2. GEOGRAPHICAL FEATURES

2.1 PHYSIOGRAPHY OF THE STUDY AREA

The entire network of the present study lies in the Bidyadhari river area of Sundarban.

The Sundarban is located between 21°32' & 22°40' North latitudes and between 88°05' & 89° East longitudes bounded by Dampier-Hodges Line all through its north from Kakwdip to Basirhat. The river Hooghly is in the west, Bay of Bengal in the south and eastern boundary is demarcated by Ichhamati-Kalindi-Raimangal rivers. The total area of Sundarban region is 9630 sq. km out of which the area under reserved forest is 4264 sq. km and the rest of the area is reclaimed and inhabited. Administrative boundary of Sundarban has gone through two districts i.e., North 24-Parganas and South 24-Parganas covering 19 Blocks—6 Blocks in North 24-Parganas district and 13 Blocks in South 24-Parganas district.

The present piece of work was done in the Minakhan Block of North 24-Parganas mainly around Bidyadhari river which is nearly 40 km east of the city of Calcutta between (latitudes 22°15'N & 23°16'N and Meridians 88°30'E & 89°E). Two stations were selected in the study area which are about 18 km apart from each other.
STATION — I

The first station, Kulti in the Minakhan Block of North 24-Parganas is nearly 40 km away from the city of Calcutta. This area receives the direct waste discharge from the city of Calcutta. A study of the old records regarding waste disposal reveals that Calcutta produced 0.0682 mm$^3$/d of wastewater in 1875. With the increase population its volumes rose considerable viz., 0.109 mm$^3$ in 1891; 0.3046 mm$^3$ in 1914; 0.5910 mm$^3$ in 1943; 0.75 mm$^3$ in 1973 and 0.75 mm$^3$/d in 1986 (P. Roy; S. B. Saha & R. K. Banerjee, 1981).

The rapid industrialization and urbanisation of the city of Calcutta in the early nineties have increased the waste disposal rate enormously which might have retarding effect on the water quality of Bidyadhari river. As this water is utilized by several shrimp culture farms in the region, therefore the possibility of accumulation of consenative pollutants in their body tissues cannot be ignored. It is on this background, the first station was selected for seasonal monitoring the ambient media and the cultured prawns in respect of some heavy metals. The station receives the some heavy metals. The station received the complex waste (municipal & industrial) from the city of Calcutta mainly throught two canals (DWF & SWF) that act as the conveyer belt for transporting the waste materials from the city.

STATION — II

The second station, Kanmari is also in the Minakhan of North 24-Parganas and is nearly 58 km away from the city of Calcutta. This area is located
in the bank of Bidyadhari river but 18 km apart from the Kulti lockgate. The waste materials on the way to Bay of Bengal is minimized to a considerable extent due to the phenomenon of bio-accumulation that occurs in every sector by numerous flora and fauna present in the system. Hence the second station is relatively less exposed to variety of wastes generated from the highly urbanised and industriised city of Calcutta.
2.2 CLIMATE OF THE STUDY AREA

Both Kulti and Kanmari being the parts of the same Sundarban region, enjoy almost the same type of climate with a slight variation in salinity and pH that becomes pronounced in the pre-monsoon season. The Kanmari area experiences an average salinity of 26.6% during the month of May and June which is higher in comparison to the other station (Kulti).

**Wind** :

The prevailing wind is from north and north-east from beginning of October to the middle of March. The months of January and February are relatively calm. The wind again commences to blow violently from the middle of March from south-west and gradually subsides in September. Storms are common during spring and autumn. Some of these often develop into cyclones of varying intensity usually accompanied by high tidal waves (7 ft.) and surges which cause much loss of life and damage of property and coastal features.

**Seasons** :

Seasons are well pronounced in this estuarine system, each with four months duration and the seasonal variations have been noted in accordance with the tidal regime (Pillay, 1958). The pre-monsoon (March to June) is the dry-season with considerably higher temperature, salinity and pH of the ambient aquatic medium. The south-west monsoon (July to October) is accompanied by heavy rainfall and low salinity, the winter season is accompanied by comparatively lower temperature. The tidal interactions in the entire Sundarban region also depends on the seasonal pattern.