ACTION PLAN FOR RESTORATION OF POLLUTED STRETCH OF RUSHIKULYA RIVER ALONG PRATAPPUR TO GANJAM

UNDER PRIORITY CATEGORY-V

EXECUTIVE SUMMARY ON PROPOSED ACTION PLANS

Sl. No.	DESCRIPTION OF ITEM		Details
1.	Name of the identified polluted river and its tributaries	:	Rushikulya River Major Tributaries : Ghodahada, Bada Nadi, Baghua, Dhanei etc.
2.	Is river is perennial and total length of the polluted river	:	Perennial river. Total length of river is 175 Km.
3.	No of drains contributing to pollution and names of major drains	:	No organized drains
4.	Whether 'River Rejuvenation Committee (RRC) constituted by the State Govt./UT Administration and If so, Date of constitution of 'RRC'	:	Yes. Constituted by the State Government vide letter No. 24426 dated 12.11.2018
5.	Whether 'River Rejuvenation Committee (RRC) have approved the Action Plan :		Yes. RRC have approved the Action Plan in its 3rd meeting held on 04.06.2018.
6.	Major Towns on the banks of the river with population	:	Aska NAC Population : 21,428 Bhanjanagar NAC Population : 19,699 (as per 2011 census)
7.	a. Total no. of existing STPs and the total capacities in MLD	:	No STP has been established.
	b. Total MSW generation in TPA	:	Insignificant
	c. Existing treatment and disposal facilities and total capacity	:	Total MSW is being disposed in the earmarked dumping yard.
8.	a. Major industrial estates located with total no. of industries	:	Not applicable
	b. No of CETP's and their treatment capacity	:	Nil
	c. Gaps in treatment of industrial effluent	:	Nil
	d. Existing HW Treatment and Disposal Facilities and total capacity with life span	:	Nil

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1.0 Background

Water quality assessment of Rushikulya river has been carried out by the State Pollution Control Board, Odisha under the project "National Water Quality Monitoring Programme" at four locations, Aska, Nalabanta, Madhopur and Potagarh in Ganjam district. The Biochemical Oxygen Demand (BOD) range in this stretch of Rushikulya river during 2017 was observed to be in between 0.5-2.8 mg/l. BOD has never exceeded the tolerance limit of 3.0 mg/l in this stretch during the total period of observation.

The polluted river stretches are categorized under five different priorities based on the BOD values as per Central Pollution Control Board (CPCB) classification. Monitoring locations with BOD concentration exceeding 30 mg/l have been categorized as Priority-I. Monitoring locations with BOD concentrations in the range 20-30 mg/l, 10-20 mg/l, 6-10 mg/l and 3-6 mg/l are categorized as Priority-II, Priority-III, Priority-IV and Priority-V respectively. Based on this classification, the river stretch of Rushikulya river has been categorized by CPCB under Priority-V with the maximum BOD value being 3.4 mg/l with the identified polluted stretch being Pratappur to Ganjam. However, based on State Board's water quality data, the stretch should not be identified as polluted because BOD never exceeded the tolerance limit of 3.0 mg/l during 2017.

2.0 Water quality of Rushikulya river

Rushikulya river originates at an elevation of 1000 m above mean sea level, from the Rushyamala hills of the Eastern ghats near Madhabari village of Phulbani district of Odisha. The river traverses a total distance of 175 km. in south direction before outfalling into Bay of Bengal at Puruna Bandha in Chhatrapur of Ganjam district. It has no delta at its mouth. Satellite image of Rushikulya river and location of water quality monitoring station on the river are shown in Fig. 1.

Water quality of Rushikulya river is being monitored by the Board on regular basis at four locations such as, Aska, Nalabanta, Madhopur and Potagarh in Ganjam district. Monthwise water quality data of Rushikulya river with respect to Biochemical Oxygen Demand (BOD) during the year 2017 and 2018 are given in Table-1.

Fig. 1 Satellite image of Rushikulya river and location of water quality monitoring station on Rushikulya river

Table-1 Monthwise BOD (mg/l) in Rushikulya river during 2017 and 2018

Month	BOD, mg/l							
	2017				2018			
	Aska*	Nalabanta*	Madhopur	Potagarh	Aska	Nalabanta	Madhopur	Potagarh
January	-	-	1.8	2.8	0.6	0.6	0.9	2.5
February	-	-	0.5	1.5	0.4	0.4	1.0	1.3
March	-	-	1.8	2.4	0.6	0.9	1.8	0.9
April	-	-	0.7	2.0	1.5	1.3	2.2	2.0
May	1.9	1.3	1.4	2.4	0.9	0.9	1.0	3.1
June	0.6	0.6	0.7	0.6	1.2	1.2	0.7	1.5
July	1.2	1.1	0.6	0.5	0.6	1.0	2.6	2.3
August	0.8	0.8	1.0	1.3	0.7	0.6	0.8	1.1
September	1.9	1.9	1.4	1.4	0.9	1.8	0.6	2.0
October	1.0	1.6	1.1	1.0	1.4	1.7	2.4	3.7
November	1.0	1.1	1.2	2.2	1.0	0.7	0.9	2.4
December	0.6	0.5	0.7	1.2	0.4	1.5	1.5	1.3
Minimum BOD, mg/l	**0.6**	**0.5**	**0.5**	**0.5**	**0.4**	**0.4**	**0.6**	**0.9**
Maximum BOD, mg/l	**1.9**	**1.9**	**1.8**	**2.8**	**1.5**	**1.8**	**2.6**	**3.7**
Average, BOD, mg/l	**1.1**	**1.1**	**1.1**	**1.6**	**0.9**	**1.1**	**1.4**	**2.0**

* Monitoring started from May, 2017

The data shows that BOD has never exceeded the tolerance limit of 3.0 mg/l during 2017. However, during 2018, BOD has exceeded the tolerance limit marginally twice in May, 2018 and October, 2018 only at Potagarh, the monitoring station on river before its confluence with Bay of Bengal.

There is no organized wastewater discharge to Rushikulya river upto its confluence with Bay of Bengal. However, as Potagarh is quite close to the mouth, tidal impact is observed at this monitoring station. Due to tidal impact and backflow of water into the river at Potagarh, marginal deviation in BOD value from the tolerance limit has been observed and therefore may be treated as an outlier of total observation.

3.0 Action plan for restoration of Water quality of Rushikulya river

As evidenced from the foregoing discussions, there is no identified point source of pollution to Rushikulya river. This is also reflected in the BOD values of Rushikulya river in which most of the time BOD remained within the tolerance limit of 3.0 mg/l during the period 2017-2018 excepting only one occasion. Such single deviation may be treated as outlier or may be due to some incidental effects.

In Para 42 of the order of the case No. 673/2018 (More river stretches are now critically polluted), Hon'ble NGT has suggested a two-fold concept for restoration of polluted river stretches as follows.

1st concept : To target enhancement of river flow through interventions on the water sheds/ catchment areas for conservation and recharge of rainwater for subsequent release during lean flow period in year. This concept will work on dilutions of pollutants in the rivers and streams to reduce concentration to meet the desired level of water quality.

2nd concept : Regulation and enforcement of standards in conjunction with the available flow in rivers/ streams and allocation of discharges with stipulated norms.

BOD value in the river most of the time remains within 3.0 mg/l excepting a single occasion. The water quality of the river can be maintained within the tolerance limit throughout the year by enhancement of river flow through interventions of the river catchment area for conservation and recharge of rainwater for subsequent release during lean flow period in the year.

The implementation of Swachh Bharat Abhiyan and construction of individual household toilets and community/public toilets, provision of water supply and increase in awareness among local inhabitants have significantly reduced the open defecation practice of the local inhabitants in the stretch.

Irrigation Division of Department of Water Resources has strengthened the embankment of Rushikulya river from Chandili to Puroshottampur as a flood control initiative for the Rushikulya river.

Besides other irrigation systems constructed on the tributaries of Rushikulya river in the basin, the Rushikulya irrigation system has an 11670 hector ayacut area.

The Forest Department in Govt. of Odisha has taken up a Plantation programme under which plantation within 1-2 km from the bank of Rushikulya river will be taken in 2019-20. Funds under State Plan and MGNREGs will be accessed for the purpose. The scheme will be implemented upto 2022-23.

4.0 Implementing Authority

Panchayati Raj and Drinking Water Department in Govt. of Odisha has the mandate to implement Swaach Bharat Abhiyan (Gramin) in all the village and make the people of peripheral villages of river aware to use toilets and to provide health sanitation facilities.

5.0 Conclusion

Single marginal deviation in BOD values from the tolerance limit of 3.0 mg/l observed in the period 2018 in the identified stretch of Rushikulya river may be attributed to tidal impact and back flow of water into the river. The two marginal deviation of BOD values (3.1 mg/l in May, 2018 and 3.7 mg/l in October, 2018) may be treated as outlier and **therefore the river stretch may be considered as not polluted.**

On the above background, the categorization of the river stretch of Rushikulya River by CPCB under Priority category – V with the identified stretch "Pratappur to Ganjam" and maximum BOD values in the range 3.4 mg/l needs reconsideration. Because of two marginal deviation in BOD values over a two year of observation 2017 and 2018, furthermore, the monitoring station Potagarh is influenced by tidal impact of sea, the stretch **may be deleted** from the list of polluted river stretch.
