Central Pollution Control Board
South Zone Office, Bengaluru-560079

Project Head I: Pollution Assessment (Survey and Monitoring)

Scheme 3: Monitoring of inter-state river water quality including all microbial parameters in Southern Zone.

One of the function of the Central Pollution Control Board, under the Section 16 2(b) of the water (Prevention and Control of Pollution) Act, 1974 is to "coordinate the activities of the State Boards and resolve disputes among them". In the light of above, the CPCB is monitoring the water quality of rivers at the interstate boundaries since 2005.In this project, the monitoring is carried out along major rivers in the interstate boundaries at regular intervals.

Objectives:

- River water quality monitoring at interstate boundary monitoring points.
- Physico-chemical/ microbiological and pesticides characterization of river water at interstate boundary monitoring points.

In Southern zone, there are eight interstate boundary rivers monitoring location and they are briefed as given below table:

S.N	River	Location	Interstate boundary
1	Cauvery	Satyagala Bridge, (Karnataka)	Karnataka /Tamilnadu
2	Thenpennai	Mugalur Bridge, (Karnataka)	Karnataka/ Tamilnadu
3	Krishna	Devdurga (Karnataka)	Maharashtra/ Karnataka
4	Tungabhadra	Hochchelli (Karnataka)	Karnataka/A.P.
5	Bhima	Gangapur (Karnataka)	Maharashtra/Karnataka
6	Pennar	Hindupur (Andhra Pradesh)	A.P./Karnataka – No water in

			the river for many years, hence stopped monitoring.
7	Manjira	Janwada (Karnataka)	Karnataka/Telangana/Maharashtra
8	Godavari	Basar (Telangana)	Maharashtra, Telangana/ Andhra Pradesh

The water quality of the rivers is regularly monitored at interstate boundaries since 2005. In Southern zone, during FY 2014-15 river water quality was monitored quarterly in River Thenpennai at Mugulur Bridge and once in a year at three locations namely River Cauvery at Satyamangala Bridge, River Tungabhadra at Hochcheli and River Krishna at Devdurga. All river monitoring points were meeting the standards but Thenpennai River at Mugulur Bridge is not meeting w.r.t BOD. The Interstate River Boundary Water Quality Analysis Results for the year 2014-2015 is given in table 1**.** The necessary action plans to prevent and control pollution have been recommended to concerned SPCBs.

The monitoring location map is enclosed as **Annexure.** As per the CPCB H.O. letter no. A-19014/41/2006-Mon/6674 dated 18.11.2008. Rivers which are small/seasonal or not causing any dispute to be monitored only once in a year, whereas dispute river locations and rivers which are not meeting the water quality criteria to be monitored quarterly. In this regard Bengaluru South Zonal Office is monitoring the River Thenpennai (Dhakshina Pinagini River) at Mugalur Bridge has been monitored quarterly, whereas other Rivers are monitored yearly.

Results and Discussions:

As per the River quality criteria, Bio-Chemical Oxygen Demand (BOD) should be 3mg/l or less for drinking water after conventional treatment.

In South Zone Inter Sate River water quality, all monitoring points are meeting the standard except Thenpennai River at Mugalur Bridge (Karnataka State). Most of the time, BOD values are exceeding the limit of 3 mg/l and phosphate and Nitrogen are also very high in this monitoring point. The reason behind this may be due to Bengaluru city, the city has an area of 941 sq. km and urban population is 1,00,00,000 (one crore). Bengaluru city generates about 1459 MLD of domestic waste water. 50% of domestic waste water treated remaining

50% sewage water goes untreated (source Bengaluru BWSSB). This may be attributed to the mixing of untreated sewage into River. There is a need of complete 100% treatment of city sewage in Bengaluru so as to reduce the pollution load in River ecosystem.

In Bengaluru sewage which treated/untreated is been discharge into lakes. These lakes water over flows joins together and become River Dhashina Pinagini (Thenpennai River). Surplus water from Belandur Lake over flows into Varthur Lake in Bengaluru. The Varthur Lake over flows and joins Thenpennai River and this River flows to Sokkaranapalli, Mugalur and reaches to Kelvarpalli Dam in Tamil Nadu State which is located 15 km away from Hosur. The distance from Varthur Lake in Bengaluru to Kelvarpalli Dam in Tamil Nadu is around 35 to 40 km. In this 35 km distance, the surplus water is used for irrigation and washing purpose. The Kelvarpalli dam water is utilized for drinking water to Hosur City, industrial purpose.

Recommendation:

Bengaluru city sewage should be treated 100% and the phosphate should be removed and meet the treated sewage standard.

Interstate River Boundary Water Quality Analysis Results for the year 2014-2015												
S. No.	Parameters all in mg/l (except pH)	River Cauvery at Sathyagala Bridge (yearly)	River Thenpennai at Mugalur Bridge (Quarterly)				River Krishna at Deodurga (yearly)	River Tungabhadra at Hochechalli (yearly)	River Bhima at Ganagapur (yearly)	River Pennar at Mothukapalli (Kar) &Hindupur (A.P) (yearly)	River Manjira at Janwada (yearly)	River Godavari at Baser (yearly)
1	pH	8.3	7.1	7.2	6.8	7.4	8.6	8.1	7.98	**There is no flow in the river from past seven years, hence the monitoring has been stopped.**	Monitoring not conducted	Monitoring not conducted
2	Electrical Conductivity µs/cm	300	1002	1174	1210	1323	623	1230	1080			
3	Total Dissolved Solids	155	503	560	648	658	440	724	740			
4	Total Dissolved Oxygen	10.8	1.26	3.1	1.5	4.0	8.1	6.4	6.6			
5	BOD	BDL	10.6	32	21.2	19.7	BDL	BDL	7.4			
6	COD	3.2	24.4	51	55.3	54.2	8.6	12.0	42			
7	Alkalinity	154	282	342	-	420	204	204	6.6			
8	Total Hardness	126	231	223	265	290	250	239	276			
9	Calcium Hardness	32	49.6	79	94	72.9	87.8	70.9	70.2			
10	Magnesium Hardness	11.2	26.0	06	7.5	26.2	7.5	14.9	24.5			
11	Chloride	-	138.8	136	159	169	72.5	136.2	129			
12	Sulphate	15.7	36.6	34.3	25.8	23.1	74.6	169.5	163			
13	Phosphate	0.04	0.51	6.4	1.9	3.0	3.2	2.9	0.02			
14	Sodium	18.0	100	168	118	126.5	100	177	128			
15	Potassium	1.60	20	18	19.9	16.1	2.5	6.2	4.6			
16	Boron	0.03	0.08	0.04	0.94	0.2	0.13	0.22	3.4			
17	NO_3-N	0.2	7.9	0.24	0.01	4.48	0.02	0.02	0.86			
18	NO_2-N	0.07	0.5	0.17	4.06	5.163	0.2	0.2	-			
19	NH_3-N	1.12	22	21.0	28.0	0.8	BDL	BDL	BDL			
20	T. Coliform CFU/100ml	-	-	262000	100800	$95x10^4$	45600	66000	-			
21	F. Coliform CFU/100ml	-	-	192000	38400	$78x10^4$	8400	7200	-			

Inter State River Water Quality Monitoring Points