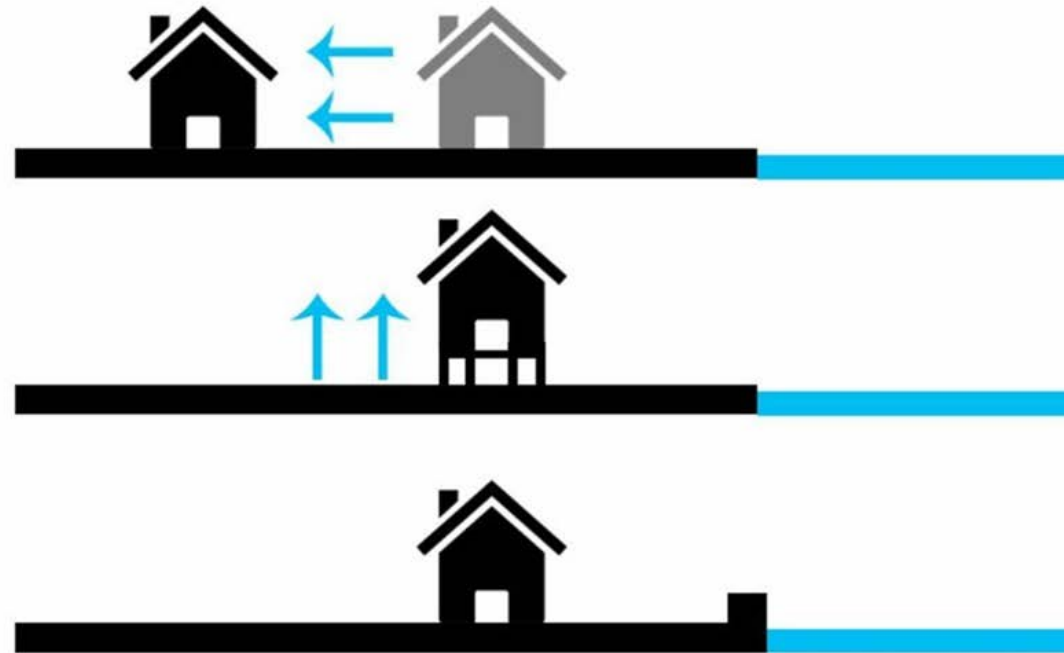


# NEW PARTNERSHIPS IN THE FLOODPLAIN MAKE IT WORK

## Conventional Solutions Won't Work



WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)

Willie Parks

Skip Stiles  
American Society of Flooplain Managers



# WE WERE TRYING TO SAVE WETLANDS (2006) WHEN TWO THINGS CHANGED...



WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)



# 1) SEA LEVEL RISE IMPACT ON TIDAL WETLANDS BECAME APPARENT



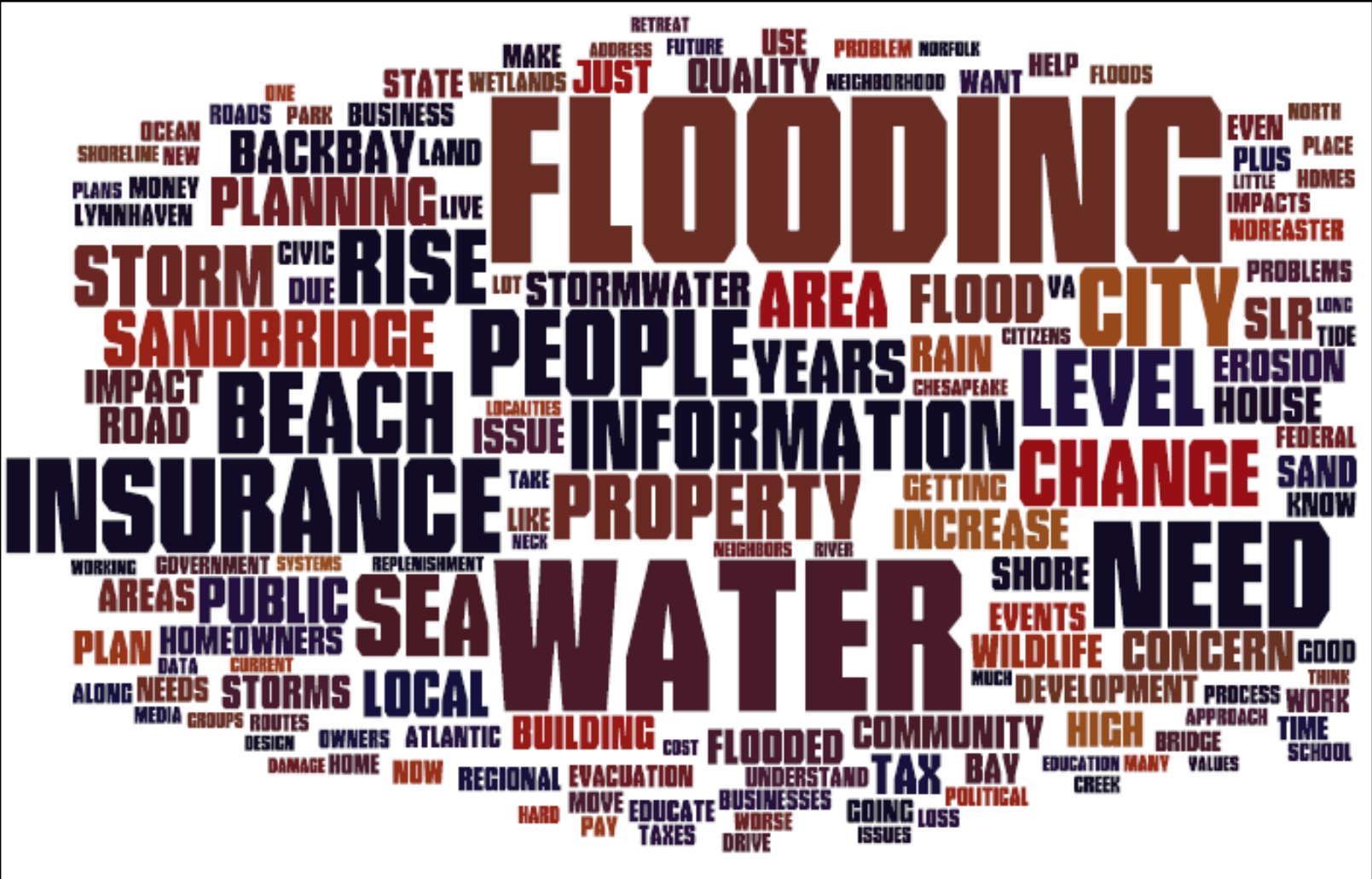
WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)



Sea Level Rise

2) THE PUBLIC WANTED TO TALK ABOUT FLOOD PROTECTION AND INSURANCE (NOT WETLANDS!)

WETLANDS  
WATCH

WWW.WETLANDSWATCH.ORG



# THE SOLUTION LIES WELL BEYOND TODAY'S SHORELINE



WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)

# WE MIGRATED UPHILL TO FIND SOLUTIONS

Local Governments are key to adaptation:

- Land Use Decisions
- Infrastructure Decisions (stormwater, roads, etc.)
- Administer Federal Programs (FEMA, HUD, etc.)

Local Government staff, appointed, and elected leadership are struggling to deal with key adaptation issues.

Land “behind” the wetlands not regulated by natural resources agencies = need to engage land use decisions, floodplain (NFIP) programs, etc.



WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)



# HANGING OUT WITH LOCAL GOVERNMENT STAFF



WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)





# WE DISCOVERED YOUR ALPHABET SOUP = CFM, CRS, PPI, ISO



WETLANDS  
WATCH

WWW.WETLANDSWATCH.ORG





# EVOLVING ROLE IN CRS/NFIP OUTREACH



WETLANDS  
WATCH

WWW.WETLANDSWATCH.ORG

 *Sea Level Rise*

# COMMUNITY LEVEL EXPERIENCES REPORTED



Raised and spent ~ \$250,000/5 years on NFIP/CRS/Floodplain related programs in Virginia



Lead Author: Mary-Carson Stiff, CFM  
Director of Policy, Wetlands Watch  
Chair, Coastal VA CRS Workgroup

Contributing Author: Taylor Goetz  
MS/MPP Graduate Student, College  
of William & Mary and the Virginia  
Institute of Marine Science



CFM  
Watch  
group  
Rise



Lead Author: Mary-Carson Stiff  
Director of Policy, Wetlands Watch

Contributing Author: Ross Weaver  
Assistant Director, Wetlands Watch



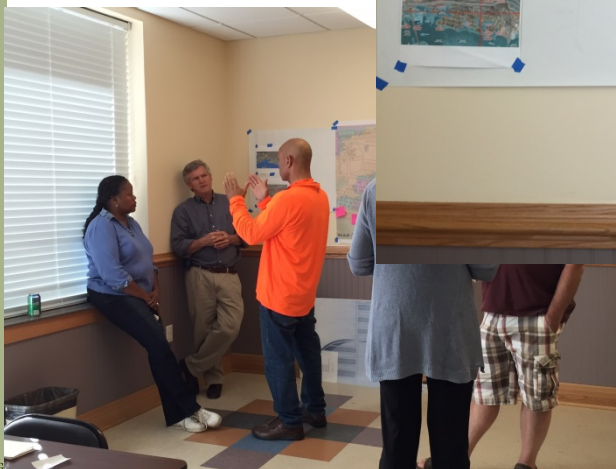
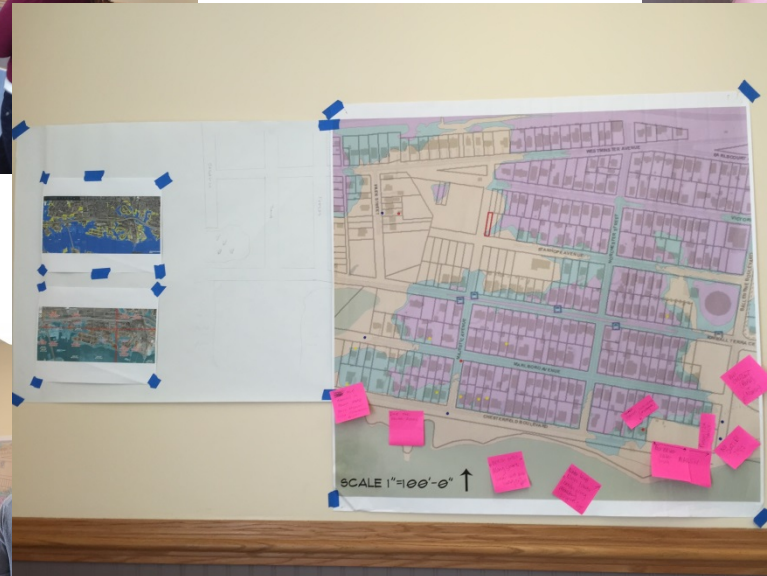
Author: Mary-Carson Stiff, CFM  
Director of Policy, Wetlands Watch  
Chair, Coastal VA CRS Workgroup

Contributing Author: Jennifer Seay  
Old Dominion University, BA Economics



# PRE-DISASTER DESIGN – “WAITING FOR KATRINA”

*Students Redefine Problem and Develop Solutions*



WETLANDS  
WATCH

WWW.WETLANDSWATCH.ORG



# TIDEWATER RISING RESILIENCY DESIGN CHALLENGE – THE WINNERS

**\$120 million award from HUD  
National Disaster Resiliency  
Competition**



WETLANDS  
WATCH  
[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)





# EXPANDING DESIGN WORK ONE COMMUNITY AT A TIME



WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)

# NEED BETTER INFORMATION ON FLOODING TO DEVELOP EFFECTIVE FLOOD PREDICTION MODELS



WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)



# RAIN FLOODING – SEPTEMBER 8, 2014



**City of Norfolk, VA Public Safety**

Monday September 8th, 2014 :: 05:54 p.m. EDT

**Advisory**

**Coastal Flood Advisory from 9/8/2014 5:18 PM to  
9/9/2014 12:00 AM EDT for City of Norfolk**

**Message Expired**

Coastal Flood Advisory from 9/8/2014 5:18 PM to 9/9/2014 12:00 AM EDT for City of Norfolk

**Address/Location**

[City of Norfolk, VA Public Safety](#)  
3661 East Virginia Beach Boulevard  
Norfolk, VA 23502

**Contact**

Emergency: 9-1-1  
Non-emergencies: 757-441-5600



WETLANDS  
WATCH

WWW.WETLANDSWATCH.ORG



*Sea Level Rise*

# OUTREACH MODERNIZATION

Develop Smart Phone app that allows people to report trouble spots and actually map inundation zones on their terms.

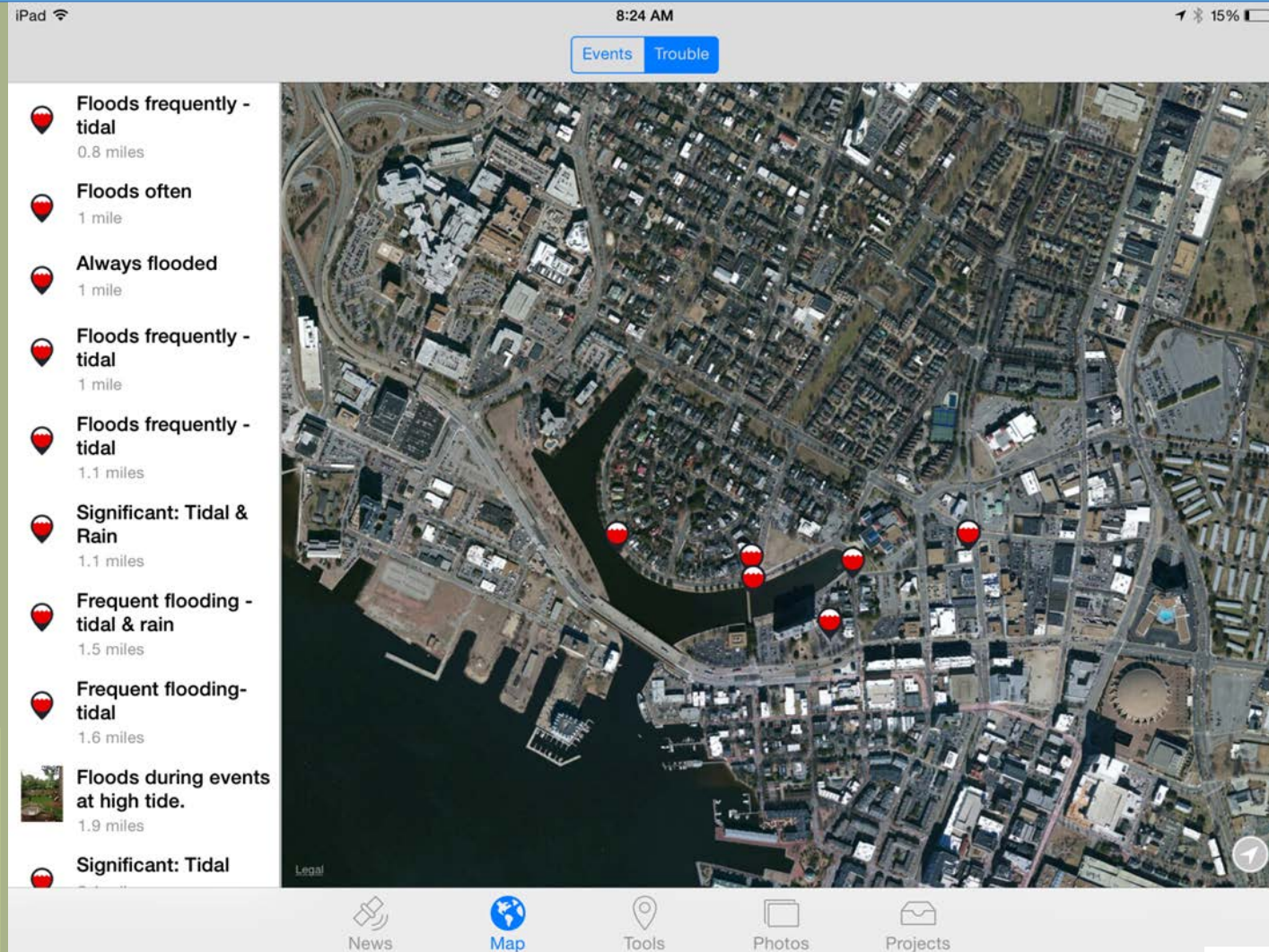


WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)



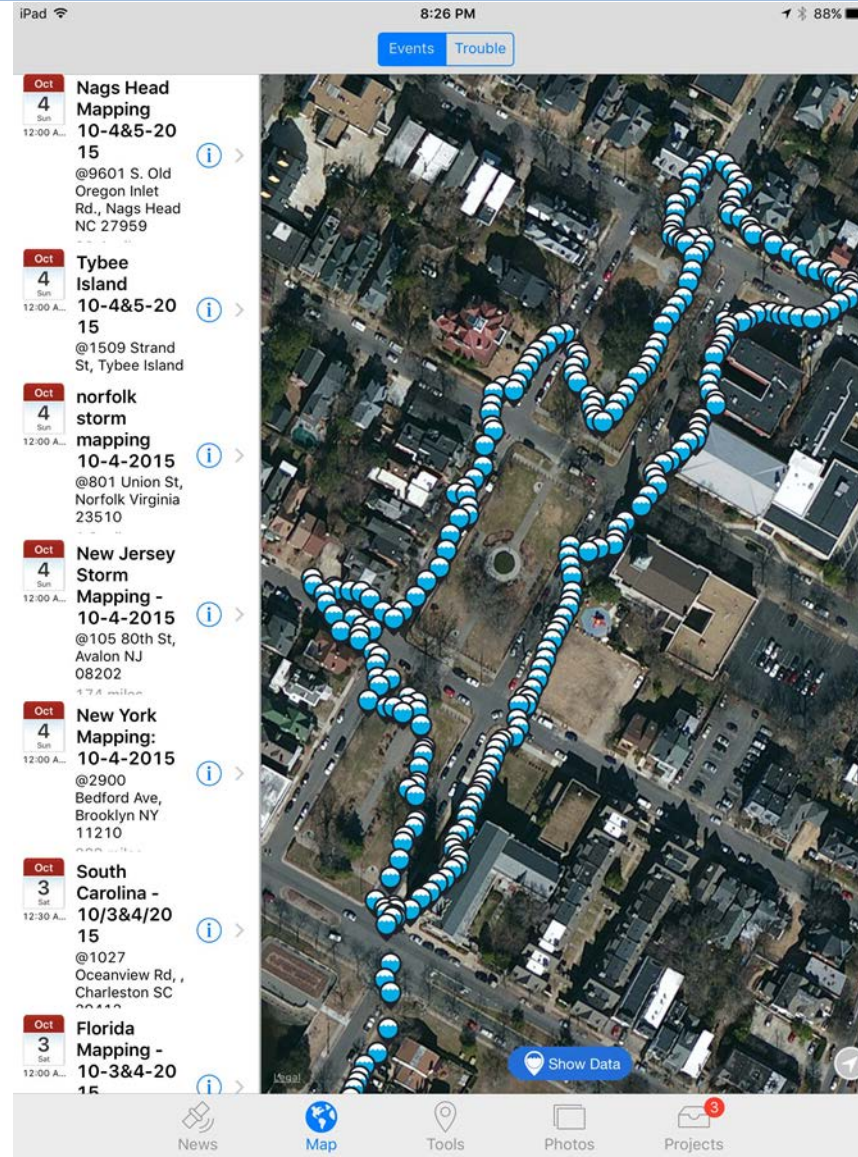
# DATA MAPPING IMPROVES FUTURE PREDICTIONS



WETLANDS  
WATCH

WWW.WETLANDSWATCH.ORG

# DATA MAPPING IMPROVES FUTURE PREDICTIONS



WETLANDS  
WATCH

WWW.WETLANDSWATCH.ORG





# DATA POINTS EXPORTED AS .CSV TO MAKE MAP LAYERS

exported data

	A	B	C	D	E	F	G
1779	1491	Storm Mapping 9-26-15	687	57:40.9	36.88188934	-76.29395294	
1780	1491	Storm Mapping 9-26-15	687	57:54.1	36.88196564	-76.2939682	
1781	1491	Storm Mapping 9-26-15	687	58:01.3	36.88201523	-76.29398346	
1782	1491	Storm Mapping 9-26-15	687	58:09.0	36.88204193	-76.29397583	
1783	1491	Storm Mapping 9-26-15	687	58:15.9	36.88208389	-76.29397583	
1784	1491	Storm Mapping 9-26-15	687	58:16.4	36.88208389	-76.29397583	
1785	1491	Storm Mapping 9-26-15	687	58:22.8	36.88210678	-76.29397583	
1786	1491	Storm Mapping 9-26-15	687	58:29.2	36.8821373	-76.29395294	
1787	1491	Storm Mapping 9-26-15	687	58:35.7	36.88217545	-76.29392242	
1788	1491	Storm Mapping 9-26-15	687	58:42.5	36.88223648	-76.29390717	
1789	1491	Storm Mapping 9-26-15	687	58:49.0	36.88224792	-76.29389954	
1790	1491	Storm Mapping 9-26-15	687	58:55.8	36.88228226	-76.29390717	
1791	1491	Storm Mapping 9-26-15	687	59:02.7	36.88231659	-76.29389954	
1792	1491	Storm Mapping 9-26-15	687	59:15.9	36.88234711	-76.29389954	
1793	1491	Storm Mapping 9-26-15	687	59:22.0	36.88237762	-76.29389191	
1794	1491	Storm Mapping 9-26-15	687	59:28.2	36.88238907	-76.29387665	
1795	1491	Storm Mapping 9-26-15	687	59:34.6	36.88241196	-76.29389191	
1796	1491	Storm Mapping 9-26-15	687	59:41.1	36.88243103	-76.29392242	
1797	1491	Storm Mapping 9-26-15	687	59:47.5	36.88247681	-76.29389191	
1798	1491	Storm Mapping 9-26-15	687	59:53.9	36.88250732	-76.29387665	
1799	1491	Storm Mapping 9-26-15	687	59:59.8	36.88254166	-76.29387665	
1800	1491	Storm Mapping 9-26-15	687	00:06.2	36.88259506	-76.29387665	
1801	1491	Storm Mapping 9-26-15	687	00:12.8	36.88264084	-76.29388428	
1802	1491	Storm Mapping 9-26-15	687	00:19.2	36.88267517	-76.29387665	
1803	1491	Storm Mapping 9-26-15	687	00:25.6	36.88273239	-76.29388428	
1804	1491	Storm Mapping 9-26-15	687	00:32.6	36.88277435	-76.29386139	
1805	1491	Storm Mapping 9-26-15	687	00:38.9	36.88279343	-76.29387665	
1806	1491	Storm Mapping 9-26-15	687	00:45.6	36.88282776	-76.29390717	
1807	1491	Storm Mapping 9-26-15	687	00:52.0	36.88286591	-76.29390717	



WETLANDS  
WATCH

WWW.WETLANDSWATCH.ORG



# Data Collection Has Become a Community Event

~\$70,000 (\$20,000 for app, \$50,000 for event/curriculum development)



700 people  
125 High



.8.  
2018.



WETLANDS  
WATCH

WWW.WETLANDSWATCH.ORG





# NON-PROFIT PARTNERS CAN SPEAK “TRUTH TO POWER” AND WORK TO CHANGE POLICY



WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)



# FLOOD DAMAGE MITIGATION – NEED AND OPPORTUNITY

November 2014

## THE CHALLENGE OF MITIGATING VIRGINIA'S FLOODING AND SEA LEVEL RISE IMPACTS



Authors:  
William Stiles, Wetlands Watch  
Shannon Hulst Jarbeau, Wetlands Watch  
Shereen Hughes, Wetlands Watch  
Mary-Carson Stiff, Wetlands Watch



WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)



WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)



# FLOOD DAMAGE MITIGATION – NEED AND OPPORTUNITY

**TABLE 2 - REPETITIVE LOSS DATA BY LOCALITY**

LOCALITY	# OF REPETITIVE LOSS PROPERTIES	AVERAGE COST OF MITIGATION	TOTAL COST OF MITIGATION	AVERAGE ANNUAL FEMA FUNDING	# OF YEARS TO MITIGATE W/ FEMA FUNDING ALONE
Chesapeake	409	\$250,000	\$102,250,000	\$787,500	130 years
Hampton	863	\$75,000*	\$64,725,000	\$833,333	78 years
Norfolk	900	\$162,500	\$146,250,000	\$778,000	188 years
Portsmouth	186	\$75,000*	\$13,950,000	NA	NA
Virginia Beach	561	\$185,000	\$103,785,000	\$725,000	143 years
<b>TOTAL</b>	<b>2,919</b>	<b>NA</b>	<b>\$430,960,000</b>	<b>NA</b>	<b>NA</b>

\*No average mitigation costs were available, so the statewide average of \$75,000 was used.

## FEMA Funding Levels:

- Hampton has received \$2,500,000 since 2011
- Chesapeake has received \$6,300,000 since 2006
- Norfolk has received \$3,890,000 since 2009
- Virginia Beach has received \$2,900,000 since 2010

Note: The most recent data available for Chesapeake, Norfolk, and Virginia Beach is September 2014; for Hampton, data is from 2013.



WETLANDS  
WATCH

WWW.WETLANDSWATCH.ORG



# FLOOD DAMAGE MITIGATION – NEED AND OPPORTUNITY

- Connecticut established a \$25 million resilience fund post-Sandy (exhausted funding)
- Virginia established a Coastal Resilience Revolving Fund in 2017 (no \$\$)
- Texas and South Carolina moving to establish resilience/mitigation funds





# NATURE BASED SOLUTIONS WON'T HAPPEN NATURALLY



WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)



# GREEN INFRASTRUCTURE PRACTICES

For Connectivity, Resiliency, Water Management in the Coastal Plain

**Urban Planters**



**Open Space Conservation & Restoration**

**Open Space – Stormwater Parks**



**Green Streets**



**Constructed Wetlands**



**Living Shorelines & Buffers**



**Retention Ponds**



**Permeable Parking Lanes**



Sources: George Homewood, City of Norfolk, Wetlands Watch, Scapes

# BRING PRIVATE SECTOR INTO THE SOLUTION



**CHESAPEAKE BAY**  
Landscape Professional



WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)



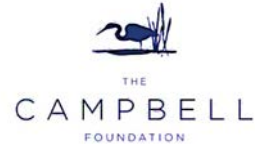
# CBLP LEVERAGES MONEY AND ORGANIZATIONAL PARTNERS

Funded By/Partners with:

Virginia  
Environmental  
Endowment



UNIVERSITY OF  
MARYLAND  
EXTENSION  
*Solutions in your community*



PRINCE CH

Nearly \$600,000 over last 6 years



WETLANDS  
WATCH

WWW.WETLANDSWATCH.ORG





# ACCELERATING LOCAL GOVERNMENT PROGRESS IN COASTAL VIRGINIA



WETLANDS  
WATCH

[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)



# LOCAL GOVERNMENT ADAPTATION GUIDE



Funding



Guidance



Tools



Legislation



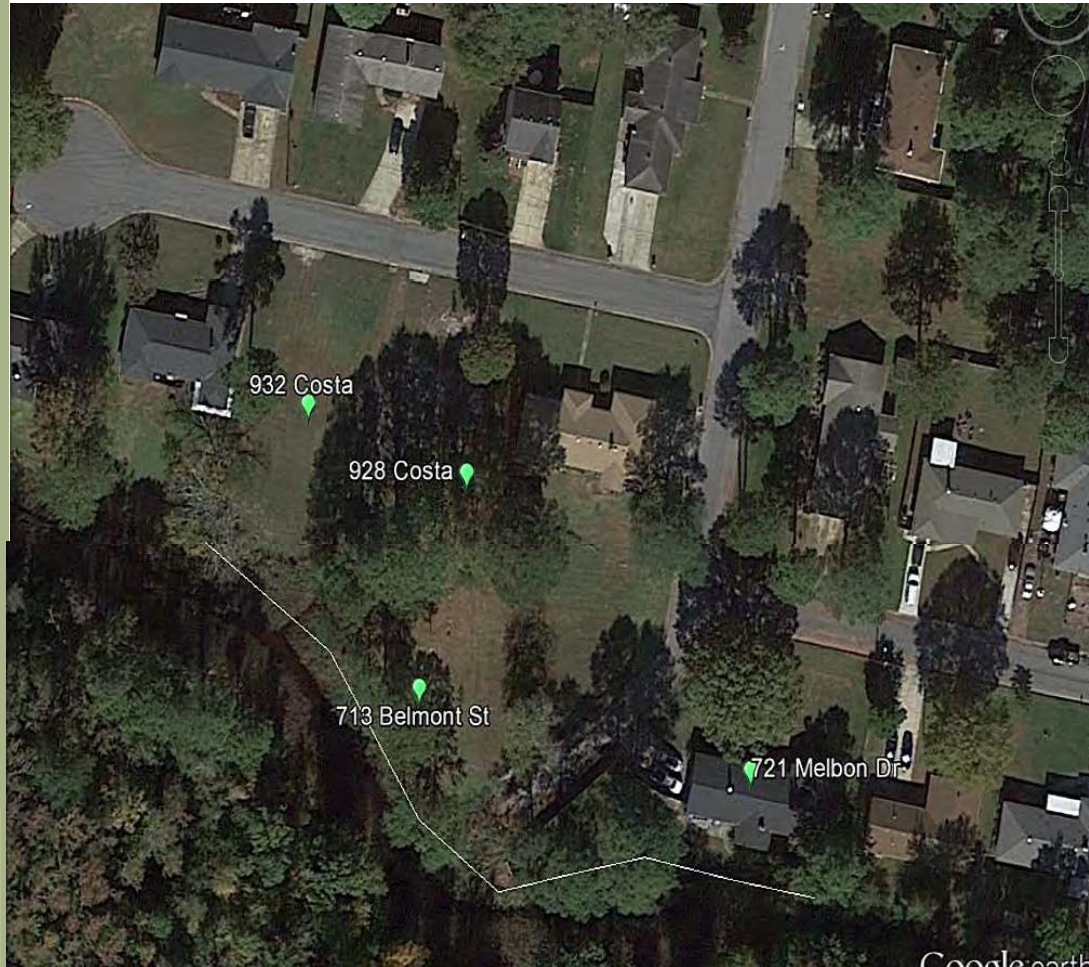
CRS Credit



WETLANDS  
WATCH

WWW.WETLANDSWATCH.ORG

## NEXT WORK – LAND TRUSTS ASSIST RETREAT



“Flip” FEMA -  
Acquired  
Properties into a  
land trust?

Restore  
Ecosystems and..  
Generate Income  
(Wetlands or  
Nutrient Bank)?



WETLANDS  
WATCH  
[WWW.WETLANDSWATCH.ORG](http://WWW.WETLANDSWATCH.ORG)



## SUMMARY

Strategic partnerships with NGO's extend reach, access new funding for floodplain/CRS programs.

NGO's can reach new audiences using a floodplain management approach.

NGO's can work with policymakers in ways that government staff/consultants cannot.

NGO's can fill gaps, pivot more quickly than government agencies, and explore new areas of opportunity.







# QUESTIONS?



Skip Stiles  
[skip.stiles@wetlandswatch.org](mailto:skip.stiles@wetlandswatch.org)

