Study No. 8

ASSESSMENT OF CHANGES IN GROUND WATER QUALITY AND LAND USE ENVIRON IN PALAR RIVER BASIN USING REMOTE SENSING TECHNIQUES

Summary

River Palar is one of the 17 major rivers of Tamil Nadu. Palar River basin covers Vellore, Thiruvannalamalai and Kancheepuram Districts of Tamil Nadu. There is surface water flow only for a few days in a year in this river. But considerable ground water potential exists in the Palar river bed. This potential facilities a large scale groundwater extraction from the river bed which is the main source of drinking water supply schemes for both rural and urban area of these three districts and even to Chennai Urban area of these three districts and even to Chennai Urban area. 62.6 Million gallons of groundwater per day is pumped from the river bed for the major water supply schemes besides number of minor water supply schemes. As there is no regular surface flow in this river, agriculture of the Vellore and Kancheepuram Districts mainly depend upon the groundwater potential of the river bed. Due to over exploitation of groundwater, 5 blocks of upper Palar Zone in Vellore District have been classified as Dark are blocks where annual extraction is more than 85% of annual groundwater recharge and resulted in depletion of water level. All these blocks are located on either banks of Palar. Water based industries like tanning, dying, sugar industries; match factories are located on the banks of Palar River. Their requirement is also fulfilled by Palar River. Hence, this river is the primary source of water for industrial, agricultural and domestic sectors of the three districts.

The geochemical quality of drinking water is deteriorating in the river bed to the discharge of industrial effluent into this river. In the entire Palar basin, pollution is more prevalent, in upper Palar where tanneries are located in large number from Vaniyambadi to Walajahpet town. These tanning industries let the untreated or partially treated effluents in large volumes into the river system, thus polluting the cultivable soil and groundwater resources. Nearly 35,000 hectares of cultivable land has been affected. Data on Geochemical quality of shallow observation wells and Remote Sensing Data are available from 1978 to 1998. Hence, studies have been made to detect the changes in geochemical quality of groundwater and land use of the area for every 10 years, 1978, 1988 and 1998. For this purpose, different thematic maps such as physiographic, geology, geomorphology, and structural land use water quality maps have been prepared. Drilling was conducted in the flood plains and river bed to know the sand thickness. The results of different studies are
analysed and technical conclusions are arrived at and recommendations are furnished in this report.