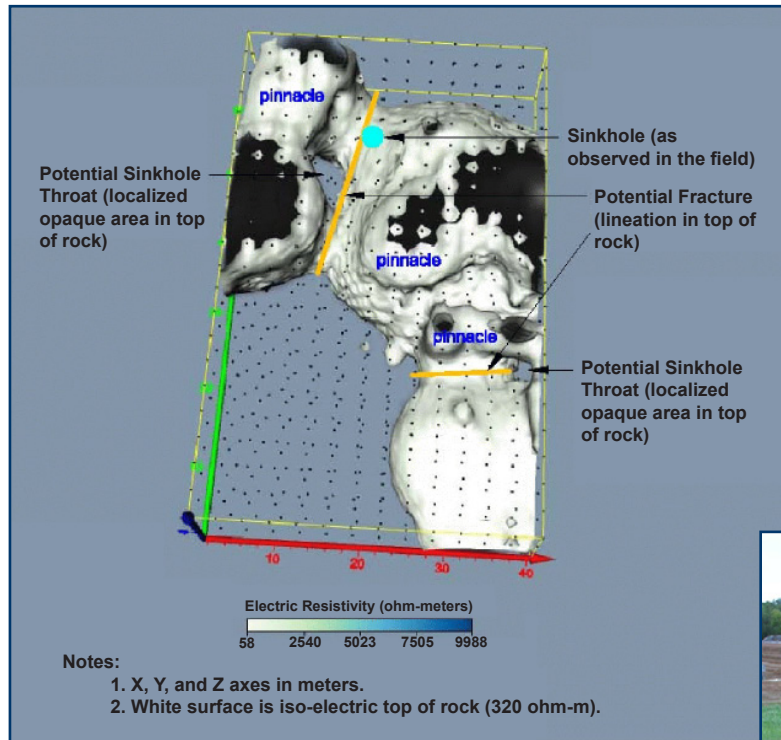


## Three-Dimensional Electrical Resistivity Imaging (3-D ERI)

Quantum Geophysics supports sinkhole remediation by using 3-D ERI to identify the location of sinkhole throats. Throats are small openings in the top of rock that allow soils to slough into large openings at depths (voids and cavities). Remediation generally entails plugging the throat. However, sinkhole throats are inherently unpredictable and are not always in the footprint of sinkholes. Trying to find them via drilling can be a hit-or-miss proposition.



3-D rendering of top of rock based upon 6,600 electrical resistivity measurements

3-D ERI provides excellent spatial coverage. It can identify small features in the top of rock by obtaining thousands of measurements beneath a grid of stakes referenced in a Cartesian coordinate system. Measurements are made using a dipole-dipole or mixed dipole-gradient array. This 3-D rendering clearly shows a sinkhole associated with a throat, and a potential fracture lineation in the top of the rock. Sinkholes, throats, and fractures generally go hand-in-hand in karst terrain. Colors associated with soil are rendered opaque so that the top of rock can be examined.



Quantum owns and operates two Advanced Geosciences, Inc. SuperSting R8 earth 84 electrode electrical resistivity systems. Upwards of approximately 20,000 square feet can be covered in one day making 3-D ERI ideal for exploring stormwater basins and building footprints.

### Other Applications:

- Locate water resources, fractured aquifers, and water-bearing sands and gravels
- Determine the horizontal and vertical boundaries of landfills and conductive plumes
- Locate borrow areas
- Map geologic contacts and the freshwater/saltwater interface
- Identify the water-table and bedrock
- Monitor the effectiveness of environmental remediation.