Study on Rejuvenation of Kham River Aurangabad

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Abstract*—A study was undertaken to monitor the water quality of Kham River in Aurangabad City. Study area of 8km's was selected and 5 sampling station were located. The study was carried out from March 2021 to September 2021 for 1 month interval. The parameters studied were pH, Temperature, Total Dissolved Solids, Electrical Conductivity, Dissolved Oxygen, Biochemical Oxygen Demand, Chemical Oxygen Demand, Chloride(asCl), Ammonia, Total Phosphorus. From the Study it was observed that the Kham River is heavily polluted due to presence of untreated sewage water. It is concluded that the quality of water is not at all suitable as per prescribed standards for domestic purpose in the downstream of study area.

Index Terms— ***Rejuvenation, Kham River, Pollution***

1. INTRODUCTION

"The progress of river to ocean is not as rapid as that of man to error." Rivers were the firm place for human civilization from decades. Human exploited rivers for their survival. The accelerated urbanization leads to urban river pollution causing damage to river ecosystem.

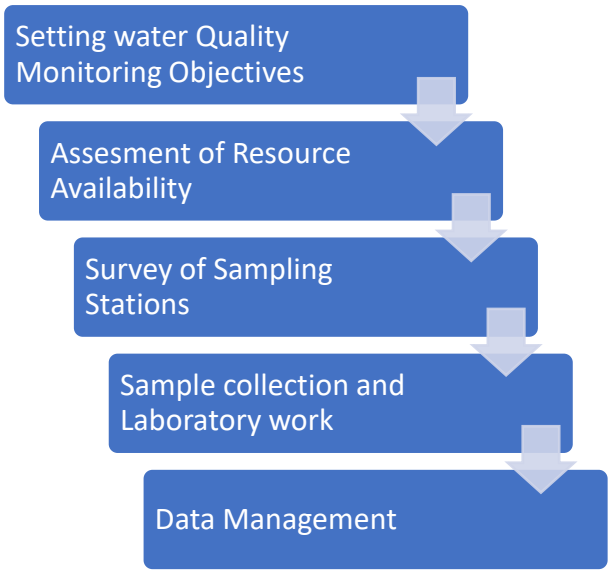
Water pollution is biggest hazardous gift from urbanization, industrialization and modern agricultural practices. Rapid progress in communications and commerce, there has been a swift increase in the urban areas along the rivers. The river is no longer only a source of water but is also a channel, receiving and transporting urban wastes away from the towns and the major problem of pollution from domestic municipal sewage. Most of the cities and towns have developed along the banks of rivers because of multipurpose use of river water. But unfortunately, some rivers are being polluted by indiscriminate disposal of sewage and disposal of industrial wastes. Water quality provides current information about the

concentration of various solutes at given place and time

1.1. Study Area

. The total area of Aurangabad city is about 139sq.km containing about 16 lakhs population as per 2021census Aurangabad is situated on Kham River. Its geographical location is latitude 19° 54' 59'' North and Longitude 75° 21' East. Kham River flows 72 km towards the southeast and connects to the Godavari River. The Kham River flows through Aurangabad city. The historic engineering marvel – city water supply was developed by Malik Ambar which had canals and Naharis running along the Kham River. This river flows with freshwater in monsoon only. Rest of the year it receives waste water from city. Kham River receives enormous amount of domestic sewage and industrial effluents. The Kham River sewage from the nallas flowing though densely polluted areas of Aurangabad district.

2. METHODOLOGY



2.1. Sampling stations

The water samples were collected from five different stations of Kham River flows in to the Aurangabad city, where is discharge of wastewater into Kham River.

Station A – Suryakund
Station B–Siddharth Garden
Station C – Cantonment Nala
Station D – AMC Building
Station E – Panchayat Samiti

2.2. Sample Collection

Water samples were collected from five different stations in plastic can of 1 liter capacity in morning session. The parameters like temperature, pH, DO (Dissolved Oxygen), TDC, EC were analyzed at sampling site using Water Quality tester of brand EUROLAB and the samples were transferred to the H2O SOIL and WATER LABORATORY for further analysis of the other parameters. The analysis was carried out for period of10 months with 2 months interval from January 2021 to October 2021.

3. RESULT AND DISCUSSION

The studied parameters are compared with the standard prescribed by World Health Organization and Central Pollution Control Board of India.

Table No 2: Mean of Lab test Results in winter Season

Sample	A	B	C	D	E
Parameters					
pH	7.58	7.2	7.13	7.1	7.6
BOD	7.2	7.32	8.43	9.56	6.21
COD	19.04	18.36	25.39	23.26	13.5
DO	3.0	2.45	1.23	2.23	3.14
Ammonia	4.2	3.26	2.39	4.18	3.9
Total Phosphorus	1.2	3.34	2.39	3.26	3.49
TDS	0.67	2.36	1.26	2.31	1.26

Table No 3: Mean of Lab test Results in summer Season

Sample	A	B	C	D	E
Parameters					
pH	7.6	7.2	7.12	7.1	7.57
BOD	11	9.36	12.45	15.42	9.11
COD	22.6	24.22	39.26	43.28	28.14
DO	3.1	3.21	1.8	3.36	3.64
Ammonia	2.1	1.8	1.63	2.13	1.23
Total Phosphorus	1.0	3.13	3.36	3.44	3.28
TDS	0.7	1.32	1.12	1.8	1.01

Table No 4: Mean of Lab test Results in Rainy Season

Sample	A	B	C	D	E
Parameters					
pH	7.5	7.26	7.14	7.02	7.57
BOD	19	11	23	22	13
COD	64	36	72	68	42
DO	4.6	4.9	3.4	4.5	4
Ammonia	0.09	0.12	0.18	0.14	0.01
Total Phosphorus	2.04	2.91	4.12	3.55	3.56
TDS	1.5	0.5	0.8	0.9	0.6

The pH values of all stations are within the limit as compared to ISI standards. The pH value shows water is slightly alkaline due to the presence of carbonates and bicarbonates. The maximum pH value is observed at station E as compared to other stations. The maximum desirable TDS is 500mg/l and maximum permissible level in absence of better source of water is 2000mg/L as the TDS also no exceeds 2000mg/L limit except station D in winter the water can be use for irrigation and domestic purpose.

The DO of water is more in rainy season as compared to winter and summer season, this is due to dilution of sewage water in rainy season .The DO level depletes in summer as the water in river is only the dry weather flow. The CPCB standards are hardly achieved in summer and winter due to less

DO.

The BOD value for Station C is 23 mg/L and this high value is due to waste discharge into river

4. CONCLUSION

The results of the study indicate that the Kham River is heavily polluted. The River is polluted due to disposal of untreated sewage in the river at number of point of sources. The various activities in society like illegal construction and sand excavation at various portion of river resulted into obstruction of flow of river and stagnation of water results into DO depletion. This pollution may result in adverse health impact on the residents along the vicinity of the river. Also it may leads to ground water pollution It is needed to undertake a program to monitor the water quality of Kham River and restrict the illegal practices along the river basin.

4.1. Strategies:

- The constant monitoring of waste water disposal is essential.
- To avoid the disposal of municipal and domestic wastewater without treatment into any water body.
- The plantation should be done at river basin with the self cleaning plants.
- Public should be made aware for the segregation of wet and dry waste.

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