

# “One Health” Forum

## North Carolina Oil Spill Response, Recovery and Health Effects

July 29, 2010



# **Oil Spill Animal Health Effects**

## **Shellfish Sanitation & Recreational Water Quality Section**

**Division of Environmental Health**



# Shellfish Sanitation & Recreational Water Quality Section

- National Shellfish Sanitation Program - NSSP - USFDA
- Classify coastal waters for shellfish harvesting for safe human consumption
- Recommend to the Division of Marine Fisheries Director through the State Health Director to open or close shellfishing waters by proclamation
- Inspect and certify shellfish and crustacea processing plants
- Monitor coastal recreational waters including ocean beaches, sounds, and bays



# What's so special about shellfish?

- Filter up to 25+ gal/day.
- Concentrate Pathogens up to 100 times
- Concentrate Toxins, chemicals up to 1,000 times
- They are Alive and often eaten Raw.



# North Carolina Oil Spill Response Plan (NCDDEM) Shellfish Sanitation and Recreational Water Quality Section Responsibilities

Collect shellfish samples for analysis, as necessary.

Advise SERT Leader concerning the potential for shellfish contamination.

Recommend to the Division of Marine Fisheries Director which coastal waters to temporarily close to shellfish harvest due to potential effects from oil spill

Assist in communicating to the public which shellfish areas are affected by a spill.

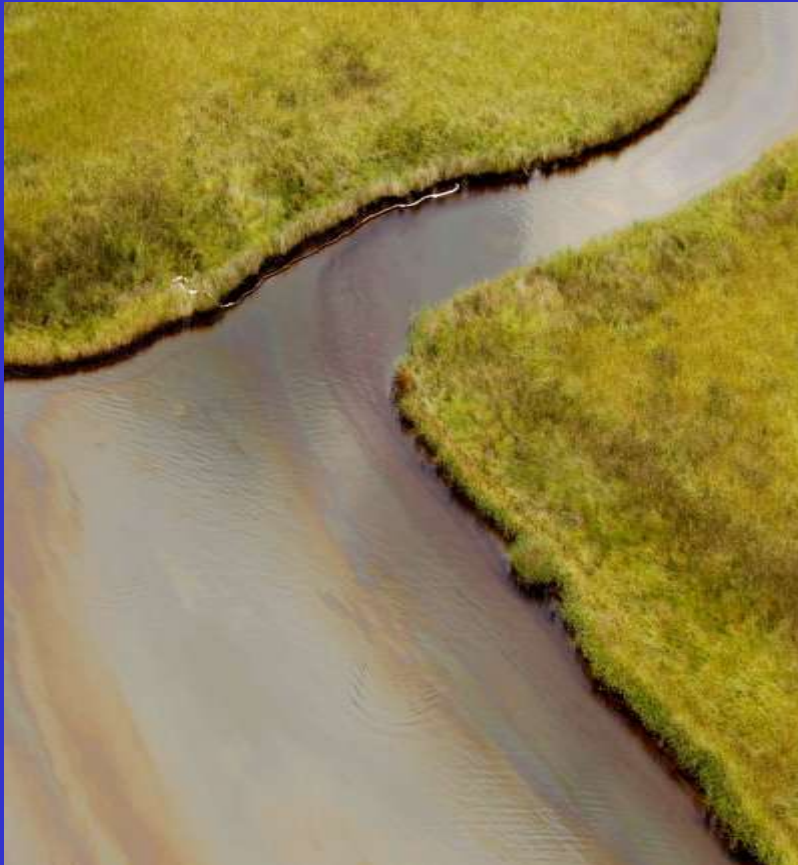
Embargo processed shellfish under authority delegated by the North Carolina Department of Agriculture and Consumer Services.

Monitor position of Gulf Stream offshore through satellite imagery if this is the transport mechanism for source of oil.

Participate on the ETAG Team assisting the SERT Leader.

Notify the general public, municipal officials, and media of swimming advisories and issue Press Release of those advisories as needed.

# Seafood Samples for Background Assessment in Response to BP's Deepwater Horizon Oil Spill



- Developed Sampling Plan
- Chain of Custody
- Frozen at  $-20^{\circ}\text{C}$  and Locked



# Seafood Sampling Collection Plan

## Crustaceans, Molluscan Shellfish and Finfish Field Collection

- Harvest as closely to commercial method for the fishery as possible.
- Rinse surface of sample in seawater from collection site and drain.
- Wrap individual animals tightly in double layers of heavy duty aluminum foil.
- Place sample in double zip-lock bags; expel all air from the bag.
- Ensure that the sample is not touched by plastic.
- Immediately chill samples in insulated, clean, odor-free coolers.
- Chill using frozen gel packs or ice separated from sample by a layer of heavy-duty aluminum foil.
- Transport back to lab and freeze at  $-20^{\circ}\text{C}$  or lower as soon as possible.

# North Carolina Department of Environment and Natural Resources



## CHAIN OF CUSTODY FORM

3441 Arendell Street, Morehead City, NC 28557

For more information contact:

252-726-7021 or 252-726-6827 or FAX 252-726-8475

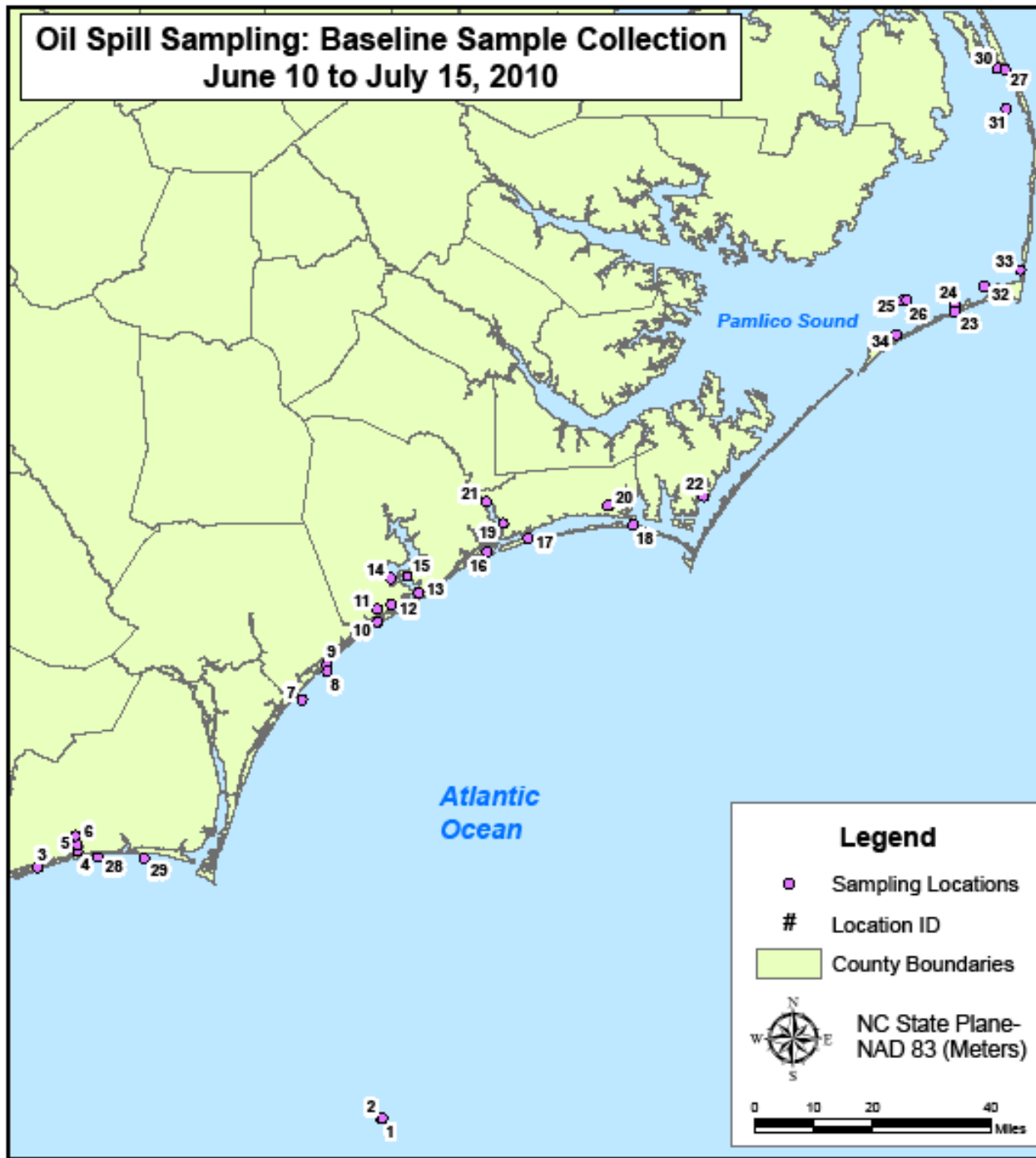
- Sampler \_\_\_\_\_
- Sample
- I.D. #
- Date & Time Collected
- Location
- GPS Coordinates
- Manner of Collection
- Sample Type (Tissue, oil, water. Include species name and tissue type)
- Comments

# PRODUCT RECEIVING LOG BOOK

1. Securely affix the Chain of Custody Form to the sample bag & Log each sample package separately.
2. Entry Number
3. Person making Log entry
4. Sample I.D. # (from Chain of Custody Form)
5. Species
6. Date / Time Received
7. Condition at time of Receipt (e.g., good, frozen refrigerated)
8. Sampling Site
9. Tissue Type (e.g., whole crab, whole finfish, oyster – in shell)
10. Package Size
11. Number of Specimens
12. Storage location and temperature

# Oil Spill Sampling: Baseline Sample Collection

June 10 to July 15, 2010



Location ID	Species (#Specimens)
1	Bee Liner (1); Scamp (2); Red Porgy (2)
2	Red Porgy (1)
3	Oyster (12)
4	Brown Shrimp (3); Spot (3); White Mullet (3)
5	Blue Crab (1)
6	Bluefish (2)
7	Atlantic Sharpnose (1); Bluefish (1); Atlantic Bumper (1)
8	Atlantic Bumper (1)
9	Spot (1)
10	Pinfish (1); Blue Crab (1); Atlantic Croaker (1)
11	Blue Crab (1)
12	Brown Shrimp (5)
13	Oyster (30)
14	Blue Crab (1); Menhaden (1); Smooth Butterfly Ray (1); Atlantic Sharpnose (1); Cobia (1); Bluefish (1)
15	Spider Crab (1)
16	Oyster (75)
17	Brown Shrimp (5)
18	Oyster (60)
19	Black Drum (1); Blue Crab (3); S Flounder (1); Spot (5); Pinfish (5)
20	Blue Crab (4); Pinfish (2); G Trout (1); Brown Shrimp (5); Spot (5); Croaker (1); S Flounder (1); Harvest (1)
21	Brown Shrimp (5)
22	Blue Crab (3); Spot (5); Pinfish (3); Croaker (1); Brown Shrimp (1)
23	Oyster (36)
24	Clams (27)
25	Southern Kingfish (~3); Blue Crab (~3); Striped Burrfish (~3); Atlantic Spadefish (~3)
26	Summer Flounder (~3); Atlantic Croaker (~3); Brown Shrimp (~3); Spot (~3)
27	Oyster (63)
28	Flame Box Crab (1)
29	Atlantic Bumper (1); Spot (1)
30	Blue Crab (1); Bluefish (2); Croaker (2); Jumping Mullet (1)
31	Juvenile Spot (12)
32	Juvenile Spot (7); Juvenile Pigfish (9)
33	Blue Crab (4); Juvenile Spot (10); Juvenile Pinfish (10)
34	Spot (1); Gulf Flounder (1); Jumping Mullet (1); Croaker (1)



Search

Fly To Find Businesses Directions

Fly to e.g., Tokyo, Japan

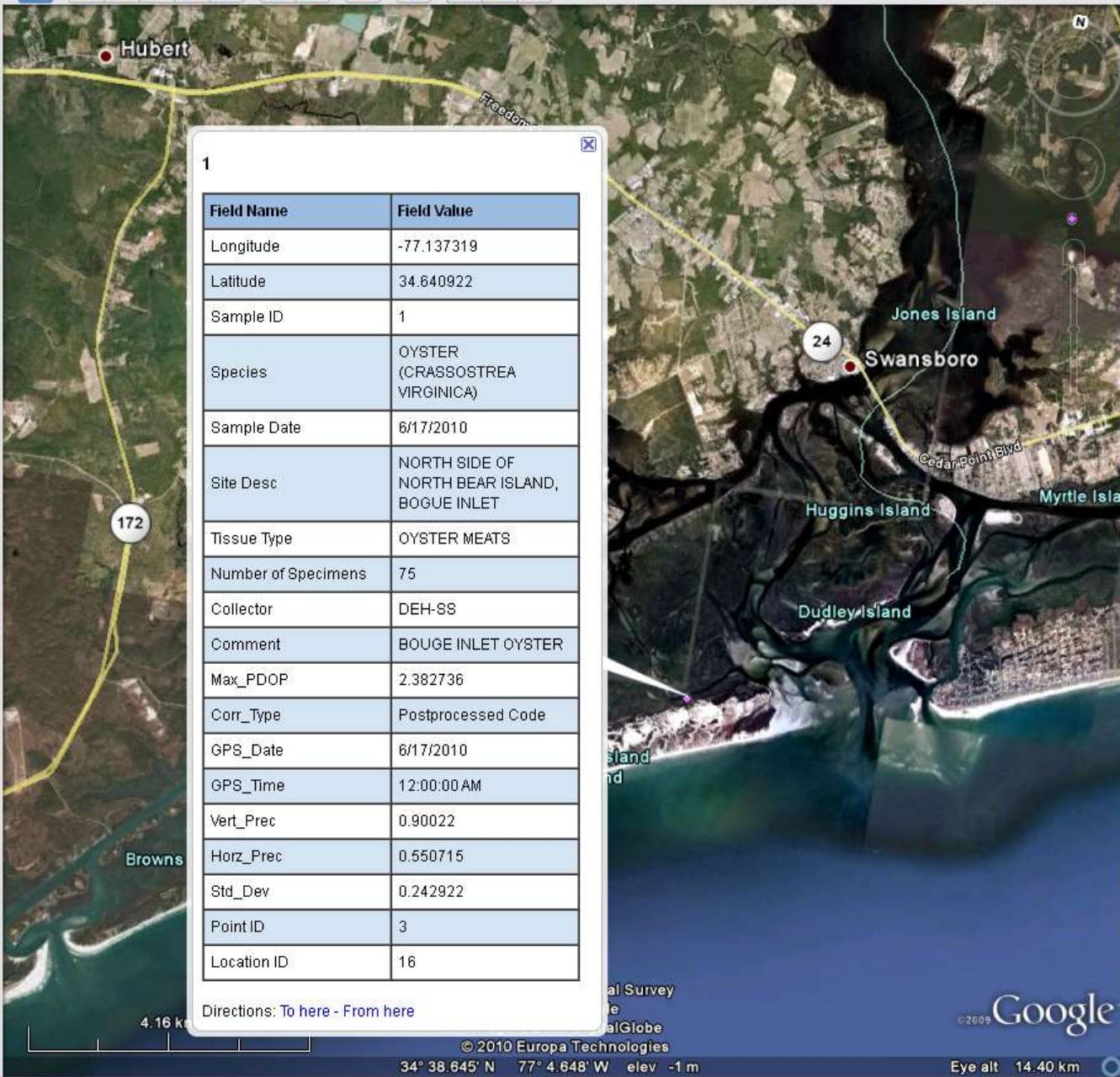
Places

Add Content

- My Places
- Temporary Places
- Oil Spill Baseline Sampling Locations

Layers

- Primary Database
- Borders and Labels
- Places of Interest
- Panoramio Photos
- Roads
- 3D Buildings
- Ocean
- Street View
- Weather
- Gallery
- Global Awareness
- More
- Terrain



1

Field Name	Field Value
Longitude	-77.137319
Latitude	34.640922
Sample ID	1
Species	OYSTER (CRASSOSTREA VIRGINICA)
Sample Date	6/17/2010
Site Desc	NORTH SIDE OF NORTH BEAR ISLAND, BOGUE INLET
Tissue Type	OYSTER MEATS
Number of Specimens	75
Collector	DEH-SS
Comment	BOUGUE INLET OYSTER
Max_PDOP	2.382736
Corr_Type	Postprocessed Code
GPS_Date	6/17/2010
GPS_Time	12:00:00 AM
Vert_Prec	0.90022
Horz_Prec	0.550715
Std_Dev	0.242922
Point ID	3
Location ID	16

Directions: To here - From here

# Lessons Learned

## Passed Events in NC

## Current Events in the Gulf



# Harmful Algal Blooms

- Red Tide Contingency Plan

- *Karenia brevis*

- Cooperative Effort

Shellfish Sanitation

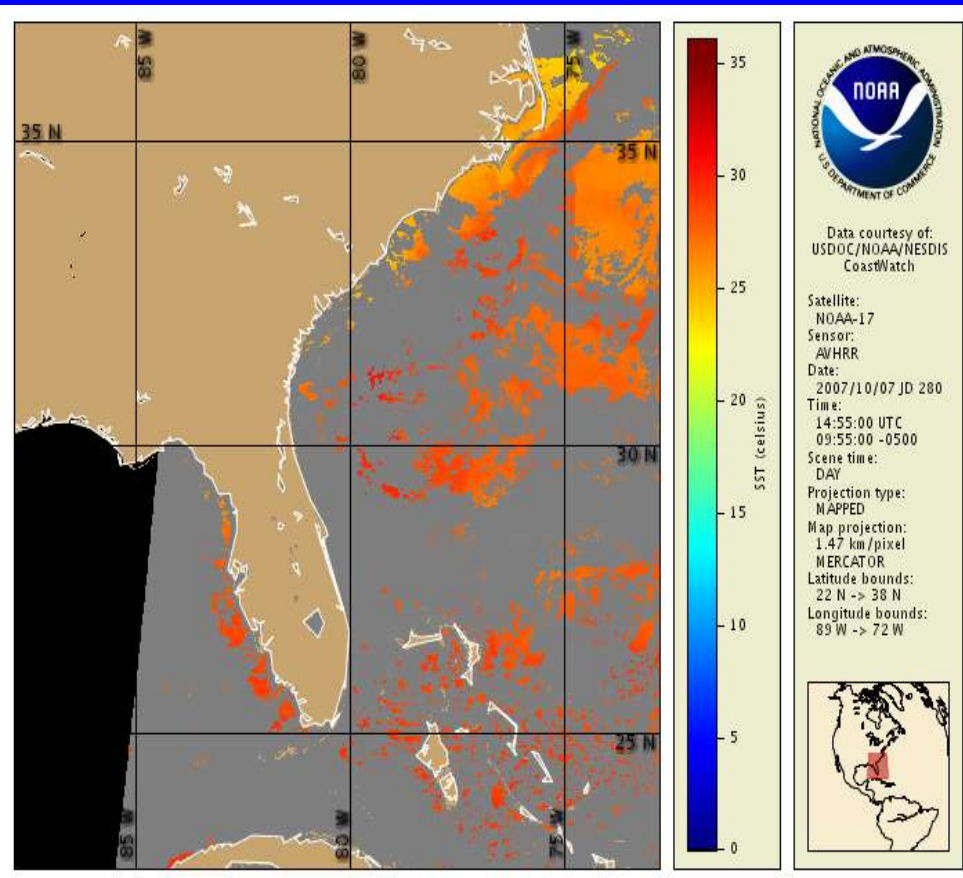
NC DMF

NOAA – Beaufort

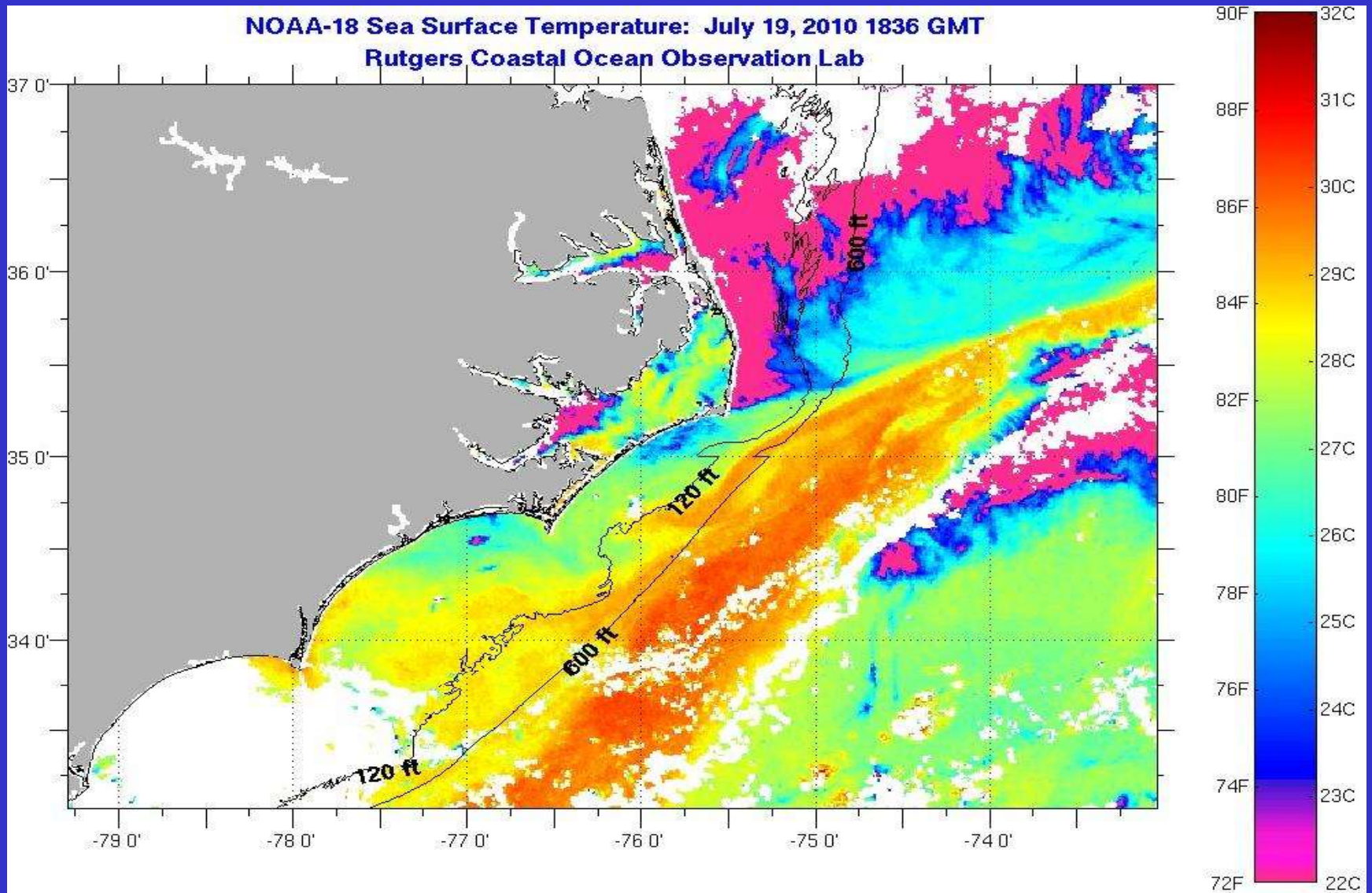
UNC / IMS

DHHS – Lab &

HAB Program

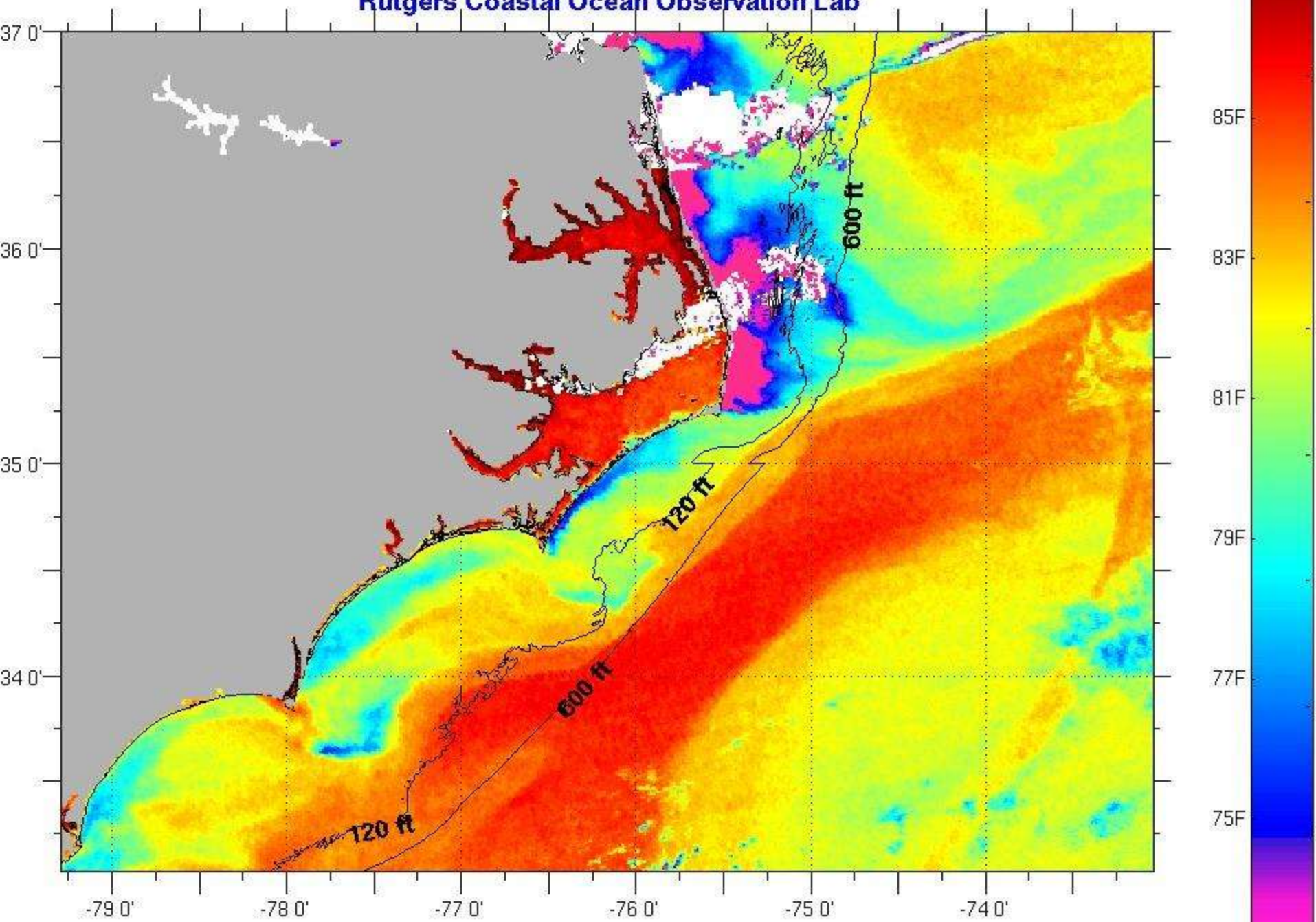


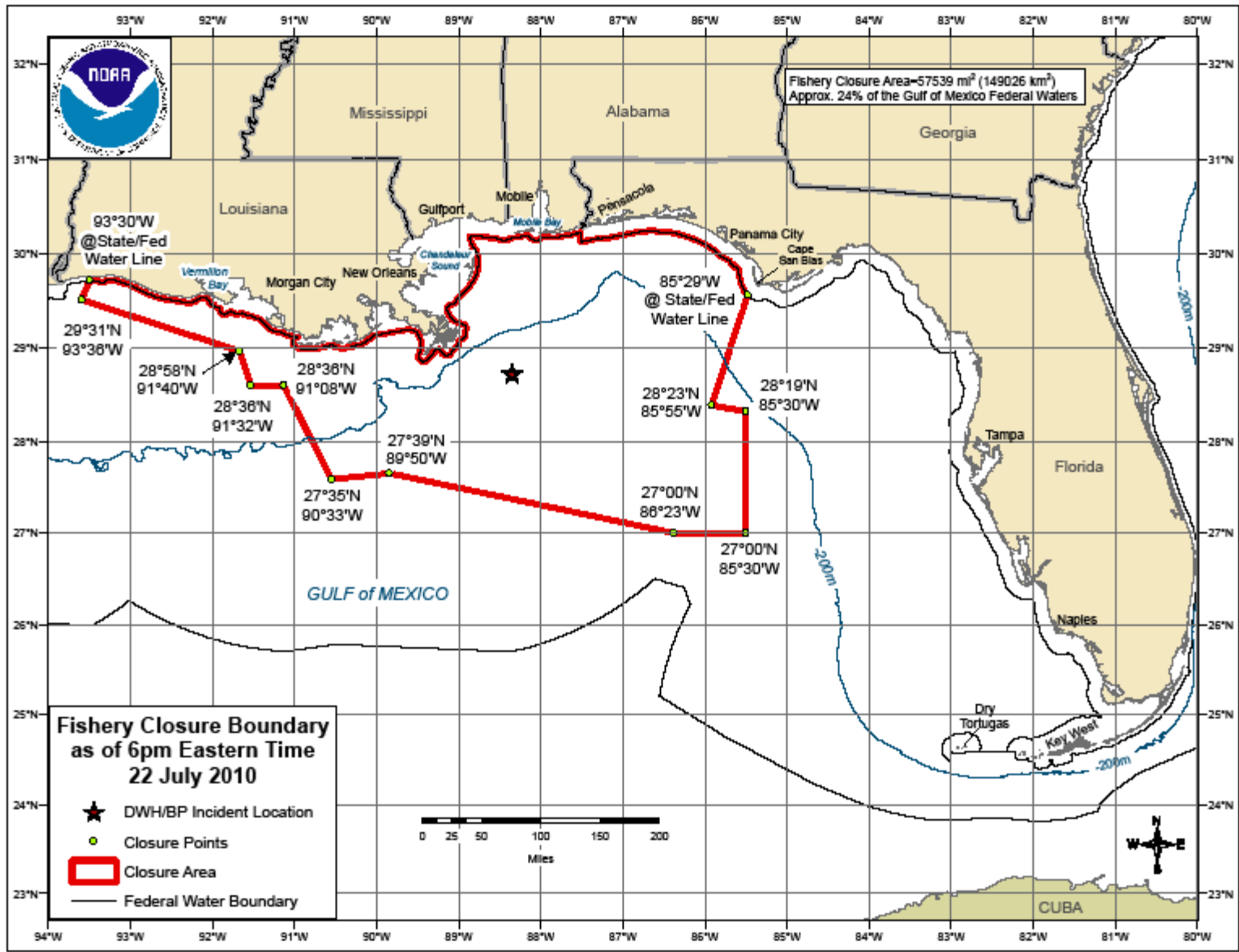
# NOAA Satellite Imagery Sea Surface Temperature



# NOAA-17 Sea Surface Temperature: July 26, 2010 0133 GMT

Rutgers Coastal Ocean Observation Lab

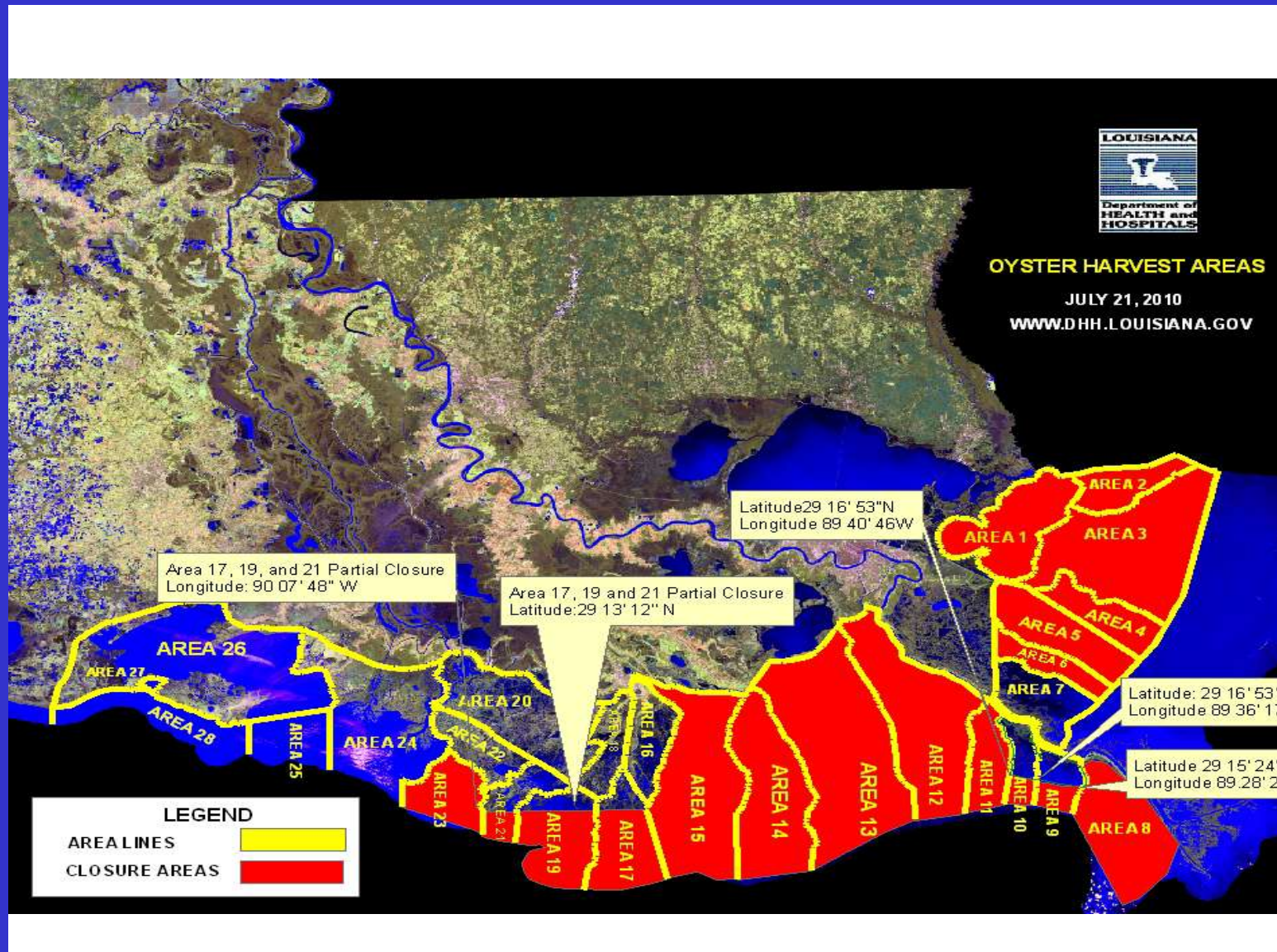




# Mississippi Canyon 252 - Projected Trajectory 27 July 2010, 1200



# Shellfish Closures - LA



# Dispersants

FDA-CFSAN Chemical Hazard Assessment  
Team Findings:

The chemical constituents of the dispersants have little or no effect on the bioaccumulation potential of oil contaminants, nor do they themselves accumulate in seafood.

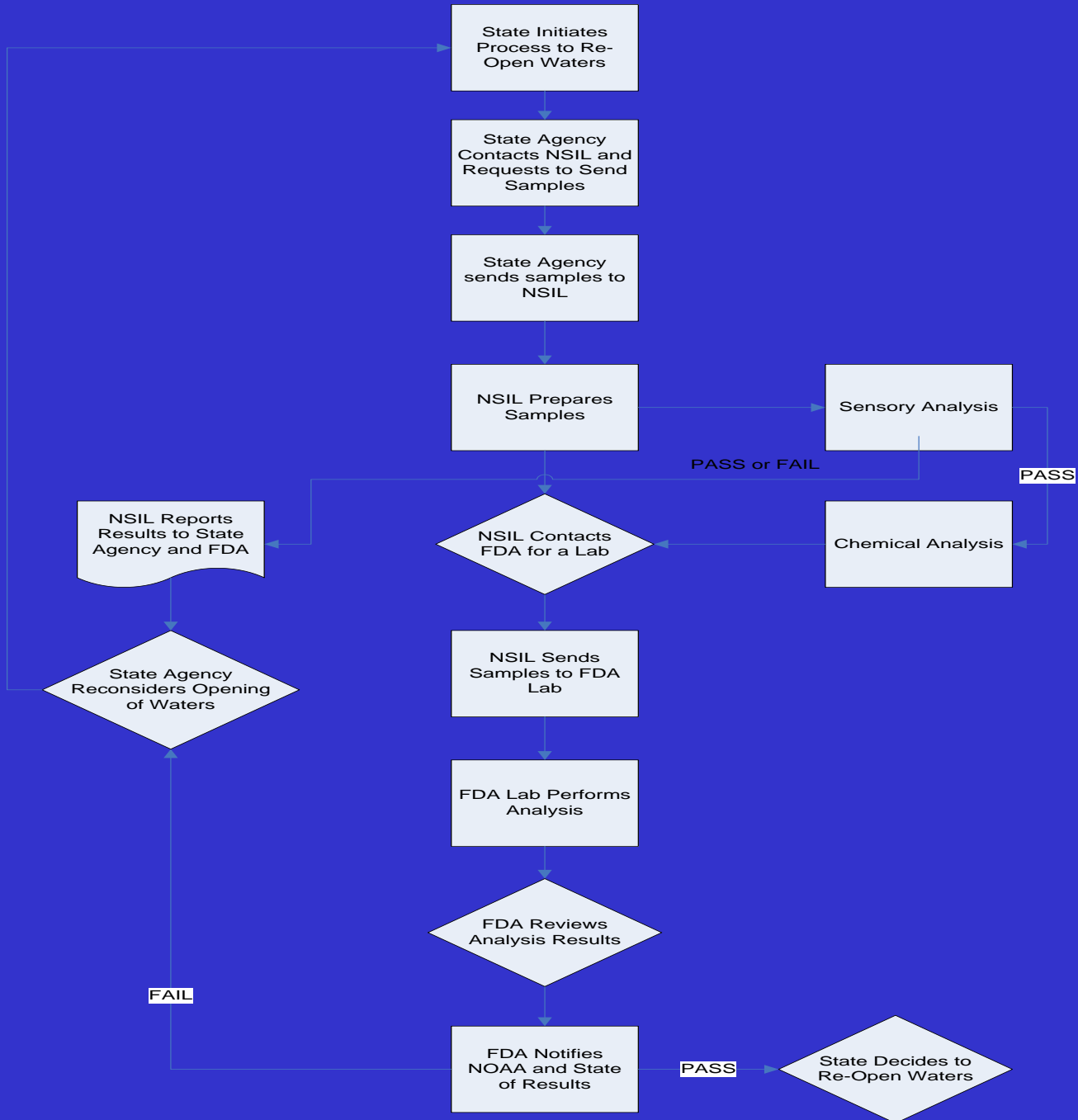
# Reopening Protocol



# Factors to Consider for Re-opening

- Precautionary Only
- Nature of Observed Oil (sheen, tar balls, light oil, moderate oil, heavy oil)
- Spatial Extent of Observed Oil
- Sub-surface Oil
- Elapsed Time Since Closure
- Elapsed Time Since Last Observance of Oil
- Potential For Future Impact (oil in adjacent areas, prevailing winds, prevailing currents)
- Likelihood Fisheries Will Be Impacted Within 7-10 Days
- Nature of Oil Impact Based on Information and Monitoring

# Sample Routing and Reporting



# Laboratory Methods

## Acceptance of a Method for Use in the NSSP

- Fit for its intended use in the Shellfish Program
- Method Application for Validation
- Performance Characteristics
- Validation Protocol for all analytical methods intended for adoption by NSSP

# Status of Alternate PAH Methodology Validation

- Projected to be finished by the end of the week
- ISSC Model Ordinance Criteria:
  1. Chemical and Physical.
    1. (1) Methods for the analysis of shellfish and shellfish growing or harvest waters shall:
      1. (a) Be the current AOAC or APHA method for all physical and chemical measurements; and
      2. (b) Express results of all chemical and physical measurements in standard units, and not instrument readings.
    2. (2) When an AOAC or APHA method is not available, EPA methods may be used.
    3. (3) If a method is not approved or validated by AOAC, APHA, or EPA then the method shall be validated in accordance with Procedure XVI of the Constitution, Bylaws and Procedures of the ISSC.

# Current Certified Labs

- NOAA National Seafood Inspection Lab  
Pascagoula, MS (sensory)
- NOAA NW Fisheries Lab  
Washington (chemical)
- FDA Arkansas Regional Laboratory (chemical)
- FDA Kansas City District Laboratory  
(chemical)
- CA Animal Health & Food Safety Lab, UC Davis,  
School of Veterinary Medicine (chemical)

# Sensory Training



# Sample Results



# Bioaccumulation in Shellfish

- Can accumulate in shellfish
- Shellfish will take up quickly
- Depuration estimates from 15 to 30 days
- Finfish metabolize quickly
- Dispersant not toxic – does not accumulate

# Recreational Swimming

## Oil Impact Notice

Escambia County Health Department

**This beach is affected by the Deepwater Horizon oil spill.**

Oil product is present on the beach and in the water, yet may not be visible due to changing surf conditions. Oil product includes: extensive oil sheen, oil slick, oil mousse, extremely large numbers of tar balls in the water. To avoid potential health impacts, please:

- Avoid wading, swimming, or entering the water. If oil makes contact with skin, wash it off with grease-cutting liquid dishwashing detergent.
- Avoid contact with oil and oily materials in the water or on the beach.
- Avoid contact with dead or dying fish or other wildlife.
- Young children, pregnant women, and people with compromised immune systems should avoid the area.
- If experiencing respiratory problems, leave the area and contact your physician, as you deem necessary.

For more information contact:

-Escambia County Health Department at 850.595.6700 and  
[www.escambiahealth.com](http://www.escambiahealth.com)

-Escambia County Emergency Management at  
[www.escambia-disasterresponse.com](http://www.escambia-disasterresponse.com)

-Florida Oil Spill Information Line at 888.337.3569



# Oil Impact Notice

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If oil product is present (extensive oil sheen, oil slick, oil mousse, or extremely large numbers of tar balls in the water) and to avoid potential health impacts, please:

- Avoid wading, swimming or entering the water.
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- Avoid contact with dead or dying fish or other aquatic life.
- Young children, pregnant women, and people with compromised immune systems should avoid the area.
- If experiencing respiratory problems, leave the area and contact your physician, as you deem necessary.
- If oil makes contact with skin, wash it off with grease-cutting liquid dishwashing detergent and water.

# Tar Balls



# 134-year-old oyster company stops shucking



PHOTO: JOHN MOORE/GETTY IMAGES

# Man claims to find oil in oyster at restaurant



# BP oil leak making waves at N.C. seafood restaurants

N.C. coastal workers wonder: Can Gulf oil spill reach our shores?

BP oil spill not in our backyard - yet

If a fish smells or tastes like oil, do not eat it.

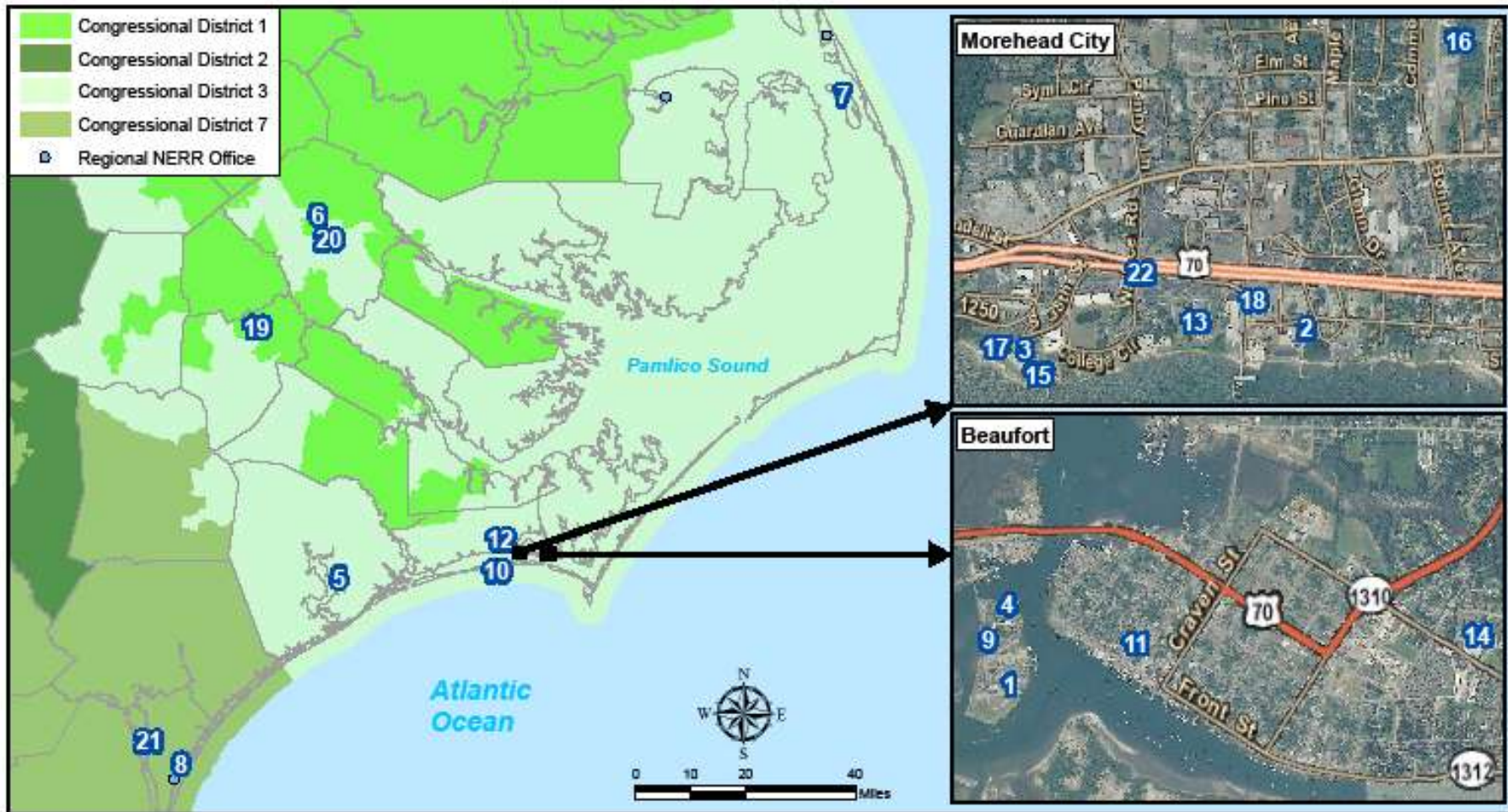
Experts: BP oil encounters at beach not

major health hazard

Gulf Seafood: Who Decides How

Safe Is Safe?





### Marine Science and Education Partnership Members

- |  |  |                                       |  |
|--|--|---------------------------------------|--|
| 1- Duke University Marine Lab                                | 6- East Carolina University Institute for Coastal Science and Policy   | 11- NC Maritime Museum                | 18- NC Division of Marine Fisheries              |
| 2- UNC Institute of Marine Science                           | 7- Coastal Studies Institute   | 12- NC Shellfish Sanitation           | 19- North Carolina Eastern Region                |
| 3- NC State Center for Marine Sciences & Technology          | 8- UNC Wilmington Center for Marine Science  | 13- Carteret County Community College | 20- NC Biotechnology Center-Eastern Office       |
| 4- NOAA's Center for Coastal Fisheries and Habitat Research  | 9- NC Coastal Reserve and National Estuarine Research Reserve - Beaufort, Wilmington, Columbia, and Kitty Hawk | 14- Carteret County Public Schools    | 21- NC Biotechnology Center-Southeastern Office  |
| 5- Defense Coastal Estuarine Research Program - Camp Lejeune | 10- NC Aquarium  | 15- NC Sea Grant                      | 22- Carteret County Economic Development Council |
|  |  | 16- NC Division of Coastal Management |  |
|  |  | 17- NC State Cooperative Extension    |  |

# Summary

- Shellfish (oysters, clams & mussels) are a fishery product of concern that will uptake with regard to effects of an oil spill
- Baseline/background sampling complete and sampling station location map complete
- Monitoring Florida Keys as NC sentinel and Gulf Stream activity for possible transport of oil to NC (Satellite Imagery)
- Fishery sample results from the Gulf so far have shown not at a level of concern



**Shellfish Sanitation &  
Recreational Water Quality**

**Morehead City, NC 28557**

**(252) 726-6827**

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