INTEGRATED STUDIES OF HYDROGEOLOGICAL INVESTIGATIONS AND REMOTE SENSING TECHNIQUES IN GROUNDWATER ASSESSMENT

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Introduction:

Water is an essential and basic component of life. The need for water is strongly ascending and has a diversified function, now a days the use and sustainability of water is getting more complex due to population growth, urbanization and industrialization. Any development is related either directly or indirectly with water utilization.

Groundwater has become immensely important for the different water supply purposes in urban and rural areas of both the developed and developing countries Geophysical survey is therefore one of the sub-methods under the surface method of groundwater exploration, important for both groundwater resource mapping and water quality evaluations.

Remote sensing is used in numerous fields including geography, land surveying and most earth Science disciplines for acquiring data without physical contact.GIS applications helps to allow users to create interactive queries (user-created searches), analyse spatial information, edit data in maps, and present the results of all these operations.

In the present study use of Remote sensing techniques and GIS application has been utilized for study of drainage patterns, geophysical characteristics, morphometric characteristics. etc., for exploration of Groundwater potential zones and water management strategies.

Objectives:

1. To determine Hydrogeological characters to estimate the groundwater availability. Thus, planning innovations in watershed management.
2. To generate Thematic maps using Remote Sensing and Geographical Information System techniques, Thus, integrating the various components estimated for better management of water resource.
3. To detect LULC change and its influence on the existing resources in the study area.
4. To assess the Groundwater potential and contour characterization along with groundwater quality of the study area.
5. To recommend suitable water management strategies that would augment the water resource further.
Methodology:
1. The study area is demarcated using SOI Toposheets
2. The available information on various parameters is collected from various governmental agencies.
3. The qualitative and quantitative geomorphic analysis is done. The results are correlated with the other hydrological parameters to draw conclusions
4. The Landuse/Landcover for the study area has been demarcated for various types of classes using satellite imageries.
5. The Geological map is updated by incorporating structural and lineament information extracted from Satellite imageries.
6. The thematic layers of the study area are prepared after the systematic Georectification and Visual interpretation. Multiple thematic layers are integrated using GIS to generate ground water potential zone map.

Results And Conclusions:
1. Water resources in the study area is assessed by geomorphic, Land use and land cover studies.
2. The results were integrated with Remote sensing and GIS for an efficient and sustainable development and management of available water resources in the study area.
3. Groundwater potential zones are identified and AGWR techniques were proposed.

Scope For Further Studies
- Estimation of Rainfall – Runoff in the study area for hydrological modelling.
- Study of groundwater quality
- Geophysical survey for groundwater investigation
- Rainfall-Runoff Modelling for sustainable water management
- Prioritization of sub watersheds based on morphometric and Land use parameters.