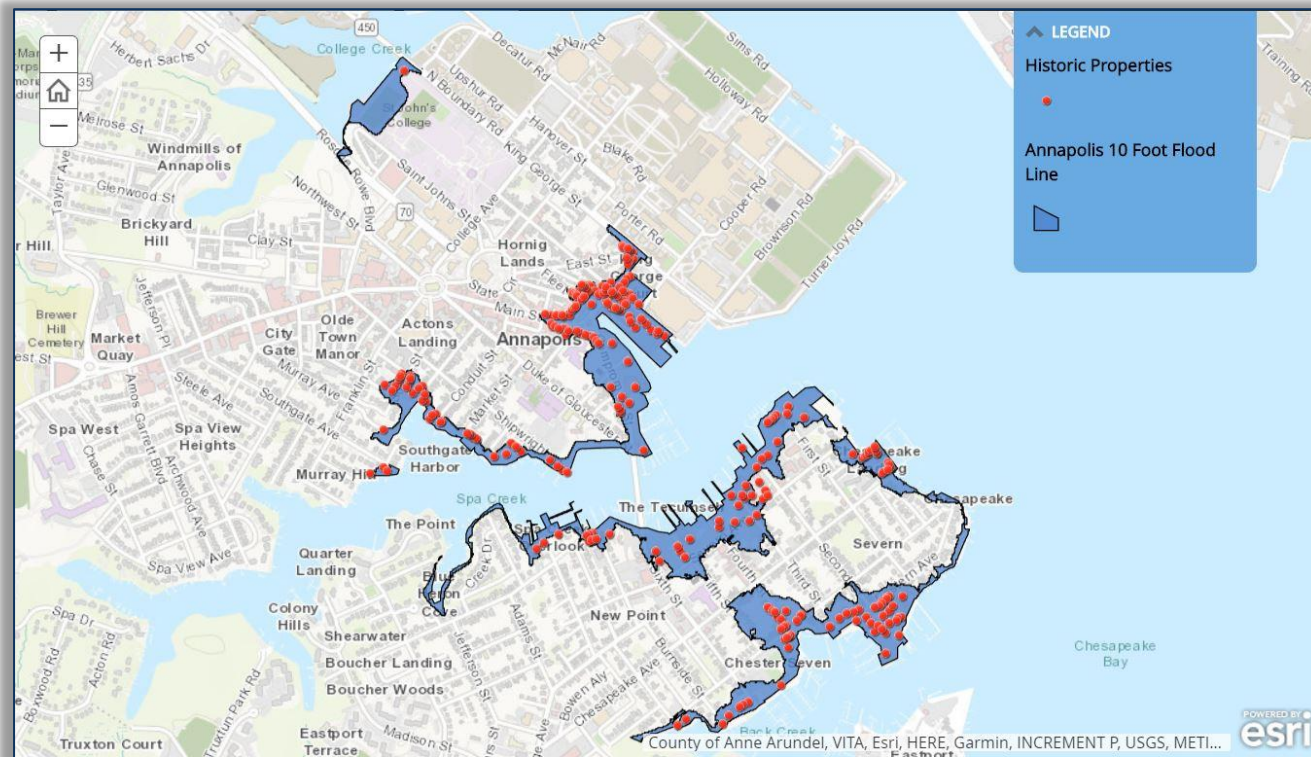




# Heritage and FEMA



# Cultural Resources at Risk - USACE



# *Data Dissemination*

# Landmark at Risk Story Map

Landmark at Risk: Protecting the Historic Seaport of Annapolis, Maryland

[View the Plan Here](#)



Landmark at Risk

A Strategic Approach

Weather It Together

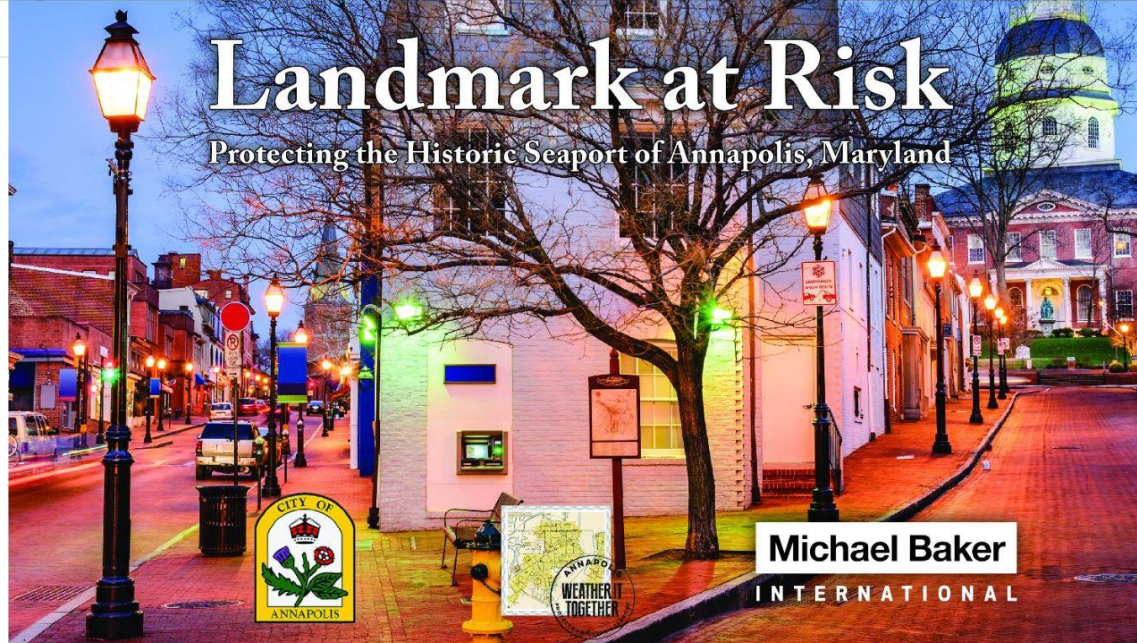
Adapting a Landmark

Get Involved

Contact Us

## Landmark at Risk

The City of Annapolis's *Weather It Together* team has collaborated with the Planning Innovation Lab of Michael Baker International to develop an interactive resource that highlights City efforts to address local climate-change impacts through proactive cultural resource hazard mitigation planning. This story map entitled *Landmark at Risk* hopes to become the go-to resource, not only for the citizens of Annapolis, but for other communities facing the challenges of climate change. Please take advantage of this interactive product to click, zoom, or scroll through the diverse media. We will be updating this resource as progress continues, so



# Landmark at Risk Story Map

## Landmark at Risk: Protecting the Historic Seaport of Annapolis, Maryland

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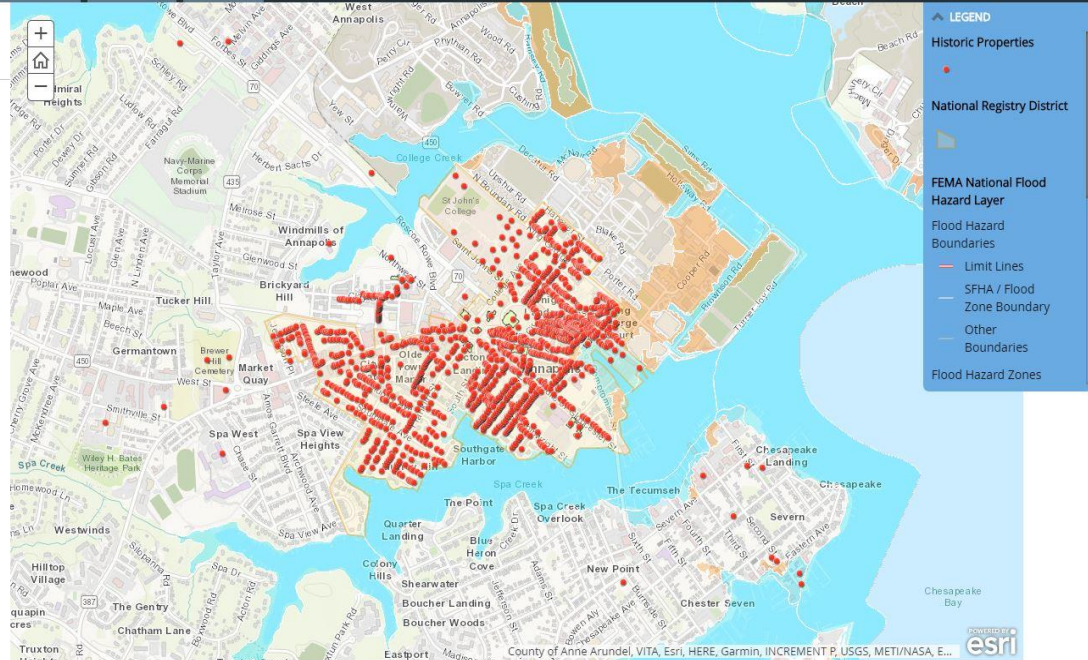
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### A Strategic Approach

#### Phase 2: Assess Risk

Phase Two outlines the process of conducting risk assessments of historic properties and cultural resources within the defined study area. This phase is broken down into four primary steps:

1. Identify the hazards that can affect your community.
2. Profile hazards to determine hazard-prone areas and magnitude of each hazard.
3. Inventory historic/cultural resources to assess vulnerability and establish preservation priorities.
4. Estimate the associated amount of potential losses.



# Landmark at Risk Story Map

**Landmark at Risk: Protecting the Historic Seaport of Annapolis, Maryland**

View the Plan Here [f](#) [t](#) [s](#)

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## Landmark at Risk

foot in the last century, the highest rate of sea level rise experienced along the Atlantic Coast and almost twice the global average (NOAA 2012). Sea level rise has exacerbated tidal flooding, which poses a risk to Annapolis's historic resources. Since 1963 the City has seen a 925% increase in annual high tide flooding events, from 3.8 days a year between 1957 and 1963 to over 40 days in 2017.

Use NOAA's Sea Level Rise Viewer to help visualize the impacts from sea level rise and high tide flooding in Annapolis. \*Desktop Only

This trend is expected to increase exponentially, with recent studies showing that by 2030 Annapolis can expect more than 180 tidal floods a year. By 2045 the frequency goes up again - to an average of more than 360 times a year; twice daily due to semi-diurnal tides.

# Landmark at Risk Story Map

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 **Weather It Together** The Team [2017](#) [2016](#) [2015](#)

## Coastline Survey: Weather It Together and U.S. Army Corps of Engineers



Architect Michael J. Dowling, ever dauntless in his search for answers.

On July 31, 2017, the *Weather It Together* team embarked on a survey of the 16 or so miles of coastline in the City of Annapolis. The team is diligent to observe potential flood conditions in all of the City, not just the area at City Dock.

# Landmark at Risk Story Map

## Landmark at Risk: Protecting the Historic Seaport of Annapolis, Maryland

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**Get Involved in the Resilience Efforts**

**Give Us Your Feedback - Take the Survey!**

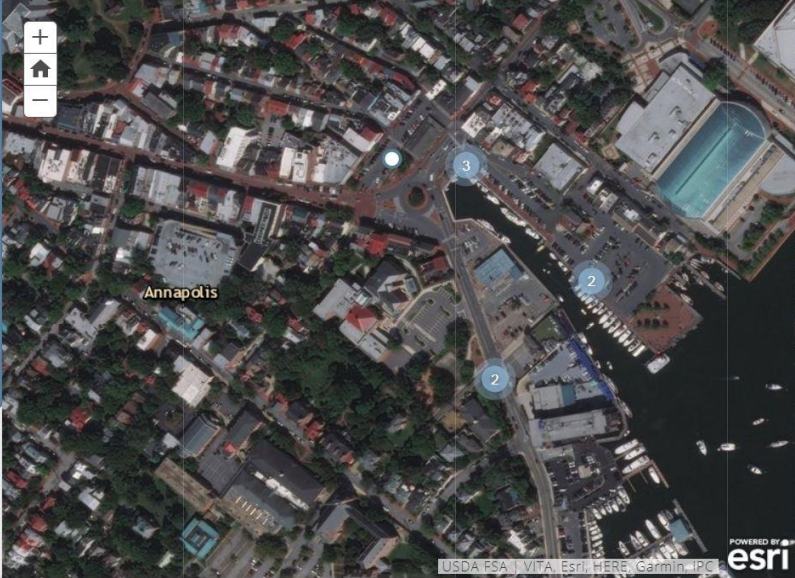
**Share Your Annapolis Flooding Photos**

Help the City of Annapolis increase public awareness of the risks due to flooding. Upload your photos of localized flooding so others can visualize flood impacts on our historic city.

Cover Image: kintehaley.org

**Annapolis in the News**

Share Your Annapolis Flooding Photos [+](#) [Share Your Photos Here](#) [f](#) [t](#) [l](#)



**Dock Street Sept 2016**

**Ego Alley Ducks Swimming under...**

**City Dock Flooding**

**Dock Street Flooding**

**City Dock**

**Sunday Flooding**

POWERED BY **esri**

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# University of Florida – Envision Heritage

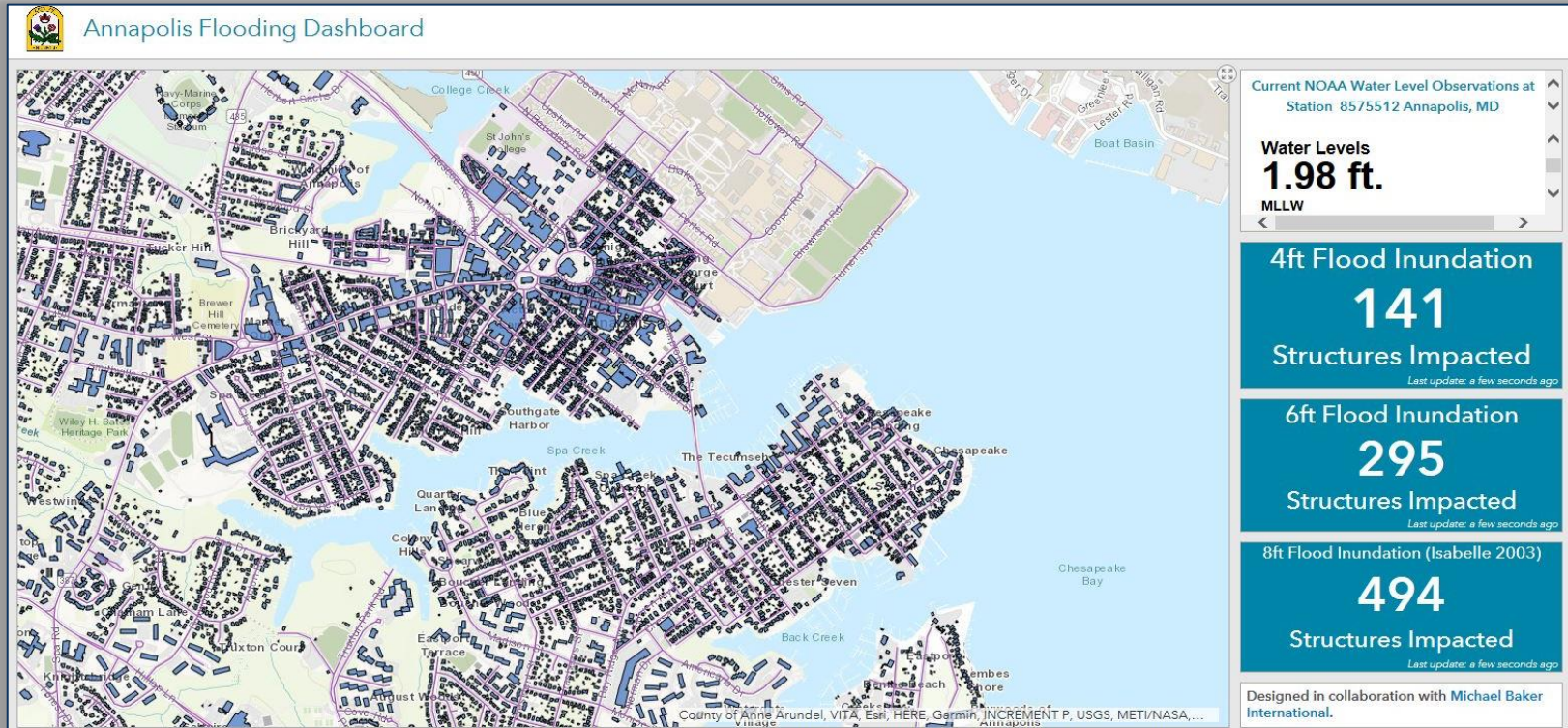


# University of Florida – Envision Heritage



8.86 ft: 1% Annual Chance + 2100 Intermediate SLR Scenario  
Camera 2: Docks

# Flood Inundation Dashboard



# Thank You



**Lisa Craig**  
**Principal**

**The Craig Group: Partners in  
Preservation & Adaptation Planning**

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