

## **Deciphering groundwater quality zone using GIS in Kalpeni Island, U.T. of Lakshadweep, India.**

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Lakshadweep is a group of thirty six islands located about 400 km from the coast of Kerala in the Arabian Sea. The total land area of the entire territory is 32 km<sup>2</sup>. Kalpeni is one of the Islands of Lakshadweep which covers an area of 2.79 km<sup>2</sup> and located 287 Km from Cochin. It is formed by three uninhabited islands (Islets) of Pitti, Tilakam and Cheriya. In these small islands, groundwater is the only freshwater available for their inhabitants. Due to growth of population the demand of freshwater is also increasing resulting in degradation of water quality and quantity. Therefore, an attempt has been made to know the ground water quality of the area. Twenty groundwater samples of post monsoon 2006, have been collected and analysed. After analysis, groundwater quality zone has been demarcated based on Water Quality Index (WQI), prepared in the GIS module using spatial analysis method. It is a very useful tool for assessing the information on overall groundwater quality scenario. The groundwater quality parameters are used based on the WHO /BIS /ICMR standards. Finally, groundwater quality zone suitable for drinking purposes has been demarcated which is divided into five classes viz. excellent, very-good, good, moderate and poor. The groundwater quality in the south – east and north – western periphery comes under excellent to very good zone whereas central part as well as some patches in northern side shows good quality in nature. The groundwater present in the extreme western part of the Island is poor to moderate in nature. The analysis result shows that amount of EC, Cl, Na, and K are above the permissible limit in the western periphery and upper part of the northern side. These indicate that sea water intrusion has started from western to southern margin and upper part of northern side. This study could be very important for proper management and assessment of groundwater condition of the island.

**Keywords:** Island, Water Quality Index, GIS, sea water intrusion