The background of the slide is a photograph of a harbor. In the foreground, several weathered wooden pilings stand vertically in the water. Behind them, two white fishing boats with red hulls are docked. The boat on the right has the name "Lacy" written on its side. The water is calm, reflecting the sky and the boats. The sky is blue with some light clouds. The overall scene is a typical coastal harbor.

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

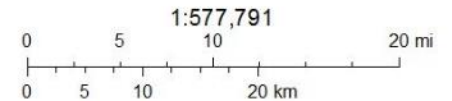
Kris Cahoon Noble

18 April 2019

Coastal Resources Commission



Hyde County, North Carolina

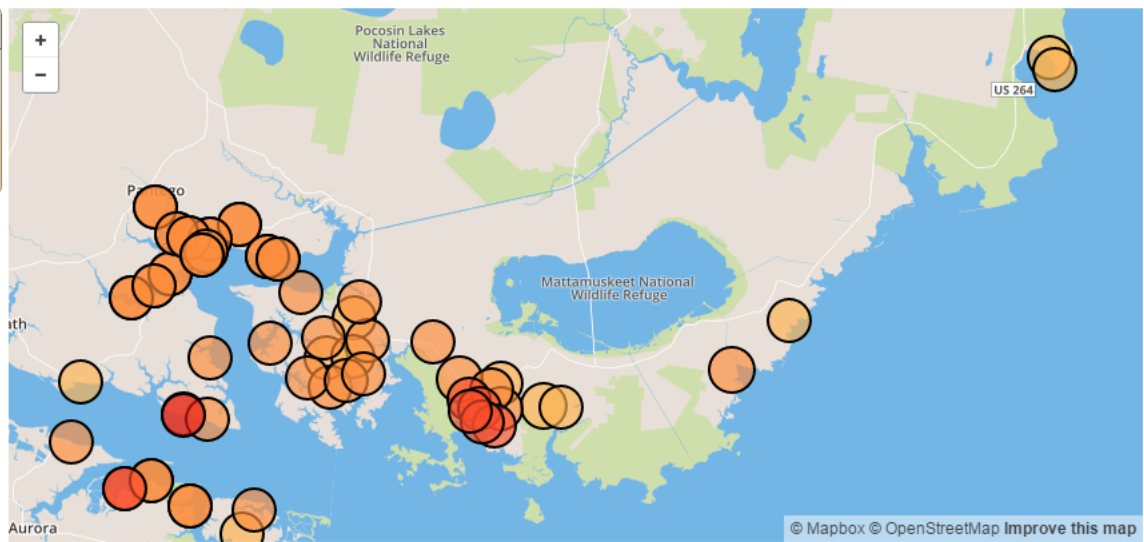


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the

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):

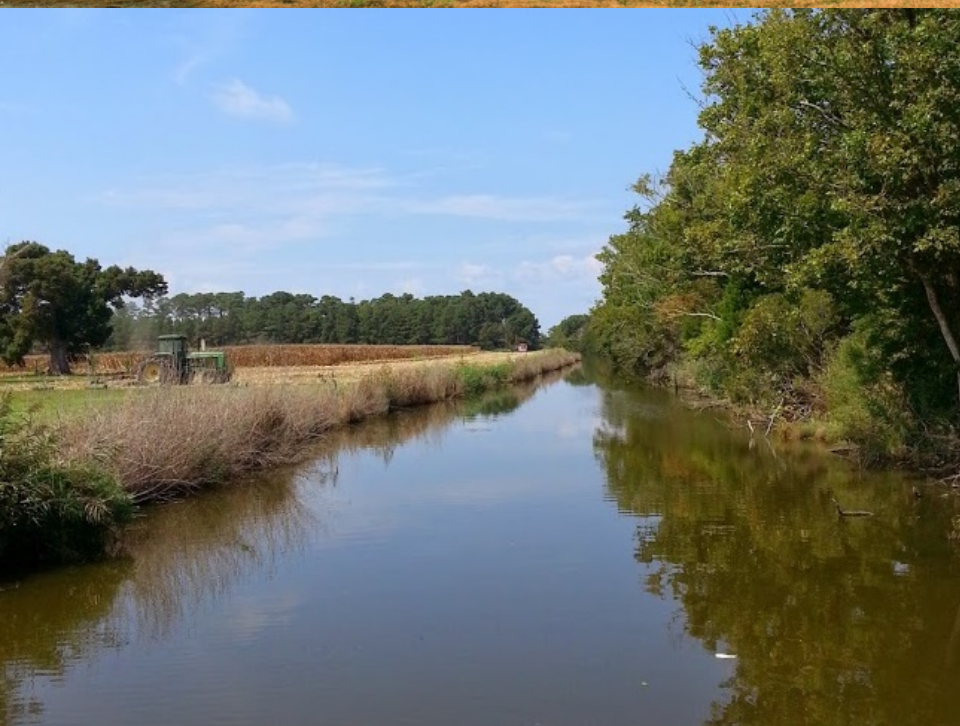
- Swan Quarter coastal storm surge water line 7.6 ft
- Engelhard coastal stillwater seed line 4.2 ft



(GA SG 2013)



(GA SG 2013)



(GA SG 2013)



(GA SG 2013)



(GA SG 2013)



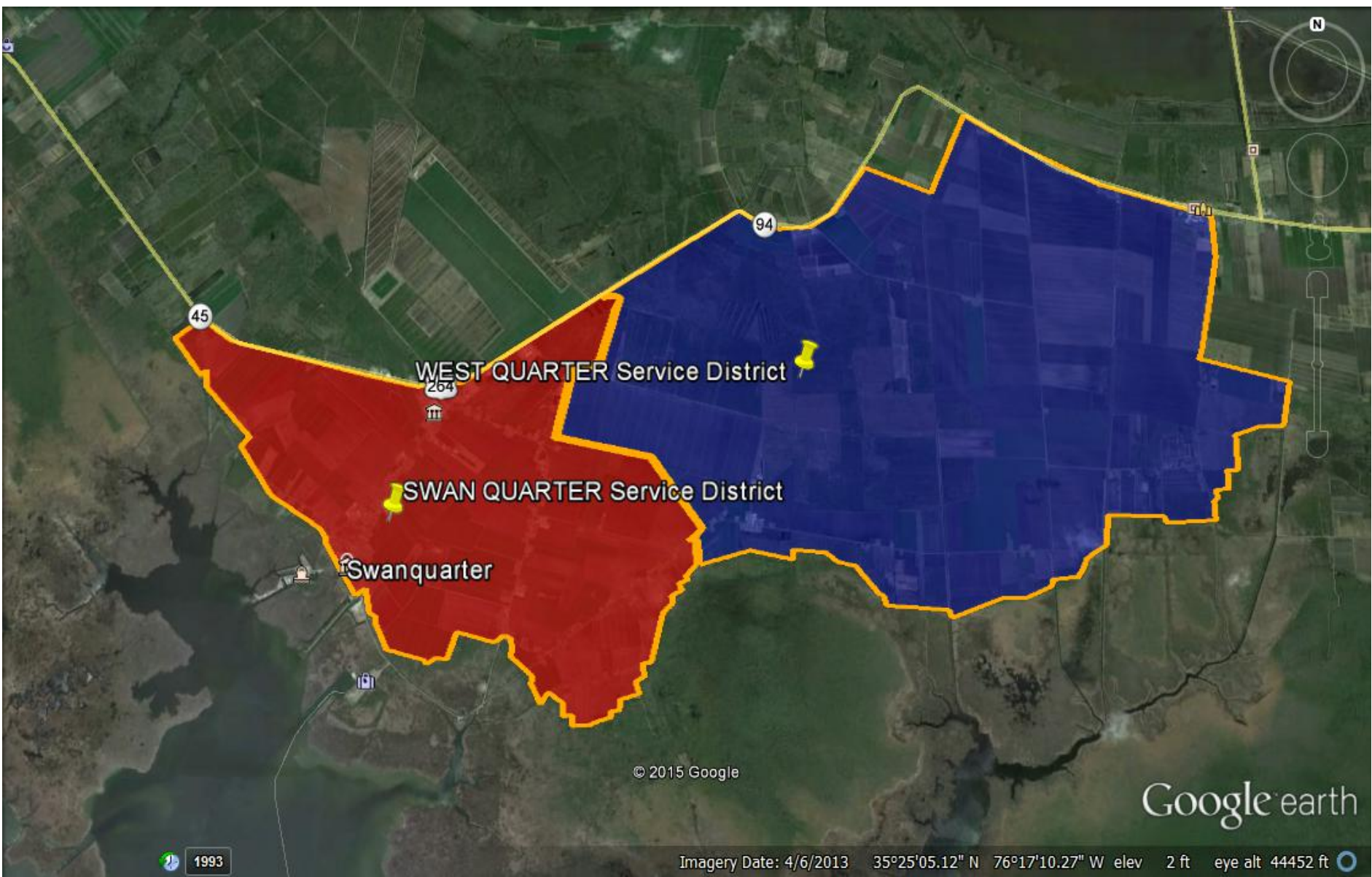
History of the West Quarter & Swan Quarter SSD's

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



5.14.2007



Raising Landing Road



5.31.2007



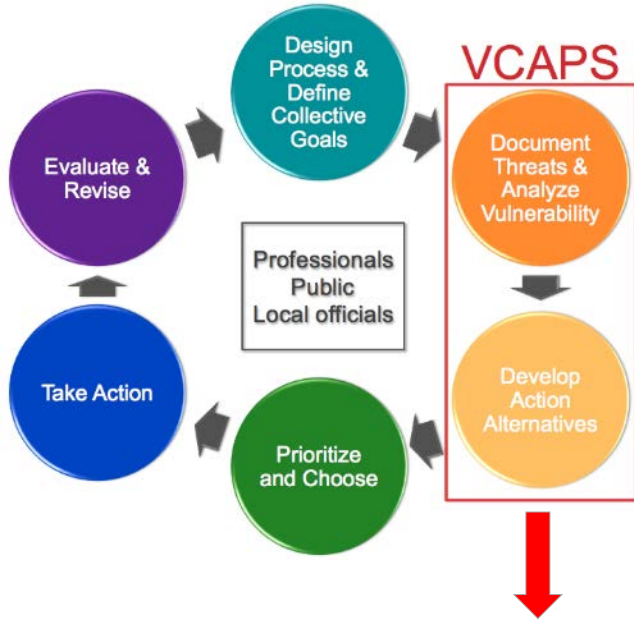
6.25.2007



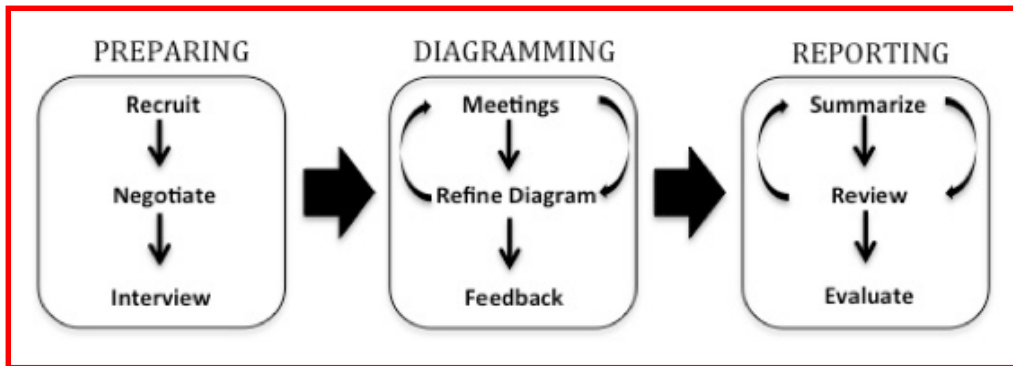
Hyde County Flood Resilience Planning Process 2015

- 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)



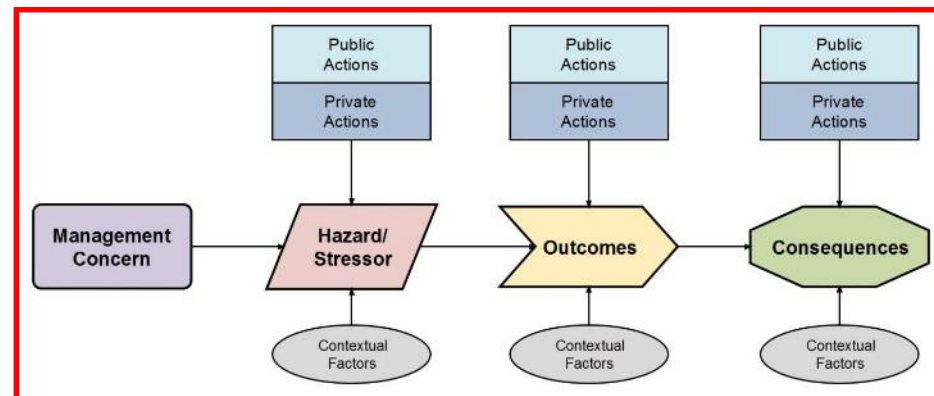


VCAPS supports initial phases of hazard and climate change planning and implementation...



...through group discussion and learning...

...supported by real-time diagramming.



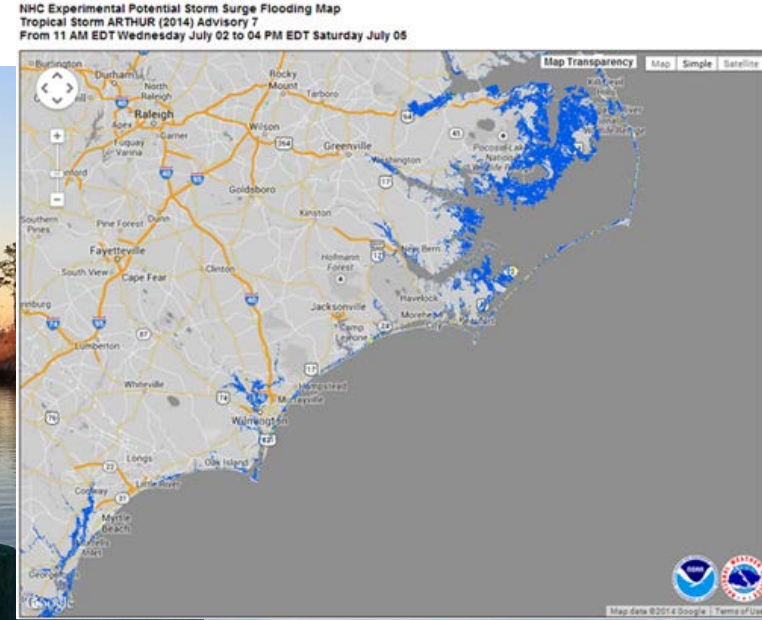
Why a facilitated conversation?

- 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



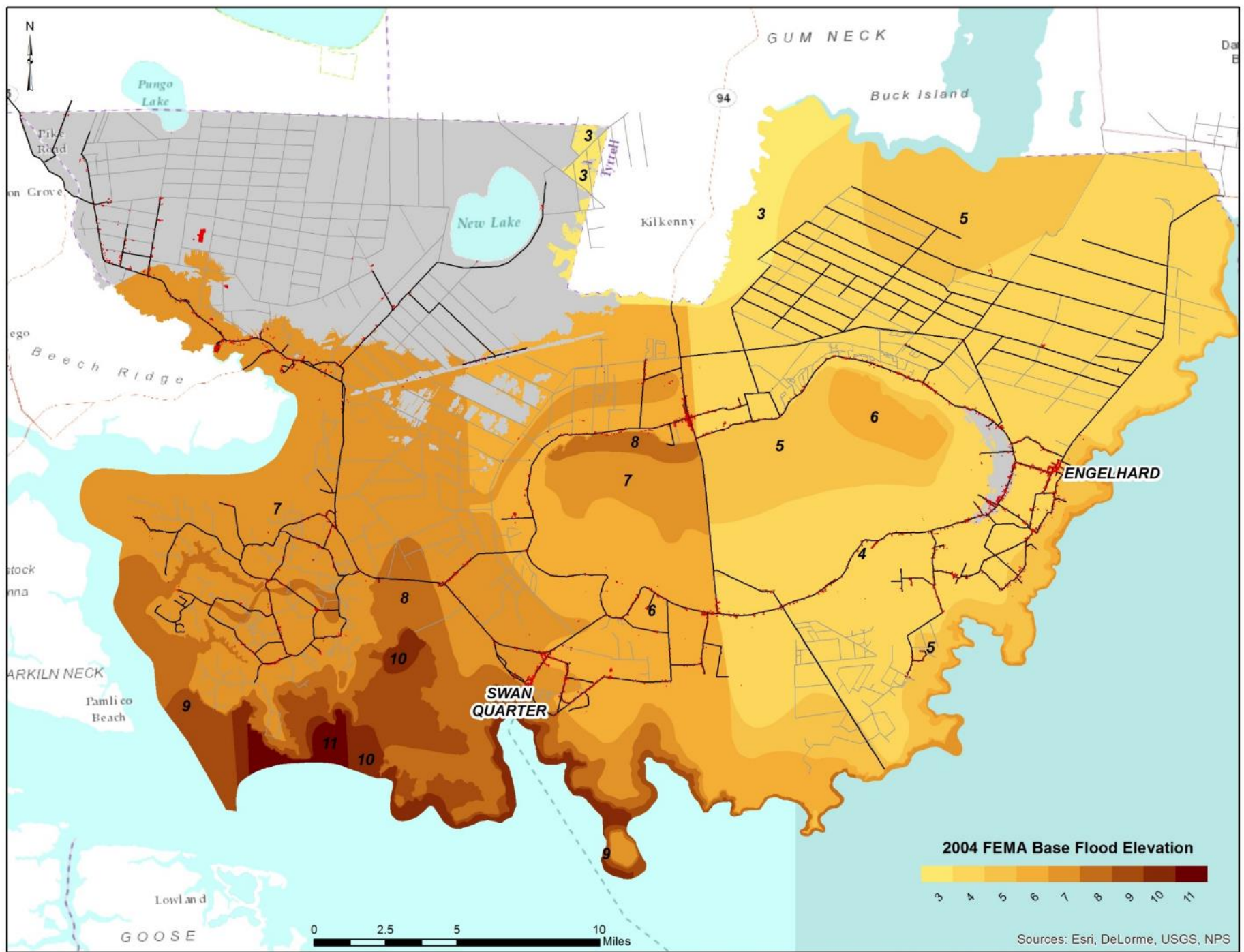
(NC Dept. of
Agriculture &
Consumer
Services 2014)



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



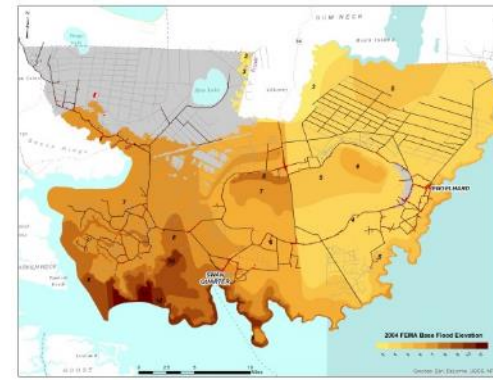


2004 FEMA Base Flood Elevation



Sources: Esri, DeLorme, USGS, NPS

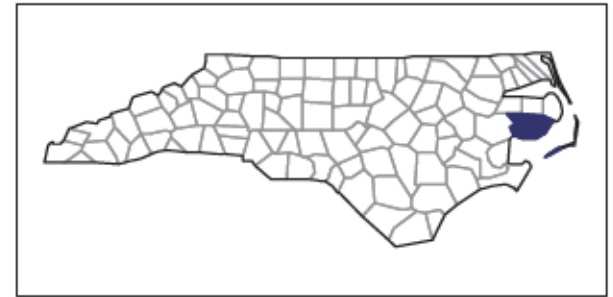
Structures with Positive Benefit/Cost for Elevation (County-Wide – 5884 Buildings)



| 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





For more information, contact:

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(252)542-0802

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

