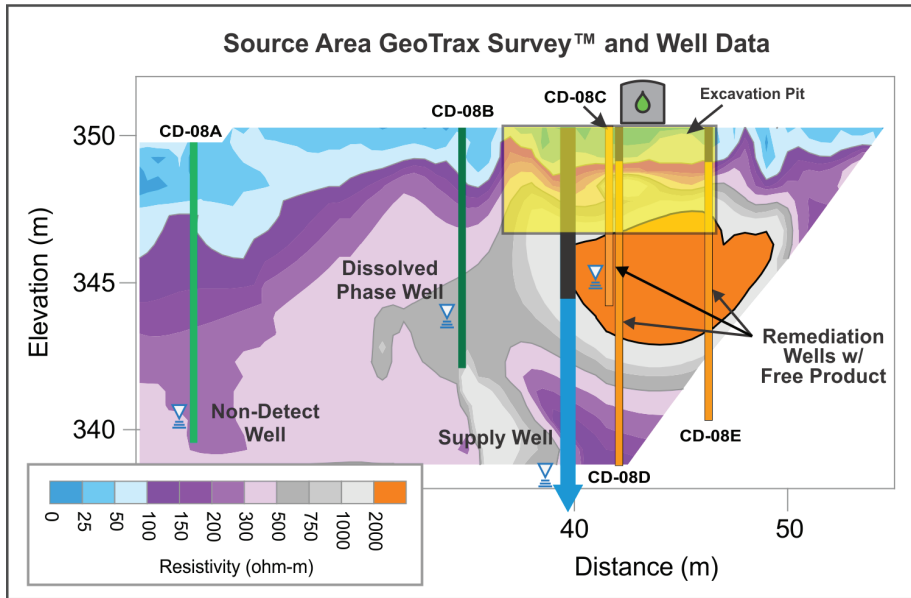


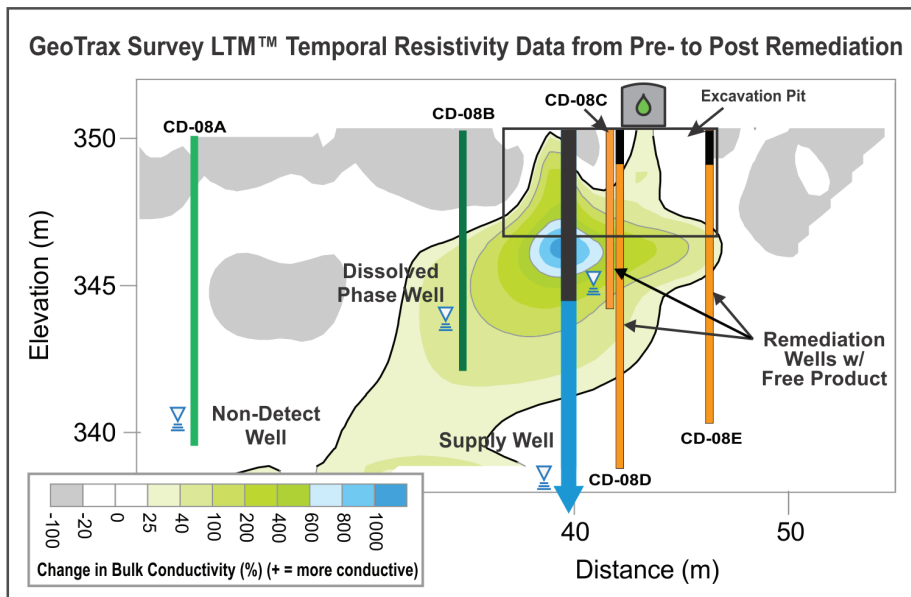
# CASE STUDY

## KARST LNAPL REMEDIATION (<2 YEARS)

Approximately 2,000-gallons of diesel fuel was released into a City of Ada, Oklahoma municipal water supply well screened in karst geology. After contaminated soil excavation, approximately 1 m (3 ft) of free-phase LNAPL persisted at 30 m (100 ft) BGS in the water supply well. Aestus used our GeoTrax Survey™ scanning technology to image the site and guide follow-up confirmation drilling and remediation work.



Following the targeted remediation work, Aestus scanned the site using our GeoTrax Survey LTM™ temporal imaging technology and confirmed the highly resistive NAPL orange zone (above image), changed to a highly electrically conductive green zone (below image) from mass removal and biodegradation within 548 days.



## RESULTS

- ☑ GeoTrax Survey™ detected LNAPL in vadose zone
- ☑ Identified preferential pathway of free-phase diesel into karst geology
- ☑ Provided specific targets for remediation wells
- ☑ GeoTrax Survey LTM™ temporal electrical imaging confirmed remediation effectiveness
- ☑ All wells non-detect in <2 years

## MORE CERTAINTY & OPTIMAL OUTCOMES

Our client needed more certainty in their subsurface data. We integrated existing site data, our GeoTrax Survey™ electrical images, and targeted confirmation drilling data to yield a more complete understanding of the subsurface. This allowed them to:

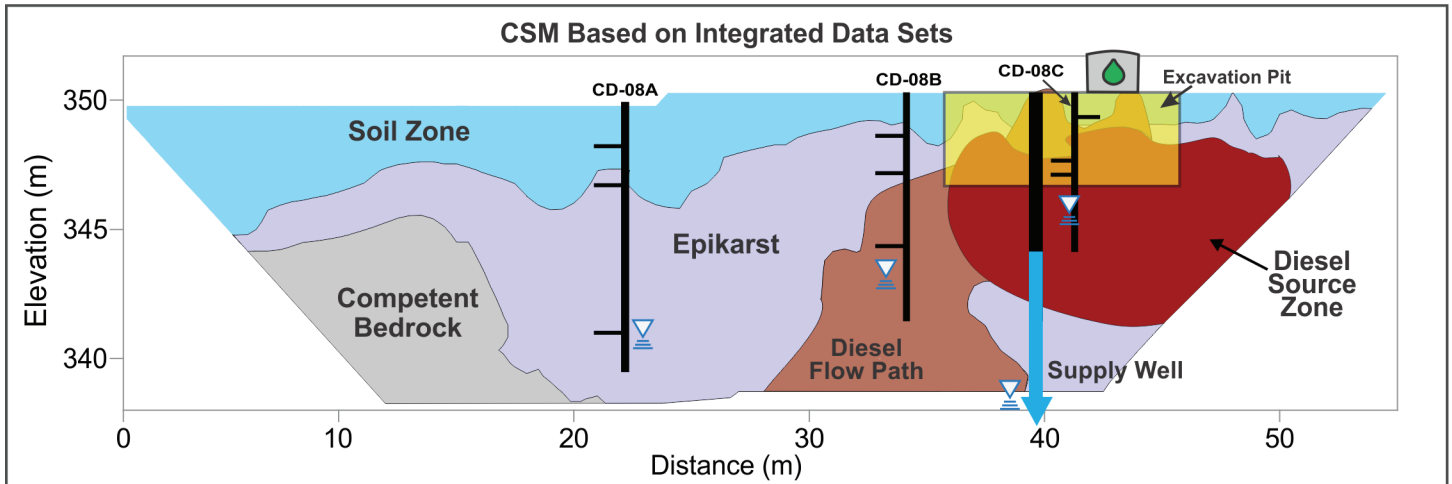
- ☑ Make better technical/business decisions
- ☑ Have clear roadmap for next steps
- ☑ Achieve project goals faster and cheaper



## CASE STUDY

# KARST LNAPL REMEDIATION (<2 YEARS)

**Aestus GeoTrax CSM+™ conceptual site model update process integrated the 2D imaging and confirmation drilling data to develop the below CSM:**



Detailed study available as Pickens, C., 2018, A comparison between model and field diesel mass recovery in dolomite karst, M.S. Thesis, Oklahoma State University, Boone Pickens School of Geology, Stillwater, OK.

**The above graphical CSM was used to guide targeted remediation work involving the following remediation technologies:**

1. Extraction pumping
2. Soil vapor extraction (SVE)
3. Surfactant flushing

The image-guided remediation work was completed within 2 years and the municipal well was brought back online to safely serve the community of Ada.

### Client Testimonial: Guy W. Sewell - President, Ada Water Resources Board

*"Utilizing advanced characterization and remediation methods, the [City of Ada] site reached non-detect for impacts in all of the municipal supply wells and was back online within two years. I believe a key factor in the success of the project was due to the expertise of Aestus and their use of ultra-high resolution methods for the characterization of the release and the local hydrogeologic environment. Their efforts allowed for the effective design, operation and evaluation of the remedial efforts."*

*"Aestus has provided the City of Ada with outstanding, and much needed, technical consulting support for several years in this area. The City of Ada highly recommends their services."*

**YOU DESERVE MORE CERTAINTY IN YOUR SUBSURFACE DATA**

