Preparing Cleanup Sites for Natural Disasters CHECKLIST

October2020

ASTSWMO - CERCLA Post Construction Focus Group

OUTLINE

- Purpose of CHECKLIST
- Types of natural disasters – Why prepare?
- Components of CHECKLIST
- **Pre, During** and **Post** event considerations
- Example of use

Purpose of Checklist

Planning tool for cleanup sites in anticipation of a natural disaster

Site-specific information for **pre, during** and **post** natural disaster events to:

- Streamline site security
- Minimize damage to remedy components
- Reduce the risk of site-related environmental impacts

Does not replace

- Health and Safety Plan (HASP),
- Standard Operating Procedures (SOP), or
- other site-specific / programmatic guidance documents

May be used at similar “non-CERCLA” and active cleanup sites

Why Use A CHECKLIST

- Consistency in Planning and Response
- Ease of use during an Emergency
- Identifies local, regional, statewide points of contact
- Reporting Up
- For use on any sites managed by state staff

Recommended Process

Pre-event planning:

- Assess site conditions to compile site specific details

Pre-event information:

- Identify, collect site plans/data and contact information
- Maintain electronic and hard copy files to ensure accessibility of the information
- Keep information current

Post-event information:

- Identify conditions that require action/repair
- Track planned actions

Types of Natural Disasters – **Why Prepare?**

Predictable, Seasonal

- Tropical Storm / Hurricane
- River Flooding – Springtime
- Wildfires
- Impacts of Climate Change

Little or no warning

- Earthquake
- Tsunami
- Land Slide
- Flash flood
- Tornado
- Hail
- Micro-burst

Consider: *Type of disasters to likely impact the site and site-specific vulnerabilities.*

Predictable

Hurricane

Flooding

Little or no warning

Earthquake

Tsunami

Little or no warning

Tornado

Micro-burst

ASTSWMO
Checklist for Natural Disaster Preparedness

Before / During / After Disaster Events

Checklist Details

http://astswmo.org/files/Resources/CERCLA_and_Brownfields/2020_06_Post_Construction_Checklist.pdf

(Must be opened in Adobe PDF viewer).

Checklist Key Components

- Contact Information - phone(s) and email
- Background and site condition - site maps
- Documents and Records - HASP and key reference documents.
- Engineering controls/restrictions on Land Use and similar information
- Details on systems, equipment/components, status of equipment
- Site photos
- Recommendations and follow up actions

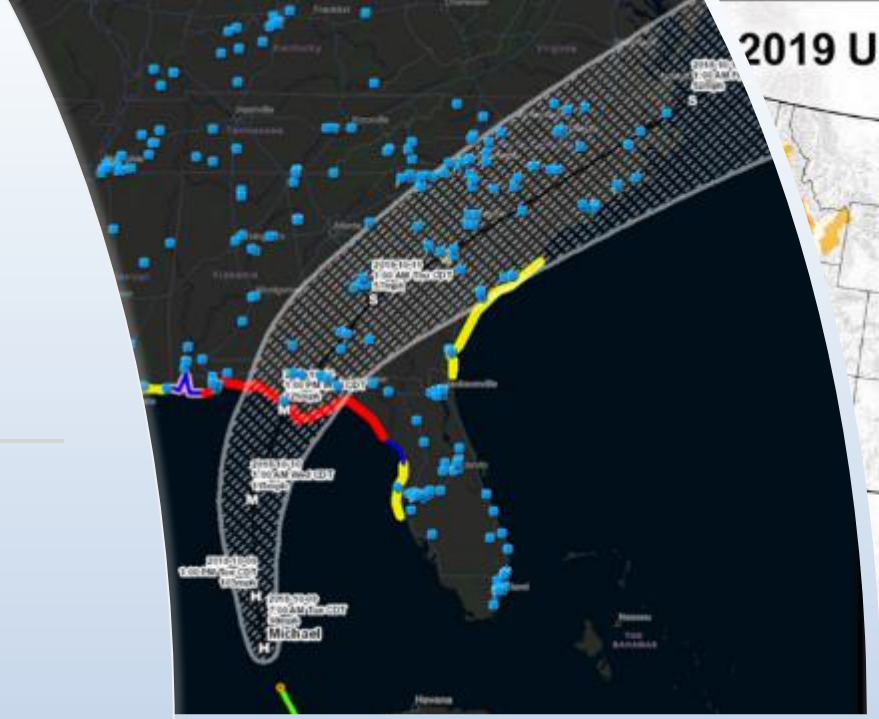
1. Pre-Event Planning

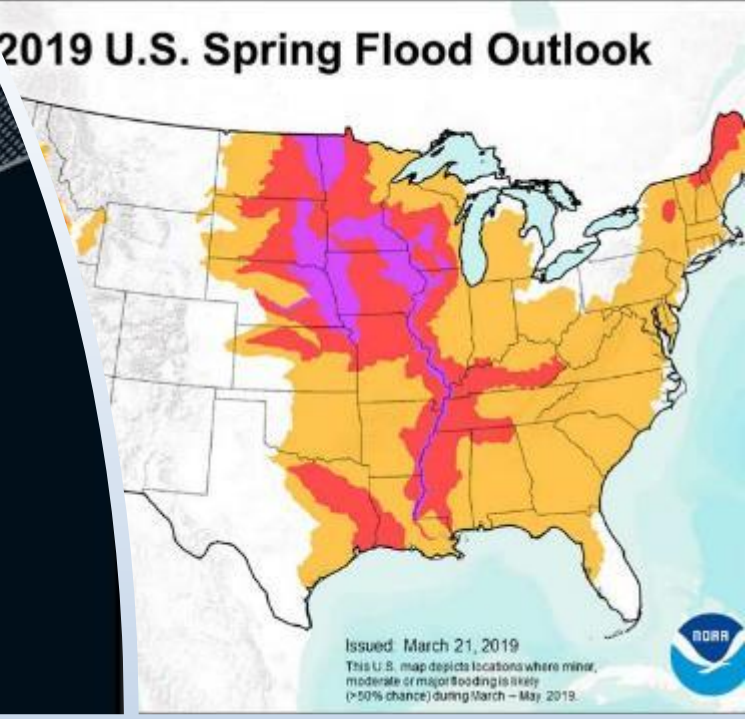
A. Initial Identification of Impacted Facilities
B. Notification of State Program Managers and Project Manager
C. Coordination with state and/or local Emergency Management for immediate impacts
D. Coordinate with Facility Contacts and/or State Contractors

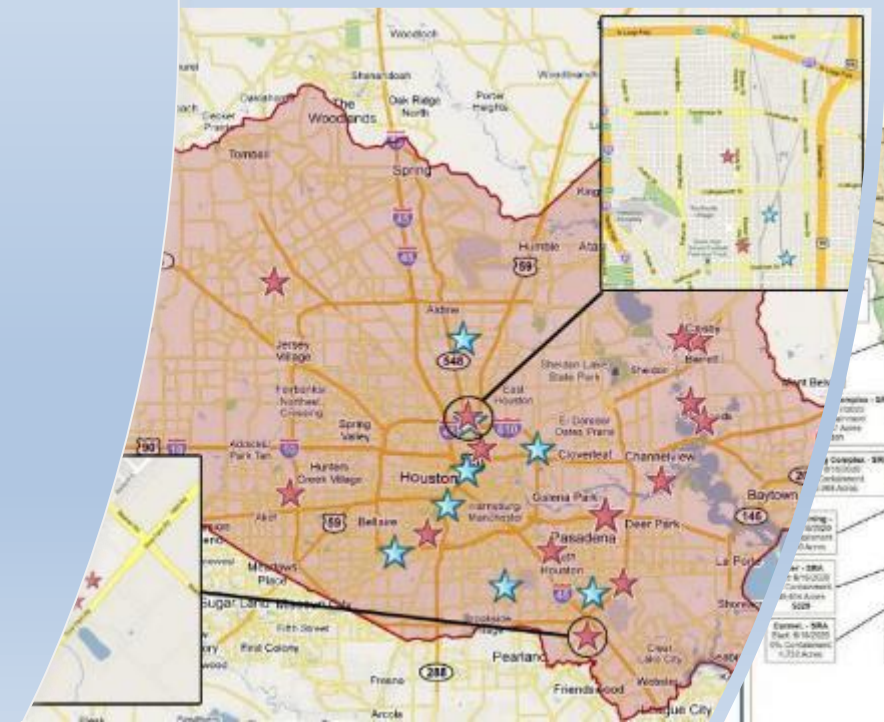
1. Pre-Event Planning

- Initial Identification of Impacted Facilities
- Notification of State Program Managers and Project Manager

A. Contact			
State Regulatory Contact			
Name:			
Telephone:		e-mail:	
EPA Remedial Project Manager			
Name:			
Telephone:		e-mail:	
Consultant			
Name:			
Telephone:		e-mail:	
O&M Staff			
Name:			
Telephone:		e-mail:	
State Emergency Operations Center			
Name:			
Telephone:		e-mail:	







1. Pre-Event Planning

- Coordination with state and/or local Emergency Management for immediate impacts
- Summary of risks posed by the site

Preparing Post-Construction Cleanup Sites for Natural Disasters Clear Data

Summary of Risks Posed by Site:

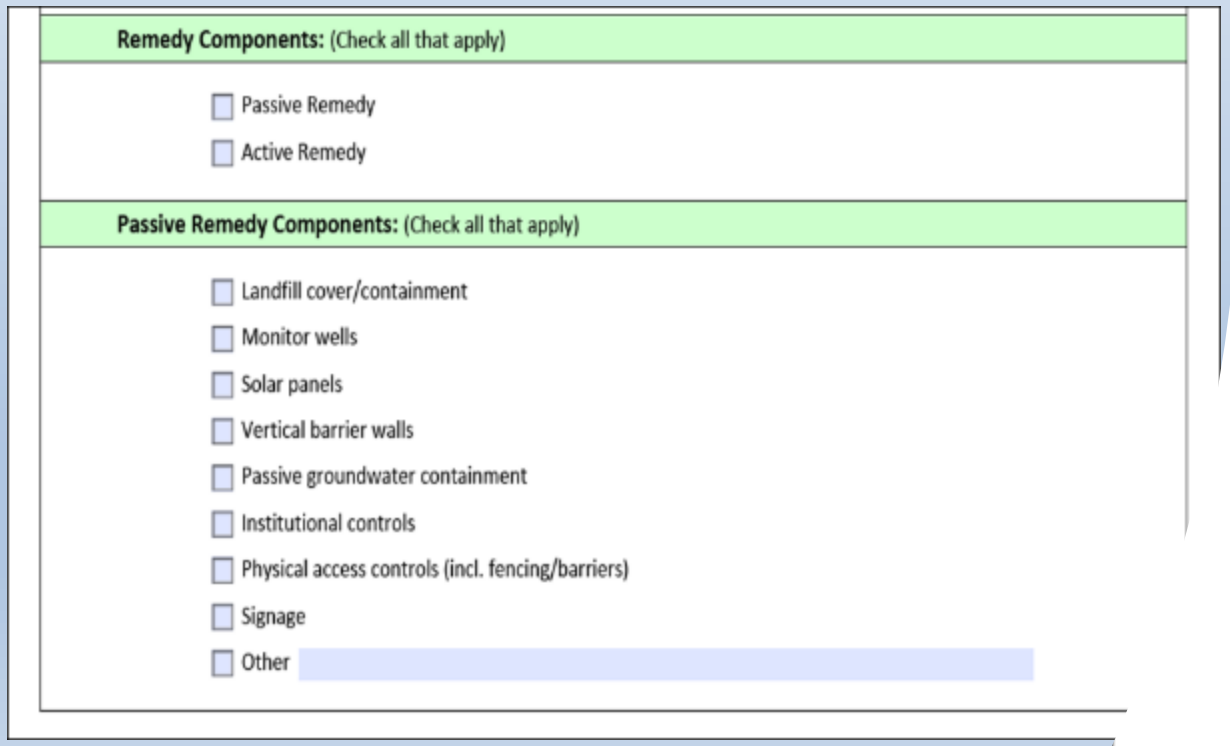
- ☐ Type of contamination
  - ☐ VOCs - Describe:
  - ☐ Metals - Describe:
  - ☐ Other - Describe:
- ☐ Direct contact with a contaminant source
- ☐ Migration of a contaminant source to:
  - ☐ A drinking water aquifer
  - ☐ Surface water
  - ☐ Soil or other solid media
  - ☐ Air (via wind-borne material)
  - ☐ Air (via volatilization)
  - ☐ Other - Describe:
- ☐ Stored Chemicals/Wastes - Hazardous
- ☐ Stored Chemicals/Wastes - Nonhazardous
- ☐ Vapor intrusion or indoor air exposure
- ☐ Off-gas exposure/migration
- ☐ Other risk - Describe:

1. Pre-Event Planning

- Site Access
  - Physical & Legal

1. Pre-Event Planning

- Remedy Components

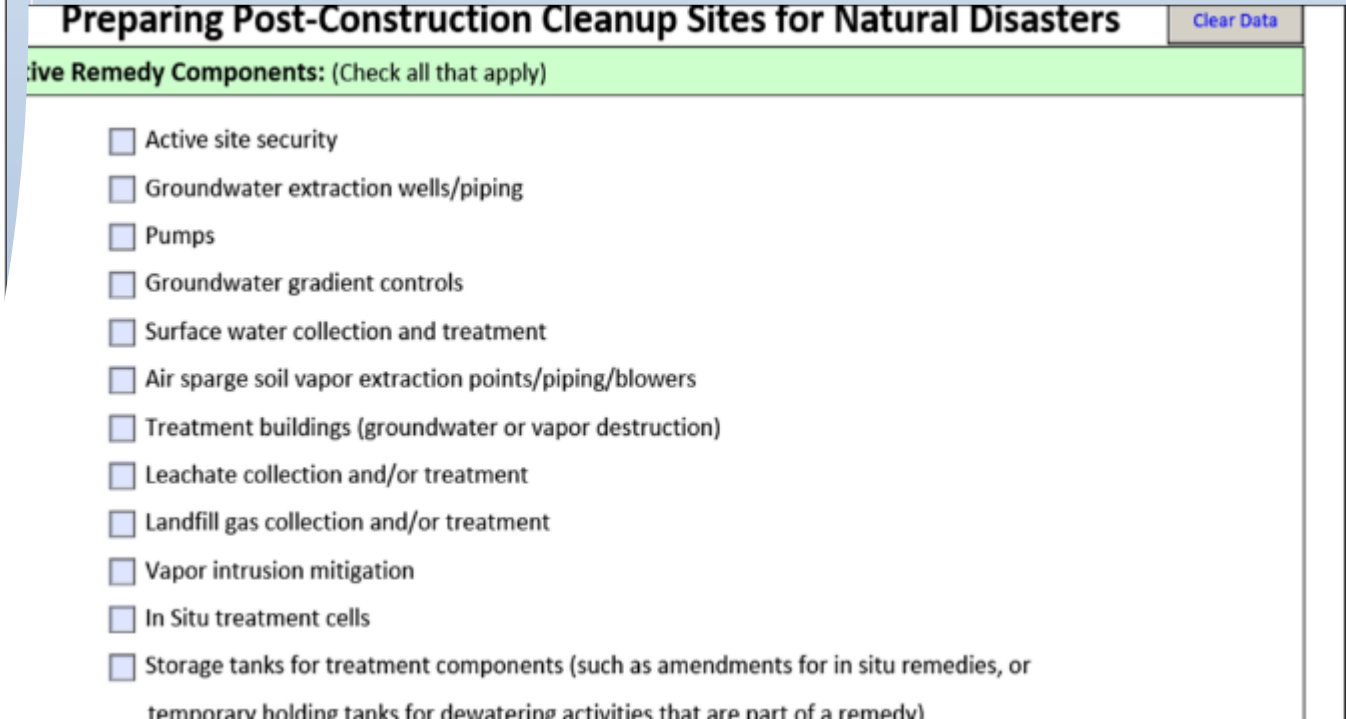


Remedy Components: (Check all that apply)

- ☐ Passive Remedy
- ☐ Active Remedy

Passive Remedy Components: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ Monitor wells
- ☐ Solar panels
- ☐ Vertical barrier walls
- ☐ Passive groundwater containment
- ☐ Institutional controls
- ☐ Physical access controls (incl. fencing/barriers)
- ☐ Signage
- ☐ Other



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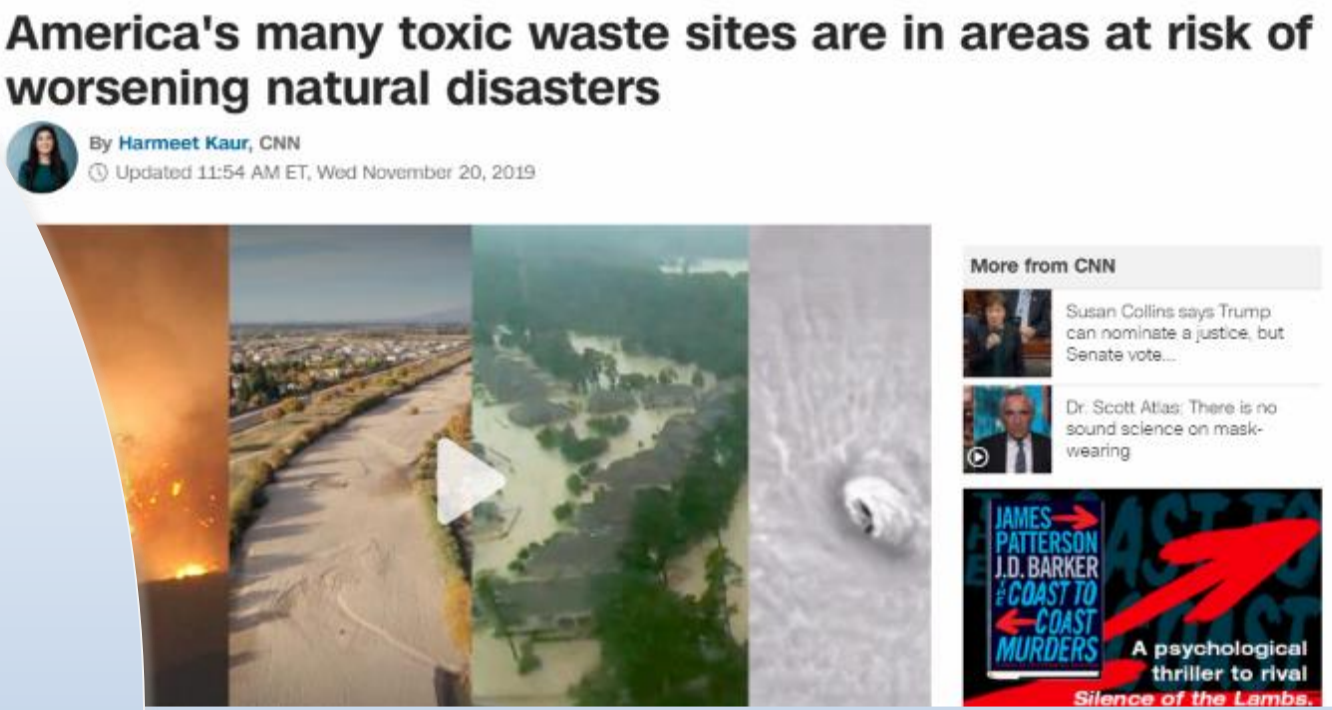
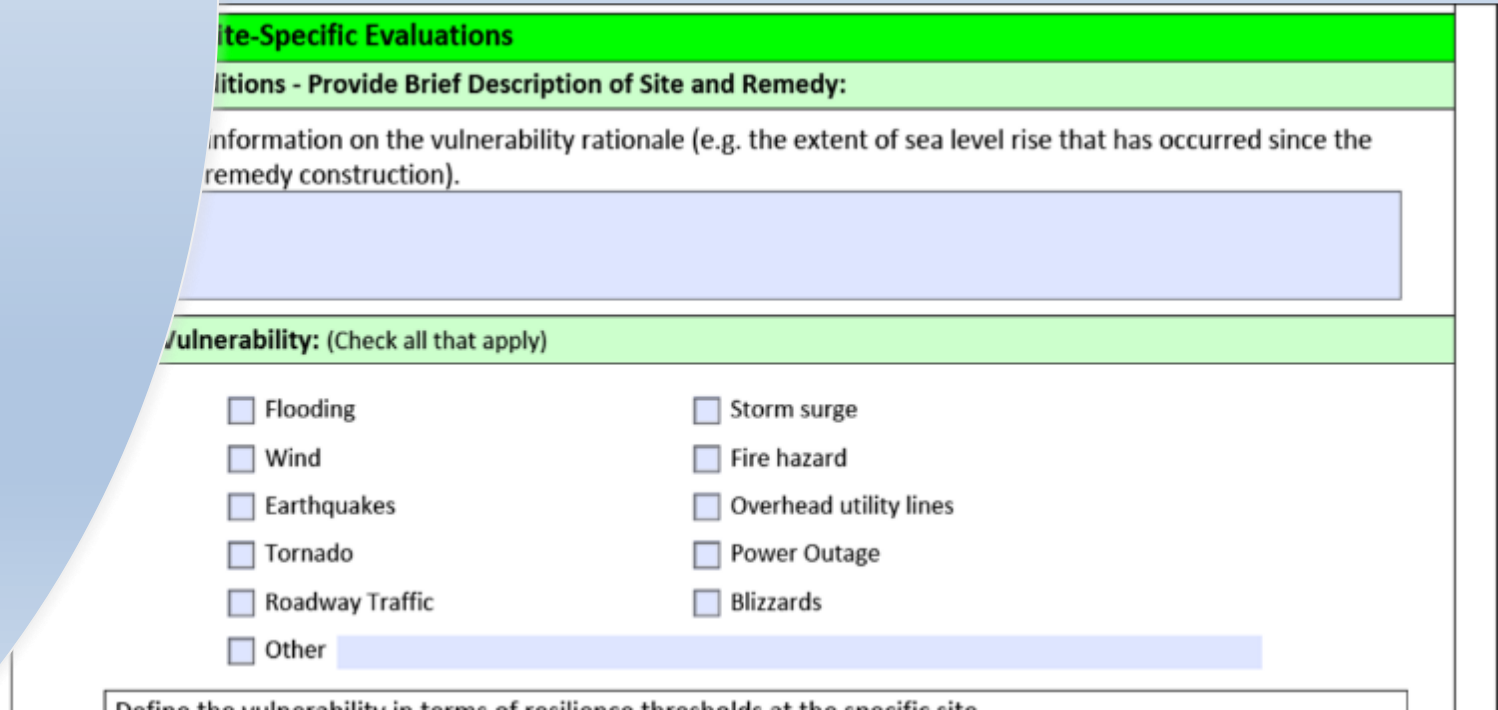
ive Remedy Components: (Check all that apply)

- ☐ Active site security
- ☐ Groundwater extraction wells/piping
- ☐ Pumps
- ☐ Groundwater gradient controls
- ☐ Surface water collection and treatment
- ☐ Air sparge soil vapor extraction points/piping/blowers
- ☐ Treatment buildings (groundwater or vapor destruction)
- ☐ Leachate collection and/or treatment
- ☐ Landfill gas collection and/or treatment
- ☐ Vapor intrusion mitigation
- ☐ In Situ treatment cells
- ☐ Storage tanks for treatment components (such as amendments for in situ remedies, or temporary holding tanks for dewatering activities that are part of a remedy)

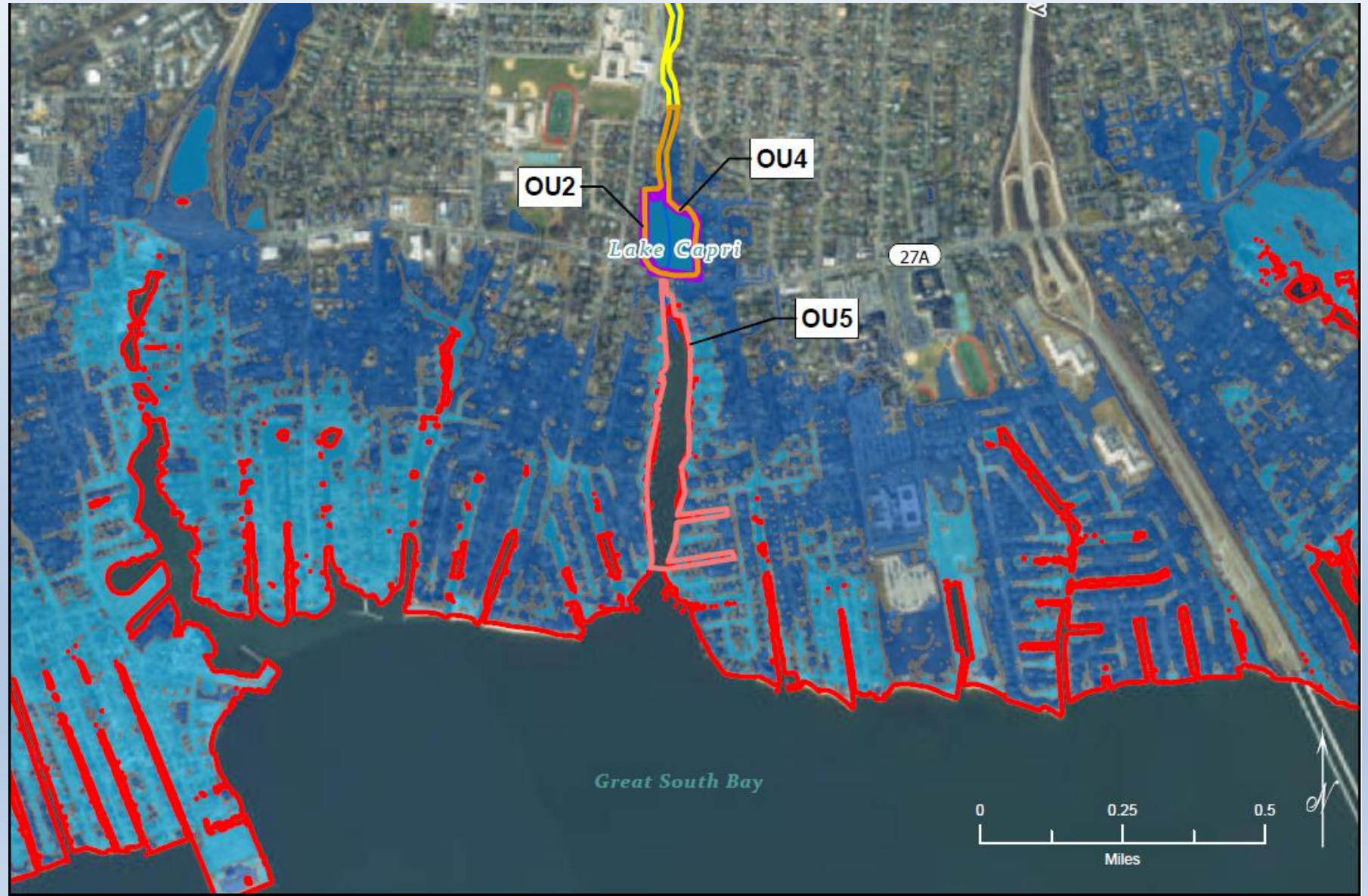
1. Pre-Event Planning

- Site Vulnerability





1. Pre-Event Planning: Use Sources to Find Vulnerabilities



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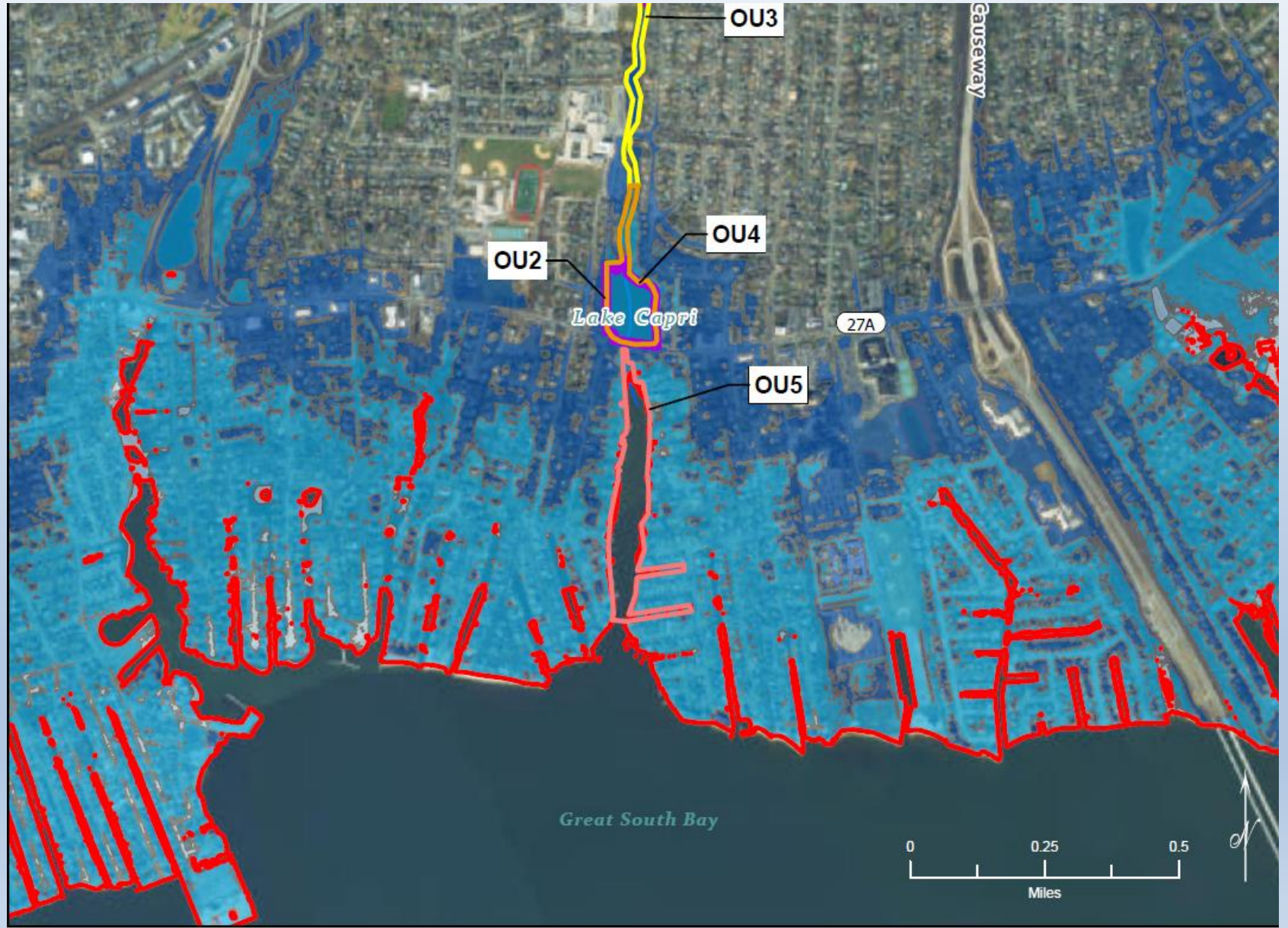

Vulnerable Components:

- [ ] Stormwater controls that could become overwhelmed by extreme precipitation events (detention/sedimentation basins)
- [ ] Rising floodwater that could impact landfill liners/slopes (by inundation)
- [ ] Wash out of access roads to the site or certain areas of it
- [ ] Building components (roof, walls, window, etc.) damaged by winds, water or hail
- [ ] Loss of power to remedy components resulting in remedy failure or immediate concern for human health and/or the environment
- [ ] Damage to electrical components
- [ ] Access to monitoring wells cut off by flooding
- [ ] Fences damaged by fallen trees
- [ ] Other

Potential High-Hazard Failures

- [ ] Landfill slope failures
- [ ] Loss of access to site by flooding (washed out access road or bridges)
- [ ] Loss of power to the site
- [ ] Other

1. Pre-Event Planning

- Site Specific Documents

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D. Site-Specific Documents

Because these documents may be required to respond to a natural disaster, verify what documents are currently available on-site, or note off-site location:

Documents Name	Document date	Electronic Location	On-site Location	Off-site Location
O&M plan	SMP June 2013	DEC Docs	Trailer	
O&M manual	SMP June 2013	DEC Docs	Trailer	
Equipment manuals	SMP June 2013	DEC Docs	Trailer	
As built drawings	FER August 2013	DEC Docs	Trailer	
Health and Safety Plan	SMP June 2013	DEC Docs	Trailer	
Institutional Control/ Engineering Control Maintenance Plan	SMP June 2013	DEC Docs	Trailer	
Other				

Case Study

Preparing Post-Construction Cleanup Sites for Natural Disasters

Clear Data

I. Pre-Event Planning

A. Initial Identification of impacted facilities

Review available State and Federal resources that may identify post-construction cleanup sites. Many States have inventories or databases of cleanup sites that are easily available for review. One resource of this type from EPA is Cleanups in my Community.

US EPA: Cleanups in my Community

Compare to the projected or known impact area to identify all potentially impacted sites & facilities.

Clarify the relevant "plan". Use checklist to crosscheck against previously established plans, such as a site management plan that outlines site vulnerabilities and the corresponding controls/measures that should be checked before and after an event.

FL DEP Contamination Locator Map (CLM). To ID all petroleum, state-funded, and NPL sites within a general area: https://floridadep.gov/waste/district-business-support/content/databases
Site-specific Information, FL. DEP, Information Portal: https://prodenv.dep.state.fl.us/DepNexus/public/searchPortal

A. Contact

State Regulatory Contact

Name: Payson Long

Telephone: 518-402-9651 e-mail: payson.long@dec.ny.gov

EPA Remedial Project Manager

Name:

Telephone: e-mail:

Consultant

Name: Megan Miller, EA Science and Technology

Telephone: 315-565-6557 e-mail: MMILLER@EAEST.COM

O&M Staff

Name:

Telephone: e-mail:

EPA Regional Emergency Operations Center

Name:

Telephone: e-mail:

Local Municipality

Name:

Telephone: e-mail:

B. Access

Is there a current access agreement? ☒ Yes ☐ No

C. Site-Specific Evaluations

Site Conditions - Provide Brief Description of Site and Remedy:

Include information on the vulnerability rationale (e.g. the extent of sea level rise that has occurred since the time of remedy construction).

former wood treater, source property is ~ 31 acres.
Current remedy for OU1 soil remedy: excavation and soil cell containment, leachate recovery and treatment system installed to recover leachate within the cell.
O&M tasks include: leachate recovery from the soil cell, inspections of the storm water system, inspection for any erosion on slopes of the soil cells, inspection of the vegetative cover, maintenance of the vegetative cover, inspection of the fences for physical security, and reporting. In addition, three on-site monitoring wells are sampled annually for SVOCs.

Site Vulnerability: (Check all that apply)

- [x] Flooding
- [x] Wind
- [ ] Earthquakes
- [ ] Tornado
- [ ] Roadway Traffic
- [ ] Other
- [ ] Storm surge
- [ ] Fire hazard
- [ ] Overhead utility lines
- [x] Power Outage
- [ ] Blizzards

Define the vulnerability in terms of resilience thresholds at the specific site

Occasional drummed IDW (liquid) generated on site from MW sampling.
Flooding due to excessive rain events. Storm events (wind/rain) may cause power outages to leachate collection system, damage to site fence, erosion of cap / containment cell slopes.

Information on remedy – soil containment cell with leachate collection system. Vulnerable to flooding, wind, and power outage.

Preparing Post-Construction Cleanup Sites for Natural Disasters

Clear Data

Summary of Risks Posed by Site:

- [x] Type of contamination
  - [x] VOCs - Describe: PAHs
  - [ ] Metals - Describe:
  - [x] Other - Describe: Dioxin
- [x] Direct contact with a contaminant source
- [x] Migration of a contaminant source to:
  - [x] A drinking water aquifer
  - [ ] Surface water
  - [ ] Soil or other solid media
  - [ ] Air (via wind-borne material)
  - [ ] Air (via volatilization)
  - [ ] Other - Describe:
- [ ] Stored Chemicals/Wastes - Hazardous
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Remedy Components: (Check all that apply)

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- [x] Active Remedy

Passive Remedy Components: (Check all that apply)

- [x] Landfill cover/containment
- [x] Monitor wells
- [ ] Solar panels
- [ ] Vertical barrier walls
- [ ] Passive groundwater containment
- [x] Institutional controls
- [x] Physical access controls (incl. fencing/barriers)
- [x] Signage
- [ ] Other gates are chained and locked.

Preparing Post-Construction Cleanup Sites for Natural Disasters

Clear Data

Active Remedy Components: (Check all that apply)

- [ ] Active site security
- [ ] Groundwater extraction wells/piping
- [ ] Pumps
- [ ] Groundwater gradient controls
- [ ] Surface water collection and treatment
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- [ ] Vapor intrusion mitigation
- [x] In Situ treatment cells
- [x] Storage tanks for treatment components (such as amendments for in situ remedies, or temporary holding tanks for dewatering activities that are part of a remedy)
- [ ] Stream diversion devices for sediment removal or other in-stream remedy component
- [ ] Generators
- [ ] Other

Vulnerable Components:

Low	Stormwater controls that could become overwhelmed by extreme precipitation events (detention/sedimentation basins)
High	Rising floodwater that could impact landfill liners/slopes (by inundation)
High	Wash out of access roads to the site or certain areas of it
Low	Building components (roof, walls, window, etc.) damaged by winds, water or hail
Low	Loss of power to remedy components resulting in remedy failure or immediate concern for human health and/or the environment
High	Damage to electrical components
High	Access to monitoring wells cut off by flooding
High	Fences damaged by fallen trees
	Other

Potential High-Hazard Failures

- [ ] Landfill slope failures
- [x] Loss of access to site by flooding (washed out access road or bridges)
- [x] Loss of power to the site
- [ ] Other

Preparing Post-Construction Cleanup Sites for Natural Disasters

Clear Data

Institutional Controls: (Check all that apply)

- [x] Land use restrictions
- [x] Groundwater restrictions
- [ ] Utility easements
- [ ] Other
- [ ] Soil disturbance restrictions
- [ ] Easements that require notification
- [ ] Restrictions to stormwater features

Action Taken to Minimize Risk Prior to Event: (Check all that apply)

- [x] Secure all ancillary items
- [x] Turn off systems
- [x] Treatment systems / trailer tie downs
- [ ] Temporary barrier installation to minimize flooding
- [ ] Other
- [ ] Fill tanks for added stability
- [ ] Connect backup power
- [ ] Stormwater runoff controls

Reference the applicable "plan" to be followed, which would detail the recommended precautionary actions, (e.g. turn off [which?] systems)

Site Management Plan - O&M section. Shutdown checklist.

Back-up Systems: (Check all that apply)

- [x] Computer - data collection
- [ ] Computer - operational controls
- [ ] Hard copies of manuals
- [ ] Other

Safety Equipment On Site: (Check all that apply)

- [x] Fire Extinguisher
- [ ] PPE - Hard Hat, Tyvek suit, goggles, boot covers
- [ ] Plastic Sheeting
- [ ] Eye Wash Station
- [ ] Backup generator
- [ ] Back hoe/Excavator
- [ ] Radio/Communication System
- [ ] Other

Preparing Post-Construction Cleanup Sites for Natural Disasters

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D. Site-Specific Documents

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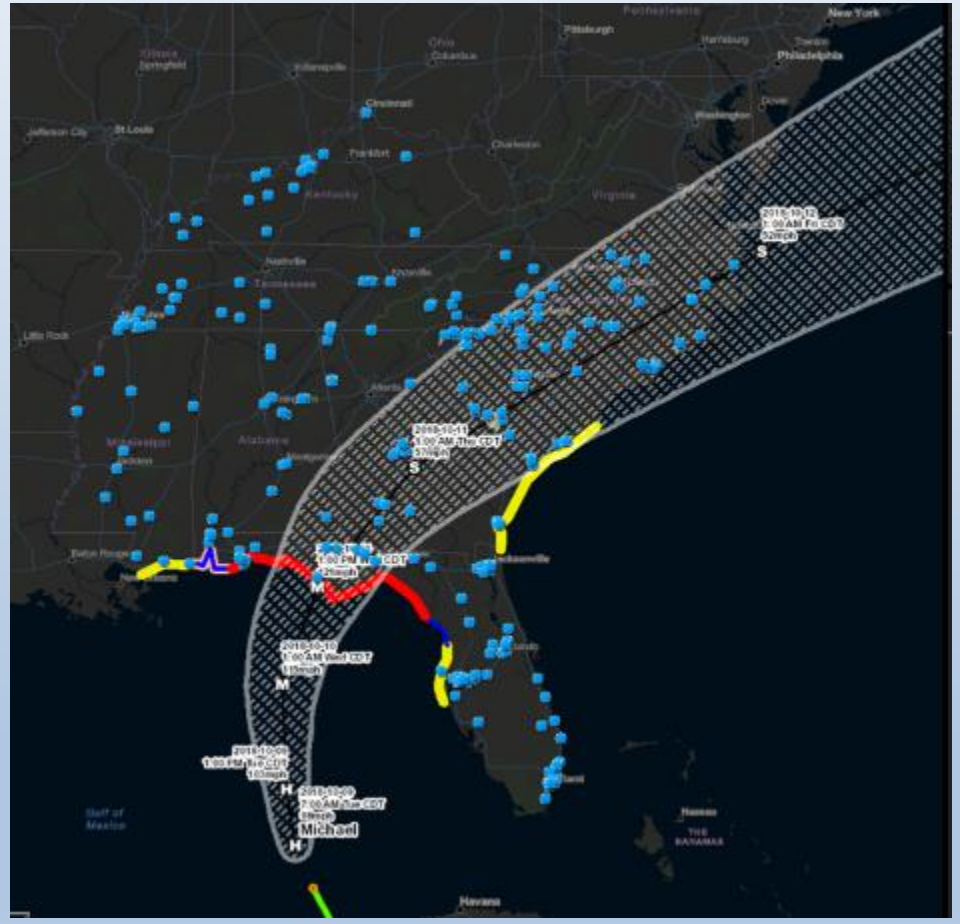
Other				

Considerations

Pre and Post Event Considerations



Hurricane Michael: 91 NPL Sites located within storm path, one within storm surge. 8 NPL sites were located in Florida

Mexico Beach, Florida 2018

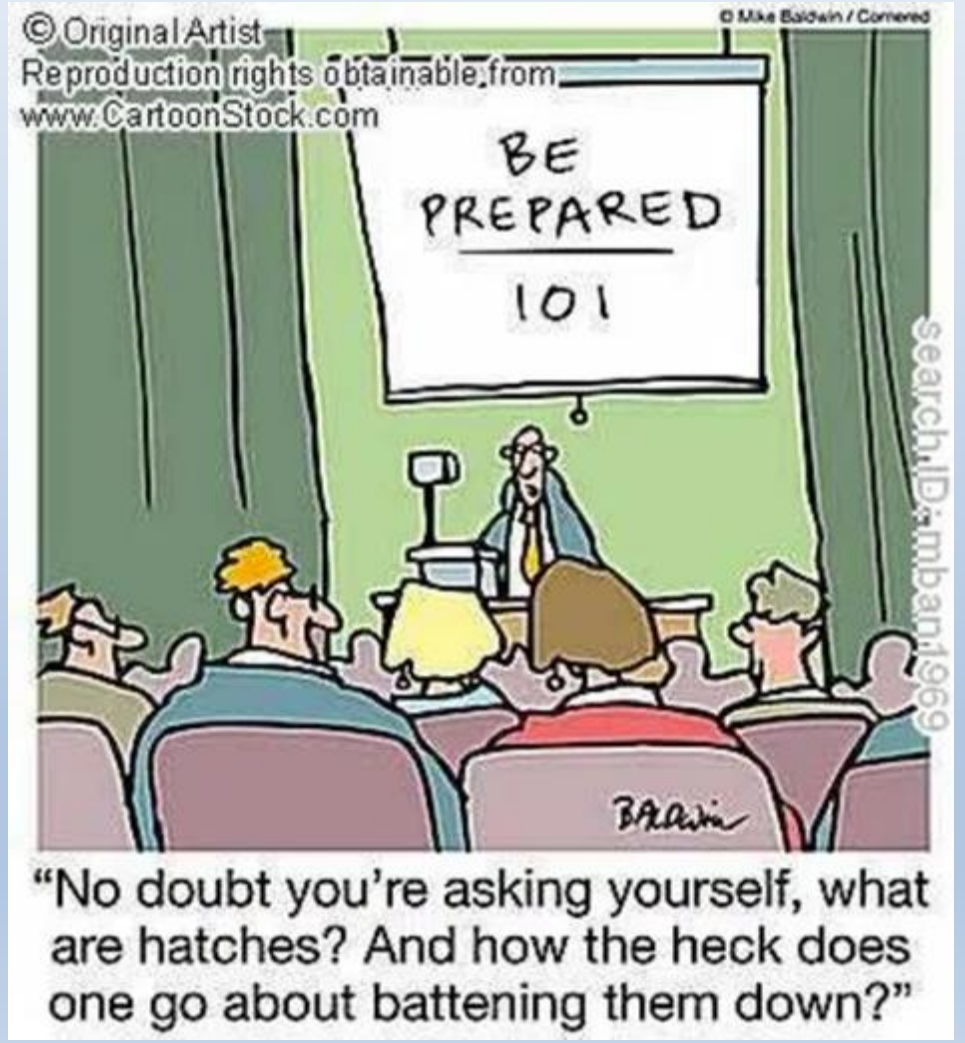
Pre Event Considerations

Prioritize sites-

- Active/Passive systems
- Which sites are most vulnerable?
- Which sites have the highest risk of public exposure?

Pre Event Considerations

- Pre-incident site inspection
- Secure equipment & materials
- Adequate safety materials on site:
  - Pumps, sandbags, filter socks



Pre Event Considerations

- Document access
  - No power?
  - Telecommunication services?
- Communicate plans with EPA RPM and Owner/Operator
- Coordinate with Contract Consultant
- Site access
  - Roads may not be accessible
  - Keys for locks, gates, doors

During Disaster

- Monitor event for potential impacts
  - Remote telemetry
  - News media
  - Weather forecasts/reports
  - Social media
- Wait…

During Disaster

- Communication
  - When to report?
  - Who does the reporting?
  - How is the message delivered?
  - Who gets the report?
    - City? County? LEPC? Tribal Govt?
    - State Emergency Response Commission (SERC)?
    - Emergency Operations Center?
    - ESF #10 – Oil & Haz

Post Event– Site Inspection

- **Evaluate** (Damage assessment)
  - Identify immediate actions to restore protectiveness
  - Equipment integrity
  - Waste piles/drums stored/other waste concerns
  - Well integrity – Groundwater level changes

Post Event - Recommendations

- Communicate with EPA and impacted parties
- Post-event photo documentation
- Consider other impacts, such as access roads, fencing, loss of power, elevated water table.
- Assignment, schedule and costs for repairs

- United Metals, Marianna, FL
- Battery reclamation facility
- Metal & auto recycler
- OCT2018 Hurricane Michael
- Containment cap intact

Preparing Post-Construction Cleanup Sites for Natural Disasters

Clear Data

IV. Photo Documentation

A. Pre Event Photos

Date added: 10/1/2017

x

Title: United Metals, Marianna FL

Add Additional Image

B. Post Event Photos

Date added: 10/30/2018

x

Title: United Metals, Marianna FL

Add Additional Image

- Cherokee County – OU6 Badger Subsite, E Badger Repository
- Pb/Zn mine waste
- MAY2019 Spring River flood
- Scouring exposed mine waste

Preparing Post-Construction Cleanup Sites for Natural Disasters

Clear Data

IV. Photo Documentation

A. Pre Event Photos

Date added: x

Title: E Badger Repository - RR trestle (looking NE)

Add Additional Image

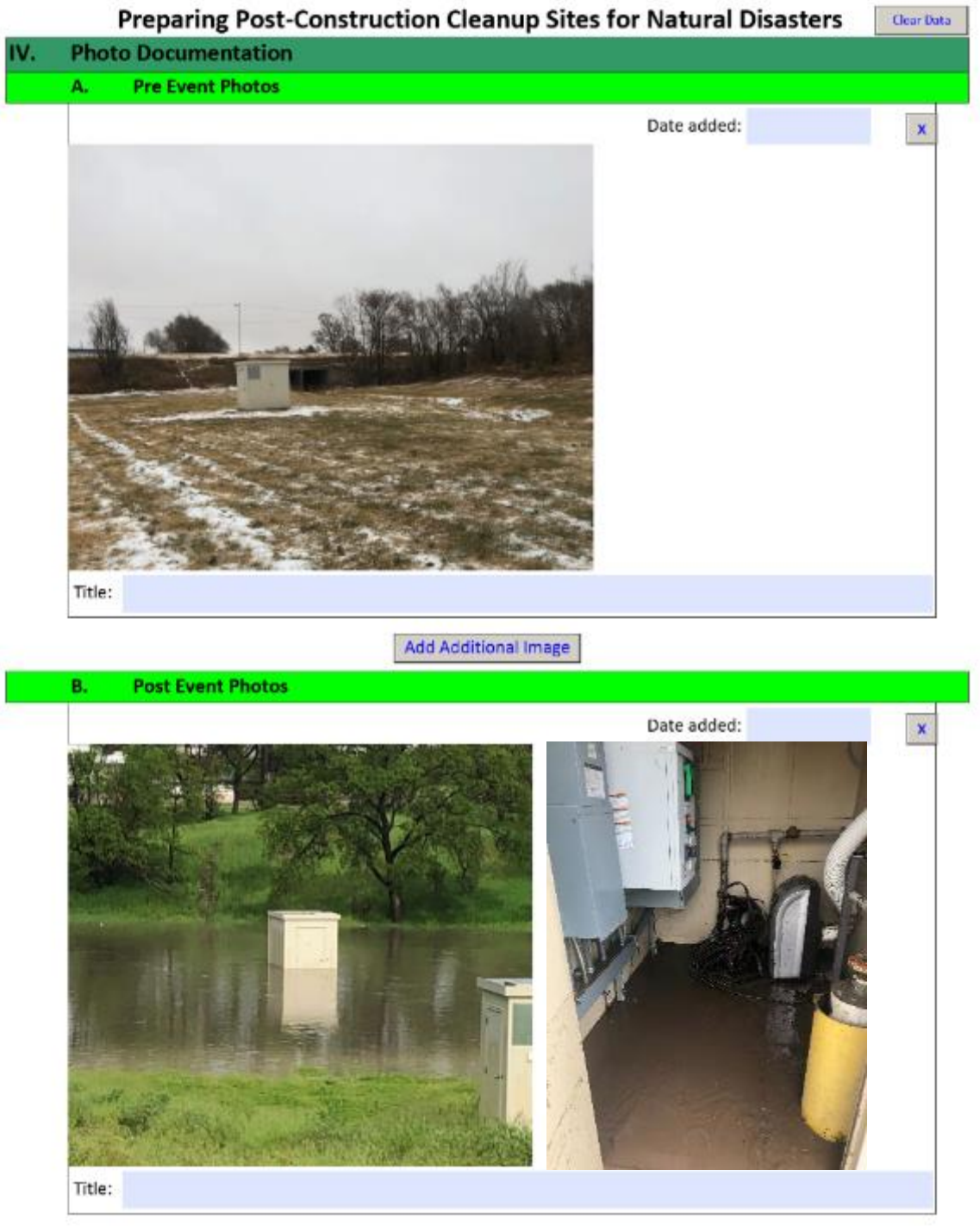
B. Post Event Photos

Date added: x

Title: E Badger Scour Event 2019-06-03 - trestle in background (looking NE)

Add Additional Image

- Ace Services – Colby, KS
- Chrome plating facility
- Soil repository w/ GET ionic resin
- 26MAY2019 - 200-year rain event
  - 3.73” in 45 minutes
- EX-7 inundated



Post Natural Disaster – Lessons Learned

- Following a disaster
  - Update checklists
  - Hot wash - what went right or wrong
  - How to improve the process prior to the next event.
- Living Document

Benefits of Checklist

- Allow for quick clear communications before, during and after event
- Identify shortcomings, systems requiring upgrades due to susceptibility/vulnerability
- Facilitate an organized response to limit impact to human health and environment
- Link to the checklist

Questions