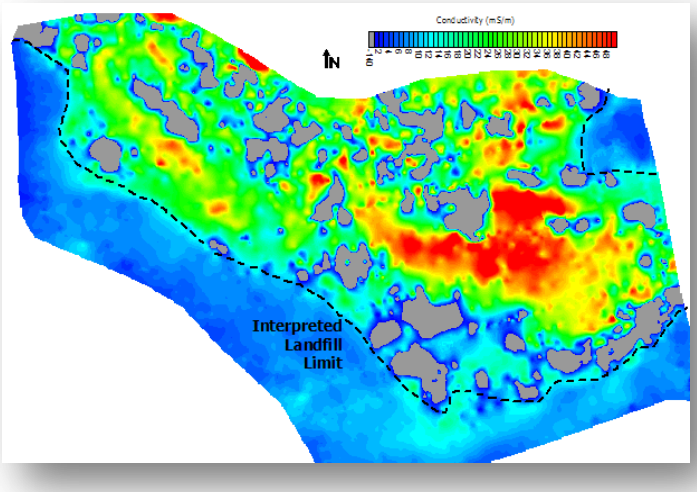
Geophysical Methods

Electromagnetic Terrain Conductivity

Frequency domain electromagnetic terrain conductivity (FDEM or EM) is often used as a reconnaissance tool to screen large sites. The frequency, coil separation, and coil orientation determine the depth of investigation. Two phases of data are commonly recorded. Data inphase with the transmitted EM signal are responsive to metallic materials. With high-quality equipment, data that is 90° out of phase with the transmitted signal, known as quadrature phase, and correlates directly with subsurface conductivity. Subsurface conductivity can be interpreted to indicate:

- Changes in soil type,
- Presence of shallow bedrock pinnacles,
- Deeply weathered bedrock zones,
- Areas of changing soil moisture, or
- Locations of shallow clay or gravel deposits.

Inphase measurements are often used to identify data interferences such as utilities, or areas of buried metals for brownfield investigations.



Quality Geophysics generally follows ASTM standard D6639 in performing FDEM surveys. The most common surveys will investigate to a depth of approximately 18-feet; however, instruments are available for depths of 200 feet or more, or as shallow as 6-foot. Data is commonly recorded in concert with a differential global positioning system (DGPS). Equipment can be hand-carried, or towed behind an all terrain vehicle (ATV) for larger site assessments.

FDEM surveys have a demonstrated capability to cost effectively screen larger sites to establish focused investigation zones to assess materials of similar composition. This approach can be used to provide more efficient and effective boring programs to characterize a site for future use or development.