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Case Study on Thenpennai River for Multipurpose

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ABSTRACT

The Thenpennai River is flowing continuously for 5000 kilometer. It passes through many villages' town and Thiruvannamalai district .It is Perennial river and monsoon based catchment. The Thenpennai river is the main source for irrigating over 17,980 acres in Thiruvannamalai district. It is also the main sources of drinking water to more hundred villages many polluted are added to this river at all points ,especially those closes to human settlement and industrial development suffer from acute level of pollution river that flow through densely populated area including towns and housing area are often polluted with solid wastes. To use the river water to water supply to many towns which includes Thiruvannamalai, Manalurpet, etc. Entire flow on the river as turbidity. Considerable amount of population depend upon the river directly for the daily become use a study has necessary to the present day to determine the suitability of the river water for domestic use.

Keywords: Water resources, Multi-purpose, Geographical Information System, Case study.

1. INTRODUCTION

The South Pennar River is known as Dakshina Pinakini in Kannada and Thenpennai or Ponnaiyar in Tamil. The river originates in the Nandi Hills in the Chikkaballapura district of Karnataka and flows through Tamil Nadu before emptying into the Bay of Bengal. It has a catchment area of 1,424 square miles (3,690 km^2) located in Karnataka, Tamil Nadu and Andhra Pradesh states. Small dams of Kelavarapalli and Krishnagiri dams are built across this river near Hosur and Krishnagiri. The largest dam on this river, Sathanur Dam with 7.3 Tmcft Gross Capacity is built near Tiruvannamalai. Moongilthuraipattu Sugar Factory is also situated on the bank of river. The river is dry for the most part of the year. Water flows during the monsoon season when it is fed by the south-west monsoon in catchment area and the northeast monsoon in Tamil Nadu. However this water flow raises the water table throughout the river basin and feeds numerous reservoirs/tanks. The old river DakshinaPinakini does not exist anymore. Substantial part of Bangalore's sewage enters this river via Bellandur and Varthur Lakes and other channels. The sand build of the river is quite impressive, suggesting that it may have been a perennial river with much larger water flow in the past. Mention of the river is found in Sangam and medieval (Thevaram - Bhakti cult era) literature, where it is depicted as rich with lush vegetation on its banks.it irrigates Krishnagiri, Tiruvannamalai, Vizhuppuram and Cuddalore districts and empties into the Bay of Bengal This river is now looted for its rich availability of sand. As the water flow

will be only in monsoon seasons, the river is dry in remaining parts of the year. Sand mafia is biggest and most dangerous elements behind killing of large rivers in south India.

STUDY AREA

Country-India

States-Karnataka and Tamil Nadu

Cities-Kolar, Hoskote, Kadugodi, Whitefield, Bagalur, Hosur, Krishnagiri, Chengam, Thanipaddy, Tiruvannamalai, Manalurpet, Tirukkovilur, Cuddalore.

Physical characteristics

Main	Nandi Hills
Source	Chikkaballapura, Karnataka 1,276 m (4,186 ft)
River	Bay of Bengal
Mouth	Cuddalore, Tamil Nadu 0 m (0 ft) 11°21′40″N 79°19′46″E
Coordinates	11°21′40″N 79°19′46″E
Length	500 km (310 mi)

MAP DETAILS

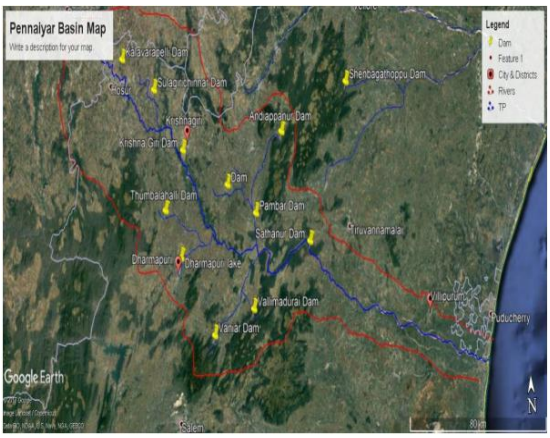
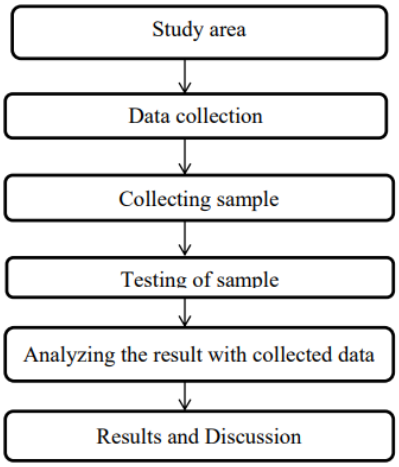


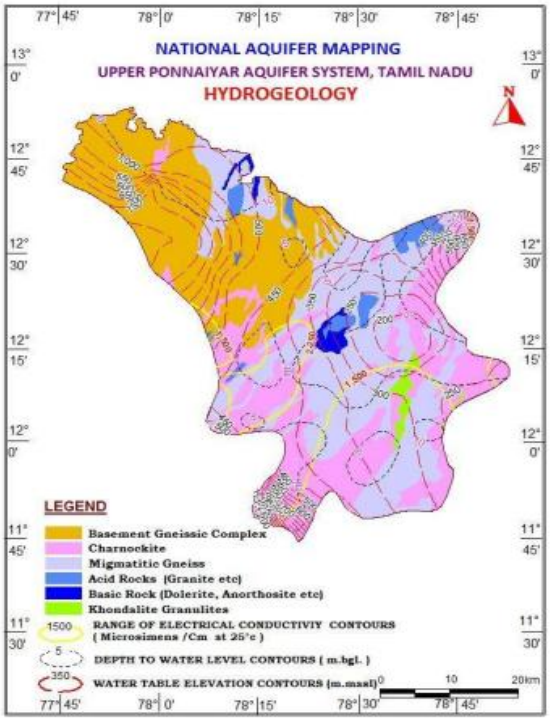
Fig 1. Map

METHODOLOGY



HYDROGEOLOGY

The Upper Ponnaiyar river aquifer system is underlain by Achaean Crystalline formations with recent alluvial deposits of limited areal and vertical extents along major rivers. The occurrence and movement of ground water are controlled by various factors such as physiographic, climate, geology and structural features. The important aquifer systems in the study area are constituted by weathered, fissured and fractured crystalline rocks and the recent alluvial deposits. Hydrogeology shown in fig



REGIONAL GROUNDWATER FLOW

The groundwater of the study area is abstracted for irrigation, drinking water supply and domestic purposes. Agriculture activity of the study area is mainly dependent on groundwater resource and small region of canal/dam command area. The Land use and land cover map was prepared to demarcate the area under cultivation. Information on the number of wells (open and bore wells) available in the study area (table 3.2.5) was collected from the department of economics & Statistics and also from the electricity board. The data obtained from electricity board included the number of wells energized and their horse power of the pump. The domestic and drinking water requirement of the study area was calculated based on population.

ANALYSIS AND EXPERIMENTAL

Programmers

Determination Of pH

Calibrate the electrodes with two standard buffer solution of PH and buffer solution. It is a solution offering resistances. The sample temperature is determine at the same time and is entered into the meteor allow for a temperature correction. Dip the electrode into the sample solution wait up to 1 min for steady reading the PH meter reading within 0.1 PH unit will be adequate for such work. The readings are taken and the indicator value remains constant for about 9 minutes. The PH of the collected river water sample is 5.87 (acid)

Determination of turbidity

Switch on the instrument and let the instrument warm for 15-20 minutes insert the cell with distilled water in to the cell holder. Covert the cell with light shield. Select the sang [1-100MTU] as yield by range on panel meter with the help of set zero control knobs. Insert cell rider in 100 NTU range and adjust to panel meter. Repeat step 3 and 4 till you get zero and standard control. Now insert all the sample solution and note to reading. The meter scale is marked from 0-100 for NTU range read 100 as 10 NTU.

Determination of Jar Test

For testing the jar test for river water first take 200 ml of river water and prepare alum. For preparation of alum take aluminum chloride of 100mg + distilled water mix this two will create alum. For each and every sample put 3 to 4 drops of alum. Take 3 no of sample. Put 3, 4 and 5 drops of alum in the sample taken. Then place the beaker of sample in the jar testing machine at least for 10 minutes. Then take out the sample of river water from the jar testing machine and leave it free for a few hours of time and allow the waste particles to settle down.

Determination of Total Solids

Take crucible dish of 2 numbers and wash it in fresh water and place the dish in oven for 10 minutes of time and take out and put it in desiccators and allow the dish to cool. After 5 minutes of time weight the dish and take it as W1. Then take 20ml of collected river water and pour it in dish then place it in oven again. Then after 10minutes of time take out the dish and place it in desiccators and allow cooling. Then weight the dish + river water and take it as W2.

CONCLUSION

Neglecting a few anomalies, generally all the parameters lied within the prescribed range though some of them are showing exceeds viz.turbidity, hardness, dissolved oxygen etc,which is obviously a threat for a dangerous tomorrow. They have the potential to cause threat to the health, because of the effluent discharge from industries,garbagedumpingandetc.goes on then it will surely cause to peoples in future. Similarly the increasing population also affected to a much greater extent on the river. water quality deteriorated, as river flows downstream especially

Fig 2. Conductivity Meter

Determination of Calcium in the Given River

Water Sample

Take 40 ml of river water sample. Then fill the burette with HCL of 50ml and start titrating. Before titrating add EBT of 4 drops in the 40 ml of Sample taken. Then titrate the sample up to a pink color changes is happen. After the color change note the reading. By doing the same method do the titration for 2 times.

Fig 4. Jar Testing Apparatus

measure must be taken implemented strictly from right now to get a control a deterioration of river .It must be remembered that 'A STICH IN TIME SAVES NINE'.

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