Frequently Asked Questions
Data Quality in Brackish/Saline Environment?

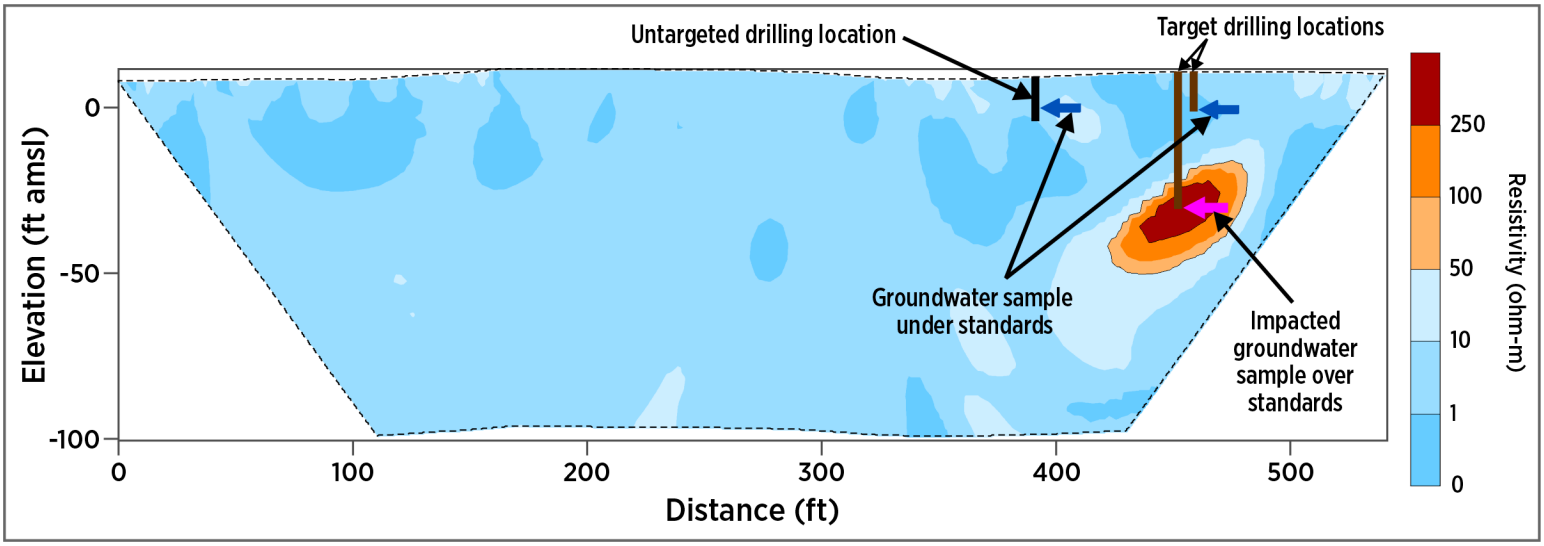
Can Aestus Image Successfully in a Brackish/Saline Environment?

YES

- Aestus' GeoTrax Survey™ specialty ERI methods CAN detect electrically resistive anomalies within a conductive environment such as brackish/saline groundwater and with good data quality
- This is contrary to the use of standard electrical resistivity imaging (ERI) techniques which have difficulty imaging or "seeing" resistive targets of interest (e.g., contamination which sometimes has an electrically resistive signal) in a highly conductive environment
- Aestus' methods allow pockets of contamination to be detected, even in brackish/saline environments, to achieve more certainty of subsurface conditions
- Other electrical resistive targets (e.g., gravel channels) can also be detected in an electrically conductive matrix.

Real-life example at a site with chlorinated solvent and petroleum hydrocarbon impacts:

1. The site's groundwater is brackish/saline due to the influence of nearby bodies of water
2. Aestus' GeoTrax Survey™ successfully generated a drillable image and identified electrically resistive zones, despite a low background electrical resistivity (i.e. high conductivity) of 3 Ω-m or less
3. The electrical resistive anomaly was drilled and confirmed to be impacted with TCE (and its daughter products), and petroleum hydrocarbons over regulatory standards in groundwater



www.aestusllc.com
info@aestusllc.com
1.888.GEO.TRAX (436.8729)

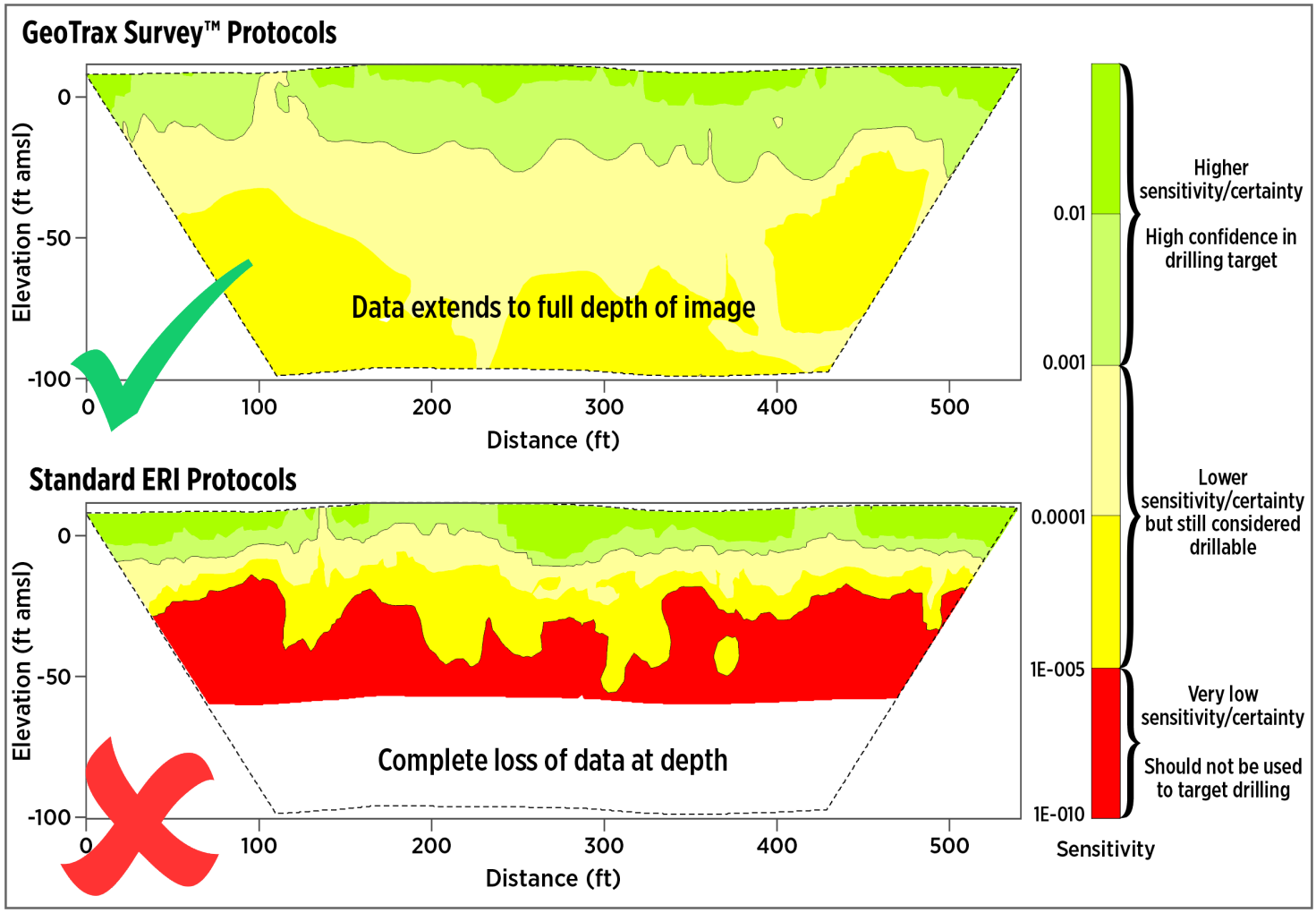
Frequently Asked Questions

Data Quality in Brackish/Saline Environment?

How does Aestus see electrical resistors in a highly conductive matrix?

Aestus' proprietary method of data collection and processing (GeoTrax Survey™) is up to several orders of magnitude more sensitive than traditional methods (Miller et al., 2014), ensuring the resulting images are more representative of the subsurface. ERI data are collected as raw resistivity data that have to be inverted (i.e., processed) to produce a model of the resistivity structure of the subsurface. The sensitivity refers to how well the inversion can detect spatial variability of resistivity. Greater sensitivity yields higher image accuracy relative to representing subsurface conditions, which leads to a more "drillable" image.

Below is a sensitivity plot comparison of Aestus' GeoTrax Survey™ versus a standard ERI survey collected at the same location using the same electrode configuration and equipment. Green zones denote high sensitivity (i.e., high certainty); yellows are zones with lower sensitivity but, with proper QA/QC, can still be used to target drilling locations; red are zones with extremely low sensitivity/certainty that indicate very little constraint on the inversion (i.e., should not be used to target drilling locations). Note that most of the standard ERI sensitivity plot is either red (indicating the image would not be targetable) or is blank at depth (i.e. NO data remained after inversion due to high noise and inherent limitations of the standard ERI approach).



Miller, R. B., Heeren, D. M., Fox, G. A., Halihan, T., Storm, D. E., & Mittelstet, A. R. (2014). The hydraulic conductivity structure of gravel-dominated vadose zones within alluvial floodplains. Journal of Hydrology, 513, 229-240.

www.aestusllc.com
info@aestusllc.com
1.888.GEO.TRAX (436.8729)