FINAL – May 18-19, 2016 -- FINAL

RRT 6 www.epaosc.org/rrt6-homepage	**Meeting Location:** US EPA Training Center 16650 Westgrove Drive Addison, Texas	**RRT Co-Chairs** Ronnie Crossland, EPA Michael Sams, USCG	**RRT Coordinators** Steve Mason, EPA Mason.Steve@epa.gov Todd Peterson, USCG Todd.M.Peterson@uscg.mil

RRT-6 Executive Committee Meeting – Tuesday, May 17, 2016		
1:00 – 4:30 PM Executive Meeting		
Day 1 -- RRT-6 General Session -- Wednesday, May 18, 2016		
Time	**Topic**	**Presenter / Facilitator**
8:30 – 9:00 AM	Introductions / Administrative Announcements / Opening Statements	Ronnie Crossland, EPA / Michael Sams, USCG
9:00 – 9:30 AM	Review of 2016 RRT Priorities / Status	Michael Sams, USCG
9:30 – 9:45 AM	Open Forum	All
9:45 – 10:15 AM	30 Years of the Emergency Planning and Community Right-to-Know Act (EPCRA) and Executive Order Updates	Steve Mason, EPA
10:15 – 10:30 AM	**Break**	
10:30 – 11:30 AM	Federal Agency Reports	Federal Agencies
11:30 AM – 1:00 PM	**Lunch**	
1:00 – 2:00 PM	National Historic Preservation Act 106 / Endangered Species Act	Steve Spencer, DOI / Barry Forsythe, FWS
2:00 – 2:45 PM	State Reports (NM, TX, AR, OK & LA)	State Agencies
2:45 – 3:00 PM	**Break**	
3:00 – 3:45 PM	EPA FOSC Reports	EPA FOSCs
3:45 – 5:00 PM	Deepwater Horizon/Natural Resource Damage Assessment Science	Dr. Lisa DiPinto, NOAA
5:00 PM	**Adjourn**	
Networking Session – Location TBD		
Adobe Connect: https://epawebconferencing.acms.com/region6rrtmeeting/ **Conference Call:** 866-299-3188 **Pin:** 214-665-2292#		

<table>
<tr><th colspan="3">Day 2 -- RRT-6 General Session -- Thursday, May 19, 2016</th></tr>
<tr><th>Time</th><th>Topic</th><th>Presenter / Facilitator</th></tr>
<tr><td>8:30 – 9:30 AM</td><td>USCG FOSC Reports</td><td>USCG FOSCs</td></tr>
<tr><td>9:30 – 10:00 AM</td><td>Overview of API Program on the Science of Subsea Dispersant Use</td><td>Tom Coolbaugh, Oil Spill Response Group, ExxonMobil</td></tr>
<tr><td>10:00 – 10:15 AM</td><td colspan="2">Break</td></tr>
<tr><td>10:15 – 10:45 AM</td><td>MEXUSGULF Tabletop Exercise Recap</td><td>Mike Drieu, Anadarko / Michael Sams, USCG</td></tr>
<tr><td>10:45 – 11:15 AM</td><td>Region 7 – Lessons Learned from Winter Flooding</td><td>Ken Buchholz, EPA Region 7</td></tr>
<tr><td>11:15 AM – 12:45 PM</td><td colspan="2">Lunch</td></tr>
<tr><td>12:45 – 1:15 PM</td><td>HWCG-LLOG Subsea Dispersant Exercise Recap</td><td>Mike Noel, HWCG / Michael Sams, USCG</td></tr>
<tr><td>1:15 – 1:45 PM</td><td>Downstream Notifications During an Incident</td><td>Monica Smith, EPA</td></tr>
<tr><td>1:45 – 2:15 PM</td><td>Barge MM 46 Response Case Study</td><td>LCDR Mary Dwyer, USCG Sector Lower Mississippi River</td></tr>
<tr><td>2:15 – 2:45 PM</td><td>Basics of Planning (NCP, NRF, RCP, ACPs)</td><td>Steve Mason, EPA</td></tr>
<tr><td>2:45 – 3:00 PM</td><td>Open Forum</td><td>All</td></tr>
<tr><td>3:00 – 3:15 PM</td><td>Closing Remarks</td><td>Ronnie Crossland, EPA / Michael Sams, USCG</td></tr>
<tr><td>3:15 PM</td><td colspan="2">Adjourn</td></tr>
<tr><td colspan="3">Adobe Connect: https://epawebconferencing.acms.com/region6rrtmeeting/
Conference Call: 866-299-3188 Pin: 214-665-2292#</td></tr>
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Dates for next RRT Meetings:	(Confirmed) (Proposed) (Proposed)	Fall Spring Fall	Nov 9-10, 2016 May 10-11, 2017 Nov 8-9, 2017

Updated: 05/19/2016 8:29:30 AM

1986

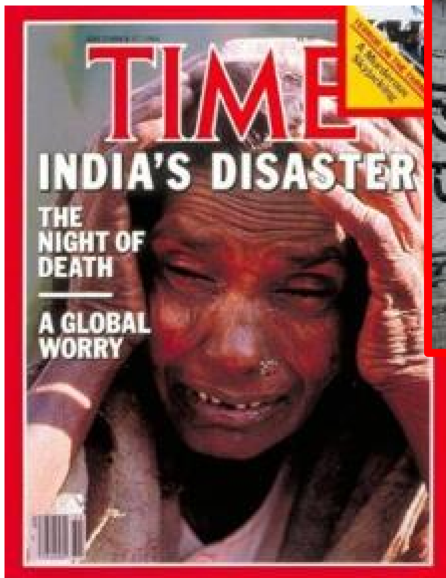
LEPC

...safety in knowledge®

EPCRA

EMERGENCY PLANNING &
COMMUNITY RIGHT-TO-KNOW ACT

2016



Union Carbide Disaster: Bhopal, India

Dec 2, 1984

The Bhopal disaster was one of the world's worst industrial catastrophes.

A massive release of methyl isocyanide gas from the Union Carbide Pesticide Plant in Bhopal, India, killed 3,800 and injured tens of thousands.

The accident raised public concern about toxic chemical storage, releases and emergency response.

Institute, WV Facility Release

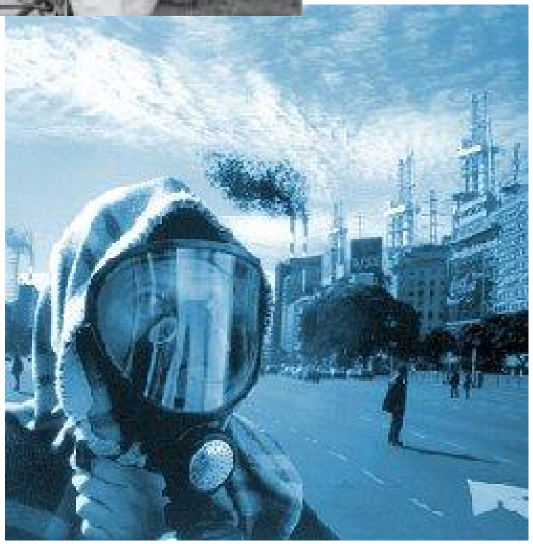
Aug 11, 1985

Union Carbide released a cloud of methylene chloride and aldicarb oxime, chemicals used to manufacture the pesticide Temik.

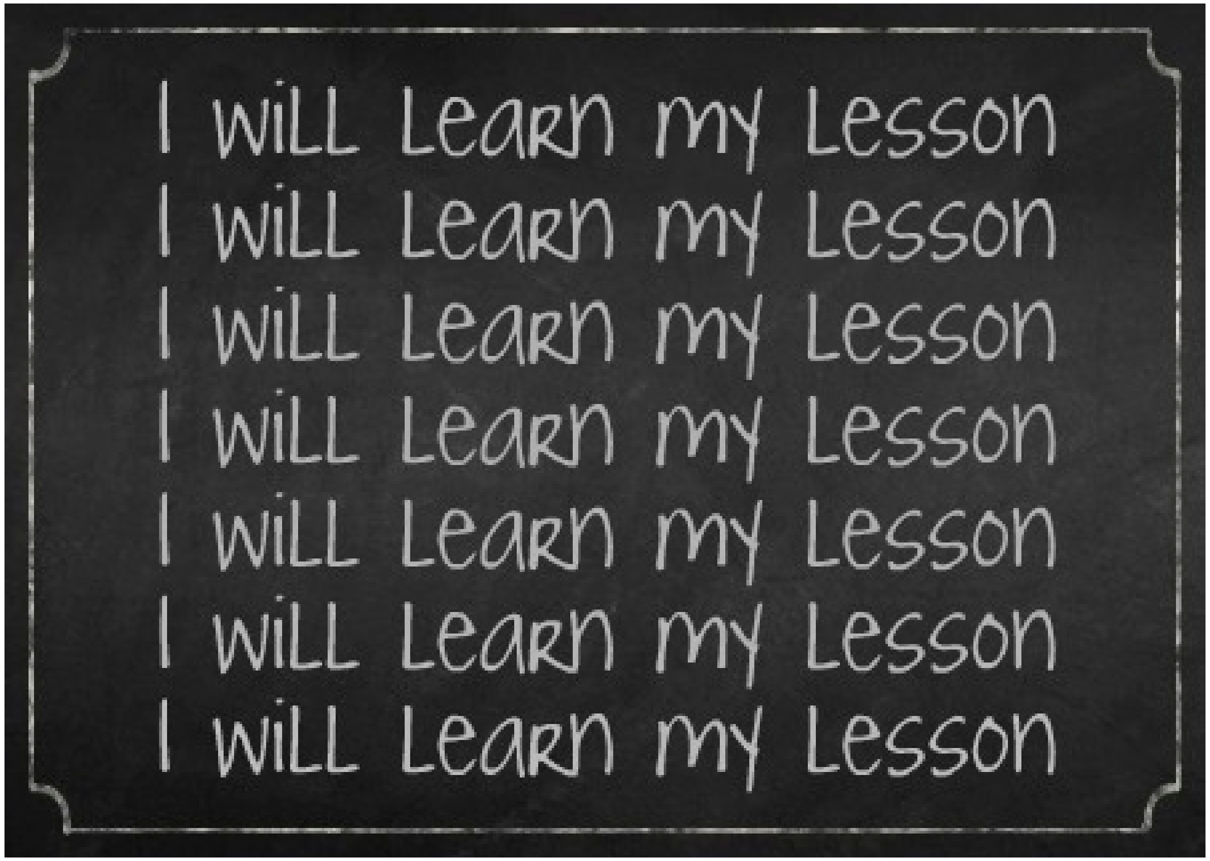
6 workers were injured and more than a 100 residents were sent to the hospital.

30 people filed two lawsuits seeking $88M in damages, but hundreds of people marched in support of the company, Union Carbide.

Union Carbide spent $5M to improve safety systems, but two more leaks occurred in February 1990.



Lessons We Should Have Learned from Bhopal



- **Safety culture**
- **Safety management**
- **Intrinsically safe design**
- **Knowledge transfer based on learning from accidents.**

CEPP

Take a closer look around your community!

Development of CEPP Program

June, 1985

EPA developed a Chemical Emergency Preparedness Program strategy to deal with air toxics in the environment, including addressing accidental releases of acutely toxic chemicals.

This voluntary program had two goals: to increase community awareness of chemical hazards, and to develop State and local response plans for dealing with chemical accidents.

This was the precursor to the passage of EPCRA.

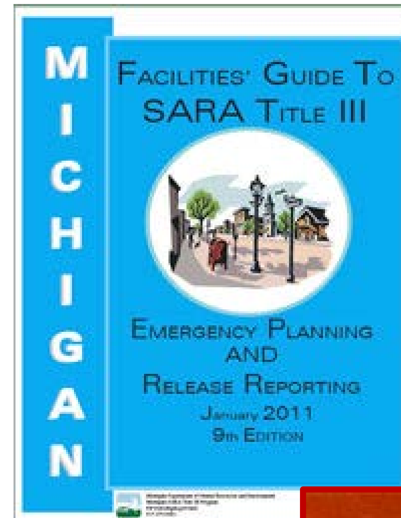
Emergency Planning and Community Right-to-Know Act (EPCRA)

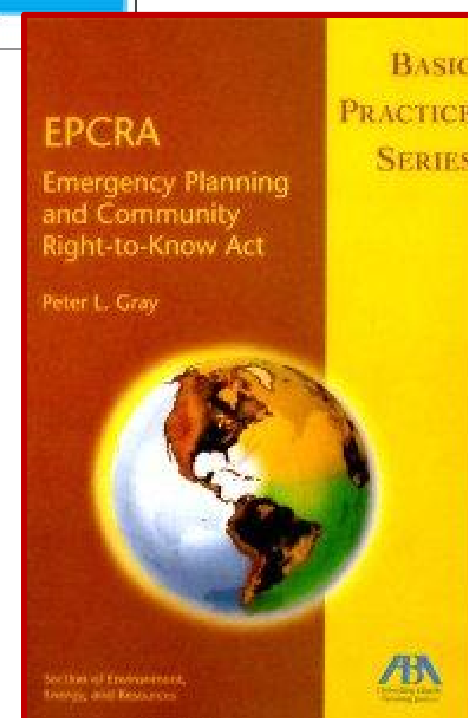
October 17, 1986

Congress amended CERCLA in 1986 with the Superfund Amendments & Reauthorization Act (SARA).

These amendments added an important section, focusing on strengthening rights of citizens and communities in the face of potential hazardous substance emergencies.

This section, EPCRA, is intended to help communities prepare to respond to a chemical emergency and to increase the public's knowledge of the presence and threat of hazardous chemicals.





EPCRA: OVERVIEW

SUBTITLE A
Emergency Planning

EPCRA 301 - 303
Emergency Planning

EPCRA 304 (CERCLA 103)
Emergency Release Notifications

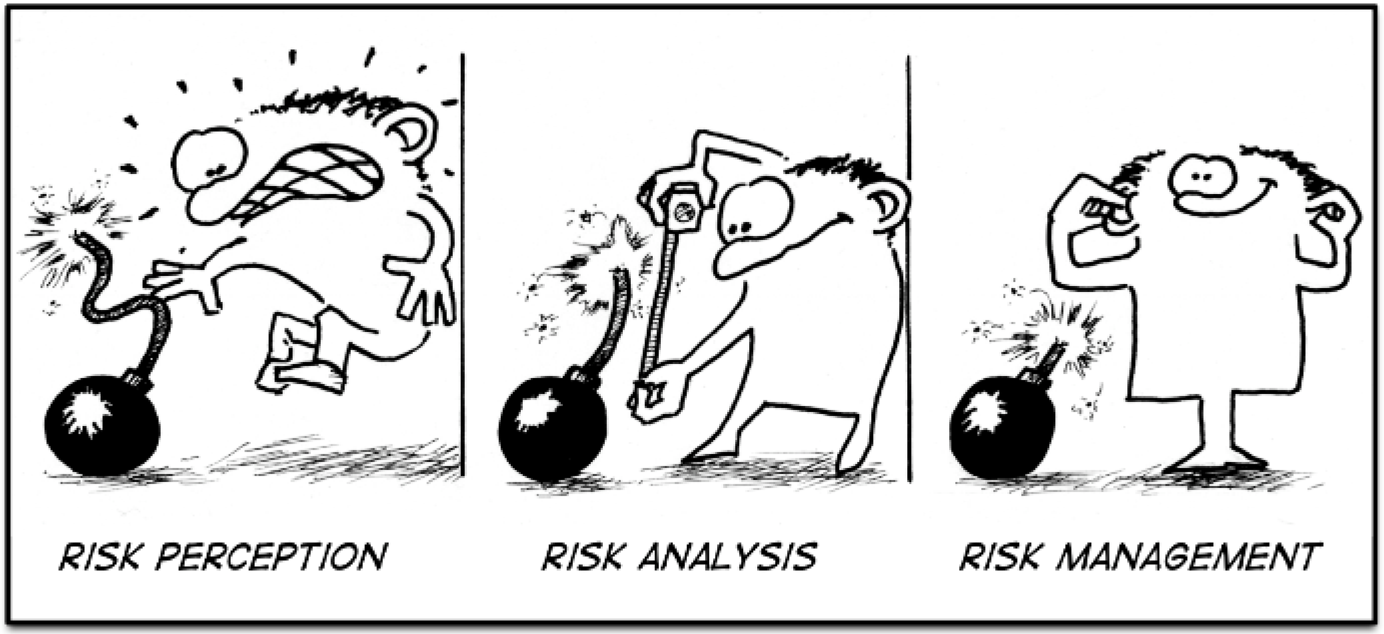
SUBTITLE B
Reporting Requirements

EPCRA 311 & 312
Hazardous Chemical Storage Reporting

EPCRA 313
Toxic Release Inventory (TRI) Reporting

Wonderful Documents Developed by EPA and others to Implement EPCRA for local, state, and industry officials

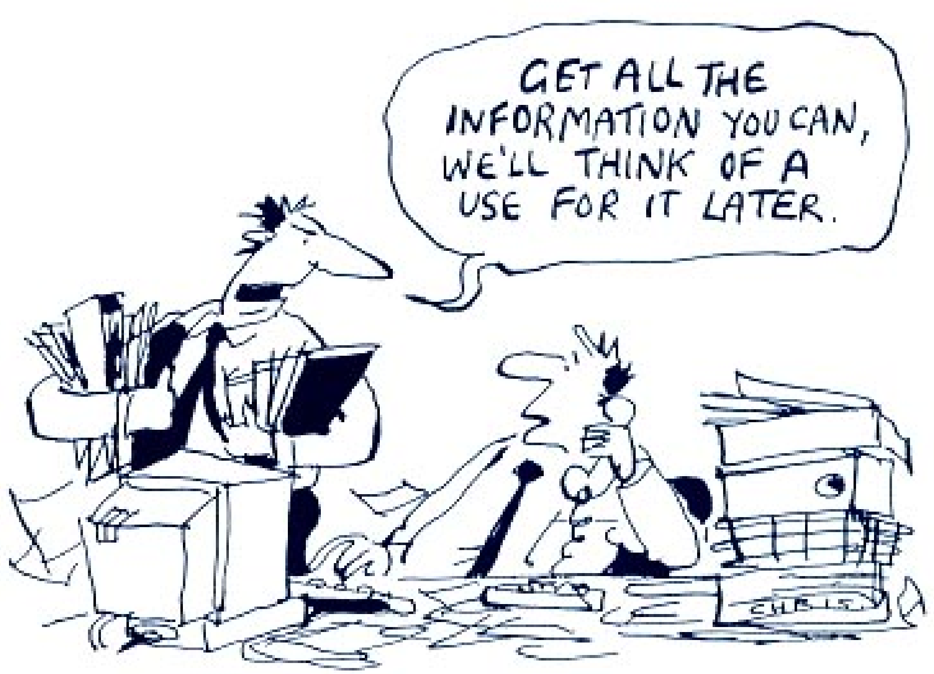
EPCRA is about CHEMICALS



- Conduct hazards analysis for the community
  - What chemicals are in the community?
    - Fixed facilities
    - Transportation routes
  - What equipment does the community need for those chemicals?
  - What training does the community need?

EPCRA is about INFORMATION

- Industry provides information about chemical hazards to:
  - SERC
  - LEPC
  - Fire departments
- LEPC can use the hazard information to plan for chemical safety in the community

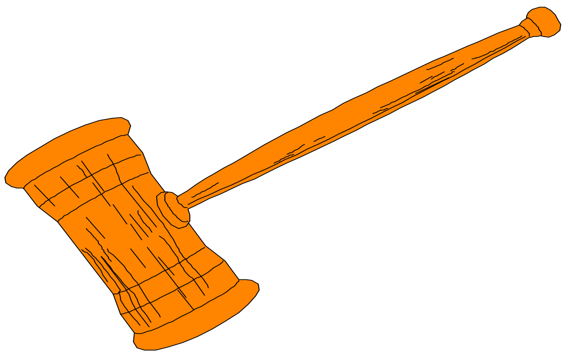


EPCRA is about LOCAL Communities

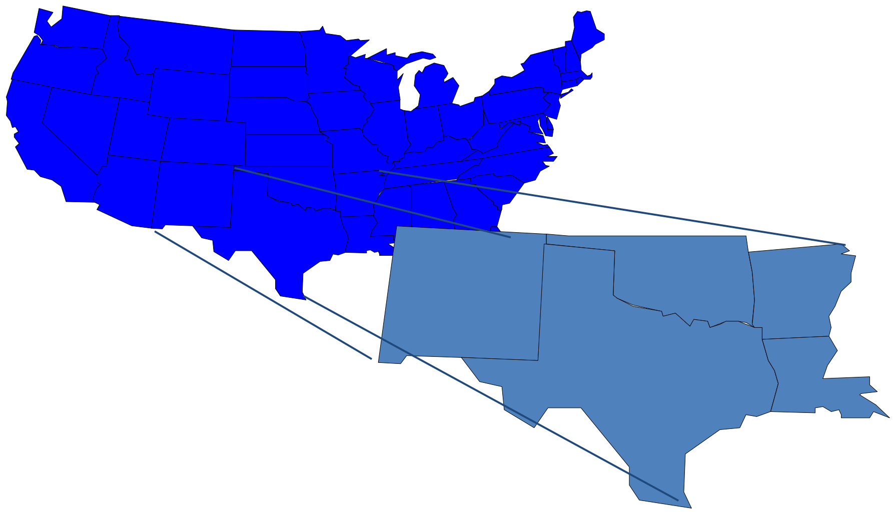
- States/locals manage the program
  - Jobs are local
  - Business profits are local
  - Hazards are local
  - Response is local
  - Planning must be local
    - Includes many volunteers
    - Include all key local groups

Where do LEPCs come from ???

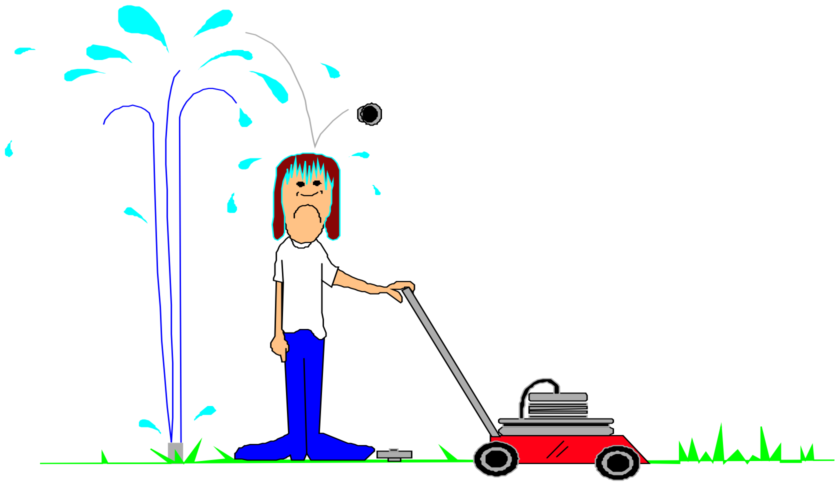
- § 301 of EPCRA required the State to establish Local Planning Districts and appoint an LEPC within each district.

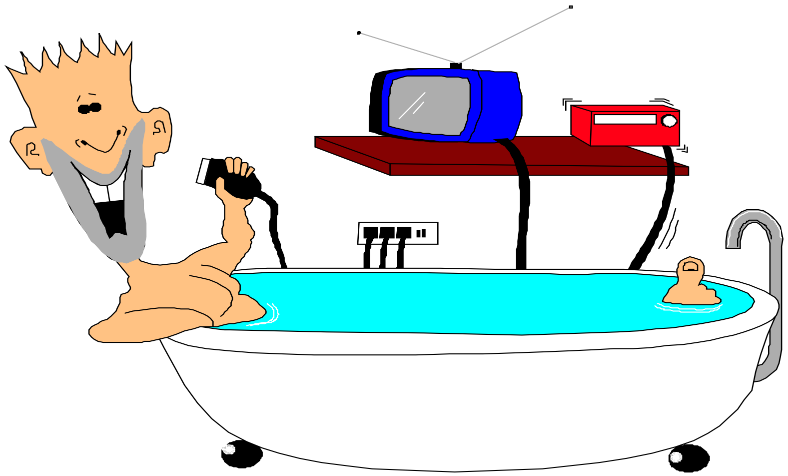


- There are approximately 530 LEPCs within Region 6, 3,200 nationwide.



Role of the LEPC

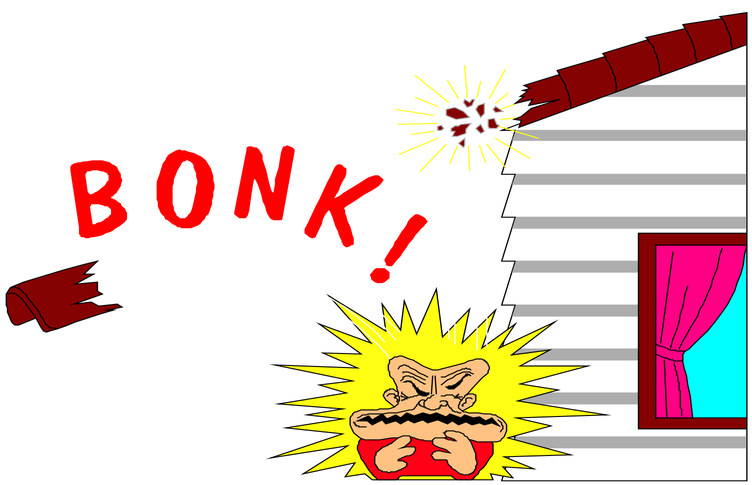


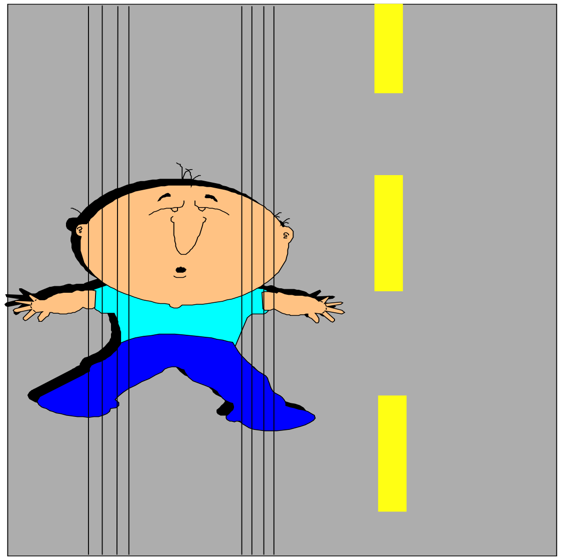


- Form a partnership with local governments and industries as a resource for hazmat planning
- Analysis of local hazards
- Incorporate into Emergency Plan
- Assess response capabilities
- Conduct training and exercises

Role of the LEPC

- LEPC's can serve as a focal point in the community to discuss:
  - Emergency planning
  - Health and environmental risks
  - Chemical hazards
  - Risk management plans
  - Terrorism and security concerns





Successful LEPCs Have:

- Clearly defined goals
- Trained, knowledgeable members
- Broad-based representation
- Committed, interested members
- “Packaged” purpose and value
- Working relationships with state and other LEPC’s

Successful LEPCs Have:

- Regular, convenient meetings
- Firm agenda of common interests
- Strong leadership & support staff
- Benchmarks for each year
- 3rd parties to audit results

What are the goals of the LEPC ??

- **Make people aware of LEPC and plan**
- **Encourage people to use EPCRA information**
- **Encourage facilities to reduce releases**
- **Prepare personnel to respond to hazards**
- **Help officials respond to questions from public**
- **Public understanding of risks in community**

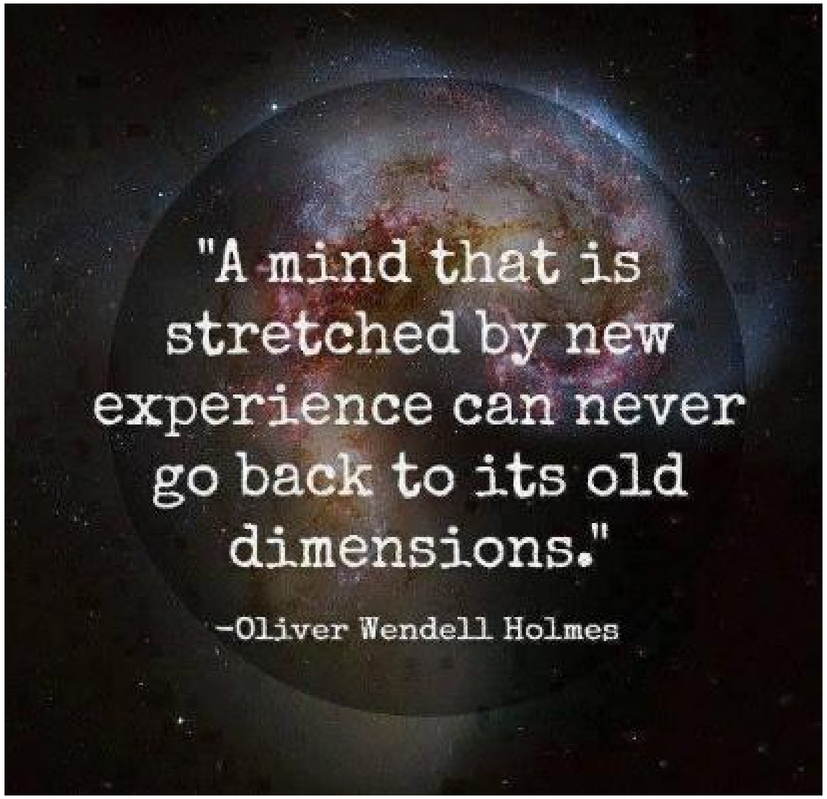
Golden Rules for LEPCs

- **Know the hazards in your community**
  - **Where there are hazardous substances?**
  - **What are the natural hazards?**
  - **What are the capabilities?**
- **Educate public and business**
  - **What can happen to you?**
  - **What are their obligations?**
- **Create participation and cooperation between public, authorities & industry in emergency planning and response.**

"Sigh… we were so close…"

Lessons

- LEPCs must be focused on their local needs and conditions
  - relevant to the community
- Do not lose track of the “routine” risks
  - chasing money may not be useful
- Expand your horizons
- When it comes to planning, preparedness, and response, we are all partners… not “us” versus “them”



Can LEPCs answer these questions ??

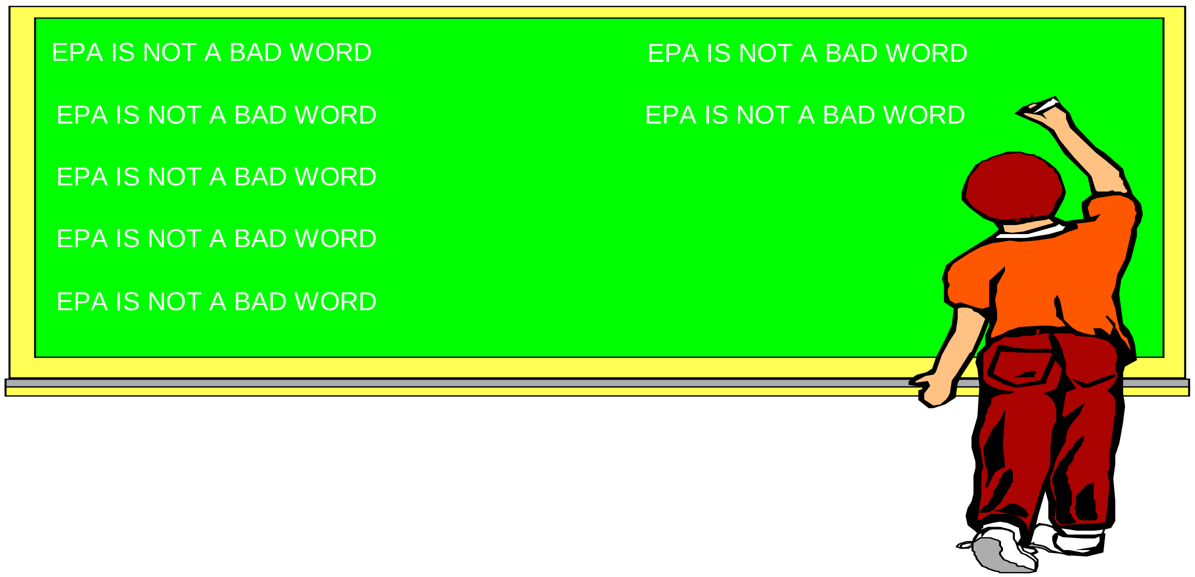
- Do facilities have any chemicals that could kill us?
- How will I know if there is a release, especially at night?
- Why don’t facilities reduce the inventory of chemicals?
- What are facilities really doing to prevent accidents?
- Why are there so many accidents?
- Do the facilities have to use these chemicals?

Can LEPCs answer these questions ??

- What have facilities done to reduce risk at the plants?
- What do I do if the plant siren sounds ?
- How will I be notified before a release reaches my house?
- Does shelter in place always work – what if houses are not air tight ?
- Who makes decisions to shelter-in-place or evacuate ?
- Who decides the best way to respond to a release?
- Who decides if they are qualified to make decisions?

Can LEPCs answer these questions ??

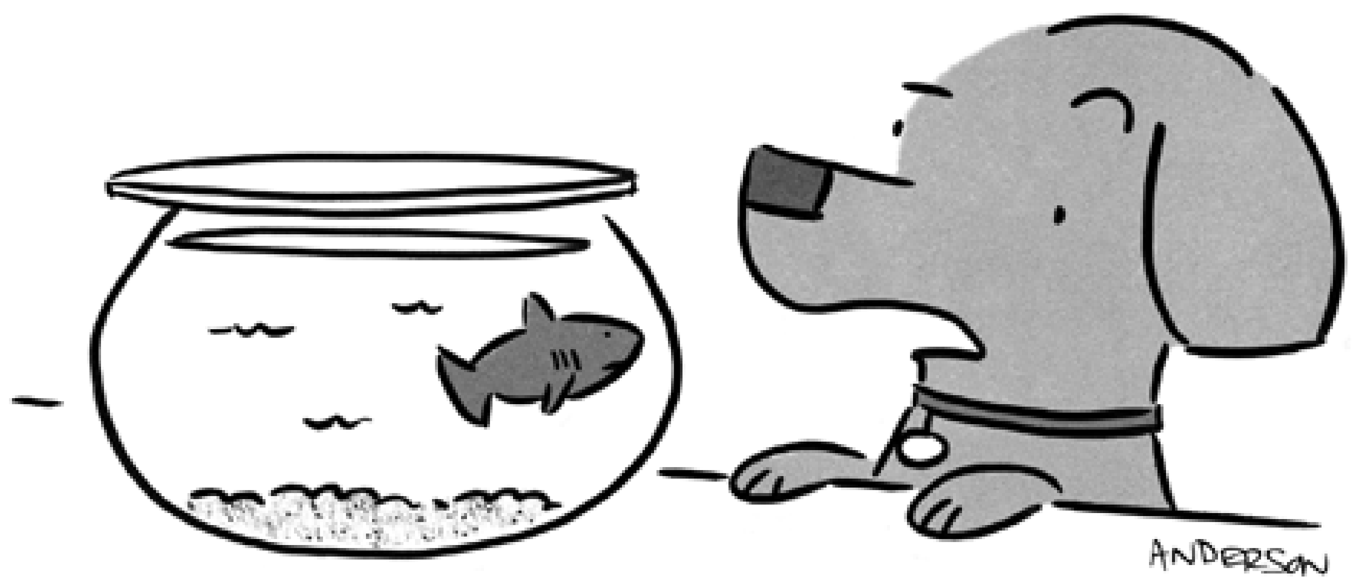
- Do plant personnel live by the plants? Why not?
- Do the local responders feel comfortable they can protect me if a release occurs?



WHAT EPCRA HAS TAUGHT US

A Short Law can have a major impact

- **CERCLA – 76 pages**
- **CAA – 210 pages**
- **RCRA – 93 pages**
- **EPCRA – 17 pages**



"You make a good point; we both hate the cat.
I'm just not sure what it is you'd bring to a partnership."

It's about partnerships !!

NHPA and Section 106 Consultation

Compliance and Historic Property Protection
During Emergency Response

Presentation Overview

1. Origins—why NHPA?
2. Core concepts
3. Process highlights
4. Recent Developments

Origins—why NHPA?

1960s—why NHPA?

- Roads and sprawl
- WWII-1964 = 6 million acres lost
- 1964 = 50 million people in 'burbs

1960s—why NHPA?

- Unforeseen federal impact
- Kennedy's Urban Renewal Program
- Johnson's Great Society
- Established Department of Housing and Urban Development – expanded slum clearance, public housing, economic reorganization of inner cities, urban renewal

John F. Kennedy (1961-1963)

Lyndon B. Johnson (1963-1969)

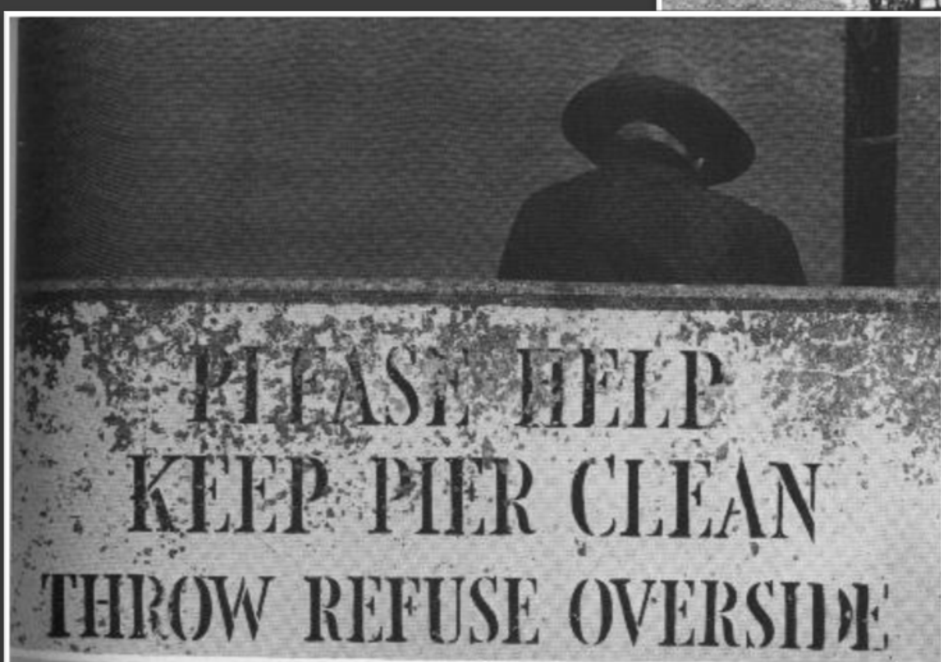
1960s—why NHPA?

- By 1966 ½ of structures on Historic American Buildings Survey razed

Urban Renewal in Albion, Michigan, 1967 (Passic 2013)
http://www.albionmich.com/history/histor_notebook/111023.shtml

1960s—why NHPA?

- Growing public concern
- Planned deterioration



Core Concepts

National Historic Preservation Act, 1966

- "…spirit and direction of the Nation are founded upon and reflected in its historic heritage…
- [It] should be preserved…as a living part of our community life…
- …in order to give a sense of orientation to the American people" 16 USC 470(b)(4)

National Historic Preservation Act, 1966

- Created National Register
- Formed ACHP
- Created SHPOs
- Formed 1st national policy on historic preservation

National Historic Preservation Act, 1966

PRESERVE EVERYTHING?

consider the effects of your actions on historic properties before spending federal funds

Five types of historic properties

- Buildings
- Structures
- Objects
- Sites
- Districts

Africa House, Melrose Plantation NHL, Louisiana

Five types of historic properties

- Buildings
- Structures
- Objects
- Sites
- Districts

USS Drum, Mobile, Alabama

Five types of historic properties

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Five types of historic properties

- Buildings
- Structures
- Objects
- Sites
- Districts

Traditional Cultural Properties (TCPs)

A TCP is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that

a) are rooted in that community’s history, and
b) are important in maintaining the continuing cultural identity of the community.

National Historic Preservation Act, 1966

Regulations Implementing Section 106

36 CFR 800 *Protection of Historic Properties*

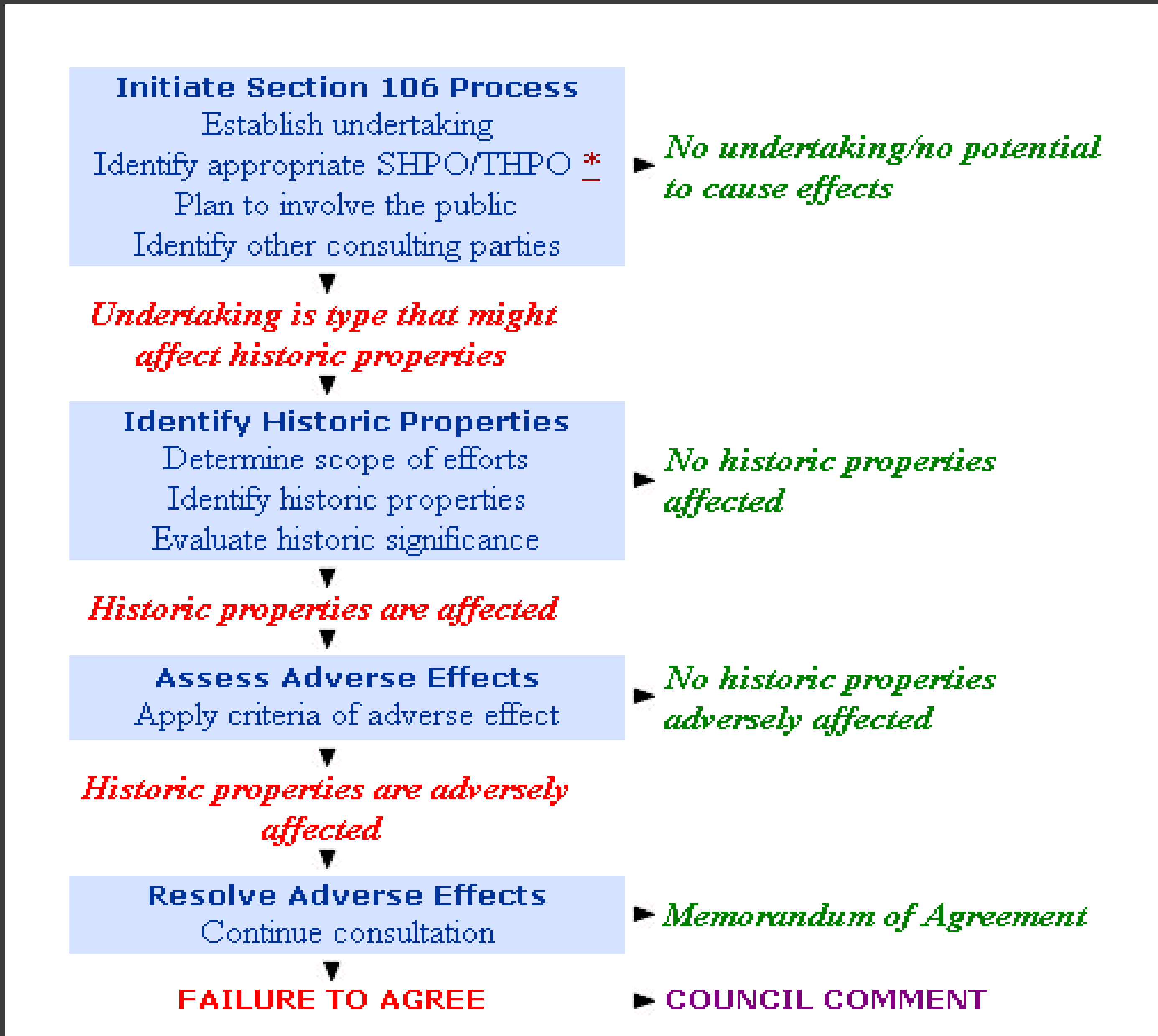
- establishes the compliance process
- last revised in 2004

36 CFR 800 Protection of Historic Properties

Section 106

The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking ***shall***, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, *take into account the effect of the undertaking on any district, site, building, structure, or object* that is included in or eligible for inclusion in the National Register*. The head of any such Federal agency shall afford the Advisory Council on Historic Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking*.

This is how the process works for for Federal undertakings.



36 CFR 800 Protection of Historic Properties

Regulatory Philosophy: Consultation

Consultation is necessary to:

- Identify historic properties
- Assess project's effects on them
- Try to avoid, minimize, or mitigate adverse effects

Who are the participants?

- Every Federal agency has an official responsible for compliance
- Designating the “lead Federal agency”
- Contractors can be used to prepare reports, etc.
- Consultation appropriate to the scale of undertaking and scope of Federal involvement

Who are the participants?, cont'd.

Advisory Council

- Issues regulations for implementation
- Oversees operations of the process
- Comments on Federal undertakings and programs that affect historic properties
- Can enter the process if certain criteria are met

Who are the participants?, cont'd.

Criteria for Advisory Council Involvement

- Substantial impacts on important historic properties
- Presents important questions of policy or interpretation
- Potential for procedural problems
- Presents issues of concerns to tribes or Native Hawaiian organizations

Who are the participants?, cont'd.

State Historic Preservation Office (SHPO)

- Undertakes statewide historic preservation planning and survey
- Nominates properties to the NR
- Reviews and comments on Federal, State, and local undertakings for purposes of Section 106
- Assists local governments with programs and certification

Who are the participants?, cont'd.

Indian Tribes and Native Hawaiian Organizations

- Respect tribal sovereignty
- Sites significant to native people may not be on tribal lands
- Government-to-government consultation

Who are the participants?, cont'd.

Tribal Historic Preservation Officer

- Assumes SHPO duties on tribal lands
- Include wide variety of programs for addressing historic properties important to them
- Different procedures on tribal land and off tribal land
- Be sensitive to cultural differences

Who are the participants?, cont'd.

Additional Consulting Parties

- Those with a "demonstrated interest"
- Due to nature of their legal/economic relation to undertaking

Who are the participants?, cont'd.

The Public

Public involvement should reflect:

- nature and complexity of the undertaking
- its effects on historic properties
- likeliness of public interest
- confidentiality concerns of private individuals and businesses
- relationship of Federal involvement

Oil Pollution Act

National Oil and Hazardous Substances Pollution Contingency Plan (NCP)

Programmatic Agreement on Protection of Historic Properties during Emergency Response Under National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Section Part 300

Programmatic Agreement on Protection of Historic Properties during Emergency Response Under National Oil and Hazardous Substances Pollution Contingency Plan (1997 PA)

Created by committee chaired by National Response Team and the following signatories:

- EPA
- USCG
- DOI (OEPC and the National Park Service)
- Department of Commerce (NOAA)
- U.S. Department of Agriculture
- U.S. Department of Defense
- Advisory Council on Historic Preservation (ACHP)
- National Conference of State Historic Preservation Officers (SHPO)

1997 PA

The 1997 PA provides an alternative process to ensure appropriate consideration of historic properties within the meaning of the NHPA during emergency response to a release or spill

1997 PA - Planning

The 1997 PA requires the identification of:

- historic properties and cultural resources that have been listed in or determined eligible for inclusion in the National Register of Historic Places that might be affected by response to a release or spill;
- unsurveyed areas with a high potential for presence of historic properties and cultural resources
- encourages the identification and use of a Historic Properties Specialist to assist the FOSC in meeting compliance requirements

1997 PA - PLANNING

The PA calls for the development of a list of parties for notification in the event of an incident in a non-excluded area

In Region VI, this list includes:

- State Historic Preservation Officers (SHPO)
- U.S. Dept. Interior (OEPC; BIA; NPS; FWS; BLM; BOEMRE)
- USDA (Forest Service)
- DoD
- Federally-recognized Tribes
- Local governments, private land owners

1997 PA - Response

Role of the Historic Properties Specialist:

- Advise the FOSC on historic preservation issues, particularly adherence to the 97 PA and 36CFR800.3-800.16.
- Make recommendations on strategies to eliminate or reduce potential adverse effects to historic properties and cultural resources during response activities.
- Assess the potential of response activities to negatively affect those historic properties/cultural resources.
- Develop Section 106 plans, best management practices (BMPs), and processes to ensure compliance with the 97 PA and federal, state, local, and tribal laws.

1997 PA - RESPONSE

"If newly discovered … historic properties/cultural resources are encountered the Federal OSC shall either:

- Consult with SHPO …to determine if the properties are eligible for inclusion in the National Register, or

- Treat the properties as eligible"

1997 PA – If the PA Cannot Be Satisfied

Emergency response – when circumstances dictate that response actions must be taken so quickly that normal consideration of Section 106 is not reasonably practicable

1997 PA – If the PA Cannot Be Satisfied

If the Federal OSC determines that protection of public health and safety is paramount to protection of historic properties, the following shall be documented in writing:

- Name and title of person making the determination
- Date of determination
- Description of competing values between public health and safety and carrying the provisions of this Section

1997 PA – If the PA Cannot Be Satisfied

If circumstances later permit, the Federal OSC shall endeavor to comply with the requirements of Section VI F. (Make and implement decisions about appropriate actions.)

OTHER HISTORIC PROPERTY AND CULTURAL RESOURCE LAWS NOT COVERED UNDER THE 1997 PA

NAGPRA – Native American Graves Protection and Repatriation Act, 1990

Applies to federal lands:

- Get a NAGPRA specialist and begin negotiations with affiliated tribes
- If an agreement is reached on how to handle burials, an action plan is issued
- Tribal representatives may have to travel to the project area at project expense

OTHER FEDERAL LAWS

Archaeological Resources Protection Act (ARPA) 1979, (P.L. 96-95)

Protects cultural resources on all Federal lands

Abandoned Shipwreck Act 1987, (P.L. 100-298)

Meant to protect historic shipwrecks from treasure hunters and salvagers by transferring the title of the wreck to the state whose waters it lies in

OTHER FEDERAL LAWS

- American Indian Religious Freedom Act, 1978 P.L. 95-341)
- Archeological Recovery Act, 1960 (P.L. 86-523, Reservoir Salvage Act)
- Archeological & Historic Preservation Act, 1974, Section 110 as amended (P.L. 93-291)
- Department of Transportation Act, 1966 (P.L. 89-670)
- Federal Highway Act, 1956 (P.L. 91-605)
- Federal Land Policy & Management Act, 1976
- Federal Property & Administrative Services Act of 1949, as amended
- Government Performance & Results Act of 1993 (GPRA)
- Historic Sites Act, 1935 (P.L. 74-292)
- Mining in the National Parks Act of 1976 (P.L. 94-429)
- Museum Act, 1955
- National Park Service Organic Act, 1916 (P.L. 74-235)
- National Park System Resource Protection Act
- Tax Reform Act, 1976 (P.L. 94-455)
- Volunteers in the Parks Act of 1969
- World Heritage Conservation Act of 1980 (P.L. 96-515)

- PLUS – STATE HISTORIC PRESERVATION LAWS

Summary of Historic Property Activities for Deepwater Horizon, as of April 2013

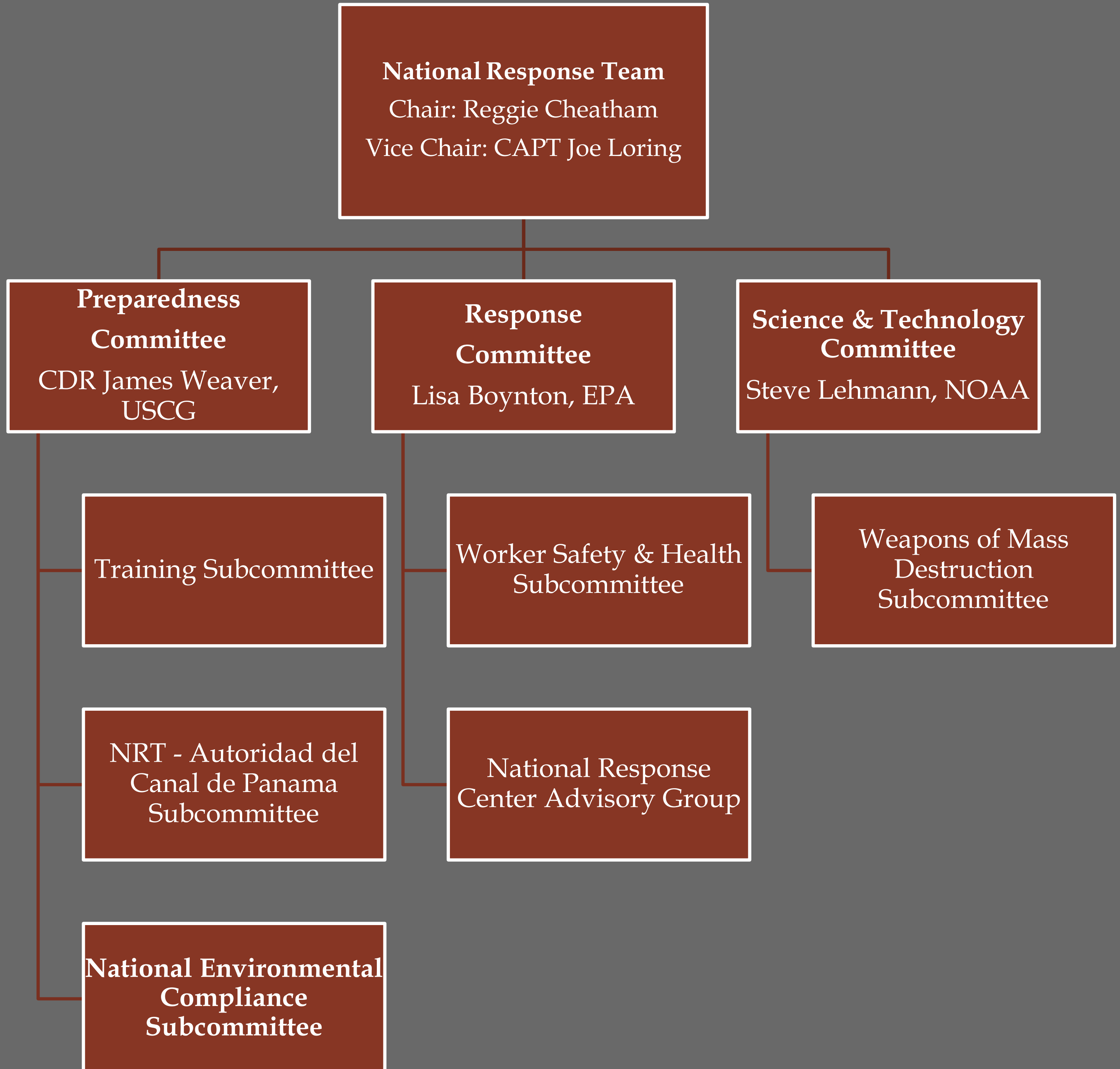
Archeological sites and Historic Properties:

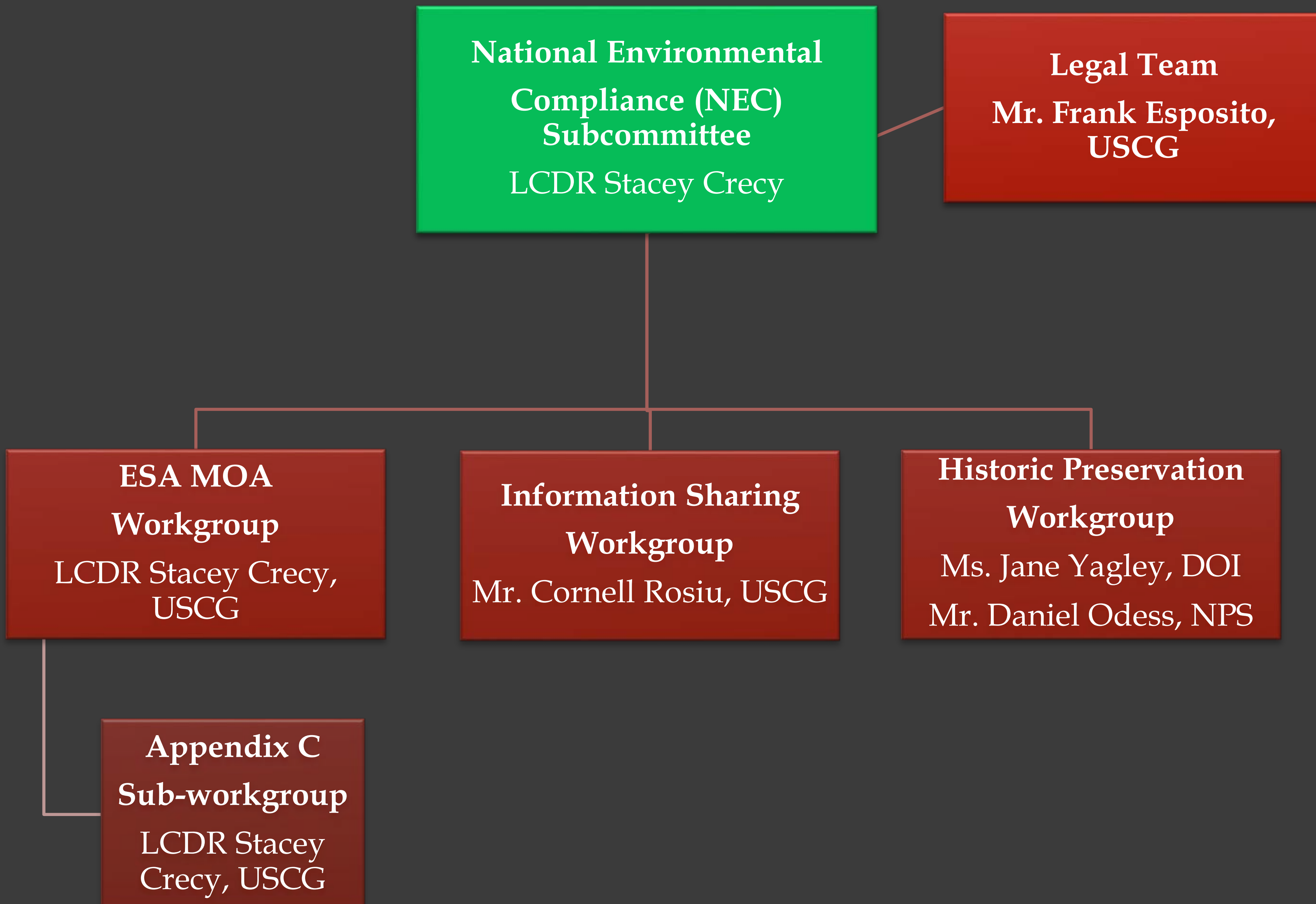
- 490 - Total number of archeological sites across AOR (LA-FL)
- 128 - Total number newly discovered sites: LA-50; MS-29; AL-29; FL-20
- 63 - Total number of oiled sites: LA-30; MS-17; AL-4; FL-12
- 17,961 - Total number kilometers surveyed
- 1,745 - Total number of archeological and monitoring missions

Recent Developments

National Response Team

- Environmental Compliance sub-committee (NEC)
- National Historic Preservation Act 106 Workgroup
- Endangered Species Act Memorandum of Agreement Workgroup


National Response Team
Chair: Reggie Cheatham
Vice Chair: CAPT Joe Loring
Preparedness Committee
CDR James Weaver, USCG
Response Committee
Lisa Boynton, EPA
Science & Technology Committee
Steve Lehmann, NOAA
Training Subcommittee
NRT - Autoridad del Canal de Panama Subcommittee
National Environmental Compliance Subcommittee
Worker Safety & Health Subcommittee
National Response Center Advisory Group
Weapons of Mass Destruction Subcommittee


National Environmental Compliance (NEC) Subcommittee
LCDR Stacey Crecy
Legal Team
Mr. Frank Esposito, USCG
ESA MOA Workgroup
LCDR Stacey Crecy, USCG
Information Sharing Workgroup
Mr. Cornell Rosiu, USCG
Historic Preservation Workgroup
Ms. Jane Yagley, DOI
Mr. Daniel Odess, NPS
Appendix C Sub-workgroup
LCDR Stacey Crecy, USCG

106 Workgroup

Will need to include:

- Advisory Committee on Historic Preservation
- National Conference of State Historic Preservation Offices
- National Association of Tribal Historic Preservation Offices
- DOI
- National Park Service
- NOAA
- USCG
- EPA

Possible Tools to Develop

- Draft Qualifications for Historic Properties Specialist (HPS) that can be used by EPA and USCG when contracting for a HPS to assist in the incident
- Collect Best Management Practices to share with the spill community
- Develop incident position in IQCS for DOI and NPS to roster qualified HPS to assist in the incident. Meets standards, experience with 106, trained in incident command.
- Will then be prepared to deploy once PRFA is approved

Possible Tools to Develop

- Draft Implementation Guidelines to address issues identified with USCG, EPA, and NOAA at first NEC meeting.
- Address incorporation of other environmental compliance laws into planning process.
- Develop tool to provide USCG/EPA guidance on what information to submit when requesting a consultation
- Develop Guidelines and Tools then bring together workgroup to review them and provide input.

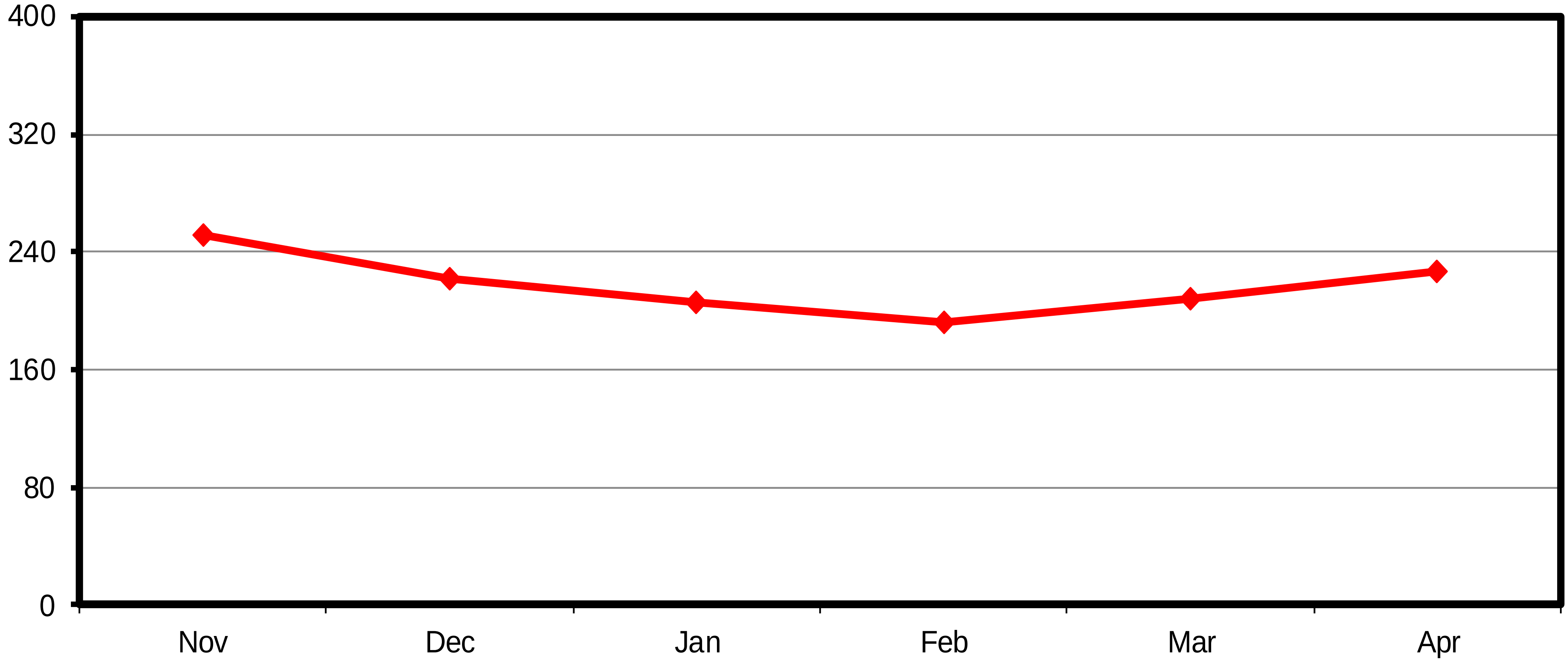
Special Thanks to Meredith Hardy of the National Park Service for Allowing Use of an Earlier Version of This Presentation

EPA Region 6 Accidental Release Information :

November, 2015 - April, 2016

Over Thirty Years of Collecting Release / Spill Information

NRC Notifications to EPA Region 6 (November, 2015-April, 2016)

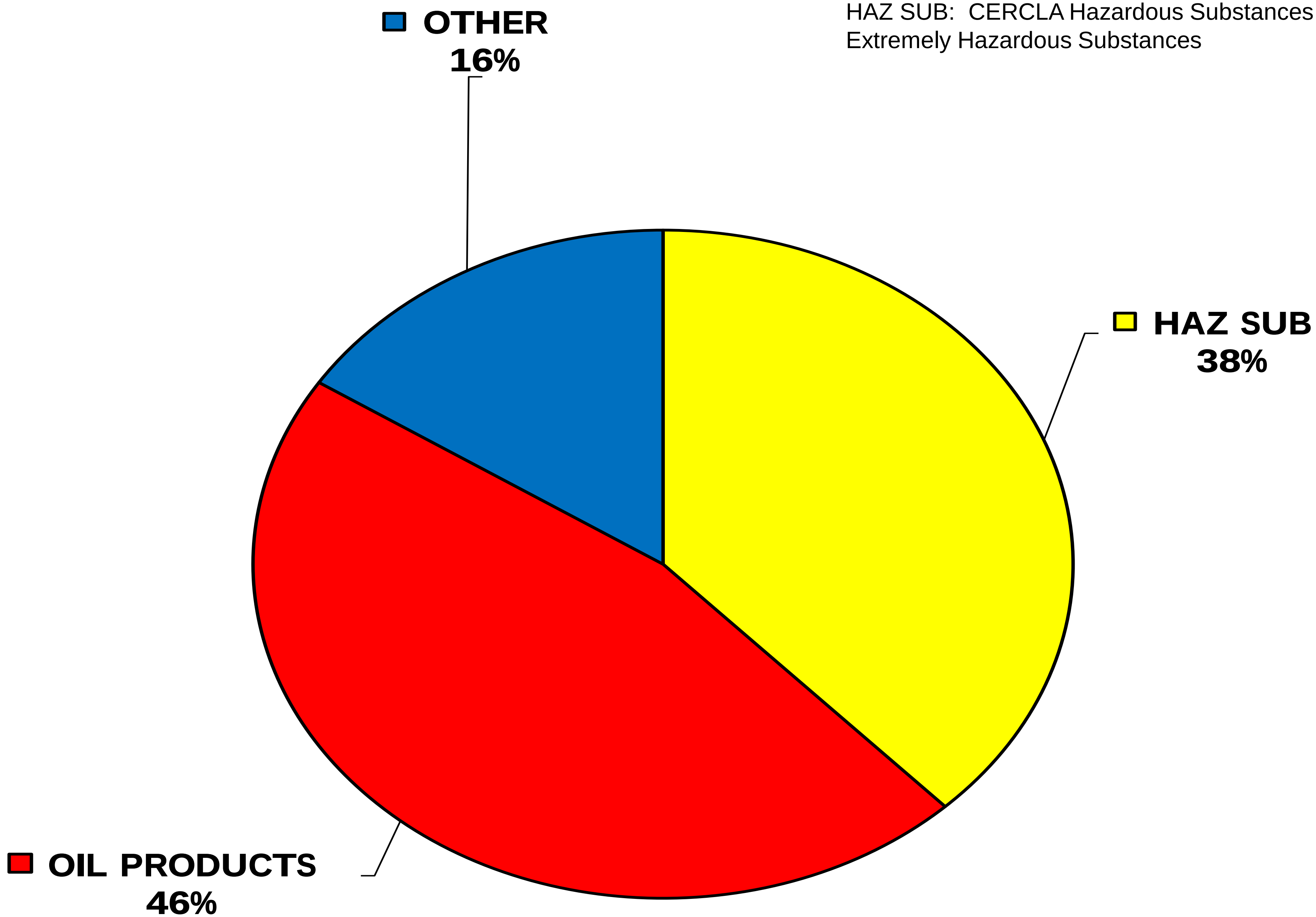


	November	December	January	February	March	April
EPA Region 6 Notifications	252	222	206	192	208	227

5/20/2016

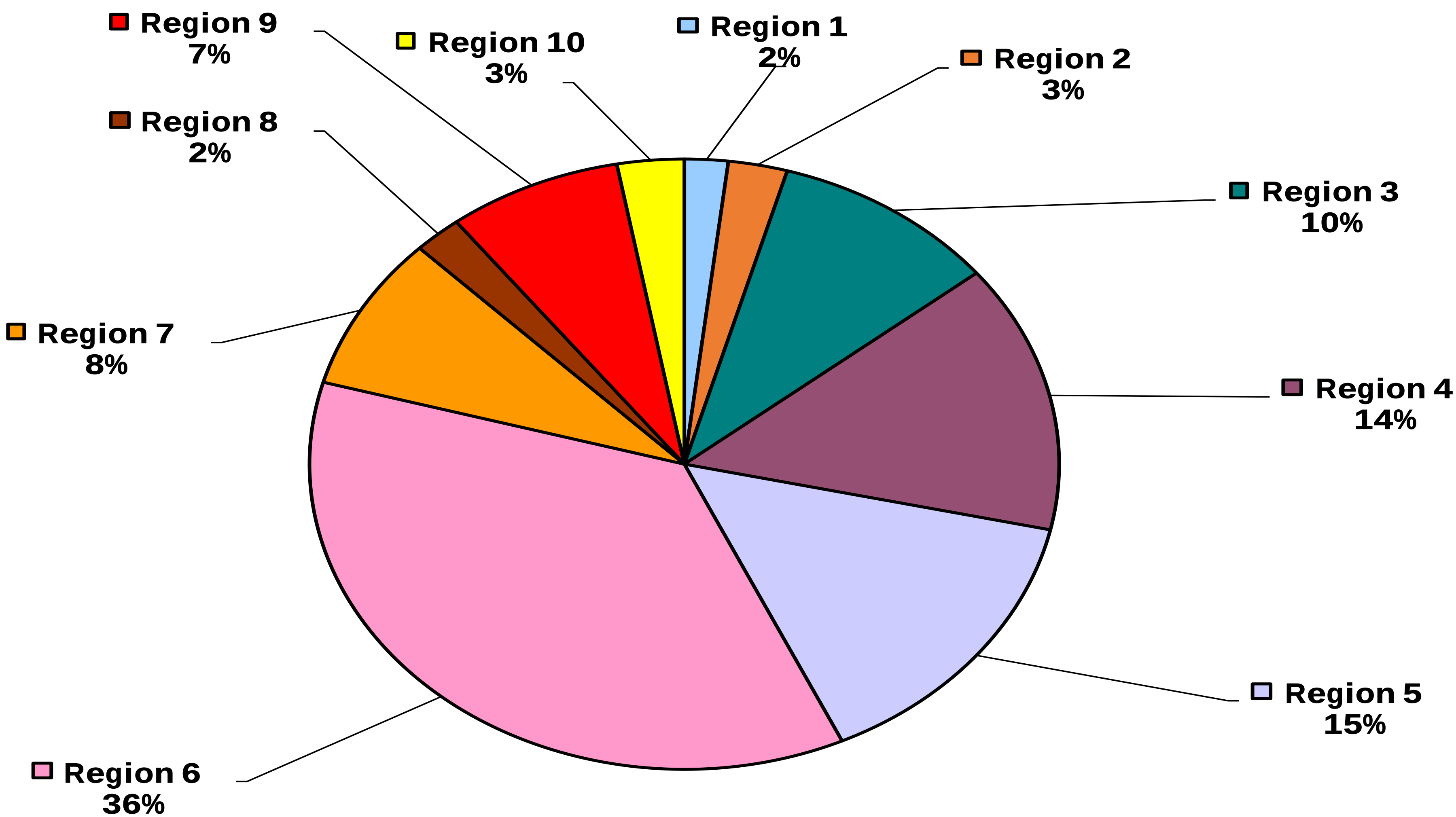
NRC Notifications to EPA Region 6 -- % by Material Type (November, 2015-April, 2016)

HAZ SUB: CERCLA Hazardous Substances & EPCRA Extremely Hazardous Substances



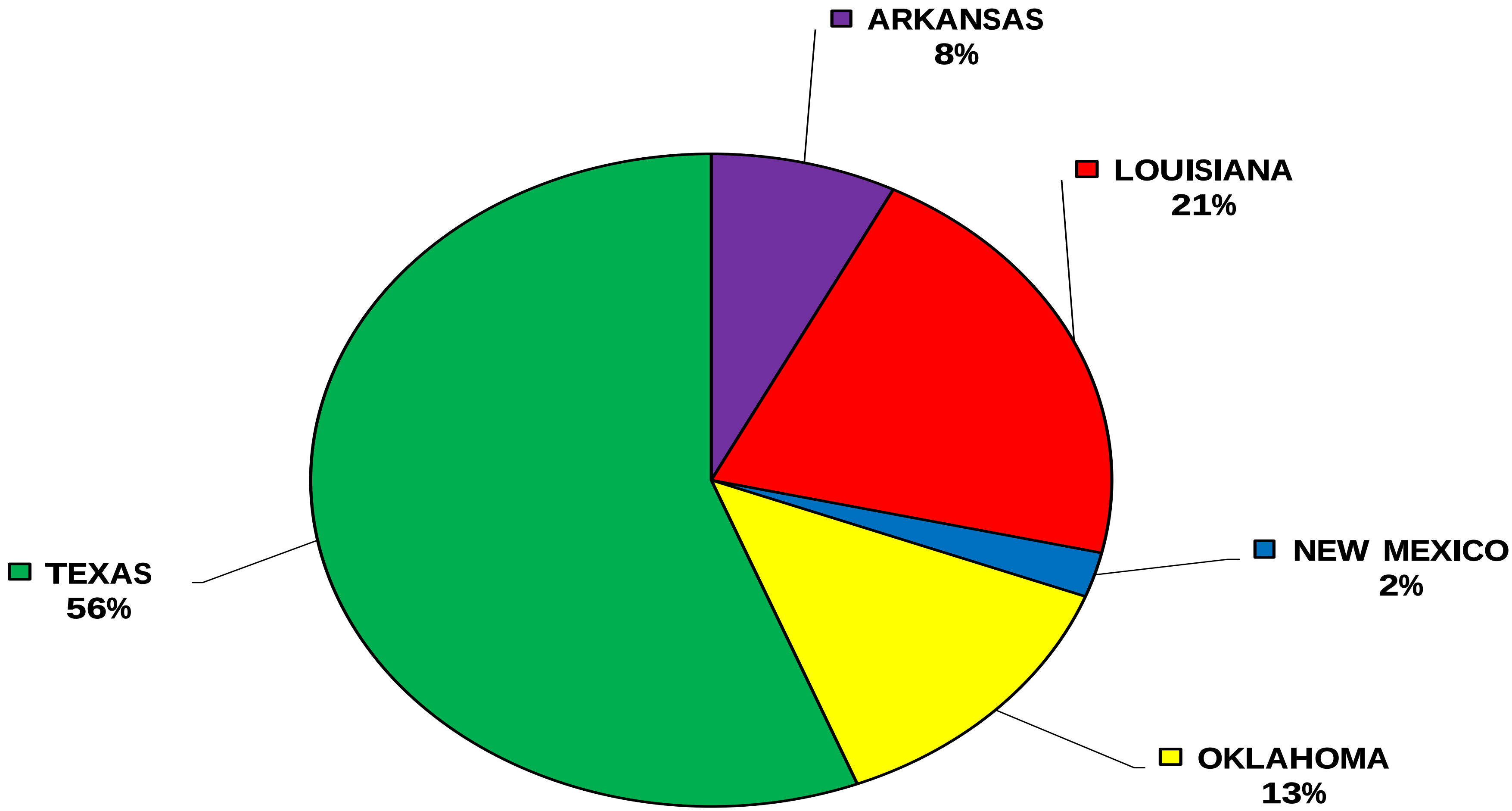
5/20/2016

EPA Air Release Notifications to NRC per Region (November, 2015-April, 2016)



5/20/2016

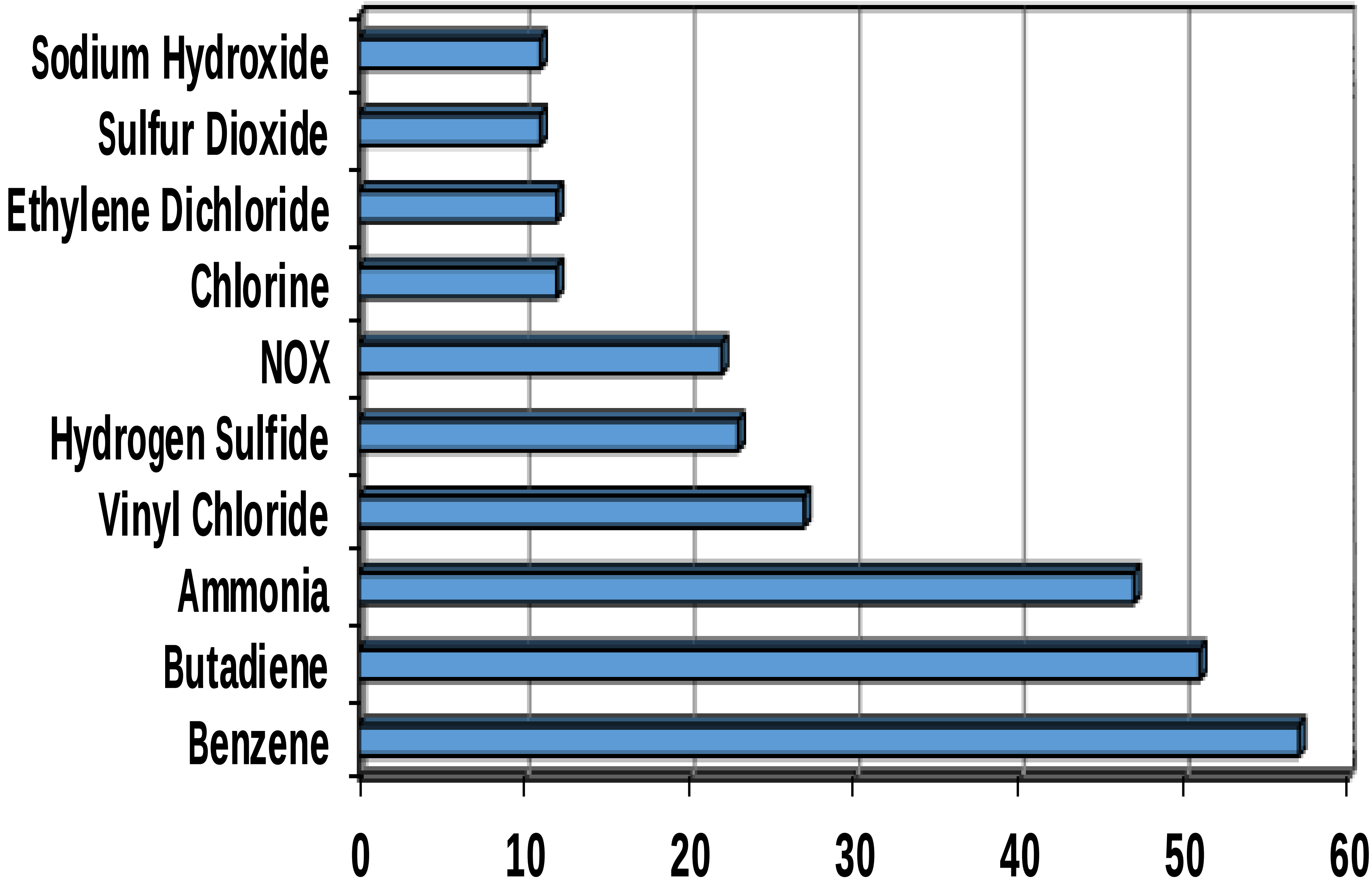
NRC Notifications to EPA Region 6 -- % by State (November, 2015-April, 2016)



5/20/2016

NRC Notifications to EPA Region 6 -- Top Hazardous Materials Released (November, 2015-April, 2016)

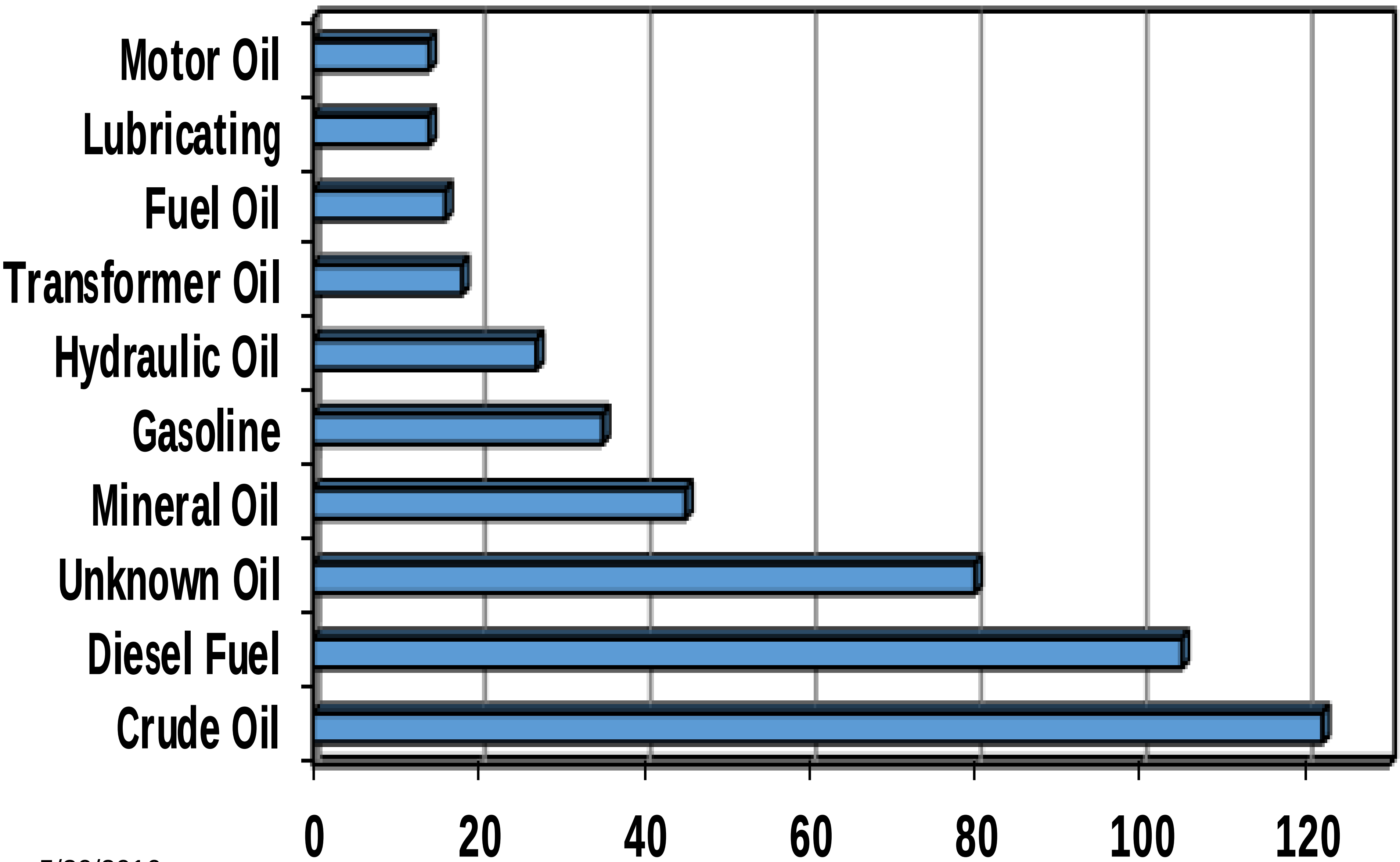
The substances listed below account for 80 % of all hazardous material releases



5/20/2016

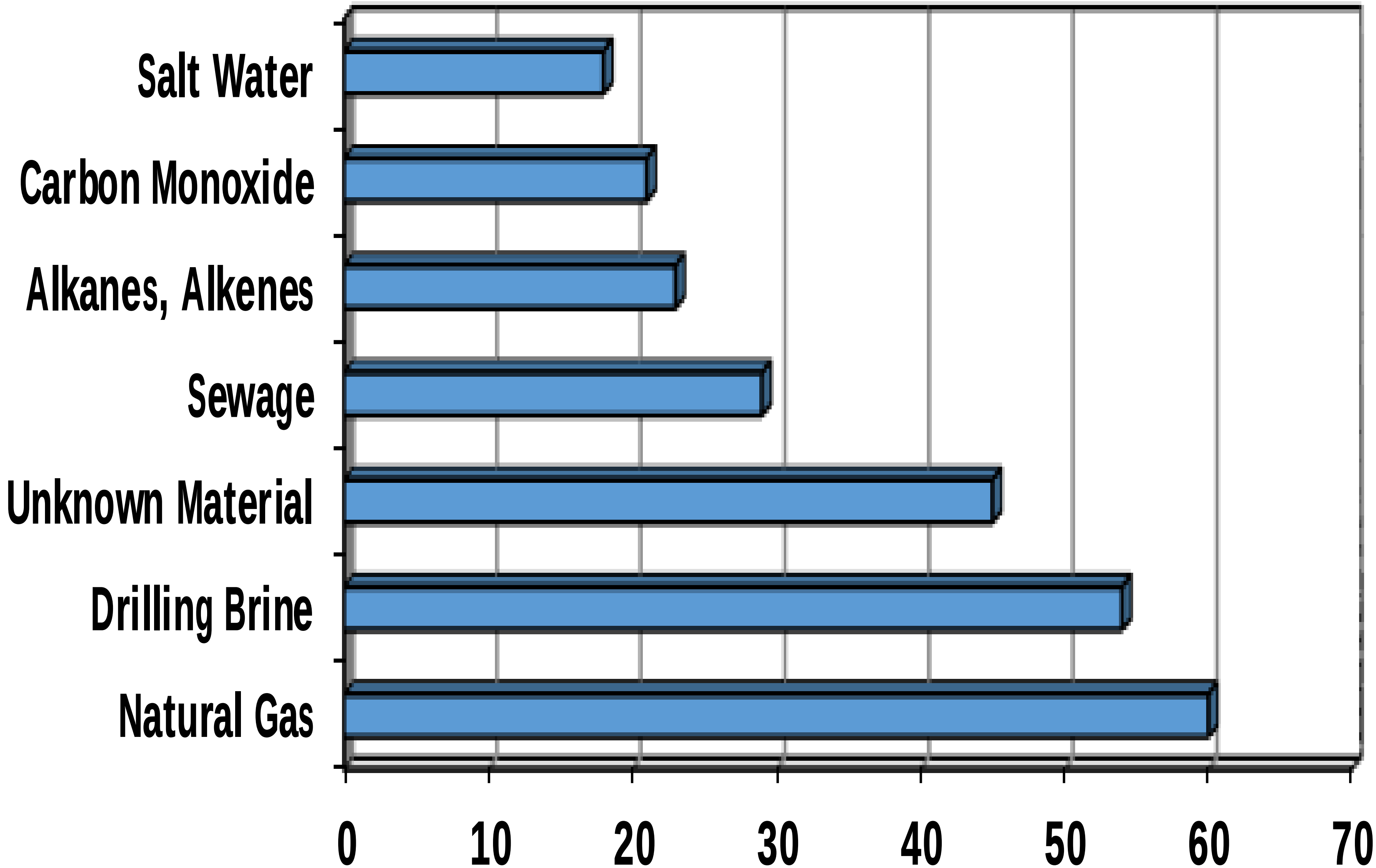
NRC Notifications to EPA Region 6 -- Top Oil / Oil Products Released (November, 2015-April, 2016)

The oil / oil products listed below account for 88 % of all oil / oil product releases



NRC Notifications to EPA Region 6 -- Top Other Substances Released (November, 2015-April, 2016)

The materials listed below account for 73 % of all other material releases



5/20/2016

EPA Responses – November, 2015-April, 2016

Miami Emergency Asbestos Assessment	Miami, OK
Henderson Plating	Oklahoma City, OK
ExxonMobil Sulfur Plant	Beaumont, TX
PRSI Fire	Pasadena, TX
Anadarko Tank Battery	Anadarko, OK
Houston Refining L.P. Fire	Houston, TX
Data Center Oil Spill - FPN E14601	Plano, TX
Magellan Pipeline E16602	Red Rock, OK
Murphy Oil – Tom South Gathering System	Campbellton, TX
M/V AMY FRANCES Barge Spill	Nachez, MS
Bayou Couba Spill FPN E16606	Bayou Couba, LA
(E16607) McGowan Operating Partners Oil Spill	Waterproof, LA
Bayou Teche Oil Spill	Jeanerette, LA
Explorer Pipeline Oil Spill - Conroe	Conroe, TX
Breitburn Operating Oil Spill	Kilgore, TX
Luling ONG Tank Battery	Luling, TX
Shell Pipeline Spill	Gulf of Mexico

Bayou Teche Oil Spill

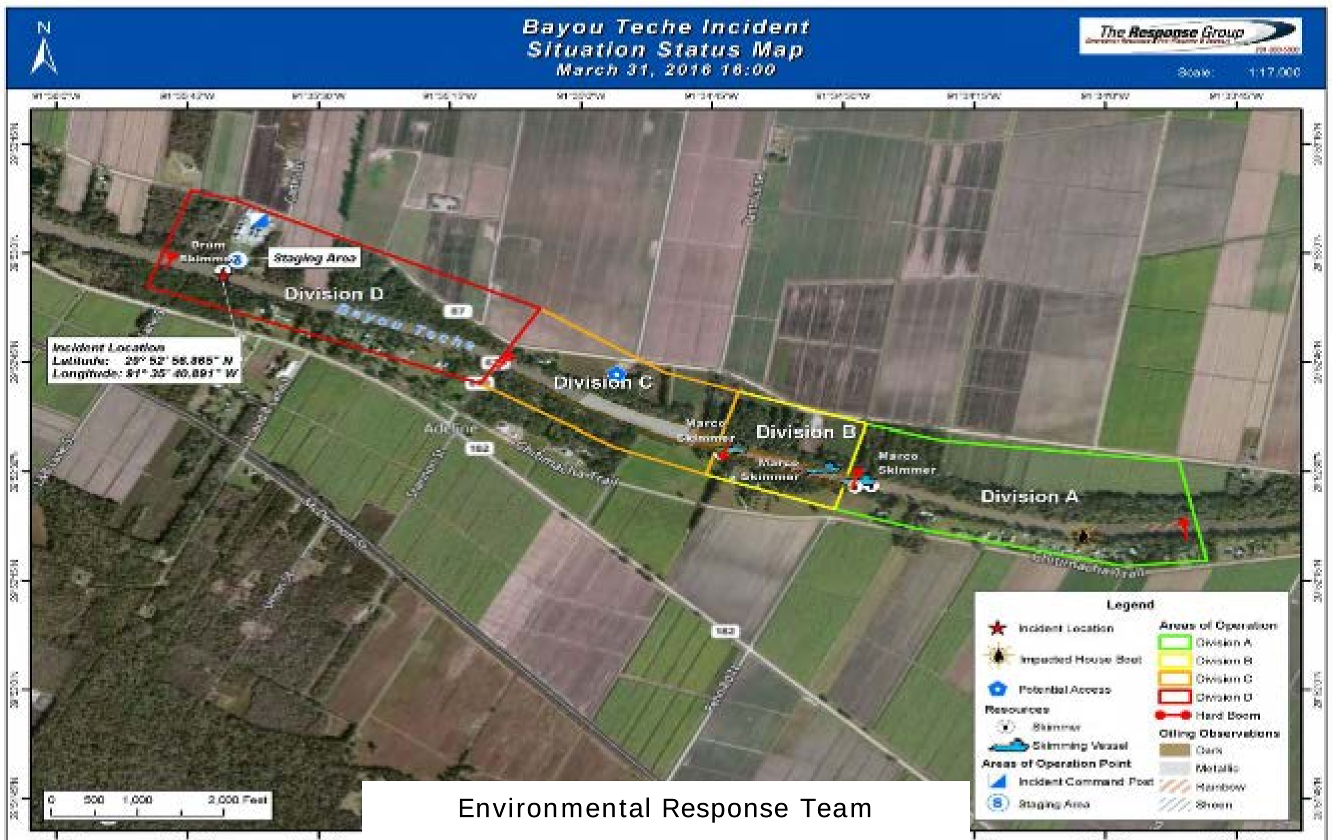
At 2010 on March 28, 2016, PSC Industrial Outsourcing (PSC) notified the National Response Center of a 50-barrel oil spill that impacted Bayou Teche near the town of Jeanerette, St. Mary Parish, Louisiana. The NRC assigned the incident report # 1143935. PSC indicated the spill was a result of an equipment failure at the PSC Industrial Resources facility located at 9523 LA Hwy 87, Jeanerette, St. Mary Parish, Louisiana.

Bayou Teche Oil Spill

Site Location

Bayou Teche Oil Spill

Site Aerial Map



Environmental Response Team

Bayou Teche Oil Spill

Responding Agencies

- US EPA
- US Coast Guard
- Louisiana Oil Spill Coordinators Office (LOSCO)
- Louisiana State Police
- Louisiana Dept. of Environmental Quality (LDEQ)
- Louisiana Dept. of Wildlife and Fisheries (LDWF)
- St. Mary Parish Office Homeland Security and Emergency Preparedness
- St. Mary Parish Sheriff's Department

Bayou Teche Oil Spill

Facility History/Operations

- Operating as PSC Industrial Outsourcing since 1998- Purchased from Allwaste Oilfield Services
- Operations:
  - Produce water disposal-injection well (5100 ft depth)
  - Oil reclamation
  - Purchasing crude oil
- 5-10,000 bbls, 1-5,000 bbls, and 2-2,000 bbls ASTs
- EPA FRP (R6-LA-1487)

Bayou Teche Oil Spill

Spill Root Cause

- The RP reported that a valve between two tanks failed permitting oil to flow from the larger to smaller tank.
- The larger tank was full at the time of the spill and is approximately 10 feet taller than the smaller tank.
- Once the available capacity of the smaller tank was reached, oil began to overflow the tank via a hatch located on the tank roof.
- Amount of release updated to approx 300 bbls

Bayou Teche Oil Spill

Spill Root Cause, cont'd

- Oil continued to spill from the smaller tank until the two tanks reached equilibrium.
- Oil exited the secondary containment structure through a stormwater drain which had been left in the open position due to an operator releasing stormwater from the containment area earlier in the day.
- Oil flowed through site drainage ditches approximately 550 feet to Bayou Teche.

Bayou Teche Oil Spill

3/28/16 PSC Reports Oil Spill and mobilizes OSRO resources to begin containment operations. USCG, Louisiana State Police, LDEQ, and Local Agencies mobilize to the site.

3/29/16 EPA mobilizes to the site, transfer of federal incident command from USCG to EPA.

4/4/16 LOSCO, LDWF, and LDNR conduct a NRDA (Natural Resource Damage Assessment). EPA demobilizes from site but continues coordination.

4/12/16 RP, LDEQ, and LOSCO representatives conduct an assessment of the affected portions of Bayou Teche. Agree that the incident category can be changed from response to maintenance.

4/13/16 The USCG and local authorities reopen Bayou Teche to boat traffic.

Bayou Teche Oil Spill

Areas of Concern

- St. Mary Drinking Water Branch
  - Bar Pit intake connected to Bayou Teche, used on occasion
  - Primarily uses Grand Lake intake, used during incident
- Chitimacha Tribal Nation
  - No impacts

Bayou Teche Oil Spill

Containment Boom

Wash Pumps

Marco Skimmer

Bayou Teche Oil Spill

Support Boat

Environmental Response Team

Storage Barge

Bayou Teche Oil Spill

Oil in Division B

Underflow Dam on ditch

Oil in trench connected to Bayou Teche

Bayou Teche Oil Spill

"J" Boom

Crews collecting oil from a concentrated area

Marco Skimmer tied into boom

Bayou Teche Oil Spill

Excavation of shoreline impact

Aerial photo of impact to bayou

PSC dock, unloading bagged debris

Bayou Teche Oil Spill

Recovered Oil, Debris, Adsorbent Material, and Soil

Oil (land/Water)	214 bbls
Soil and/Rocks	600 yds^3
Absorbent/Debris/Vegetation	725yds^3

Bayou Teche Oil Spill

Wildlife Impact

The LDWF conducted an active recovery operation for impacted wildlife. Oiled animals were captured, cleaned, and released to an area free of oil.

Totals:
Birds – 3 captured, 1 released, 2 mortalities
Reptiles – 15 captured, 14 released, 1 mortality
Amphibians – 10 captured, 9 released, 1 mortality
Invertebrates – 3 captured, 2 released, 1 mortality

Bayou Teche Oil Spill

Questions?

DEEPWATER HORIZON NATURAL RESOURCE DAMAGE ASSESSMENT
Settlement, Science, and the Shaping of Future Response and Assessments

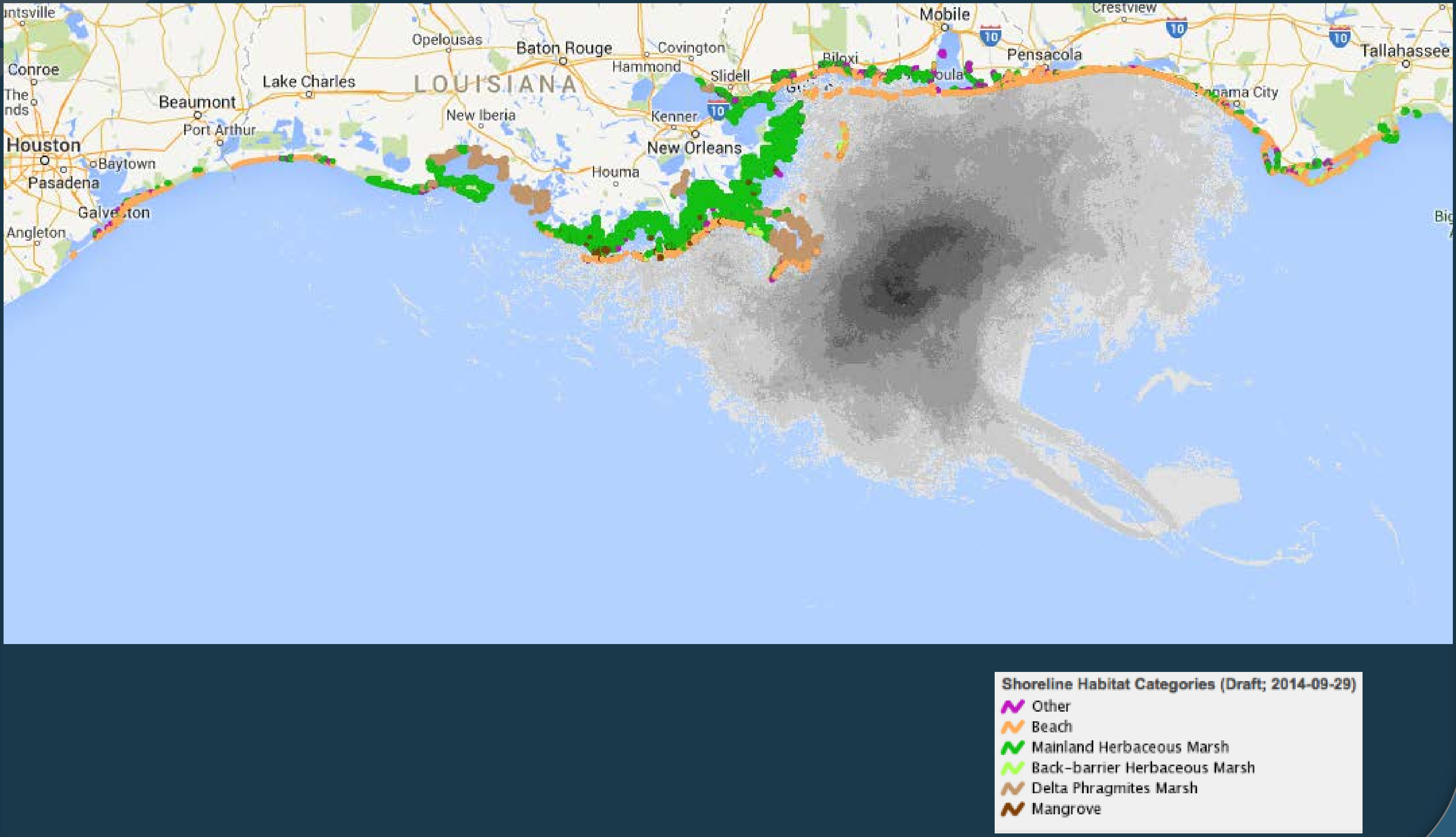
Lisa DiPinto, Ph.D.
Senior Scientist
National Oceanic and Atmospheric Administration
Assessment and Restoration Division

RRT 6 Meeting
May 17, 2016

What is Natural Resource Damage Assessment (NRDA)?

- A structured legal process defined in regulations
  - OPA, CERCLA, CWA, NMSA, other State and Federal Acts
- Focused on restoration of injured natural resources and the services they provide
- Damages under NRDA
  - Cost of restoring the injured resources to their baseline condition, including for interim losses pending recovery
  - Reasonable cost of the damage assessment

A massive spill, a massive response, a massive NRDA



DWH Allocation

$20.8 B

<u>up to $8.8B</u>
for Natural Resource Damages

- Includes $1B for Early Restoration
- Includes up to $700M to address future unknown conditions
- Restoration over 15+ years

<u>$5.5B</u>
for Clean Water Act civil penalties

- $4.4B (80%) will flow through the RESTORE Act
- $1.1B (20%) will go to the Oil Spill Liability Trust Fund

<u>$5.9B</u>
for economic claims

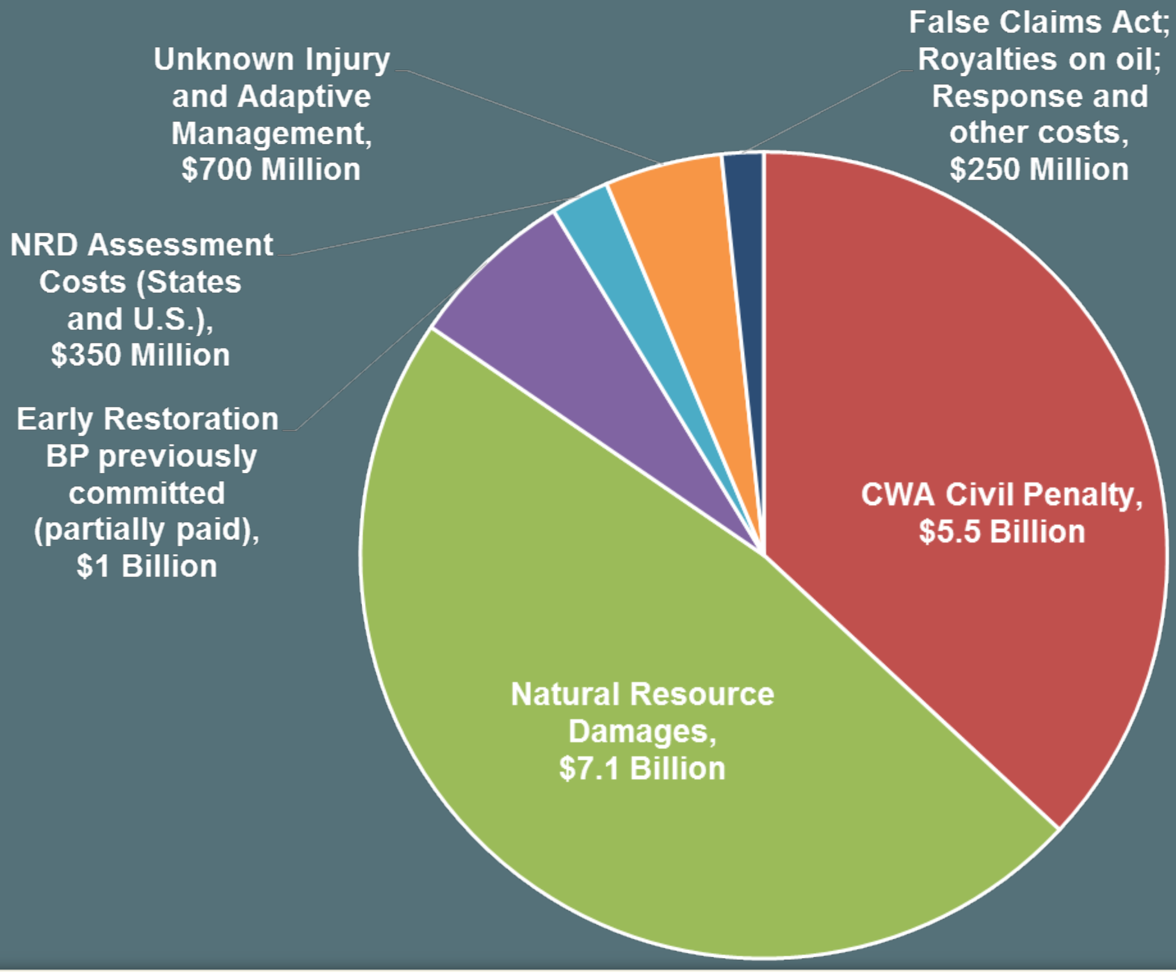
- $4.9B to the 5 Gulf states
- Up to $1B to local governments in the 5 Gulf states

<u>$0.6B</u>
for additional payments

- $0.35B NRD assessment costs
- $0.25B False claims act royalties on oil; response & other costs

Consent Decree Payments

Summary of Payments



NRDA Settlement (up to $8.8B)

- Payments must be used to restore or replace nature resources lost or injured by the spill – restoration projects

- Restoration outlined in the *Final Programmatic Damage Assessment and Restoration Plan and Draft Programmatic Environmental Impact Statement (PDARP/PEIS)*
  - Includes assessment of impacts of the spill
  - Identifies the types of restoration needed to compensate the public for these impacts

- Payments include:
  - $1B already committed for early restoration
  - $7.1B for restoration over 15+ years
  - Unknown conditions and adaptive management – up to $700 million
  - Costs of assessment

- Payments start one year after CD was final (April 4, 2016)

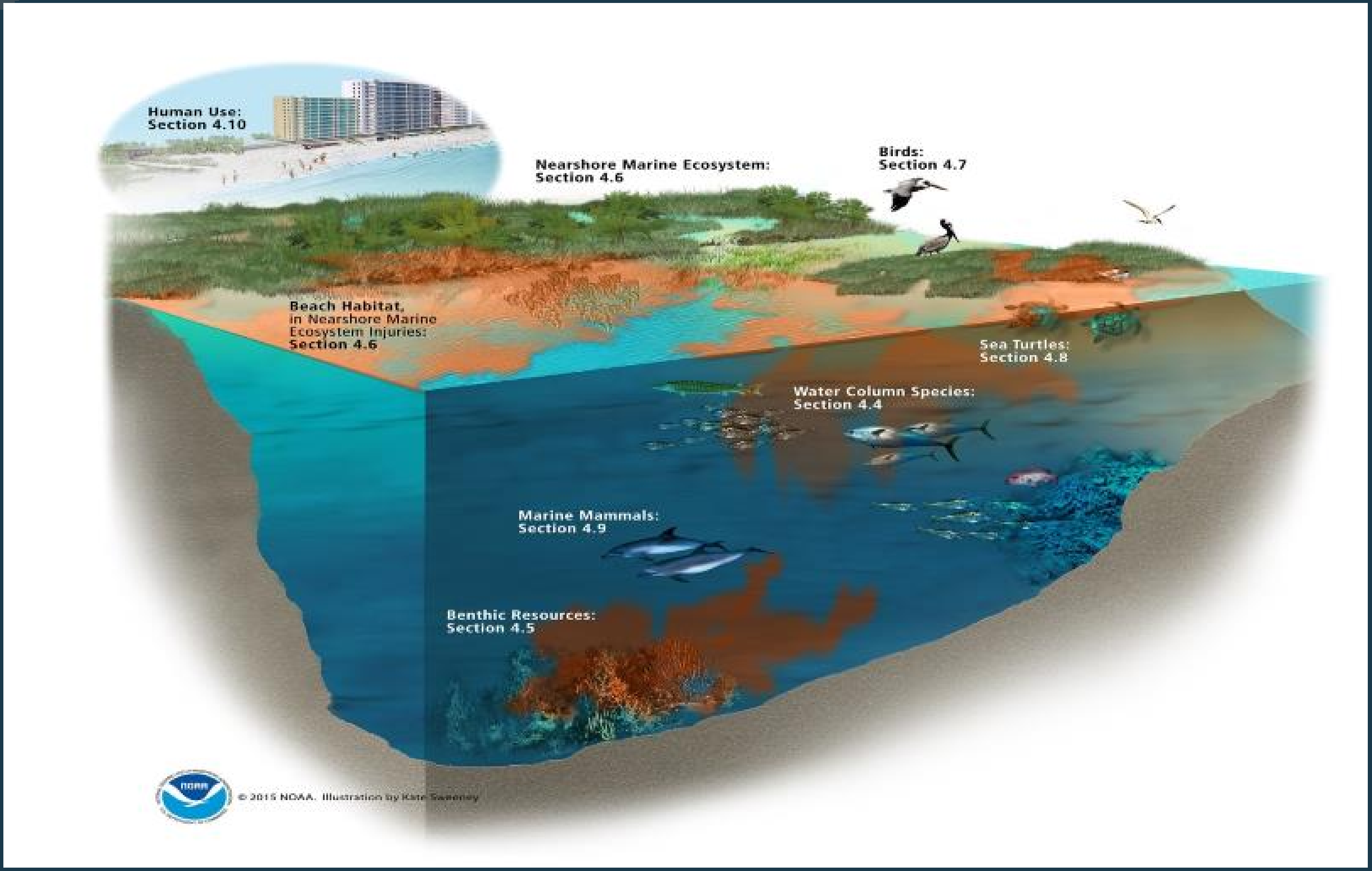
Deepwater Horizon Trustees

Federal Trustee Agencies
Department of the Interior • U.S. Fish and Wildlife Service • Bureau of Land Management • National Park Service
Department of Commerce • National Oceanic and Atmospheric Administration
Environmental Protection Agency
Department of Agriculture

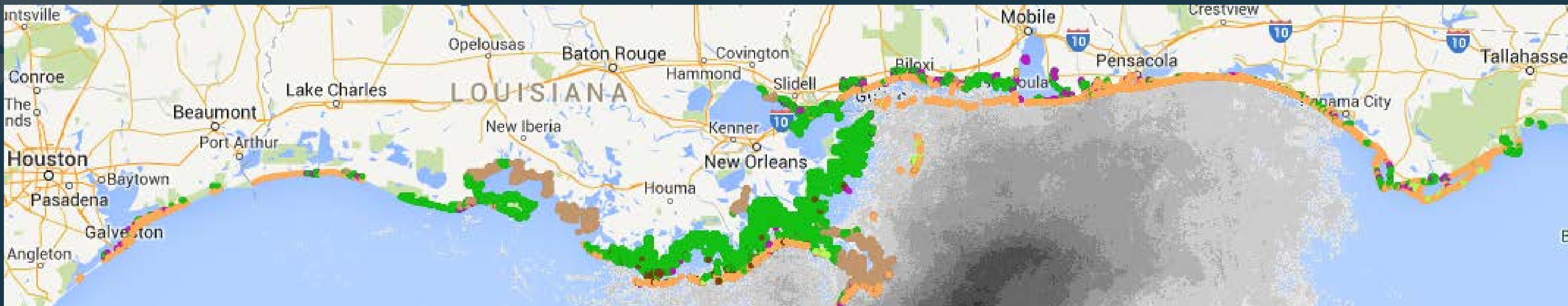
- Assess injuries to natural resources
- Ensure restoration of injured natural resources

State Trustee Agencies
Florida • Department of Environmental Protection • Fish and Wildlife Conservation Commission
Alabama • Department of Conservation and Natural Resources • Geological Survey of Alabama
Mississippi • Department of Environmental Quality
Louisiana • Coastal Protection and Restoration Authority • Oil Spill Coordinator's Office • Department of Environmental Quality • Department of Wildlife and Fisheries • Department of Natural Resources
Texas • Commission on Environmental Quality • General Land Office • Parks and Wildlife Department

NRDA Assessment Activities



A massive spill, a massive response, a massive NRDA



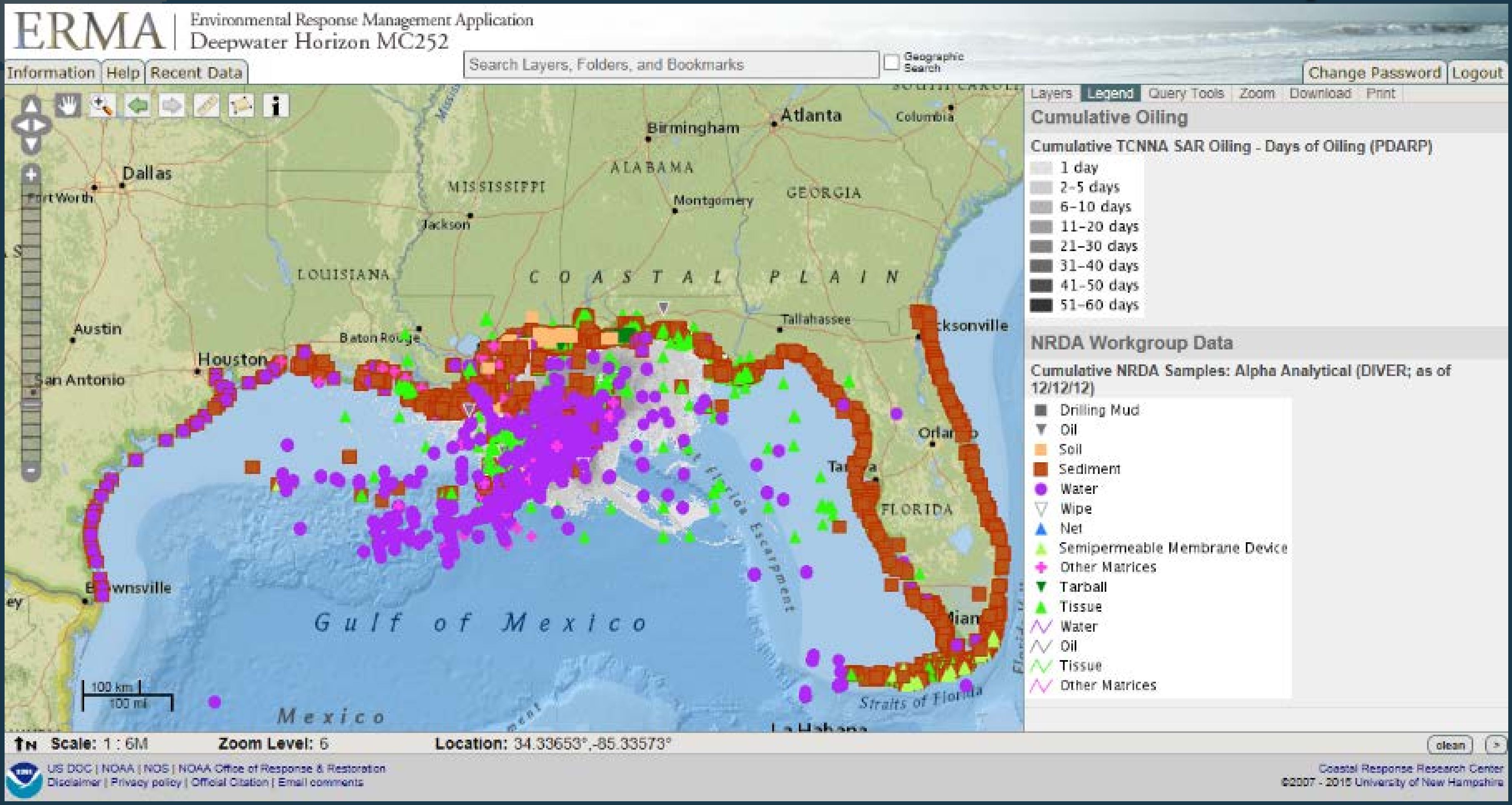
Data Collection Efforts

- 20,000 trips to the field to collect data
- 100,000 environmental samples collected
- 13 million records publically available
- Sediment, air, water, tissue samples, carcasses, photos and videos, carcasses, telemetry, aerial imagery, GPS data, observations

https://dwhdiver.orr.noaa.gov

Shoreline Habitat Categories (Draft; 2014-09-29)
- Other
- Beach
- Mainland Herbaceous Marsh
- Back-barrier Herbaceous Marsh
- Delta Phragmites Marsh
- Mangrove

Cumulative NRDA Analytical Samples



http://gomex.erma.noaa.gov

Long Term Data Incorporation and Management in Draft Consent Decree

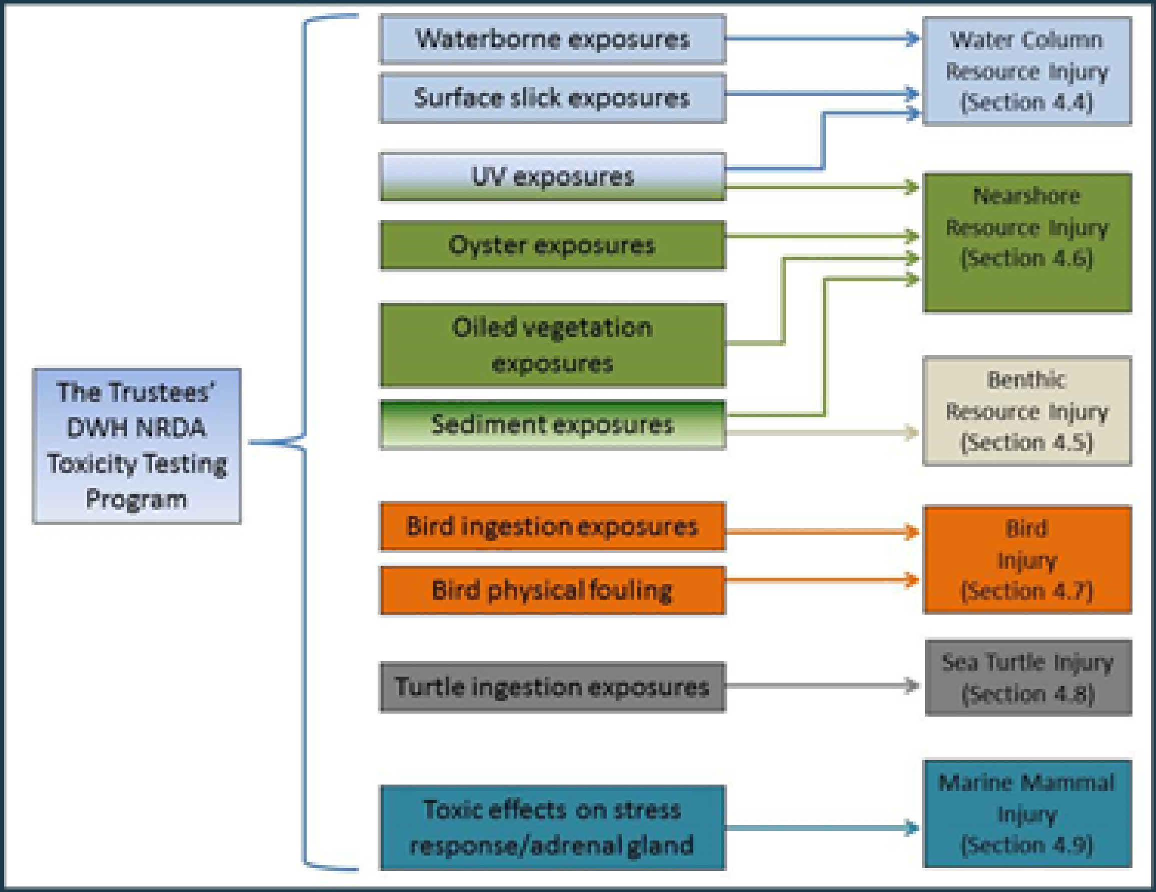
- NOAA to establish, populate, manage, and maintain a Gulf-wide environmental data management system
- Accessible to all Trustees and the public (10 years)
- DIVER as platform
- Restoration data repository and central reporting platform
- Support comprehensive data sharing for ecological effects and restoration
- Provide scientific foundation and baseline information for future science

Where can I find the data?

https://dwhdiver.orr.noaa.gov

http://gomex.erma.noaa.gov

Toxicity Program

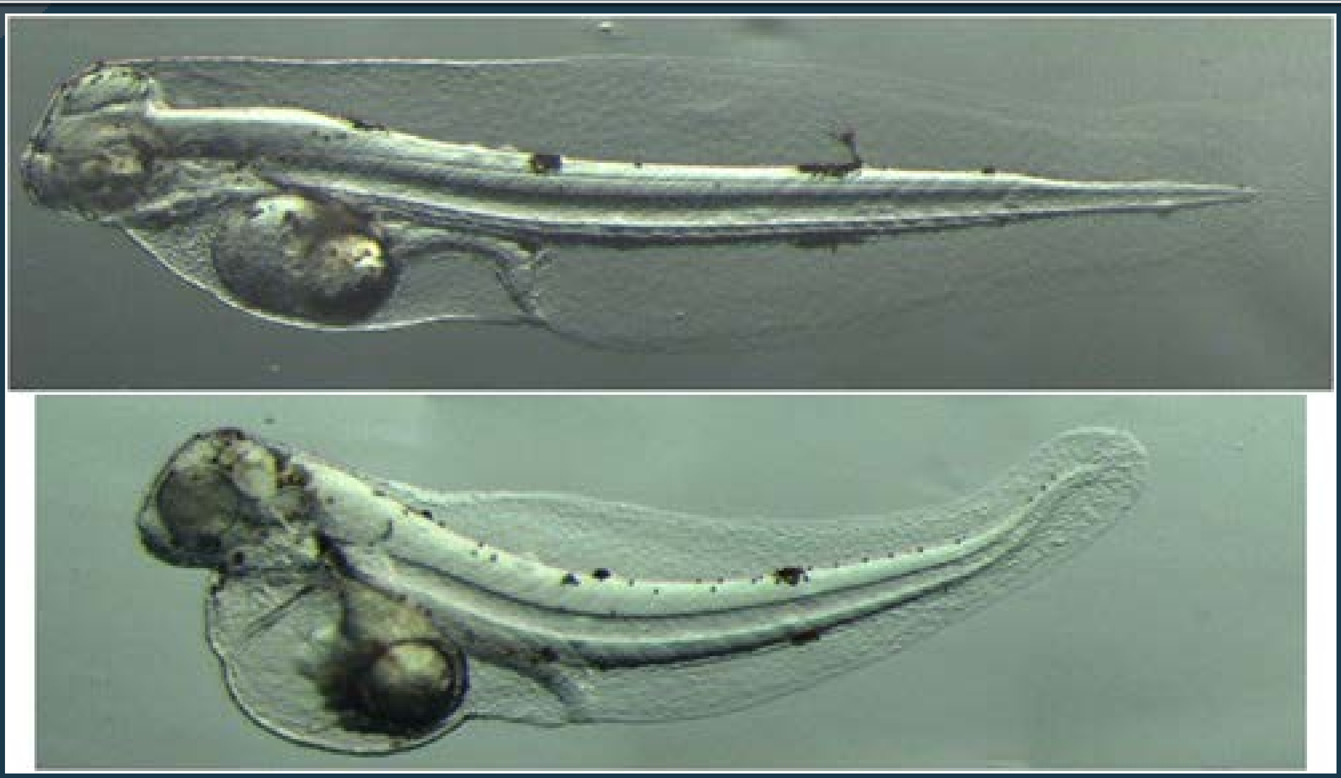


Tested 40 species including fish, invertebrates, plankton, 2 freshwater turtle species, birds, and a mammal adrenal cell line study

Toxicity Program

- Adverse effects at sediment concentrations ~ 1 ppm (mg/kg) TPAH50
- Adverse effects at water concentrations ~ 1 ppb (ug/L) for fish and ~ 13 ppb for invertebrates TPAH50
- Measured and modeled concentrations of TPAH50 in sediments and surface waters at numerous locations and times exceed these toxic concentrations
- Some toxic effects conserved across species (e.g., cardiotoxic effects in fish and birds, adrenal impairment in fish, birds and mammals,other)

Advances in Understanding Cardiotoxic Effects



Cardiotoxic effects of oil on developing red drum fish from Trustee studies.

Toxicity Program: Importance of Surface Oil and Sheens

- Thin sheens (1 um or less) toxic to early life stages (ELS) of fish and to invertebrates
- UV enhanced toxicity resulted in 10x to >100x increase in toxicity under ambient UV for semi-transparent inverts, and early life stage fish

Thin oil sheen generated in a beaker using DWH oil (~ 1um thick) as used in bioassays with fish and invertebrates.

Source: *Abt Associates*

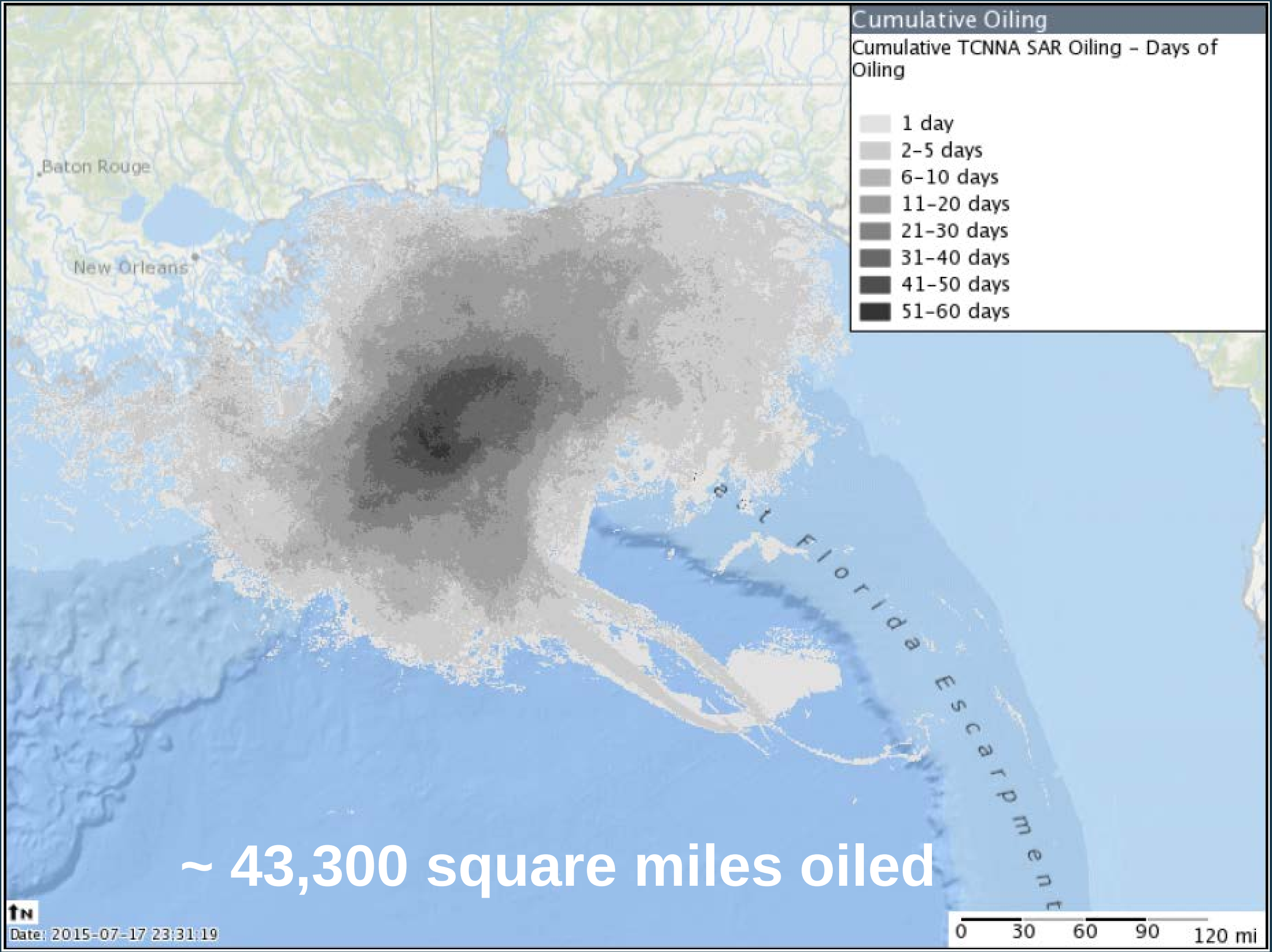
DWH oil sheen photographed from an airplane

Source: *NOAA*

Importance of Surface Oil Observations Used in Assessment

- Oil on water products used for every resource category
- Multiple sensors evaluated and used alone or in combination
- Surface oiling “footprints” of exposure
  - Cumulative, daily, weekly, or other timeframes relevant to resources of interest
  - Overlay resources (e.g., turtles, mammals, birds, other using telemetry, boats, aerial surveys etc) with surface oil
- Percent cover of oil, or other information about surface oil ‘patchiness’
- Information about surface oiling “thickness”
  - Thin and ‘thicker than thin’
  - Slick thickness estimates used to determine oil concentrations in surface mixing zone, volumes of water exceeding toxic concentrations, etc.

Cumulative SAR Surface Oiling Footprint

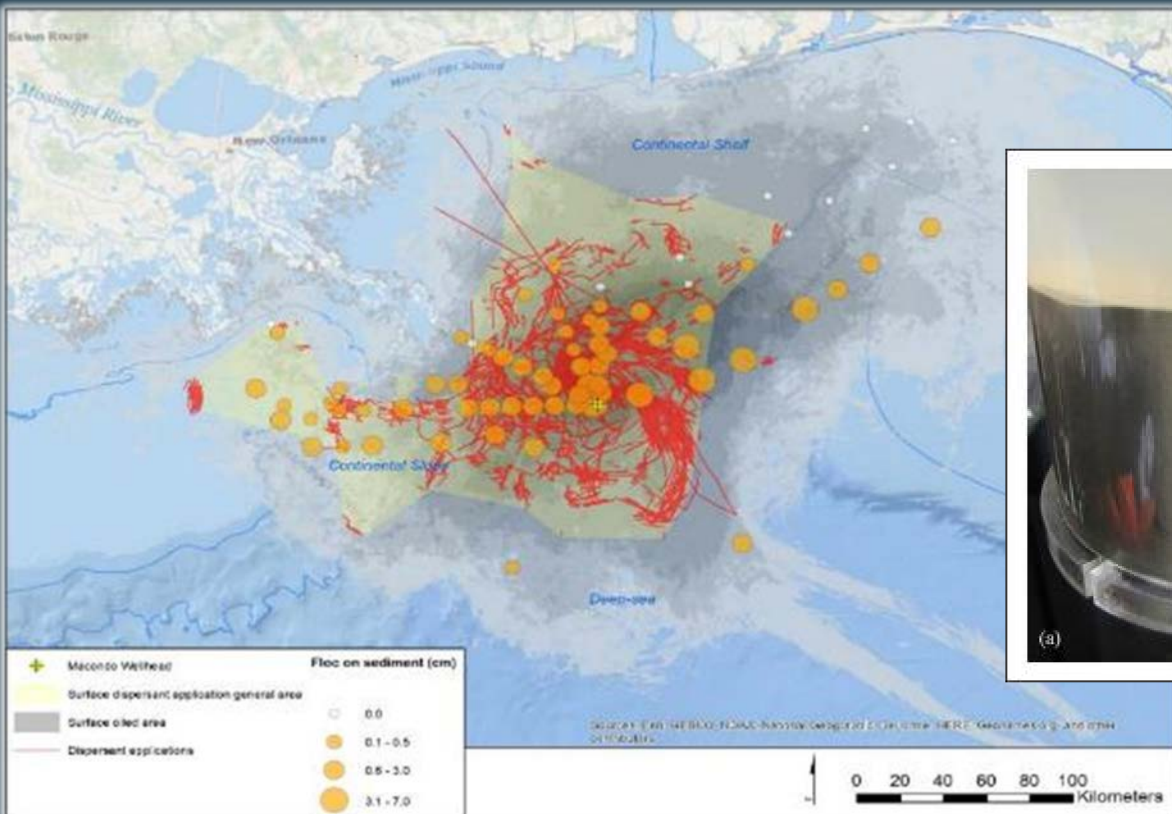


Water Column

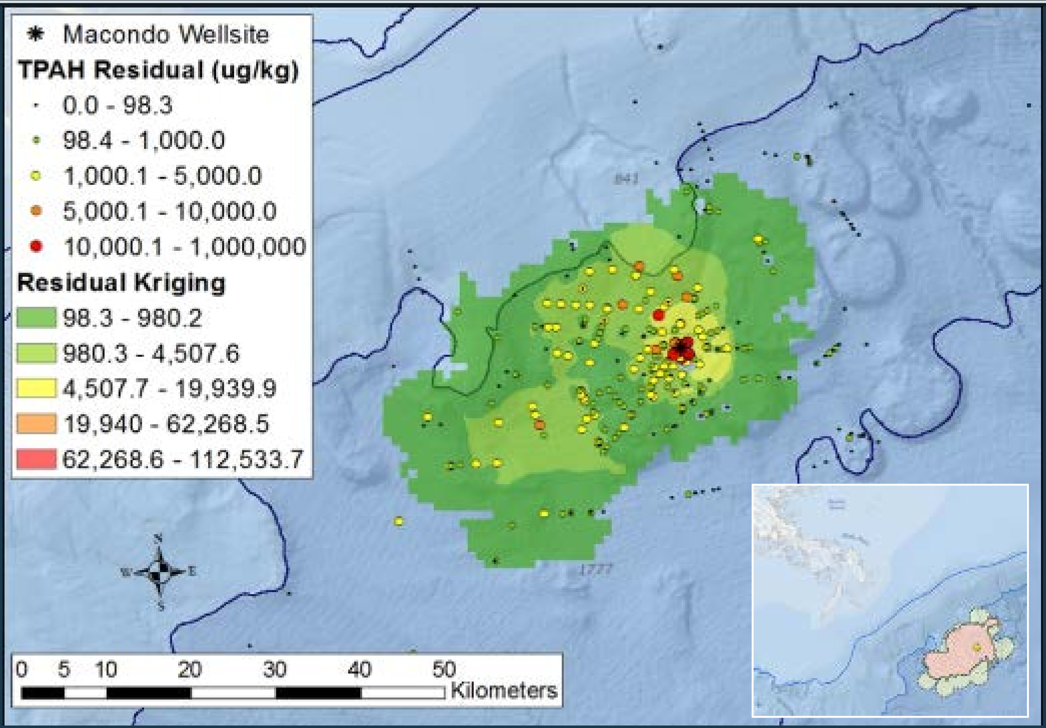
- Mortality determined for early life stage fish and invertebrates in surface slick, subsurface mixing zone, rising cone, deep plume
- Average daily volume of water affected by surface oil slicks was 57 billion cubic meters (15 trillion gallons)
  - The volume of contaminated water in subsurface mixing zone quantified using empirical chemistry data collected under the footprint of the floating oil.
- Toxicity data for representative high and low sensitivity fish and invertebrates used to bracket range of injury in UV (surface, nearshore) and non-UV areas
- Number of organisms killed calculated using biological data from NRDA-specific field studies, historical collections, NRDA toxicity testing studies, and published literature
  - Surface water injury > rising cone and deepwater plume based on number of larval fish and planktonic invertebrates killed
- Loss of up to 23% of Sargassum habitat (Essential Fish Habitat), covering 4,300 square miles

Surface Oil and Sea Floor Floc

- Larger quantities of floc were observed on the sea floor beneath areas experiencing persistent surface oil and application of dispersants



Deepwater Benthic Exposure: Advances in Forensic Chemistry



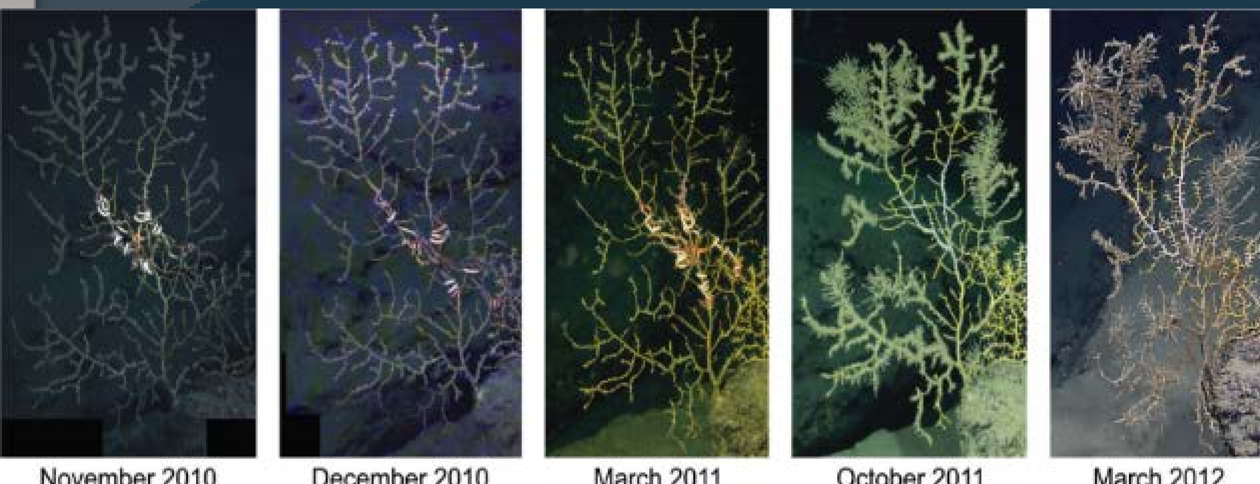
Inset shows location relative to the Mississippi River Delta

- Map showing the concentration of TPAH50 attributable to DWH oil in deep-sea surface sediment (0–1 centimeter)
- Forensics analyses include evalauations of conserved biomarkers, PAH distribution patterns across width and depth
- PAH attributable to natural seeps are excluded following forensic analysis
- “Footprint” of Macondo oil estimated to be ~400->700 sq. miles

Benthos are not charismatic!

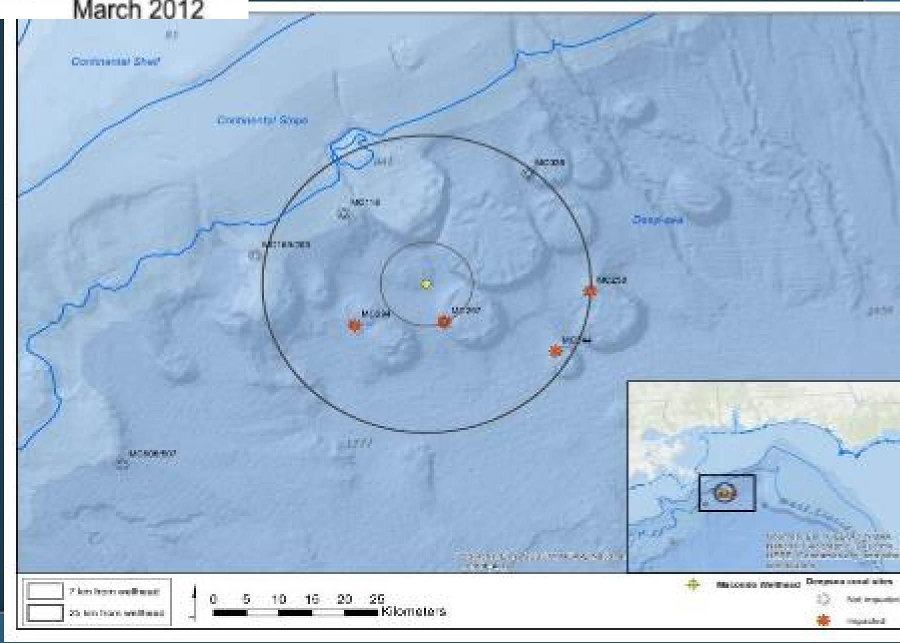
"I don't know why I don't care about the bottom of the ocean, but I don't."

Deepsea Coral Colony Injury Progression



Progression of coral injury from coverage by flocculent material in 2010, through hydroid colonization in 2011 and onset of terminal branch loss in 2012

Map of locations of injured coral sites in relation to the DWH wellhead



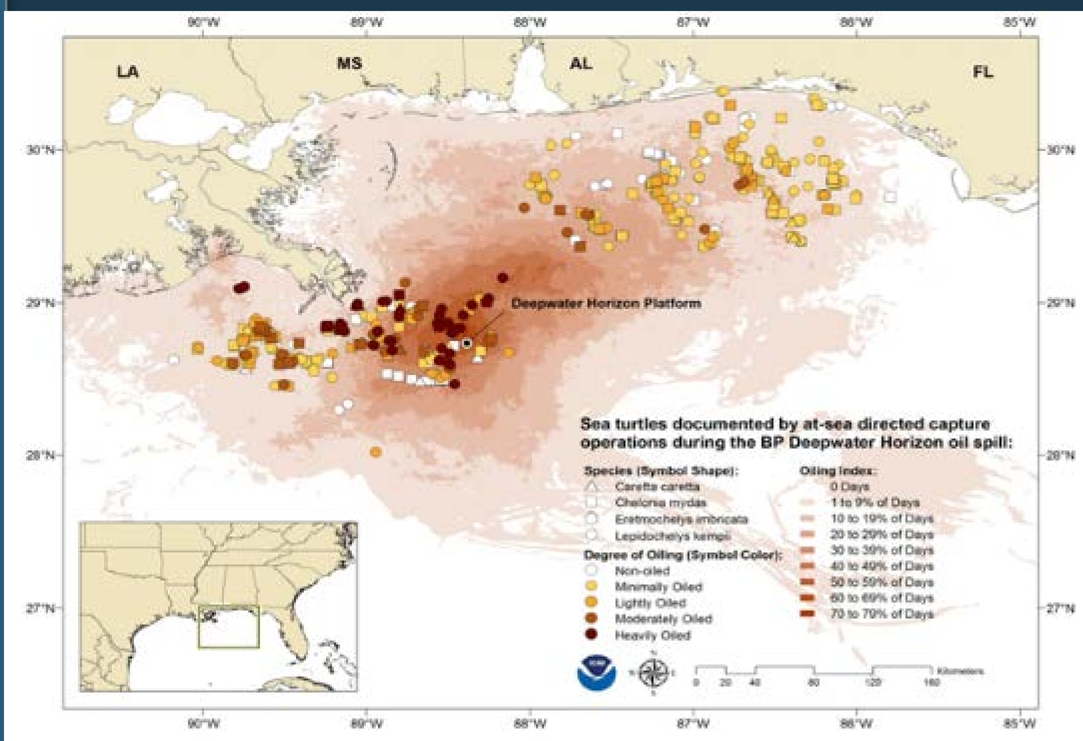
4,900-7,600 large juveniles and adults killed

56,000-166,000 small juveniles killed

35,000 hatchlings injured by response activities

Boat based rescue efforts on transects within convergence areas

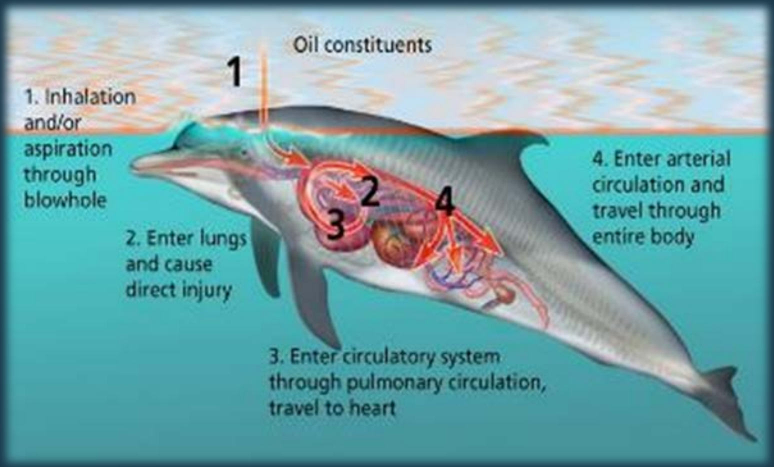
NOAA veterinarian assessing condition of heavily oiled sea turtles rescued from oiled surface habitat



Locations of turtles captured and assessed during rescue operations, overlaid upon cumulative oil-days within the oiling footprint

Marine Mammals

- Tens of thousands of marine mammals exposed to DWH surface slick
  - *inhaled, aspirated*, ingested, physically contacted, and absorbed oil
  - Non-NRDA work evaluating role of surface dispersants on aerosol formation

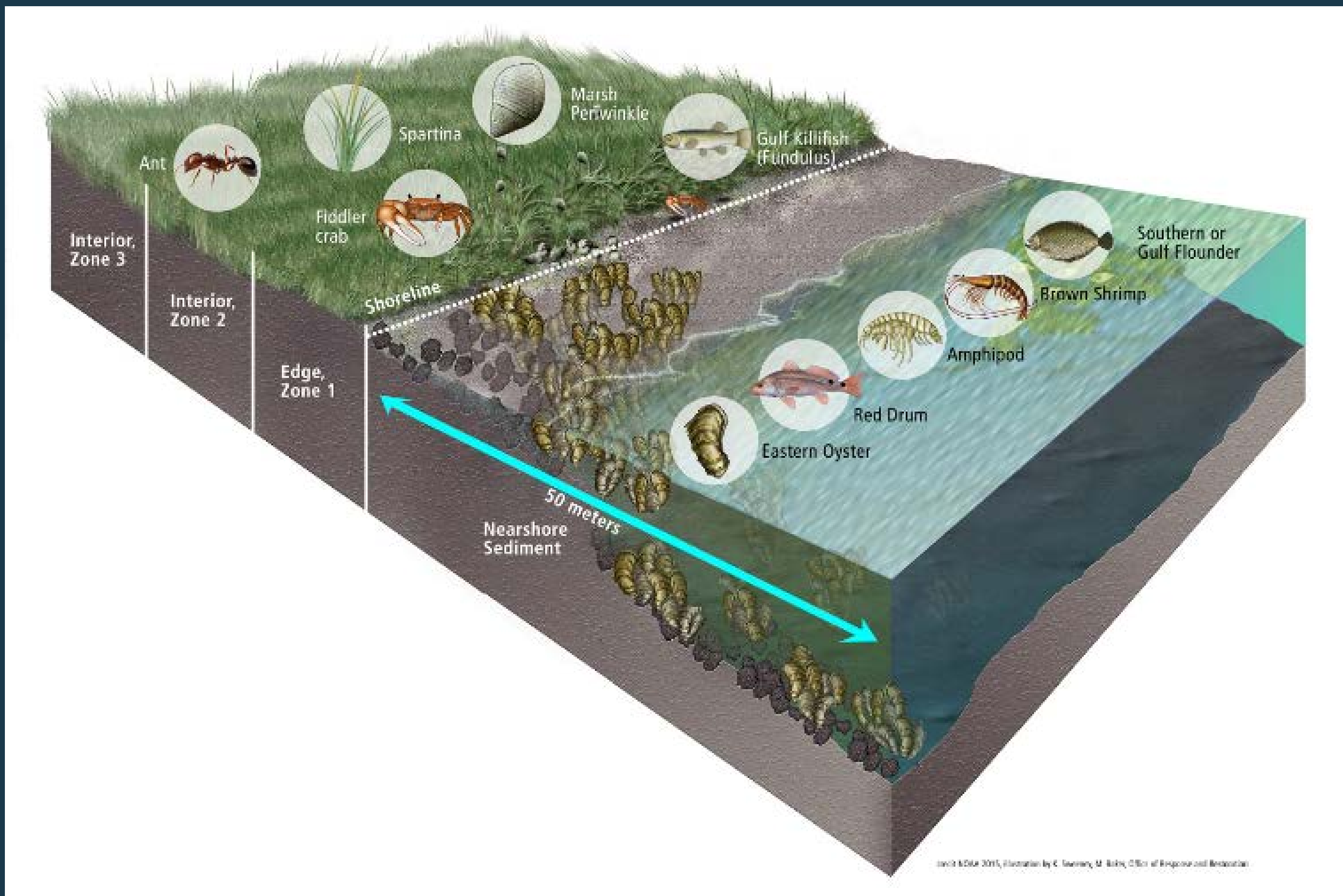


- Oil damaged tissues and organs; led to adverse health effects including lung disease, reproductive failure, adrenal disease, poor body condition

- Mammal exposure to DWH oil contributed to the largest and longest lasting marine mammal Unusual Mortality Event (UME) on record in the northern Gulf of Mexico (>1,000 stranded)

- Barataria dolphins one of the most severely injured populations.
  - 35%increase in death
  - 46% increase in failed reproduction
  - 37% increase in other adverse health effects

Nearshore Ecosystem



Nearshore

- > 1,300 miles of shoreline oiled using combined SCAT and NRDA data, confirmed by forensic data
- Marsh *plant cover* and *vegetation biomass* reduced along 350 to >720 miles of shoreline
- Response activities such as washing, cutting, and raking of oiled shoreline vegetation, stranding of oil booms impacted marsh animals and coastal wetland habitat
- Erosion
  - Areas of most heavy oiling and response actions had double yearly marsh edge erosion rates
  - Higher erosion rates also associated with areas that lost adjacent oyster habitat

Nearshore

- Multiple indicator species had reductions in injury metrics including survival, reproduction, growth, biomass, abundance
  - Shrimp
  - Amphipods
  - Fundulus
  - Juvenile southern flounder
  - Red drum
  - Fiddler crab
  - Insects

- 4-8.3 billion subtidal adult ‘oyster equivalents’ lost Gulf-wide from combination of oiling and river-water releases
- Seagrass losses documented oiling + response
- Beaches and dunes

DWH NRDA publications

- 30+ peer reviewed publications and counting……
  - Deepsea corals and benthos
  - Dolphins
  - Fish Toxicity
  - Sea Turtles
  - Oil in the environment

- Publications available to public: http://response.restoration.noaa.gov/deepwater-horizon-oil-spill/noaa-studies-documenting-impacts-deepwater-horizon-oil-spill.html

How Might DWH Research Inform and Possibly Change Our Response?

Some groups that have done and are currently doing oil spill research and stakeholder discussions

NOAA GULF SPILL RESTORATION
DAMAGE ASSESSMENT, REMEDIATION, AND RESTORATION PROGRAM

energy API

GULF OF MEXICO RESEARCH INITIATIVE

INTERAGENCY COORDINATING COMMITTEE ON OIL POLLUTION RESEARCH
UNITED STATES OF AMERICA

NATIONAL FISH AND WILDLIFE FOUNDATION NFWF

Gulf Environmental Benefit Fund

NATIONAL ACADEMY OF SCIENCES

Gulf Coast Ecosystem Restoration Science, Observation, Monitoring and Technology Program
NOAA RESTORE Act Science Program

OGP International Association of Oil & Gas Producers

What Could this Mean for Emergency Response?

- More coordination in planning and preparedness

- Feedback on coordinating early data collection endpoints and data sharing

- Expectations and understanding of impacts may change

- Tradeoff evaluations using DWH science to support – undertake re-evaluation of some NRDA science to answer different questions?

- Future studies to refine NRDA science (e.g., BSEE OoW work)

- Technology will continue to play an evolving role
  - Satellites and other remote sensing methods/interpretations
  - UAVs and UASs
  - Water column exposure and impact measures using alternative technology

Where Do We Go?

- We have an unprecedented amount of data and now it would be good to answer the “What if …?” questions
- The answer to those questions may change our Scientific Support Coordinator recommendations to the Federal On Scene Coordinator on what response actions should be taken and what Damage Assessment tools and research would be appropriate for the next event
- Coordination discussions underway at NOAA and beyond

Questions?

http://www.gulfspillrestoration.noaa.gov

https://dwhdiver.orr.noaa.gov


EIGHTH COAST GUARD DISTRICT
PROTECTING THE GULF AND THE HEARTLAND
ONE TEAM FOR A SAFE, SECURE AND PROSPEROUS SOUTH TEXAS
SECTOR CORPUS CHRISTI
SECTOR
U.S. COAST GUARD
SEMPER PARATUS
HOUSTON-GALVESTON
COAST GUARD SECTOR NEW ORLEANS
"WHERE HEROES LIVE"
USCG SECTOR
LOWER MISSISSIPPI RIVER
MSU PORT ARTHUR
USCG
UNITED STATES COAST GUARD
MARINE SAFETY UNIT MORGAN CITY, LA

Sector Corpus Christi

Captain Tony Hahn

Sector Commander

NRC Notifications	RRT Activations	Federal Projects	CERCLA Projects
88	**0** Surface Washing Agents **0** In-situ Burns **0** Dispersants	2	0

“Tarpocalypse”

RRT Activation:	No
Type and amount of product spilled:	Tarballs (550 gallons-Corpus Christi / 850 gallons- Brownsville)
Cause of spill:	Believed to be natural seep, investigated all sources, nothing discovered
Date of spill:	23 Mar 2016 (Corpus Christi) & 15 Apr 2016 (Brownsville)
Responsible Party:	Potential Natural Seep/unknown source
Key operational activities:	CG/GLO survey of beaches followed by quick removal efforts from OSRO & City.
Major lessons learned:	Tarballs are an annual event. This year some of the largest we have seen hit Brownsville, and the City was a key resource, providing for swift cleanup. The C.C. incident was very visible and provided a teaching opportunity for home school students.
Lead Coordinator Contact Information:	LCDR Patrick Marshall, USCG SCC Mr. Jimmy Martinez, TGLO

M/V OCEAN FREEDOM-Kirby Barge Allision

RRT Activation:	No
Type and amount of product spilled:	None- Empty red flag barges, not gas free
Cause of Incident:	Human Error
Date of spill:	29 Oct 2015
Responsible Party:	M/V OCEAN FREEDOM
Key operational activities:	Very quick initial response & initial assessment. Quick turnover on the "separation" plan. Successfully separated by the next evening. No discharge.
Major lessons learned:	Work closely with other units & agencies, air monitoring is critical.
Lead Coordinator Contact Information:	MST1 Gordon Bellinger, USCG SCC

Sector Corpus Christi

Training

Description	Dates
Tour MWCC	17 Feb2016
NSF Training	08-09 Apr 2016
ICS Prep Exercise	31 Mar 2016

Exercises/Workshops

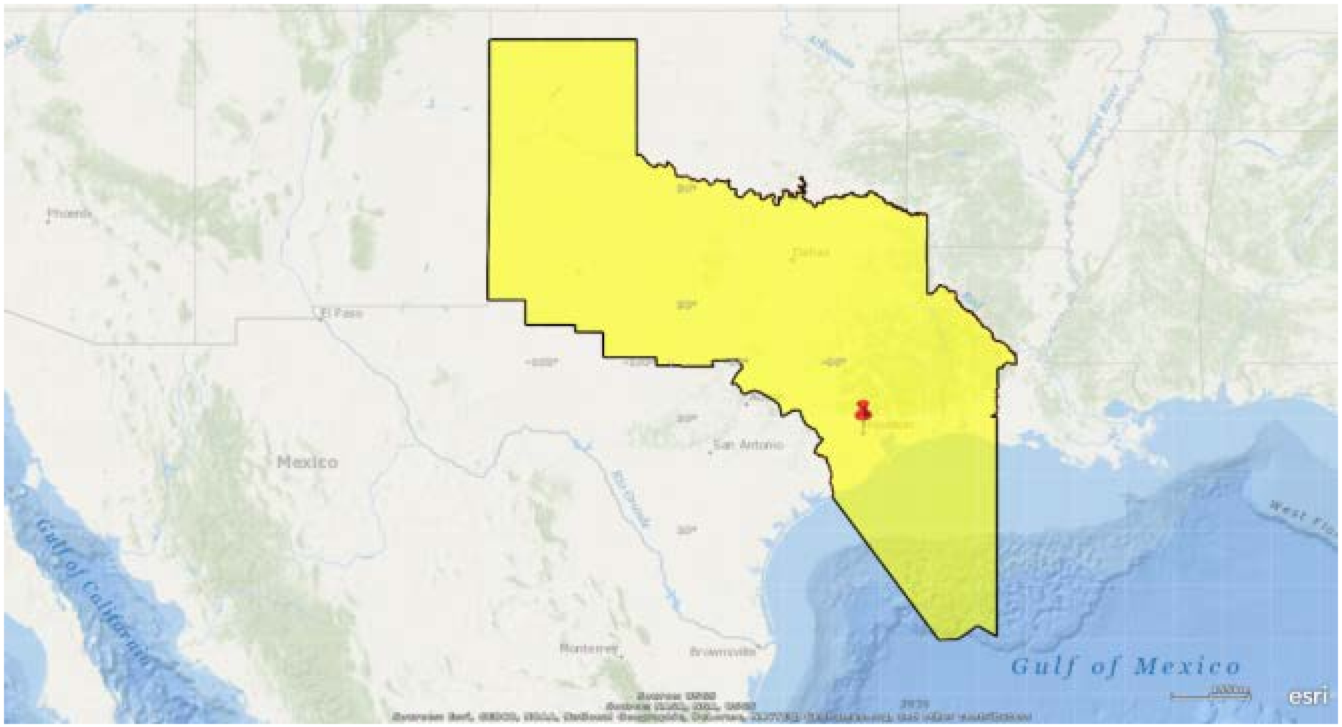
Hurrex	20-21 May
CITGO PREP	16 Nov 2016

Federal, state, and local planning and coordination efforts

Description	Dates
Area Committee	17 May 2016
Area Committee	16 Aug 2016

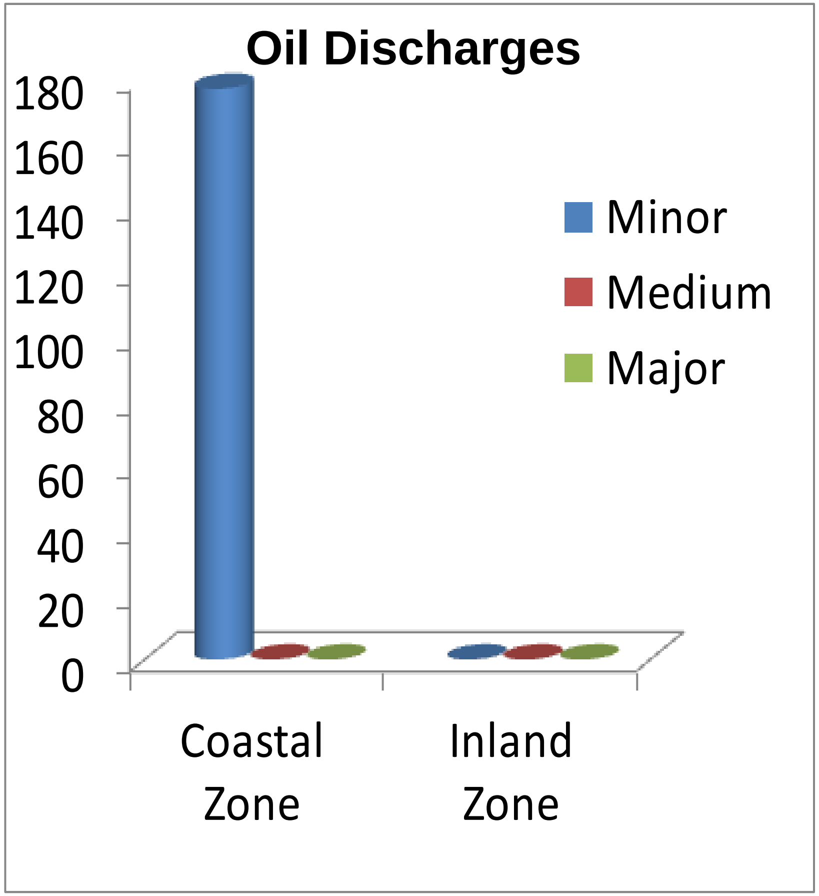
Sector Houston-Galveston

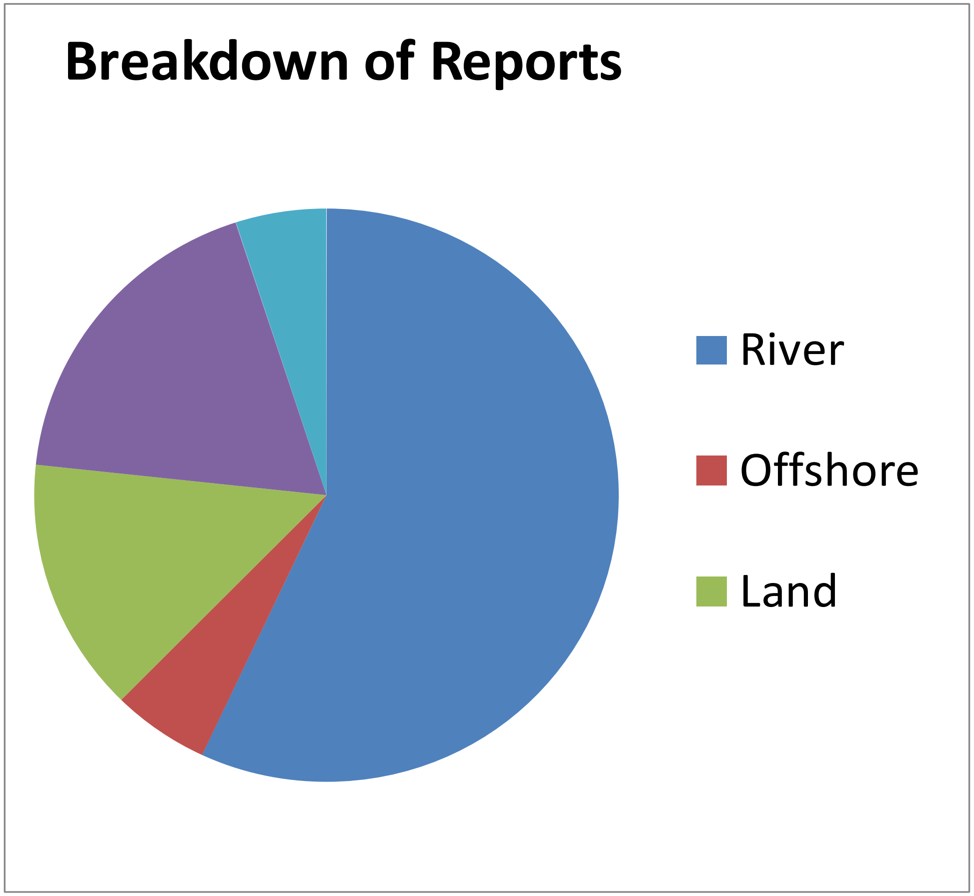
Captain Brian Penoyer
Sector Commander



NRC Notifications	RRT Activations	Federal Projects	CERCLA Projects
244	02 Surface Washing Agents 00 In-situ Burns 00 Dispersants	06	00

NRC Notifications





UTV RICKY J. LEBOEUF

RRT Activation:	No
Type and amount of product spilled:	225 Gallons – Lube Oil 200 Gallons – Slop Oil Potential 10,200 Gallons - Diesel
Cause of spill:	Sunken Tug due to rapid currents in Houston Ship Channel
Date of spill:	19 Apr 2016
Responsible Party:	D & S Marine
Key operational activities:	Salvage
Major lessons learned:	Divers are unable to enter water at greater than 1.5 knots of current, which can delay operations.
Lead Coordinator Contact Information:	MST2 Kyle Metcalf, USCG SH-G LTJG Keriann Mason, USCG SH-G

M/T MINERVA GLORIA

RRT Activation:	No – Pre-approved plan for use of Surface Washing Agent
Type and amount of product spilled:	Estimated 20 Gallons of Crude Oil
Cause of spill:	Failed gasket on dock loading arm, sprayed crude oil on side of M/T MINERVA GLORIA at dock.
Date of spill:	16 Nov 2015
Responsible Party:	Shell Oil Company, Deer Park
Key operational activities:	Surface Washing Agents
Major lessons learned:	Local industry not trained/misunderstood purpose of pre-approved plans for SWA. They believed they could go straight to SWA without first attempting other methods.
Lead Coordinator Contact Information:	MST2 Justin Chartier, USCG SH-G

F/V JANA LIN (N16026)

RRT Activation:	No
Type and amount of product spilled:	Potential 2,000 gal Marine Diesel
Cause of spill:	Potential Spill - Grounding
Date of spill:	06 Mar 2016
Responsible Party:	Shawn Reed / John Defonte
Key operational activities:	RP made 02 attempts at recovery with negres (severely stuck in the mud). Divers are assessing feasibility of recovery. Coordinating with State/Local agencies to determine best course of action.
Major lessons learned:	Consider opening the fund earlier for vessels grounded in the area of the Jetty
Lead Coordinator Contact Info:	MST2 Cory McDougal, USCG MSU TC MST2 Jeffrey Baker, USCG MSU TC

F/V KATHY (N16016)

RRT Activation:	No
Type and amount of product spilled:	Used motor oil and bilge slops; 40 gallons
Cause of spill:	Vessel Sinking (corrosion; holes in hull)
Date of spill:	11 Mar 2016
Responsible Party:	Manny Berlanga
Key operational activities:	Vessel was extremely unsafe to board due to excessive corrosion making passive oil collection from waterside the only cost effective response strategy available.
Major lessons learned:	Work with State to more closely monitor derelict/deteriorating vessels to avoid future incidents of this nature.
Lead Coordinator Contact Information:	MST2 Cory McDougal, USCG MSU TC MST3 Kim Franklin, USCG MSU TC

Sector Houston-Galveston

Training

Description	Dates
SCAT	05-07 Apr 2016
Science of Oil Spills	06-10 Jun 2016
CBRNE	TBD Jun 2016
FOSCR	20 Jun – 01 Jul 2016

Exercises/Workshops

Description	Dates
HURREX 2016	24-25 Feb 2016
Shell WCD Ex.	27-18 Apr 2016
Chevron Pipeline Ex.	04 May 2016
BP IMT Functional Ex.	15 Sep 2016

Federal, state, and local planning and coordination efforts

Description	Dates
CTCAC	02 Jun 2016
LEPC Meetings	(Ongoing)
F/V JANA LIN Response Coordination	(Ongoing)

MSU Port Arthur/Lake Charles

Captain Randal Ogrydziak

Captain Of The Port (COTP)

NRC Notifications	RRT Activations	Federal Projects	CERCLA Projects
225 **Nov 2015-May 2016**	1 Surface Washing Agents 0 In-situ Burns 0 Dispersants	1	**0**

Phillips 66 Dock Cleanup

RRT Activation:	Yes
Type and amount of product spilled:	Residual/waste oil. Minor amount discharged, potential during heavy wx
Cause of spill:	Potential cracks and breaches in sump containment, inefficient pumping system
Date of spill:	Sep 2015; ongoing
Responsible Party:	Phillips 66
Key operational activities:	Dive survey, clean containment area. Approval of surface washing agent for heavily impacted areas.
Major lessons learned:	Best practice to conduct shake test to verify agent.
Lead Coordinator Contact :	MST2 Kira Dodson, USCG MSU PA

CWM 545 Barge

RRT Activation:	Not Applicable
Type and amount of product spilled:	Diesel, Hydraulic Oil and Lube oil Approximately 500 gallons discharged
Cause of spill:	Crack of the hull, subsequent sinking
Date of spill:	6 Apr 2016
Responsible Party:	Inland Dredging
Key operational activities:	Removal of discharged oil from the waterway and salvage operations of barge, crane and conex box
Major lessons learned:	More interaction with SERT
Lead Coordinator Contact :	MST1 Hoskins, USCG MSU LC

MSU Port Arthur/Lake Charles

Training

Description	Dates
HAZWOPER training	26 Apr 2016
ICS-300	Sep 2016

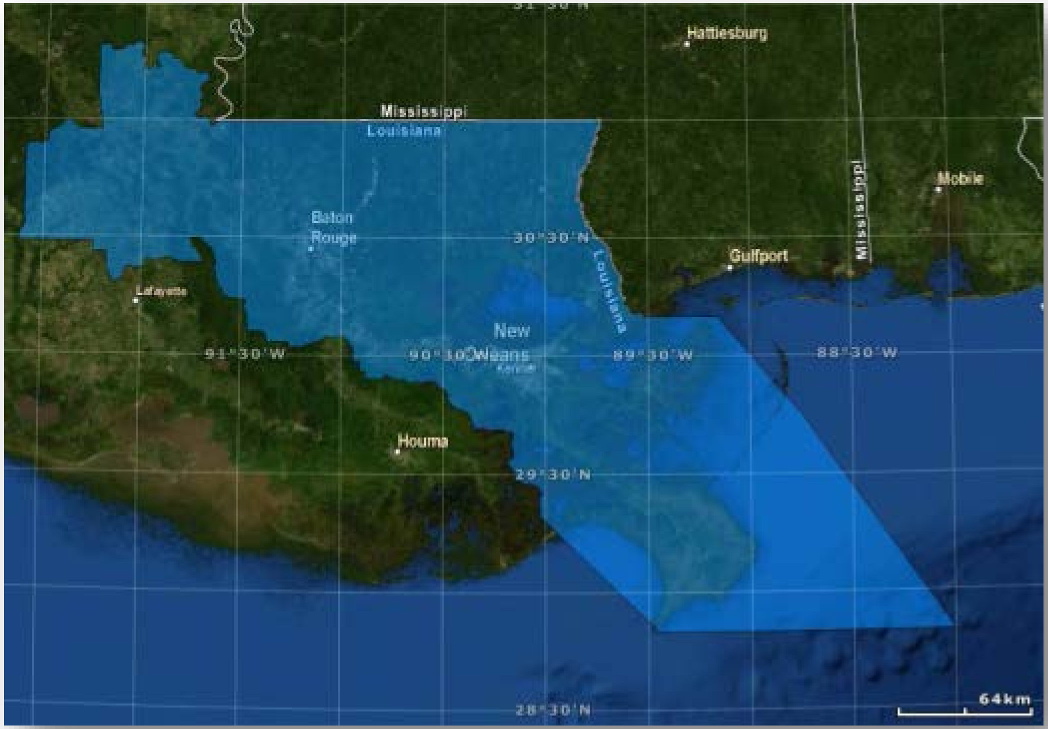
Exercises/Workshops

Description	Dates
Unconventional Oil Response Workshop & Exercise	22 Jan 2016
GIUE at Chevron in Beaumont, TX	1 Mar 2016
MSU Port Arthur Hurricane Exercise/ COOP	20 Apr 2016
GIUE at Enterprise in Vidor, TX	29 Apr 2016

Sector New Orleans

Captain Philip Schifflin

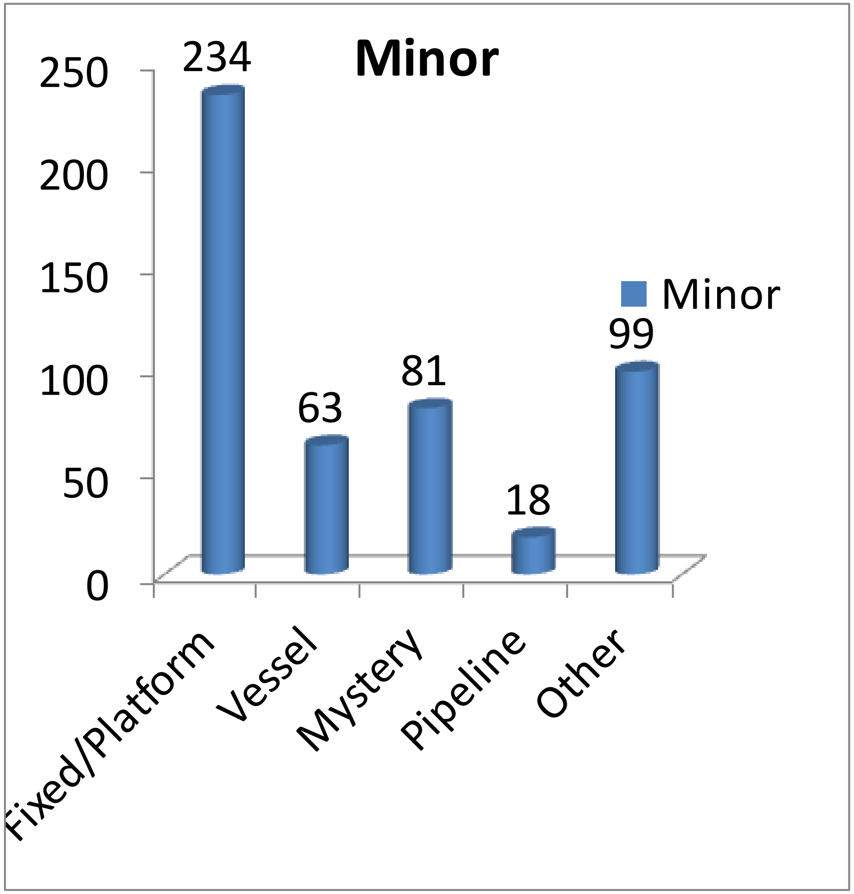
Sector Commander

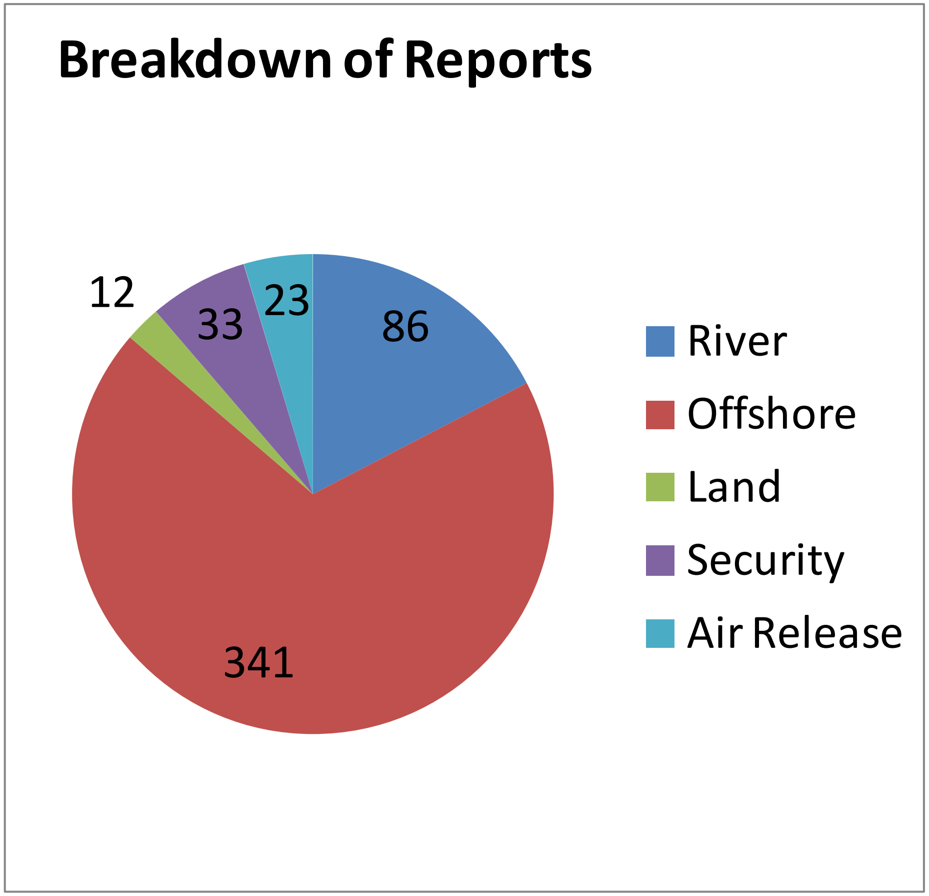


NRC Notifications	RRT Activations	Federal Projects	CERCLA Projects
495 **(Nov15-APR16)**	01 Solidifying Agent 00 In-situ Burns 00 Dispersants	03	**01**

NRC Notifications

Sources





Offshore Pipeline

RRT Activation:	N/A
Type and amount of product spilled:	Est. 220 Barrels of Crude Oil
Cause of spill:	8” Crack in 26 mile Transfer Line
Date of spill:	17 November 15 – 03 December 15
Responsible Party:	Crimson Gulf
Key operational activities:	-Weather delayed on scene operations -Jetting operations discovered 8’’ hairline crack. Temporary rubber seal and metal band installed.
Major lessons learned:	-Effective comms w/ FOSCR, SSC, and RP -Oil surface recovery challenging due to weather
Lead Coordinator Contact Information:	MST2 Kampsnider, USCG SNO

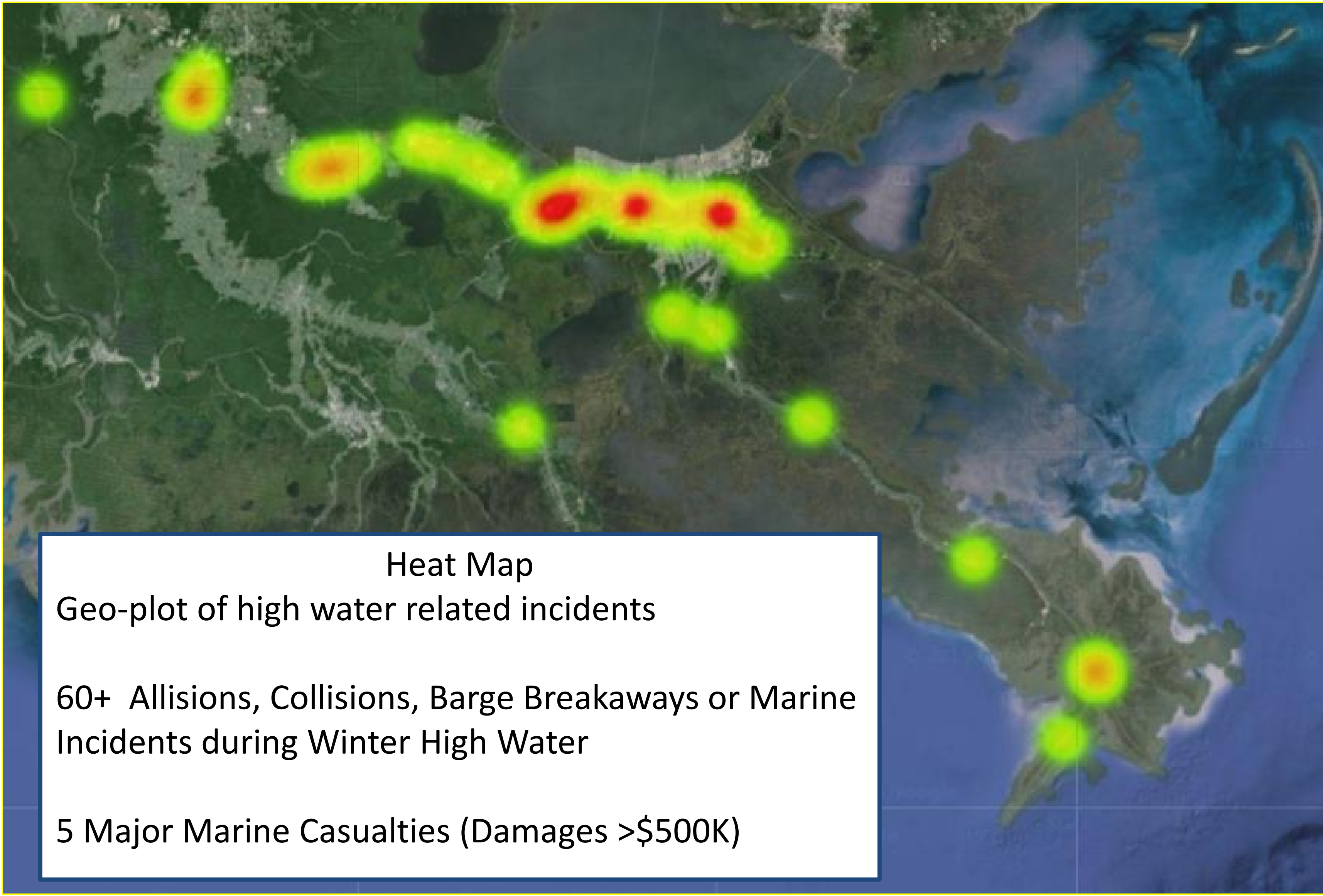
17th Street Canal

RRT Activation:	N/A
Type and amount of product spilled:	Est. 900 Gallons/ Potential 7,000 Gallons
Cause of spill:	Operator Error
Date of spill:	23FEB16
Responsible Party:	Delta Petroleum
Key operational activities:	-Waste oil collection at Pump station -Coordination w/ LDEQ and the Sewage and Water Boards of Jefferson and Orleans Parish
Major lessons learned:	-Shoreline assessment key to locating source - Unique path of discharge
Lead Coordinator Contact Information:	MST1 Irvin/Olivas, USCG SNO

Winter High Water Barge Collision

RRT Activation:	N/A
Type and amount of product spilled:	40 gallons of Crude
Cause of spill:	ATB collision into barge
Date of spill:	15 January
Responsible Party:	ATB LUCIA
Key operational activities:	-Initiation of IMT -Patrol and Assessment teams -Increase interaction w/ industry
Major lessons learned:	-One-way traffic/safe speeds -Extending stricter barge fleeting requirements south of mm 88 was helpful for preventing barge breakaways -VTC crucial in mitigating issues
Lead Coordinator Contact Information:	USCG SNO

Areas of Concern



Heat Map

Geo-plot of high water related incidents

60+ Allisions, Collisions, Barge Breakaways or Marine Incidents during Winter High Water

5 Major Marine Casualties (Damages >$500K)

Sector New Orleans

Training

Description	Dates
Beta Tester: LNG 1st responders	5 Feb
NOAA Science of Chemical Release	21-24 Mar
NOAA Science of Oil Spills	28 Mar-1Apr

Exercises/Workshops

Description	Dates
GUIE, BSEE led	20 Jan
SMFF training	23-25 Feb
GIUE, EPA led	5 Apr
SMFF OPA 90 TTX	14 Apr
Salvage Familiarization	18 Apr

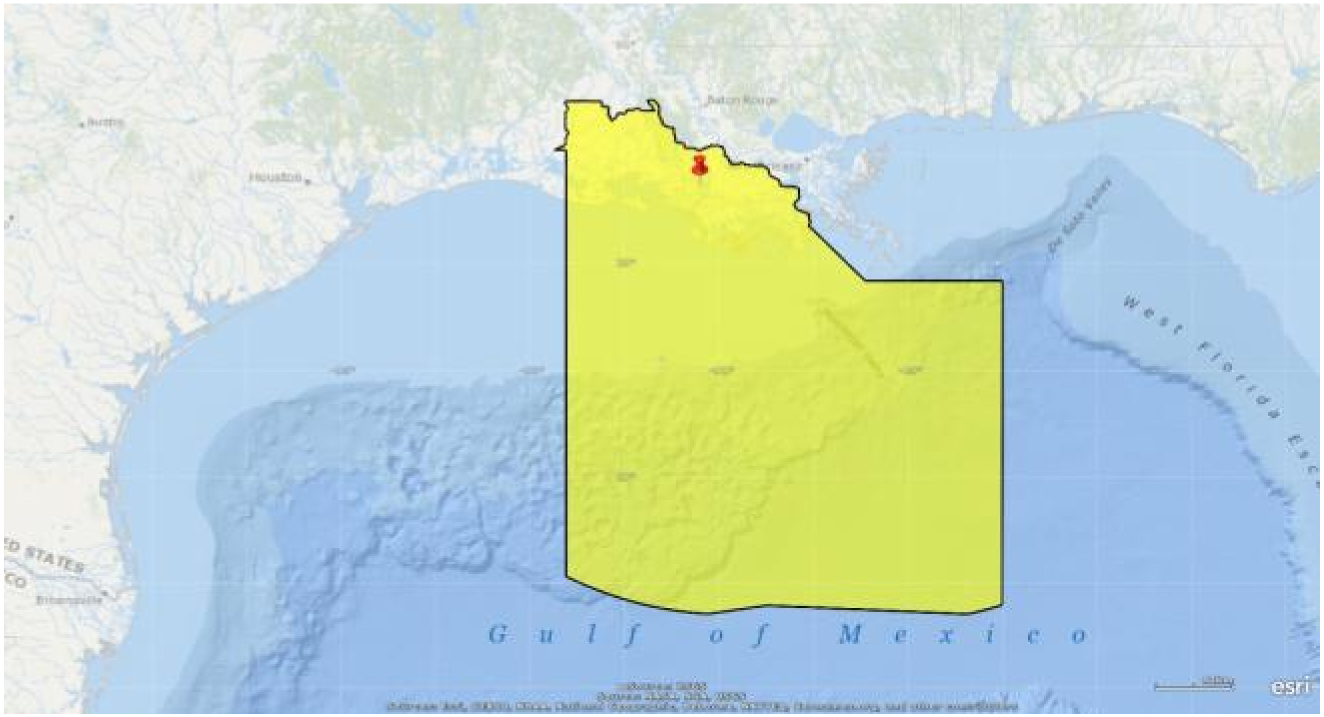
Federal, state, and local planning and coordination efforts

Description	Dates
Whitney Oil & Gas GIB AOC	12 Apr
Area Committee Meeting	15 Dec
Area Committee Meeting	29 Mar

MSU Morgan City

Captain David McClellan

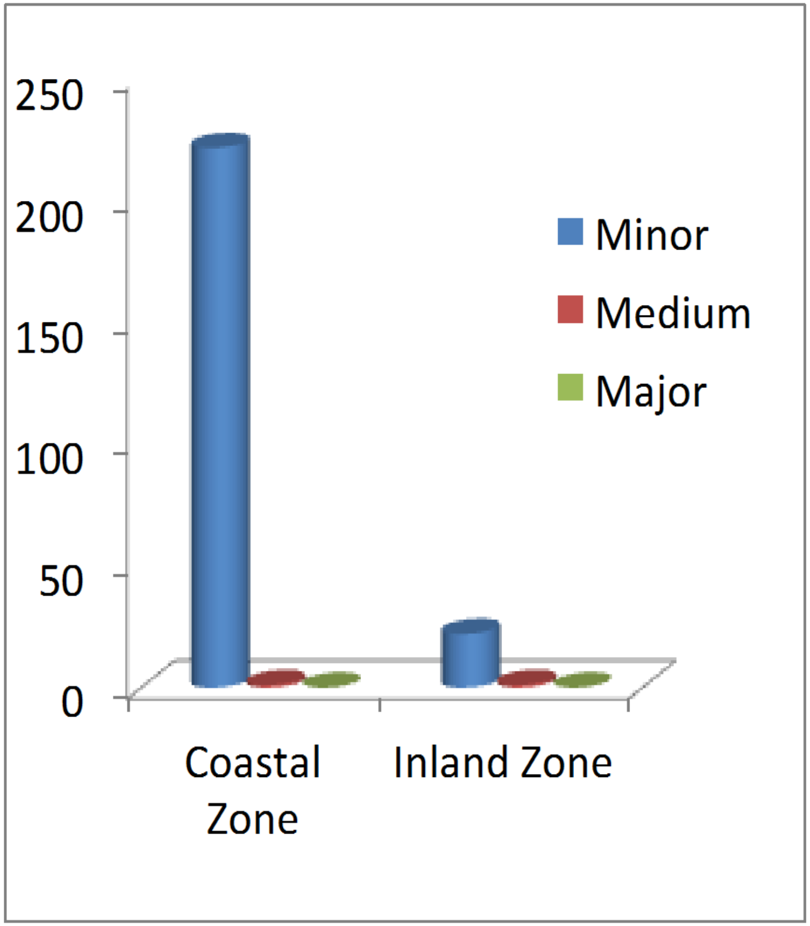
MSU Commanding Officer

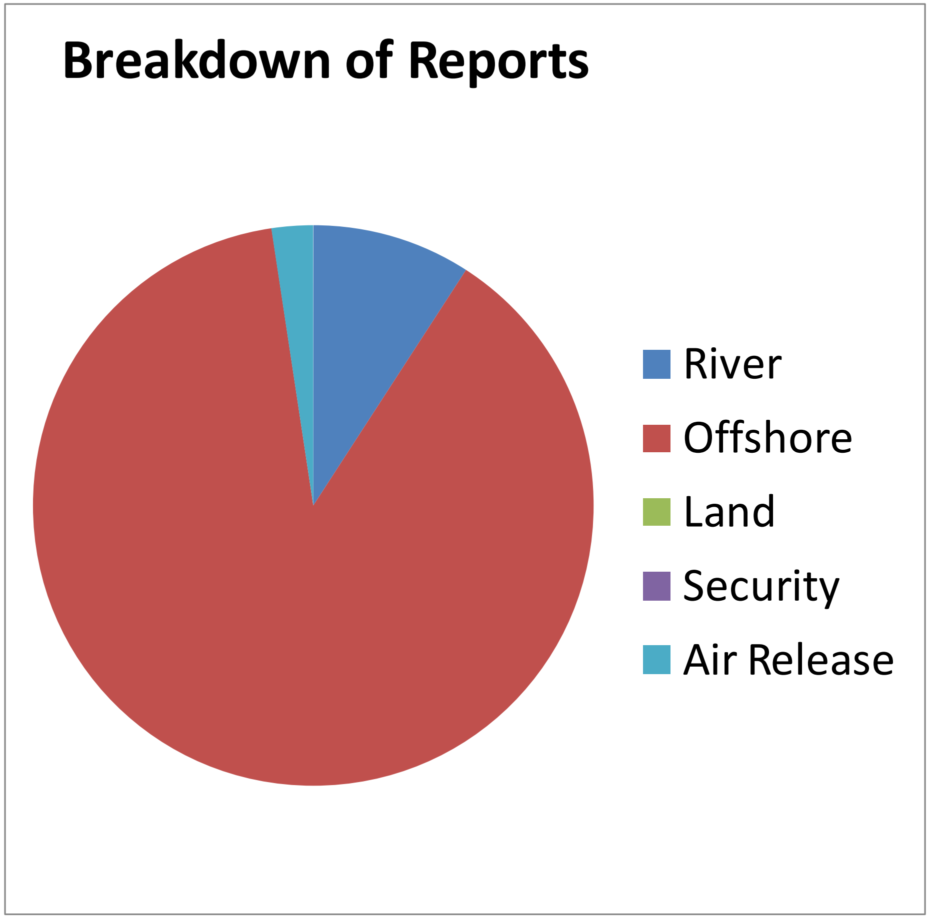


NRC Notifications	RRT Activations	Federal Projects	CERCLA Projects
464	0 Surface Washing Agents 0 In-situ Burn 0 Dispersants	1	0

NRC Notifications

Oil Discharges





Bayou Teche Oil Spill

RRT Activation:	Yes
Type and amount of product spilled:	262 BBLS Crude Oil
Cause of spill:	Discharge from a crude oil storage tank that overflowed due to equipment failure
Date of spill:	28 Mar 2016
Responsible Party:	PSC Industrial Outsourcing
Key operational activities:	Initial oil Recovery efforts. Establishment of Incident Command. RRT consultations. Remedial actions with continued monitoring.
Major lessons learned:	Position Specific Training Accurate Reporting First Federal Responder On-Scene
Lead Coordinator Contact Information:	MST1 Al Daniel, USCG MSU MC

Green Canyon 248

RRT Activation:	Yes
Type and amount of product spilled:	Crude Oil discharged into water estimated 2100 BBLS.
Cause of spill:	Jumper line from the #4 glider well ruptured.
Date of spill:	12 May 2016
Responsible Party:	Shell
Key operational activities:	Opening the OSLTF. Monitoring contractor operations. Arial observation.
Major lessons learned:	Incident Imagery, Definitive Decisions Early Coordination, Net Environmental Benefit, Documentation Support
Lead Coordinator Contact Information:	MST1 Al Daniel, USCG MSU MC

MSU Morgan City

Training

Description	Dates

Exercises/Workshops

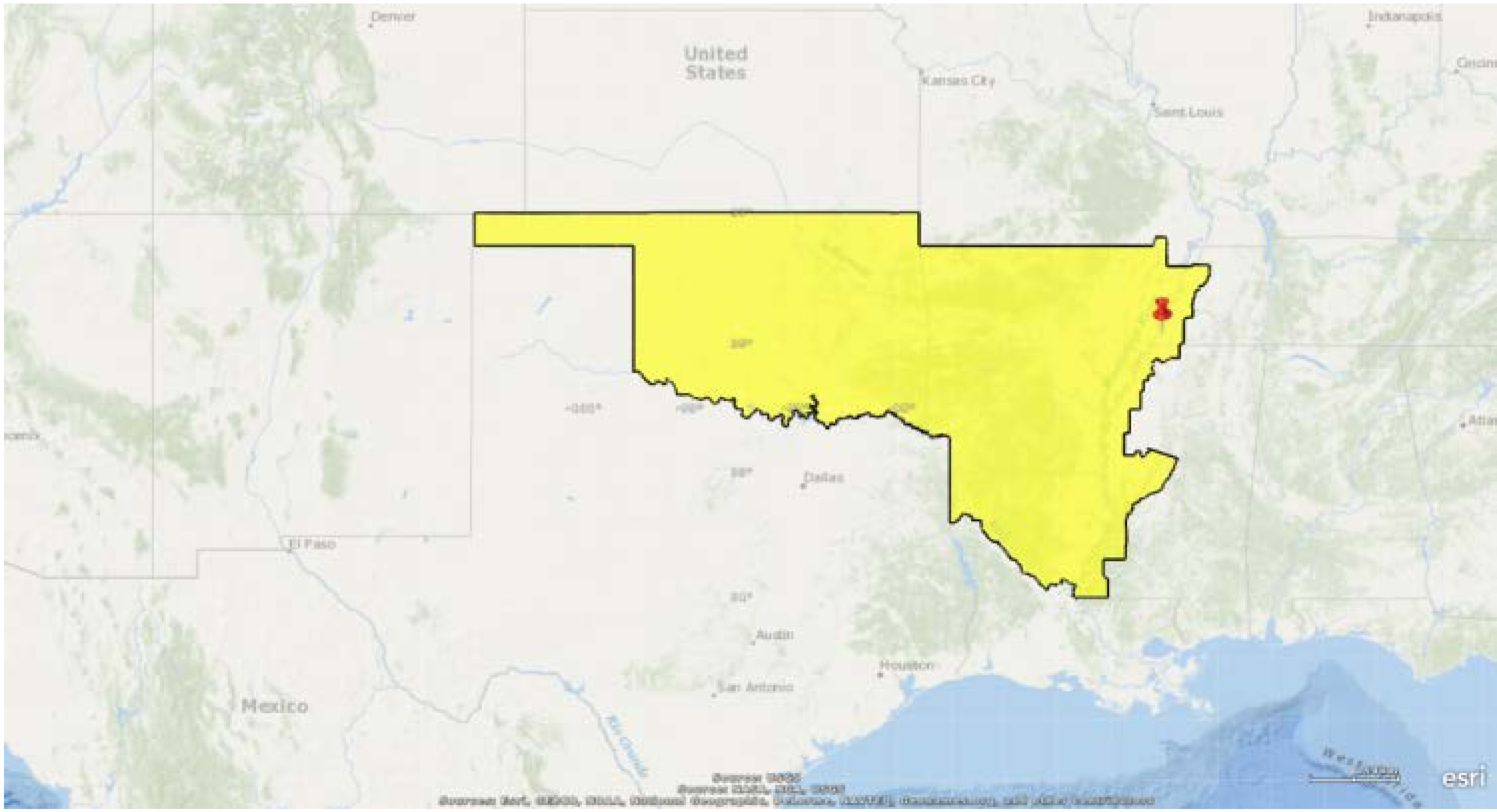
Description	Dates
MEXUS	26 Apr 2016
LOOP	3 May 2016
HWCG	11-12 May 2016

Federal, state, and local planning and coordination efforts

Description	Dates
Area Committee	24 Mar

Sector Lower Mississippi River

Captain Timothy Wendt
Sector Commander



NRC Notifications	RRT Activations	Federal Projects	CERCLA Projects
39	00	02	02

M/V WILLIAM E. STRAIT

RRT Activation:	No
Type and amount of product spilled:	Diesel Fuel Oil/ Lubricating Oil ~ 13,844 gallons (>96,000 gals onboard)
Cause of spill:	Collision UTV MARGARET ANN (03 Loaded Asphalt barges) and UTV WILLIAM E STRAIT (30 Dry Cargo).
Time and date of spill:	14 Dec 2015
Responsible Party:	Western Rivers Boat Management
Key operational activities:	Recovery of spilled oil Lightering Operations Transit of UTV for final repairs
Major lessons learned:	-Oil recovery & vessel salvage challenges during changing river conditions -Local coordination/info sharing
Lead Coordinator Contact Information:	LCDR Mary Dwyer, USCG SLMR

Sector Lower Mississippi River

Meetings

Description	Dates
RRT 7 Meeting	29-31 Mar 2016
RRT 4 Meeting	01-03 Mar 2016
AMSC Meeting	Monthly

Training

Description	Dates
Individual ICS Position Trainings	Numerous

Drills/Exercises

Description	Dates
GIUE	24 Apr 2016

API Subsea Dispersant Injection Project Overview

History

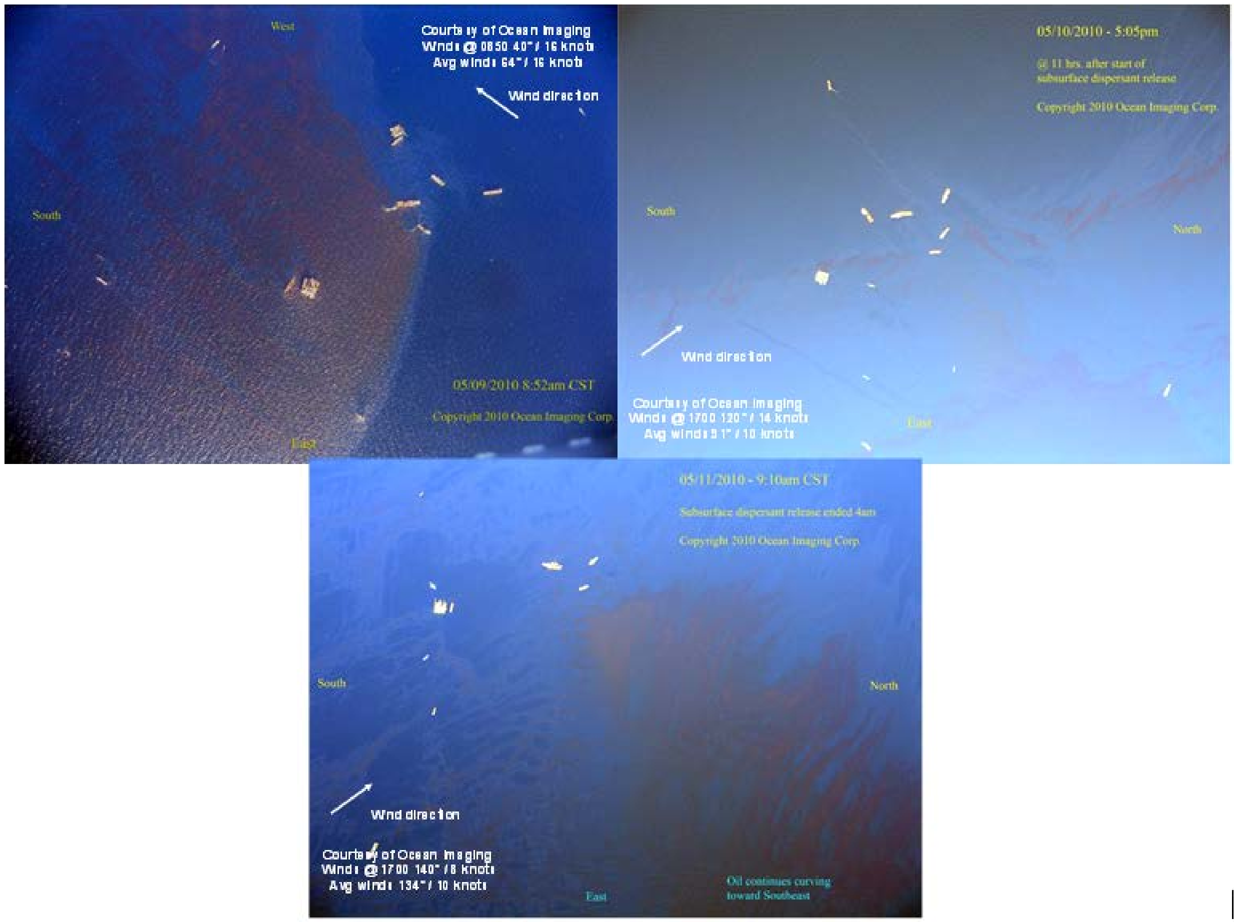


Figure 1. Aerial Photos Taken Over the Macondo Well Site (Rorick et al., 2012; photo credit: Jan Svejkovsky). Upper left image: May 9, 2010 - before subsea dispersant injection started; upper right image: May 10, 2010 - after 11 Hours of injection; bottom image: May 11, 2010 - 5 hours after injection stopped.

API Subsea Dispersant Injection Program (SSDI)

Based on JITF Industry Recommendations to Improve Oil Spill Preparedness and Response Report (OSPR JITF,2010)

AMOP: **API Program to Advance Science of Subsea Dispersants Use in Oil Spill Response**

Dr. Victoria Broje
Shell Exploration & Production Company

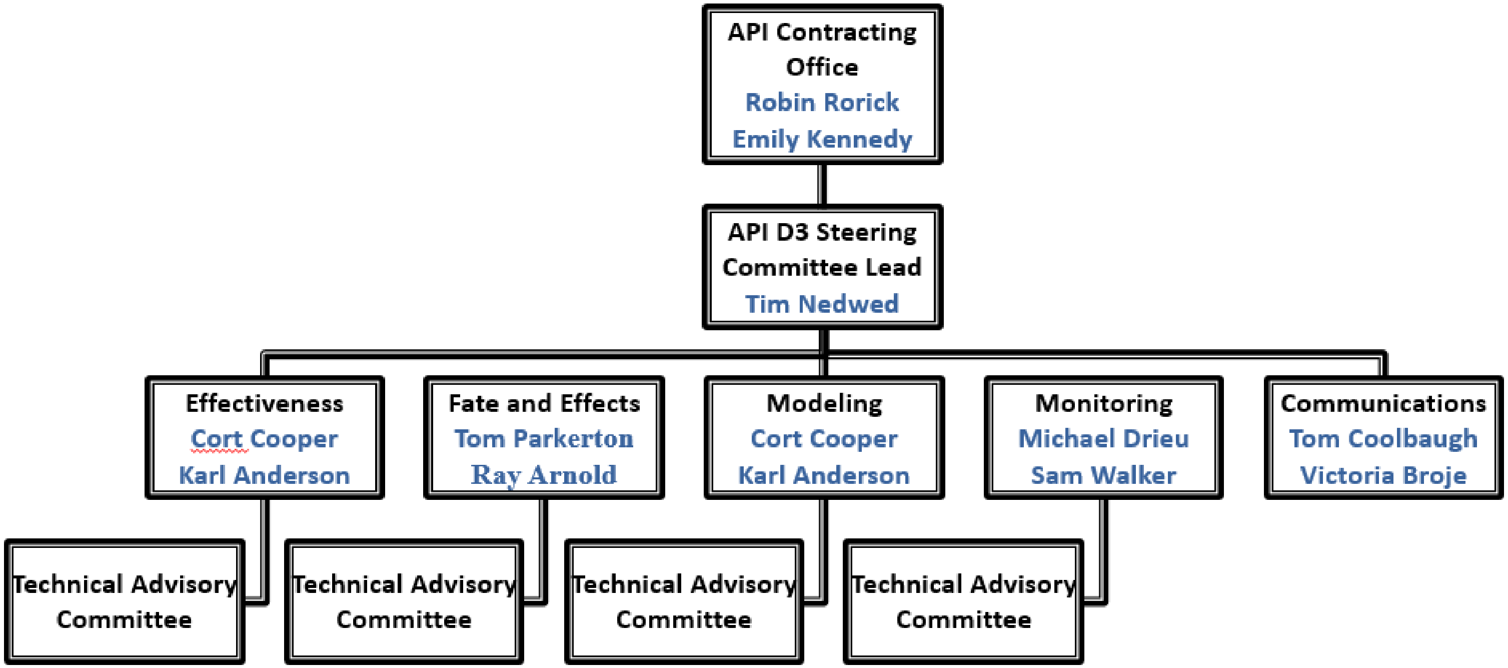
Dr. Tim Nedwed
ExxonMobil Upstream Research Company

The API initiated a large-scale, multi-year research effort to study all aspects of subsea dispersant injection in October 2011. This program was designed to establish a strong scientific basis for incorporation of subsea dispersant injection into contingency planning for deep water wells. This research was organized into five work streams:

1. Effectiveness
2. Fate & effects
3. Modeling
4. Monitoring
5. Communications

All these projects involved collaboration among industry, government, and academia.

Project Organization



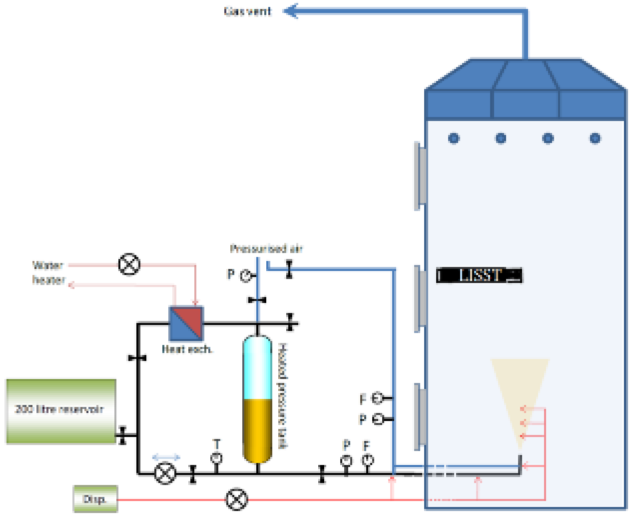
Work Stream 1 – Effectiveness

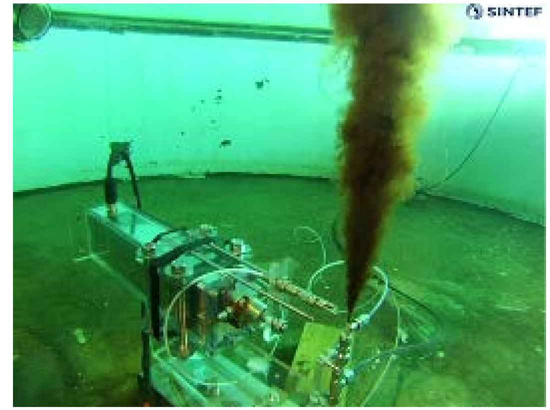
- Examine impact of release and response parameters on oil droplet size
- Generate data to construct models to simulate various scenarios
- Release & Response Parameters studied:
  - Oil release velocity
  - Dispersant dosage and injection method
  - Temperature and pressure
  - Gas-to-oil ratio
  - Oil and dispersant characteristics
- Experimental work conducted by several research groups
  - SINTEF Tower tank in Norway
  - University of Hawaii
  - Southwest Research Institute's (SwRI) hyperbaric facilities in San Antonio
  - BSEE OHMSETT facility

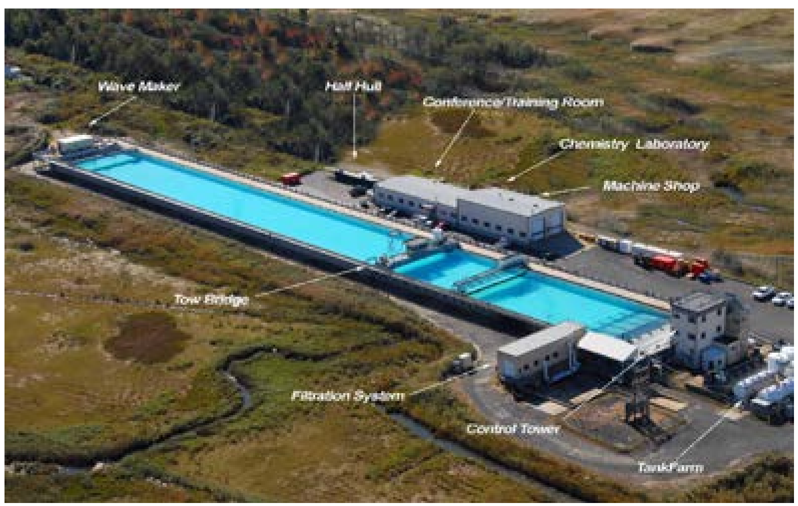
Work Stream 1 – Effectiveness

- Study of oil droplet formation from a simulated subsea release and examined effects of release nozzle diameter, flow rates, DOR and dispersant injection method
- Oseberg Crude oil and Corexit 9500 dispersant
- Conducted by SINTEF
- Oil released at a rate of 1.2 L/min from a discharge orifice of 1.5mm located at the base of a 6m tall tower tank kept at 11^{o}C

Work Stream 1 – Effectiveness

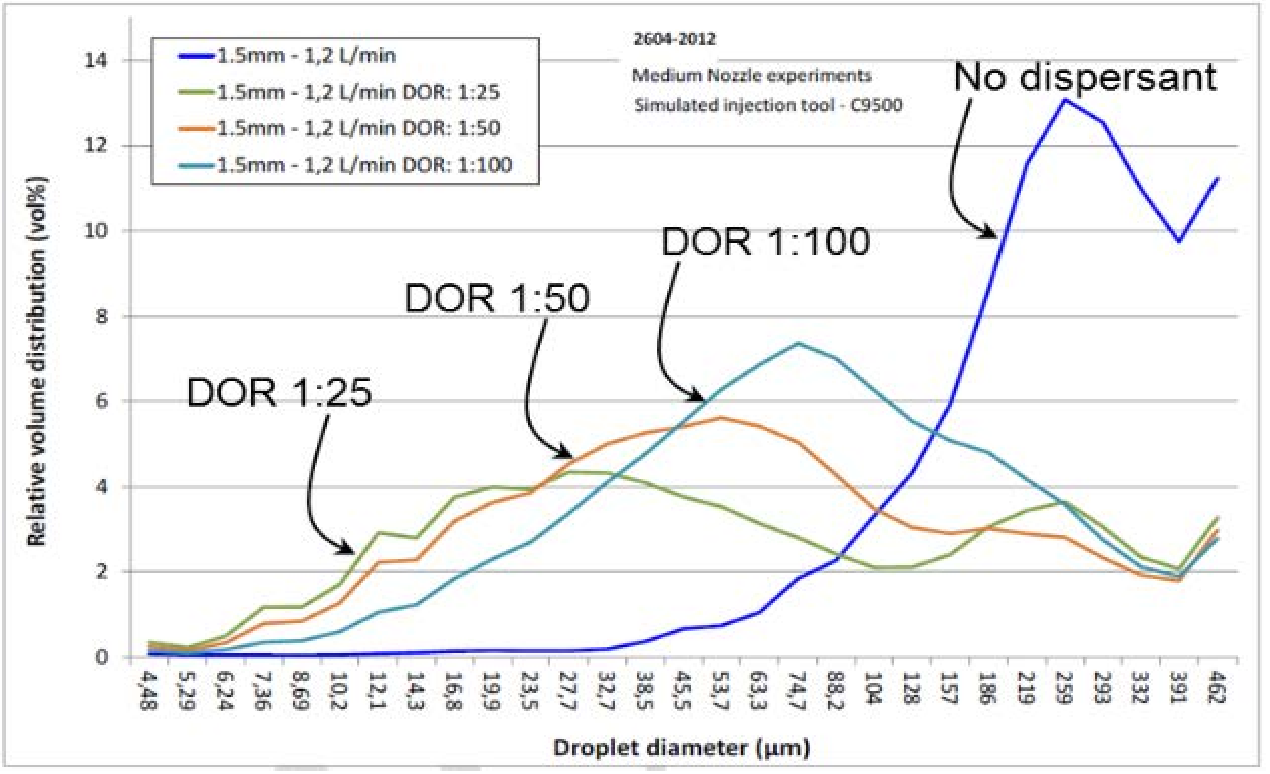






Work Stream 1 – Effectiveness

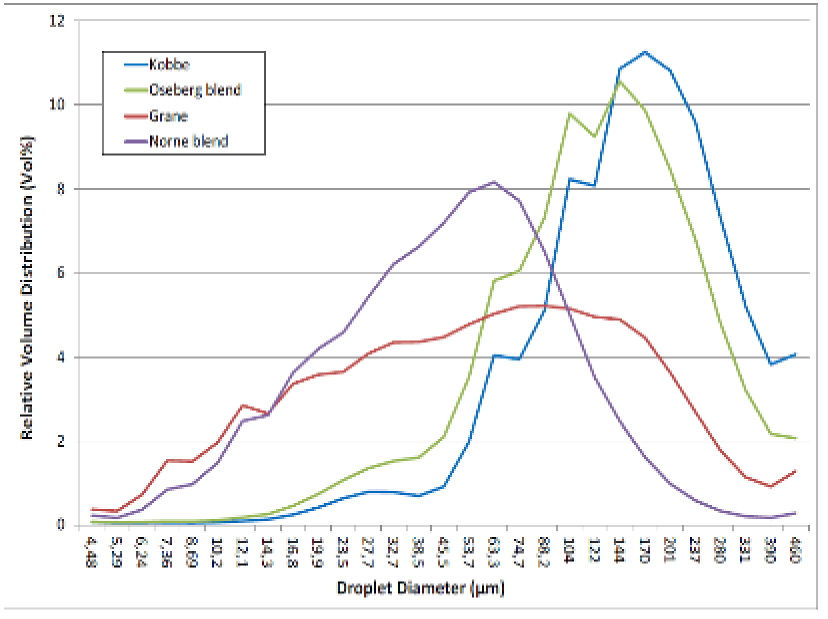
- DOR Studies

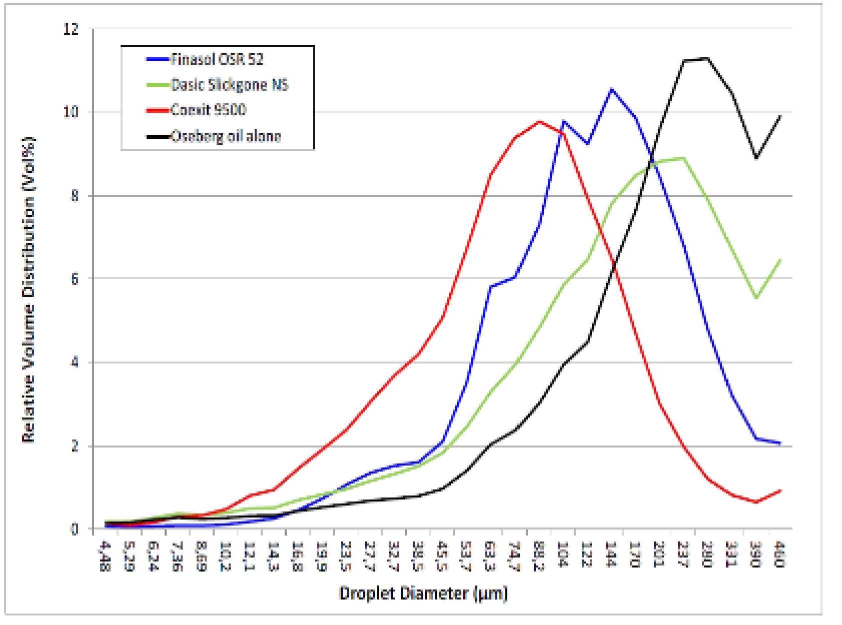


Results showed that decrease in droplet size can be achieved with low DOR (1:100) compared to the DOR (1:20) for surface application

Work Stream 1 – Effectiveness

- Dispersant types and Oil types





Droplet size distribution with Finasol OSR52 as a function of oil type

Droplet size distribution as a function of dispersant type with Oseberg Crude

Results showed that effectiveness of the three dispersants depended on oil type. Results indicated Corexit 9500 is the most effective dispersant followed by Finasol OSR 52 and Dasic Slickgone NS

Work Stream 2 – Fate and Effects of Dispersed Oil

Evaluate

Biodegradation Rates

State of the art summary on deepwater petroleum biodegradation (Hazen et al., 2015)

- Microbes capable of degrading crude oil are every where (tropics to polar)
- Most hydrocarbons in dispersed oil are biodegradable

Potential Impacts

Toxicity Studies conducted in two phases

Phase 1: Literature and toxicity model review

Phase 2: Toxicity Testing

Work Stream 2 – Fate and Effects of Dispersed Oil

Phase 1: Literature and toxicity models

- *Influence of dissolved gases on toxicity?*

- Results showed dissolved gases are not a major contributor to aquatic toxicity
- Lighter hydrocarbons contributed most to the overall toxicity close to the well

- *Behavior of crude oil components under deepwater marine conditions?*

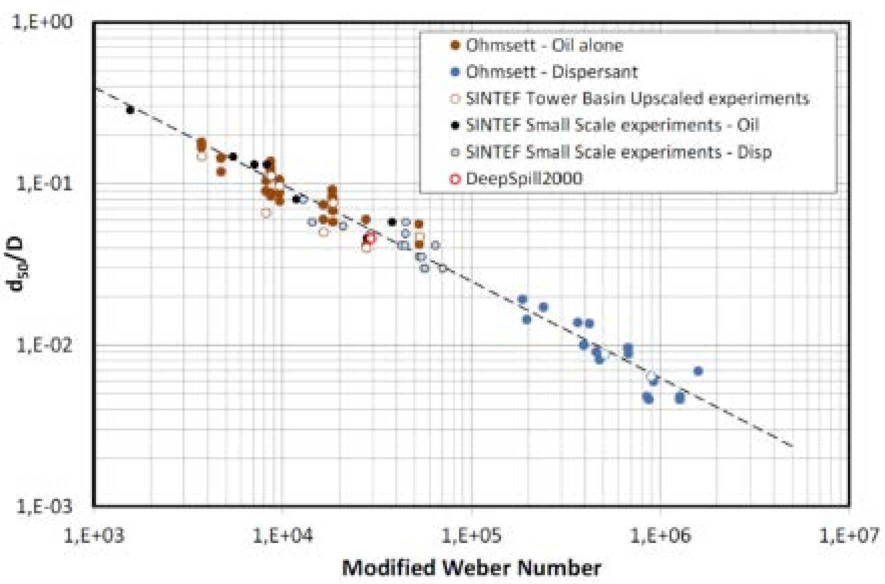
- The work suggested that toxicity testing of baro-tolerant deep sea species at ambient pressure likely results in overestimation of toxicity as it doesn't factor a reduction of effect under pressure

Work Stream 3 – Numerical Modeling of Deepwater Plumes

- Models that predict the fate of deepwater oil discharges have been available for more than 10 years
- But are not designed to incorporate the change in droplet sizes caused by the injection of dispersants

Phase 1: Review of oil droplet formation models

- Concluded that SINTEF modified-Weber number model had a good theoretical basis to calculate the average initial droplet size from subsea release



Work Stream 3 – Numerical Modeling of Deepwater Plumes

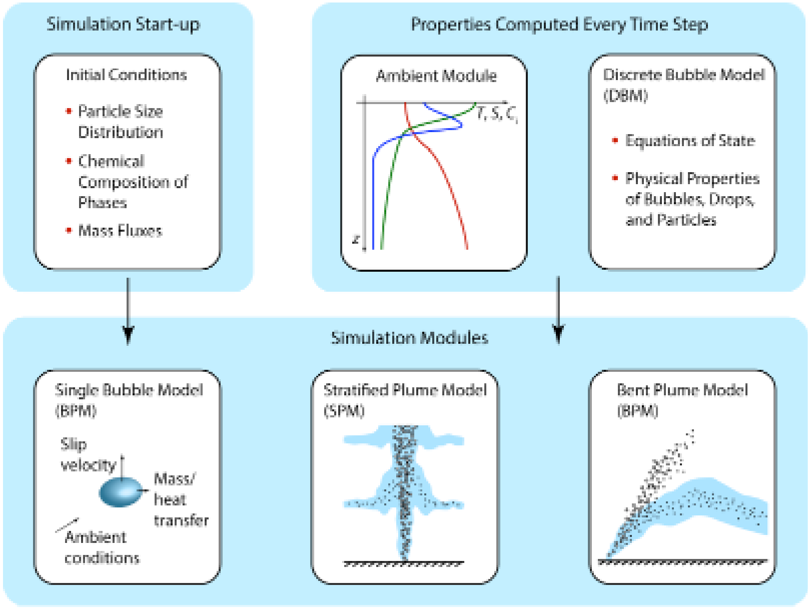
Phase 2: Comparison of most used integrated plume trajectory models

- SINTEF Oil Spill Contingency and Response (OSCAR) model, which includes the DeepBlow model as the integrated nearfield plume model, Plume-3D
- National Energy Technology Laboratory (NETL) Blowout and Spill Occurrence Model (BLOSOM)
- The MIKE by DHI Oil Spill (OS) module, with integrated nearfield plume model and coupled Lagrangian and Eulerian model for tracking of dispersed and dissolved oil in the farfield
- RPS ASA's oil spill model OILMAP, which includes the OILMAPDeep module as the integrated near-field plume model. OILMAP's far-field module was not used; instead simple surfacing calculations using analytical solutions were performed
- A hybrid modeling approach of empirical and Lagrangian particle tracking models

Work Stream 3 – Numerical Modeling of Deepwater Plumes

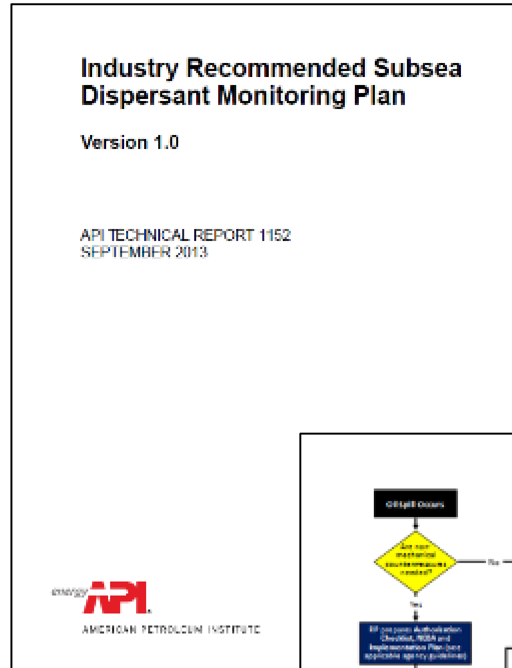
- Modelers ran 14 simple but realistic scenarios with and without subsea dispersant injection in deep and shallow water for high and low gas-oil ratio and in weak to strong cross-flows
- Initial droplet size distribution and the rates of the fate processes are critical to improving confidence in model predictions
- Validated with observations made at Macondo, published SINTEF lab data and DeepSpill data
- Results were reviewed at a workshop
- Publication – Sokolofsky et al, 2015

Reduced droplet size results in a one to two order of magnitude increase in downstream displacement of the initial oil surfacing zone and may lead to significant fraction of the spilled oil not reaching the sea surface



Work Stream 4 – Monitoring of Subsea Oil Plumes

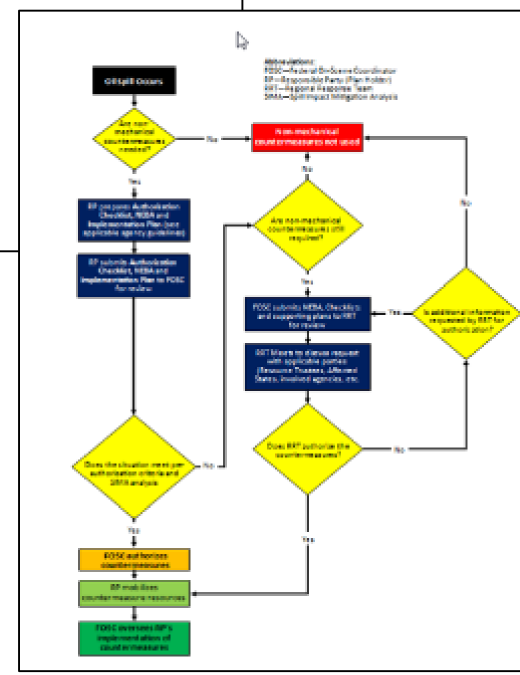
- To evaluate , develop and recommend plans and technologies for subsea dispersant injection monitoring
- Developed Industry Recommended Subsea Dispersant Monitoring Plan (API, 2013)
- Ongoing Work: Development of Industry Guidelines on Requesting Regulatory Concurrence for Subsea dispersant use


Industry Recommended Subsea Dispersant Monitoring Plan

Version 1.0

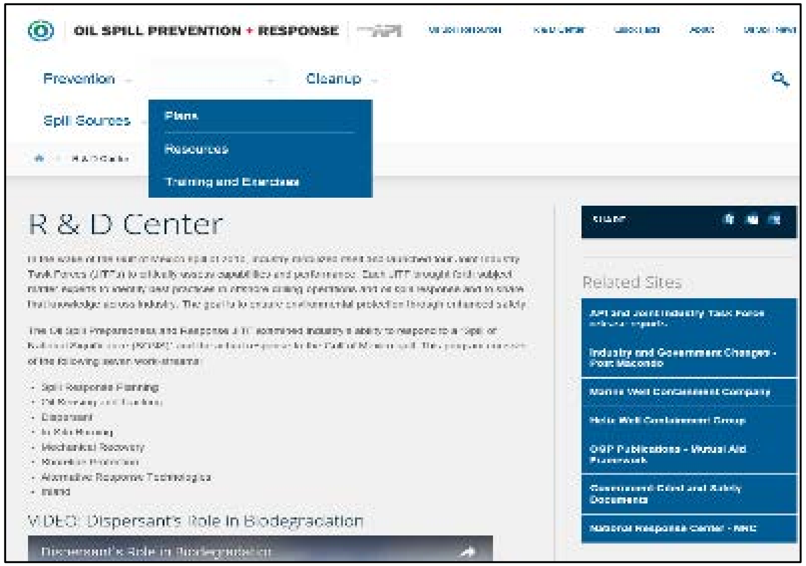
API TECHNICAL REPORT 1152
SEPTEMBER 2013

AMERICAN PETROLEUM INSTITUTE

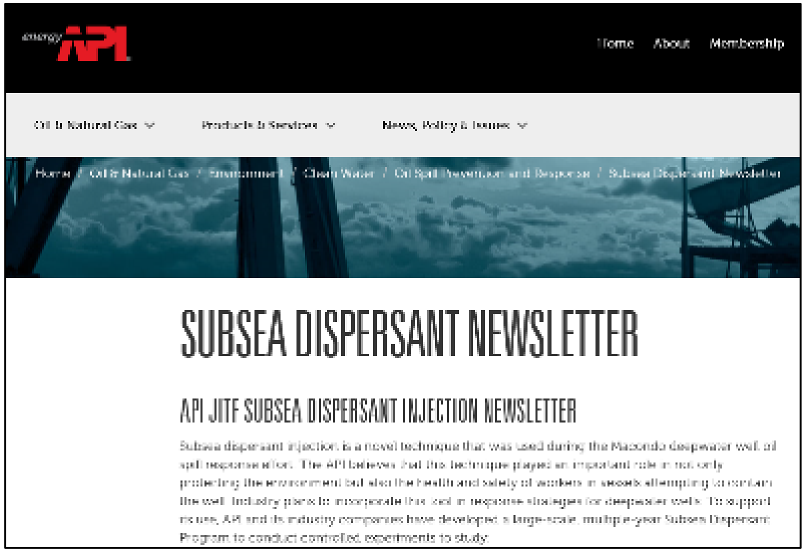


Work Stream 5 – Communications Efforts

- Formation of external technical advisory committees
- Workshops
- Factsheets
- Newsletters
- Peer-reviewed scientific literature
- Conferences



Website:
http://www.oilspillprevention.org



News letter:
http://www.api.org/Environment-Health-and-Safety/Clean-Water/Oil-Spill-Prevention-and-Response/api-jitf-subsea-dispersant-injection-newsletter

Ongoing Work

New Projects:

- Modeling to estimate surface VOC concentrations
- Compare / contrast biodegradation algorithms in integrated fate models
- Literature review on marine snow

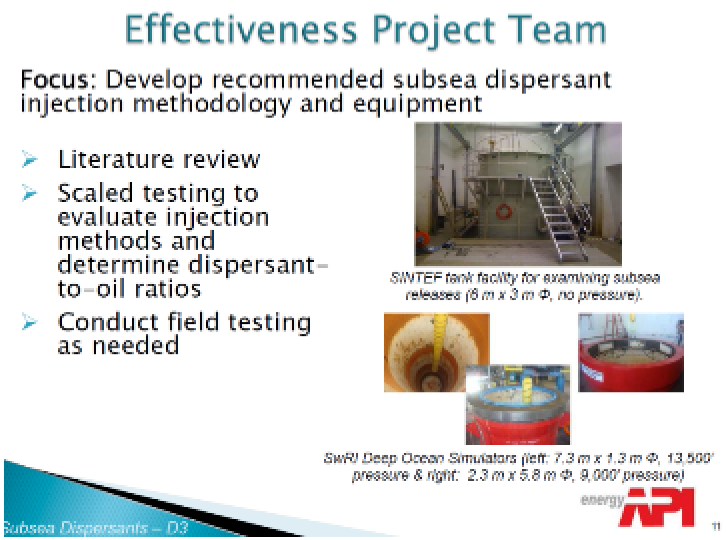
- Final effort is a Consensus Risk Assessment on SSDI

The Oil Spill Response Joint Industry Project

- Three – year project (2012 – 2014) addressing recommendations for spill response developed following the Montara and Macondo incidents
- Nineteen members, twenty-two projects
- Improving co-ordination between the many groups that are also working global oil spill response issues
- Dispersant issues are being addressed in about 20% of the JIP work streams

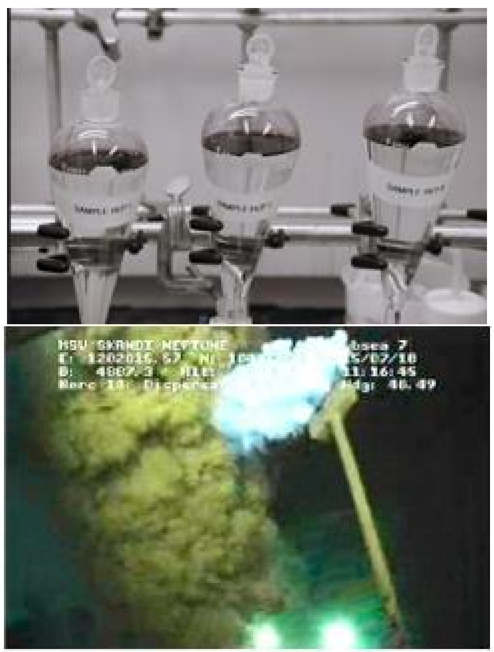
Development of Bench Scale Subsea Dispersant Effectiveness Test (IPIECA/IOGP)

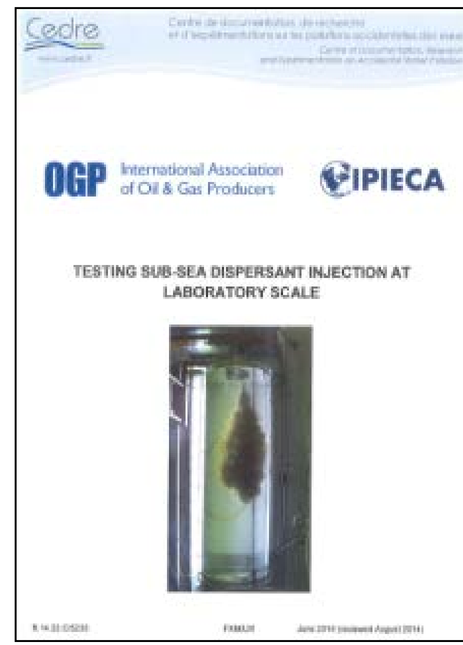
- Project launched to improve bench-scale testing for dispersant effectiveness during sub sea injection using the three most common dispersants in use today.
- Focus on testing and scaling to applicable to API's subsea dispersant program ("D3") using the same crude oils and dispersants
- SINTEF (Norway) & Cedre (France) running parallel testing programs
  - ✓ Four crude oils
  - ✓ Three dispersants
  - ✓ Two mixing regimes (high and low energy)
  - ✓ Similar (but different) experimental set-up



Development of Bench Scale Subsea Dispersant Effectiveness Test (IPIECA/IOGP)

- SINTEF (Norway) & Cedre (France) ran parallel testing programs
  - ✓ A goal was to bridge the gap between real world and existing tests
  - ✓ Kickoff June, 2013 in Trondheim, Norway
  - ✓ Complete December, 2014 and comparative assessment has been received





Cedre

Locating the oil nozzle in the upper section of the water column and orienting the oil flow downwards allowed the oil plume to travel downward in order to leave more time for observation and measurement during its travel back up the water surface. The equipment set-up is shown below in Figure 1 and a test trial is shown in Figure 2.

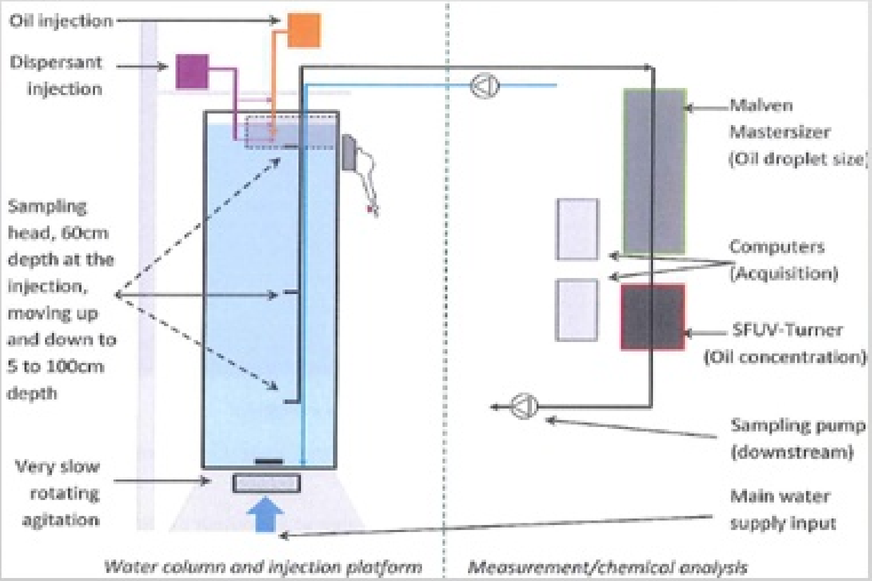


Figure 1. CEDRE Subsea Dispersant Effectiveness Test Tank Schematic

Figure 2. CEDRE Subsea Dispersant Effectiveness Test Tank in Operation

SINTEF

The equipment set-up is shown below in Figure 4 and a test trial is shown in Figure 5.

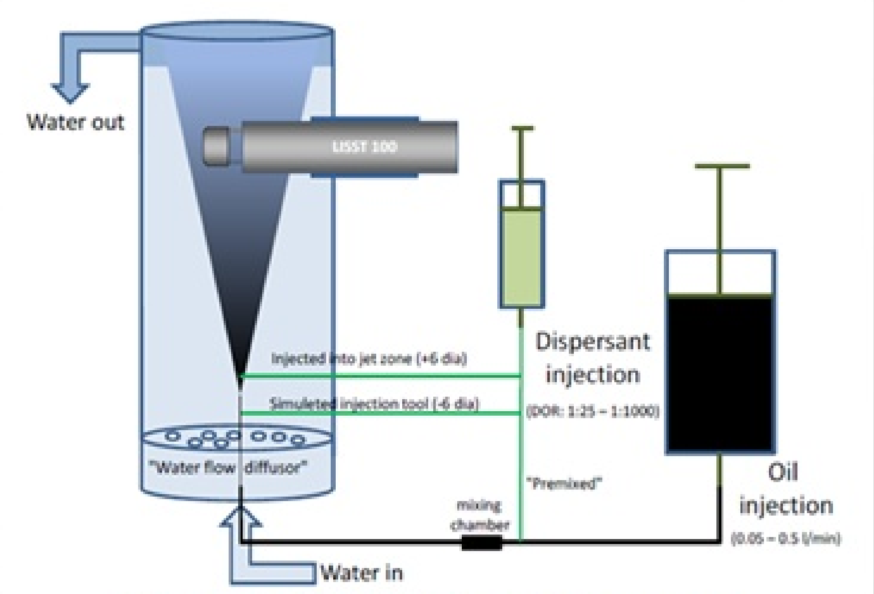


Figure 4. SINTEF Subsea Dispersant Effectiveness Test Tank Schematic

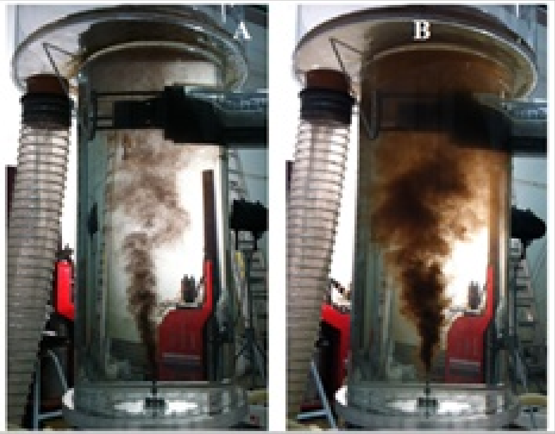
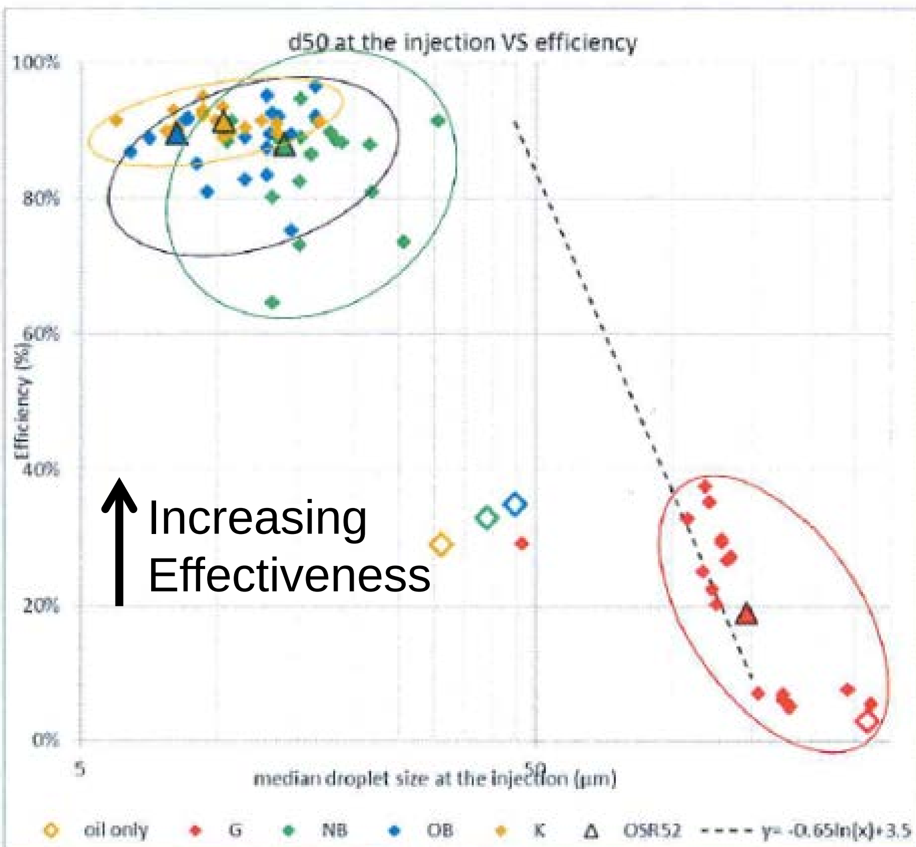


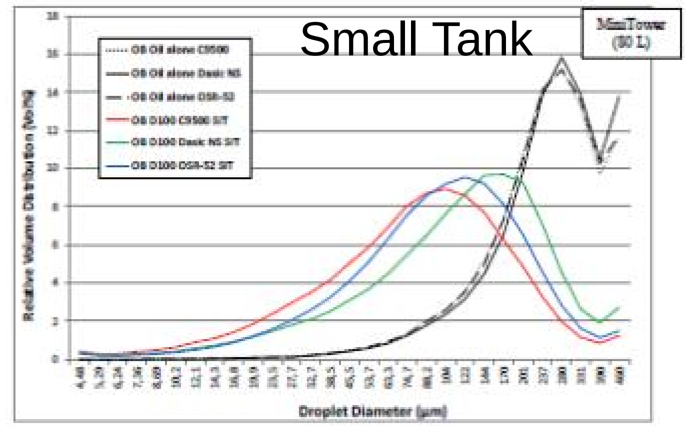
Figure 5. SINTEF Subsea Dispersant Effectiveness Test Tank in Operation; (A) without dispersant (B) with dispersant

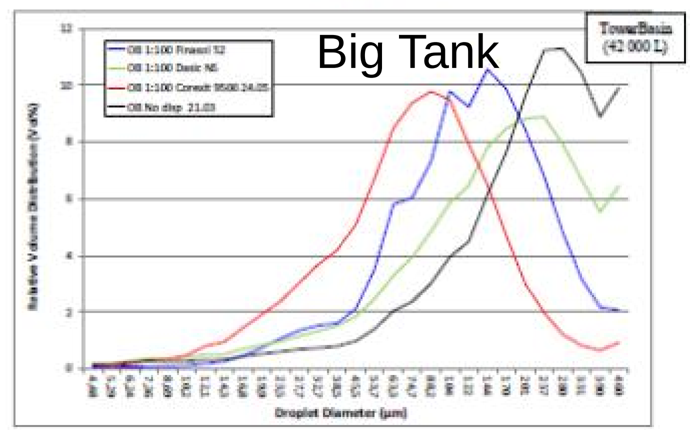
Example of Results: Droplet Size Effects

Cedre: Different Oils

SINTEF: Different Dispersants



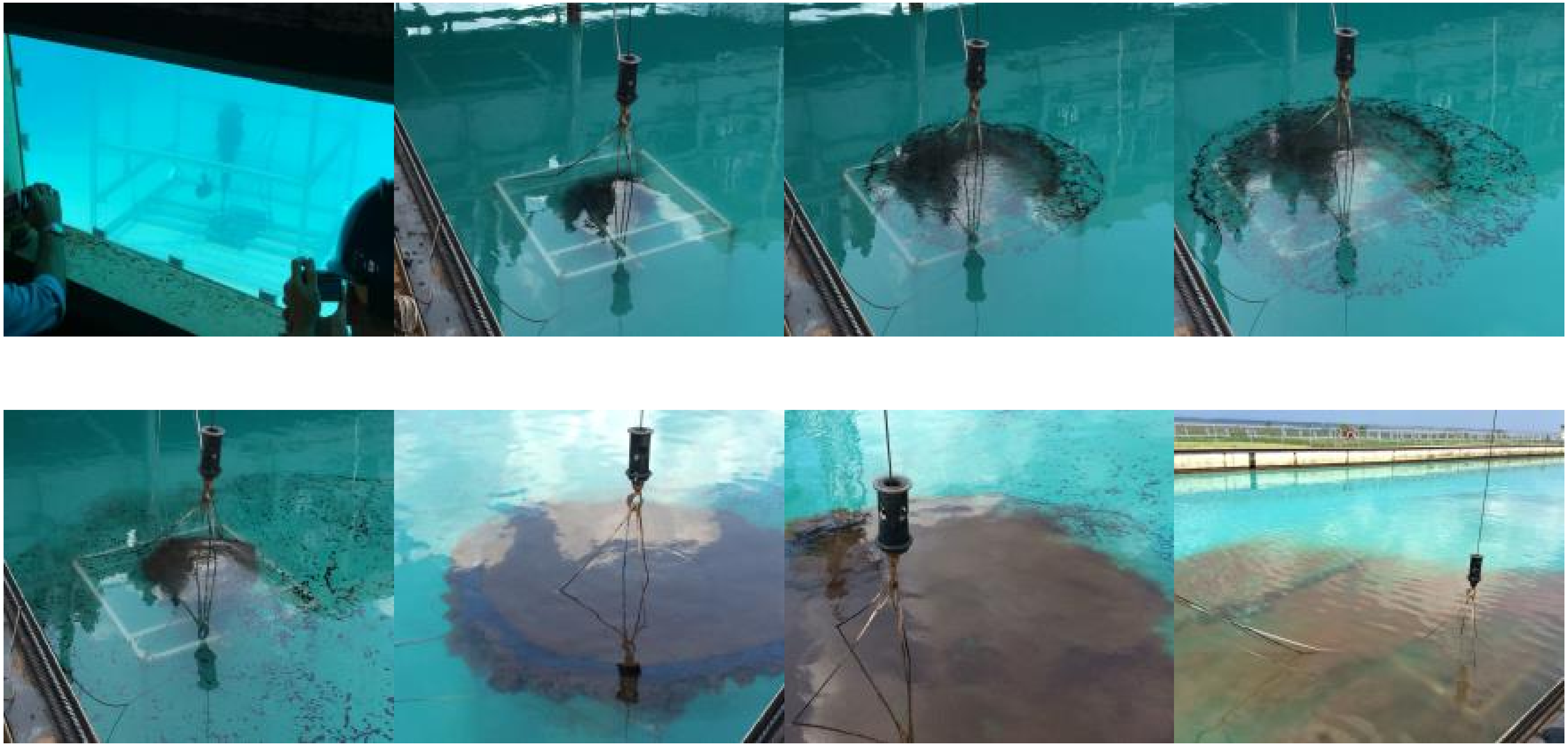




Increasing droplet size →

AMOP Paper 2015

Demonstration of Subsea Dispersant Effectiveness (API)



OHMSETT Facility, New Jersey, July, 2014

Funded by API Joint Industry Task Force

OIL SPILL PREVENTION + RESPONSE

Observations and Conclusions

- Demonstrated the ability to measure droplet size distributions and water column concentrations of oil
- Measured changes that occurred under different conditions, different oil and dispersant types and with respect to placement of dispersant injection relative to the oil outlet nozzle
- Oil droplet sizes were observed to decrease, indicating influences of DORs, energy levels and proximity of the dispersant injection to the oil outlet nozzle
- Median droplet size decreased with increasing DOR and dispersant concentrations may be lower than usually employed for surface oil dispersion, e.g., DORs of 1:50, 1:100
- Still evaluating the potential utility of the tests

Dispersant Research: API D2 Review of Recent Publications

From a report by the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling entitled, “The use of surface and subsea dispersants during the BP Deepwater Horizon oil spill”

- *Using dispersants to remove oil from the water surface has several potential benefits. First, less oil will float ashore to adversely affect shorelines and fragile estuarine environments. Second, animals and birds that float on or wade through the water surface may be less exposed to oil. Third, dispersants may accelerate the rate at which oil biodegrades. Smaller droplets have a larger surface-area-to-volume ratio…”*

Gulf of Mexico Research Initiative (GoMRI)

- $500 Million over 10 years

- The publication pipeline is filling up

API Joint Industry Task Force

Review of Recently Published Oil Spill Dispersant Fate and Effects Research Papers

DRAFT FINAL REPORT

For

American Petroleum Institute

1220 L Street, NW

Washington, DC 20005-4070

Research Review Panel

- 14 members from industry, research organizations, government agencies, independent consultants

- Challenges from a perspective of potentially criticizing fellow researchers
- Time commitment to review and discuss research papers
- Retirements and new positions
- A fairly thankless activity

Report Summary

The use of dispersants during the Macondo response led to a rapid expansion in dispersant research and many research publications. A review was undertaken to assess the work. The initial objective was to review recent dispersant research because-

- It has become evident that some researchers are unaware of specifics of dispersant use when designing studies
- Focus is on papers between 2013 and 2016
  - only papers dealing with the fate and effects of dispersed oil and dispersants
  - only papers published in peer-reviewed journals
- Many of the publications have come from GoMRI-funded research
- Jointly funded by API JITF and IPIECA-IOGP OSR JIP

Research Categories

- Papers keep coming – the research pipeline is filling
- Some areas are more problematic than others
- Desire to flag problems for researchers to avoid in the future – and identify potentially misleading results

Table 1: Summary of publications by subject

Fate / Degradation of Dispersed Oil and Dispersants	**Effects of Dispersants and Dispersed Oil**	
Macondo Oil Spill	**Macondo Oil Spill**	
Spier et al. 2013 Mendoza et al. 2013 Zhou et al. 2013 Place et al. 2014 Gray et al. 2013 Perkins et al. 2013 Bejarano et al. 2013 Sammarco et al. 2013 Brooks et al. 2015	Bacosa 2015 Montagna et al. 2013 Fitzgerald et al. 2014 Echols et al. 2013 Moody et al. 2013 Paul et al. 2013 Bejarano et al. 2013	
Degradation – Experimental	**Lethality**	
Lee et al. 2013 Prince and Butler 2013 Prince et al.2013 McFarlin et al.2014 Kleindienst et al. 2015 Campo et al.2013 Batchu et al.2014 Macías-Zamora et al.2013 Vilcaez J et al.2013	Adams et al. 2013 Almeda et al. 2013 Alameda et al. 2014 Anderson et al. 2014 Coelho et al. 2013 DeLeo et al. In Press Rico-Martínez et al. 2013 Gardiner et al. 2013 Goodbody-Gringley et al. 2013	Kuhl, et al. 2013 Lee KW et al. 2013 Ozhan et al. 2014 Ozhan et al. 2014 Powers et al. 2013 Dasgupta et al. 2015 Kleindienst et al. 2015 Peiffer and Cohen 2015 Dussauze 2015 Pie and Mitchelmore 2015
Fate Experimental	**Sublethal Effects**	
Ehrenhauser et al. 2013 Liyana-Arachchi et al. 2013 Gong, et al. 2013 Kuhl et al. 2013 Zhou et al. 2013 Passow 2014 Fu et al. 2015 Kuhl et al. 2013. Zuijdgeest and Huettel 2012	**Bioaccumulation** Chase et al. 2013 Almeda et al. 2013 Nørregaard 2015 **Enzyme Induction/Metabolites** Milinkovitch et al. 2013 **Immunosuppresion** none **Performance and Fitness** Claireaux, et al. 2013 Milinkovitch et al. 2013	**Gross Abnormality or Histopathology** Agamy 2013 Agamy 2013 **Growth/Reproduction** Brewton et al. 2013 Zhang et al. 2013 Polli et al. 2013

Some Critical Issues

Relevance

- Faulty understanding of dispersant use, e.g., a study of the fate and toxicity of dispersant treated oil in shallow near shore waters
- Lack of awareness of NEBA, e.g., surface slick vs dispersed oil droplets
- Lack of understanding of dispersant vs dispersed oil considerations
- Lack of understanding of appropriate toxicology methodologies, e.g., exposures that are of significantly longer duration and higher concentration

There is progress

From a GoMRI consortium paper…

- "We cannot make clear delineations regarding the use of dispersants, as guidance for their use involve a number of factors related to oil spills (surface or deep sea spill, temperature and wind conditions for surface spills, proximity to coastlines and the nature of seafloor terrain, sensitivity of the ecosystem to chemical perturbations). But we do recognize that it is extremely important that laboratory research be done at concentrations relevant to the marine environment. In a laboratory setting with experimental systems of finite volume, it is hard to replicate the vast dilution of the marine environment."

How to respond?

- Letter to the editor….

PNAS

Chemical dispersants can suppress the activity of natural oil-degrading microorganisms

Sara Kleindienst, Michael Seidel, Kai Ziervogel, Sharon Grim, Kathy Loftis, Sarah Harrison, Sairah Y. Malkin, Matthew J. Perkins, Jennifer Field, Mitchell L. Sogin, Thorsten Dittmar, Uta Passow, Patricia M. Medeiros, and Samantha B. Joye

PNAS

LETTER

Oil dispersants do facilitate biodegradation of spilled oil

Roger C. Prince[a,1], Thomas S. Coolbaugh[b], and Thomas F. Parkerton[c]

PNAS

LETTER

REPLY TO PRINCE ET AL.:

Ability of chemical dispersants to reduce oil spill impacts remains unclear

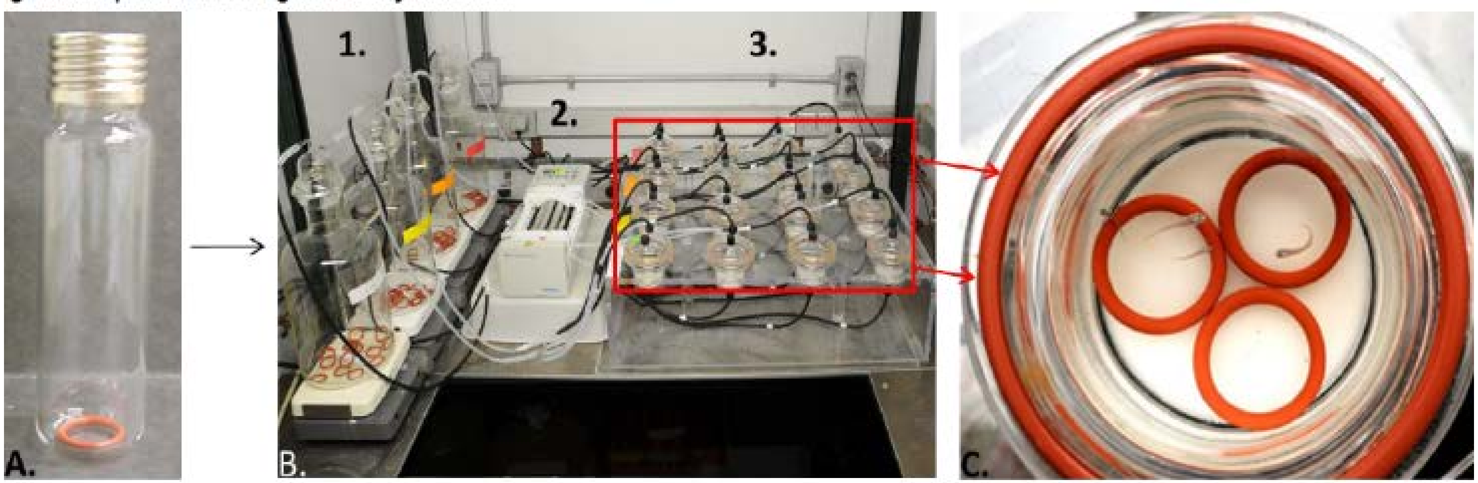
Sara Kleindienst[a,1], Michael Seidel[a,2], Kai Ziervogel[b], Sharon Grim[c,3], Kathy Loftis[a,4], Sarah Harrison[a], Sairah Y. Malkin[a], Matthew J. Perkins[d], Jennifer Field[d], Mitchell L. Sogin[c], Thorsten Dittmar[e,f], Uta Passow[g], Patricia Medeiros[a], and Samantha B. Joye[a,5]

- May not be very effective or satisfying…..

Provide information as often as possible e.g., all you want to know about toxicology…

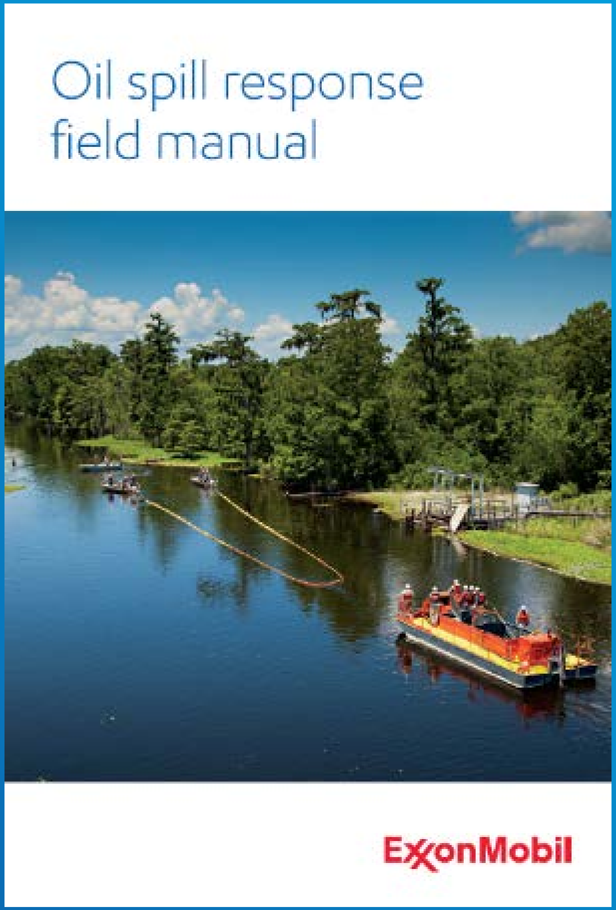
- Butler, JD, DJ Letinski TF Parkerton, AD Redman[a], KR Cooper (2016) Assessing Aromatic Hydrocarbon Toxicity to Fish Early Life Stages Using Passive Dosing Methods and Target Lipid / Chemical Activity Models, Submitted to *Environmental Sci. Technol*.
- Bragin,GE, TF Parkerton, AD Redman, DJ Letinksi, JD. Butler, ML Paumen, CS Sutherland, TM. Knarr, M Comber, K den Haan (2016). Chronic Toxicity of Selected Polycyclic Aromatic Hydrocarbons to Algae and Crustaceans Using Passive Dosing, Accepted in *Environ. Chem & Toxicol.*
- Redman, AD, TF Parkerton (2015). Guidance for improving comparability and relevance of oil toxicity tests, *Marine Pollution Bulletin* 98:156-170.

igure 2. Experimental design of 30-day ELS test



- It's an ongoing effort – conferences, papers, workshops, one-on-one…

Thanks for listening



MEXUSGULF Tabletop Exercise Recap

Mike Sams
USCG District 8

&

Mike Drieu
Anadarko

Purpose, Scope & Structure

DATE / LOCATION:

- 26 APR 2016
- Anadarko Petroleum Corporation
  1201 Lake Robbins Dr, 3rd Floor,
  Allison Hall, The Woodlands, TX

PURPOSE:

Test the MEXUS Plan and MEXUSGULF Annex in preparation for MSU Morgan City PREP Full-Scale Exercise 2017

SCOPE:

- 1 day event

STRUCTURE:

- Module 1: Scenario Overview
- Module 2-4: 9 Objectives
- Module 5: Morgan City FSE 2017 Overview

Anadarko Petroleum Corporation

Exercise Objectives

1. Notifications
2. Incident Command Post (ICP)
3. Spill Management Team (SMT)
4. Regional Response Team (RRT) Interactions
5. Source Control
6. Response Strategies and Tactics
7. Communications
8. Response Information Sharing (RIS)
9. Trans-Border Resource Movements

TTX Attendees

Organization / Company	# of attendees
U.S. Coast Guard (USCG)	25
Secretariat of Navy (SEMAR) Zone One (ZN-1)	2
Agency for Safety, Energy, & Environment (ASEA)	2
Port Authority (Tampico & Altamira)	2
Anadarko Petroleum Corporation (APC)	50
Bureau of Safety and Environmental Enforcement (BSEE)	3
Contractors (WWC, MWCC, CGA, MSRC, CTEH, Merkurios Group, OSRL, Interpreter)	21
Louisiana Oil Spill Coordinator's Office (LOSCO)	1
National Park Service (NPS)	3
Texas General Land Office (TGLO)	2
NOAA	3
U.S. Environmental Protection Agency (EPA) -- Region 6	1
Total	**115**

TTX Scenario Overview

Oil Platform: Lucius (Anadarko Petroleum Corporation)

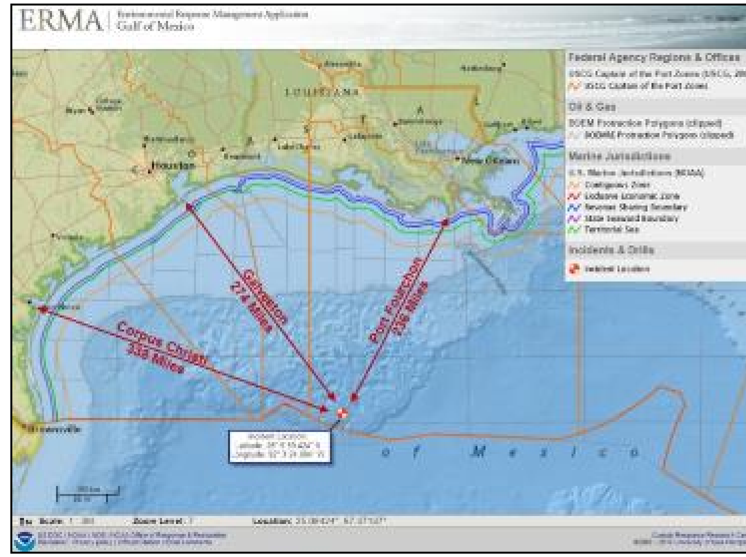
Location: Keathley Canyon (KC) 919

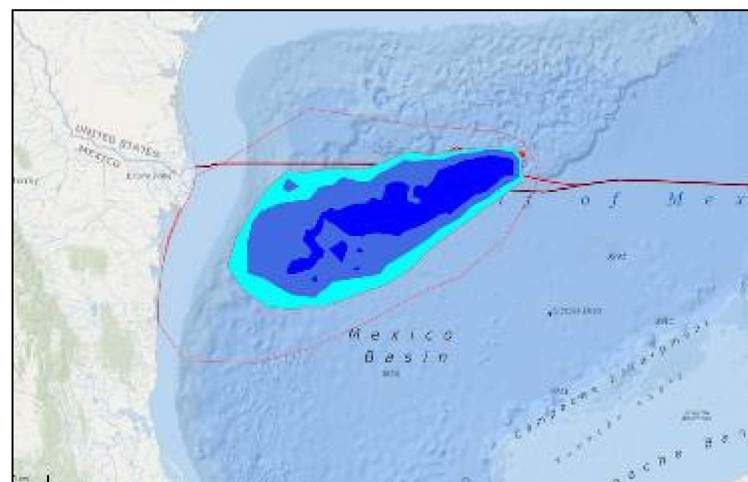
- 16 Miles to EEZ (Western Gap)
- 32 Miles to MX Waters

Cause: Drillship experienced an un-commanded disconnect; riser parted

Worst-case discharge:

- Oil: 20,000 Barrels of Oil Per Day (BOPD)
- Gas: 26 Million Standard Cubic Feet per Day (MM SCF/D)





TTX Takeaways

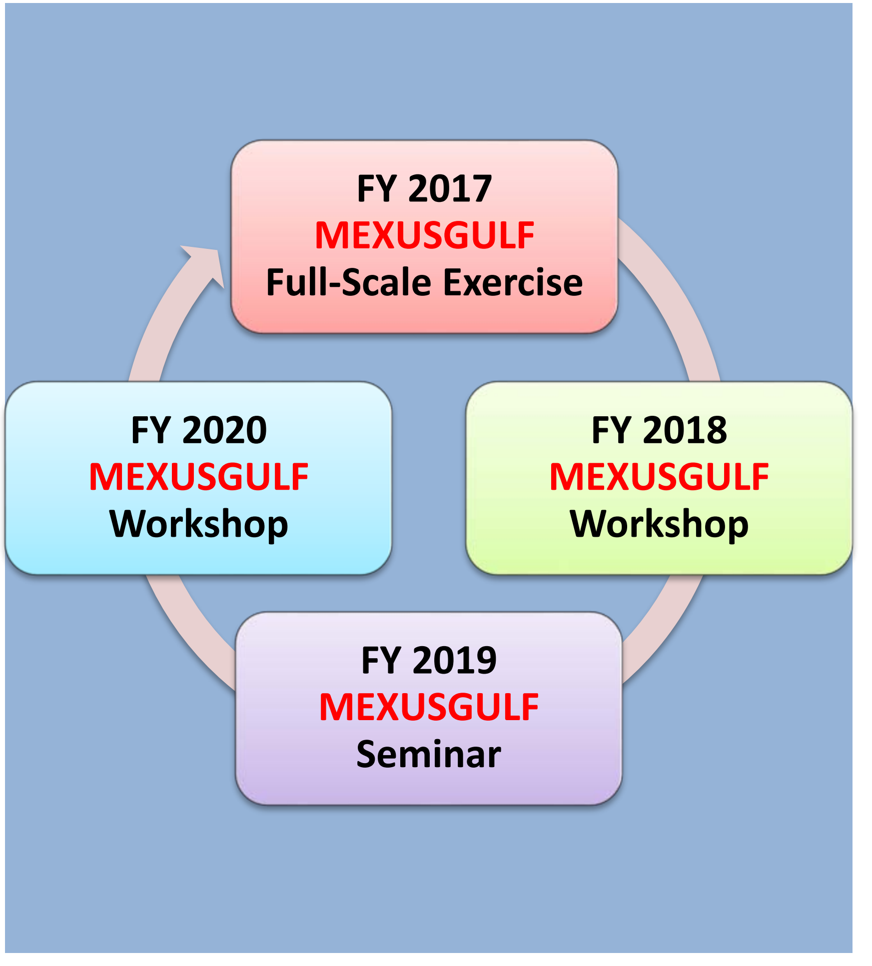
- **Security**: MX will provide if needed (Navy & Army)
- **Alternative Response Technologies (ART)**
  - Dispersants – MX will entertain requests; if valid request is presented w/proper documentations
  - In-Situ Burning
- **Trans-Border Resource Movements:**
  - US- CBP provided 24/7 Phone #
  - US OSRP vessel non-SOLAS/COI voyage waiver for emergency response only
- **Plans**: MX has National, Area, Regional, & Local Plans

TTX Takeaways

- **Waste Disposal:**
  - Originates in US waters- dispose in US
  - Originates in MX waters- dispose in MX
- **Mexico and US EEZ and Territorial Sea**
  - Activities authorized and permits needed for spill response
  - Treaty between countries effecting the activities authorized

Proposed Future Interactions & Exercises

- **2017:** Joint D8/MSU Morgan City Government-Led Full-Scale Exercise (FSE) 2017
- **2018:** Workshop
- **2019:** Seminar
- **2020:** Workshop



MSU Morgan City Full-Scale Exercise 2017 Overview

- Dates
  7-9 March 2017
- Scenario
- Location
- Objectives
- Participants

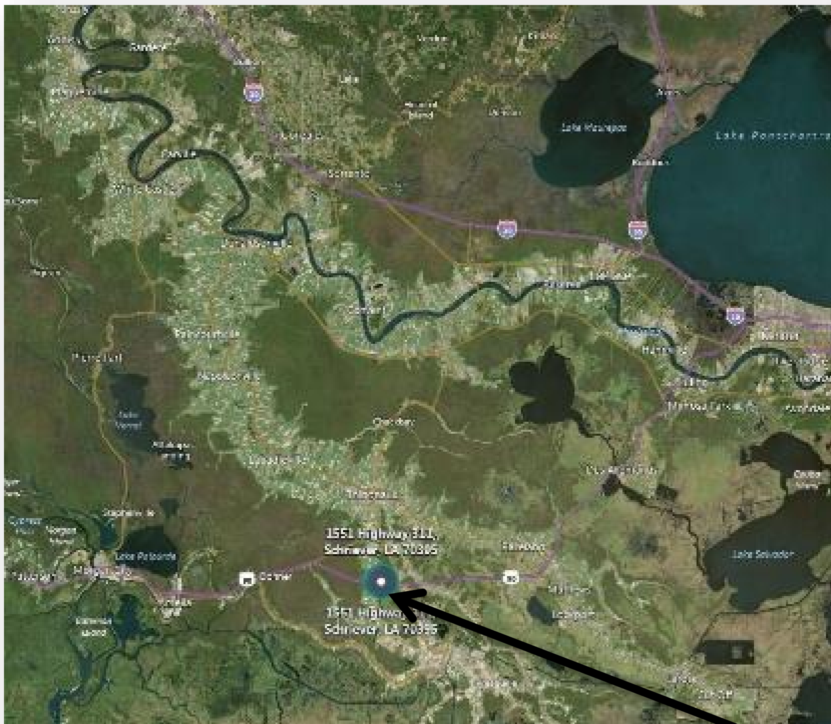
- **What is different?**
  - Demonstrate v. Discuss
  - ICS Planning P
  - Government-Led PREP
  - MEXUSGULF Component

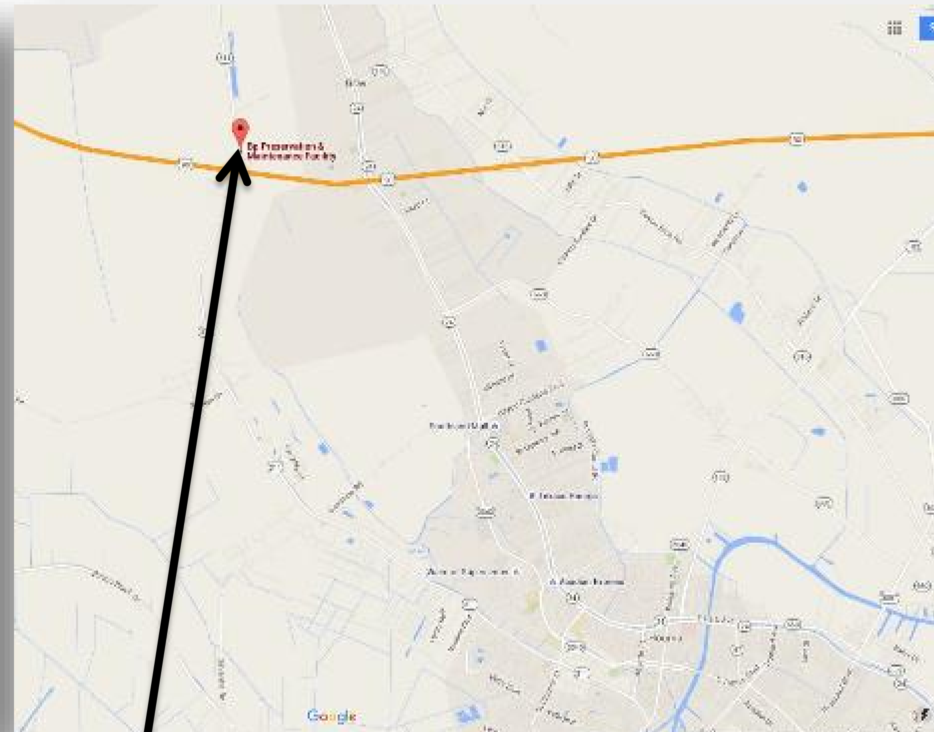
FSE 2017 Exercise Planning & Conduct Calendar

Exercise Planning Time Line

29-30 Jun 2016	25-27 Oct 2016	1-2 Feb 2017	7-9 Mar 2017	23 Mar 2017	15-18 May 2017
Concept & Objectives Meeting & Initial Planning	**Midterm Planning Meeting & Master Scenario Events List**	**Final Planning Meeting**	**Full-Scale Exercise** **Day 1: Training** **Day 2: Exercise** (warm start) **Day 3: C/E Debrief Meeting & Drafting of AAR / LLs Meeting** (all day event)	**EST 3 Debrief AAR/LLs Draft Meeting by Teleconference** ***Draft AAR/LLs due:*** *from EST 3 to MSU Morgan City EPTL* 3 wks after FSE	**International Oil Spill Conf**
(2 Days)	**(3 Days)**	**(2 Days)**			**(4 Days)**
Location: BP Facility Schriever, LA	**Location:** BP Facility Schriever, LA	**Location:** BP Facility Schriever, LA	**Location:** BP Facility Schriever, LA	**Location:** Via Teleconference	**Location:** LA/LB, CA

BP Facility (*Final Contract Pending*)





1551 Highway 311
Schriever, LA 70395

Path Forward

Milestones	Target Date
MEXUS Plan approval and implementation	~2016
MEXUSGULF Annex approval and implementation	~2017
Clean Gulf Conference – Tampa, FL	1-3 Nov 2016
Joint D8/MSU Morgan City Government-Led Full-Scale Exercise (FSE) 2017	7-9 Mar 2017
International Oil Spill Conference – LA/Long Beach, CA	15-18 May 2017

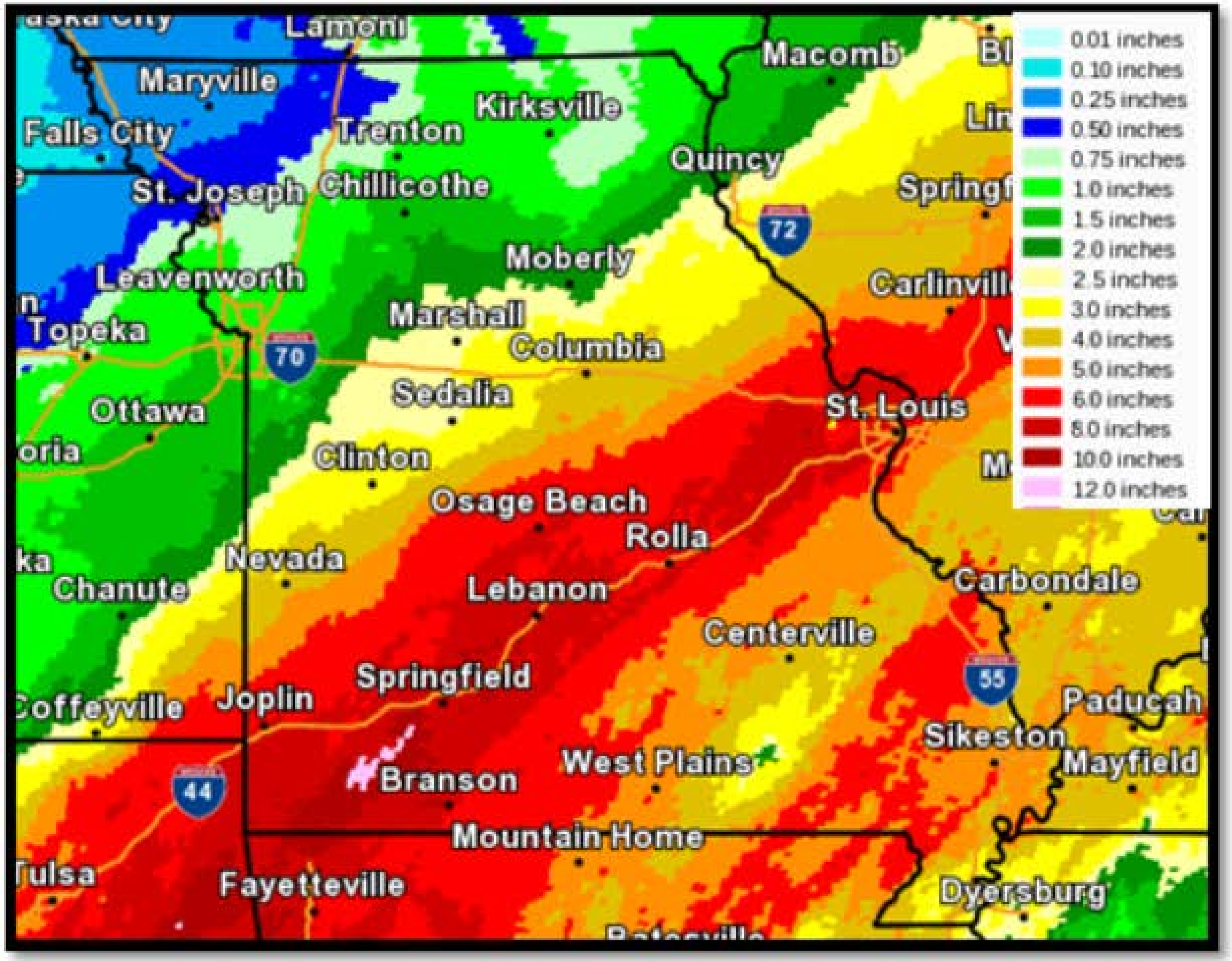
Missouri flood 2015

Missouri Flooding 2015-16

- Beginning December 22, 2015, a winter storm system tore through the central U.S., bringing tornadoes, blizzards, ice, heavy rain and floods.
- At the St. Louis-area town of West Alton, the Mississippi River spilled over a levee, prompting the mayor to urge everyone in the town of 520 people to evacuate.
- The Bourbeuse River, which runs near St. Louis, had risen to a record-breaking 34 feet

Storm Total Rainfall

ST. LOUIS	9.18"
COLUMBIA	4.49"
JEFFERSON CITY	5.17"
CHESTERFIELD	7.85"
ST. CHARLES	8.04"
FARMINGTON	5.99"
QUINCY	2.58"
CAHOKIA	5.91"
BELLEVILLE/SCOTT	5.31"
PITTSFIELD	3.82"
SPARTA	5.53"
SALEM	3.05"



Perceptions and Politics

Missouri's governor has declared a state of emergency because of widespread flooding that has led to fatalities in Kendricktown, Mo., Dec. 27, 2015

Missouri Floods 2015-16 Impacts

Winter flood that brought record crests along the Mississippi River and its tributaries

- **9-14” of rain over 3-day period (Dec 26-28)**
- **Million-Plus Sandbags (4,546 tons of sand)**
- **10,500 tons of rock**
- **717 rolls of plastic**
- **8 record crests**

- **25 deaths**
- **12-County Disaster Area**
- **2-Wastewater Treatment Plants damaged, releasing raw sewage**
- **I-40, 55 and 44 were all shut down (cut KC off from St. Louis)**
- **4-day halt of AMTRAK**

Two Wastewater Treatment Plants damaged

Two wastewater treatment plants near St. Louis failed when the Meramec River overtook its banks after days of pounding rain, sending millions of gallons of untreated sewage eventually into Mississippi. Grand Glaze WWTP was off-line Dec. 31 – Jan 4 and Fenton WWTP was off-line Dec. 31 – April 8.

Missouri Governor’s Press Conference

Missouri Gov. Jay Nixon says he's asking for a federal emergency declaration in the wake flooding in the St. Louis area of severe flooding.
https://www.youtube.com/watch?v=5mSduAKHZCE

Timeline

News Reports

- **29 Dec.** MO Gov. Jay Nixon announces in a press conference:

  "…I will be seeking the **U.S. Army Corps of Engineers** debris removal assistance to collect and dispose of the debris…."

Federal Response

- **29 Dec.** R7 activates ESF #3 and ESF #10 in anticipation of rain/flood event
- **31 Dec.** EPA Fisher LNO reports to R7 RRCC
- U.S. ACE Northwest Division – KC District (NWK) Hydrologist reports to R7 RRCC

TIMELINE

News Reports

- **2 Jan.** MoNG would manage debris cleanup at state level, coordinating with federal and local governments
- **2 Jan.** Gov. Nixon said: "I appreciate the debris removal assistance the federal government has agreed to provide, and the speed with which the president responded to our request."

Federal Response

- **2 Jan.** POTUS signs EM DEC (CAT A and B)
- **2 Jan.** EPA Davis reports to RRCC
- **2 Jan.** USCG and EPA stand-down Birds Point Levee detonation plan (120,000 acres)
- USACE receives Verbal EM Regional Activation and Debris Planning and Response Teams (PRT) MAs
- **3 Jan.** ESF 3 TL & Debris SMEs arrive at RRCC
- **4 Jan.** ESF 3 ATL arrives at RRCC

TIMELINE

News Reports

- **3 Jan.** State reports 8800 structures damaged

Federal Response

- **3 Jan.** ESF 3 TL & Debris SMEs arrive at RRCC
- Unverified damage report estimates are being reported
- **3 Jan.** Debris Task Force concept is discussed
- **4 Jan.** ESF 3 ATL arrives at RRCC

TIMELINE

News Reports

- **5 Jan.** Gov. Nixon says flooding has affected about **7,100 buildings** in four counties, and about a **half-million tons of debris** needs to be removed.

Federal Response

- **5 Jan.** Debris SMEs forward deploy to St. Louis and begin coordination with NG
- Debris PRT MA to USACE is amended to $5,000,000
- Advanced Contracting Initiative (ACI) Contractor planning cell activated
- **6 Jan.** Debris SME **begins initial windshield debris assessments**

TIMELINE

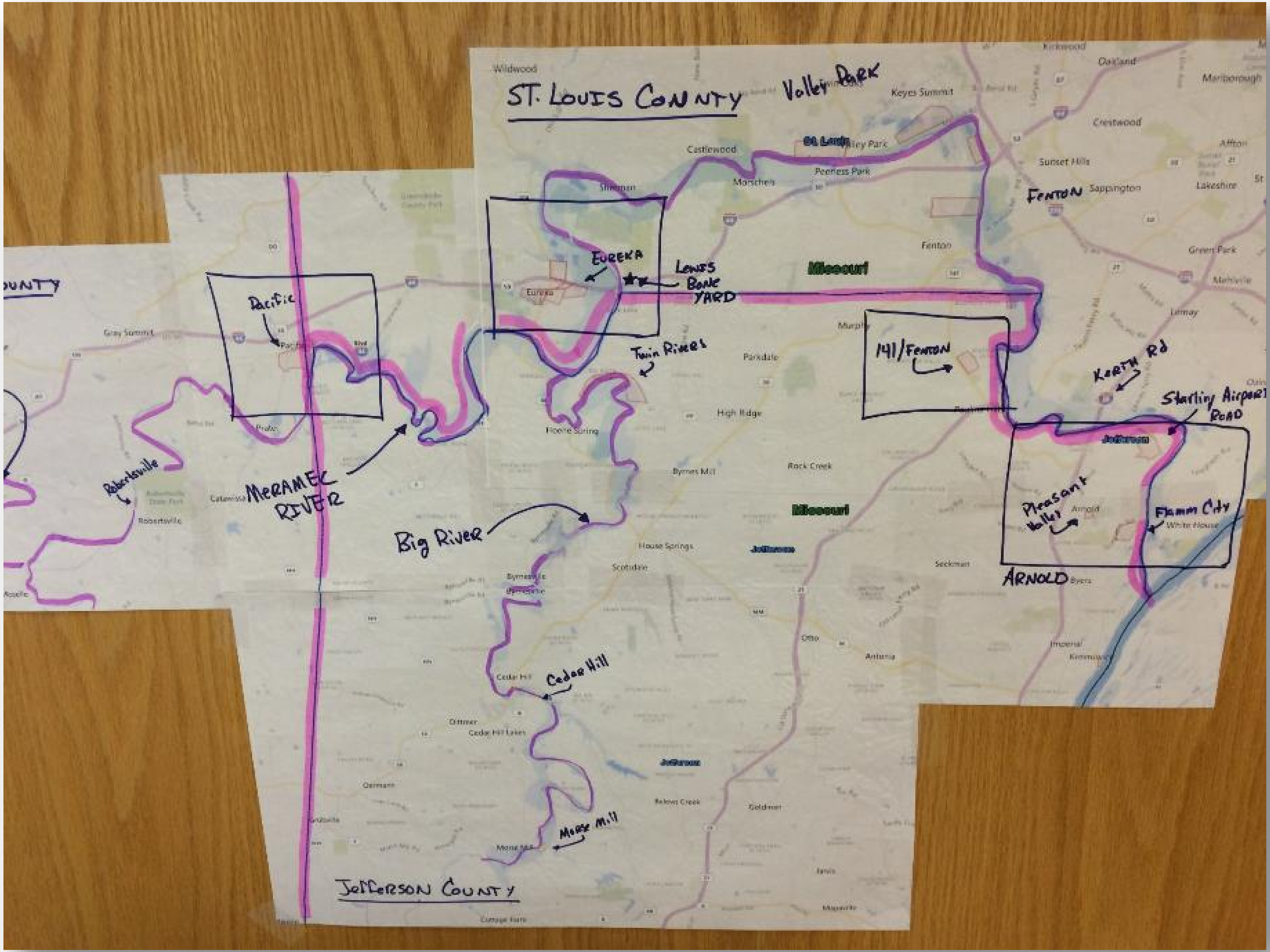
News Reports

- **7 Jan**. Gov. Nixon announces:
- “Operation Recovery' to clear **500,000 tons of flood debris** from St. Louis “
- “The guard is working with local communities and the Corps of Engineers to develop a schedule for pickup. Contractors will begin pickup next week and will make multiple passes in affected communities,” Nixon said.

Federal Response

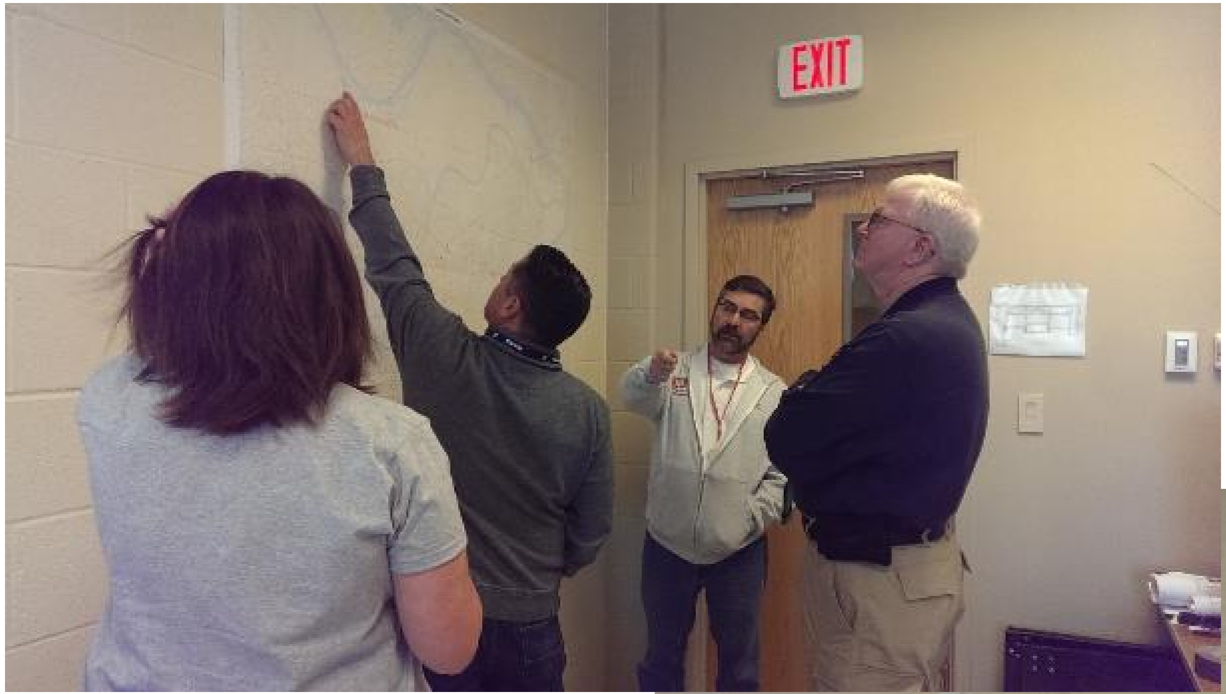
- **7 Jan.** Debris SME initial findings **estimates < 20,000 cy** of debris
- Federal and state partners discuss viability of federal involvement in Debris Removal


EXIT
Missouri



ST. LOUIS COUNTY
Valley Park
OUNTY
Pacific
Eureka
Lewis Bone Yard
Twin Rivers
141/Fenton
Fenton
Kerth Rd
Starling Airport Road
Pleasant Valley
Flamm City
ARNOLD
Robertsville
MERAMEC RIVER
Big River
Cedar Hill
Morse Mill
Jefferson County

INTERAGENCY COORDINATION and COMMUNITY OUTREACH



USACE LGL and MONG LNO teams:

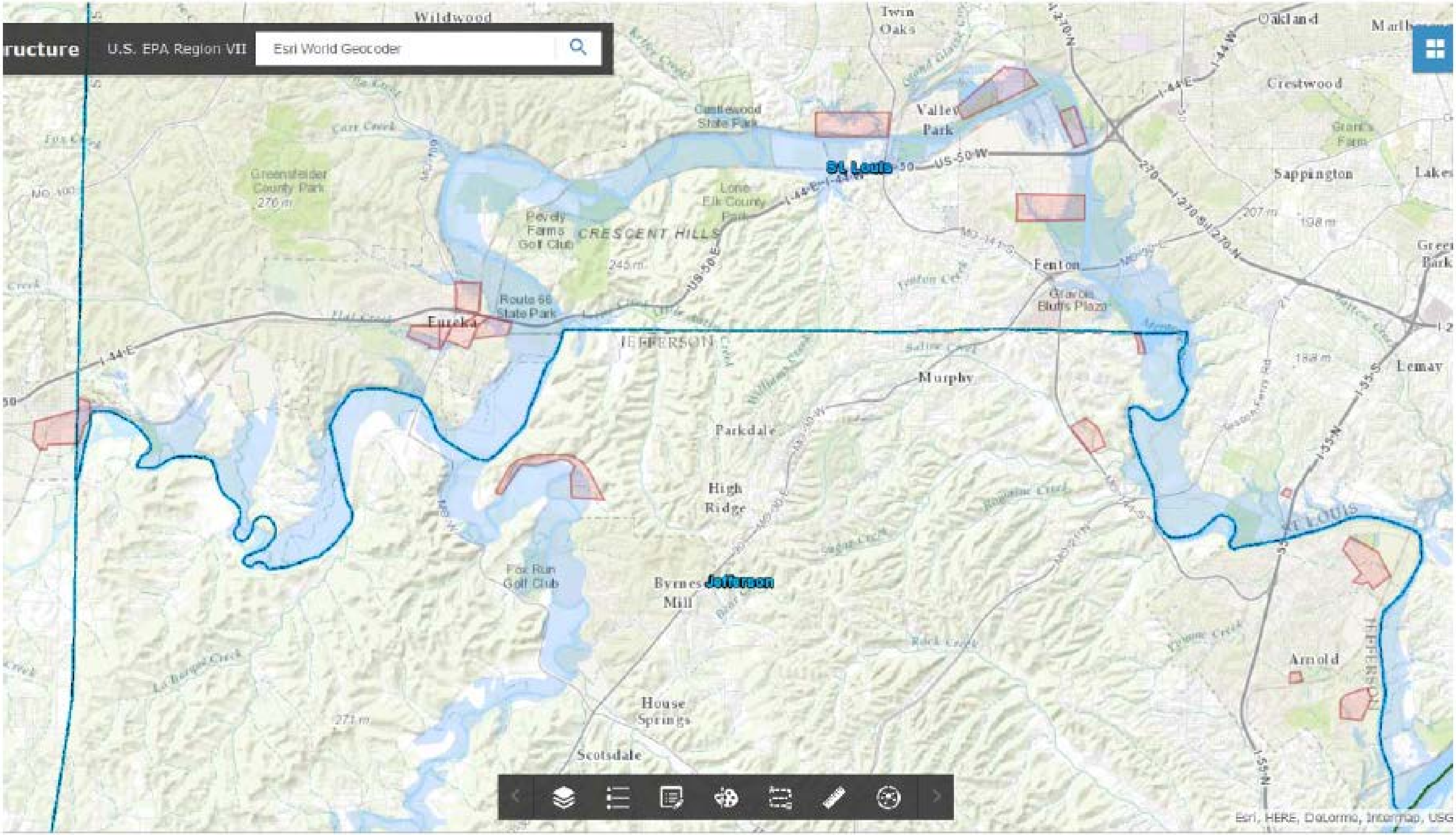
- Engaged in community outreach
- Education of debris segregation
- Identification debris piles

Nightly operations / sync meetings included LNO/LGL providing data updates For GIS mapping

Separating Your Debris
Debris should be placed curbside, without blocking the roadway or storm drains.
DEBRIS SEPARATION
Separate debris into the six categories shown below.
DO NOT STACK OR LEAN
Placing debris near or on trees, poles, or other structures makes removal difficult. This includes fire hydrants and meters.
UNSURE WHERE TO PLACE DEBRIS?
If you don't have a sidewalk, ditch, or utility line in front of your house, place debris at the edge of your property before the curb.
NO PICKUP ZONE
Any debris placed from the sidewalk toward your property will not be picked up.
NEWS
Normal Household Trash
Normal household trash and bagged debris of any kind will not be picked up with disaster debris. You should continue to follow your normal garbage removal schedule.
VEGETATIVE DEBRIS
· Leaves (do not put in bags)
· Logs
· Plants
· Tree branches
CONSTRUCTION & DEMOLITION DEBRIS
· Building materials
· Carpet
· Drywall
· Furniture
· Lumber
· Mattresses
· Plumbing
APPLIANCES & WHITE GOODS
· Air conditioners
· Dishwashers
· Freezers
· Refrigerators
· Stoves
· Washers, dryers
· Water heaters
ELECTRONICS
· Computers
· Radios
· Stereos
· Televisions
· Other devices with a cord
HOUSEHOLD HAZARDOUS WASTE
· Cleaning supplies
· Batteries
· Lawn chemicals
· Oils
· Oil-based paints and stains
· Pesticides
For more information contact your local government.


BEHR PREMIUM
TEXTURED
DeckOver

ESRI Field Collection App Loaded to IPads / IPhones



ructure
U.S. EPA Region VII
Esri World Geocoder
Wildwood
Twin Oaks
Oakland
Crestwood
Valley Park
Castlewood State Park
Greensfelder County Park
Lone Elk County Park
Peveay Farms Golf Club
CRESCENT HILLS
St. Louis
Sappington
Fenton
Gravois Bluffs Plaza
Route 66 State Park
Eureka
JEFFERSON
Murphy
Parkdale
High Ridge
Fox Run Golf Club
Byrnes Mill
Jefferson
House Springs
Scotsdale
Arnold
Lemay
ST. LOUIS
JEFFERSON
I-44-E
US-50-W
I-270-N
I-55-N
Esri, HERE, DeLorme, Intermap, USG

Debris estimates

- Extensive use of roll-off dumpsters throughout the area greatly reduced volume of debris for Federal Mission.

- USACE SMEs and ACI contractors conducted recon throughout the four primary counties and estimated actual debris volume to be <20K cubic yards.

Debris discussions

- Not cost effective to MA USACE for an estimated < 20K CY of debris. Cost per cy using typical ACI Contract would far exceed rates that are considered fair and reasonable.
- State continued to pressure need for federal assistance with debris removal in some capacity

- COAs explored:
  - ► USACE Restricted/Small Business ACI
  - ► USACE issuing local sole source 8A
  - ► Sub-task EPA to execute the mission under our Debris Mission
  - ► FEMA Directly Mission Assign EPA

FEMA PHOTO

Debris Mission

- COA decision that FEMA would issue a Debris Mission directly to EPA.
  - Expedience the primary factor.
- USACE was asked to support FEMA, EPA and state with QA and community relations.

- USACE also supports EPA with debris removal mission planning and operations.

Stafford Act funding

Mission assignment	Total Funds Authorized	Federal Share	State Share	EPA expended to date
Pre-dec / RRCC/JFO/AFO Coordination	$170,000	$170,000	$0	$42,965
HHW and orphan container	$1,150,000	$862,500	$287,500	$770,311
Debris	$3,000,000	$2,250,000	$750,000	$1,640,361
Total	$4,320,000			$2,453,367

ORGANIZATIONAL STRUCTURE OF REOC/INCIDENT COMMAND

MISSOURI FLOOD ESF#10

1/16/2016

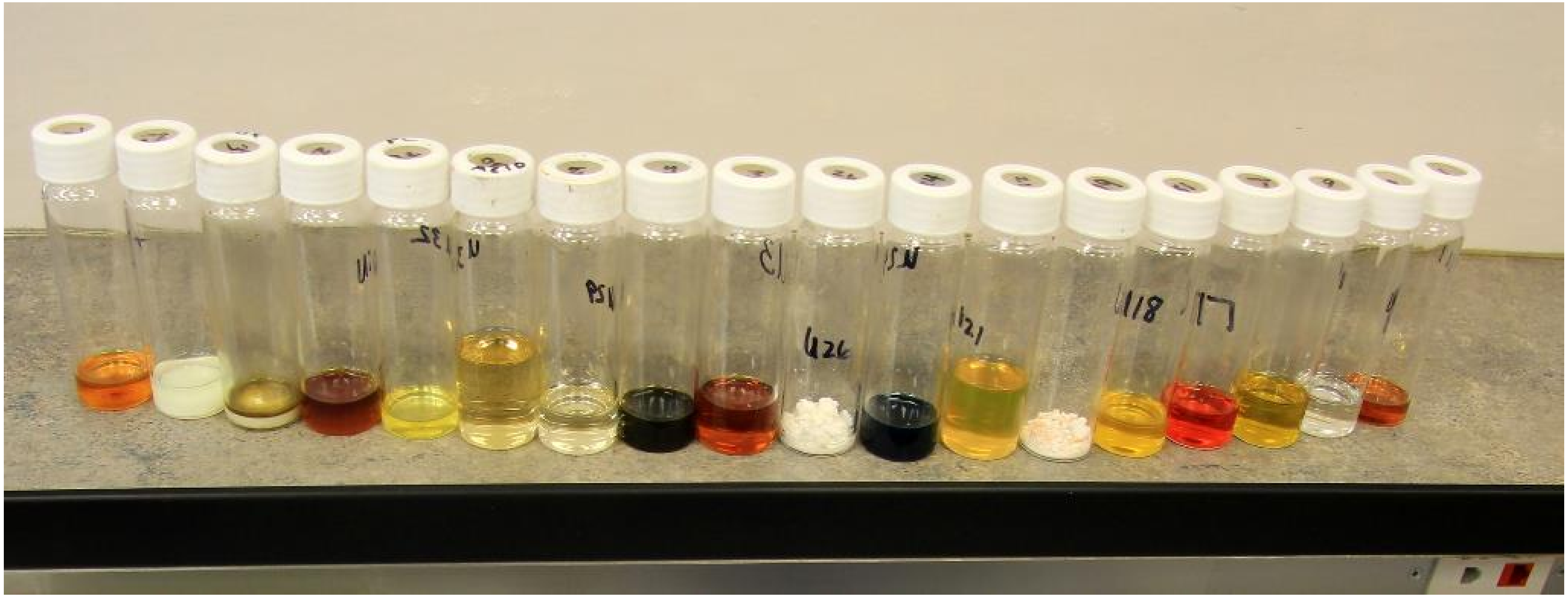
NOTE: Name/Name annotates there will be a rotation during this operational period. The first name will begin the operational period and the second name will rotate in during this operational period

- **RA** — Mark Hague, Mike Brincks
  - **RIC** — Mary Peterson, Bob Jackson
    - **RICT** — Ken Buchholz KC REOC
    - **CNSL** — Kristen Nazar
    - **Incident Command** — Ken Buchholz / Dave Williams from R7 REOC
      - **FEMA JFO** — Susan Fisher / Ken Buchholz
      - **Health and Safety Officer** — Roy Krueger, EPA / Steve McLane, MDNR
      - **Liason Officer** — TBD
      - **Public Information Officer** — Chris Whitley (KC)
      - **Planning Section** — Eric Nold / Michele Miller
        - **Environmental Unit Leader** — TBD
        - **Resource Unit Leader** — TBD
        - **Situation Unit Leader** — TBD, Bill - START GIS
      - **Logistics Section** — TBD
      - **Operations** — Heath Smith OSC, Eric Nold DOSC
        - **Hazmat Branch** — Adam Ruiz / Kevin Larson EPA
          - HHW North Team — MDNR SOSC
          - HHW South Team — MDNR SOSC
          - Waste Staging Area — Doug Ferguson EPA, Laura Moore, START, Kevin Cashion, EPA
          - Boat Ops Planning — Adam Ruiz
        - **Assessment/GIS BRANCH** — Heath Smith / Adam Ruiz, EPA
          - **GIS** — Bill S./Nick W., START
          - **Assessment** — Greg B./James C., START
          - **Field Documentation** — START
        - **Debris Branch** — Mike Davis EPA
          - St. Louis Division — Mindy Luetke, EPA
            - Recovery Teams as needed daily
          - Franklin Division — Randy Brown / Andrew Gieseke, EPA
            - Recovery Teams as needed daily
          - Jefferson Division — MDNR SOSC
            - Recovery Teams as needed daily
          - St. Charles Division — MDNR SOSC
            - Recovery Teams as needed daily
      - **Finance/Budget Section** — Debbie Bishop (KC)

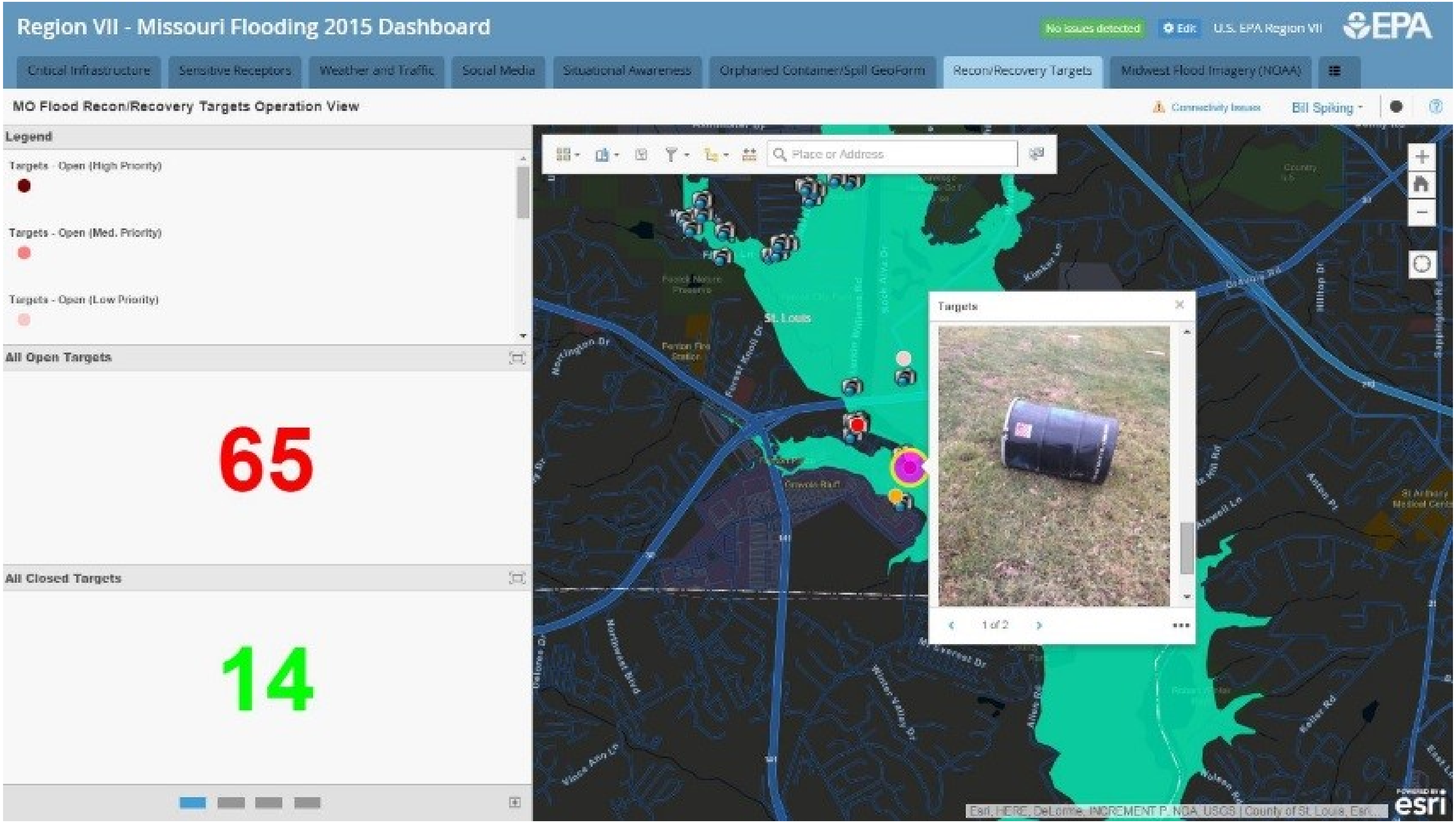

DNR
ENVIRONMENTAL
EMERGENCY
RESPONSE
AUTO CRANE
Kircher
Park
23-0081M

ESTABLISHING HHW PAD


UNITED STATES
EPA
Region VII
Iowa, Kansas, Missouri, Nebraska
EMERGENCY
RESPONSE
ENVIRONMENTAL PROTECTION AGENCY
FARBER


U26

ORPHAN CONTAINERS


Region VII - Missouri Flooding 2015 Dashboard
No issues detected
Edit
U.S. EPA Region VII
EPA
Critical Infrastructure
Sensitive Receptors
Weather and Traffic
Social Media
Situational Awareness
Orphaned Container/Spill GeoForm
Recon/Recovery Targets
Midwest Flood Imagery (NOAA)
MO Flood Recon/Recovery Targets Operation View
Connectivity Issues
Bill Spiking
Legend
Targets - Open (High Priority)
Targets - Open (Med. Priority)
Targets - Open (Low Priority)
All Open Targets
65
All Closed Targets
14
Place or Address
Targets
1 of 2
St. Louis
esri

FEMA
PHOTO


花火百


INTERNATIONAL
US DOT 801905

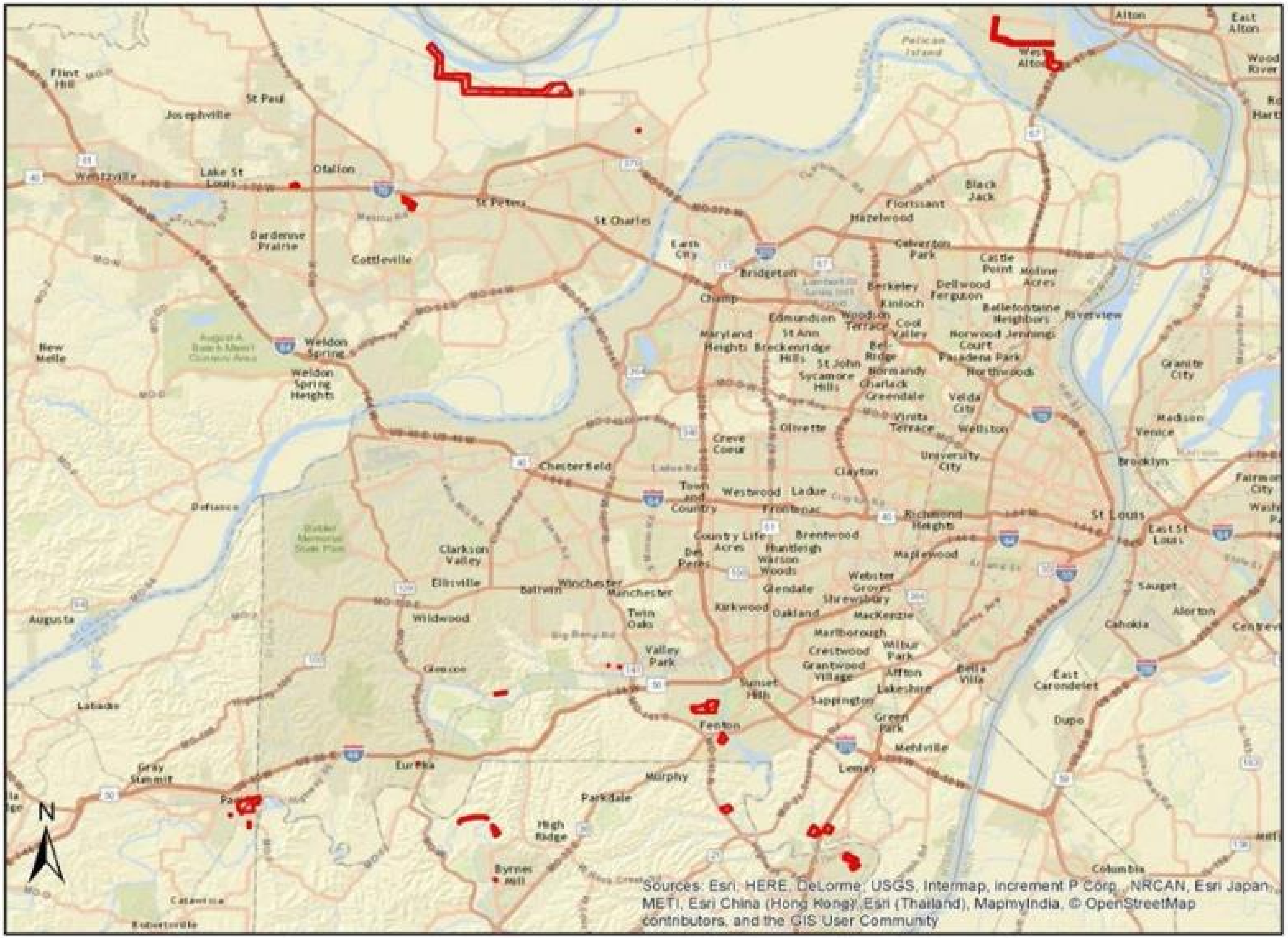

EXIT

Date: 08Jan2016

Debris Removal Operations

Overall View

1:400,000



DEBRIS RESPONSE AREA

JEFFERSON COUNTY
FRANKLIN COUNTY
ST. CHARLES COUNTY
ST LOUIS CITY/COUNTY

0 5 10 20 Miles

Legend

Debris_locations

Missouri National Guard

MIXED DEBRIS / HHW CURBSIDE IN PACIFIC, FRANKLIN COUNTY, MO.


CAT


Bobcat


CAT
SLOW


Bobcat Rents

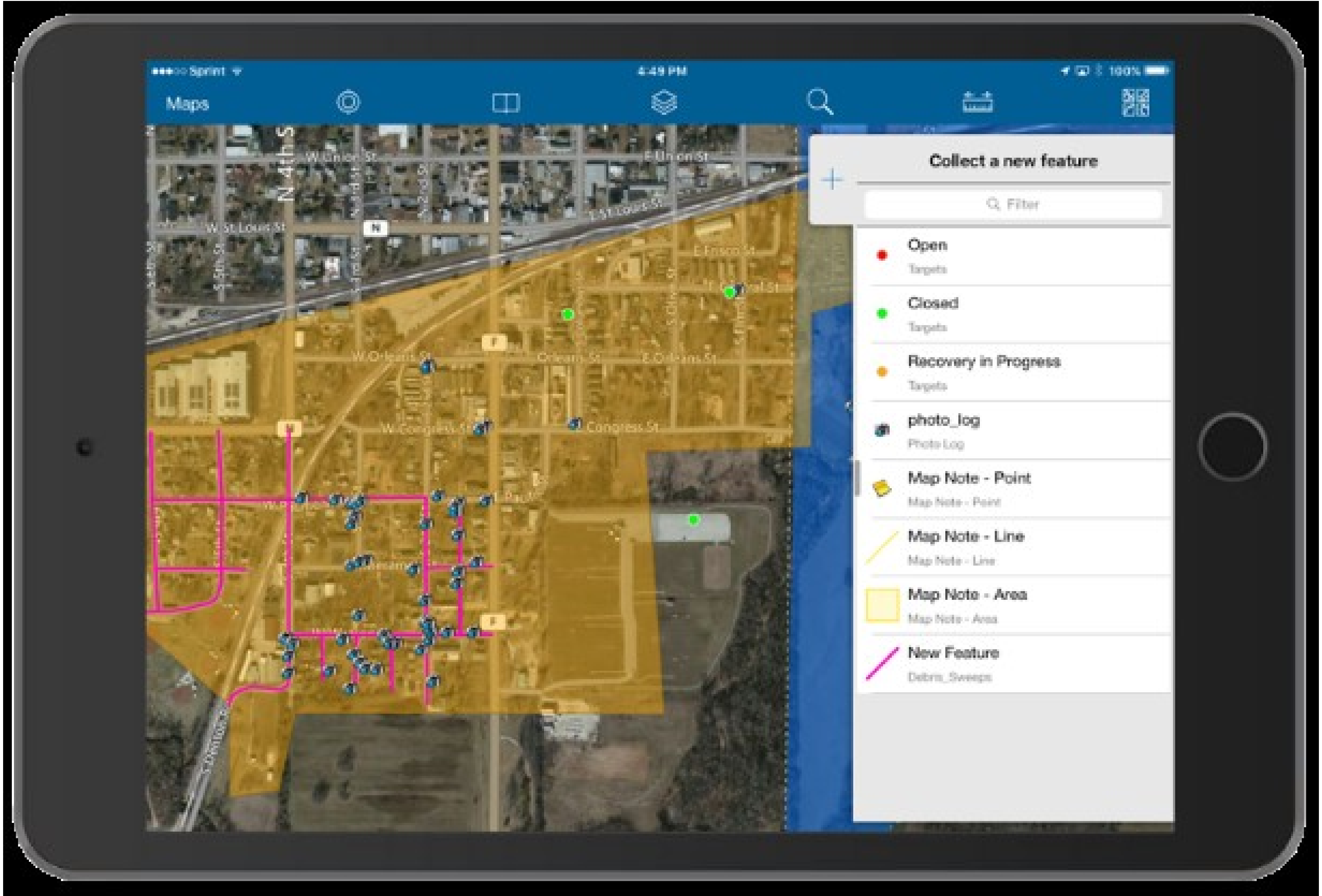

DNR
Environmental
Emergency
Response


AUTO CRANE


MACK


CASE


CAT


Maps
Collect a new feature
Filter
Open
Targets
Closed
Targets
Recovery in Progress
Targets
photo_log
Photo Log
Map Note - Point
Map Note - Point
Map Note - Line
Map Note - Line
Map Note - Area
Map Note - Area
New Feature
Debris_Sweeps


FOX 2
FEMA PHOTO


KEC322
ST. LOUIS
EPA


EPA
FEMA PHOTO


STOP

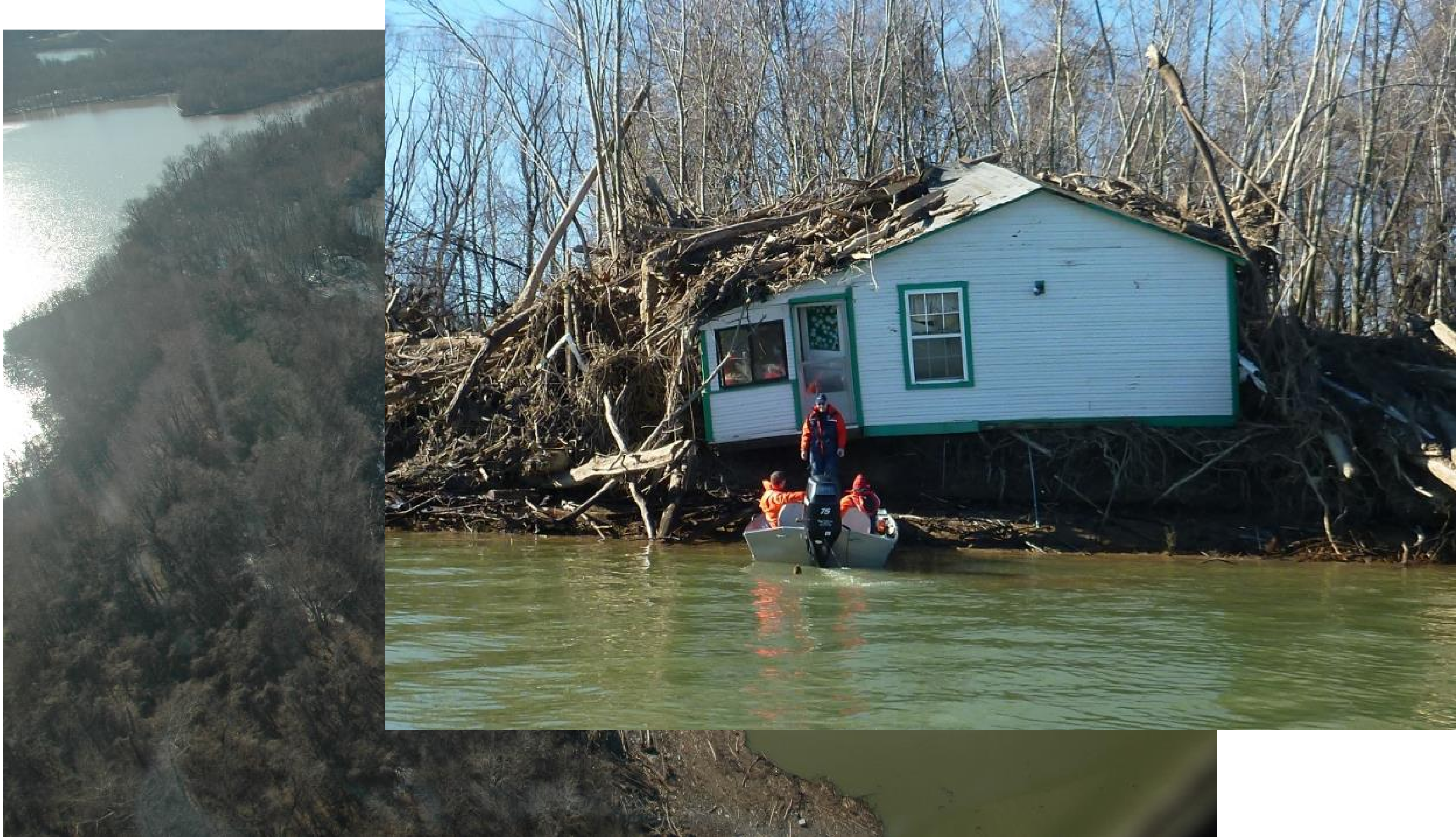

FEMA PHOTO



Jelly Roll Hogan's Place
Hogan Gang


Samsonite


POLICE
N911MD




FEMA PHOTO


OUTLAW
EPA


75

FEMA
PHOTO

FEMA
PHOTO

FEMA
PHOTO

- ESF #10 personnel:
  - 14 Federal On-Scene Coordinators
    - 31 Total EPA Personnel Supported the Operation
    - 1 Region 6 FOSC
  - 15 State On-Scene Coordinators
    - 17 Total MDNR Personnel Supported the Operation
  - 11 START contractors Rotated Through
  - 63 ERRS contractors at peak

- Over 22,000 cubic yards of residential flood debris
  - 8,913 cubic yards debris / sandbags
  - 13,500 cubic yards of vegetative debris
- HHW / Orphan Containers
  - 317 fifty-five gallon drums
  - 20,852 assorted small containers
  - 179 propane tanks
  - 266 other compressed gas tanks
  - 1032 white goods (major appliances like refrigerators and stoves)
  - 403 batteries
  - 117 small engines
  - 6,037 electronic items

Lessons learned and future actions

- First time that mobile collection devices utilized on major incident—highly successful
- Deploy backups for certain positions up front (RRCC, OPS) and integrate staff from other regions earlier in the response.
- First time that EPA was assigned a task usually assigned to Corps of Engineers; will likely be working with FEMA and Corps in planning for future similar activations
- Relatively low political interest meant smoother “incident command;” this may vary tremendously depending on the incident
- Invest in training to fill gaps in various KLP positions, and strengthen RSC.

Questions/comments?

HWCG – Subsea Dispersant Project

Presentation to RRT VI
18 May 2016

Who is HWCG

HWCG is a Not-for-Profit Consortium

- Consisting of 16 owner/member companies
- All Deepwater Operators in the Gulf of Mexico

- *Bennu Oil & Gas, LLC*
- *Cobalt International Energy, L.P.*
- *Deep Gulf Energy, LP*
- *ENI U.S. Operating Co. Inc.*
- *Energy Resource Technology GOM, LLC*
- *EnVen Energy Partners, LLC*
- *LLOG Exploration Company, LLC*
- *Marathon Oil Company*
- *Marubeni Oil & Gas (USA), Inc.*
- *Murphy Exploration & Production Company – USA*
- *Noble Energy, Inc.*
- *Freeport-McMoRan Oil & Gas LLC*
- *Repsol Services Company*
- *Stone Energy Corporation*
- *Walter Oil & Gas Corporation*
- *W&T Offshore, Inc.*

HWCG Ready to Respond

Event Disclaimer

- Events for this drill are **Fabricated!**
- They are used to help drive the drill
- These events were designed to allow for exposure to multiple severe problems at a common time
- Events are to mimic actual possible events to assist in maintaining preparedness to the ER

LLOG / HWCG Drill Scenario

- **2016 HWCG/LLOG Source Control Exercise Scenario**
  - Event Conditions

- At 0545 CST 07 May 2016 the Sevan Louisiana suffered a loss of power resulting in a drift off.
- At the time of the incident the Sevan Louisiana had just completed drilling operations and the well was at TD of 21,020' MD and the drill bit was still on bottom.
- At that time the rig lost power and went "deadship" losing all mechanical and station keeping capability.

- At the time the rig was also in a severe thunderstorm with straight-line winds of 50 knots for 45 minutes. The crew assessed the situation, however the rig was well into the "red zone" prior to activating the emergency disconnect system (EDS). The rig was at a substantial offset when the vessel's crew activated the subsea BOP EDS.

- The EDS worked and the riser and LMRP disconnected from the BOP stack.

  - All personnel responded to General Quarters and are accounted for; non-essential personnel have made preparations for possible evacuation.

  - The rig moved to a safe zone, jumped ROV and inspected the riser and associated subsea equipment. The LMRP is attached to the riser.

Location:

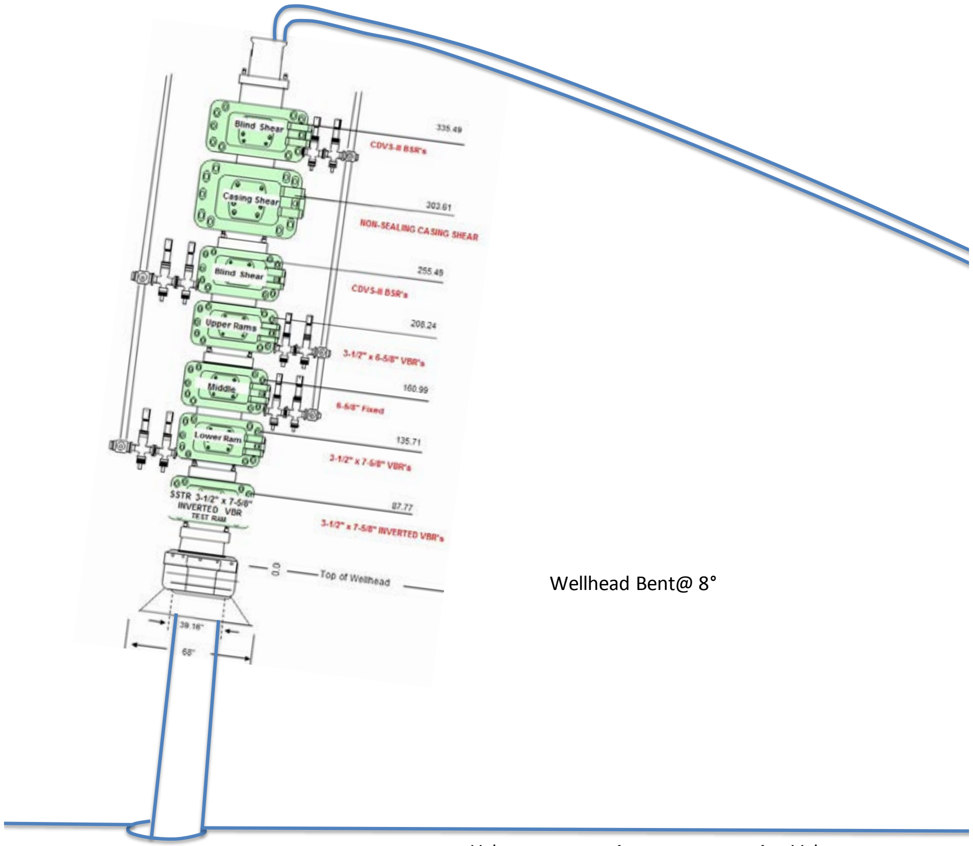
Approx 52 miles to South Pass
Approx 100 miles to Dauphin Island

Subsea Situation

5. LLOG HWCG Drill 2016 Sub-Sea Conditions

5-8-2016 19:45 – ROV Notes Gas & Oil Flow at BOP, no solids.

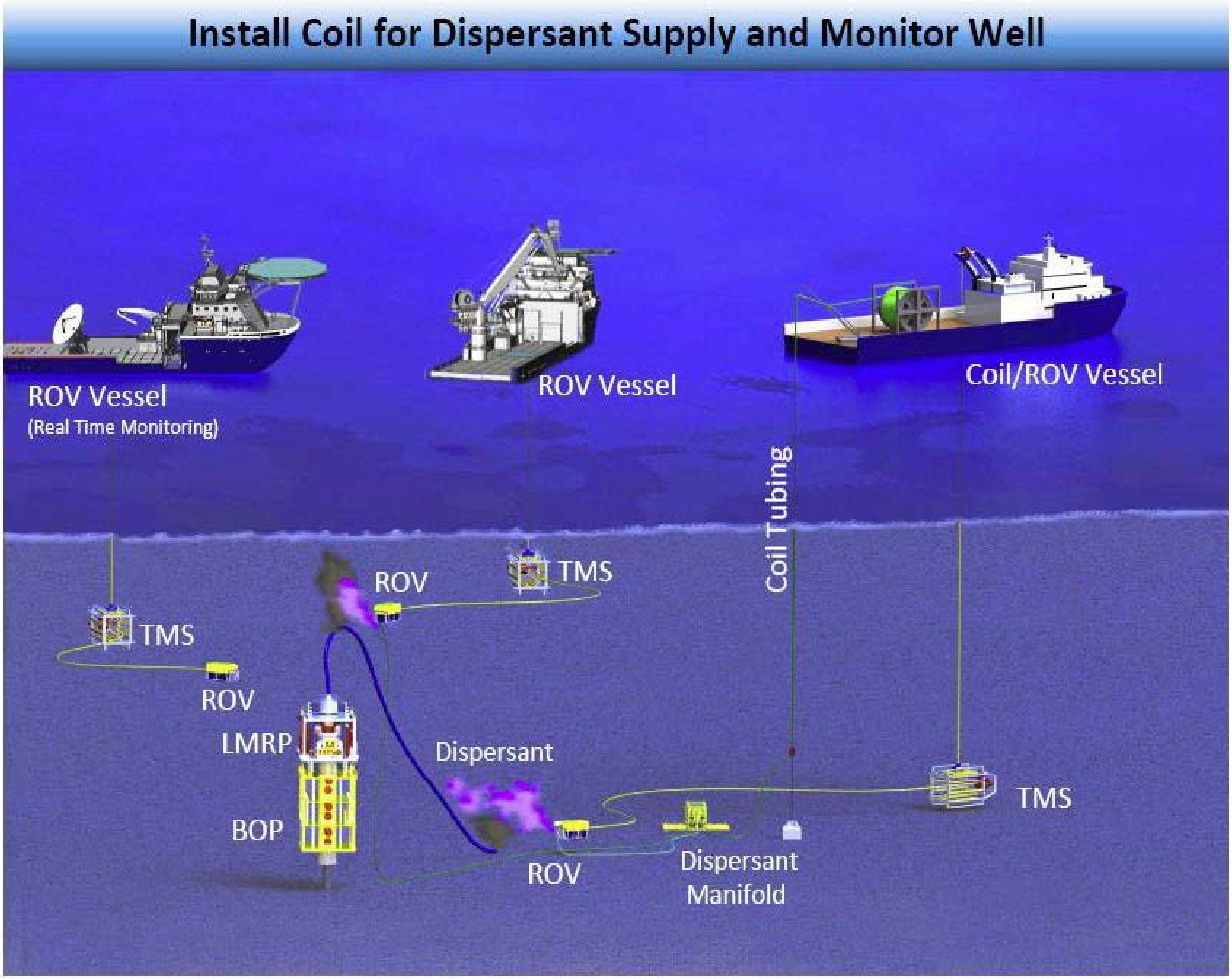
Seafloor - Wellhead



			Hole Diam	Avg Pipe	Ann Vol bbl/Ft	Bbls
13 5/8" Casing	6,242					
		9784	12.375	6.625	0.1062	1038.8
11 7/8" Liner Top	16,026					
		2940	10.711	6.625	0.0688	202.39
11 7/8" Csg Shoe	18,966					
		2054	12.125	7.250	0.0918	188.54
Open Hole TD	21,020					
						1429.7

Field Operations – Subsea Dispersant

This is a picture depicting the overall field operation needed to supply dispersant subsea



Subsea Dispersant Application Outline

Parts of Application Outline

- Signature page for approval by UC
- Comprehensive incident data sheet
- Subsea Dispersant Operations Plan
- Subsea Dispersant Monitoring Plan
- Identification of Resources at Risk
- 3-D modeling information used to predict oil and dispersed oil trajectories
- Subsea Dispersant Injection Minimum Criteria Checklist
- Analysis of potential NEBA and Risk Assessment associated with SSDI

Resources at Risk

NOAA’s preparation of Resources at Risk document April 27, 2016

DRILL- DRILL- DRILL Resources at Risk for the northern Gulf of Mexico (GOM) - 15 pages

DRILL- DRILL- DRILL Resources at Risk for the northern Gulf of Mexico (GOM)

I. Spill Source Information

This report was prepared on 27 April 2016. Information in this report is meant to cover a release of approximately 6,500 barrels per day of Louisiana crude originating on May 10th at 28°40'59.913" N and 88°10'34.391" W. The spilled product is moving north and east, and will impact the shoreline primarily in Mississippi, Alabama, and Florida if it makes landfall.

II. Geographic Region Covered

The resources covered in this report are those expected to be found in the offshore area corresponding to block MC-300, the adjacent continental shelf, and coastal zone extending from lease block MC-300 to the shore from the Chandeleur Islands, LA to Destin, FL.

III. Oil type, behavior and effects to impacted species

Louisiana crude is a light crude that has an API of 37. It has moderate concentrations of toxic compounds and is moderately volatile. Observations during aerial surveys indicate that the crude oil readily emulsifies (both during its 5,000 ft rise to the water surface and by wave action on the sea surface). Thick emulsified oil occurs as large patches (tens of meters in diameter), long streamers, and smaller tarballs. Large areas of sheens are associated with the emulsified oil. The oil could concentrate in convergence zones, in patches of Sargassum (where sea turtles and birds may also concentrate).

Oil that reaches nearshore and coastal areas will mostly be weathered crude oil from the well. These relatively large accumulations of emulsified oil can heavily coat intertidal areas. The emulsified oil could also become mixed with sand, either in the surf zone or after stranding onshore. These oil:sand mixtures are heavier than water and could accumulate as submerged oil mats in nearshore areas off Gulf sand beaches. They can become buried by the movement of offshore bars, be buried within the beaches, and persist for years. The oil can become trapped in and form thick deposits along fringing marsh shorelines. The stability of the emulsions, once stranded on the shoreline and sheltered from wave action, is uncertain. One possibility is that the emulsion could break, releasing liquid oil that could be only moderately weathered (emulsification slows weathering processes such as evaporation and dissolution). The release of liquid oil inside the marsh fringe or on beaches could cause significant additional impacts to benthic, water-column, and water-surface resources in these shallow water habitats. Animals may not avoid the weathered emulsified oil, particularly if it does not provide any indication of hazards (e.g., it might not smell oily, could look like natural debris), and animals could still attempt to feed in the open areas between the patches that would still have some sheen. Further away from the source, tarballs (oil <10 cm in diameter), tar patties (oil >10 cm), and occasional tarmats may strand along the shoreline. These oil deposits could range in texture from soft, emulsified oil to semi-hardened outer layers. The oil may adhere to aquatic vegetation, birds, fur-bearing mammals, and reptiles. Oil coming ashore will be weathered so oil effects are likely to

be a result of coating and smothering of shoreline resources, ingestion of tarballs by sea turtles, and the persistence of oil in sediments.

Background on Potential Effects

The impacts arising from oil spills on aquatic species in open waters likely varies by species and with the rate at which oil partitions and dilutes in the water column, and with the co-occurrence of sensitive life stages and both physically and chemically dispersed oil. Species that may be at increased risk of exposure to chemically dispersed oil are those entrained within and traveling with the water mass containing the chemically dispersed oil (e.g., small species, embryos, larvae, zooplankton), followed by slow-moving species and life stages. Highly mobile species (e.g., adult shrimp, pelagic fish) may be less likely to be exposed to high concentrations of chemically dispersed oil due to dilution and avoidance.

Toxicity Studies

Exposure of aquatic species, and in particular early life stages, to physically and chemically dispersed oil can lead to lethal and non-lethal but ecologically important impacts (Teal and Howarth, 1984; Albers, 1995; NRC, 2005), but the onset of these impacts depends on several factors including oil concentrations and exposure duration. A growing body of literature (e.g., Carls *et al.*, 1999; Heintz *et al.*, 1999; Heintz *et al.*, 2000; Incardona *et al.*, 2004; Incardona *et al.*, 2005; Incardona *et al.*, 2011; Incardona *et al.*, 2013; Mager *et al.*, 2014; Esbaugh *et al.*, 2016) has shown that under controlled laboratory conditions fish embryos exposed for several hours post hatch to low oil concentrations (>1 mg/L oil, dissolved polycyclic aromatic hydrocarbons [PAHs] in the low µg/L range) develop gross abnormalities, with permanent impacts potentially causing reduced survival later in life (Incardona *et al.*, 2013). These impacts have been documented under laboratory conditions on embryos of pelagic species (i.e., yellowfin tuna [*Thunnus albacares*], Southern bluefin tuna [*T. maccoyii*], yellowtail amberjack [*Seriola lalandi*], and mahi mahi [*Coryphaena hippurus*]), some of which occur in the Gulf of Mexico (Incardona *et al.*, 2014; Mager *et al.*, 2014; Esbaugh *et al.*, 2016). However, the impacts arising from oil spills on fish embryos in open waters and their recruitment to the larval stages likely varies with the rate at which oil partitions and dilutes in the water column, as well as with the co-occurrence of fish embryos and the chemically dispersed oil. As a point of reference, a large proportion of water samples (75%) collected during the *Deepwater Horizon* oil had total PAH concentrations <1 µg/L, though water samples in the immediate vicinity of the wellhead had concentrations >1,000 µg/L (Boehm *et al.*, 2016). In contrast to these sensitive life stages, juveniles and adults are generally highly mobile and may only be temporarily exposed to chemically dispersed oil given their ability to move in and out of the water masses containing the entrained oil.

One of the greatest limitations in understanding the potential impacts related to dispersant use in open waters is the lack of data derived using relatively realistic exposure conditions. Even greater uncertainties and data limitations exist on the potential impacts of subsea dispersants. Despite these limitations, toxicity data from controlled laboratory studies could provide

conservative estimates of potential impacts. Toxicity data are commonly reported as lethal or effects median concentrations (LC50 and EC50, respectively[1]). With regards to dispersants alone, data based on spiked exposures[2] show that most data fall within the slightly to practically nontoxic range[3], with most data falling within the practically nontoxic range. Even for sensitive species, most toxicity values for COREXIT 9527 and COREXIT 9500, regardless of exposure conditions, are >20 mg/L, falling within the range of what is considered slightly toxic. Similarly, the reported toxicity of South Louisiana crude oil chemically dispersed with COREXIT 9500 from 96-h (LC50s and EC50s combined) constant static exposure[4] ranges from 4.84 to 18 mg THC/L (n=8 records) (NOAA/ERD, 2015), falling within the moderately to slightly toxic range.

Potential Levels of Concern

Derivation of potential thresholds of concern could be achieved by the use of Species Sensitivity Distributions (SSDs). SSDs are cumulative distributions of toxicity data that allow for comparisons of the relative sensitivities of aquatic species dispersed oil, and they are useful in that they could be used to calculate the 5th percentile Hazard Concentration (HC5), or concentrations assumed to be protective of 95% of all species in the SSD. While HC5 values may not be necessarily protective of all aquatic organisms, and particularly of those known to be most sensitive to oil, their derivation is often conservative enough to a large range of sensitivities. Conservative estimates HC5s for COREXIT 9527 and COREXIT 9500 are 8.38 mg/L and 4.04 mg/L, respectively, falling within the moderately toxic range. However, these concentrations are assumed to be worst case, as exposure concentrations under standard dispersant applications (ASTM, 2010a; ASTM, 2010b) are not expected to remain constant in the water column, and at any given moment are likely below these concentrations. Based on modeled information of toxicity data (96-hr exposures) for South Louisiana crude oil, the conservative HC5 estimate is 0.97 mg THC/L with a 95% confidence interval of 0.63-1.49 mg THC/L (Bejarano and Barron, 2014). These values fall within the upper and lower ends of the highly toxic and the moderately toxic range, respectively. As a point of reference the range of oil concentrations in the chemically dispersed underwater plume range from non-detectable levels to 6,130 mg/L, with a geometric mean of 1.09 µg/L (Boehm *et al.*, 2011). Given that this oil release

[1] The LC50 is the concentration lethal to 50% of the exposed test population, while the EC50 is the concentration that causes an adverse non-lethal effect to 50% of the exposed test population. As a general rule, the smaller the LC50 or EC50 values, the greater the toxicity.

[2] Spiked or spiked flow-through tests are tests that address the dilution that occurs in open waters by reproducing under laboratory conditions rapid changes in concentrations within the water column.

[3] Toxicity LC50 and EC50 categories for aquatic organisms are as follows: Very highly toxic <0.1 mg/L, Highly toxic 0.1-1 mg/L, Moderately toxic >1-10 mg/L, Slightly toxic >10-100 mg/L and Practically nontoxic >100 mg/L Source: http://www2.epa.gov/pesticide-science-and-assessing-pesticide-risks/technical-overview-ecological-risk-assessment-0

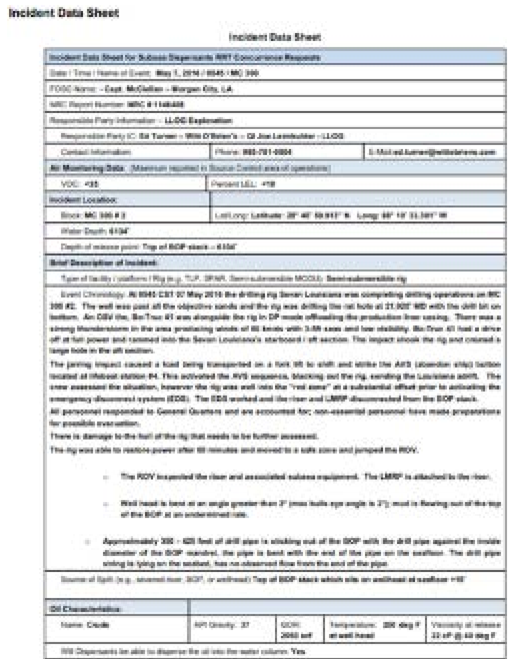
[4] Exposures that do not account for the natural dilution that occurs in open waters.

HWCG
Ready to Respond

Application for Subsea Dispersant Use

Package

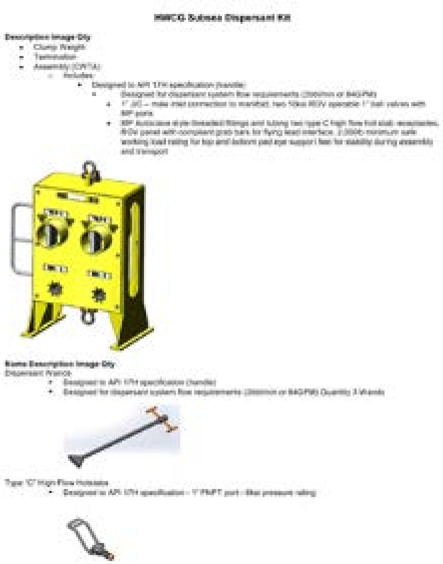
- Subsea Application
- Subsea Monitoring
  - Monitoring personnel & Equipment
- Dispersant Equipment
  - Subsea injection
  - Coil Tubing
  - Vessels


Incident Data Sheet

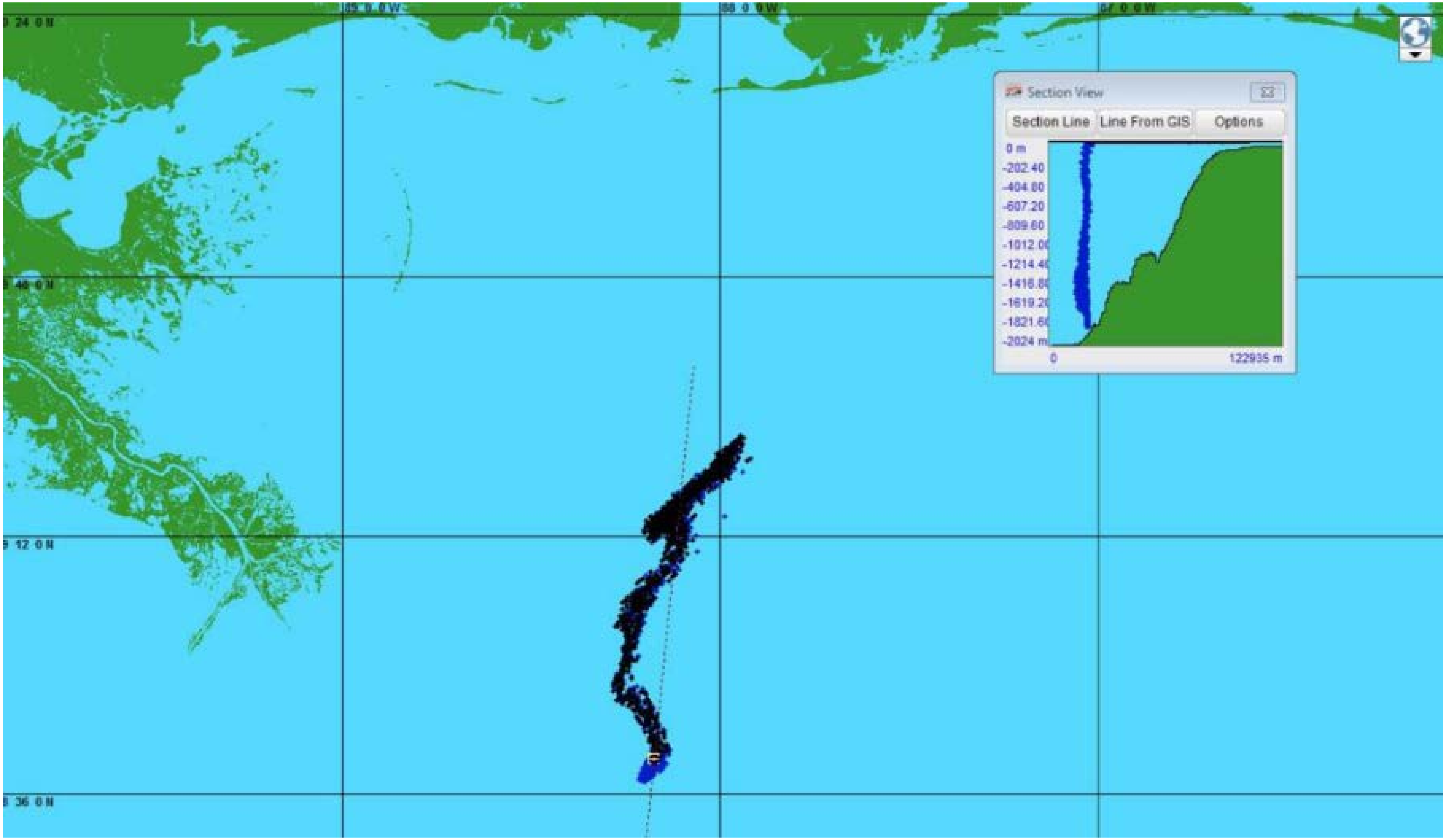
Incident Data Sheet


Subsea Dispersant Monitoring Plan (SDMP)
Proposed for the Mississippi Canyon Block 300 (MC300) Drill

HWCG/LLOG
28 April 2016


HWCG Subsea Dispersant Kit

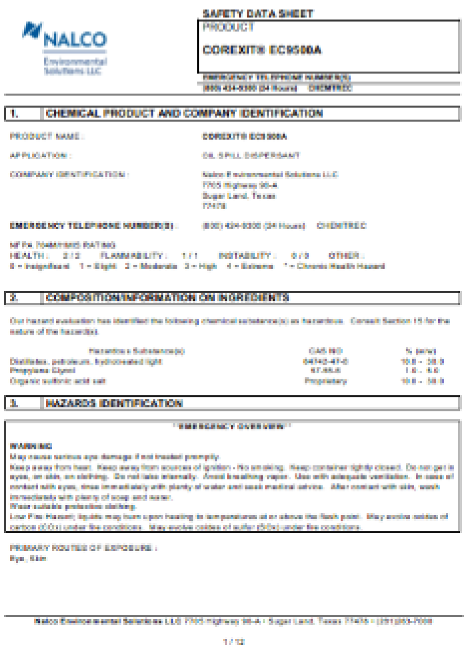
Spill Trajectory



Dispersant

Dispersant

- Corexit
- Finasol
- Accell

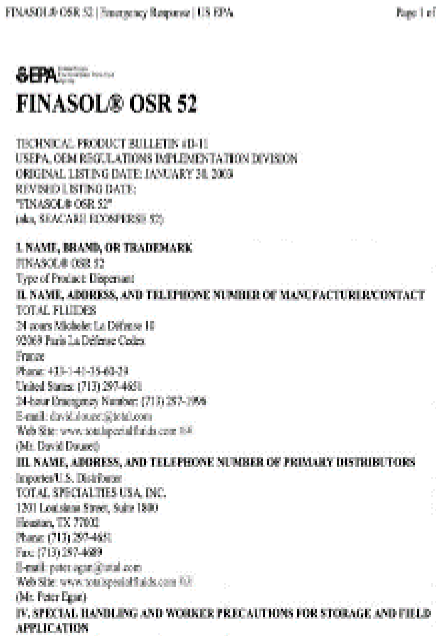

SAFETY DATA SHEET
PRODUCT
COREXIT® EC9500A

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : COREXIT® EC9500A
APPLICATION : OIL SPILL DISPERSANT
COMPANY IDENTIFICATION : Nalco Environmental Solutions LLC, 7705 Highway 90-A, Sugar Land, Texas 77478
EMERGENCY TELEPHONE NUMBER(S) : (800) 424-9300 (24 Hours) CHEMTREC

2. COMPOSITION/INFORMATION ON INGREDIENTS

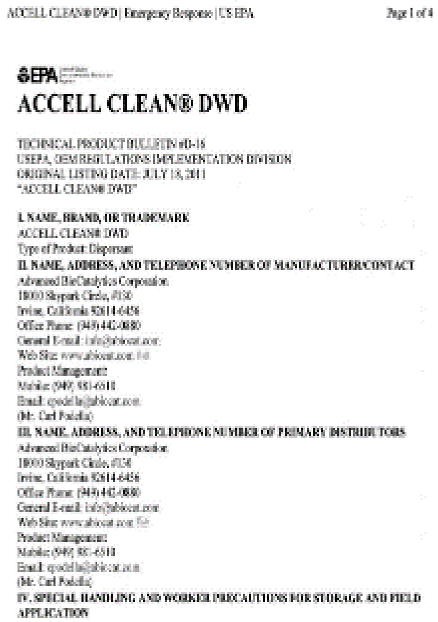
3. HAZARDS IDENTIFICATION


FINASOL® OSR 52 | Emergency Response | US EPA

FINASOL® OSR 52

TECHNICAL PRODUCT BULLETIN #D-11
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JANUARY 31, 2003
REVISED LISTING DATE:
"FINASOL® OSR 52"
(aka, SEACARE ECOSPERSE 52)

I. NAME, BRAND, OR TRADEMARK
FINASOL® OSR 52
Type of Product: Dispersant
II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
TOTAL FLUIDES
24 cours Michelet La Défense 10
92069 Paris La Défense Cedex
France
III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Importer/U.S. Distributor
TOTAL SPECIALTIES USA, INC.
1201 Louisiana Street, Suite 1800
Houston, TX 77002
IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION


ACCELL CLEAN® DWD | Emergency Response | US EPA

ACCELL CLEAN® DWD

TECHNICAL PRODUCT BULLETIN #D-16
USEPA, OEM REGULATIONS IMPLEMENTATION DIVISION
ORIGINAL LISTING DATE: JULY 18, 2011
"ACCELL CLEAN® DWD"

I. NAME, BRAND, OR TRADEMARK
ACCELL CLEAN® DWD
Type of Product: Dispersant
II. NAME, ADDRESS, AND TELEPHONE NUMBER OF MANUFACTURER/CONTACT
Advanced BioCatalytics Corporation
18010 Skypark Circle, #130
Irvine, California 92614-6456
III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS
Advanced BioCatalytics Corporation
IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION

A request was made for the use of all three

That request was taken into consideration by the RRT that concurred with their use

Ready to Respond

Dispersant - Cascade

Cascading of dispersant to a dock facility for offshore transit

Indicative Sequencing Plan for US Deployment of Global Dispersant Stockpile to New Orleans USA

Destination = New Orleans Airport

Elapsed Deployment Time (Hours)

Sequence	Type	m3	US Gal	Location	Comment		12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192
1	Corexit EC9500A	200	53,000	OSRL Base Ft Lauderdale USA	Air Freight			100	100													
1	Corexit EC9500A	300	79,500	OSRL Base Ft Lauderdale USA	Road Freight				180			120										
2	Corexit EC9500A	500	132,500	OSRL Base Brazil	Air Freight				100	100		100	100									
3	Finasol 52	500	132,500	OSRL Base Southampton UK (Finasol)	Air Freight				100	200		100	100									
4	Finasol 52	1,500	397,500	Supplier Warehouse - Europe	Air Freight				100	200		100	100	200		300	100	100		300		
5	Finasol 52	350	92,750	OSRL Base Singapore (Finasol)	Air Freight									300								
5	Finasol 52	800	212,000	OSRL Base South Africa	Air Freight									300				300				300
		4,150	1,099,750	Number of IBCs		No of IBCs	0	100	580	500	0	420	300	800	0	300	100	400	0	300	0	300
				Amount of Dispersant in US Gallons		US Gallons	-	26,500	153,700	132,500	-	111,300	79,500	212,000	-	79,500	26,500	106,000	-	79,500	-	79,500
				Cummulative Dispersant in US Gallons		Cumm Gals	-	26,500	180,200	312,700	312,700	424,000	503,500	715,500	715,500	795,000	821,500	927,500	927,500	1,007,000	1,007,000	1,086,500

Assumptions

Note 1: *This Plan is presented as indicative. Actual shipment methods and timing are the responsibility of the Subscriber and driven by their sequencing needs.*

Note 2: *The GDS Sequencing Plan is dependent on the number of aircraft available during this mobilization event.*

This simulation utilized 12x B747 aircraft in the first 96 hours. Past the 96 hour mark, considerable efficiency may be gained by retasking contracted aircraft for longer duration re-supply mission profile.

Sequence	Type	m3	US Gal	Location	Comment	Assumptions
1	Corexit EC9500A	200	53,000	OSRL Base Ft Lauderdale USA	Air Freight	2 x B747, 50 IBC per load, 4 loads
1	Corexit EC9500A	300	79,500	OSRL Base Ft Lauderdale USA	Road Freight	10 Trucks, 18 IBC per truck, two trips each truck
2	Corexit EC9500A	500	132,500	OSRL Base Brazil	Air Freight	4 x B747, 50 IBC per load, 10 loads
3	Finasol 52	500	132,500	OSRL Base Southampton UK	Air Freight	6 x B747, 50 IBC per load, 10 loads
4	Finasol 52	1,500	397,500	Supplier Warehouse - Europe	Air Freight	6 x B747, 50 IBC per load, 30 loads
5	Finasol 52	350	92,750	OSRL Base Singapore	Air Freight	6 x B757, 50 IBC per load, 6 loads
5	Finasol 52	800	212,000	OSRL Base South Africa	Air Freight	4 x B747, 50 IBC per load, 16 loads
6	Dasic Slickgone NS	500	132,500	OSRL Base Southampton UK	Air Freight	TBD
7	Dasic Slickgone NS	350	92,750	OSRL Base Singapore	Air Freight	TBD
		5,000	1,325,000			

30-Day Advanced Biocatalytics Cascading Plan for Accell Clean® DWD

Day	Plant	Amount	Cummulative	Transport Time to Port Forchon, LA	Transport Time to Fourchon, LA	Amt Delivered	Date/time Delivered	Cummulative
May 9	Chattanooga, TN	15,000		10.5 hrs		15,000	10-May	15000
9-May	Dallas, TX	15,000			11 hrs	15,000	10-May	30,000
10-May	Chattanooga, TN	15,000		10.5 hrs		15,000	11-May	45,000
10-May	Dallas, TX	15,000			11 hrs	15,000	11-May	60,000
11-May	Chattanooga, TN	15,000		10.5 hrs		15,000	12-May	75,000
11-May	Dallas, TX	15,000			11 hrs	15,000	12-May	90,000
12-May	Chattanooga, TN	15,000		10.5 hrs		15,000	13-May	105,000
12-May	Dallas, TX	15,000			11 hrs	15,000	13-May	120,000
13-May	Chattanooga, TN	15,000		10.5 hrs		15,000	14-May	135,000
13-May	Dallas, TX	15,000			11 hrs	15,000	14-May	150,000
16								

HWCG
Ready to Respond

Incident Command Call to RRT-6

May 10, 2016

Incident Command Call to RRT-6 requesting use of Subsea Dispersant for drill event.

Phone followed a pre submittal of application on April 29th.

Members of the RRT present agreed to the use of subsea dispersant as a viable solution.

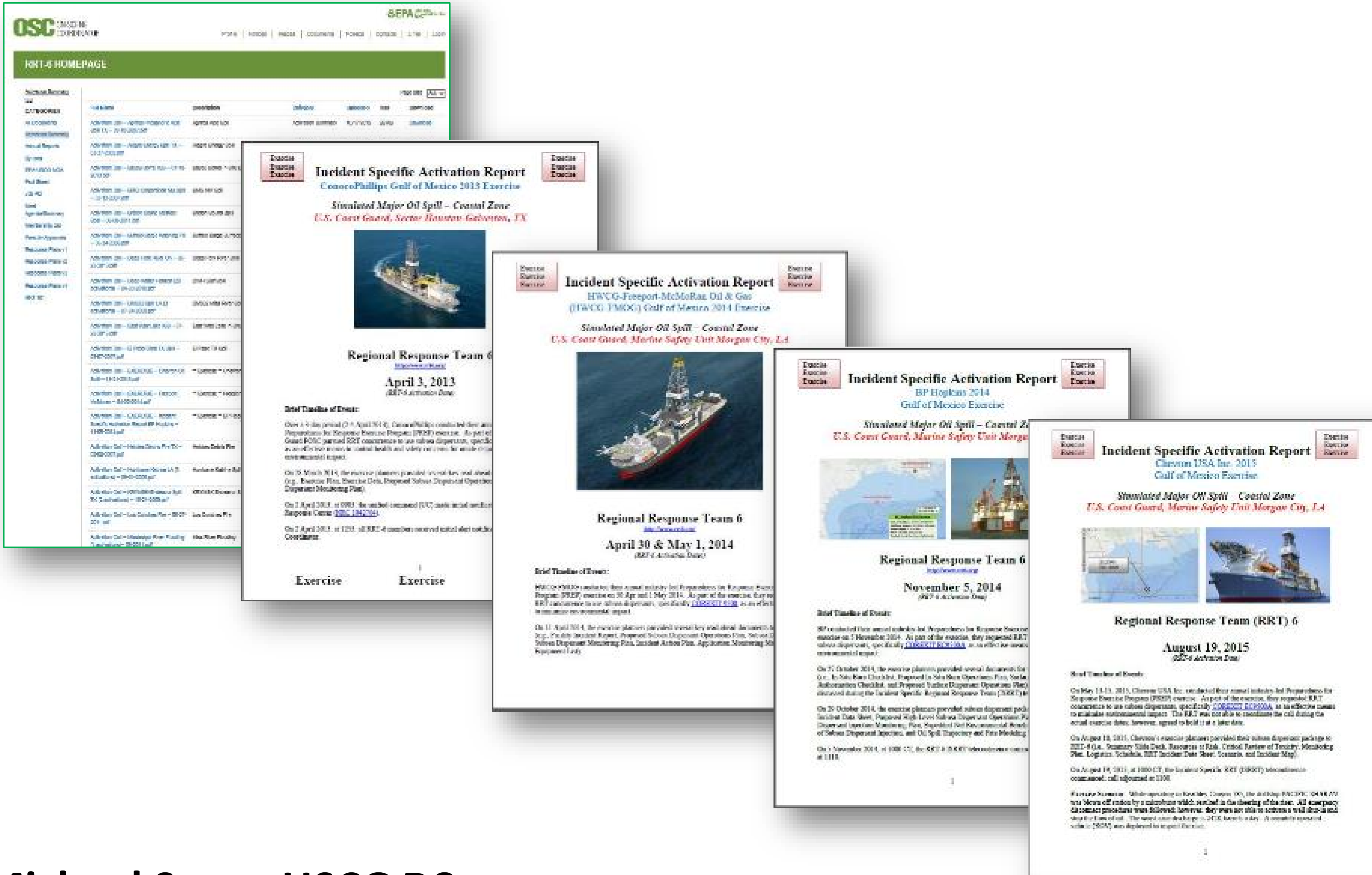
HWCG Dispersant Team

- Owen Francis (LLOG Dispersant Lead)
- Roger Scheuermann (HWCG Lead)
- Jodi Harney (CSA Inc.)
- Robert Simmons (ES^2)
- Gina Coelho (Spill Response Science)
- Jim Staves (Environmental & Emergency Management Consultant)

Special thanks to Page Doelling with NOAA for her "Resources at Risk" efforts that helped guide the team

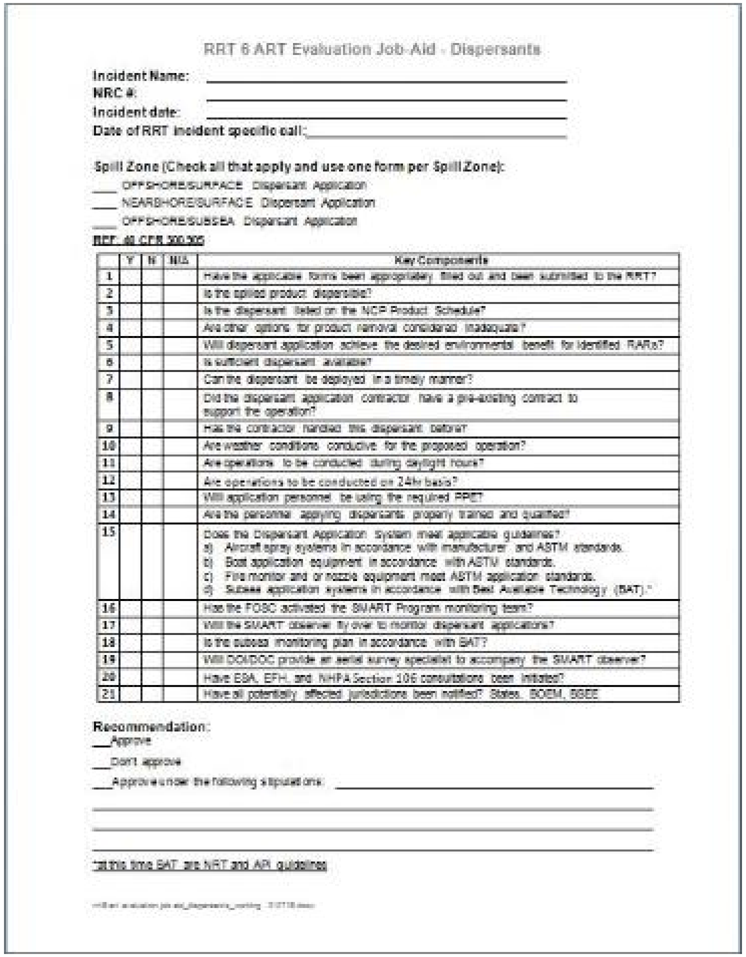
…A comprehensive well containment response model – made up of equipment, people, procedures and processes – Ready to be activated immediately in the event of a deepwater well control incident…

Exercise History



Michael Sams, USCG D8

RRT-6 ART – Subsea Dispersant Checklist


RRT 6 ART Evaluation Job-Aid - Dispersants

Incident Name: ____________________
NRC #: ____________________
Incident date: ____________________
Date of RRT incident specific call: ____________________

Spill Zone (Check all that apply and use one form per Spill Zone):
___ OFFSHORE/SURFACE Dispersant Application
___ NEARSHORE/SURFACE Dispersant Application
___ OFFSHORE/SUBSEA Dispersant Application

REF: 40 CFR 300.305

	Y	N	N/A	Key Components
1				Have the applicable forms been appropriately filled out and been submitted to the RRT?
2				Is the spilled product dispersible?
3				Is the dispersant listed on the NCP Product Schedule?
4				Are other options for product removal considered inadequate?
5				Will dispersant application achieve the desired environmental benefit for identified RARs?
6				Is sufficient dispersant available?
7				Can the dispersant be deployed in a timely manner?
8				Did the dispersant application contractor have a pre-existing contract to support the operation?
9				Has the contractor handled this dispersant before?
10				Are weather conditions conducive for the proposed operation?
11				Are operations to be conducted during daylight hours?
12				Are operations to be conducted on 24hr basis?
13				Will application personnel be using the required PPE?
14				Are the personnel applying dispersants properly trained and qualified?
15				Does the Dispersant Application System meet applicable guidelines? a) Aircraft spray systems in accordance with manufacturer and ASTM standards. b) Boat application equipment in accordance with ASTM standards. c) Fire monitor and or nozzle equipment meet ASTM application standards. d) Subsea application systems in accordance with Best Available Technology (BAT).*
16				Has the FOSC activated the SMART Program monitoring team?
17				Will the SMART observer fly over to monitor dispersant applications?
18				Is the subsea monitoring plan in accordance with BAT?
19				Will DOI/DOC provide an aerial survey specialist to accompany the SMART observer?
20				Have ESA, EFH, and NHPA Section 106 consultations been initiated?
21				Have all potentially affected jurisdictions been notified? States, BOEM, BSEE

Recommendation:
___Approve
___Don't approve
___Approve under the following stipulations: ____________________

*at this time BAT are NRT and API guidelines

ISRRT Telcon - Sample Agenda Topics

1. Welcome & roll call (Sams)
2. Purpose (Sams)
3. Situation brief (RP rep)
4. Discussion (All)
5. Consultation with natural resource trustee reps (DOC-NOAA; DOI-USFWS)
6. Federal/State concerns (EPA, USCG, LA, & TX)
7. Concurrence to use subsea dispersants (EPA & States)
8. Identify issues/concerns – Action Items (RRT-6 participants & RP)
9. Adjourn

Michael Sams, USCG D8

Subsea Dispersant Read-Ahead

- Submit package to USCG Coordinator and Co-Chair at least one-week prior to ISRRT Telcon
- Coordinator sends out invite; package attached.

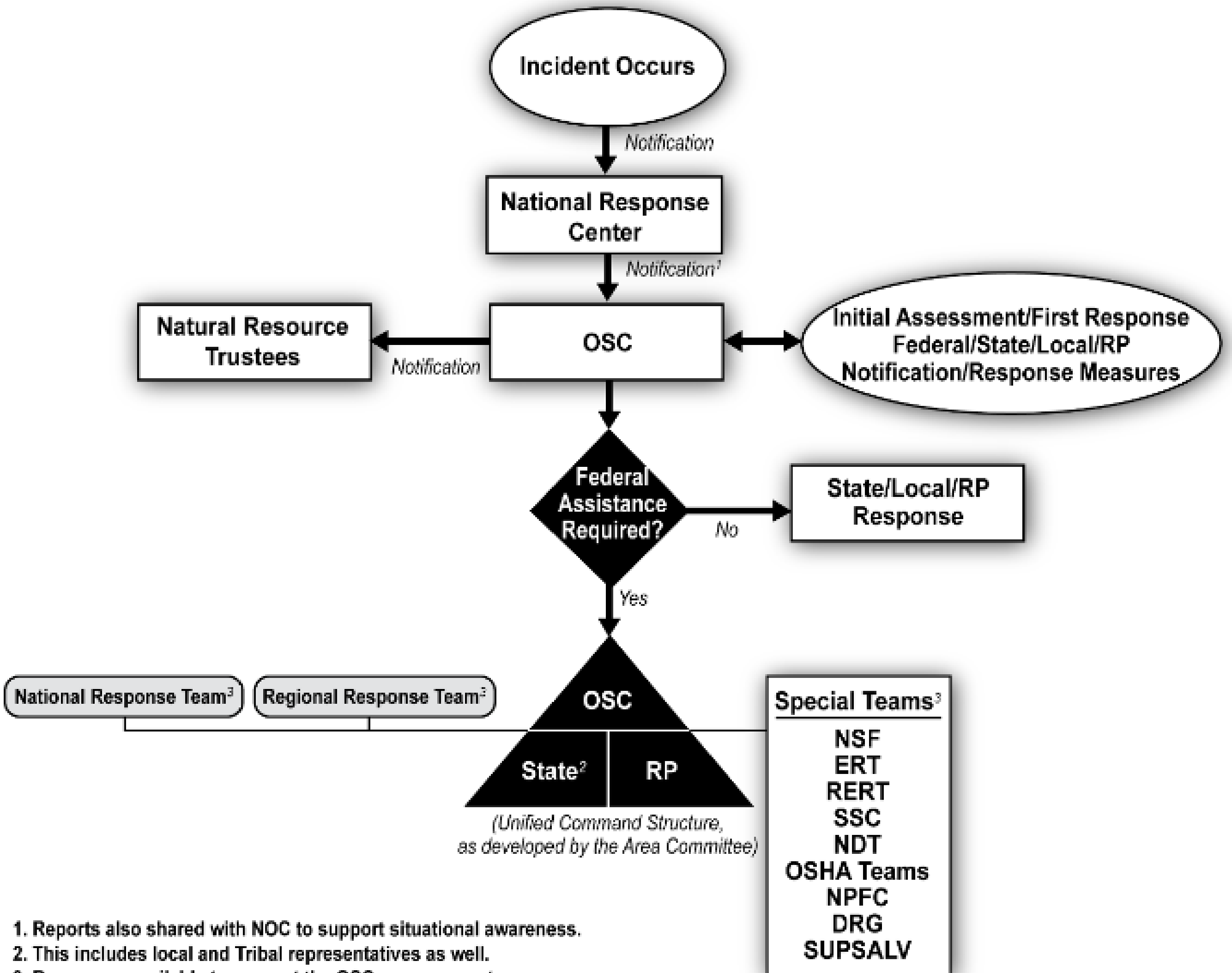
Michael Sams, USCG D8

Region 6 Release / Discharge Notification System And Procedures

What Prompted Review

- 08/05/2015 – Gold King Mine Spill
- 09/04/2015 – Memo from Stanislaus to RA's
- 01/08/2016 – Memo from NRT to RRT's
- Asking for review of notification procedures and conduct exercise of procedures

National Response System (NRS) Notification & Decision Process



1. Reports also shared with NOC to support situational awareness.
2. This includes local and Tribal representatives as well.
3. Resources available to support the OSC upon request.

How that works in Region 6

Release / discharge occurs in Region 6

↓

Notification to NRC

↓

Notification to Region 6 Phone Duty Officer

↓

Assess incident (follow-up)

↓

Notifications if EPA response

Under NCP:

- For hazardous substance release:
  - NRC shall promptly notify OSC
  - OSC shall notify Governor, or designee, of state affected by release.

Under the NCP:

- For an oil discharge:
  - NRC shall promptly notify OSC
  - OSC shall ensure notification of state agency of any state which is, or may reasonably be expected to be, affected by discharge
  - OSC shall proceed, as outlined in RCP and ACP

NRC Notifications:

- Example for a sewage release in Longview, TX on Monday:

- CENTERS FOR DISEASE CONTROL
- DHS TEXAS FUSION CENTER
- DOT CRISIS MANAGEMENT CENTER
- U.S. EPA VI (MAIN OFFICE) -- MR RUHL
- LA DEPT OF ENV QUAL
- LA GOV OFFICE HS AND EMERGENCY PREP
- NATIONAL INFRASTRUCTURE COORD CTR
- NOAA
- OSHA (DALLAS OFFICE)
- LA STATE POLICE (MAIN OFFICE)
- TCEQ (MAIN OFFICE)
- TCEQ (REGION 5)
- DEPT OF ENERGY
- TEXAS STATE OPERATIONS CENTER (COMMAND CENTER)
- USCG DISTRICT 8 (PLANNING)

NRC Notifications:

- Barge allision on Mississippi River in January:
- CENTERS FOR DISEASE CONTROL
- DHS NOC (NOC)
- USCG INVESTIGATIVE SERVICE HQ (WFO)
- DOT CRISIS MANAGEMENT CENTER (MAIN OFFICE)
- EPA OEM (MAIN OFFICE)
- U.S. EPA IV (MAIN OFFICE)
- U.S. EPA IV (EPA RRT4)
- FEMA REGION 4 (WATCH UNIT)
- USCG NATIONAL COMMAND
- INFO ANALYSIS AND INFRA PROTECTION
- LA DEPT OF ENV QUAL (MAIN OFFICE)
- LA GOV OFFICE HS AND EMERGENCY PREP
- MEMPHIS POLICE DEPT (COMMAND CENTER)
- MS ANALYSIS AND INFORMATION CENTER
- NATIONAL INFRASTRUCTURE COORD CTR
- NOAA
- HOMELAND SEC COORDINATION CENTER
- DOI FOR REGION 4 (MAIN OFFICE)
- USCG SECTOR LOWER MISSISSIPPI RIVER
- SHELBY SHERIFF'S OFFICE
- LA STATE POLICE (MAIN OFFICE)
- MS EMERGENCY MANAGEMENT AGENCY
- MSU BATON ROUGE (MAIN OFFICE)
- DEPT OF ENERGY
- U.S. NAVY SUPSALV (OIL SPILL RESPONSE)
- USCG DISTRICT 8 (MAIN OFFICE)

Under Regional Contingency Plan (RCP):

- During specific incident, lead state agency shall take following actions as appropriate:
  - Notify downstream water users (municipal, industrial, and agricultural) of all discharges and releases that may threaten them

Under Regional Contingency Plan (RCP):

- During specific incident, lead state agency shall take following actions as appropriate:
  - Notify and coordinate with other state and local agencies, including state trustees for natural resources
  - During RCP review, all states agreed to language

RRT Agencies

- State of Arkansas
  - Arkansas Department of Emergency Management
  - Arkansas Department of Environmental Quality
  - Arkansas Department of Health
- State of Louisiana
  - Louisiana Department of Environmental Quality
  - Louisiana Governor's Off. of Homeland Security and Emergency Preparedness
  - Louisiana LSUHSC, Dept of Emergency Medicine
  - Louisiana Oil Spill Coordinators Office
  - Louisiana Poison Control
  - Louisiana State Police
- State of New Mexico
  - New Mexico Environment Department
  - New Mexico Health Department
  - New Mexico Office of Homeland Security & Emergency Management
- State of Oklahoma
  - Oklahoma Department of Environmental Quality
  - Oklahoma Department of Emergency Management
  - Oklahoma State Department of Health
- State of Texas
  - Texas Commission of Environmental Quality
  - Texas Department of Public Safety / GDEM
  - Texas Department of State Health Services
  - Texas General Land Office -- Oil Spill Prevention & Response
  - Texas Railroad Commission

- U.S. Department of Agriculture / Forest Service
- U.S. Department of Commerce / NOAA
- U.S. Department of Defense
  - Navy Region Southeast
  - U.S. Army DCE
  - USACE
- U.S. Department of Energy
- U.S. Department of Health & Human Services
  - ATSDR
- U.S. Department of Homeland Security
  - Critical Infrastructure
  - FEMA
- U.S. DHS / USCG 8th District
- U.S. Department of Justice
- U.S. Department of Labor / OSHA
- U.S. Department of State
- U.S. Department of the Interior
- U.S. Department of Transportation
- U.S. Environmental Protection Agency
- U.S. General Services Administration
- U.S. Nuclear Regulatory Commission

Under Inland Area Contingency Plan (ACP):

- For spills and releases that could potentially affect another Region, Region 6 will notify potentially affected Region(s) via their 24 hour phone line.

- Downstream region will make additional internal notifications, including their regional management and elected officials.

Under Inland Area Contingency Plan (ACP):

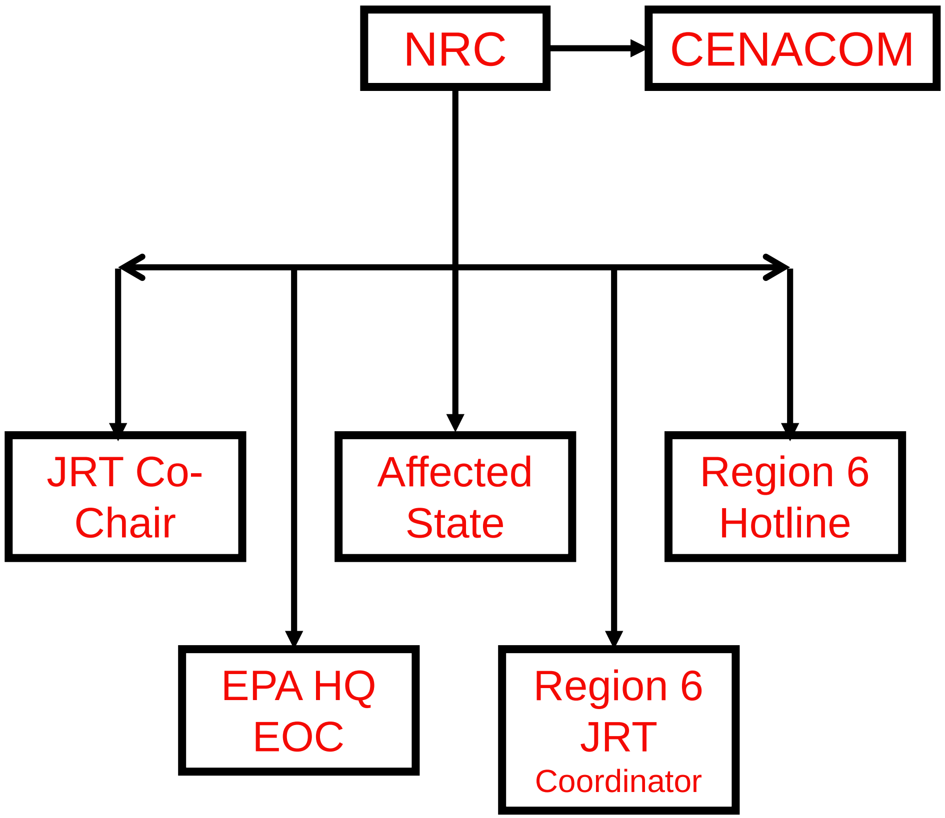
- OSC shall also work with state in which release or spill occurred to ensure appropriate downstream notifications are made to water systems, municipalities, counties, parishes, tribes, or other States which may be impacted by incident.

NCP and ACP also require OSC:

- Make prompt notification to trustees and other managers of affected natural resources
- Advise appropriate state, tribal, and local officials on scene of response actions
- Fully inform and coordinate closely with RRT during response
- Keep public informed of response actions

Joint Contingency Plan (JCP) Notification Process

- Any release affecting the Inland Border Area reported immediately to CENACOM or NRC, which in turn is to notify its counterpart
- CENACOM will notify all agencies within Mexico, including the State emergency management agency
- NRC will notify EPA Region 6 Coordinator, JRT Co-chair, EPA HQ EOC, and Regional 24-phone duty officer
- OSC ensures all appropriate notifications are performed
- Each Sister City Plan has procedures in place for local community to notify counterpart if release could affect across border.



EPA Response Procedures

- If EPA is responding to event:
  - Verbally notify Branch management
  - Verbally notify State, tribe, locals of response
  - Send out Response Notify notification
    - If other State or Region is affected, will be noted on the response notify email
  - Establish webpage on EPAOSC.net to provide information

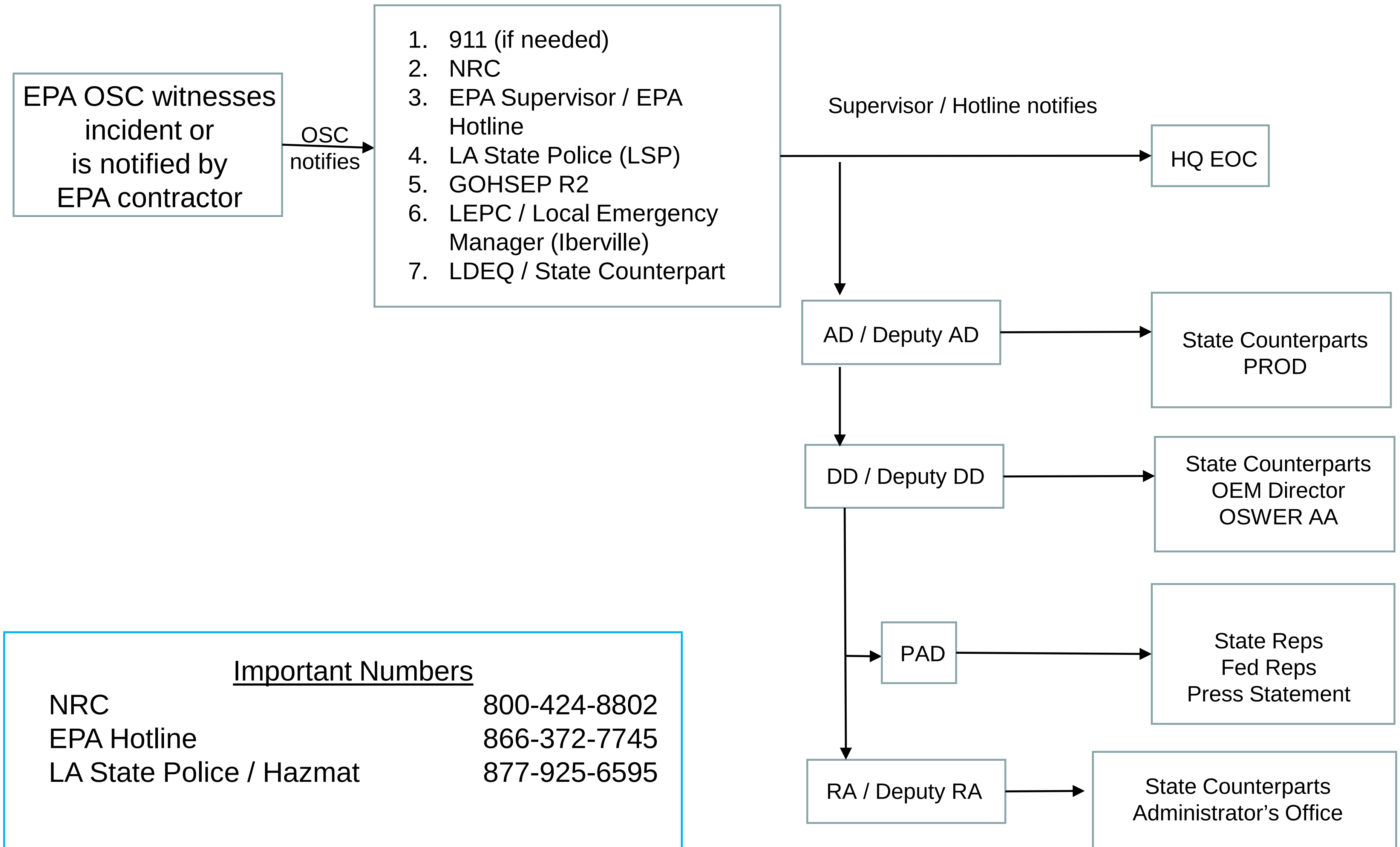
If Release Occurs at EPA-managed site

OSC responsible for site will notify:

1. 911 (if needed)
2. NRC
3. EPA Supervisor / EPA Hotline
4. LEPC / Emergency Management
5. State Hotline / State Agency counterpart
6. Response Notify (OSC or PDO)

Notification list is developed by OSC for each site, and copy of all site plans is maintained in REOC

Example: Bama Fuel Corp -- Event/Incident Notification Plan



<u>Important Numbers</u>

NRC	800-424-8802
EPA Hotline	866-372-7745
LA State Police / Hazmat	877-925-6595

RRT Agency Notification Exercise

- Notification exercise to all RRT member agencies at least annually
- Last exercise -- October 28, 2015
- Successfully contacted agency representative for all State/Federal agencies within 15 minutes
- Will conduct exercise before May RRT meeting

State Procedures

- February 22, 2016: requested five State RRT agencies (Environmental and Emergency Management agencies) to provide information on notification procedures during an incident, including downstream notifications

- Received responses back from four of the states (Arkansas, Oklahoma, New Mexico, and Texas).

State Procedures

- States responded similarly
- EOC would be notified of incident, who would notify all other State agencies, other states, tribes, as well as appropriate federal agencies
- Each State agency would make internal notifications
- EOC would notify county/parish/community emergency management agencies within each jurisdiction potentially affected by incident
- If incident could affect drinking water intakes or supplies downstream, state water program would notify those systems

Call Down Notification Exercise

- Tuesday, March 22, 2016
- 15 entities notified
- Confirming contact information

- EPA Headquarters EOC
- Regional EOC's
- State Police
- State Environmental Departments
- Spill Hotlines
- EPA Safety Officers
- Contract Project Officers
- EPA External Affairs

Notification Exercise Lessons Learned

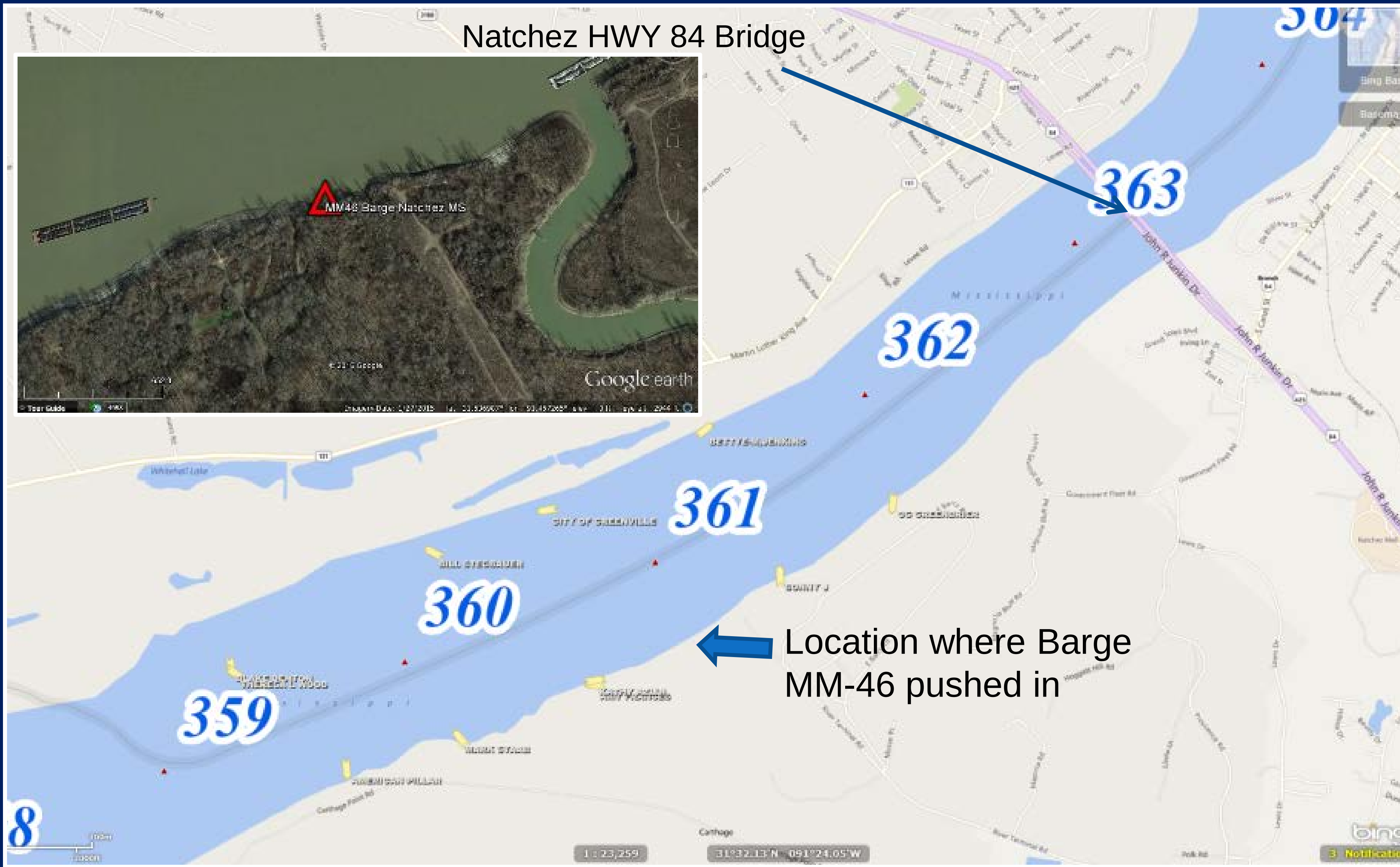
- Almost all contacts were accurate and readily available
- Region 4 Hotline could not be reached due to technical difficulties
- One entity changed number since last verification exercise
- Updated contact information accordingly

Barge MM 46 Response
Natchez, MS
Lower Mississippi River Mile Marker 363

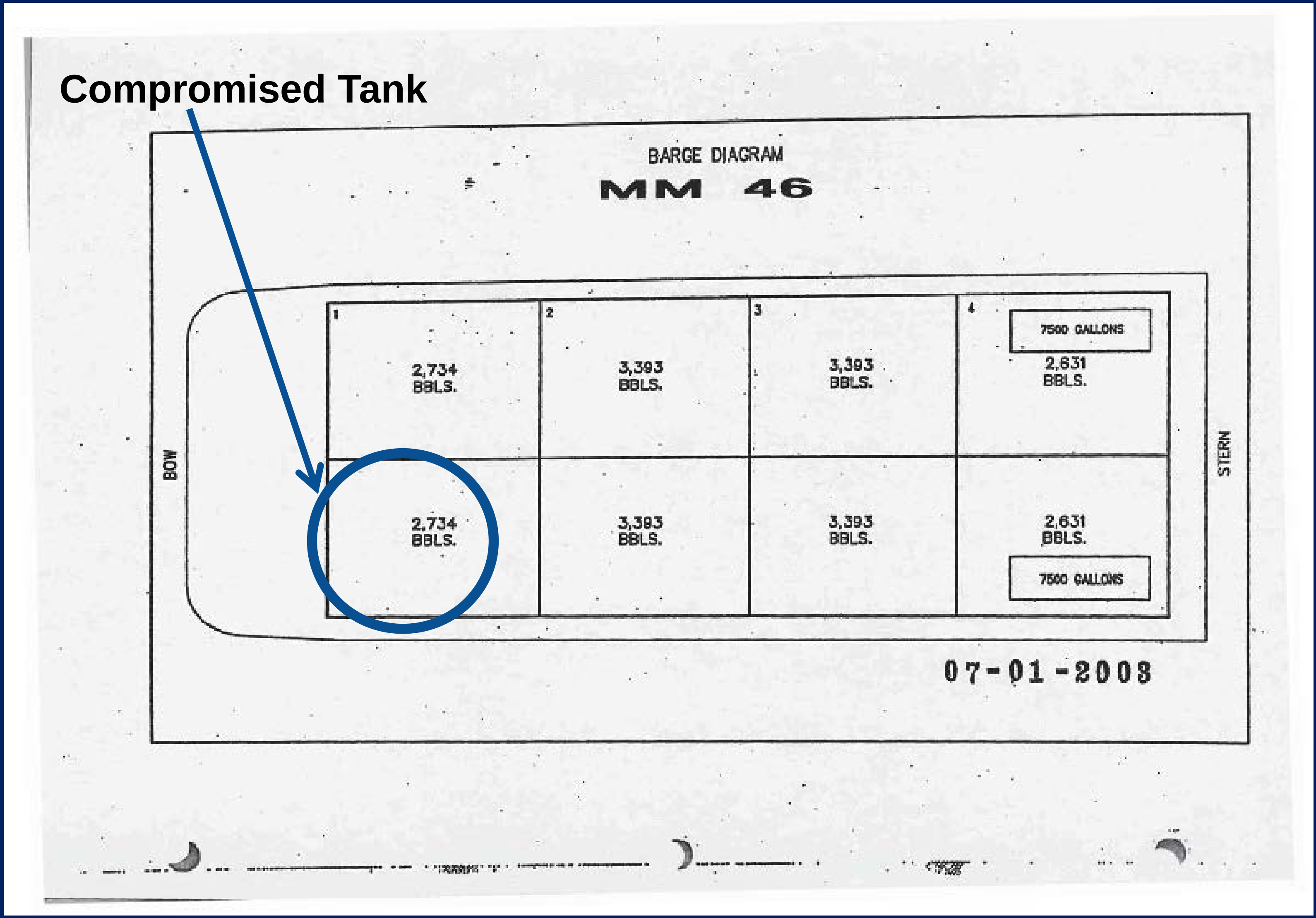
Barge MM 46 Response, Natchez, MS

RRT Activation:	None
Type of Product & Amount spilled:	Catalytic Cracked Clarified Oil (CCFB) Pends Final Investigation : ~ 4,127 gallons
Cause of Spill:	UTV AMY FRANCES struck Natchez Highway 84 Bridge, #1 Port tank of lead port Barge MM 46 damaged
Date of Spill:	21 January 2016
Responsible Party:	Magnolia Marine Transport (MMT)
Agencies Involved:	MS DEQ, LA DEQ, NOAA, NWS, USACE, USFWS, MS SHPO, US EPA (R4 & R6)
Key Operational Activities:	Recovery of spilled oil Ongoing SCAT Barge lightering Transit of barge for final repairs
Major Lessons Learned:	River conditions affected ability to locate spilled CCFB; Use of USACE Side Scan Sonar equipment Consultation with SHPO & USFWS
Other:	USCG IMAT and GST assisted

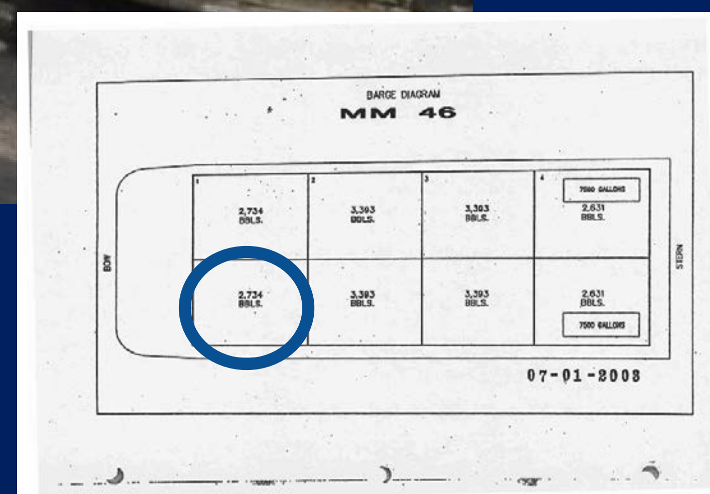
Incident Location



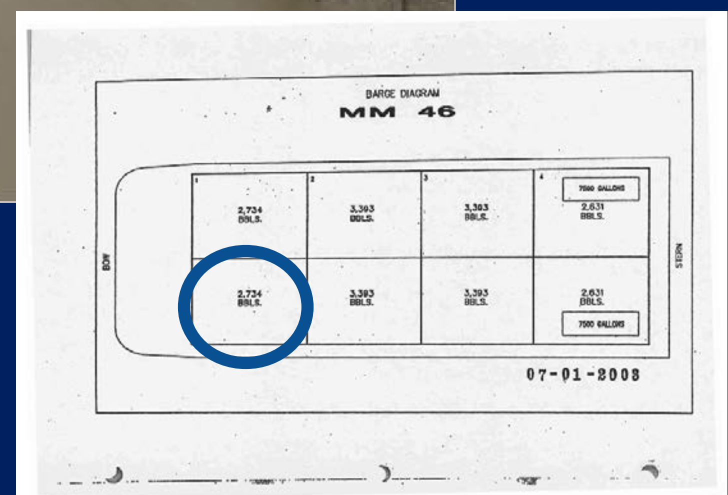
Barge MM 46 Diagram

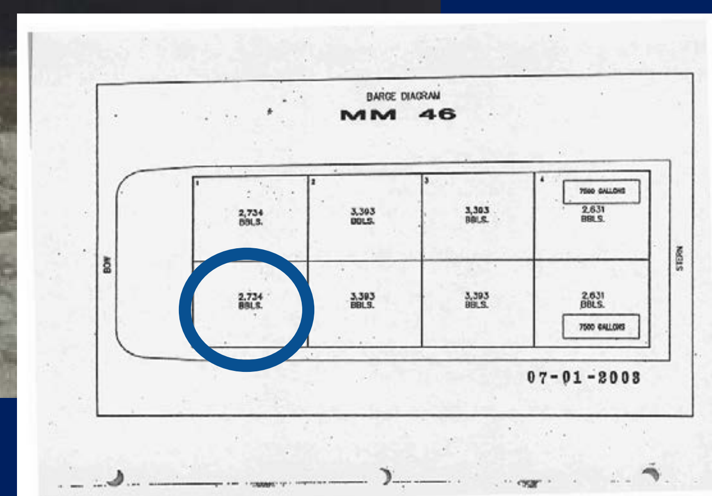


View: from starboard bow to port bow

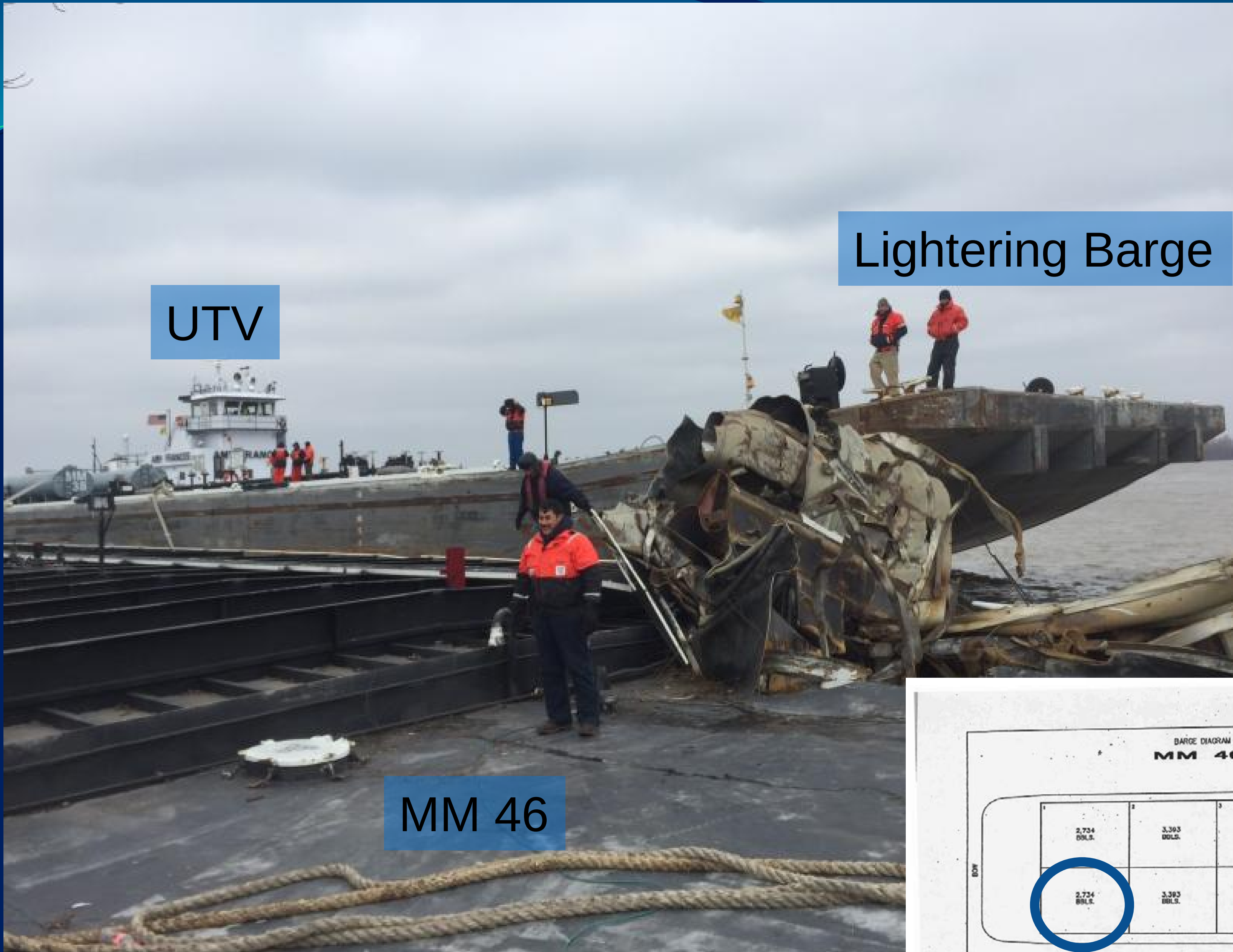


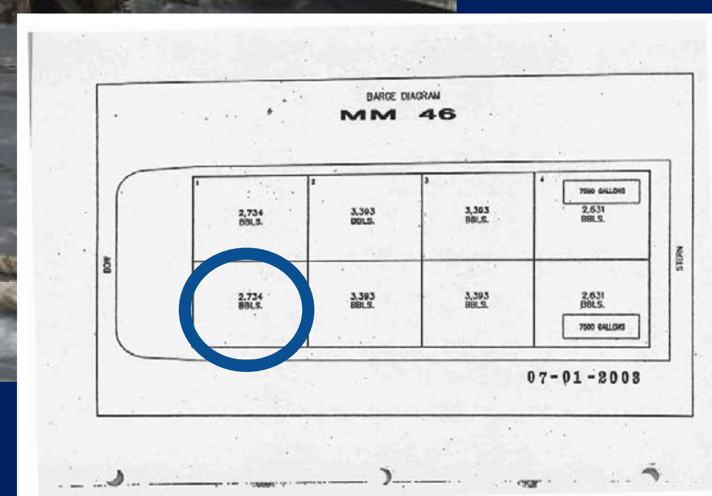
View: Overflight from stern to bow





View: from small boat to port bow





View: from starboard bow to port bow

Operations

Response Resources:	200' Feet Containment Boom
Response Equipment:	05 OSRO Vessels

"Tailgate" Test shows product likely to sink

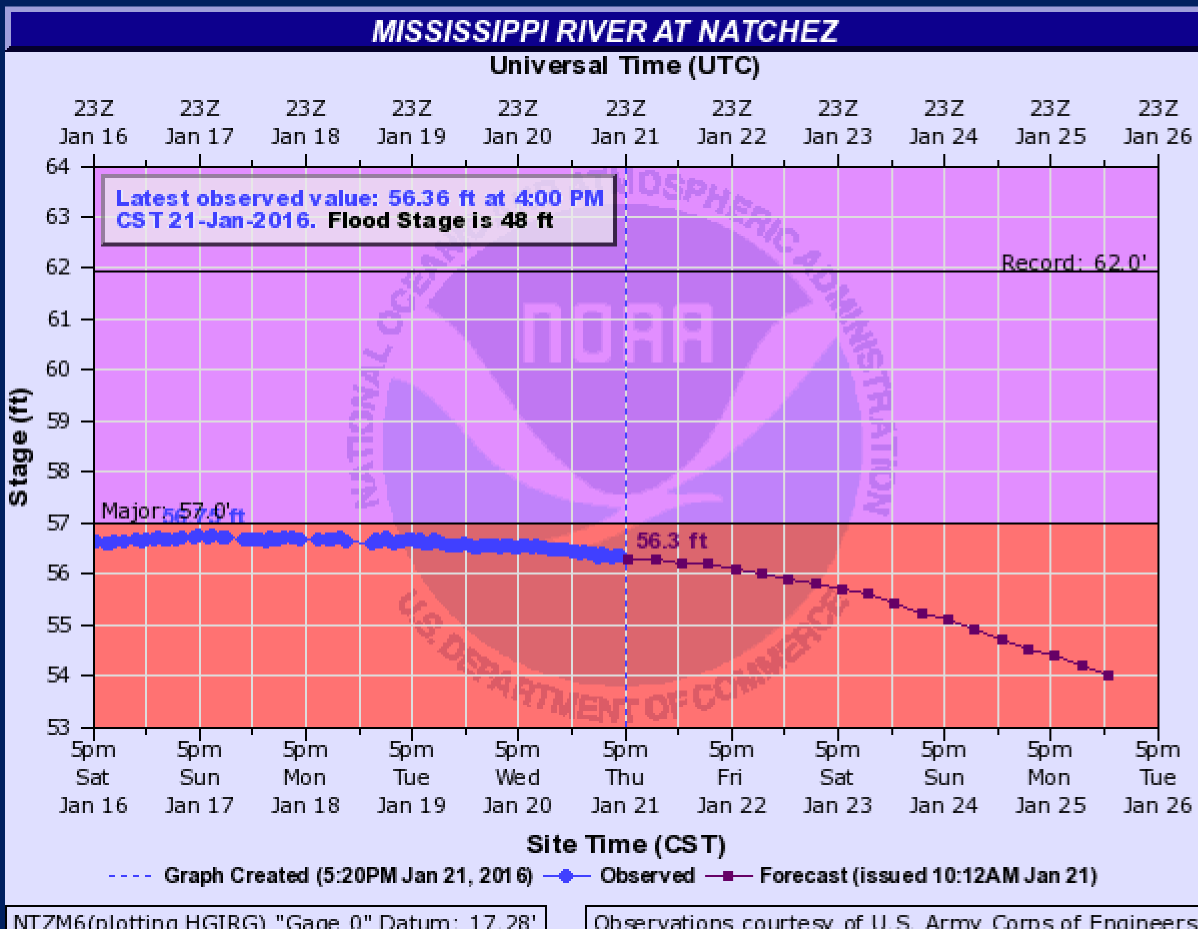
Lessons Learned:

River Conditions & Use of USACE Survey Equipment

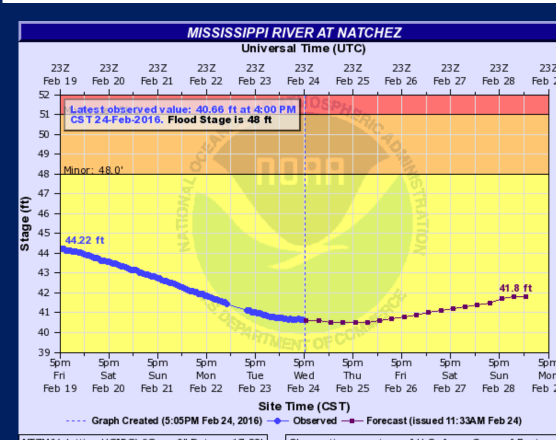
- River conditions affected ability to locate spilled CCFB
  - -Different than APEX 3508 slurry oil spill near Paducah, KY
- Capabilities of USACE Side Scan Sonar equipment
- Consultation with SHPO & USFWS

River Info – 21 Jan 2016

- Discharge near Natchez: 1.77 million cfs
- Based on cross-sectional area of river this represents an AVERAGE velocity of 4.6 knots
- Mid channel currents are likely stronger, on the order of 6 kts



24 Feb
remains above normal



USACE Survey Info

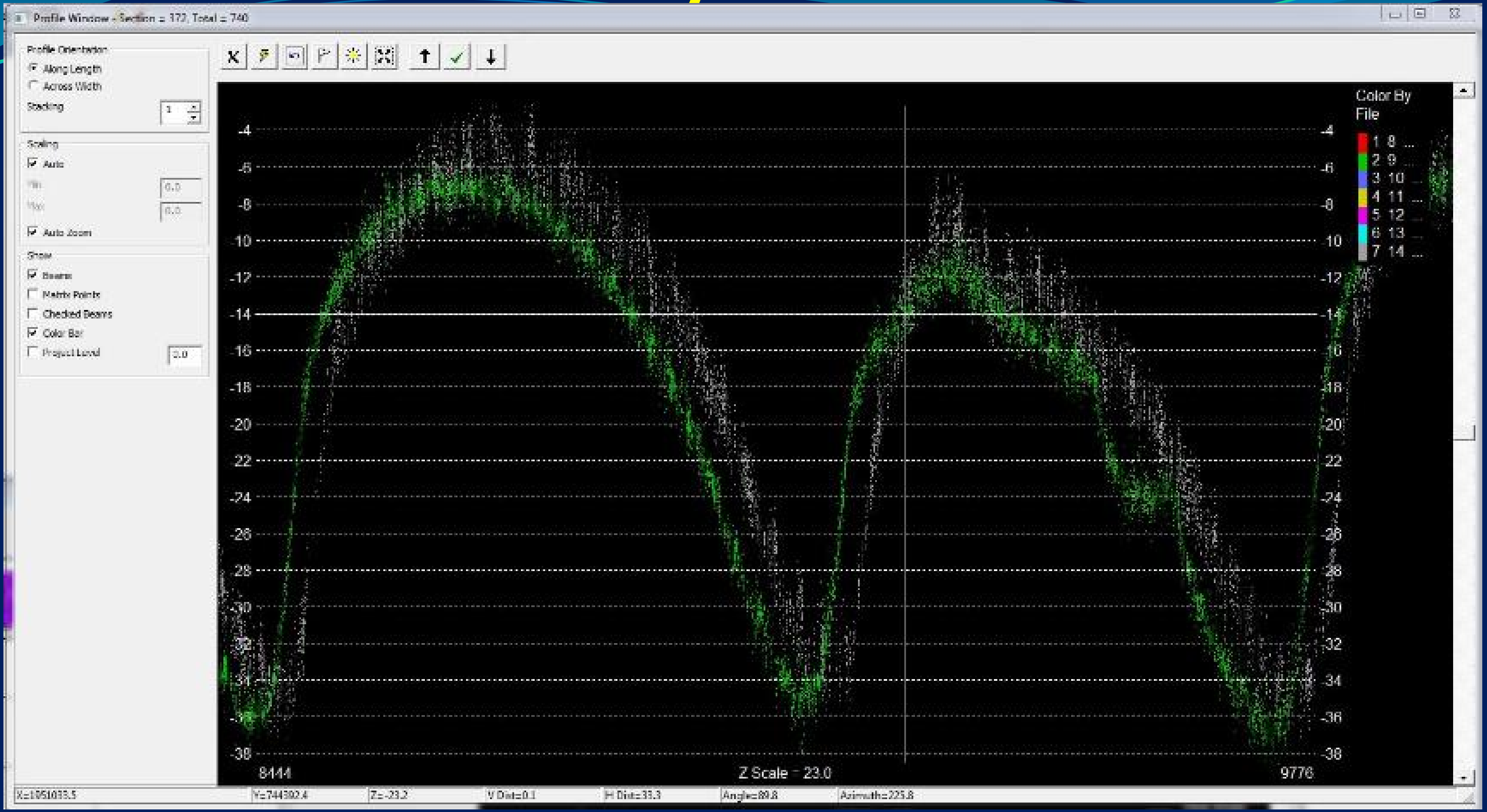
•Coastal Hydraulic Laboratory (CHL) from US Army Engineer Research and Development Center (ERDC)

•25’ workboat:

-Geoswath 250 kHZ interferometric sonar

-600 kHz RD Instruments Acoustic Doppler Current Profiler (ADCP)

USACE Survey -River Bottom

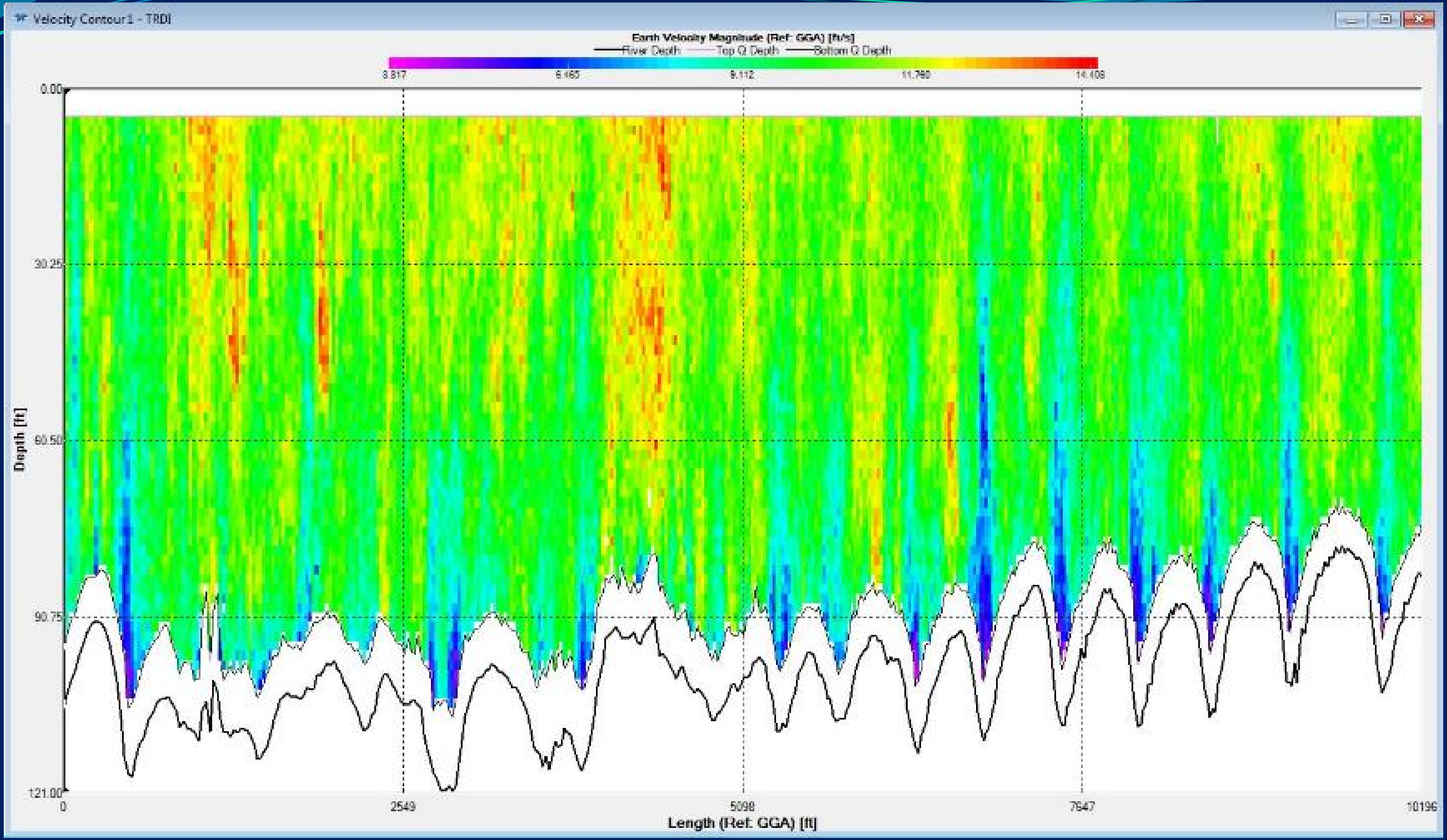


•The gray line is a longitudinal profile from the multi-beam starting near the Natchez bridge

•The green line started near the bridge 2 hours later. The sand waves are moving from right to left, 30 feet tall and 600 feet long

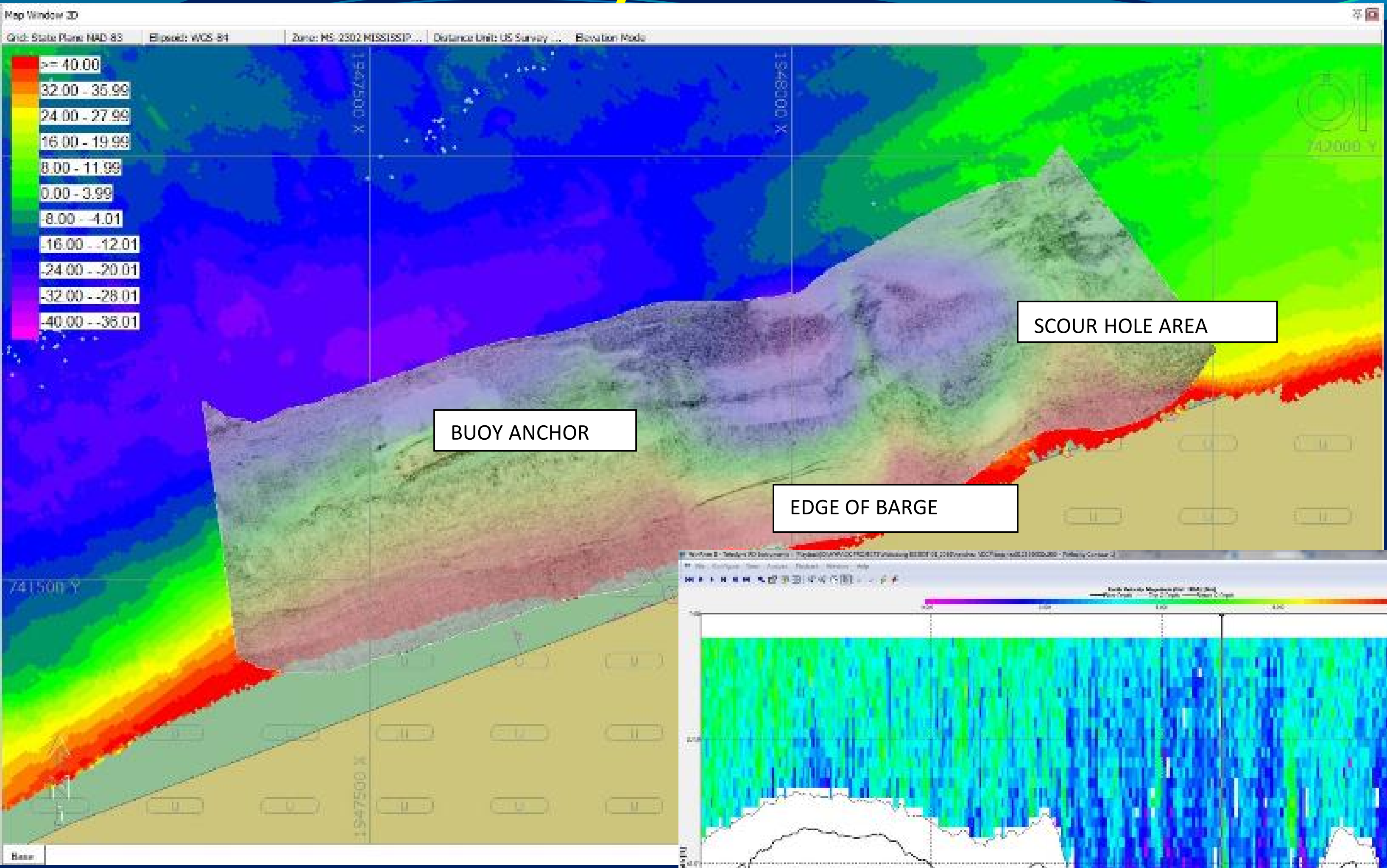
•The downstream face of the sand waves moved about 30 feet in 2 hours

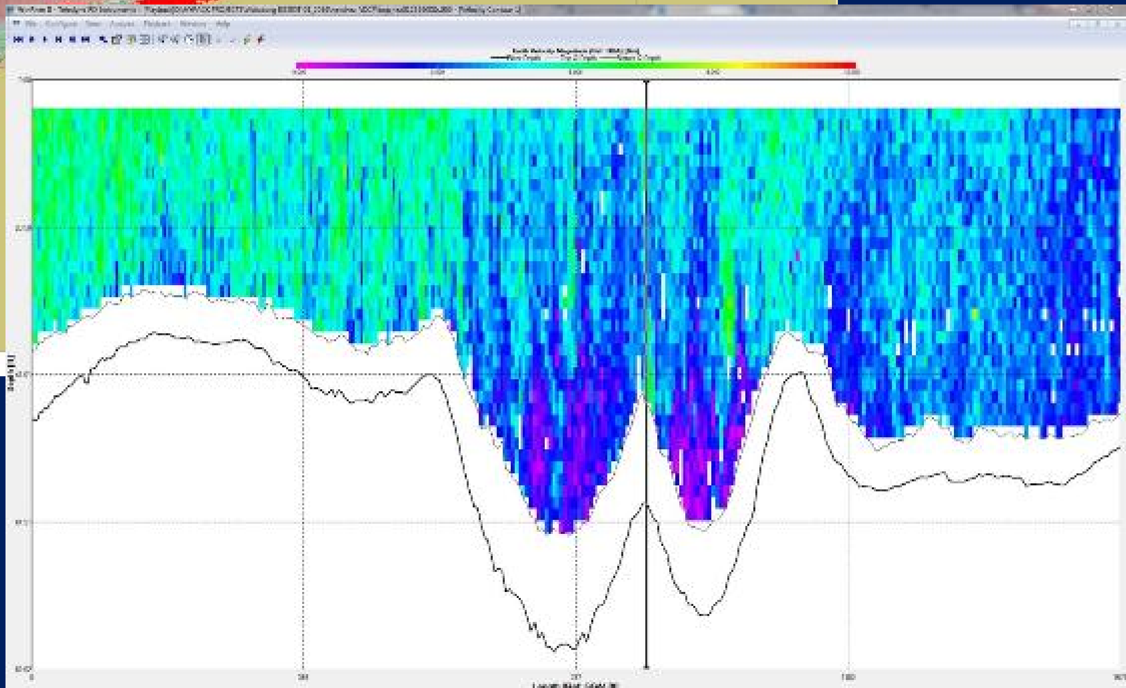
USACE Survey -River Bottom



•Velocity magnitude for 10000 feet of a longitudinal transect
•The heavy black line at the bottom of the profile shows the sand waves on the channel bottom

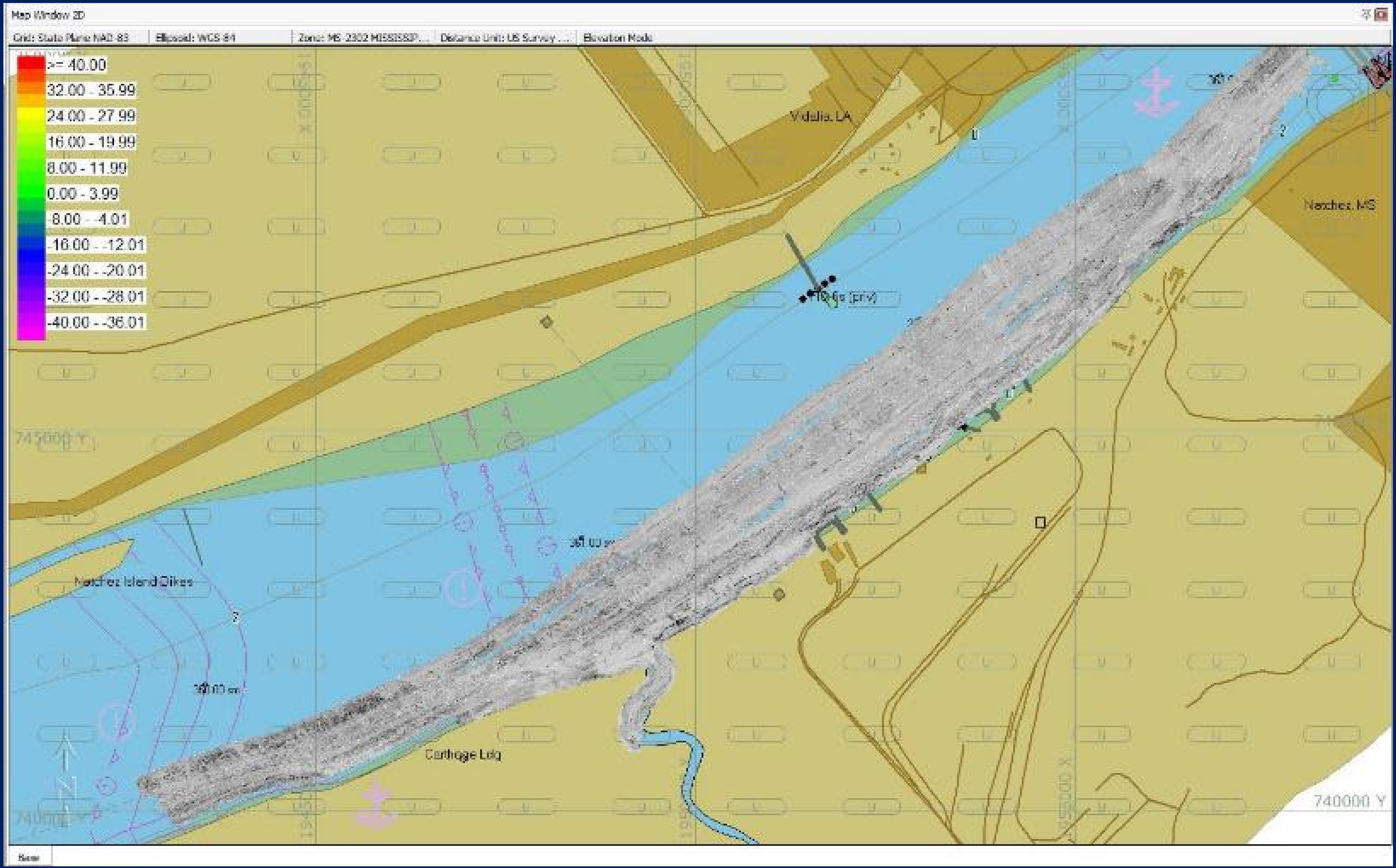
USACE Survey – Multi-beam Imagery





Area of Low Velocity near the barge in the 2 deep scour holes

USACE Survey – Side Scan Sonar



•No anomalies noted

USACE Survey – River Velocities

- Longer arrows indicating faster velocity in center channel
- Shorter arrows indicating slower velocity along barge location

USACE Survey Info

- Although side scan sonar did not identify areas with anomalies that could be investigated as sunken oil…
- It was critical in characterizing river conditions to identify areas of potential sunken oil (scour areas and shoreline) to be targeted for further investigation and recovery.
- Was best tool for assessing bottom conditions; Confirmed significant bottom sediment transport and allowed UC to focus efforts on recovering oil from shoreline

Lessons Learned:

River Conditions & Submerged Shoreline Oil

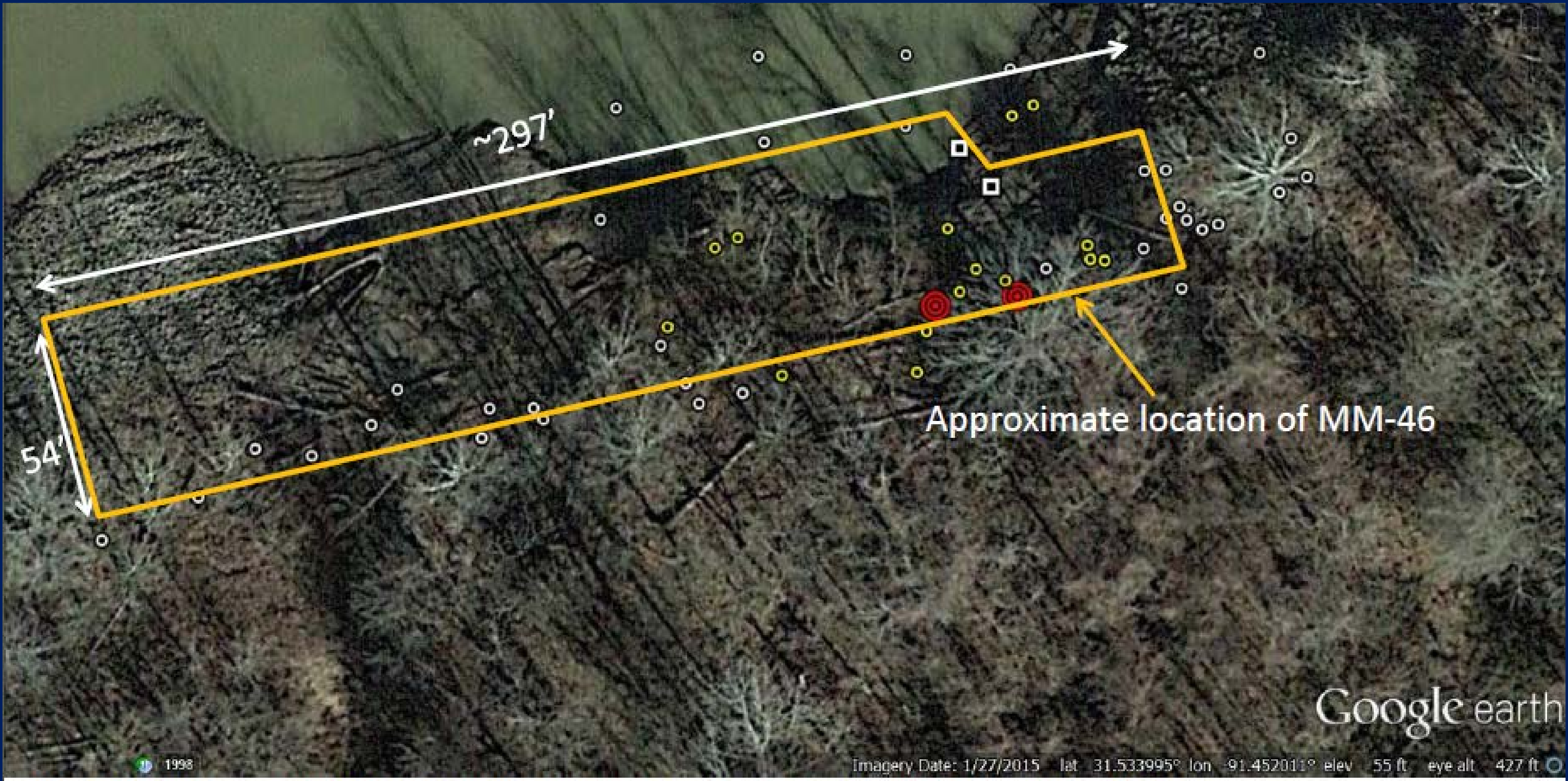
- Vessel Submerged Oil Recovery System (VSORS)
    - “Q-Tip”
    - Sentinel Snare

- VSORS mapping

VSORS

VSORS

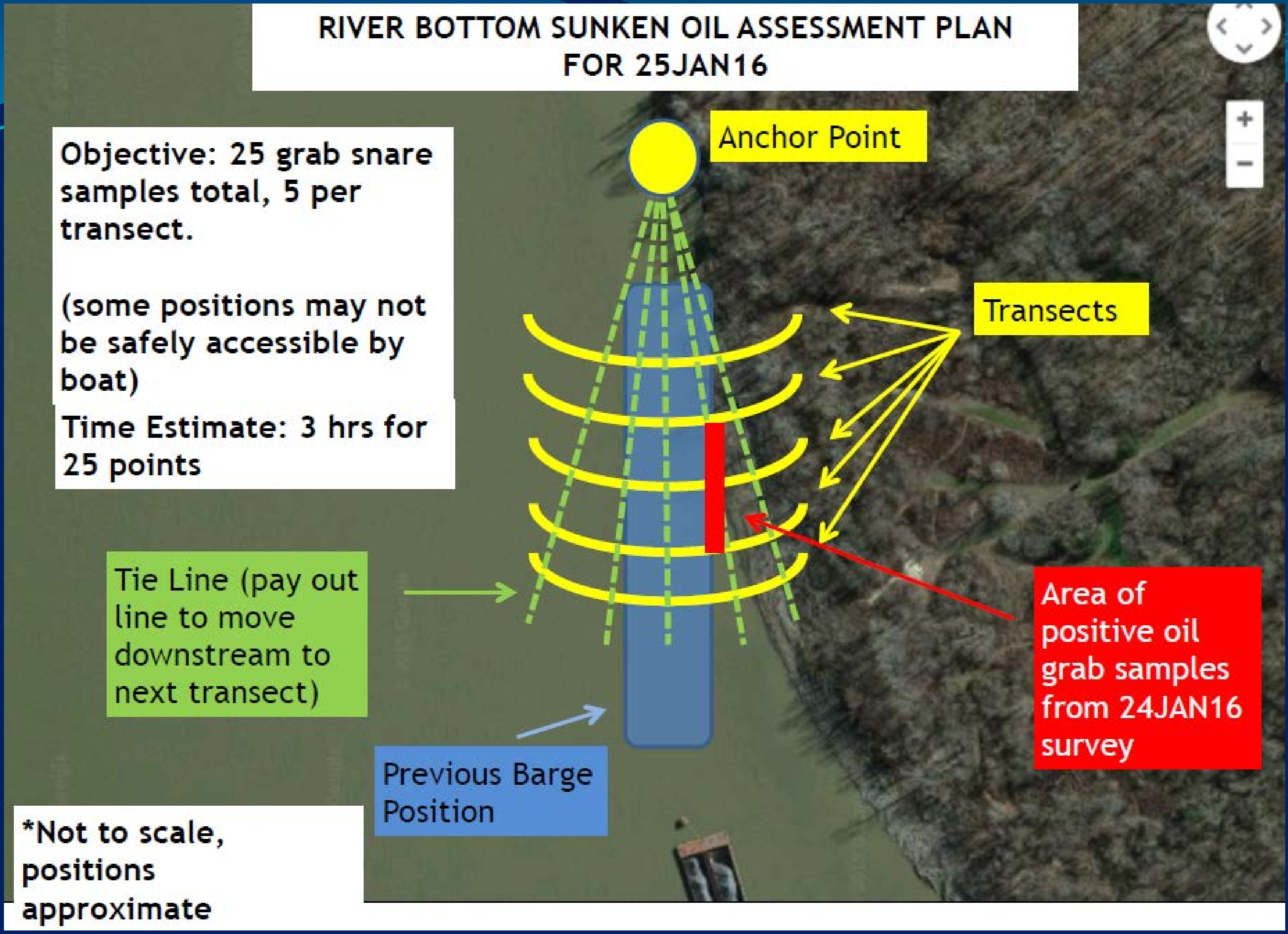
Jan 24 & Jan 25 VSORS Results



White filled dots were Non Detect, Yellow filled dots were trace, Red filled were the Q-Tip Method

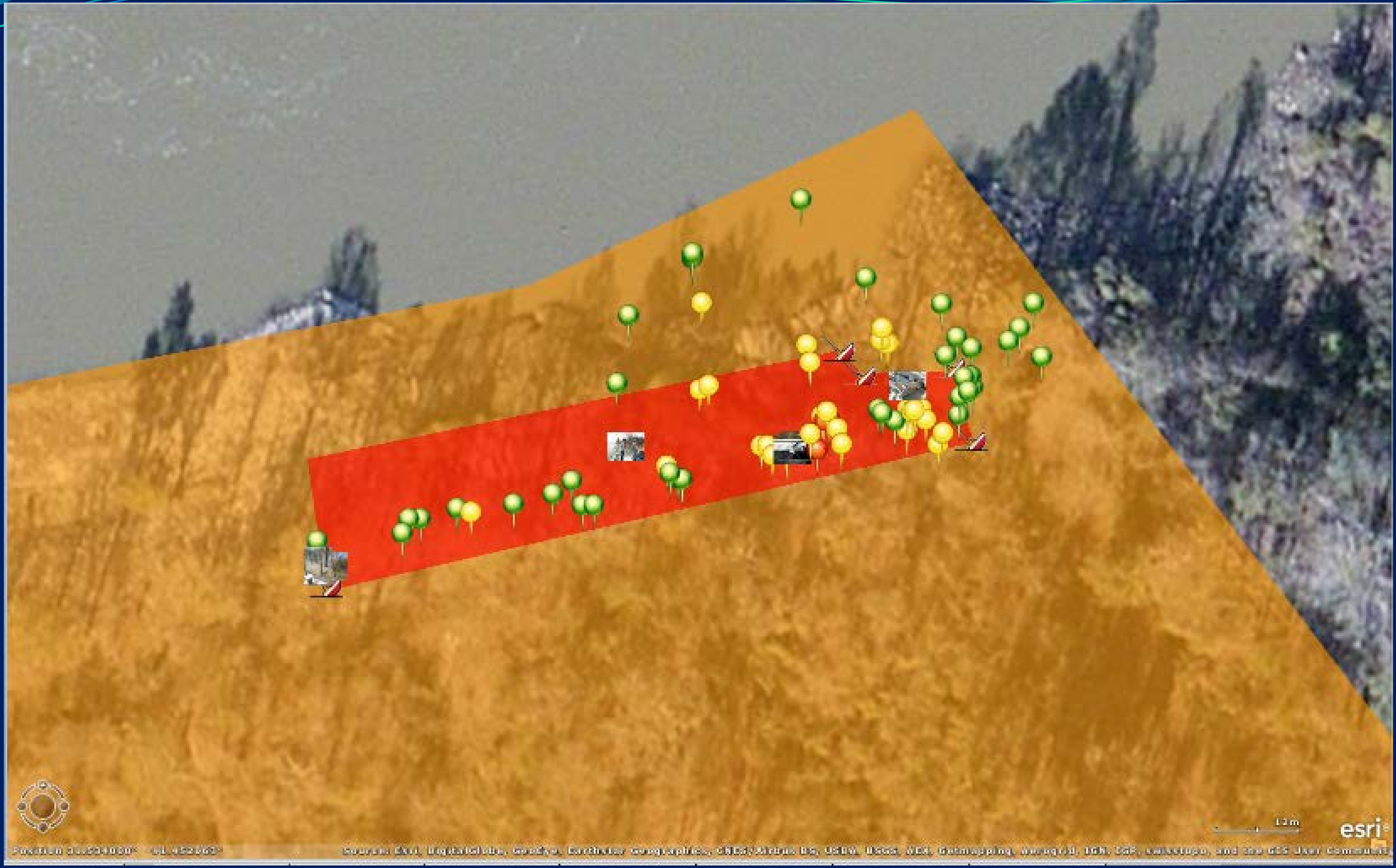
How do we check for submerged oil after damaged barge has departed?

What are the risks in this area?



•If you have the right people at the response,
you can mitigate risks and develop safe response options

VSORS- Bottom Sampling 25 Jan



Green – Non Detect, weighted sorbent snare

Yellow –Trace amount or greater detected, weighted sorbent snare

Red – Detect using “Q-tip”

Final Stages - SCAT

SCAT Resources:	**SCAT Assessments Conducted on 01 Feb, 03 Feb, 10 Feb, & 25 Feb** **Recovery conducted on 4-5 Feb & 11 Feb & 26 Feb**
Future Plans:	Continue to conduct SCAT assessments & oil recovery as river level recedes and more shoreline is exposed; Gain Unified Command concurrence on completion of recovery when appropriate

Lessons Learned:

Historic/Tribal Consultations & Endangered Species Act Consultation

- Consultation with MS State Historic Preservation Office (SHPO) rep (MS Dept of Archives & History) indicated possible resource concerns in the response area
- Consultation with USFWS
- Representatives from both were present during SCAT on 03 Feb and reported no particular resources at risk and no opposition to proposed response techniques
- NOAA SSC facilitated this process on behalf of USCG FOSC

Barge MM 46 Response
Natchez, MS
Lower Mississippi River Mile Marker 363

Questions?

1986

LEPC

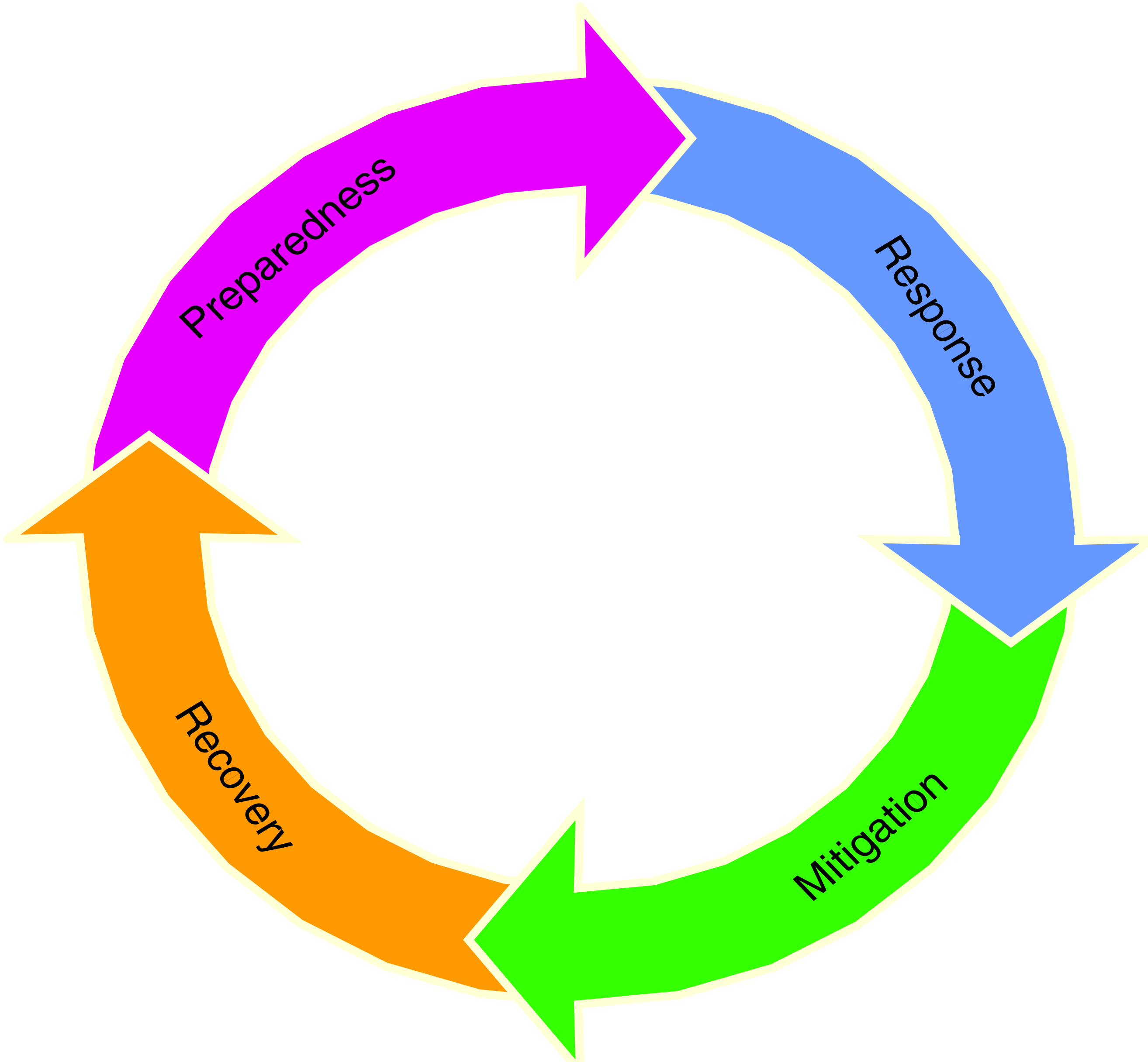
...safety in knowledge®

Planning Under the National Response System

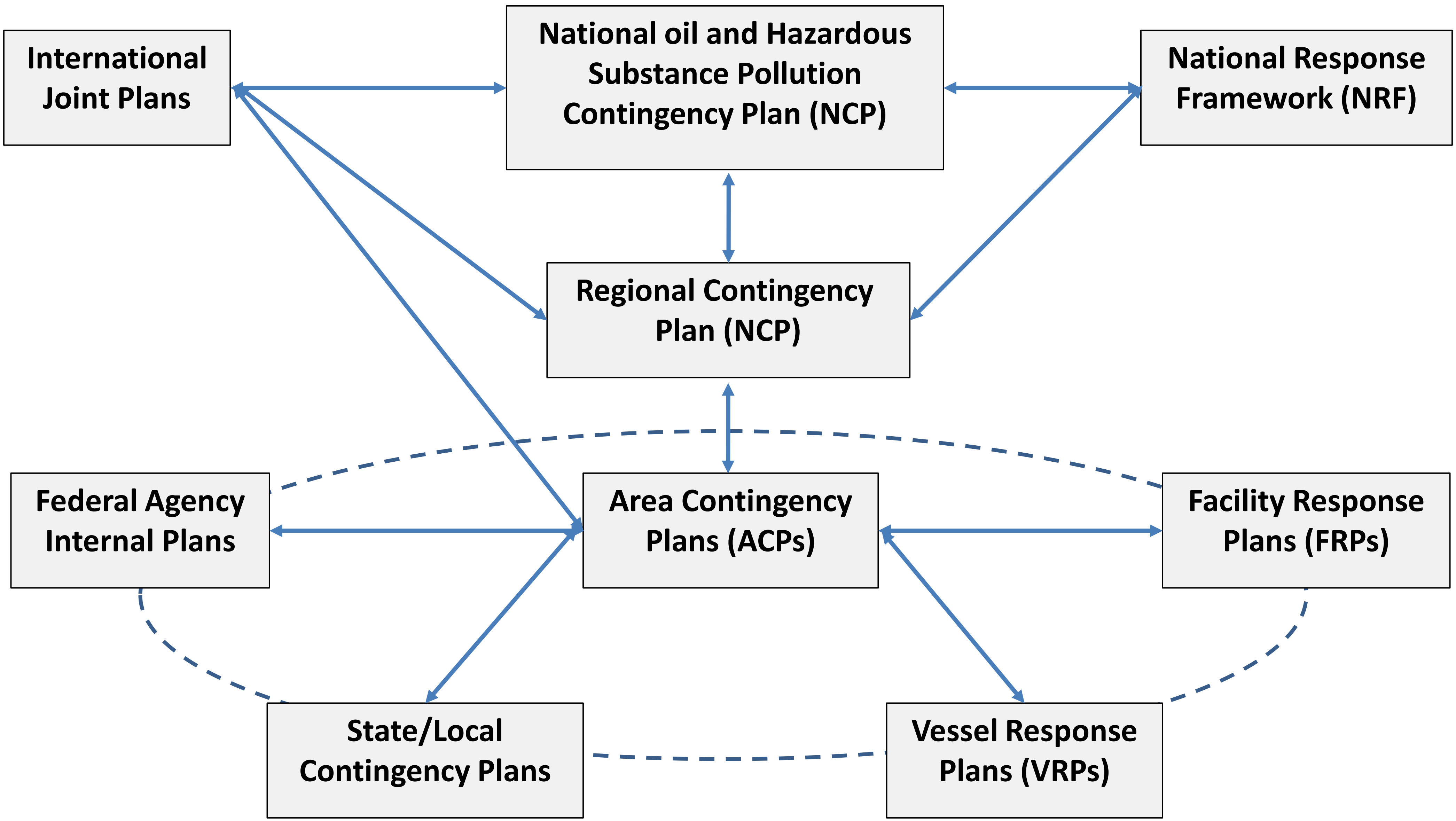
EMERGENCY PLANNING & COMMUNITY RIGHT-TO-KNOW ACT

2016

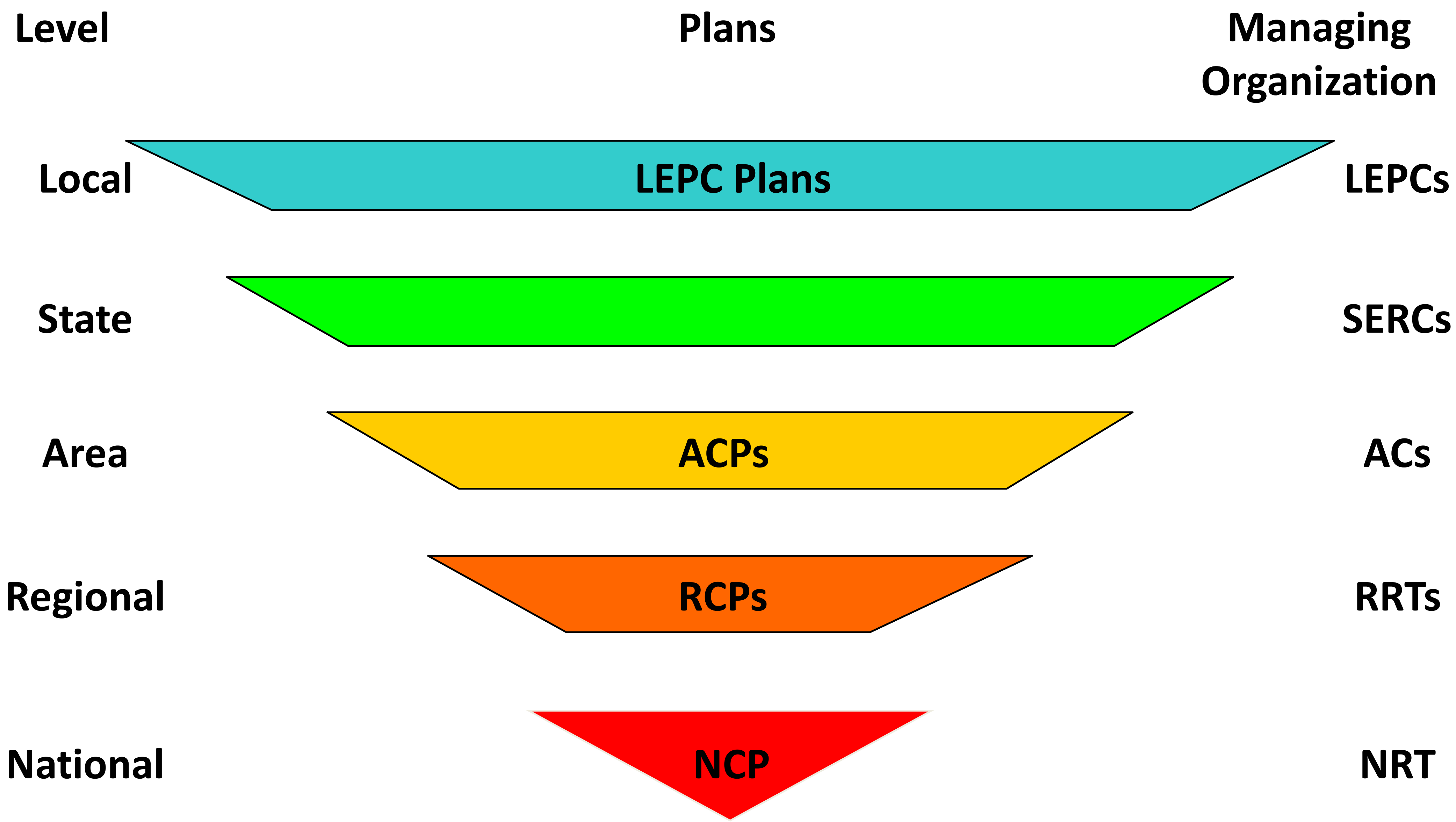
Importance of Preparedness in the Emergency Management



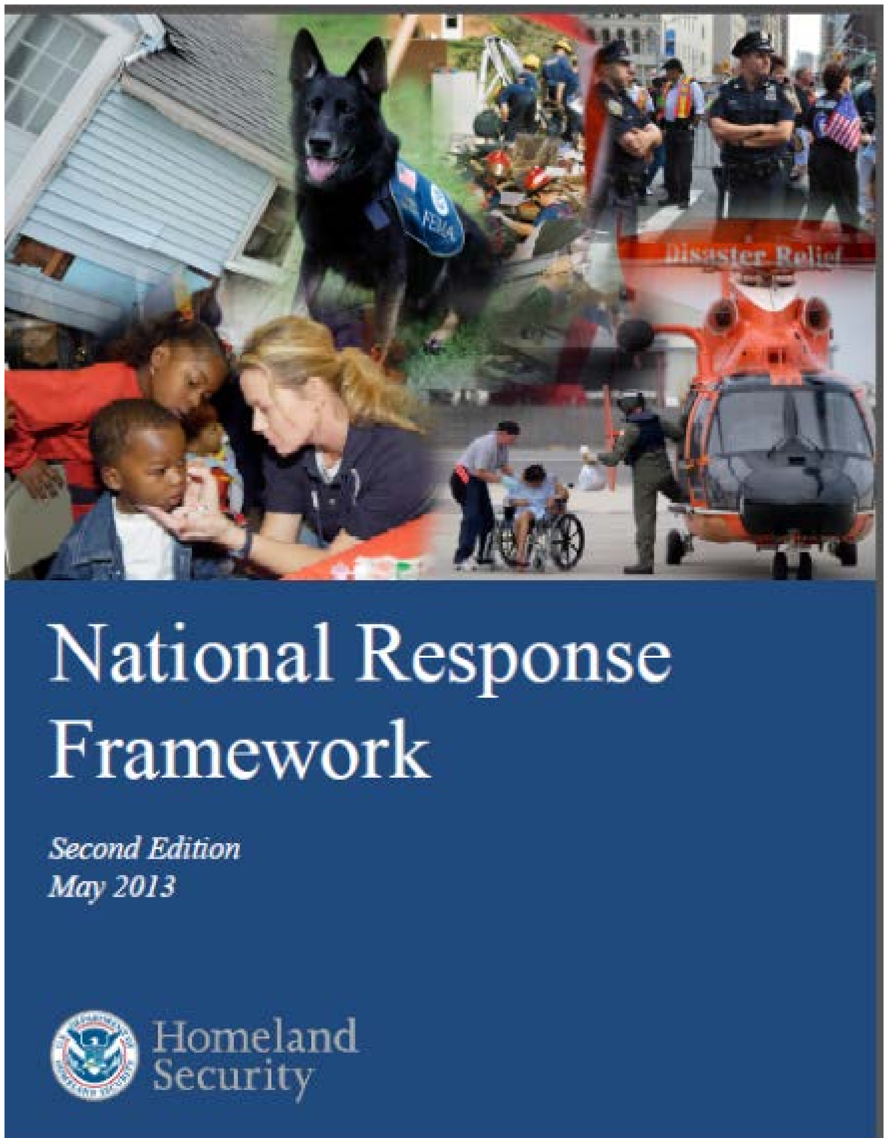
Planning Concepts



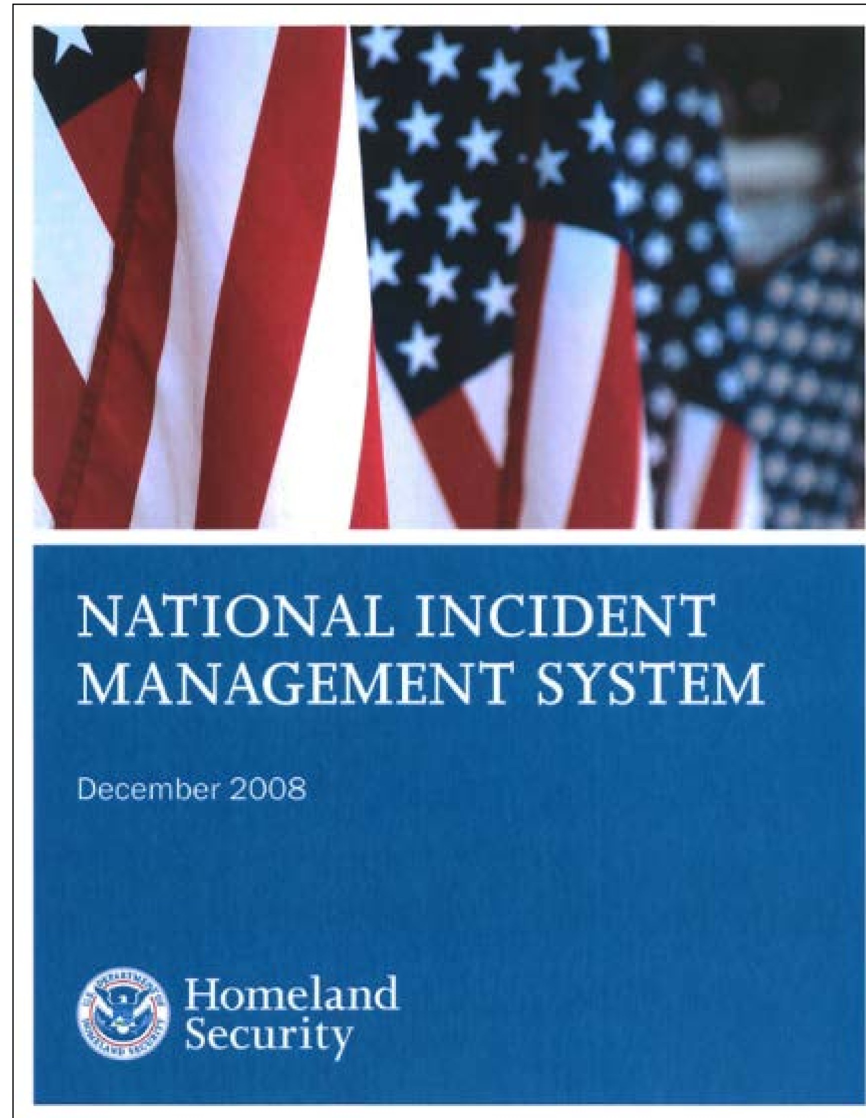
Preparedness Components Under the NRS



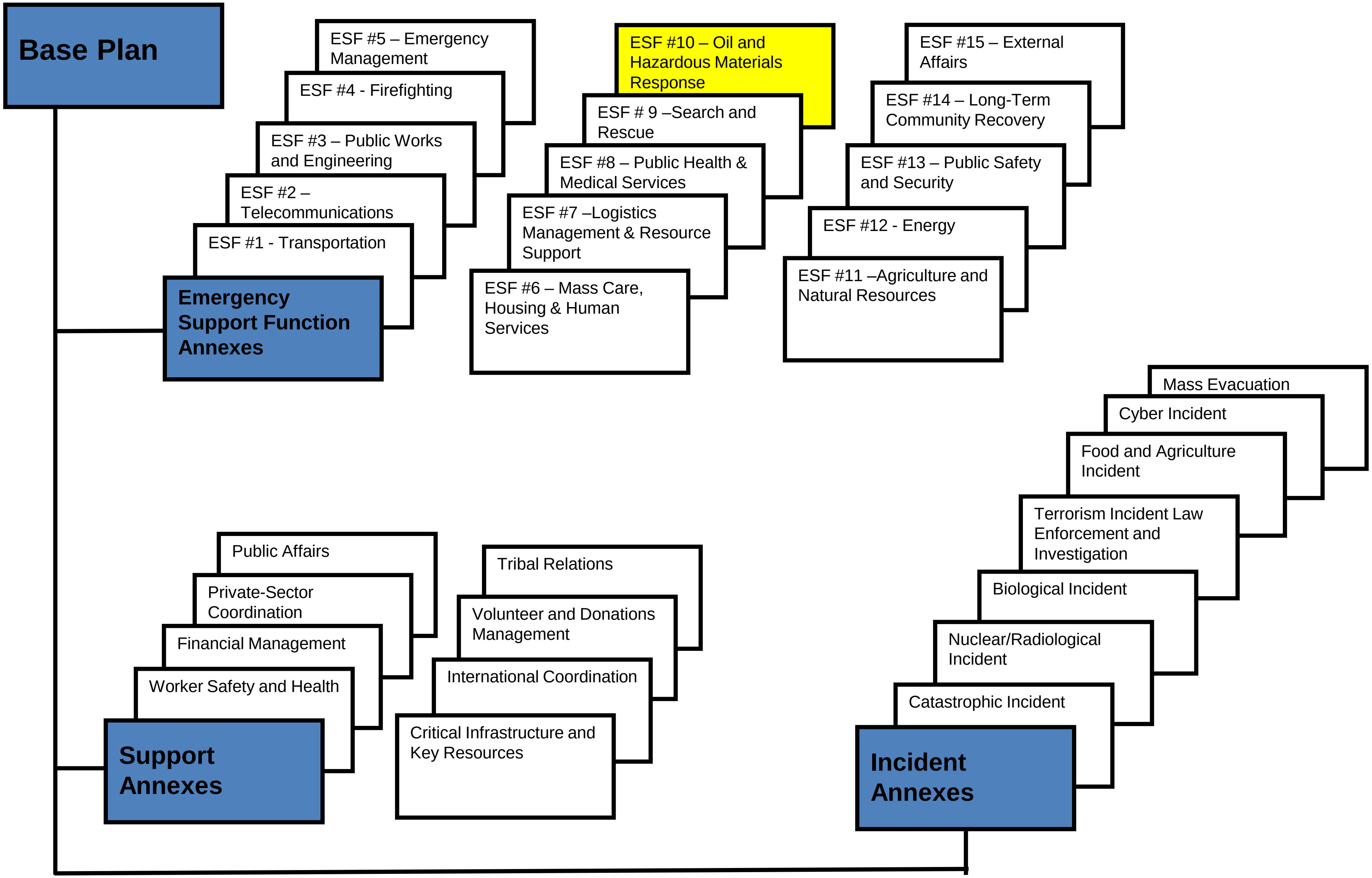
National Response Framework



National Incident Management System



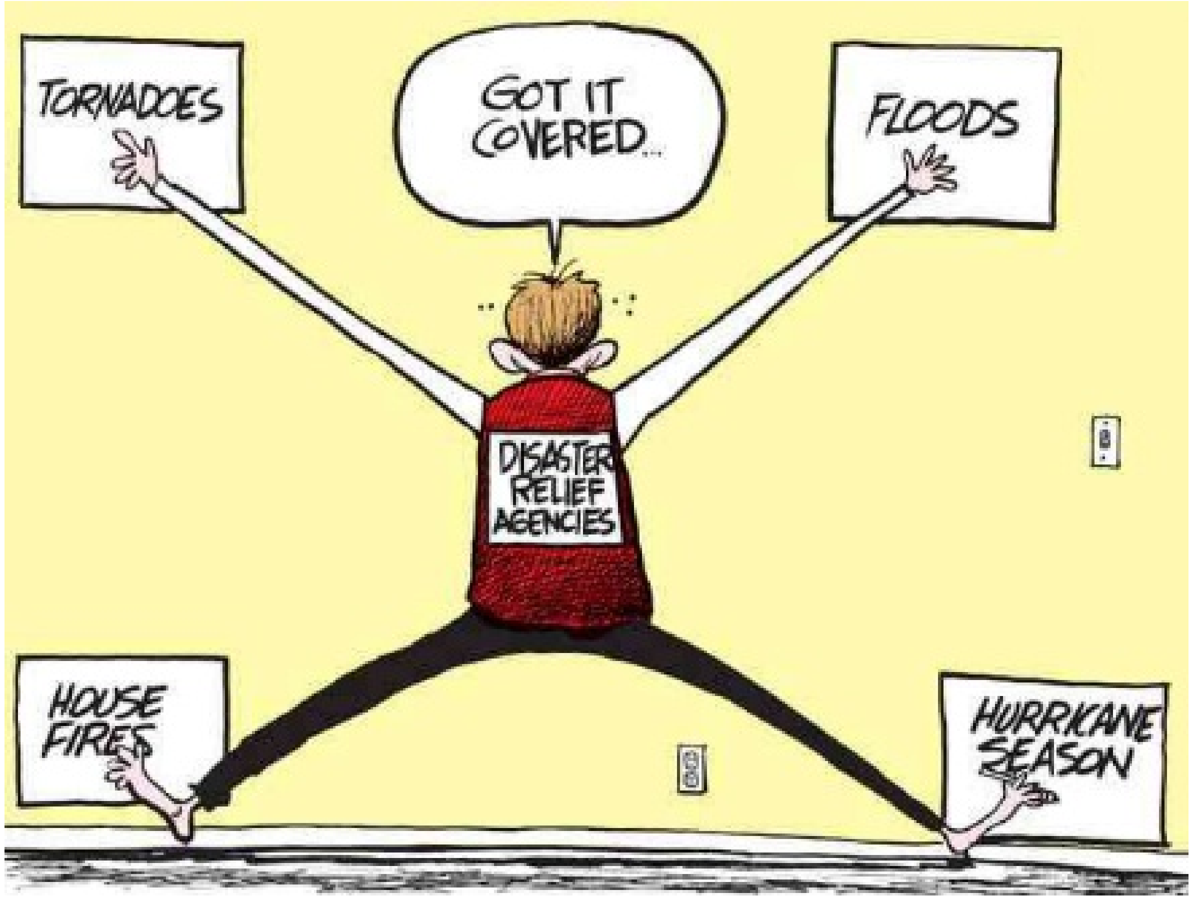
Organization of the NRF



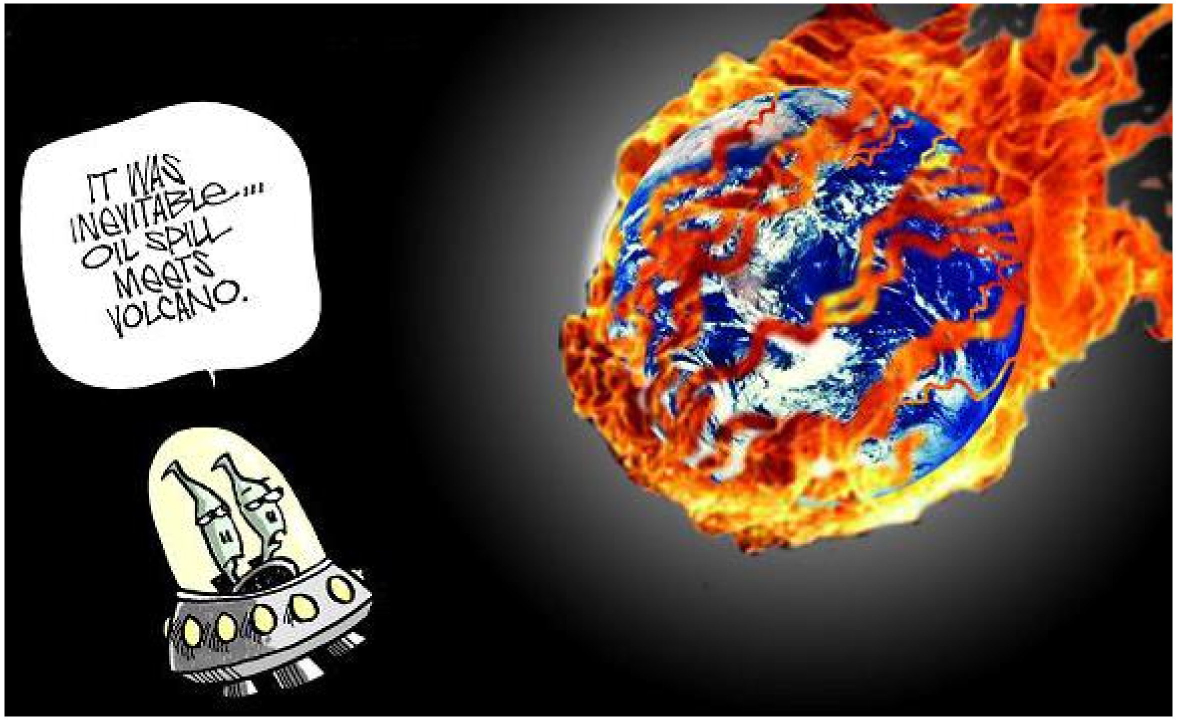
The NRF-NCP Relationship

- **NRS (OSCs, RRTs, NRT, etc.) responds under NCP on daily basis for more "routine" oil and hazardous materials incidents**

- **When DHS leads incident under NRF, NRS assets are activated under NRF Emergency Support Function (ESF) #10 – Oil and Hazardous Materials Response Annex**

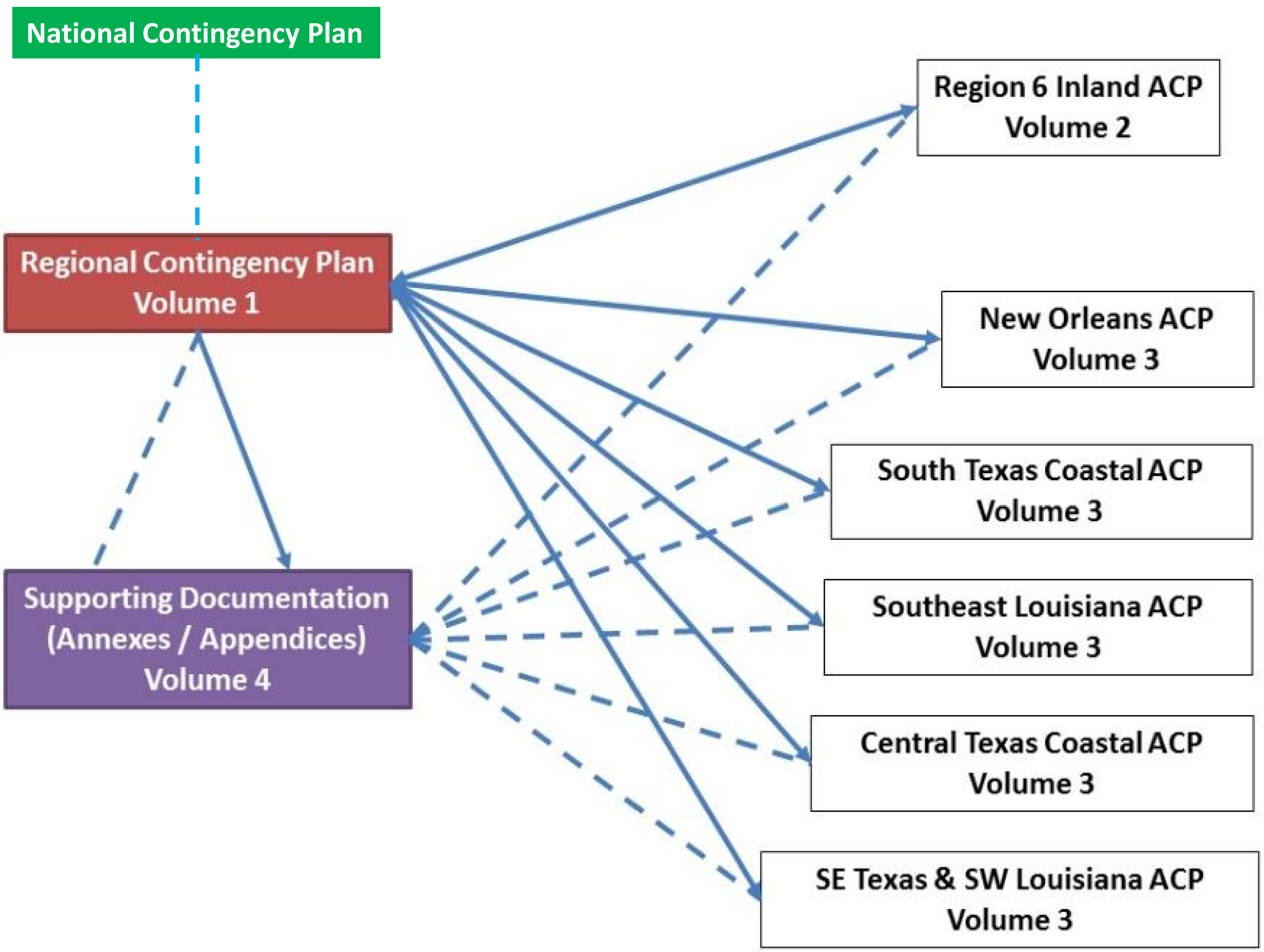


The NRF-NCP Relationship

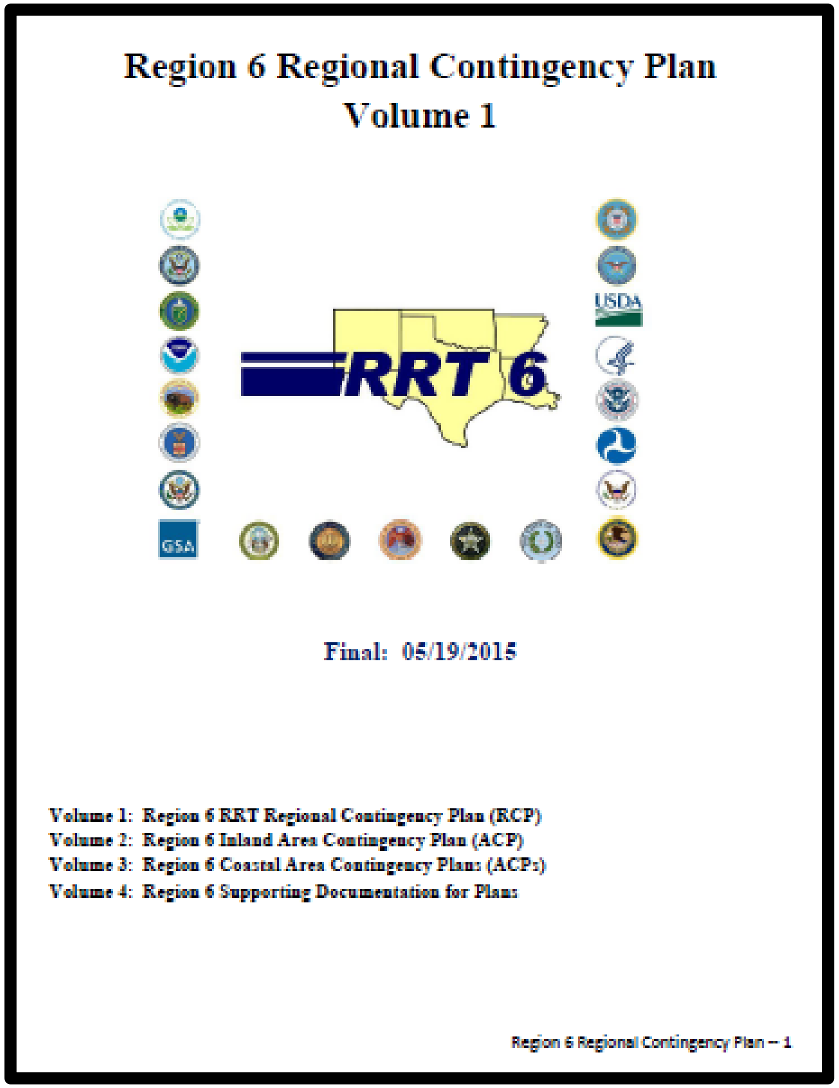


- In some cases, NRS may respond initially under its own authorities pending an ESF #10 activation, then transition to Stafford Act authority and funding
- ESF #10 uses NRT and RRTs to coordinate response among ESF #10 Primary/Support Agencies at national and regional levels as needed

NRS Planning in Region 6



Volume 1 -- RCP


Region 6 Regional Contingency Plan
Volume 1

RRT 6

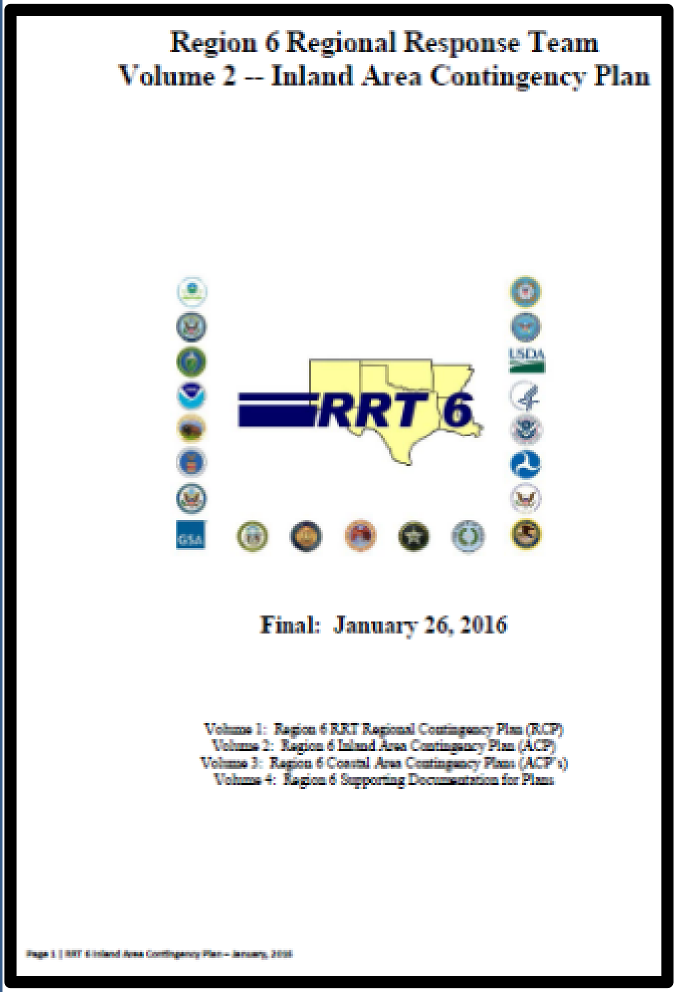
Final: 05/19/2015

Volume 1: Region 6 RRT Regional Contingency Plan (RCP)
Volume 2: Region 6 Inland Area Contingency Plan (ACP)
Volume 3: Region 6 Coastal Area Contingency Plans (ACPs)
Volume 4: Region 6 Supporting Documentation for Plans

Region 6 Regional Contingency Plan – 1

I. Purpose and Objective
II. Authorities
III. Scope of the Regional Contingency Plan
IV. NRS Overview
V. Relationships
VI. National Response Team (NRT): Organization, Role, Responsibilities
VII. Standing Regional Response Team: Organization, Role, Responsibilities
VIII. Incident-Specific RRT: Organization, Role, Responsibilities, and Activation
IX. On-Scene Coordinators (OSCs): Role, Responsibilities
X. Agency Representation: OSC Assistance During a Response
   a. United States Environmental Protection Agency (USEPA)
   b. United States Coast Guard (USCG)
   c. Department of Health And Human Services (DHHS)
   d. Department of Commerce (DOC)
   e. Department of Defense (DOD)
   f. Department of Energy (DOE)
   g. Federal Emergency Management Agency (FEMA)
   h. General Services Administration (GSA)
   i. Department of Justice (DOJ)
   j. Department of Labor (DOL)
   k. The Department of State (DOS)
   l. Department of Transportation (DOT)
   m. Nuclear Regulatory Commission (NRC)
   n. Department of the Interior (DOI)
   o. State of Arkansas
   p. State of Louisiana
   q. State of New Mexico
   r. State of Oklahoma
   s. State of Texas

Volume 2 – Inland ACP


Region 6 Regional Response Team
Volume 2 -- Inland Area Contingency Plan

Final: January 26, 2016

Volume 1: Region 6 RRT Regional Contingency Plan (RCP)
Volume 2: Region 6 Inland Area Contingency Plan (ACP)
Volume 3: Region 6 Coastal Area Contingency Plans (ACP's)
Volume 4: Region 6 Supporting Documentation for Plans

Volume 3 – Coastal ACPs

1000 INTRODUCTION
2000 COMMAND
3000 OPERATIONS
4000 PLANNING
5000 LOGISTICS
6000 FINANCE
7000 HAZARDOUSMATERIALS
8000 MARINE FIRE FIGHTING
9000 APPENDICES

Volume 4 – Appendices

	Document
1	NRT ICS/UC Technical Assistance Document: Managing Responses to Oil Discharges & Hazardous Substances Release under the NCP.
2	NRT JIC Model Guidance Document
3	RRT Public Information Pamphlets
4	Various Executive Orders for RCP / ACPs
5	USCG/USEPA Response Jurisdiction Boundary MOA
6	Instrument of Redelegation between USCG/USEPA
7	SMART Guidance Document
8	Inter-agency MOA regarding Oil Spill Planning & Response Activities under the NCP and the ESA
8a	Guidebook: Inter-agency MOA regarding Oil Spill Planning & Response Activities under the NCP and the ESA
9	Programmatic Agreement on Protection of Historic Properties during Emergency Response under the NCP
10	National Respone Framework (NRF) ESF-10
11	Dispersant Policy & Preauthorization
12	Expedited Near Shore Dispersant Guidelines
13	In-situ Burn Policy & Preauthorization
14	Subsurface Dispersant Use Guidelines
15	Region 6 RRT Bioremediation Position Paper
16	Region 6 Solidifier Policy
17	NMFS and FWS ESA Consultations for Dispersant Pre-Authorization
18	Natural Disaster Operational Workgroup (NDOW) Process & Documentaiton
19	Air Space Control Procedures
20	Well Control & Containment
21	RRT Member Agency List (not individual names, but agency names & updated mailing lists) ??
22	Region 6 RRT By-Laws
23	Pre-Authorization for Surface Washing Agents in Region 6
24	Acronyms used in the Region 6 RCP, Inland & Coastal ACPs
25	Fish and Wildlife Sensitive Environments Plan
26	National Oil & Hazardous Substances Pollution Contingency Plan (NCP)
27	Memorandum of Understanding Between the U.S. Environmental Protection Agency Regions 2, 6, & 7 Emergency Response Programs
28	Region6 Inland Federally-Listed Endangered or Threatened Species
29	Metropolitan areas with population greater than 50,000
31	Region 6 Oil Spill Response Organizations (OSRO)
31a	Other Oil Spill Contractors in Region 6 – August, 2014
32	Overview of the National Response System
33	NRT Volunteer Guidance
34	NRT Atypical Dispersant Guidance
35	NRT: Regional Response Team Job – Aid (05/15/2012)
36	USCG Incident Management Handbook
37	EPA Incident Management Handbook
38	Guidance for Federal OSCs for Response to Spills on Tribal Lands
39	EPA National Crisis Communication Plan
40	EPA Region IV / Region 6 Response Boundary Memorandum of Understanding -- Feb 1994
42	Region 6 Regional Contingency Plan – May 29, 2013
44	National Incident Management System (NIMS) Guide -- 2008
45	List of Region 6 Inland Facility Response Plan (FRP) Facilities
46	List of Region 6 Inland Risk Management Plan (RMP) Facilities
47	EPA Region 6 Phone / Response Duty Guidance and Response Criteria – April, 2014
48	Inland Oil Spills Response Tactics – August 2014
49	MOU Between USCG, EPA, and CNCS for Volunteer Use during Oil Spill
50	Oil Spill Best Management Practices – August, 2014
51	Compliance Guide for National Historic Preservation Act during an Emergency Response
52	Inland Response Tactics Manual – August, 2014
53	Initial Incident Objectives for Hazardous Materials Events – August, 2014
54	Initial Incident Objectives for Oil Spills – August, 2014
55	Guidance for Use of Bioremediation within Region 6 – August, 2014
56	ESA Section 7 Compliance Section for Inland ACP Guidance – August, 2014
57	Notice of Federal Interest for Oil Spills in Region 6 – August, 2014
58	ESF # 10 Fact Sheet – August, 2014
59	RRT6 Oil Spill Countermeasures Playbook – December 14, 2014
60	RRT6 Oil Spill Waste Management Guidelines / Template – January 15, 2014
60a	Examples of Oil Spill Waste Disposal Plans – January 15, 2014

www.epaosc.org/rrt6-homepage