



Draper Aden Associates

Engineering • Surveying • Environmental Services

PRESLAR'S EXXON

A TALE OF TWO AGENCIES

(Apologies to Charles Dickens)

THE CHARACTERS

NCDOT

NCDEQ

UST Section

Division of Water Quality

Division of Water Resources

Trust Fund

The Landowner



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THE PLOT

1968 to 1994 – Site operated as a gas station

(2) 3,000-gallon gasoline

(1) 2,000-gallon gasoline

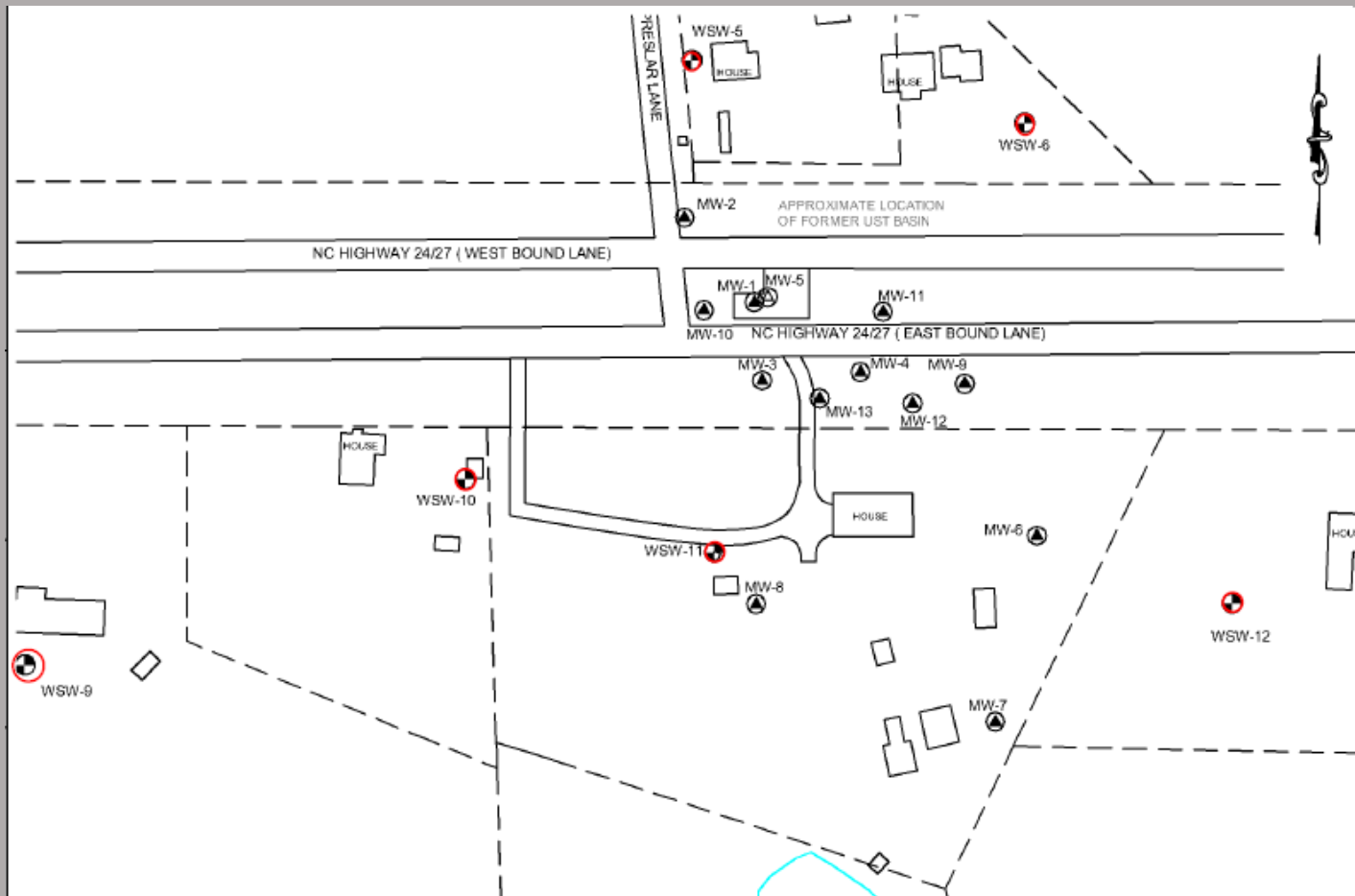
(10) 560-gallon kerosene

1994 – Initial assessment completed for the property that shows no environmental concerns; NCDOT purchases the site for road expansion

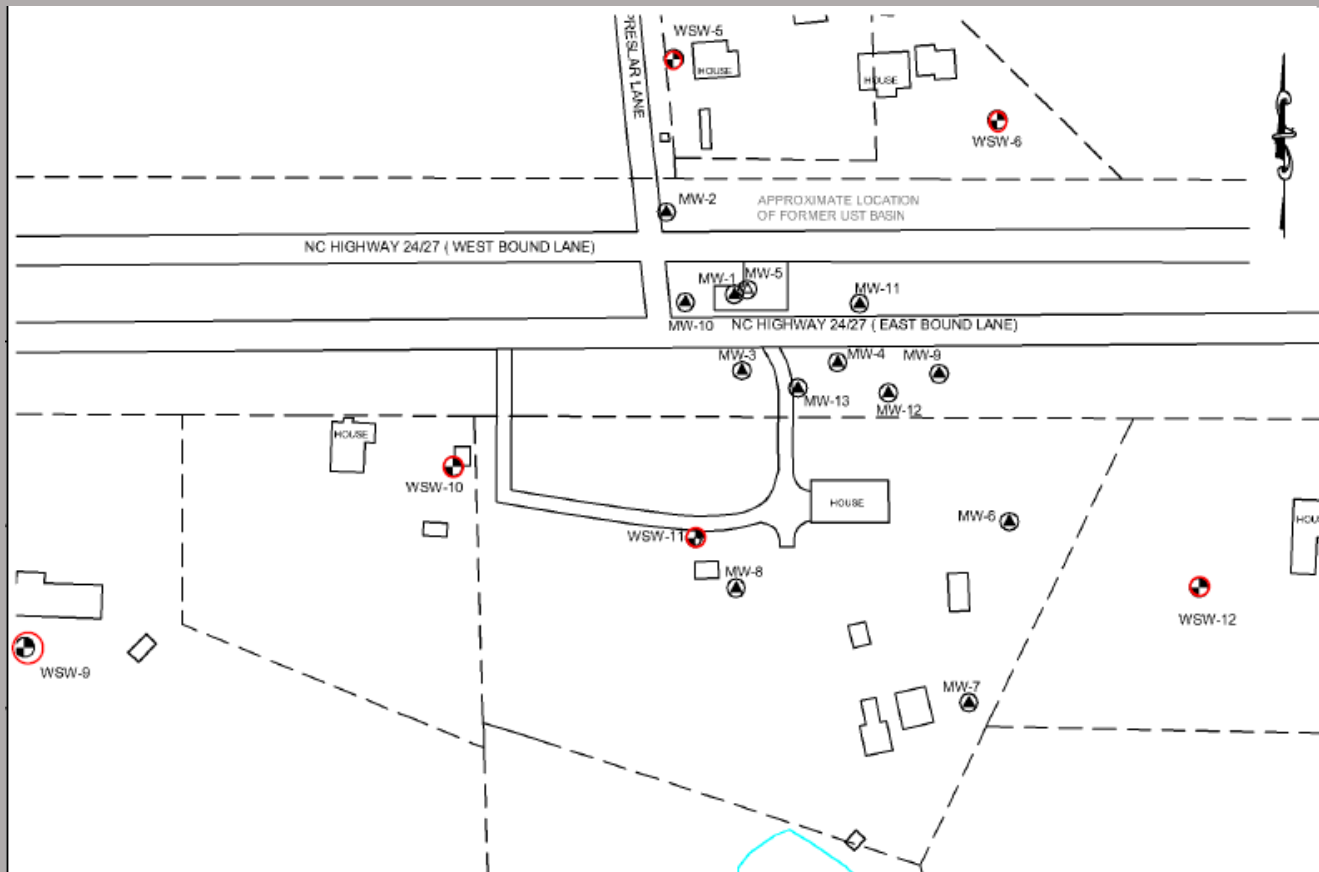
1994 – NCDOT removes USTs from the site and discovers contamination; removes 200+ tons soil



1998 – LSA conducted and results indicate high risk site due to surrounding potable and irrigation wells.



2001 – CSA completed with 9 monitoring wells that show petroleum contamination in the median and southern right-of-way. The CSA also reports that groundwater is at a depth of 6 to 12 ft bgs; bedrock is at 5 ft bgs.



THE PLOT THICKENS

UST Section now involved and requires NCDOT to:

- Install additional monitoring wells
- Collect groundwater samples from all monitoring wells
- Collect additional soil samples
- Collect samples from all surrounding potable and irrigation wells.



PLOT TWIST

Late 2002 – Draper Aden Associates takes over the project

2003 – UST Section completes review of previous information and directs NCDOT to:

- Collect additional off-site well samples
- Install additional monitoring wells
- Collect samples from the monitoring wells semiannually
- Perform a 5-day MMPE event



SUBPLOT

2003 to 2009

DAA prepares a CAP that recommends injection techniques

MNA continues at the site

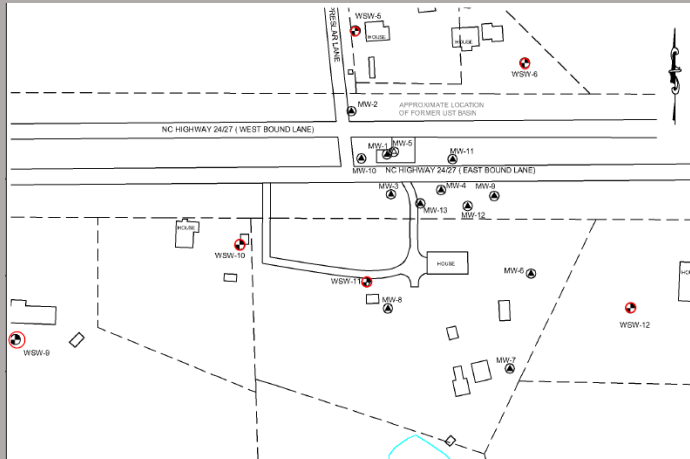
Site is determined eligible for Trust Fund reimbursement

NCDOT attempts to reduce risk classification by connecting well owners to public water

The attempt is partially successful; nearby irrigation well replacement not accepted



Irrigation well within 250 feet of source area



NCDOT attempted to replace well

Original well was 30 feet deep and yielded 5 gpm



Replacement well was 300 feet deep and yielded 1 gpm



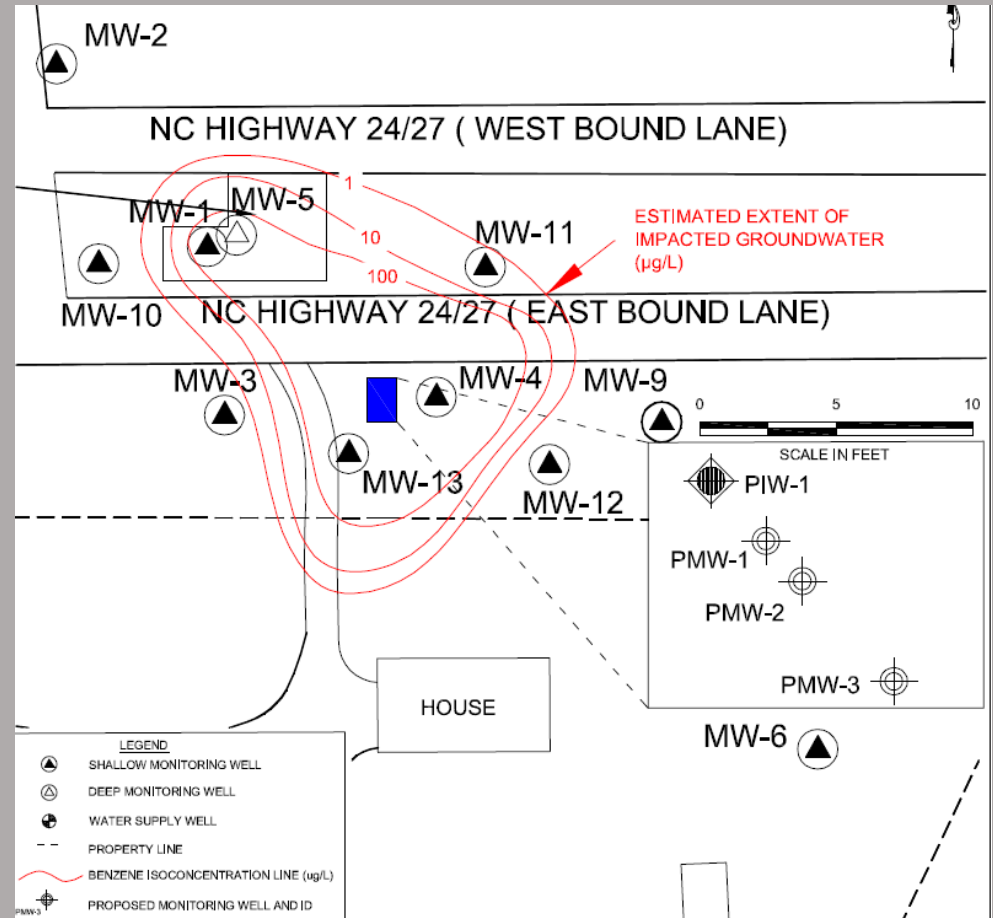
Landowner rejected new well

PLOT

2009 to 2012

UST Section requires
NCDOT to continue
sampling

- Groundwater found to be anaerobic
- Plume size reduced significantly
- Pilot test using sulfate conducted with good results



2013

-UST Section approves a CAP Addendum and directs full-sale injection (3 events scheduled)

- Now have input from:
 - UST Section – requiring remedial action
 - Division of Water Quality – UIC Permit
 - Division of Water Resources – injection well permits
 - Trust Fund – cost oversight

Nineteen (19) injection wells installed in right-of-way



May 2015 – First injection event completed. Sampling results indicate reduction in contaminants

January 2016 – UST Section wants additional sampling and Trust Fund concerned with costs.

April 2016 – Second injection event completed and analytical results continue to show progress



PLOT TWIST

June 1, 2016

North Carolina Petroleum UST Release Corrective Action
Phase Project Management:
A Calibrated Risk-Based Corrective Action Decision &
Implementation Guide



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CLIMAX

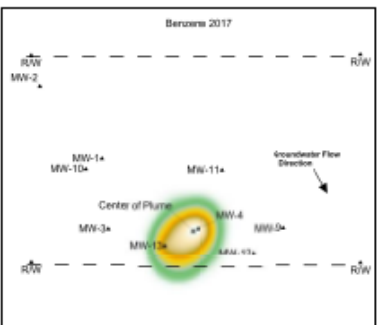
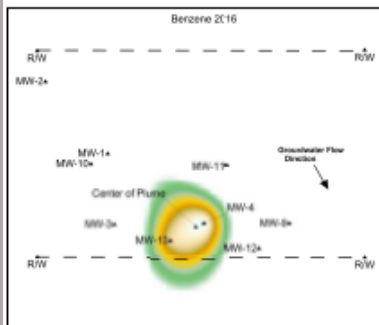
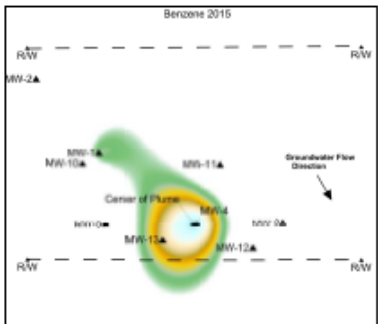
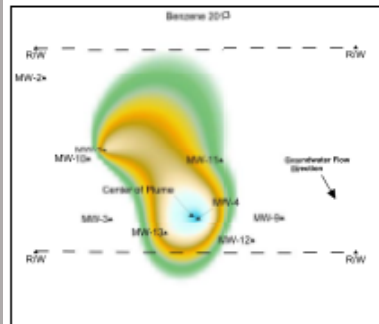
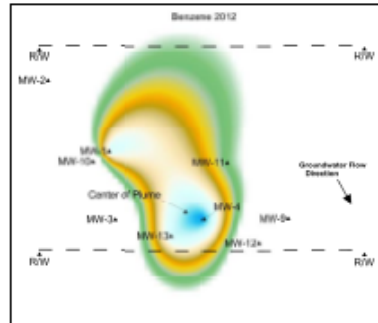
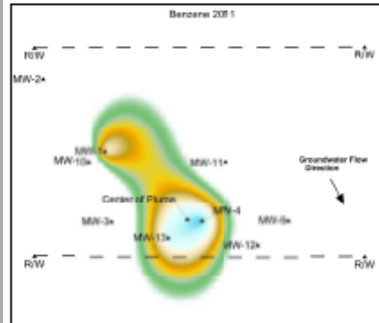
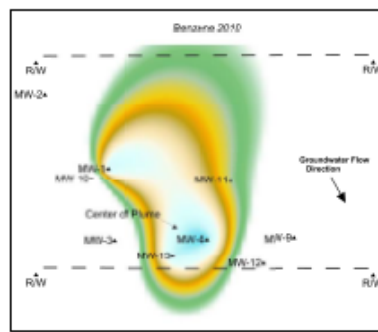
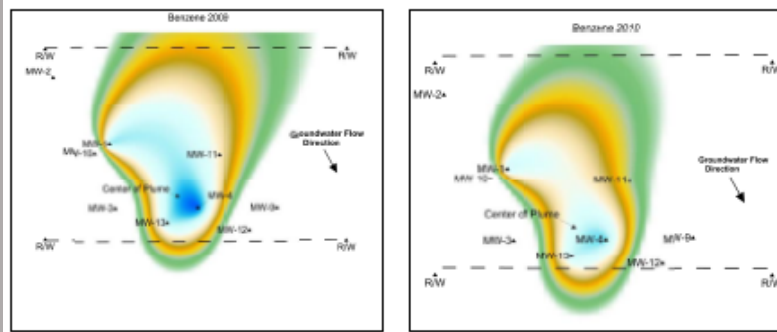
NCDOT wants to close the site

UST Section wants to close the site, but concerned with nearby irrigation well

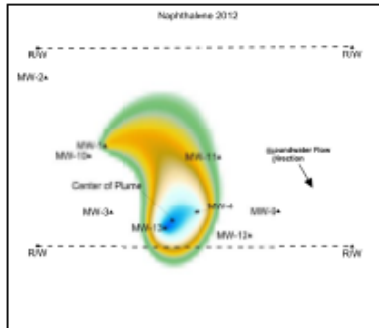
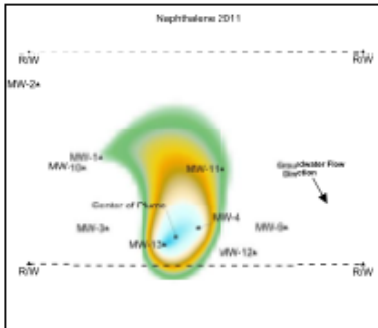
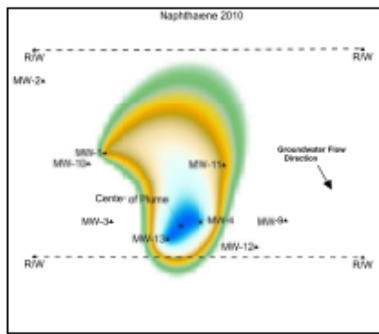
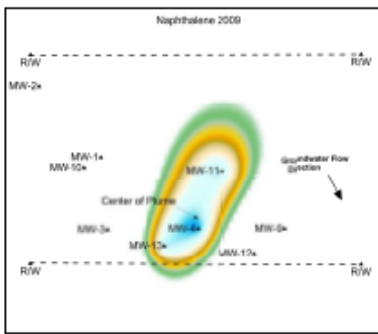
Division of Water Resources wants to know if injection program complete

Eight years of groundwater data pre- and post-injection

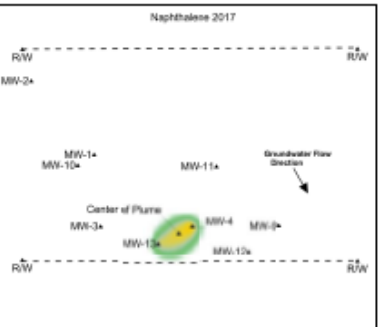
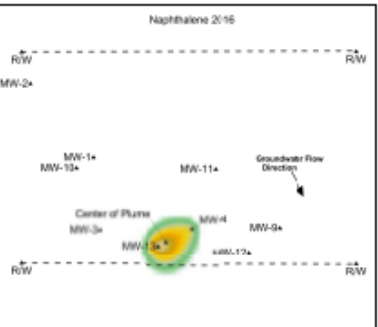
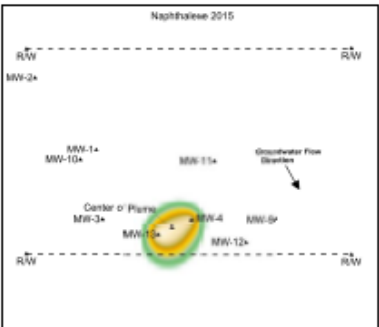
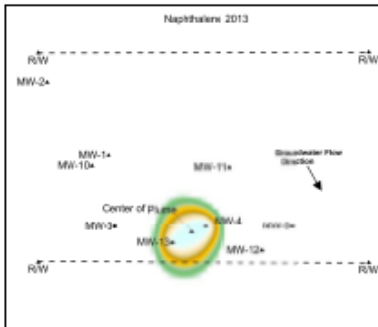


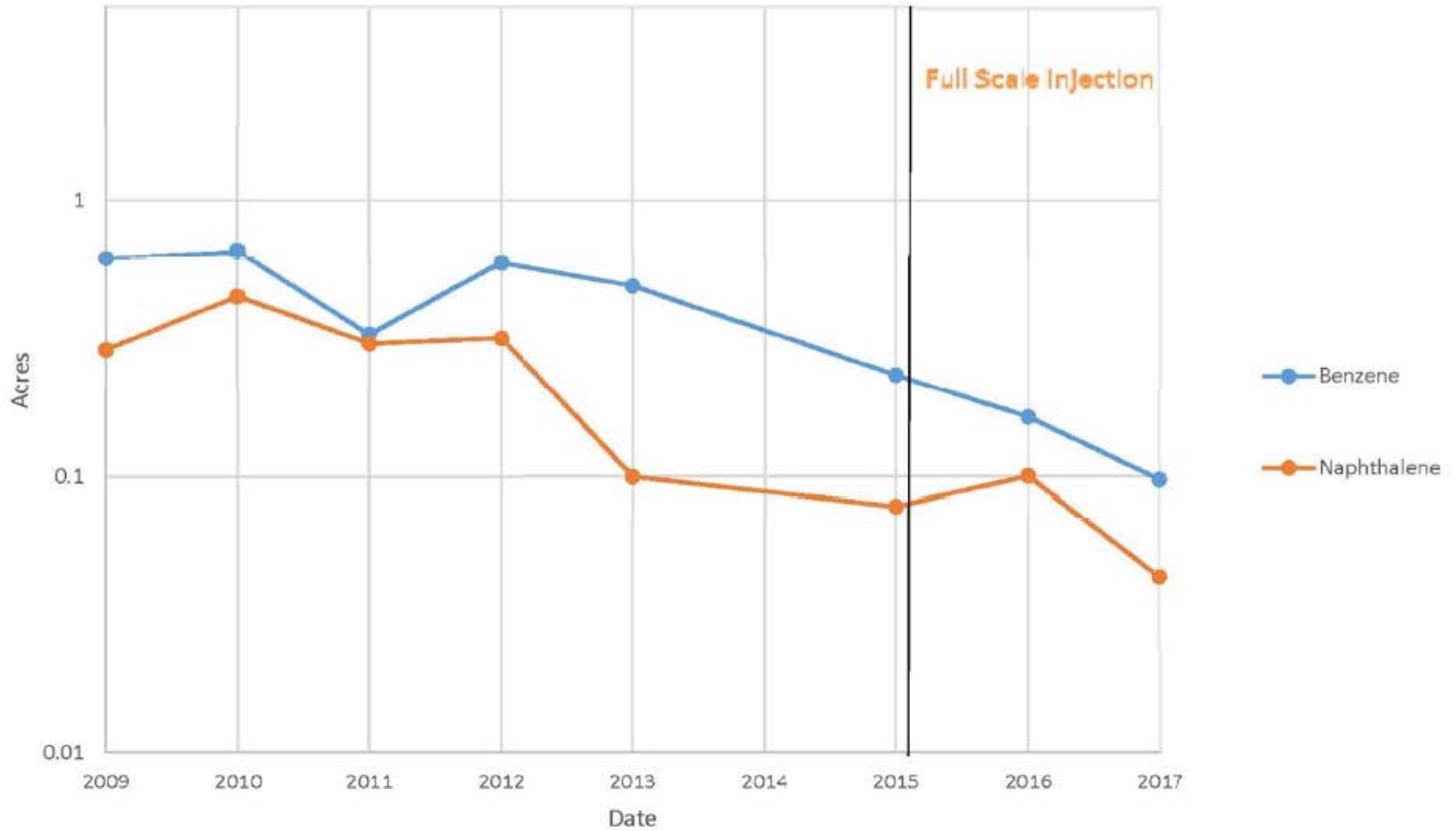


Benzene Concentrations Over Time

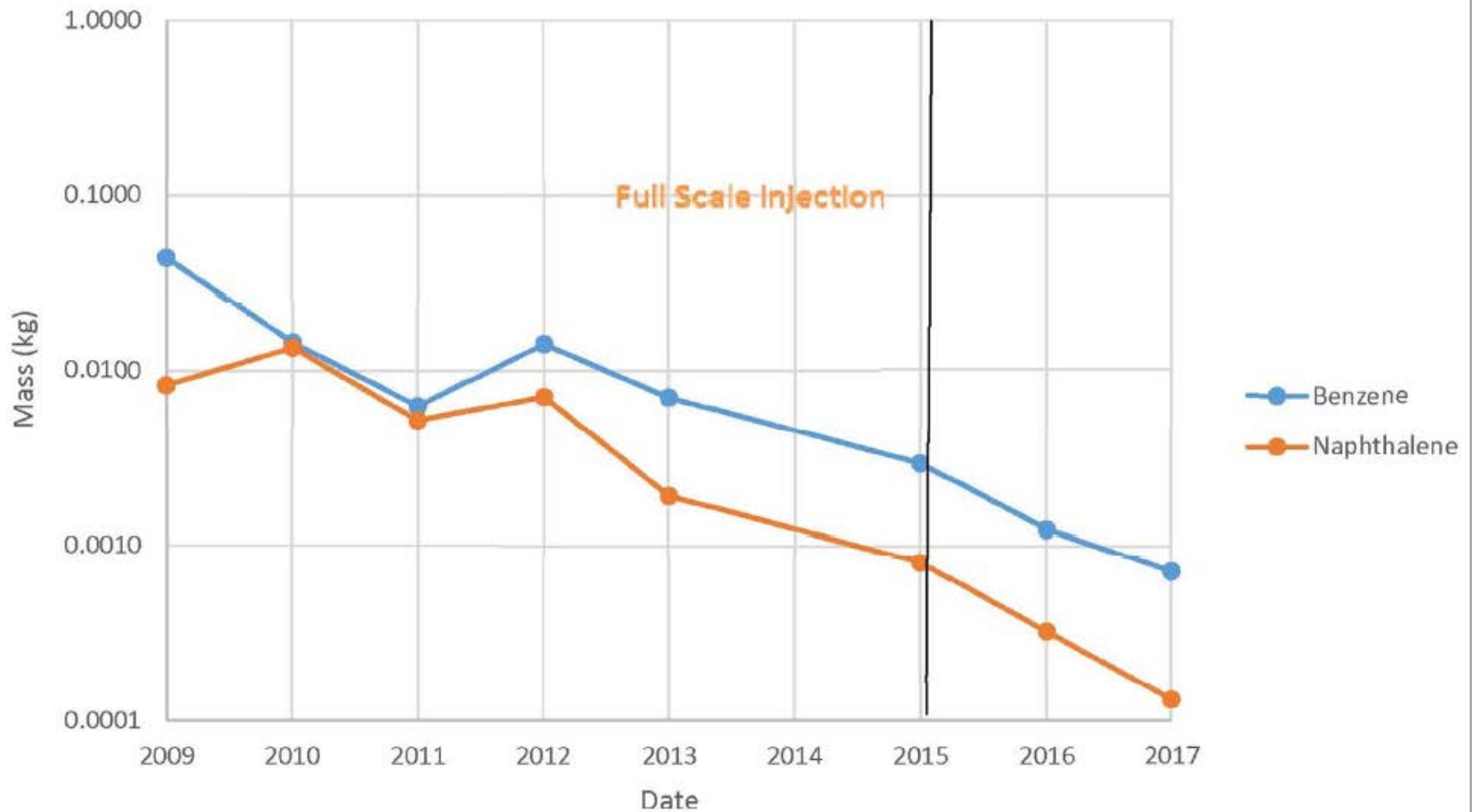


Naphthalene Concentrations Over Time

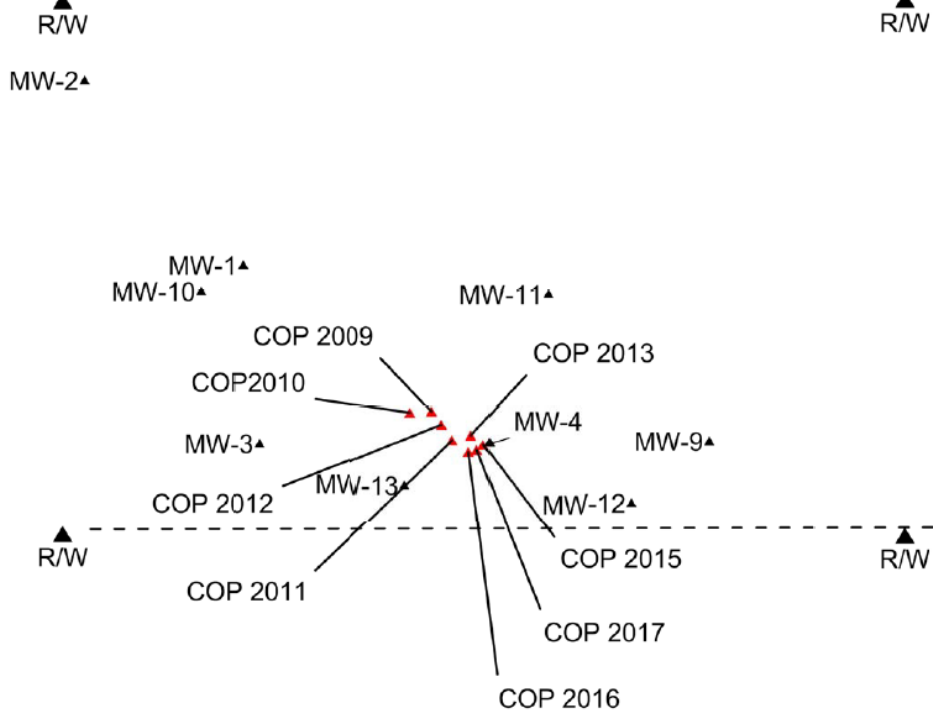




Benzene & Naphthalene Plume Size Over Time

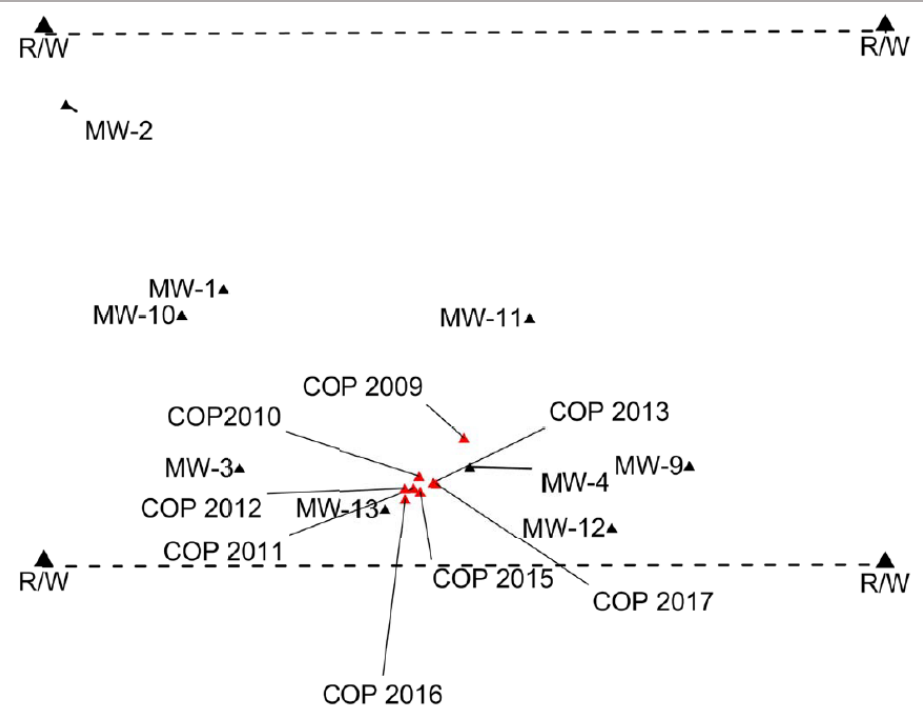


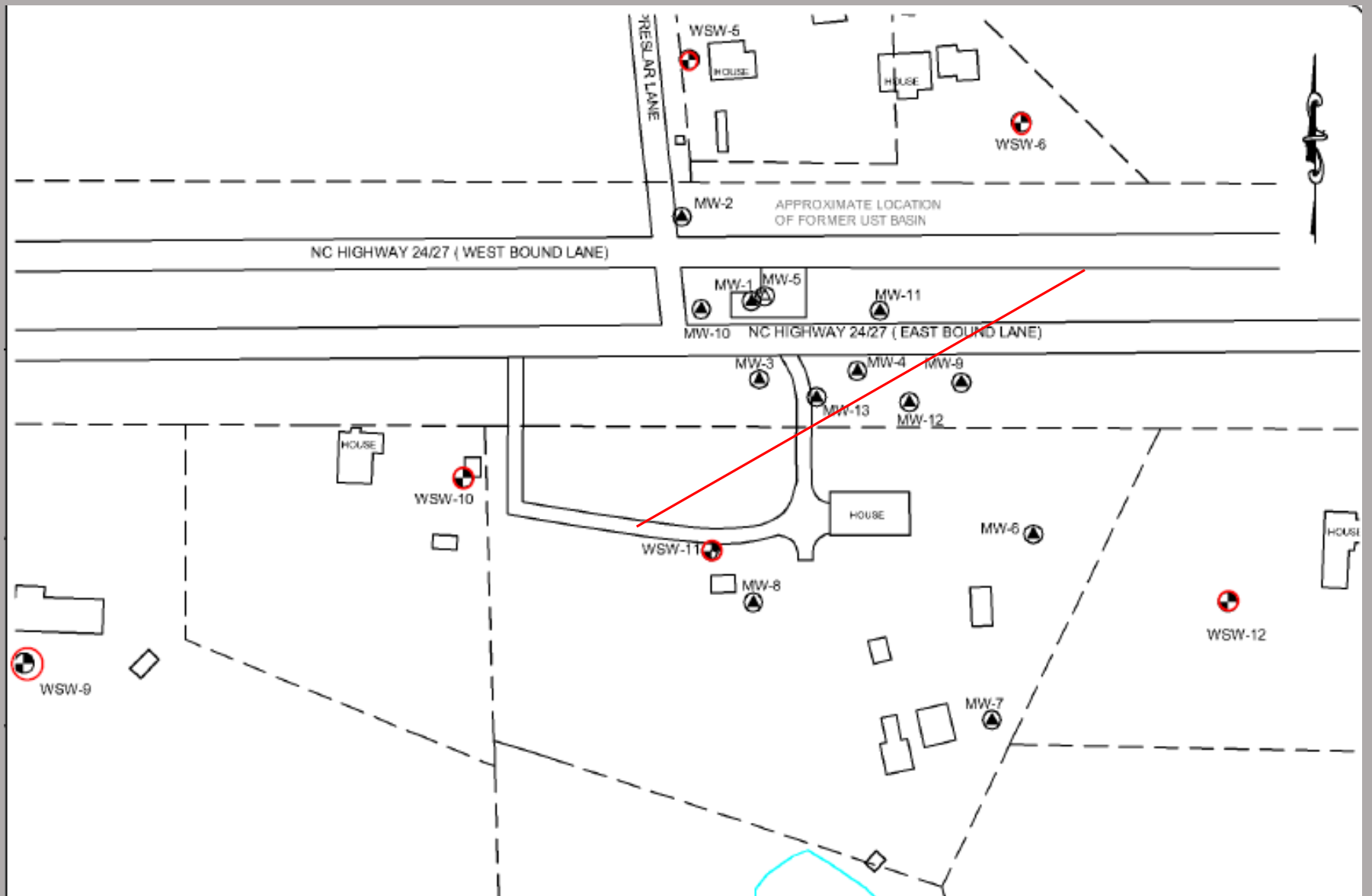
Benzene & Naphthalene Mass Over Time



Benzene Center of Mass Over Time

Naphthalene Center of Mass Over Time





NCDOT submits the information with a request for reclassification to intermediate risk

UST Section says nice report but.....

- Irrigation well still makes site high-risk and can't reclassify
- No specific evidence that the irrigation well will not be affected
- Plume still outside right-of-way

Trust Fund says additional injections not cost effective

Division of Water Resources continues to want injection event updates

EPILOGUE

NCDOT still required to conduct MNA sampling; however,

- Monitoring events were reduced to annually
- Analytical suite reduced
- Will request reduction in the number of wells sampled to those that exhibit contamination
- Continue to negotiate abandonment of irrigation well

