

**ESTIMATION OF AQUIFER VOLUME USING GEOPHYSICAL AND GPS STUDIES FOR
A PART OF MEHADRIGEDDA RESERVOIR CATCHMENT, VISAKHAPATNAM, INDIA -
A 3-DIMENSIONAL MODELLING APPROACH USING GIS**

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ABSTRACT

The importance of aquifer mapping and computing its volume is discussed in the paper. The increasing demand on water resources has created pressure on both surface as well as groundwater reserves. As the aerial extent of the aquifer system is not known, a sub-watershed was considered for the study. Differential Global Positioning System (DGPS) survey was carried out for topographic surface modeling, which is an accurate and less time consuming process when compared to traditional methods of land survey. Electrical resistivity method, a geophysical technique, was used for subsurface mapping. ArcGIS – 3D Analyst module was used to generate 3-Dimensional models, Triangulated Irregular Network (TIN) and GRID formats, of surface and subsurface. Isopach map was prepared, which can be used for planning of rainwater conservation structures, to recharge the aquifers.

KEYWORDS: Aquifer Mapping, Isopach, Geophysical Technique, 3-Dimensional Models, TIN, DEM, DTM, DSM