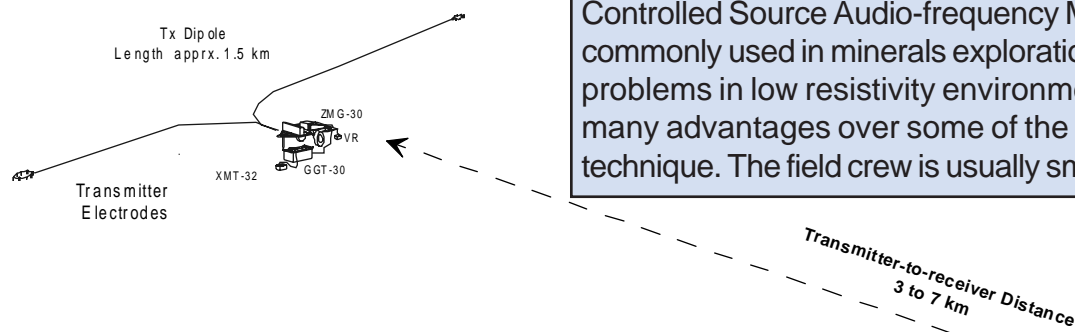


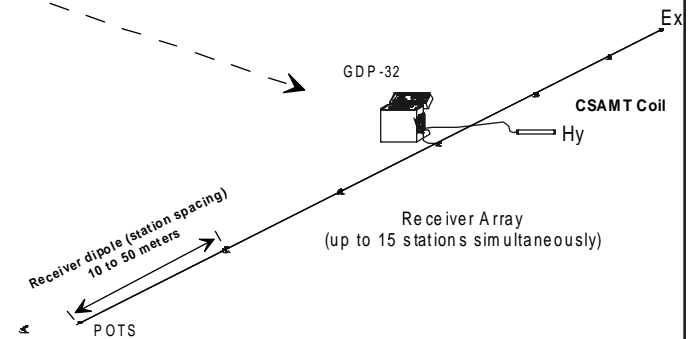
CSAMT

High Resolution Resistivity Sounding

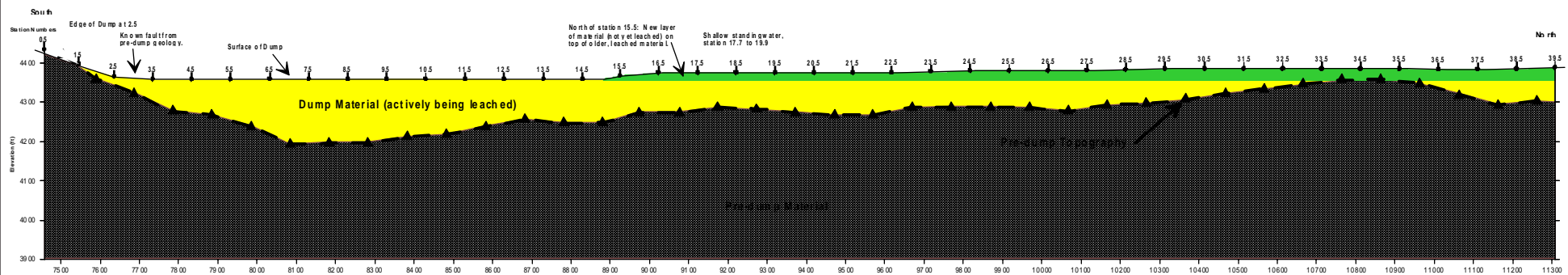


Controlled Source Audio-frequency Magnetotellurics (CSAMT) is a high resolution resistivity method commonly used in minerals exploration, and it also has applications in environmental and engineering problems in low resistivity environments or when deep data are required. Logistically, CSAMT has many advantages over some of the other resistivity methods, since it is a far-field electromagnetic technique. The field crew is usually small (3 or 4 people), the method works well in noisy environments, and survey speed is relatively fast if a multi-channel receiver is used. Successful environmental projects include groundwater location, mapping contaminant plumes, monitoring in-situ leaching operations at mines, and locating brine injection leaks in oil fields.

The example below shows a CSAMT line across a leach dump at an active copper mine in the southwestern USA. Leaching fluids are usually very conductive, and are therefore very good targets for resistivity methods. CSAMT data were used to determine whether the leaching fluids were moving uniformly through the dump, or whether the fluids were moving along preferred flow paths, leaving some areas un-leached. Fluids escaping the dump into the pre-dump geology could also be detected. The saturated areas are clearly evident in contrast to the pre-dump, higher resistivity geology, and the new lift of un-leached material (north of station 15.5) is obvious.



Known Cross Section of Leach Dump



CSAMT Smooth-model Inversion Results

