GUIDELINEGEO

ABEM | MALÅ

CASE STORY

Geophysical survey - Aquifer

| TEM - Transient Electro Magnetic |

TEM use for characterization of aquifer

CLIENT PROFILE

U.S. Geological Survey (USGS) is the science agency within the U.S Department of the Interior. USGS serves the US by providing scientific information about the Earth. The agency collects, monitors and analyze data to protect and preserve life, water, mineral resources, energy including minimizing the effects of natural disasters etc. (www.usgs.com)

CHALLENGE

Wanting to characterize an aquifer to estimate saturated thickness and fresh/saline-water interface on Cape Cod, Massachusetts.

SOLUTION

Using the ABEM WalkTEM and passive seismic horizontal-to-vertical spectral ratio (HVSR) methods.

CONCLUSION

The TEM-estimated saturated thickness and fresh/saline-water interface was within 2 percent of the contact interpreted from the EM logs. HVSR and TEM- derived depths to bedrock were within 5 and 1 percent of the drilled depth, respectively. These results demonstrate the utility of combined TEM and HVSR methods for mapping the subsurface conductivity structure and thickness of unconsolidated aquifers and the efficacy of NMR logging to provide continuous logs of hydrologic properties in PVC-cased boreholes.

PROJECT

- Site: Cape Cod, Massachusetts
- Citation: Jonson, C., White, E., LeBlanc, D., Phillips, S., Hull, R., Stone, B. and Lane, J. (2017): *"Combined use of transient electromagnetics, passive seismic, and nuclear magnetic resonance methods to charcterize an unconsolidated aquifer on Cape Cod, Massachusetts"*. SAGEEP
- Method: TEM