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Geoelectric signatures of the coastal aquifer system of Adappa watershed

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Abstract : The need for good quality water has increased extensively due to awareness and technology. The Groundwater is the viable alternative for the surface water sources; it becomes the most important component in our life support system. The Groundwater at all locations is not directly usable for domestic or irrigation and industrial purposes because of the poor quality of available water. Thus, many people rely on the exploration and exploitation of Groundwater. These problems can be solved using proper exploration techniques. Thus, numerous problems of Groundwater exploration and exploitation require the systematic use of scientific techniques. In coastal areas, due to over exploitation and natural disasters like the tsunami, the quality of fresh water aquifers gets deteriorated by seawater intrusion. In order to explore the Groundwater resources and to delineate the subsurface lithology of Adappa watershed in the Cauvery river basin of Tamilnadu, an integrated geological, geomorphological, hydrogeological and geophysical investigation has been taken as a research project. As a part of the research project, a multi oriented approach to study on the coastal geology, hydrogeomorphology and geoelectrical signatures of the coastal aquifer system of the Adappa watershed have been made in this study. To access the groundwater resources and to find the depth to fresh water and salt water interface, about nine VES have been carried out in the study area. The VES data were analyzed using IPI2 Win and surfer software programs and the geoelectric parameters were evaluated. The majority of the VES curves are QQ types with 3 to 6 geoelectric layers. From the geoelectric studies, it is inferred that the approximate depth of fresh water-salt water interface is in the range of 0.904 to 8.34 meters below ground level [MBGL]. From the true resistivity contour anomalies, it may be revealed that the quality of groundwater is poor in southern and southeastern parts of the study area. The Groundwater development in these areas must be carried out with necessary management strategies.

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