

Ground Penetrating Radar & Electromagnetic Induction



What are GPR and EMI

Ground-penetrating radar (GPR) is a non-invasive, high-resolution geophysical method used in the investigation of earthen materials. Ground-penetrating radars transmit short pulses of high to ultra high frequency electromagnetic energy into the ground to detect subsurface interfaces. Interfaces often correspond to major soil, stratigraphic, and lithologic layers or features.

Electromagnetic induction meters measure the bulk averaged or apparent conductivity (ECa) of soils and earthen materials. The apparent conductivity of soils is influenced by the type and concentration of ions in solution, the amount and type of clay in the soil matrix, the volumetric water content, and the temperature and phase of the soil water. The ECa of soils will increase with increases in soluble salts, water, and/or clay contents. Interpretations of ECa data are based on the identification of spatial patterns in data sets, which are often displayed with plotting software such as GIS.

Source: Geophysical Survey Systems, Inc.

APPLICATIONS

- Depth and/or thickness of organic material
- Depth to water table
- Depth to fragipan
- Depth to bedrock
- Bathymetry on freshwater pond (contour pond bottom)
- Pond sedimentation thickness
- Cultural resources
- Detection of salt water intrusion
- Detection of subsurface animal waste flows
- Old landfill delineation in urban areas
- Anthropogenic soil deposits
- Tile drainage
- Tree root distribution
- Compaction
- Wetland restoration - dam bridging
- Others

