

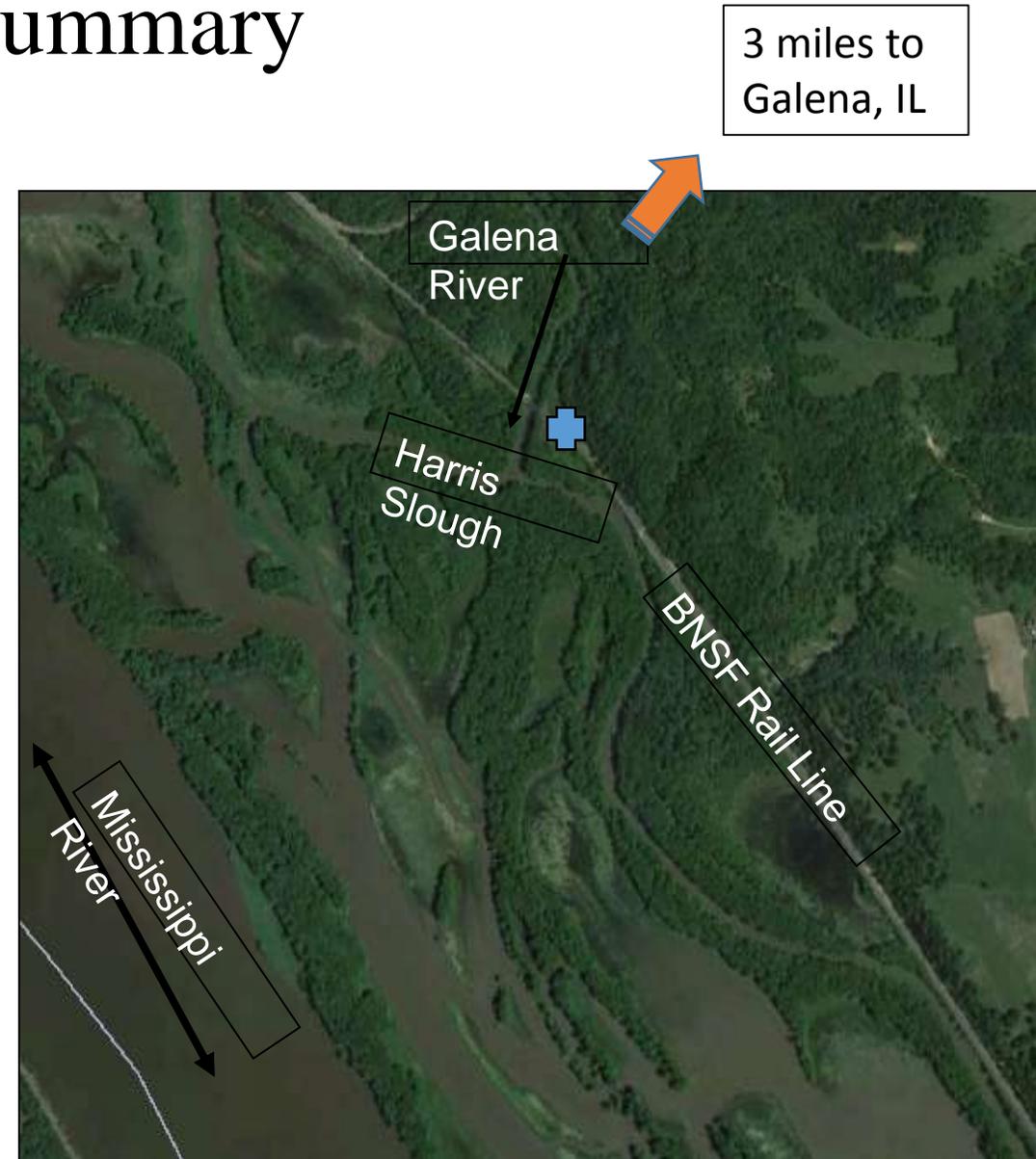
# Lessons Learned – Galena, Illinois Derailment

**NRT Worker Safety & Health Technical Conference – 10/19/2016**



# Quick Incident Summary

- 1324hrs on March 5
- 21 of 105 cars derailed
- Crude oil released to ground & burned
- Initial response focus =
  - Life safety
  - Incident stabilization
  - Protection of environment
- **415** personnel initially
  - Local (City/Co/Township), State, Federal, Contractors

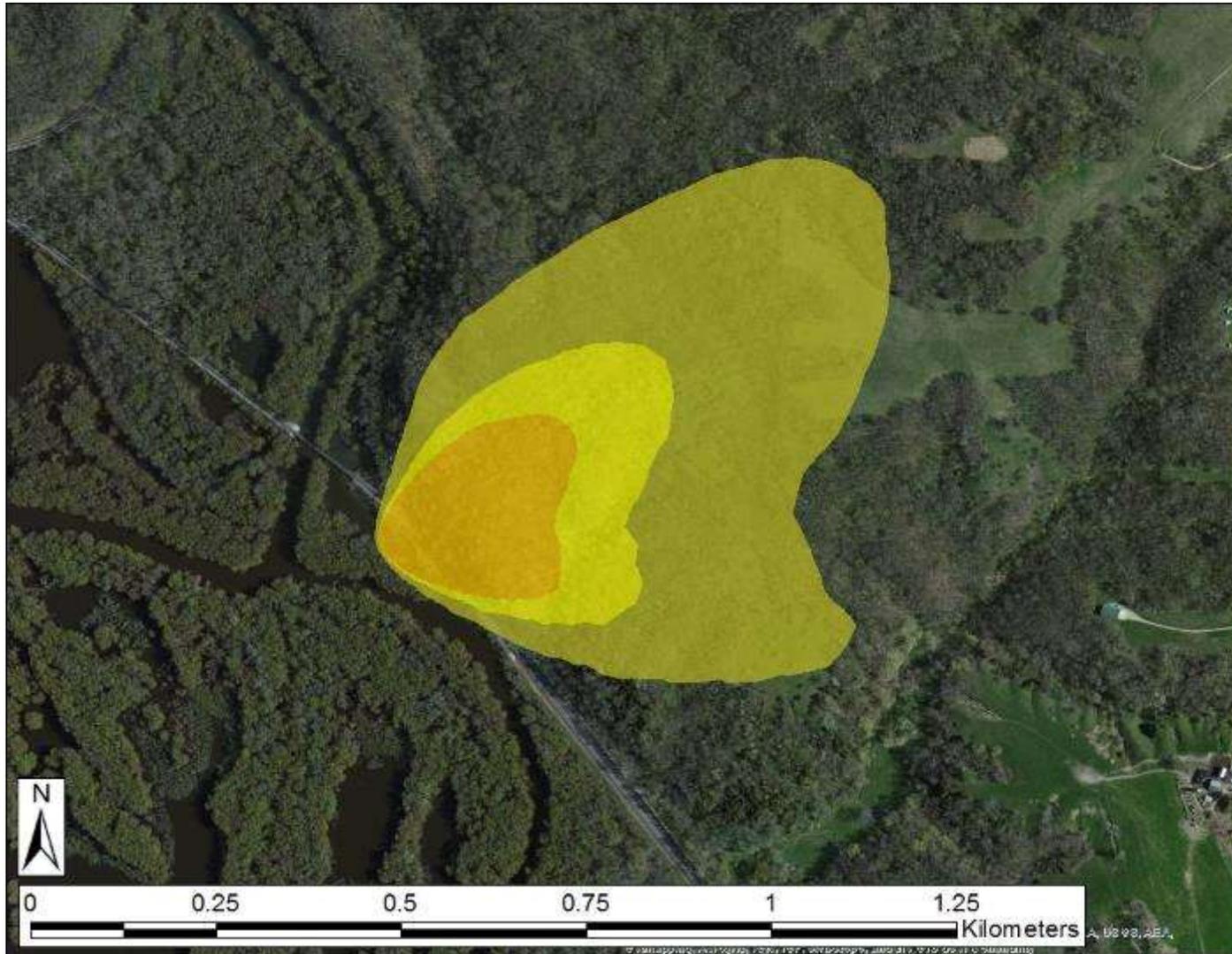


# Initial Response

- A soil berm was conducted between the derailment site & the river
- Containment boom was placed in the river as a precautionary measure
- Fire service attempted to extinguish / control fire(s)



# Contingency Planning - Modeling



Oilfire Gas Surface Dosage 07-Mar-15 22:00:00Z (24.000 hr)		
	mg-min/m3	In contour area (km <sup>2</sup> )
<span style="color: orange;">■</span> Hazardous	360.72	4.92E-2
<span style="color: yellow;">■</span> Very Unhealthy	216.72	0.108
<span style="color: lightgreen;">■</span> Unhealthy	94.32	0.349

This quick response used a weather prediction model; and was not coordinated with other IMAAC participants. Coordination will follow, and product will be updated as needed.

## FACTS

Galena, IL

Location:

42.374470° N / 90.4443060° W

Event Time: 1725, 06MAR2015

Type: Bakken Crude Oil

Amount: 60,000 gallons

Dissemination: Rail Accident

Weather: 12 km NAM

Model: HPAC 5.3

Static Population Estimates:  
LandScan 2013

# Containment





Underflow Dam

Hard Boom  
Pom Poms  
Sausage Boom



# Containment



# Response Activities

- Extinguished fire, investigate, assess scene
  - Roadway access to difficult area
- Vacuumed out crude from impacted cars & ground
- Removed damaged cars from right-of-way
  - Emptied, cleaned, purged, cut up & scrapped cars (hailed out by truck)
- Excavated contaminated soils under tracks
- Replaced damaged track & resume track ops
  - 100 trains had backed up

# Assessment - Friday, March 6



PR

Saturday, March 7



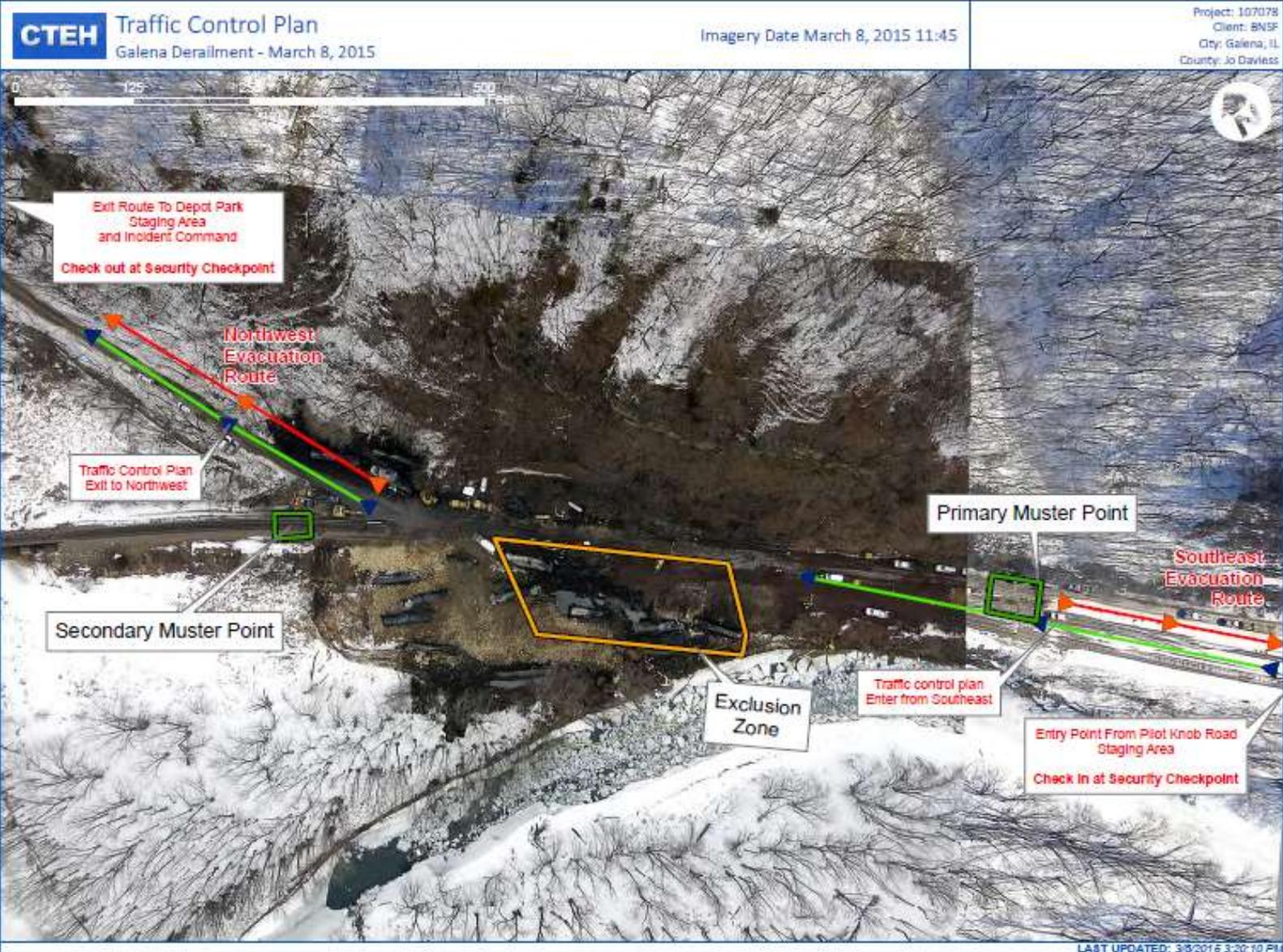


LD LMT 211500 LB 35950 KG  
LT WT 24500 LB 33900 KG



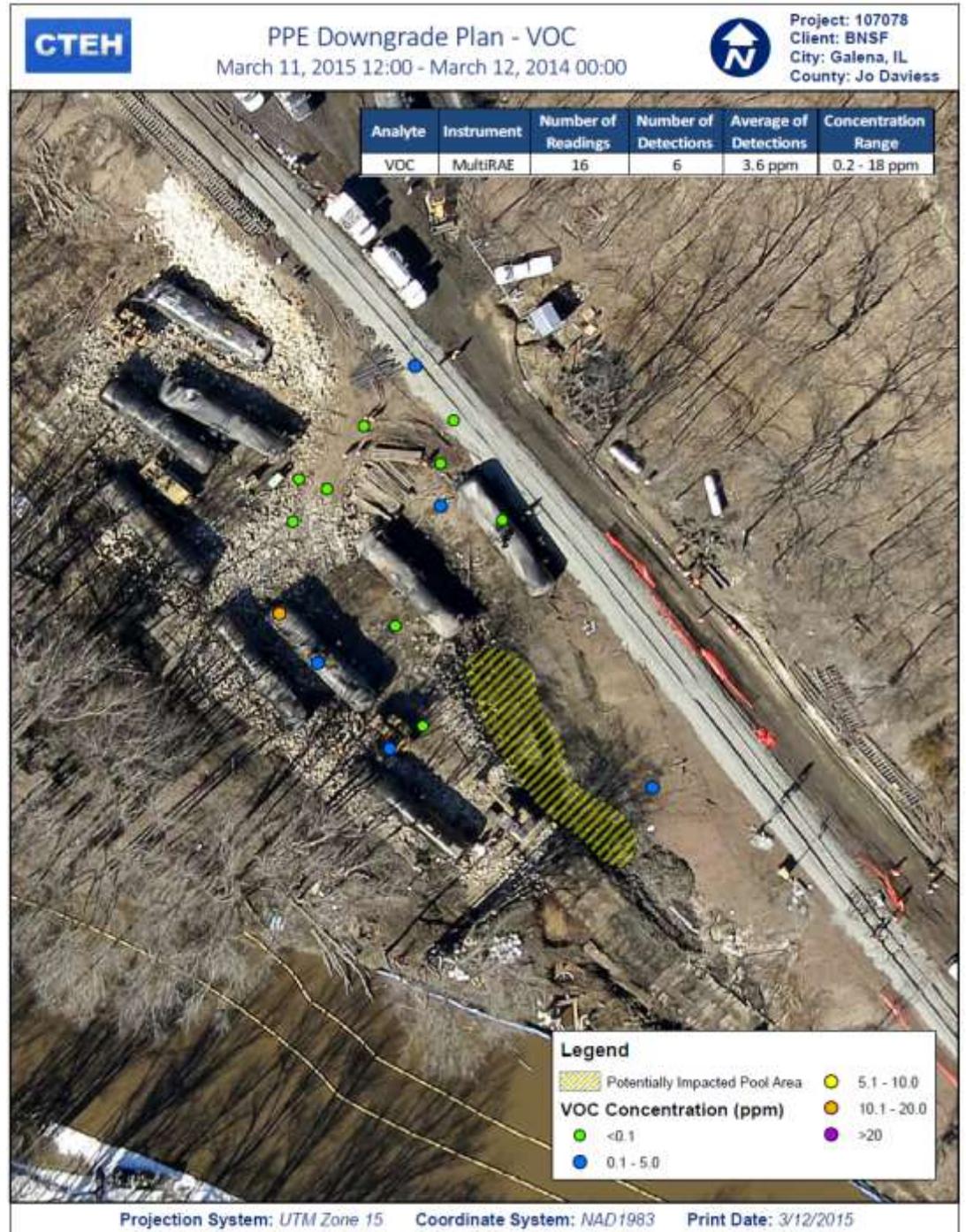
35202

# Traffic Control Plan



# PPE Planning

- Zone delineation
- VOCs
- LELs

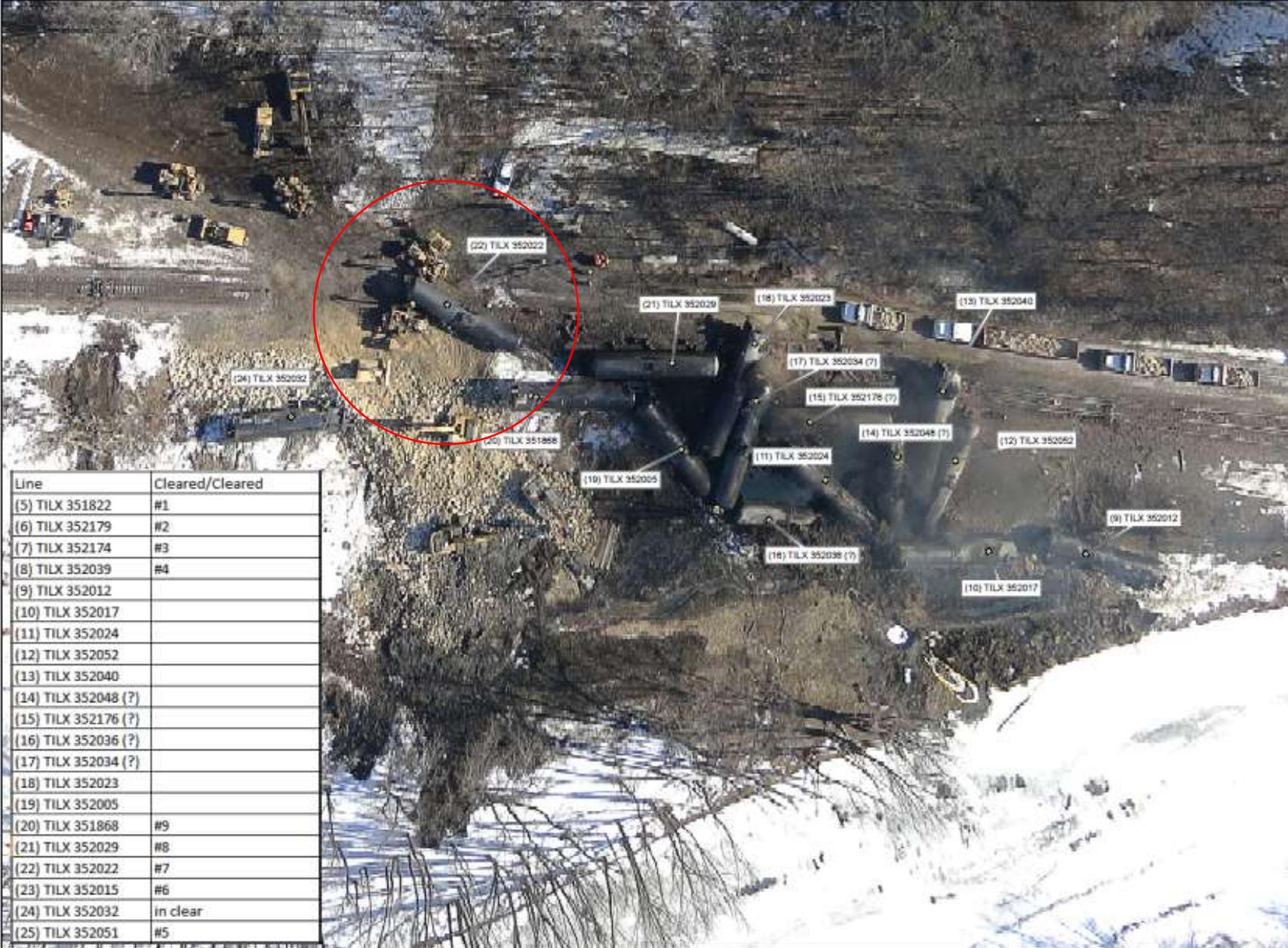




(This particular) Bakken Crude was Green



# Staging & Clearing Wreck



Line	Cleared/Cleared
(5) TILX 351822	#1
(6) TILX 352179	#2
(7) TILX 352174	#3
(8) TILX 352039	#4
(9) TILX 352012	
(10) TILX 352017	
(11) TILX 352024	
(12) TILX 352052	
(13) TILX 352040	
(14) TILX 352048 (?)	
(15) TILX 352176 (?)	
(16) TILX 352036 (?)	
(17) TILX 352034 (?)	
(18) TILX 352023	
(19) TILX 352005	
(20) TILX 351868	#9
(21) TILX 352029	#8
(22) TILX 352022	#7
(23) TILX 352015	#6
(24) TILX 352032	in clear
(25) TILX 352051	#5

# Equipment



# Staging & Clearing Wreck

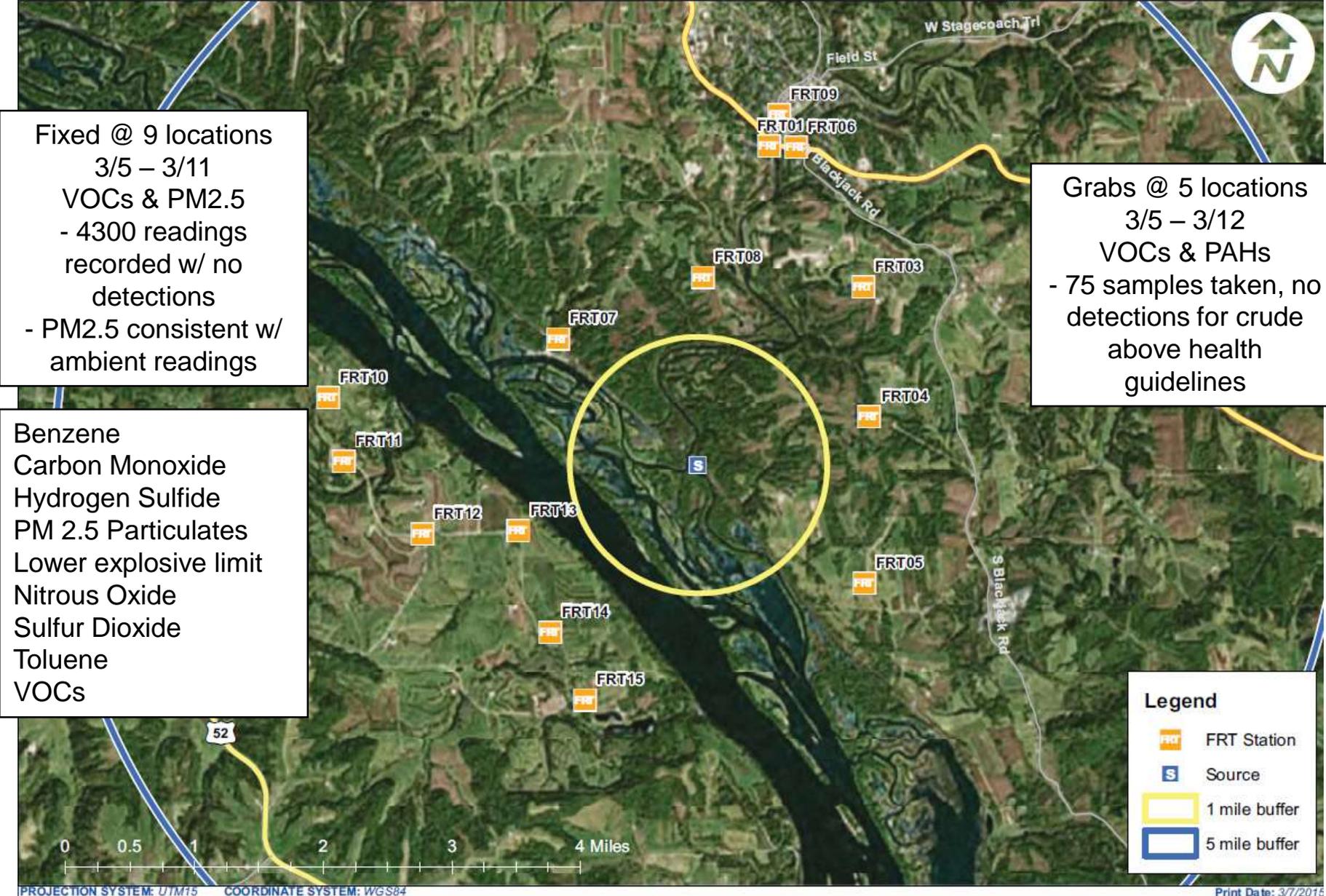




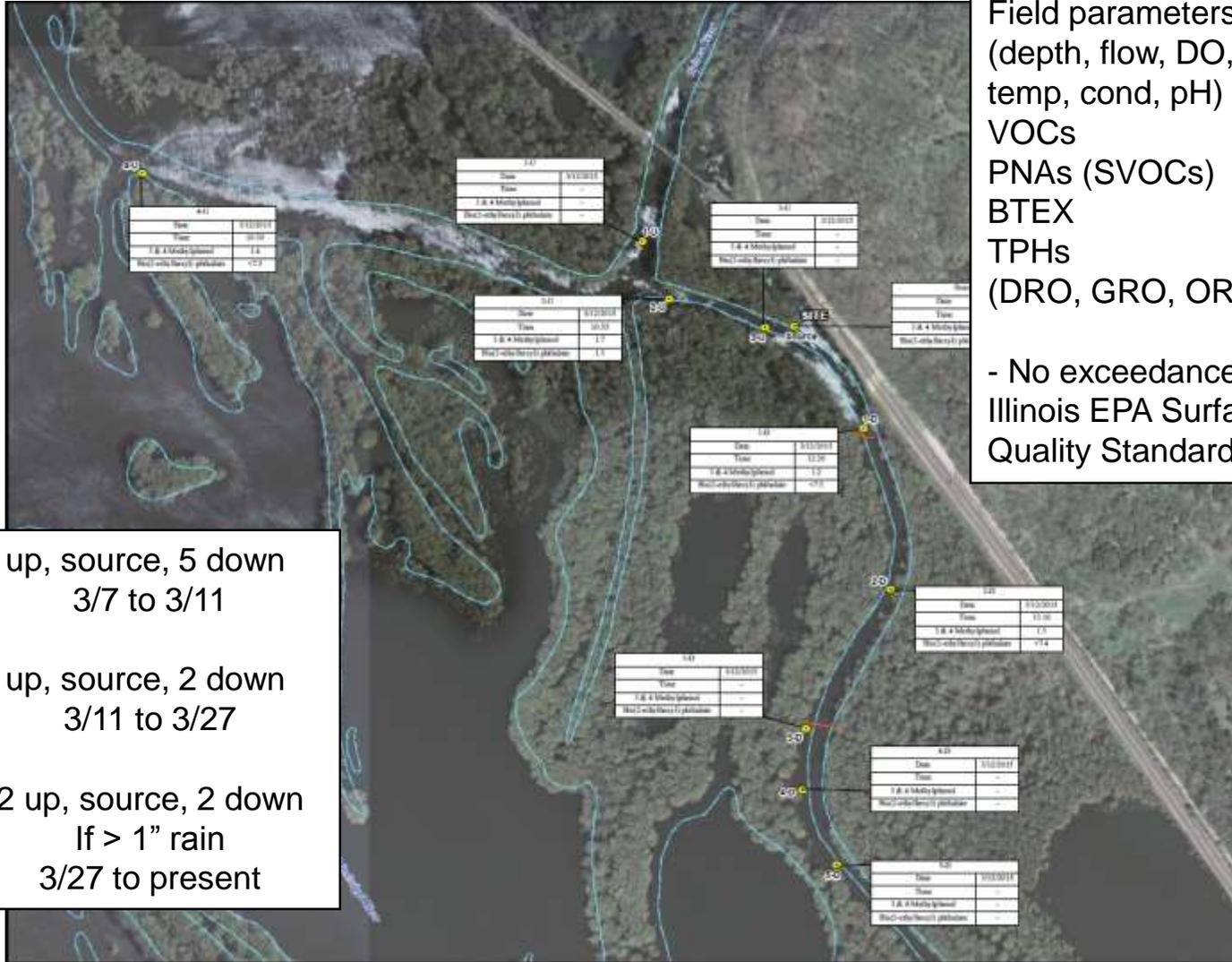
0 50 100 200 Feet



# Air



# Surface Water



Field parameters:  
 (depth, flow, DO, ORP,  
 temp, cond, pH)  
 VOCs  
 PNAs (SVOCs)  
 BTEX  
 TPHs  
 (DRO, GRO, ORO)

- No exceedances of  
 Illinois EPA Surface Water  
 Quality Standards

4 up, source, 5 down  
 3/7 to 3/11

2 up, source, 2 down  
 3/11 to 3/27

2 up, source, 2 down  
 If > 1" rain  
 3/27 to present



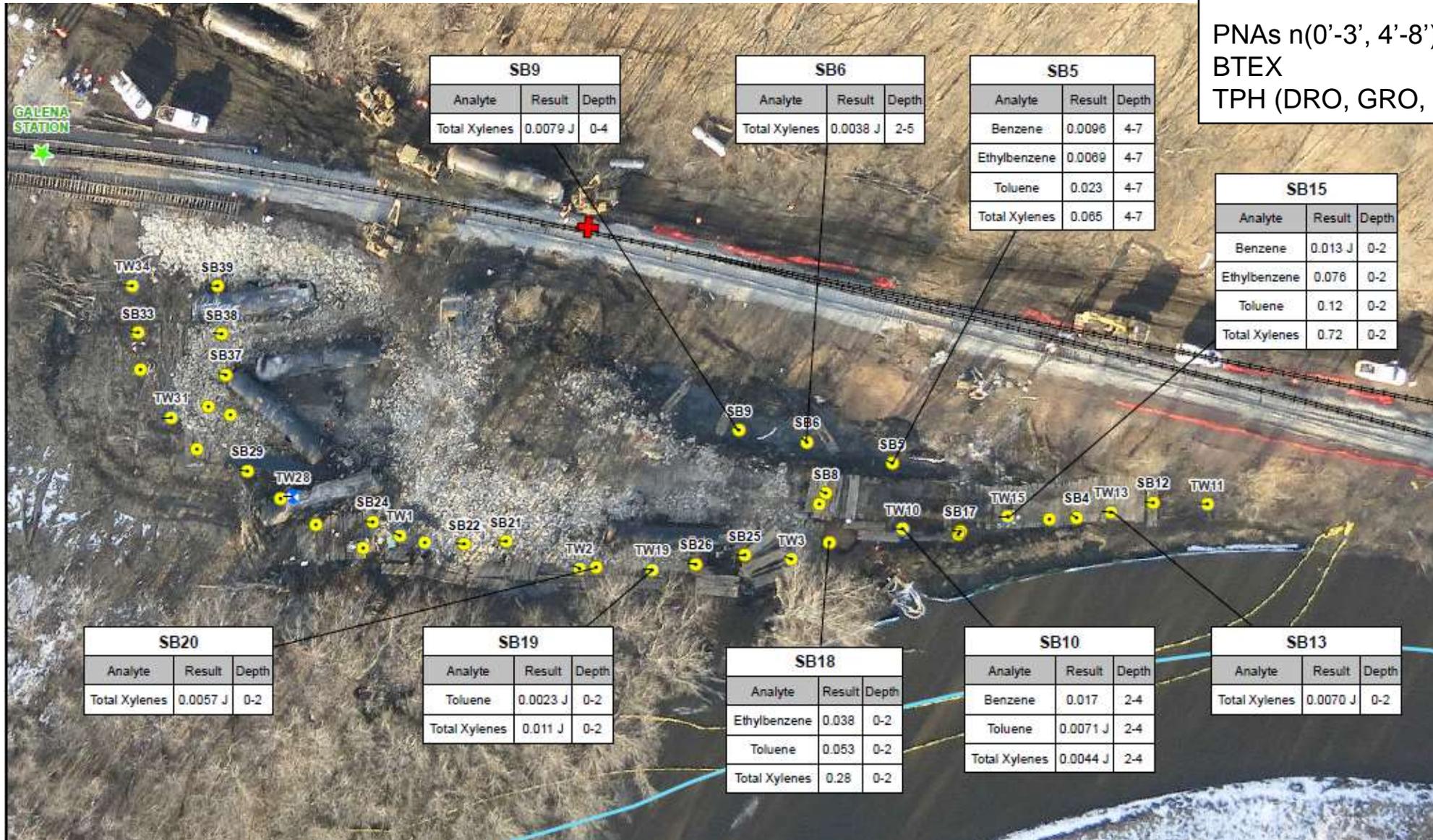
# Area of Most Significant Impact – 12 cars



# Soils

- 143 samples from 35 borings screened  
39 samples to lab

PNAs n(0'-3', 4'-8')  
BTEX  
TPH (DRO, GRO, ERO)



# Remediation Activities

- Remove crude (mass balance)
- Sheet pile impacted area
- Excavate impacted soils
  - Disposed of at Subtitle D landfill
- Flush ballast / ramp & recover oil
  - Water Treatment
  - FOSC exercised NCP, CWA Sect. 311(c) & NPDES Section 122.3(d) authority to exempt NPDES permit until state issued permit
- Backfill & restoration (USACOE)
- Long term monitoring



# Equipment



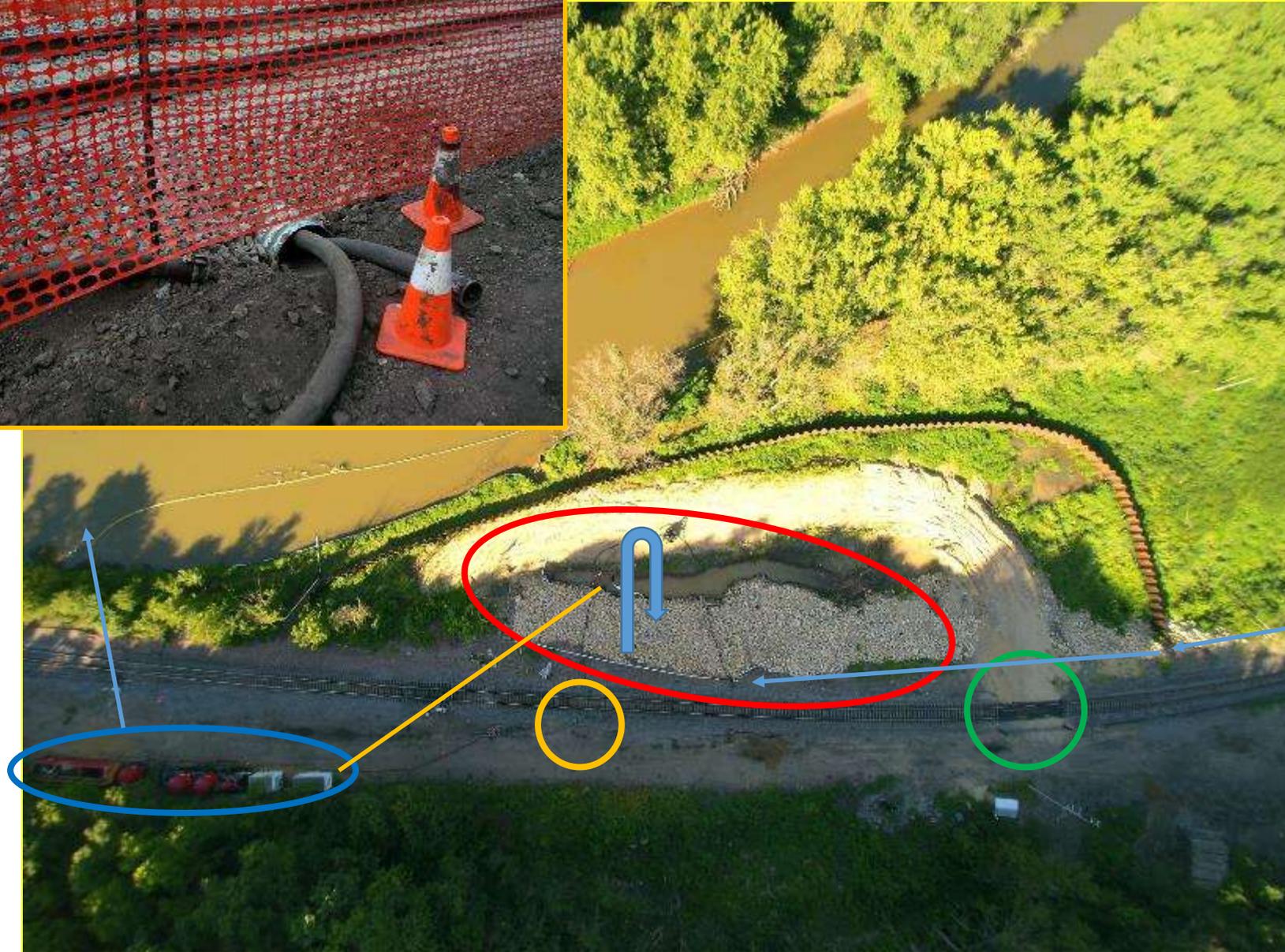
# Sheet Pile Containment



# Excavation



# Soil Flushing Set Up



# Soil Flushing



# Metrics

<b>Product</b>	<b>Total</b>
Crude Oil (recovered)	221,421 gal
Contact Water (treated)	1,700,000 gal (+)
Contaminated Soil	4,748 tons (+)
Tankers wrecked	12

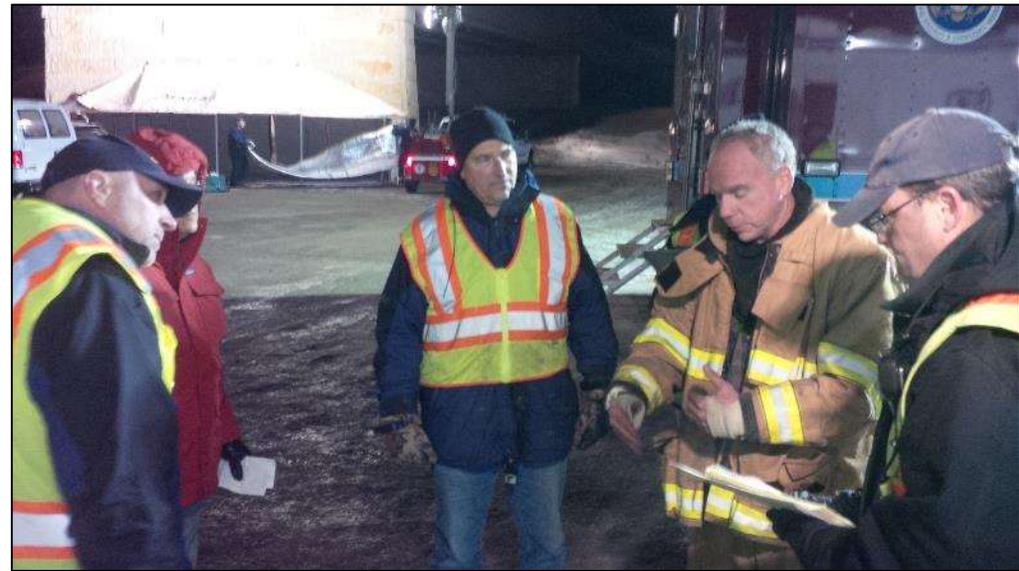
# Response/Recovery Transition

- IL-IMT met with USEPA to discuss integration
- UC selected based on:
  - **Responsibility, Authority, Expertise**
- Day 3 IAP = combination of BNSF IAP & IL-IMT IAP from Day 2
- IL-IMT worked with USEPA to establish transition plan
- IL-IMT stepped back to support role for Day 5 IAP
- IL-IMT stepped out of command structure on Day 6

## Investigation

- USDOT Pipeline & Hazardous Materials Safety Administration (PHMSA) inspected & sampled product inside cars
- USDOT Federal Railroad Administration (FRA) inspected track & rail infrastructure to determine cause of the derailment
- USCG Atlantic Strike Team & OSHA provided assistance with Health & Safety during response operations

# 'IMT' Meetings Progression



# IC to UC Transition Issues

- Composition of UC (US EPA, BNSF, JDEMA, IEPA)
  - PHMSA, FRA, OSHA, IEMA, IL IMT left off
- Selection of 1 individual was challenging:

## **BEFORE = AFTER**

- 1 IC = 4(UC)
  - 5 PSCs = 1 (CTEH)
  - 6 SOs = 1 (BNSF)
  - 4 OPSs = 1 (BNSF)
  - 3 ENVLs = 1 (ARCADIS)
- Strategy to populate KLPs w/ qualified personnel w/ longevity on site (EPA shadow or deputy)
  - IAP software utilized



# Planning Meeting – Day 6



# OPS Briefings



DAY 6



DAY 12

## Incident Action Plan

Incident: BNSF Galena Derailment 03/25/2015 07:00 CDT <sup>EST</sup>  
 Prepared By: Anton Avguchenko

Period: #10: 03/17/2015 07:00 CDT - 03/19/2015 07:00 CDT <sup>PP</sup>  
 Version Name: P010V02

Approved By *CA*

Organization	Name	Signature
U.S. EPA REGION 5	PAUL RUECH	<i>[Signature]</i>
BNSF	Charles Thomas	<i>[Signature]</i>
TD DAVIENESS EMA	CHARLES PEDERSEN	<i>[Signature]</i>

Incident Photo



### Included in Action Plan

Incident Forms	Period Forms	Attachments
<input type="checkbox"/> Include Incident Cover	<input checked="" type="checkbox"/> ICS 202 - Incident Objectives	<input checked="" type="checkbox"/> 208 Safety Message/Plan
<input type="checkbox"/> ICS 201-1 - Incident Briefing	<input type="checkbox"/> ICS 203 - Organization Assignment Lists	<input checked="" type="checkbox"/> 205a - Communications List
<input type="checkbox"/> ICS 201-2 - Summary of Current Actions	<input checked="" type="checkbox"/> ICS 204 - Assignment List(s)	<input checked="" type="checkbox"/> Oil Spill Contingency Plan
<input type="checkbox"/> ICS 201-3 - Organization Chart	<input checked="" type="checkbox"/> ICS 205 - Communication Plan	<input checked="" type="checkbox"/> Water Influx Contingency Plan
<input type="checkbox"/> ICS 201-4 - Resource Summary	<input checked="" type="checkbox"/> ICS 206 - Medical Plan	<input checked="" type="checkbox"/> 209 Situational Update
<input type="checkbox"/> ICS 201-5 - Site Safety and Control Analysis	<input checked="" type="checkbox"/> ICS 207 - Organizational Chart	<input checked="" type="checkbox"/> Site Map
<input type="checkbox"/> Reactive Phase Weather Report	<input checked="" type="checkbox"/> ICS 208 - Site Safety Plan(s)	<input checked="" type="checkbox"/> ICS 203 OP10
<input type="checkbox"/> Reactive Phase Notifications	<input type="checkbox"/> ICS 211P - Check In List	<input checked="" type="checkbox"/> Site Road map
	<input type="checkbox"/> ICS 213 - General Message(s)	<input checked="" type="checkbox"/> Plan Tracker
	<input checked="" type="checkbox"/> ICS 214 - Activity Logs	<input checked="" type="checkbox"/> ICS 233 - Open Action Items
	<input type="checkbox"/> ICS 215 - Operational Planning Worksheet	
	<input checked="" type="checkbox"/> ICS 230 - Meeting Schedule	
	<input type="checkbox"/> Weather Report	
	<input type="checkbox"/> Incident Critique	

## ICS 202: Incident Objectives

Incident: BNSF Galena Derailment Prepared By: Anton Avguchenko  
 Period: #10: 03/17/2015 07:00 CDT - 03/25/2015 07:00 CDT Version Name: 03/17/2015 08:25 CDT

### Objective(s)

1. SAFETY OF RESIDENTS & RESPONDERS
2. PROTECT ENVIRONMENT AND CONTROL RUNOFF
3. STABILIZE SITE
4. MONITOR ENVIRONMENTAL CONDITIONS/IMPACTS
5. FACILITATE INVESTIGATIONS & PRODUCT RECOVERY/REMEDIATION
6. RESTORE DERAILMENT SITE
7. ENSURE SAFE AND EFFECTIVE TRACK OPERATIONS
8. ENSURE CONSTRUCTION OF SITE CONTROLS

### Operational Period Command Emphasis

INITIATE TRANSITION OF REGULATORY OVERSIGHT FROM USEPA TO ILEPA  
 RELOCATE COMMAND POST  
 COMMUNICATE HEALTH AND SAFETY PLAN TO ALL RESPONDERS  
 TRAIN RESPONDERS ON-TRACK SAFETY  
 COMMUNICATE CONTINGENCY PLAN TO ALL RESPONDERS  
 CONTINUE COMMUNICATIONS AMONG RESPONDERS AND RESPONSE AGENCIES  
 IMPROVE COMMON OPERATING PICTURE AT THE SITE AND THE ICP  
 UPDATE THE CONTAINMENT/CONTINGENCY PLAN

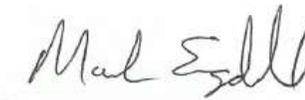
### LIMITATIONS/CONSTRAINTS

TRACK WINDOWS

### General Situational Awareness

ENVIRONMENTAL SAMPLING CONTINUES (SURFACE WATER ONLY)  
 INSTALLATION OF SHEETPIILING WALL  
 DELIVERY OF WATER TREATMENT SYSTEM  
 COMMAND SITE HAS NIGHTTIME SECURITY ONLY  
 WORK SITE STILL HAS 24HR SECURITY

- 24 Work Plans were developed, commented on & approved in a 2 week period
  - Heavy involvement from OPS (ideas, suggestions, experience, comments)
- + USCG input based on Mt Carbon incident

BNSF Derailment, Galena, Illinois	
Title: Water Influx Contingency Plan	
Version: 2	
Date Submitted: 3/16/15	
Plan Submitted by: BNSF	
Unified Command Sign-off	
US EPA:  3/16/2015	Galena FD: County EMA: 
Illinois EPA:	
BNSF:  3/16/2015	
Notes:	

# Communications - VIPs



# AAR

- Operational objectives analyzed:
  - Notification
  - Initial Response
  - Incident Stabilization
  - Transfer of Command
- Analysis of core capabilities:
  - Public information & warning
  - Environmental response / H&S
  - Operational Coordination
  - Situational Assessment
  - On-Scene Security & Protection
  - Operational Communications
  - Planning
  - Intelligence & Information Sharing



## **Galena Train Derailment**

After-Action Report/Improvement Plan

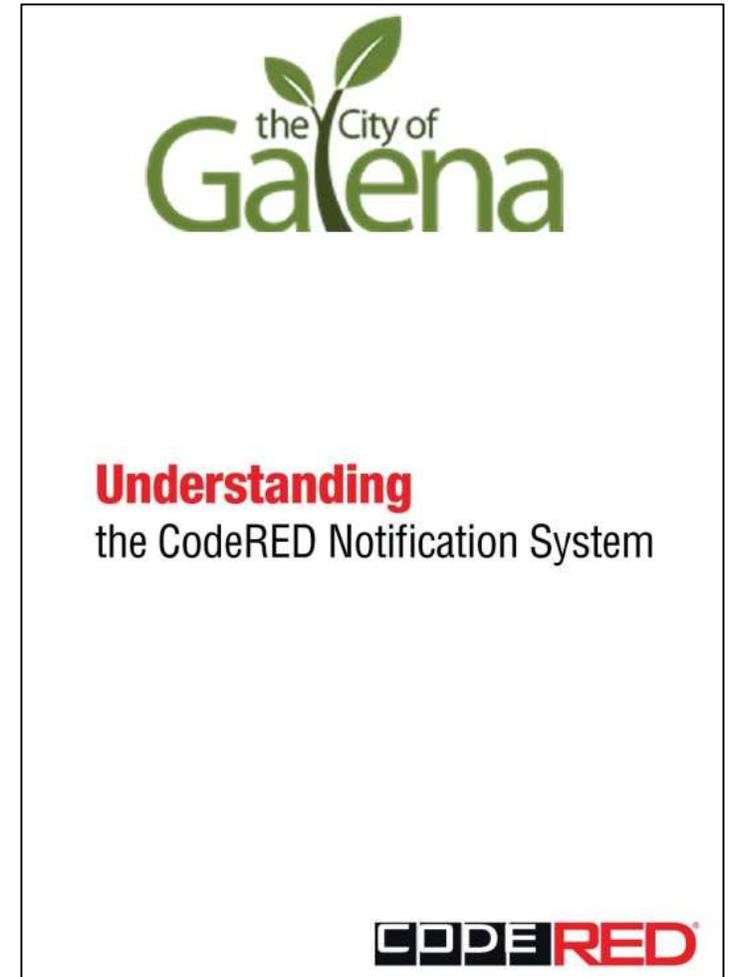
March 27, 2015

The After-Action Report/Improvement Plan (AAR/IP) aligns exercise objectives with preparedness doctrine to include the National Preparedness Goal and related frameworks and guidance. Exercise information required for preparedness reporting and trend analysis is included; users are encouraged to add additional sections as needed to support their own organizational needs.

Rev. April 2013  
HSEEP-IP01

# Improvement Plan Highlights

- Policies and procedures
  - EOP Updates
    - Declaration of a disaster
    - Chain of Command
    - Decision-making & spending authority
    - Train derailment annex
  - Release of information to the public
    - Emergency notification system
    - Facebook & Twitter accounts established
- Training
  - Galena FD attended SERTC (PER-327)
    - <http://sertc.org/courses/crude-by-rail-emergency-response-cbr/>
  - Coalition-building with surrounding counties
- Equipment
  - Cell phones, comms tower, light tower
  - MCP upgrades
  - Updated inventory of resources county-wide



# State & Regional Impacts

- Joint EPA / AAR / Class I coordination meetings
- EPA & States seeking to share & coordinate ER planning info/resources w/ Class 1 RRs sending unit trains thru Region 5
  - Joint trainings (TRIPR, TRANSCAER, etc.)
  - Local tabletop exercises (3-4 completed in 2016)
  - Full scale exercises
  - Participation in Regional Response Team (RRT) meetings

# *Thank You!*



<http://www2.epa.gov/il/galena-train-derailment>  
<http://www.epaossc.org/bnsfgalenaspill>

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