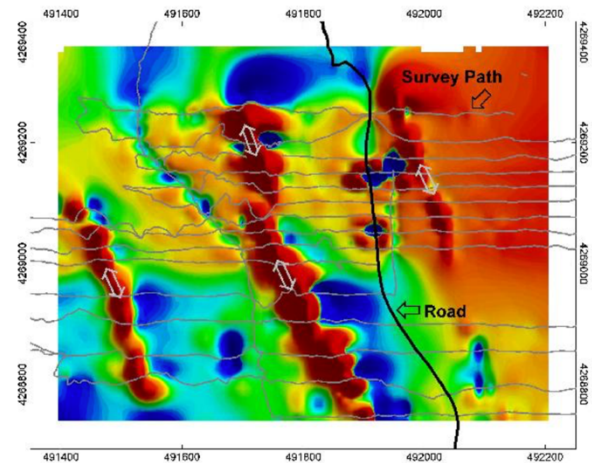


# Electromagnetics (EM)

## The Method

Electromagnetic (EM) methods include some of the most commonly employed geophysical techniques used for environmental and geotechnical studies. EM methods employ active sensing technology in which a generated EM field is used to induce secondary EM response in the mediums being investigated.

All EM surveys provide measurements of variability in subsurface conductivity, which can be naturally occurring (differing lithologic materials), or man-made (soil/groundwater contaminants or buried metal). As compared to magnetometer-based investigations, EM instruments have the added capability of detecting non-ferrous as well as ferrous metallic objects.



## Data Processing and Presentation

Graphical presentation of the results of an electromagnetic investigation typically include a site plan showing the area of investigation, known cultural features, and data collection points. The electromagnetic data can be presented as color or color-fill contour maps or stacked profiles, which can overlay the site plan.

## Applications

- Identify small ferrous and non-ferrous metallic objects such as unexploded ordnance (UXO)
- Locate buried metallic objects (drums, tanks, etc)
- Map soil salinity and salt water intrusion
- Delineate landfill and trench boundaries
- Map soil and groundwater contaminants
- Detect location and orientation of faults
- Map lateral and vertical distribution of soil type

### Equipment Used

**Geonics** EM31 DL terrain conductivity meter  
**Profiler GSSI** EM terrain conductivity meter detector  
**Geophex** GEM-2 conductivity / metal detector