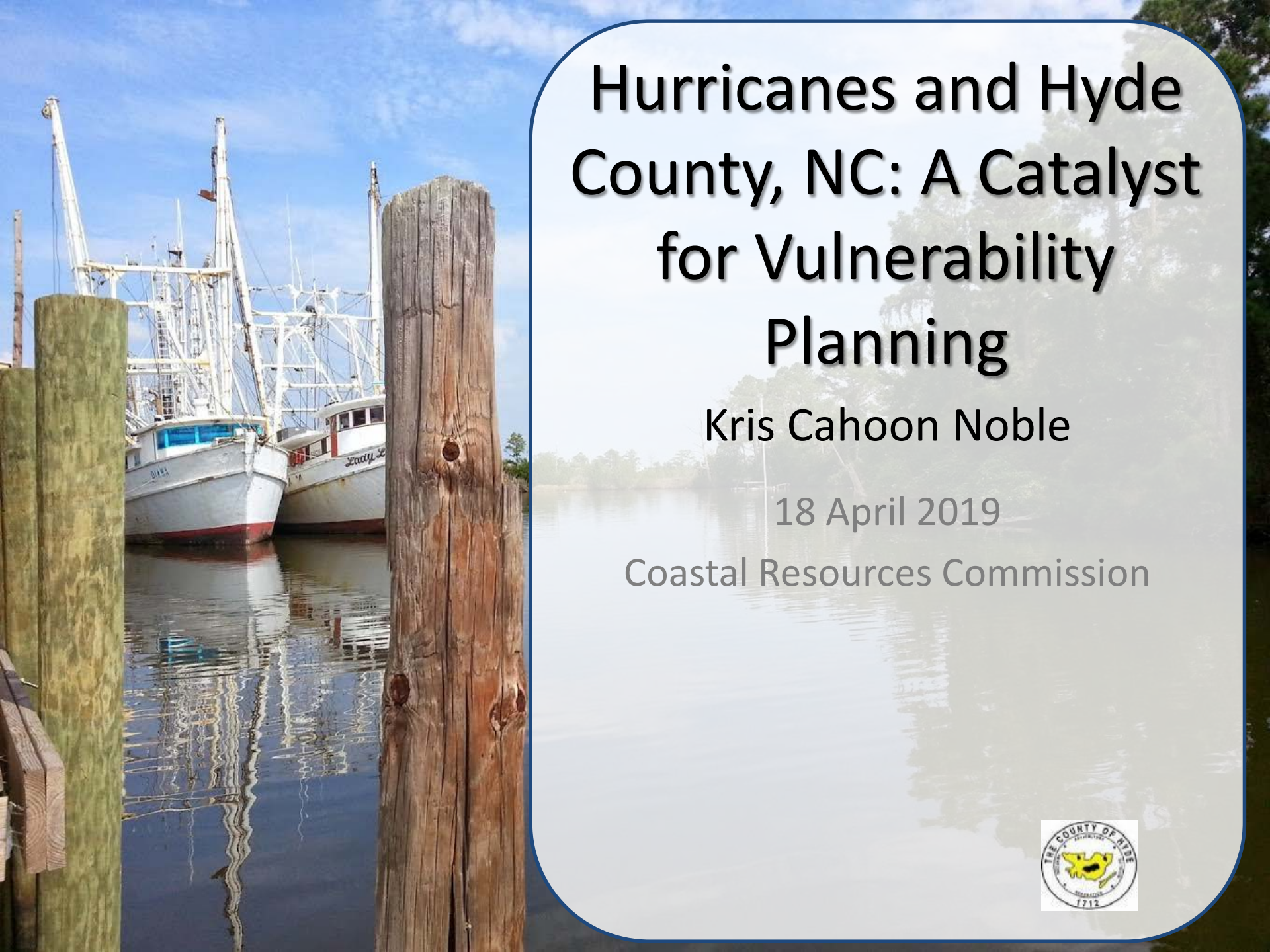




Hurricanes and Hyde County, NC: A Catalyst for Vulnerability Planning

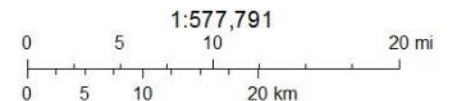
Kris Cahoon Noble

18 April 2019

Coastal Resources Commission



Hyde County, North Carolina

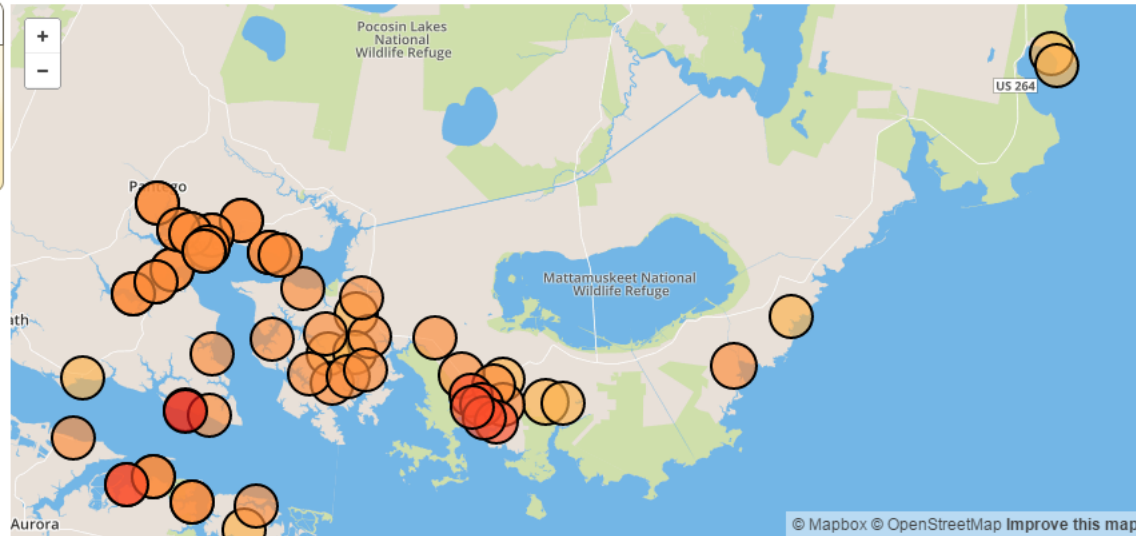


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the

Search By Storm Name & Year

Isabel

2003



<< first < prev 4 5 6 7 8 9 10 11 12 13 next > last >>

Storm Name	Year	Longitude	Latitude	Storm Tide(ft)	Storm Tide(m)	Surge(ft)	Surge(m)	Location	Basin	State
Isabel	2003	-75.5043	35.3441			4.20	1.28		U.S. Atlantic Coast	NC
Isabel	2003	-76.6668	35.3455			4.40	1.34	544 Lewis Rd. Spring Creek NC	U.S. Atlantic Coast	NC
Isabel	2003	-76.6668	35.3455			4.40		544 Lewis Rd. Spring Creek NC	U.S. Atlantic Coast	NC
Isabel	2003	-76.7491	35.3773			5.00	1.52	Route 306 South Aurora NC Ferry loading dock	U.S. Atlantic Coast	NC
Isabel	2003	-76.3137	35.3912			7.10	2.16	1378 Oyster Creek Rd. Swan Quarter NC 27885	U.S. Atlantic Coast	NC
								Swan	U.S.	

Peak Isabel (2003):

- Swan Quarter coastal storm surge water line 7.6 ft
- Engelhard coastal stillwater seed line 4.2 ft



(GA SG 2013)



(GA SG 2013)



(GA SG 2013)



(GA SG 2013)



(GA SG 2013)



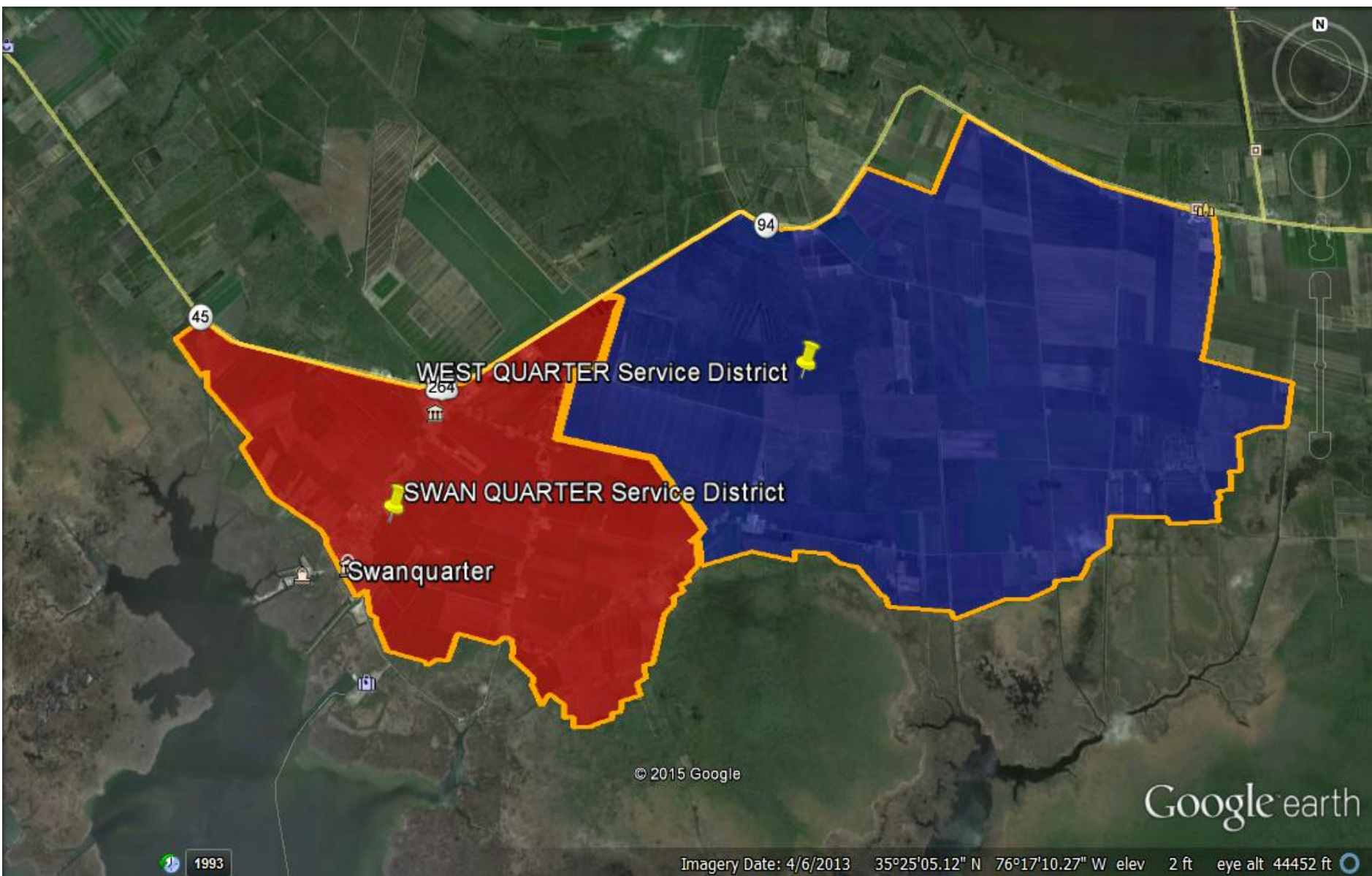
History of the West Quarter & Swan Quarter SSD's

The idea of protecting the greater Swan Quarter Area with a dike was conceived in the 1940s and the original work plan was developed in 1965.

The West Quarter special service district was completed in 1995 after 8 years and 7 phases. It consists of 6 major tide gate structures and 6 miles of earthen dike.

The Swan Quarter Special Service District began in 2003 and was completed in 2011. It has a total of 75 tide gates, 4500ft of vinyl sheet piling and 11 miles of earthen dike.

Combined these Service Districts protect 11069 Acres of land and approximately **\$62,000,000** in property value.



WEST QUARTER Service District

SWAN QUARTER Service District

Swanquarter

© 2015 Google

Google earth

1993

Imagery Date: 4/6/2013 35°25'05.12" N 76°17'10.27" W elev 2 ft eye alt 44452 ft





6.19.2007













5.14.2007



Raising Landing Road



5.31.2007

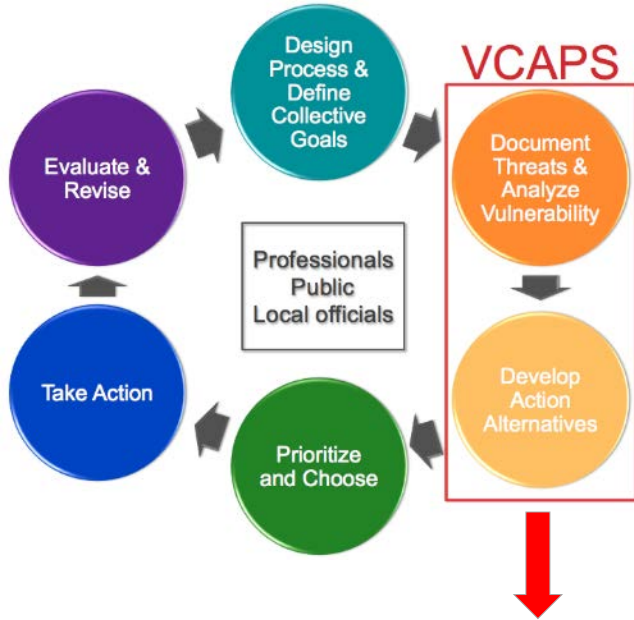




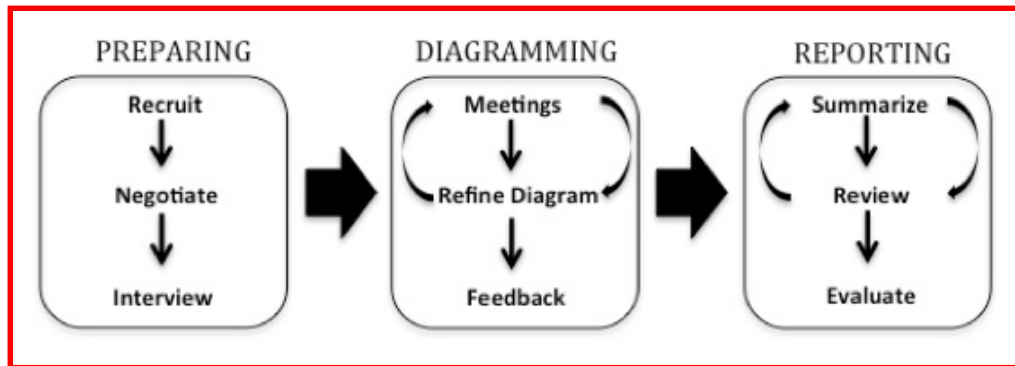
Hyde County Flood Resilience Planning Process 2015

- National Sea Grant Office Coastal Climate Adaptation Initiative funding
- Vulnerability, Consequences, and Adaptation Planning Scenario (VCAPS) Process by Sea Grant
 - Interviews
 - Group diagramming
- GIS-based cost-benefit analysis by Stetson (not completed)
 - Investigations of options as needed (ex. elevation data collection)



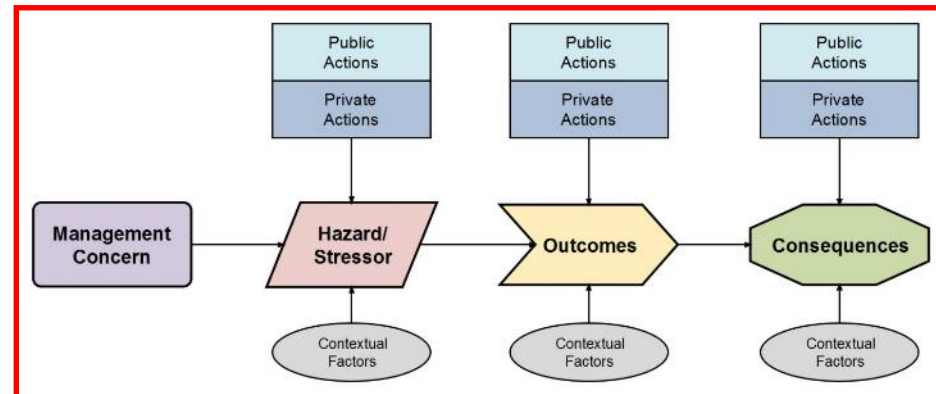


VCAPS supports initial phases of hazard and climate change planning and implementation...



...through group discussion and learning...

...supported by real-time diagramming.



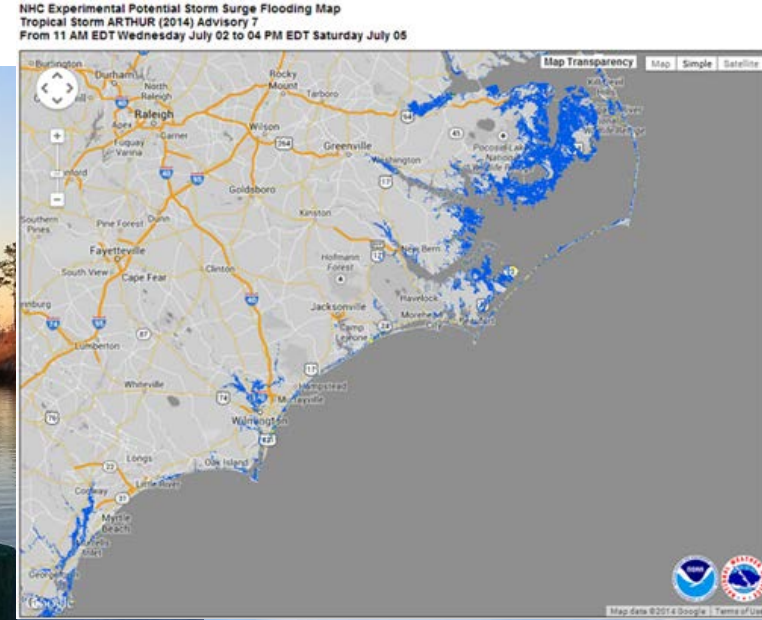
Why a facilitated conversation?

- VCAPS provides a discussion framework rooted in the science of hazards
- Real-time diagrams help participants see and build on each others' ideas
- Local knowledge means more grounded results
- Process leads to ideas and local momentum on implementable next steps



July 1, 2014 VCAPS Session – as Hurricane Arthur approached

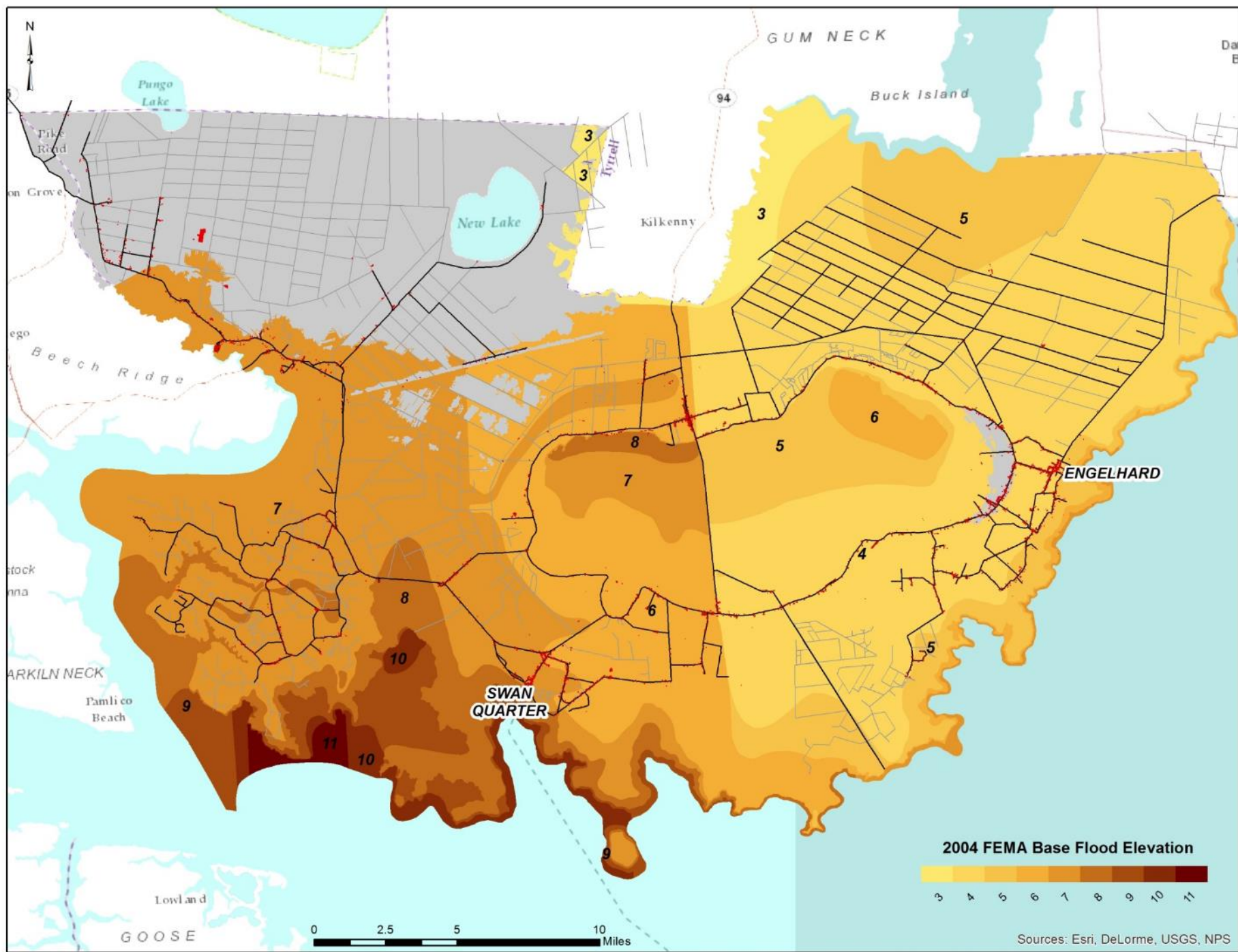
- Mainly focused on structures
- Strong desire for Community Rating System (CRS) points
- Integrates natural and built solutions
 - Agriculture and salinity intrusion
 - Seafood industry
- Adaptations require new ways of working
 - Tailwater recovery
 - Improve grant applications for wastewater engineering assistance
 - Regulatory flexibility and coordination



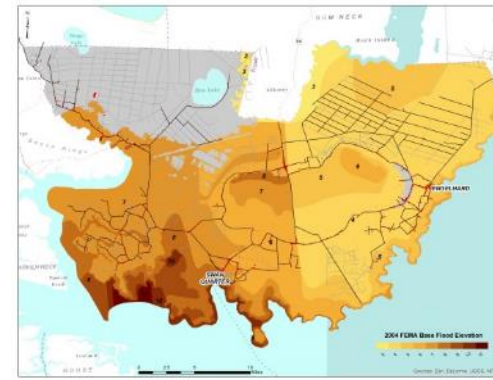
VCAPS: 48 Actions Identified

- Reduce CRS score
- Elevate structures
- Develop locally tailored residents' guide to flood response and recovery
- Investigate farmers' options for salt water intrusion
- Improve grant applications for wastewater engineering assistance





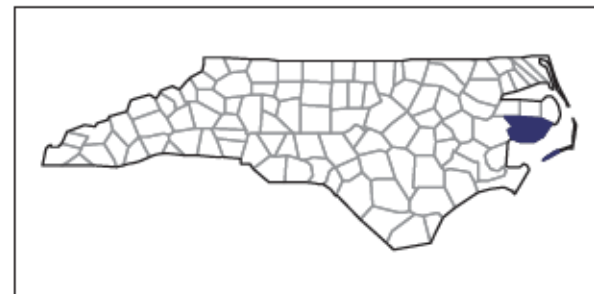
Structures with Positive Benefit/Cost for Elevation (County-Wide – 5884 Buildings)



Floodplain	Structures	Total Value	Elevation Cost	Avoided Damage
10-Year	122	\$12.8 M	\$8.1 M	\$11.3 M
50-Year	133	\$16.5 M	\$9.7 M	\$13.3 M

2012 CENSUS OF AGRICULTURE

COUNTY PROFILE



Hyde County North Carolina

	2012	2007	% change
Number of Farms	158	176	- 10
Land in Farms	107,559 acres	82,680 acres	+ 30
Average Size of Farm	681 acres	470 acres	+ 45
Market Value of Products Sold	\$133,411,000	\$68,173,000	+ 96
Crop Sales (D)			
Livestock Sales (D)			
Average Per Farm	\$844,375	\$387,347	+ 118

***2012 USDA Data indicate \$1,240
of annual market value for every
acre of Hyde County farmland***



Helping Hyde County act to increase resilience

- Stetson challenged to refine cost-benefit analysis ID'd as needed by farmers
- Sea Grant developed locally tailored flood resiliency guide
- Documented steps for Community Rating System (CRS) points following sister project experience in St. Mary's, GA
- Hyde County worked with NC Coastal Federation and NC DCM to develop watershed management plan





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(252)542-0802

VCAPS was funded by NOAA National Sea Grant Community
Climate Adaptation Initiative Grant

