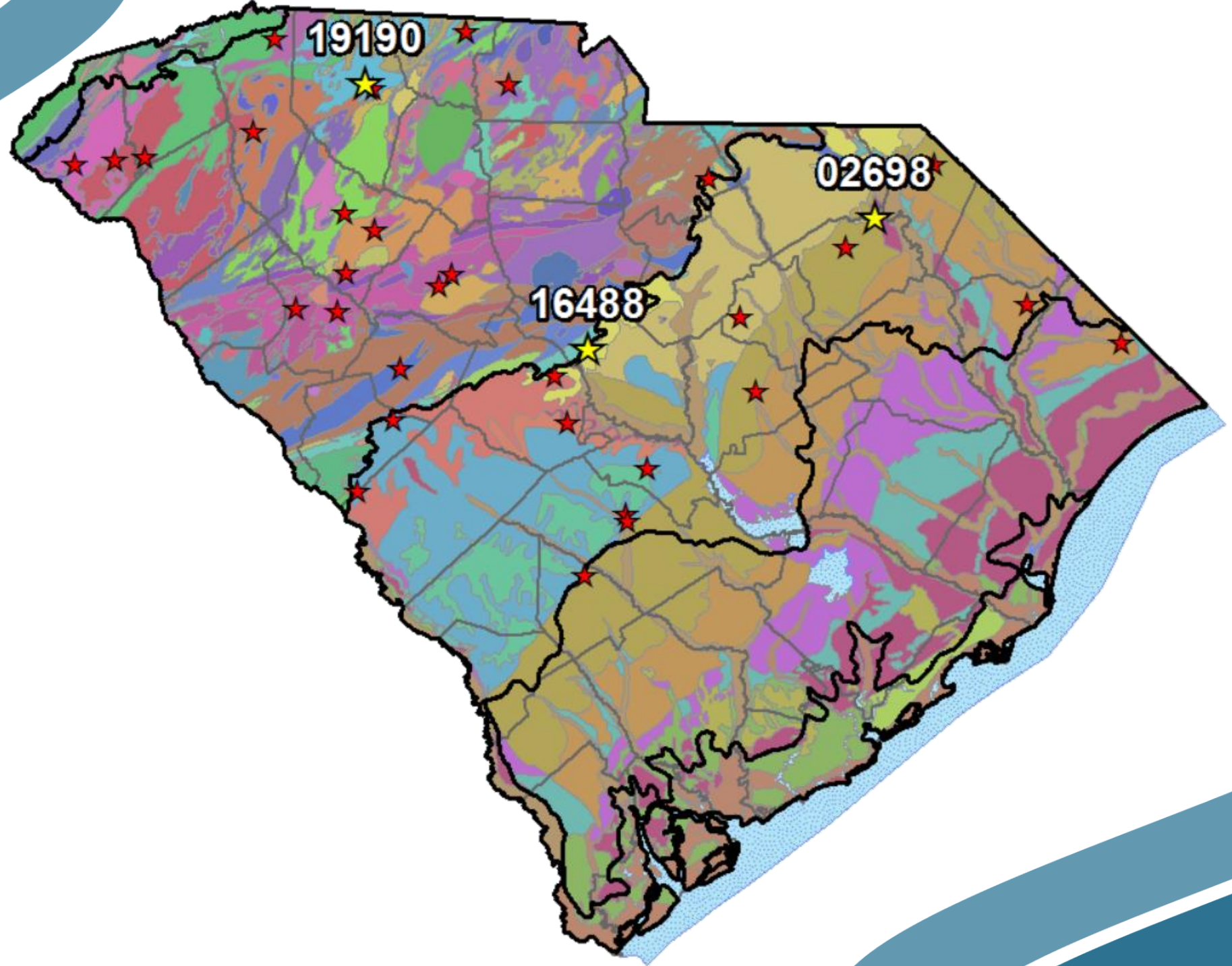


# **A PILOT STUDY IN HIGH RESOLUTION SITE CHARACTERIZATION AT SOUTH CAROLINA LUST SITES: LESSONS LEARNED AND BEST FUTURE USE**

# PILOT STUDY PURPOSE

- Compare High Resolution (HRSC) to traditional investigative methods
- Apply HRSC technologies in various geologic settings within South Carolina
- Develop a rate structure to allow utilization for cleanup contractors



# MULTI CONTRACT STRUCTURE

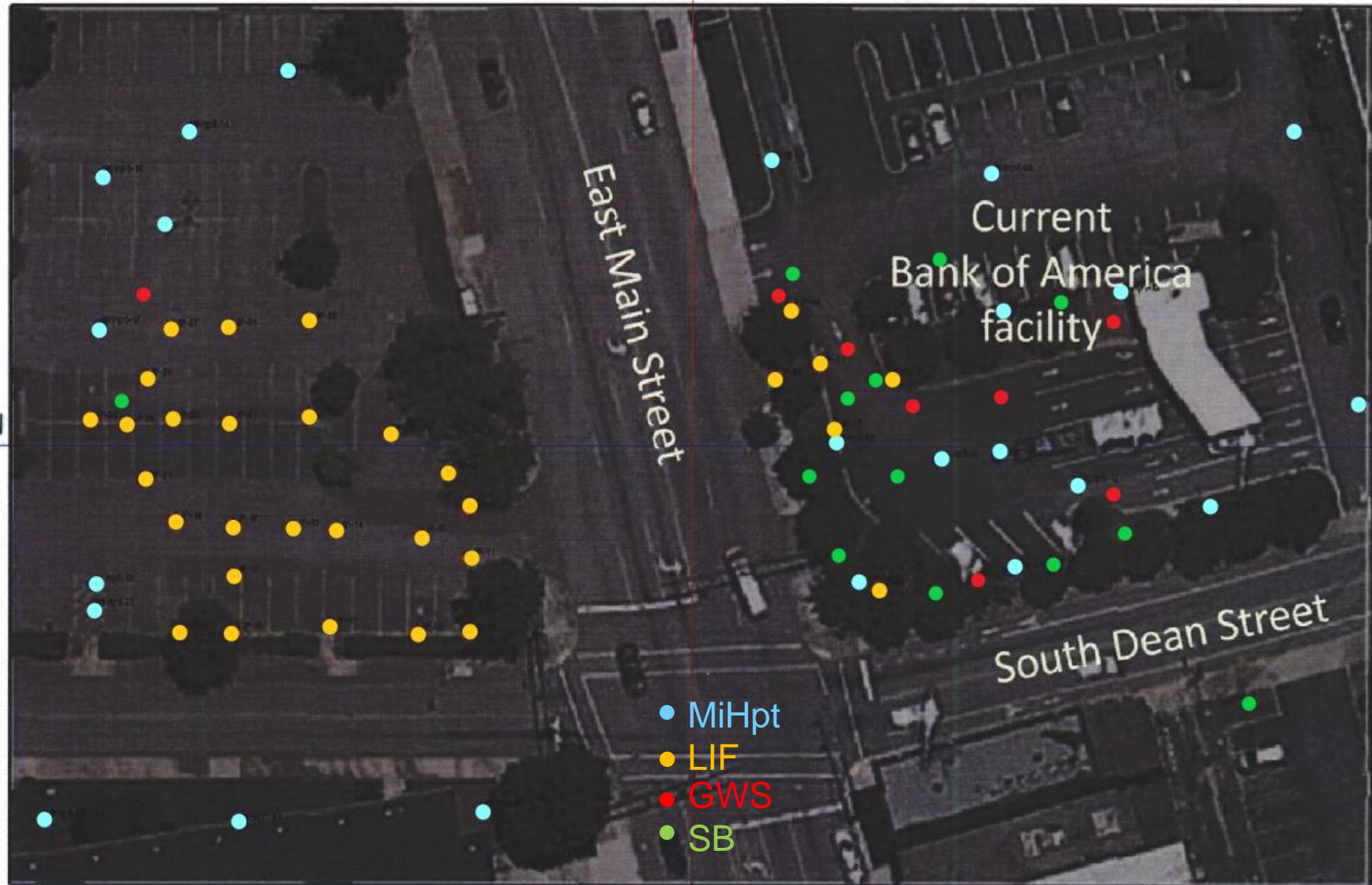
	Contract #1	Contract #2	Contract #3
<b>SC Certified Contractor</b>	Contractor A	Contractor B	Contractor B
<b>HRSC Sub-Contractor</b>	HRSC Contractor 1	HRSC Contractor 1 & 2	HRSC Contractor 3
<b>Technologies Utilized</b>	MiHpt, LIF, OIP	MiHpt, LIF	MIP, OIP
<b>Number of Sites</b>	13	13	9

# CONTRACT #1

# UST 19190 BANK OF AMERICA

- One Release: March 14, 2012
- Unknown Tank Status or Number
- Sanborn Map showed Dry Cleaner adjacent to site
- Piedmont Physiographic Provenance

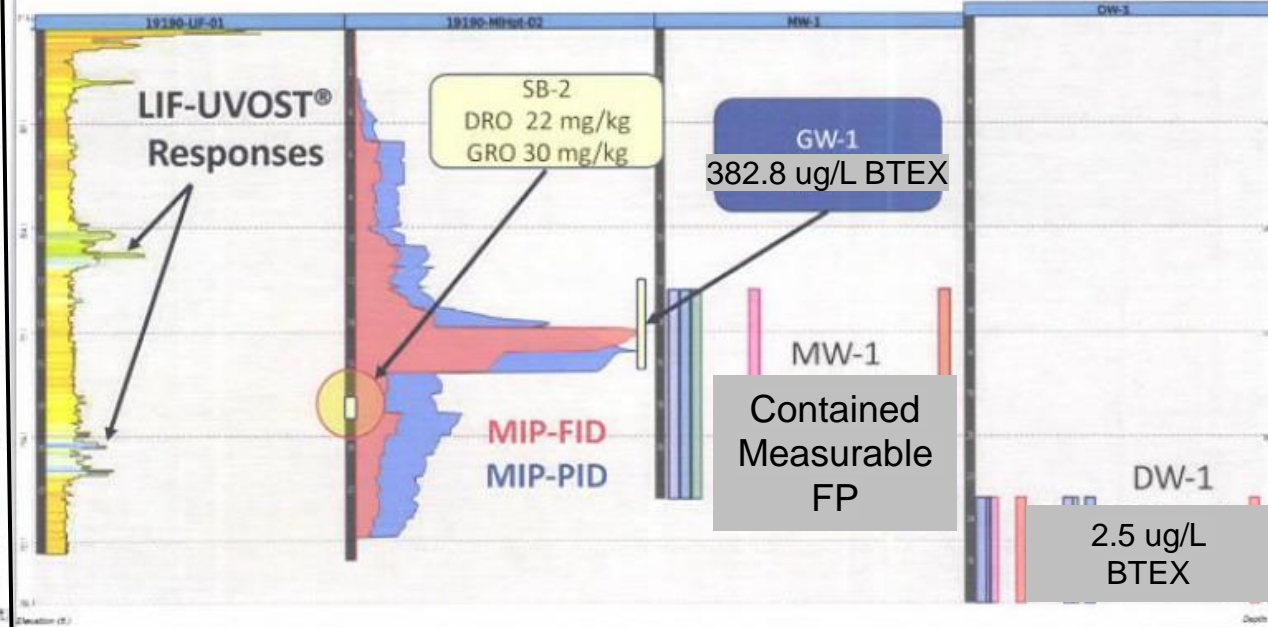
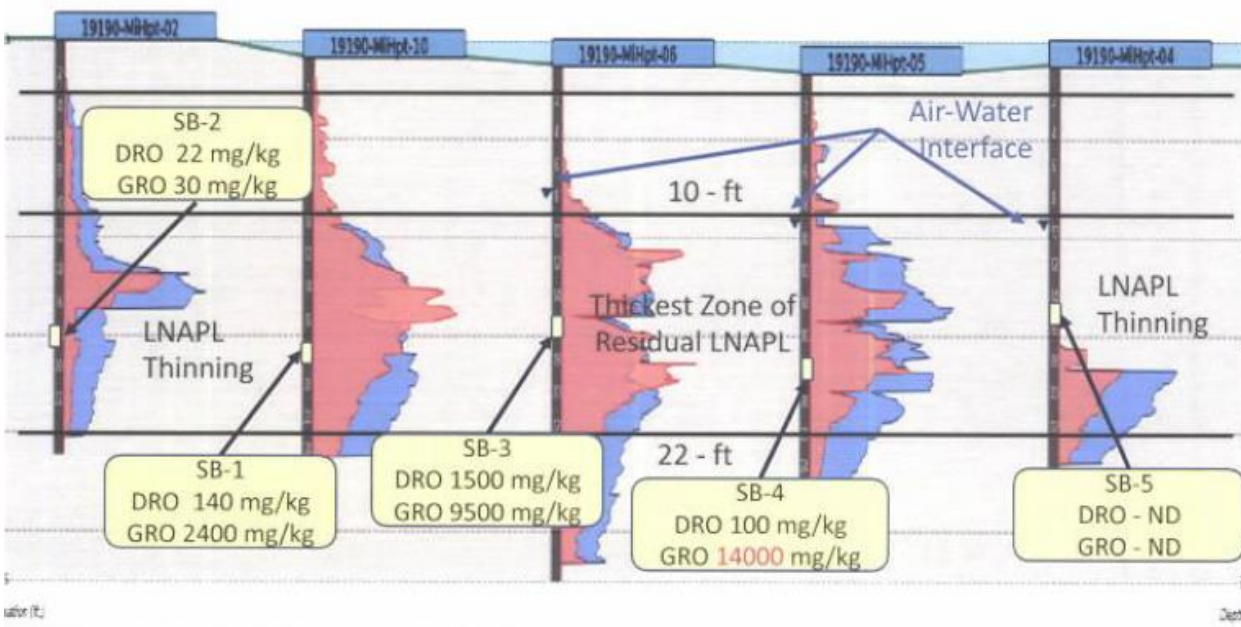
N





MIP-FID  
MIP-PID

Transect through B of A Source Area

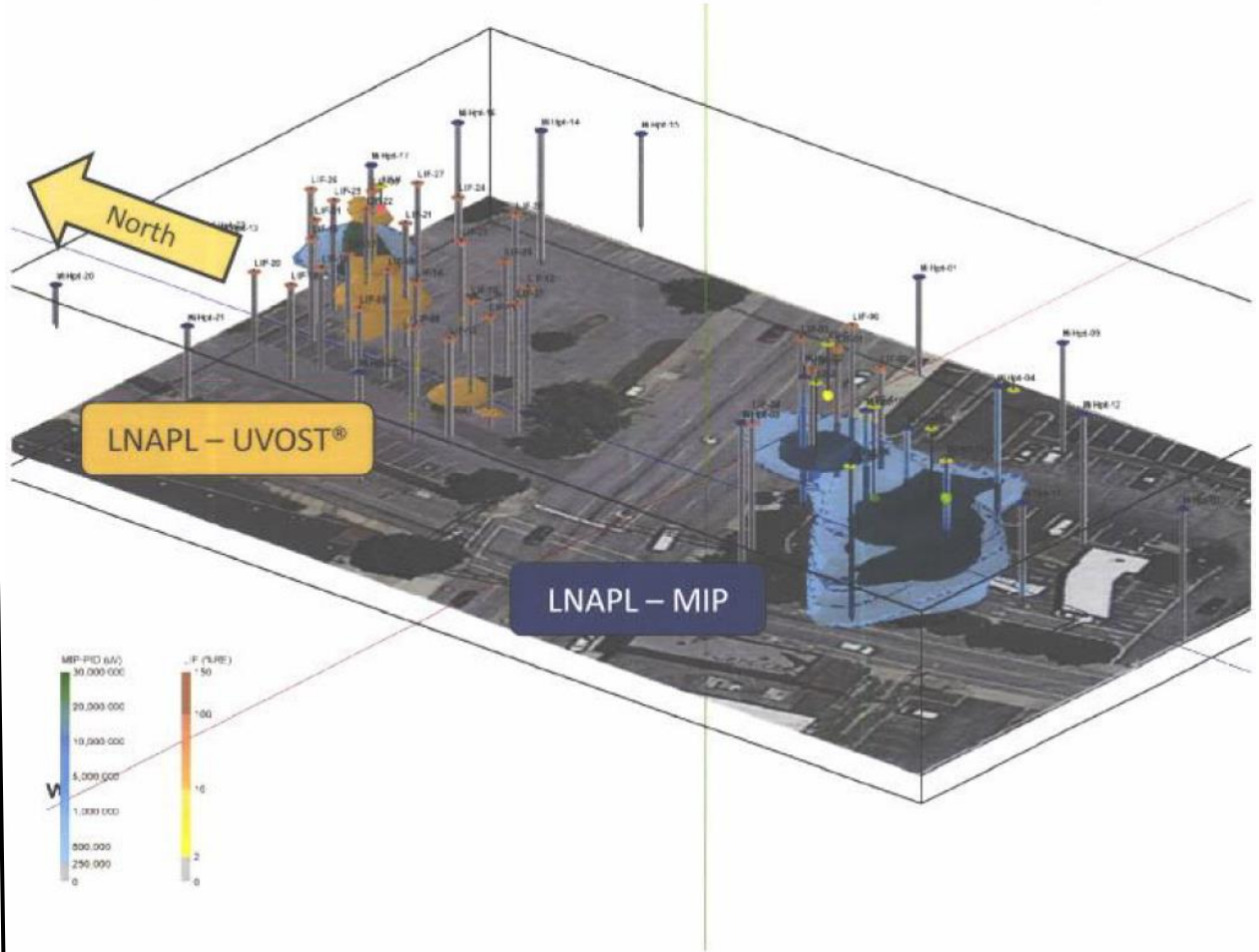




# Site Conceptual Model Based in HRSC Data



BTEX Concentration Contours based on Monitoring Well Sampling Data



# LIMITATIONS

- Site Access
- Utilities
- Shallow Boring Refusal
- Down Time due to Equipment Troubleshooting

# LESSONS LEARNED

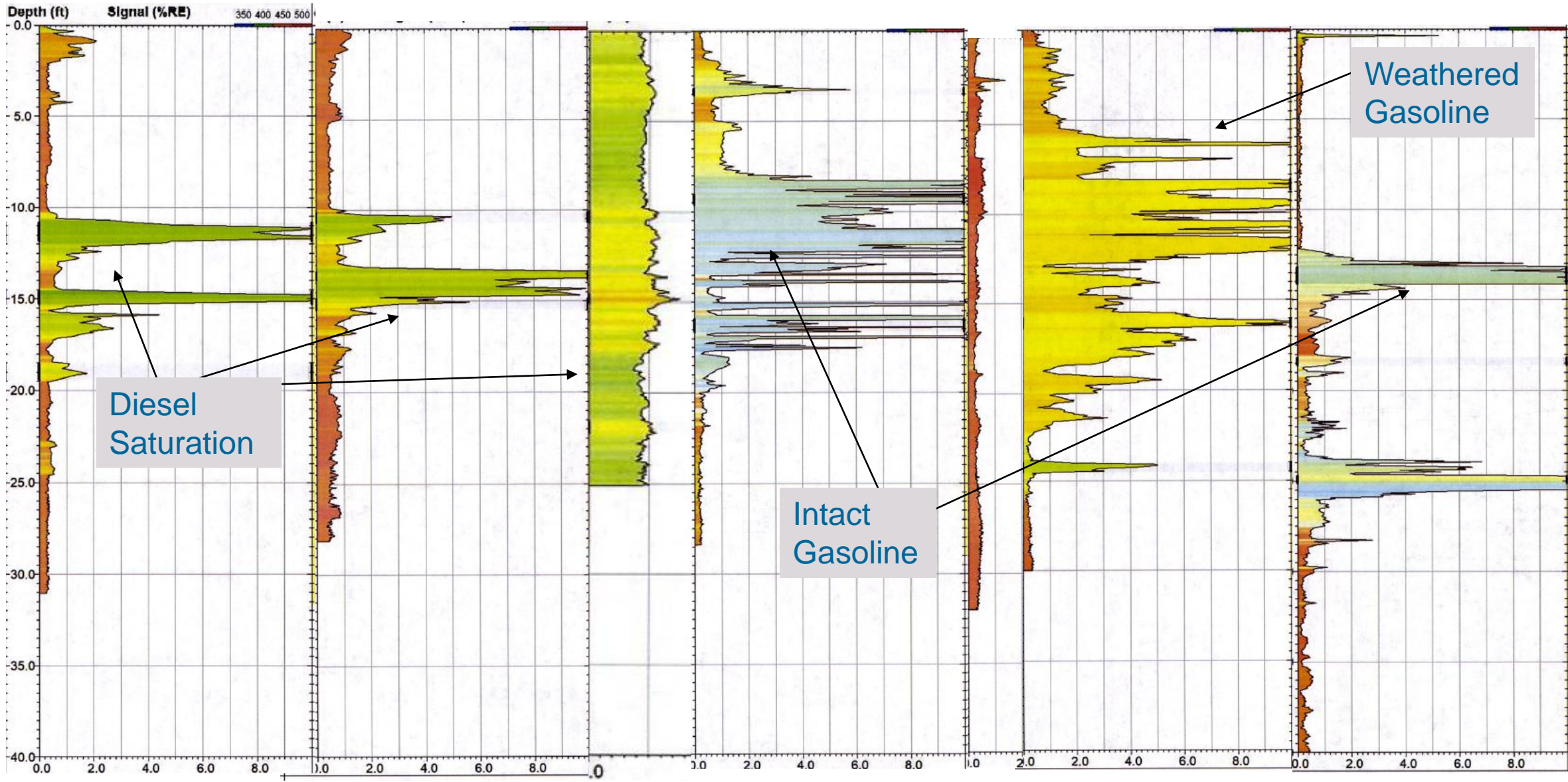
- Hydraulic LNAPL recovery efforts (AFVR) would not be effective based on LNAPL saturation present
- Two distinct source areas
  - One Due to Solvents
  - One Gasoline/Motor Oil
- Diffusion possibly causing co-mingling

# CONTRACT #2

# UST #02698 JOHNNIE'S TRUCK STOP

- 2 UST Releases
  - January 27, 1989 (Gasoline UST)
  - April 12, 2001 (Diesel Dispenser)
- One Unsuccessful Free Product Only Solicitation
- Over 13' Free Product total in 10 wells
- Outer/Lower Coastal Plain Physiographic Provenance





Weathered Gasoline

Diesel Saturation

Intact Gasoline

L-038

L-024

L-005

L-052

L-046

L-058

L-069





# LIMITATIONS

- Property Access Issues
- Difficult Terrain
- Lithologic Conditions
- EC Failure in some borings
- Site in poor overall condition
  - Some wells unable to be sampled or purged due to obstruction
  - Well IDs missing or illegible

# LESSONS LEARNED

- Two Distinct Plumes
  - Gasoline/Weather Gasoline to the North
  - Diesel to the South
- Better Site Conceptual Model
- Targeted Clean-up Effort

# CONTRACT #3

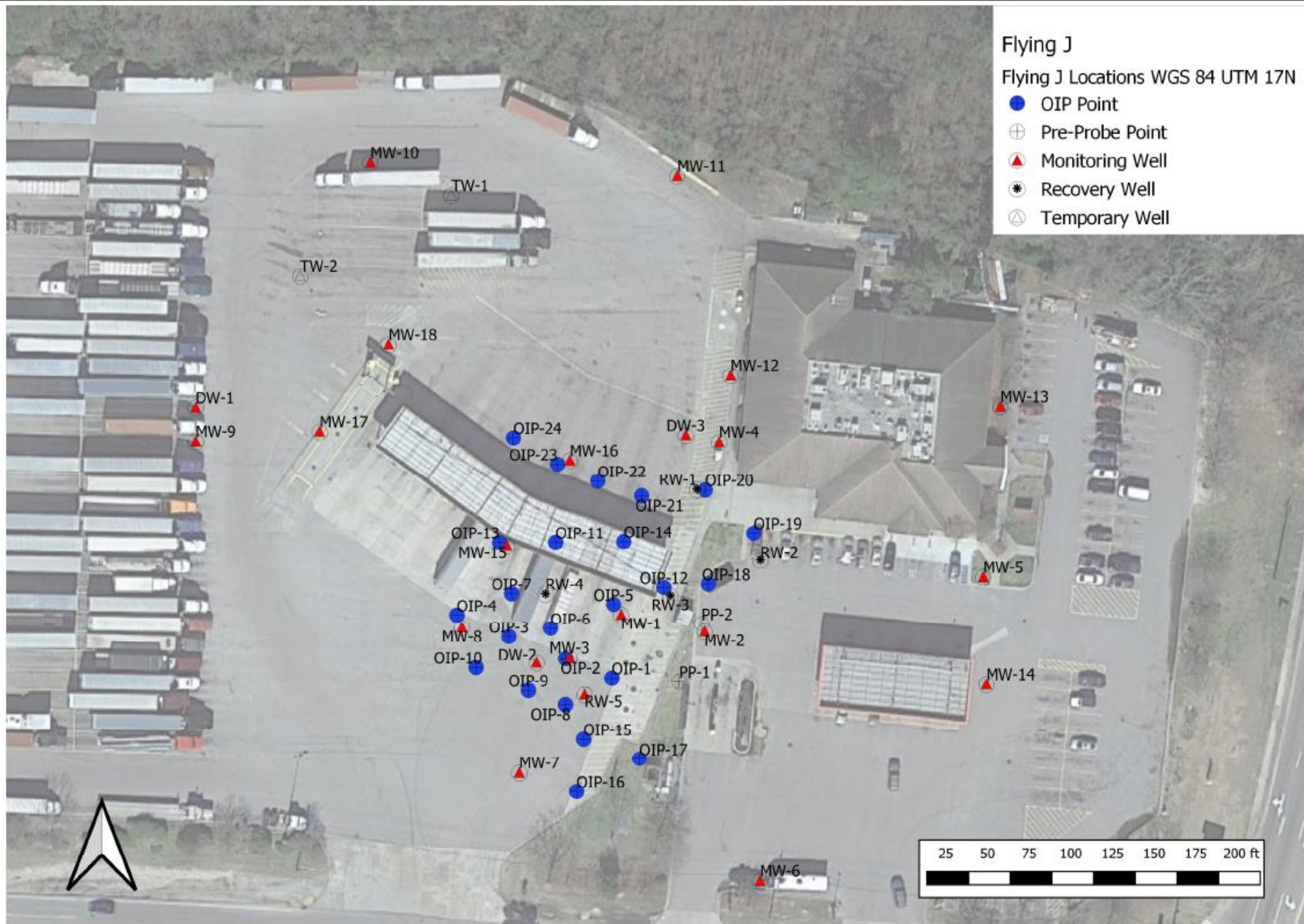
# UST #16488 FLYING J 712

- 2 releases
  - November 04, 2009 (Diesel Closure)
  - November 02, 2020 (Regulatory NFA)
- Active Tank Pit
  - 5 Currently in Use Tanks
    - 2 Diesel
    - 3 Gasoline
- 1 Unsuccessful Free Product Only Solicitation
- Inner/Upper Costal Plain Physiographic Provenance

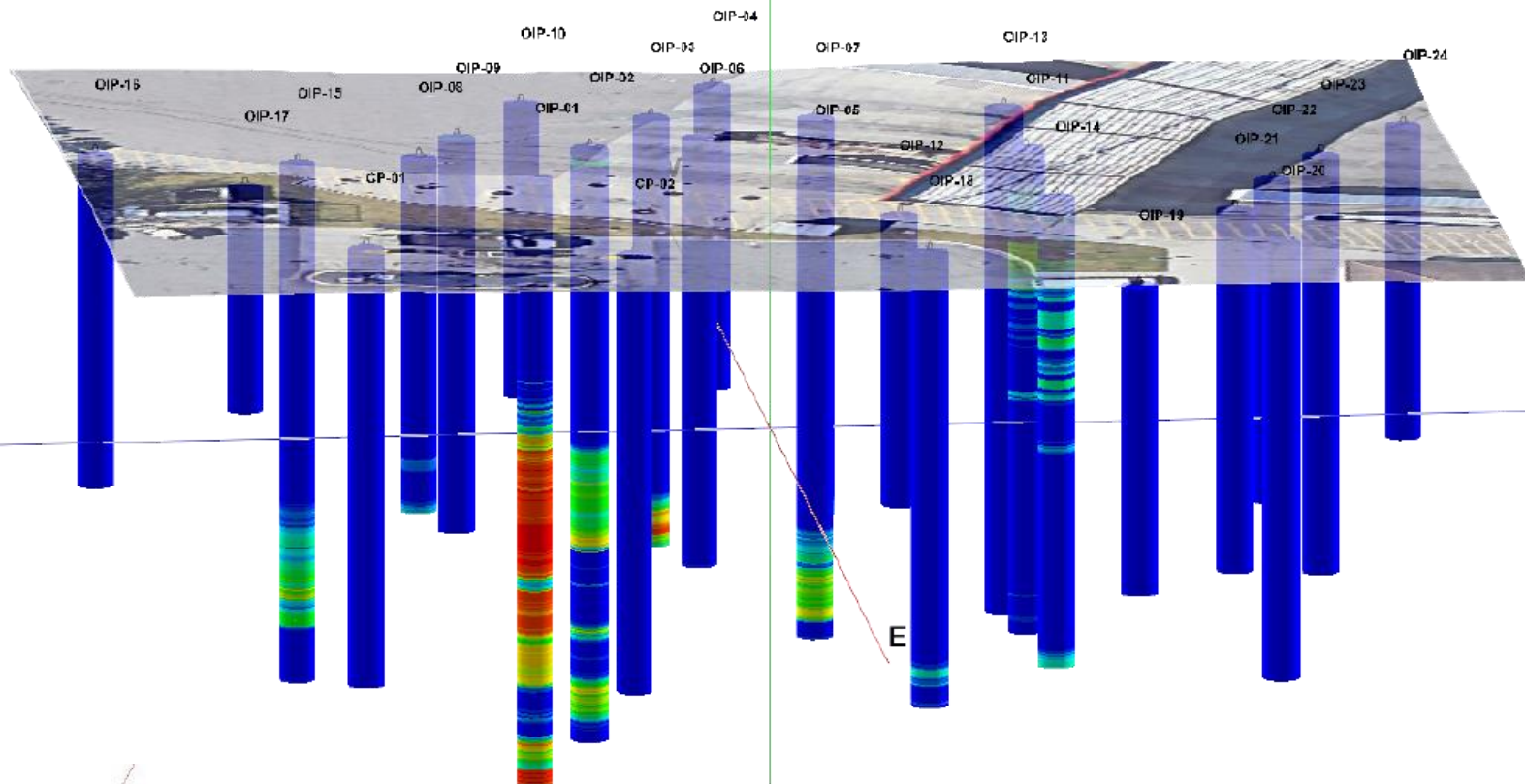
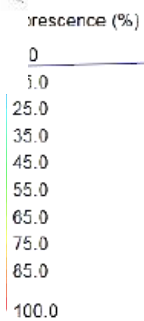
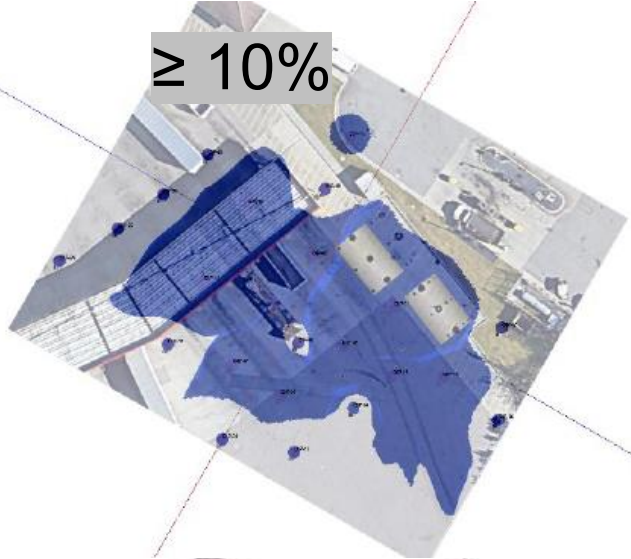
# Flying J

Flying J Locations WGS 84 UTM 17N

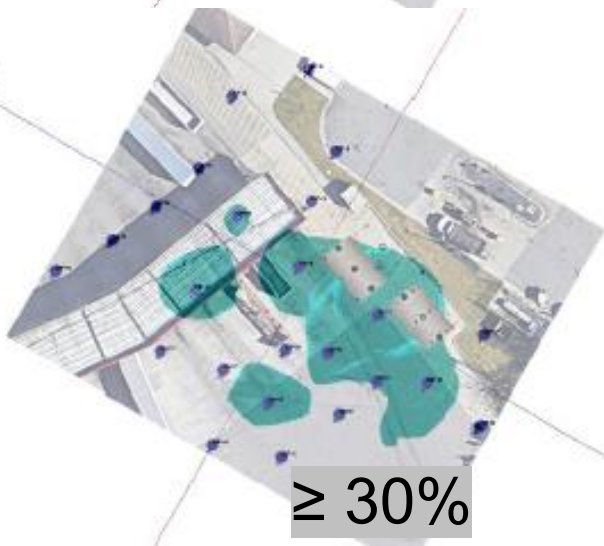
- OIP Point
- ⊕ Pre-Probe Point
- ▲ Monitoring Well
- ⊛ Recovery Well
- ⊙ Temporary Well



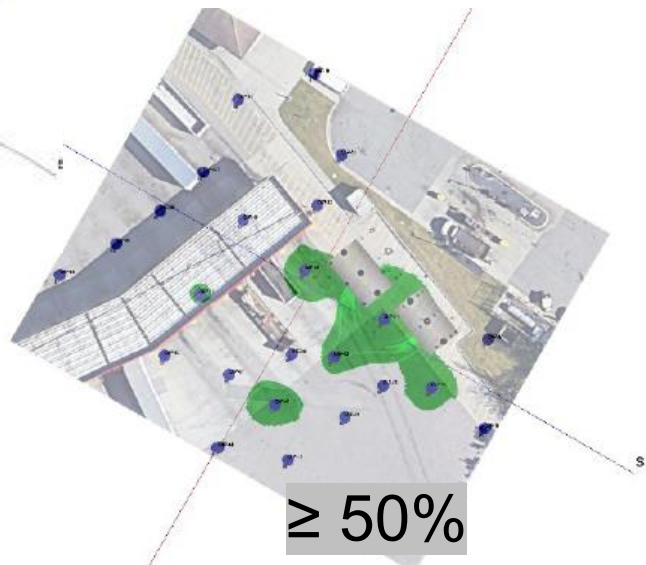
$\geq 10\%$



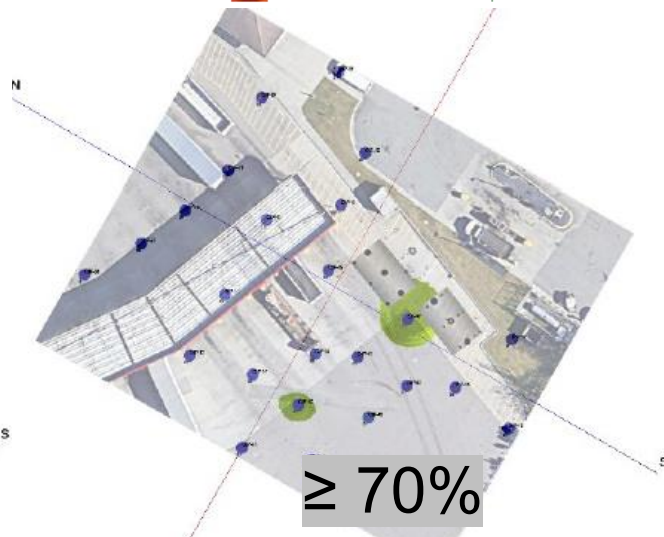
$\geq 30\%$



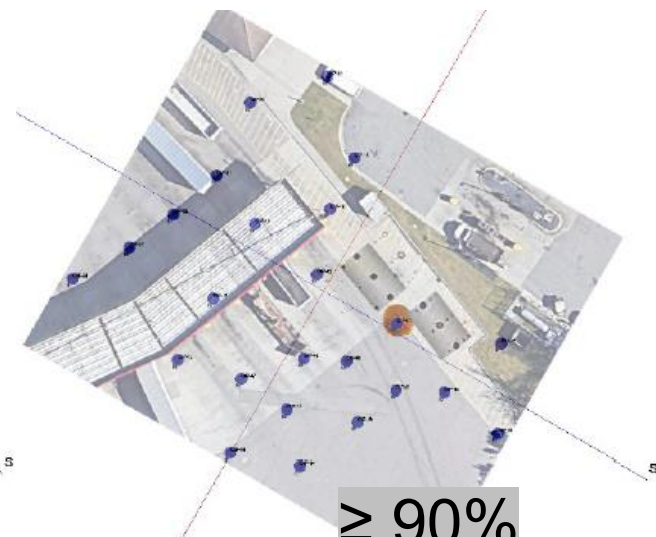
$\geq 50\%$



$\geq 70\%$



$\geq 90\%$



# LIMITATIONS

- Probe refusal at shallow depths
  - OIP probe points pre-drilled to 5 feet
  - MIP deep points deemed impractical
- EC Failure
- HPT only partially successful on 4 boring locations

# LESSONS LEARNED

- Better visualization of product distribution across the site
- Understanding of the potential setbacks due to probe refusal
- OIP tool only shows % Florescence
  - Unable to differentiate product type



# DEVELOPING RATES

- 1<sup>st</sup>/2<sup>nd</sup> contract involved running analysis
  - Daily rate based on 250'/day
  - Well below, more like 150'/day or less
- Based on Contract #3
- Unit rate structure (per foot)
  - Pay for deliverable
  - Compensate for work completed
- Followed normal in-house bidding process
- Available on our website: <https://scdhec.gov/environment/land-management/underground-storage-tanks/release-assessment-clean/superb-funding-1>

# CONTACT US

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