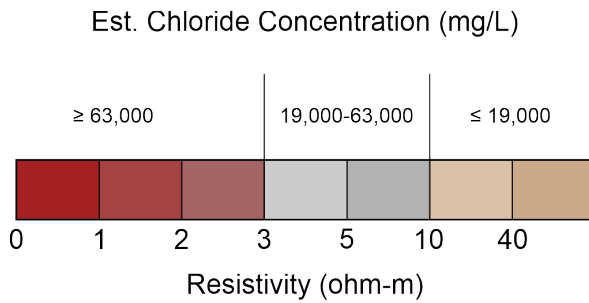


# CASE STUDY

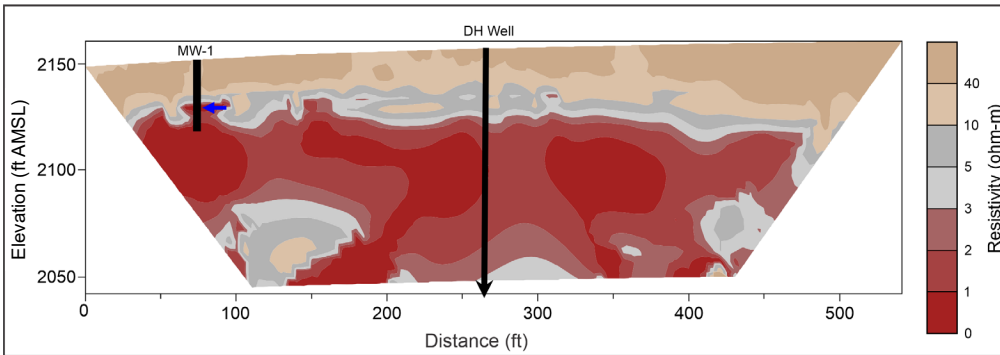
## LOCATING SOURCES AND EXTENTS OF CHLORIDE PLUME

Sampling data from wells at an oilfield site in west Texas confirmed chloride impacts up to 181,000 mg/L. A nearby abandoned production wellbore along with nearby injection wells were suspected source(s) of the chloride contamination, but monitoring well data alone could not determine the source(s) and plume extents.

Sixteen GeoTrax Survey™ transects were performed at the Site and existing groundwater chemistry data was integrated with the electrical resistivity imaging (ERI) data. As expected, the highest chloride concentrations corresponded with the most electrically conductive anomalies. From this relationship, chloride concentrations could be estimated based on the recorded resistivity measurement.



Using this relationship, the primary source well responsible for the chloride plume was determined. In 2D transects and integrated 3D model, the highest aggregation of highly conductive anomalies that correspond to high chloride concentrations (burgundy areas) was around the DH Well. The distribution of highly conductive electrical anomalies also suggests chloride concentrations seen in wells to the south of the DH Well likely originated there.



Groundwater Sample Results		
Well		MW-1
Sample Date		12-27-10
Parameters	Units	
pH	standard	6.4
Fluid Resistivity	Ohm-m	0.0215
TDS	mg/L	298,426
Na	mg/L	108,938
Cl	mg/L	181,000



## RESULTS

- ☑ Located primary source (leaking abandoned wellbore) of chloride plume
- ☑ Confirmed leaky casing in a second well as secondary source of chloride plume
- ☑ Developed correlation between subsurface electrical resistivity and estimated chloride concentration
- ☑ Provided 3D map of chloride plume showing vertical and horizontal plume extents

## 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:

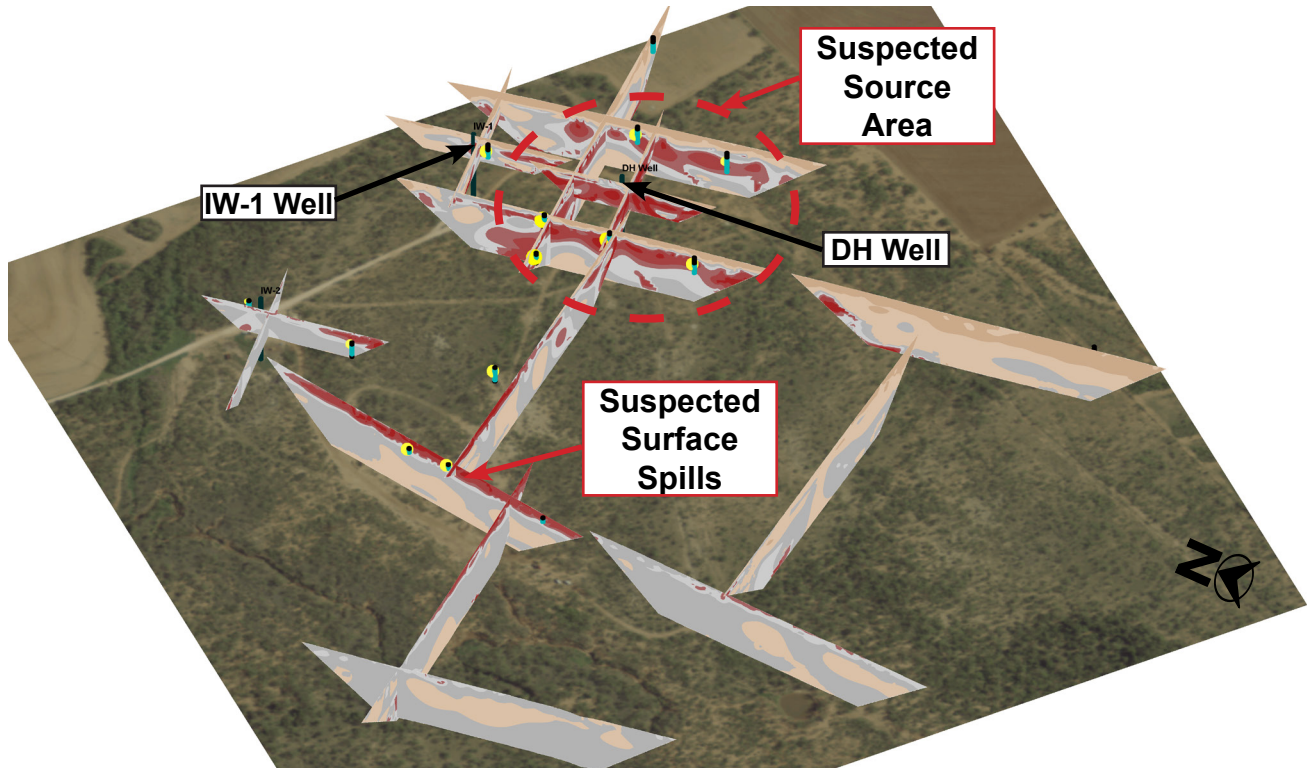
- ☑ Make better technical/business decisions
- ☑ Have clear roadmap for next steps
- ☑ Achieve project goals faster and cheaper



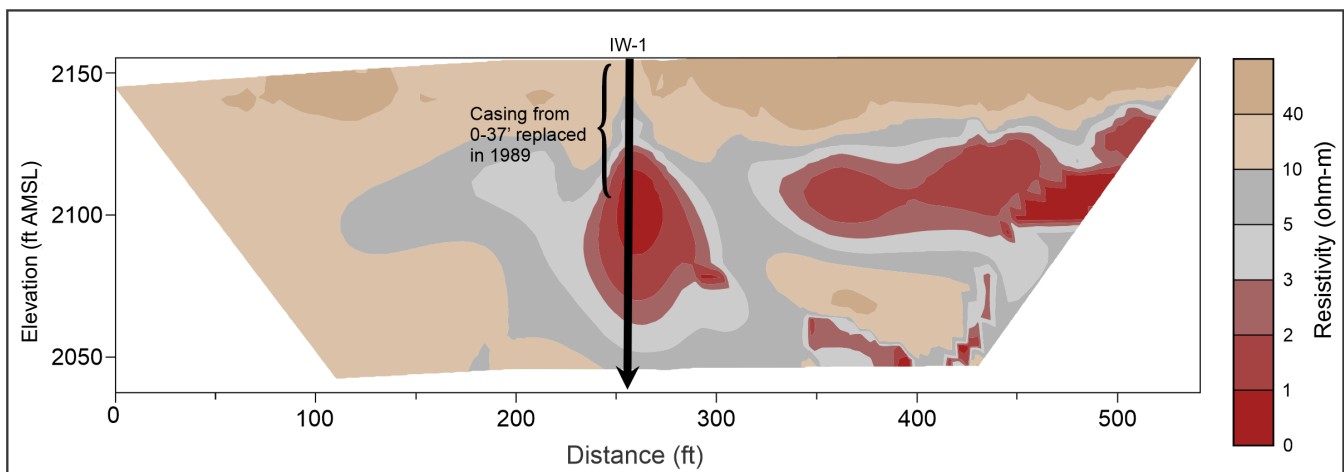
# CASE STUDY

## LOCATING SOURCES AND EXTENTS OF CHLORIDE PLUME

Data integrated into Aestus' 3D visualization model shows the highest aggregation of highly conductive anomalies (burgundy zones) which correspond to high chloride concentrations (yellow globes at well locations) are proximal to the abandoned DH Well bore (suspected source of chloride impacts). These data also indicate likely surface spills of chloride containing water in the western part of the investigation domain.



Integrity testing of injection well IW-1 (shown below) indicated a leaky casing in the upper portion of the well as shown in the graphic below. Aestus' imaging confirmed the leaking casing based on the presence of a very electrically conductive anomaly (burgundy colored zone) at/below the zone of the leaking casing. This was determined to be a secondary and minor source of subsurface chloride impacts at the Site.



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

