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Effect of Waterbodies on the Quality of Groundwater in Coastal Areas of South 24-Parganas in West Bengal, India

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The effect of waterbodies (sea, river or canal) on the electrical conductivity of the piezo-water at high and low tide is analysed. It is found that quality of twelve piezo-water samples upto a depth of 160-330 m is not dependent on the quality of surface water bodies like rivers or canals.

In the coastal areas the major problem is the quality of water. The electrical conductivity is one of the major parameters to determine the quality of water. Irrigation water is safe when it is lifted from underground formations whereas the surface water sources are not useful due to salinity. In this regard the studies on the effect of the distances of waterbodies, viz. rivers, canals and sea on electrical conductivity of water taken from different piezometers is of much importance.

MATERIALS AND METHODS

Piezo-waters were collected from Kakdwip, Namkhana, Bakkhali, Lothian, Sitarampur, Canning, Gosaba and Rangabelia in May, 1986 at high and low tides from a depth of 160-330m (Dhara *et al.* 1990). Besides, water samples were collected only at high tides from Bhagbatpur, Dhanchi, Surendragunj and Gobardhanpur at similar depths. Duplicates of each sample were analysed for electrical conductivity (EC).

RESULTS AND DISCUSSION

The electrical conductivities of water samples from piezometers at different locations with corresponding distances of those piezometers from sea and nearest rivers or canals are presented in Table 1. The data indicate that the electrical conductivities are not dependent on the distances of piezometers either from sea or from river or canal as the soil is nearly impermeable. Again it is indirectly found that there is no difference in electrical conductivity of sea and river or canal water.

Table 1 *Distances of waterbodies (sea and river or canal) and electrical conductivity of piezowater*

Location of Piezometer	Distance from water bodies (km)		Electrical conductivity of piezowater (mmhos/cm) at 25°	
	Sea	River or canal	High tide	Low tide
Kakdwip	31.253	1.000	27.5	30.0
Namkhana	20.835	0.250	16.0	15.8
Bakkhali	9.471	0.200	41.0	42.0
Lothian	37.882	0.200	30.5	30.0
Bhagbatpur	38.829	0·250	35.5	—
Dhanchi	15.153	0.205	47.5	—
Surendragunj	16.100	1.000	2.3	—
Gobardhanpur	9.471	0 200	27.5	—
Sitarampur	12.312	0.100	29.5	28.0
Canning	69.609	2.000	24.8	—
Gosaba	56.824	0.500	30.8	30.0
Rangabelia	55.876	0.400	17.1	17.0

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