

Analysis of Physico-Chemical Properties of Krishna River Water at Wai Taluka- A Review

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Abstract- Increasing industrialization, urbanization, human population and agricultural activity increases water demand and produces more waste and waste water. That results in deterioration of freshwater resources. The physico-chemical parameters of Krishna river water at Wai Taluka were studied in September 2015. Wai is known as City of temple; city is situated near Dhom dam on the river Krishna. The Krishna river originates at Mahabaleshwar and empties in the bay of Bengal. For the study five samples will be collected from different locations in Wai taluka and parameters like pH, BOD, COD, DO, TDS, Hardness, Nitrates and Phosphates will be determined in the laboratory. The sources of river water contamination are M.I.D.C, Waste water from households, city sewage, bathing ghats, washing clothes at ghats, human activities along the river length, agricultural activity etc. The city needs safe disposal techniques, solid waste and waste water management, Constant River monitoring by the Government and restriction on human activities.

Keywords- Krishna River, Physicochemical parameters, Pollution.

I. INTRODUCTION

India has witnessed a rapid increase in the urban population, with that water demand also increasing rapidly. But the insufficient wastewater treatment facilities resulting untreated sewage disposal into natural water bodies. It produces negative effects on the health of both people and ecosystems. Wastewater management is an intense need of today's world. The statistic's shows that in India approximately 25 to 30 % of wastewater getting treated at satisfactory level. In rural areas people don't have access to safe drinking water due to lack of piped water supply. On the other hand, urban areas are facing the problem of inadequate supply and low quality services. Water supply systems are important, but at the same time wastewater treatment systems are also equally important. Approximately 80% of water turns to waste water after its utilization.

The Krishna river flows through western ghats at elevation of 1337m. Originated at Mahabaleshwar and travels about 1400 Kms upto Bay Of Bengal.

Geographically and according to the administrative boundaries of the Krishna river basin lies in the states of Maharashtra, Karnataka, and Andhra Pradesh. Krishna River Basin is India's fifth largest river basin, which covers around 8% of the total area of the country which is 2,58,948 km² in peninsular India. The principal tributaries joining Krishna are the Ghataprabha, Malprabha, Bhima, Tungabhadra, Musi and Koyana. For Maharashtra the last point of Krishna river is Sangli district. To study the impact of wastewater pollution in selected regions, the Krishna river basin is taken up in the study. The Krishna River had having 260 kms total length in the state and 36 kms. within study area Wai is situated in Western Ghats at an elevation of 718m. Average annual rainfall recorded is 734.6 mm in the study region. Population of wai as per census 2011 is 36,030. Krishna is Perennial River, which is known as major river of Maharashtra. As we all know approximately 80% of water turns to waste water after its utilization. Roughly Wai Taluka produces 38, 91,240 liters of wastewater as per 135 lpcd.

II. PROBLEM STATEMENT

There are many problems associated with Krishna River in Wai and Karad region. Previous research says these two regions in Maharashtra heavily contaminate River Krishna.

- I) Land of Wai has huge coverage of agriculture. Due to use of fertilizers and pesticides river and ground water may get contaminated.
- II) Wai is named as city of temples. Approximately 100 temples situated in wai taluka and 8 ghats including Menawali situated along the river length. That is a major cause of pollution.
- III) Wai is known as holy place so many people visits Wai every year. Due to improper solid waste management and traditional beliefs left of garland and food directly disposed in river water it increases organic loads.
- IV) Till date many peoples in wai used to defecate at the bank of river. Bathing at ghats, washing clothes etc. human activities results in contamination of water in the River.
- V) Wai has no wastewater distribution system and treatment plant. Wastewater from households directly discharged into the river.



Fig 1. Map of Wai taluka

III. FIELD APPLICATION

For study purpose five points along the river bank were selected as shown in fig. from dhom dam to bhuinj marked as black circles. Detailed survey should be done along the river to calculate discharge variations at various points due to joining tributaries, odha's(streams), culverts etc.

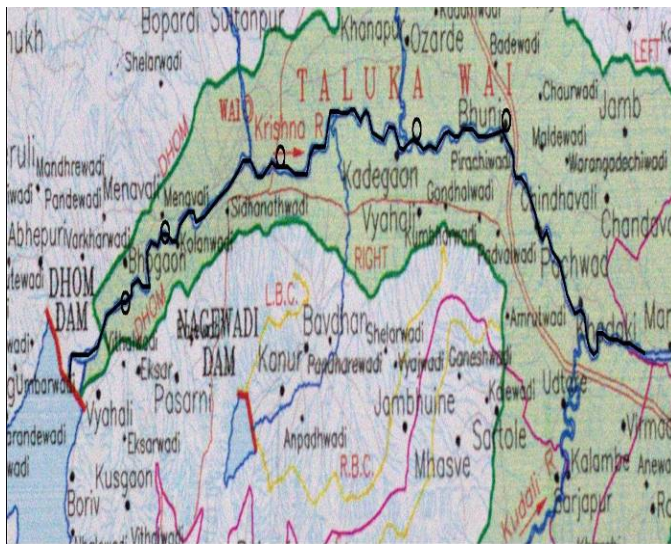


Fig. 2. Study area map

Approaching roads were marked on map for further use. Water collection points were selected approximately 200m to 300m away from habitation and connecting streams at downstream side. The selected points are as follows (1) Bhogaon (2) Menawali (3) Bhadreshwar (4) kadegaon (5) Bhuinj these are sample collection points on Krishna River bank in Wai (black line represents Krishna river) Samples will be collected from mentioned nodal points for 6 times with interval of 15 days. Sample collection will be done between 9am-11am. 2 lit polyethylene cans will be used to collect

water from selected points, immediately DO fixation will be done to maintain the parameters of river water till reaching laboratory. Location will be properly marked on cans to avoid mistakes. As mentioned in methodology various parameters to be tested in laboratory as per American Public Health Association (APHA) standards. On the basis of lab test results, contamination will be discussed further. Following are some images of collection points.



Fig, 3. Bhogaon



Fig. 4. Menawali



Fig.5. Bhadreshwar



Fig.6. Kadegaon



Fig.7. Bhuinj

IV. CONCLUSION

A study of Physico-chemical parameters of Krishna river water at wai taluka in Satara district of Maharashtra will be carried out by taking certain important parameters like mentioned earlier. For various season. After testing water samples parameters should be found within permissible limits. This will represents that the reservoir is non-polluted and can be used for agriculture, fish culture and domestic use.

REFERENCES

- [1] SushamaPawar ; Ramesh Vaidya“Studies on Physico Chemical Characteristics and Level of Sewage Pollution in Krishna River at Wai, Dist: Satar”Proceeding of International Conference SWRDM-2012.
- [2] Shastri S. S.; Raval P. M, “Recycle and reuse of treated sewage within polluter’s boundary for sustainable wastewater management : a case study, pune, india” J. Environ. Res. Develop, Vol. 7 No. 1A, July-September 2012.
- [3] Daa J; Van Rooijen; Hugh Turrall; Trent Wade Biggs; “SPONGE CITY: WATER BALANCE OF MEGA-CITY WATER USE AND WASTEWATER USE IN HYDERABAD, INDIA” Irrig. and Drain. 54: S81–S91 (2005), 81-84.
- [4] Daa J; Van Rooijen; Hugh Turrall; Trent Wade Biggs; “URBAN AND INDUSTRIAL WATER USE IN THE KRISHNA BASIN, INDIA” Irrig. and Drain. (2008).
- [5] U. H. SHAH; A. E. PATIL “PHYSICO-CHEMICAL AND MICROBIAL PROFILE OF SOME OF BORE WELLS WATER FROM SATARA” The Ecoscan6(1&2): 35-36, 2012.
- [6] S.D. Jadhav, M.S. Jadhav, R.W. JAwale “Study of Dissolved Oxygen of Krishna River at Karad (Maharashtra): A Case Study” International Journal of Research in Advent Technology, Vol.2, No.4, April 2014 E-ISSN: 2321-9637.
- [7] N.R. Prasad, J.M. Patil “A STUDY OF PHYSICO-CHEMICAL PARAMETERS OF KRISHNA RIVER WATER PARTICULARLY IN WESTERN MAHARASHTRA” Rasayan J. Chem. Vol.1, No.4 (2008),943-958.
- [8] ISSN: 0973-4945; CODEN ECJHAO E-Journal of Chemistry, Vol. 5, No.2, pp. 377-384, April 2008 Study on the Quality of Water in Some Streams of Cauvery River
- [9] APHA (1998). Standard methods for the examination of waste water. American public Health Association, Washington D.C 874