

## **Evaluation Of Groundwater Quality In Parts Of Alladurg Mandal, Medak District, Telangana State, India**

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Thirty water samples from open and bore-wells were collected during the post-monsoon period 2015, in parts of Alladurg area of Medak district to assess the quality of water for both drinking and irrigation purpose. The suitability of the water from the groundwater sources for drinking and irrigation purposes was evaluated by comparing the values of different water quality parameters with World Health Organization guideline values for drinking water. In connection to that different parameters like Ph (6.7 – 7.8), Electrical Conductivity (400 – 2600 mg/l), Total Dissolved Solids (256-1664 mg/l), Total Hardness (85-540 mg/l), and major cations [ $\text{Na}^+$  (0-19.09 mg/l),  $\text{K}^+$  (1.17-30.03 mg/l),  $\text{Ca}^{2+}$  (20.04-170.34 mg/l), and  $\text{Mg}^{2+}$  (6.08-96.06 mg/l)] and anions [ $\text{CO}_3^-$  (0-231 mg/l),  $\text{HCO}_3^-$  (122-719.8 mg/l),  $\text{Cl}^-$  (17.72-730.27 mg/l),  $\text{SO}_4^-$  (15.84-213.12 mg/l),  $\text{F}^-$  (0.25-2.8 mg/l), and  $\text{NO}_3^-$  (7.83-484 mg/l)] were estimated and calculated various indices like Sodium Absorption Ratio, Sodium Percentage, Residual Sodium Carbonate.  $\text{HCO}_3^-$  and  $\text{Ca}^{2+}$  were the dominant ions in groundwater samples and also major hydrochemical facieses were Ca- $\text{HCO}_3$ , and Ca-Mg-Cl types. Majority of the samples are suitable for drinking purposes except fluoride and nitrate and far from drinking water standards. The results showed that the high fluoride concentration is southern region while high nitrate concentration zone was middle part of the study area. Based on the US Salinity Laboratory diagram, groundwater samples were classified as C3S1 (>80%) and C2S1 were the most dominant classes in groundwater samples are due to high concentration of bicarbonate. The groundwater quality is above the sufficiency level for both drinking and irrigation, and appropriate management measures are recommended for sustainable development.