

## Assessment of Inorganic Pollutant Contamination in Groundwater using Ground Penetrating Radar (GPR)

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**ABSTRACT:** *The objective of this study was to evaluate the ground penetrating radar (GPR) wave responses to different levels of electrical conductivity (EC) in contaminant plumes. GPR wave simulations were carried out using GprMax2D and the simulated data were compared with GPR surveys on Lysimeter test. Trace amplitude of the reflected wave was plotted with two-way travel time and the 2D GPR images were developed to observe the variation of GPR responses with increasing EC. Simulation study showed the disappearance of the subsurface reflection and wave amplitude reaching zero at higher EC levels (when  $EC > 0.28$  S/m). In addition, when the EC level was higher, the plume thickness did not have a significant effect on the amplitude of the reflected wave. However, it was also found that reflected signal strength decreases with increasing plume thickness at a given EC level. Further research is needed to verify the results under heterogeneous aquifer conditions.*

**Keywords:** *Ground penetrating radar, solid waste dump site, groundwater, landfill leachate*

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