BEFORE THE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH, NEW DELHI

OA. No.673 OF 2018

IN THE MATTER OF:

NEWS ITEM PUBLISHED IN 'THE HINDU' AUTHORED BY SHRI. JACOB KOSHY TITLED "MORE RIVER STRETCHES ARE NOW CRITICALLY POLLUTED: CPCB".

INDEX

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PLACE: DELHI
DATED: 29.07.2019

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH: NEW DELHI
ORIGINAL APPLICATION NO. 673/2018

IN THE MATTER OF

NEWS ITEM PUBLISHED IN 'THE HINDU' AUTHORED BY SHRI. JACOB KOSHY

TITLED

"MORE RIVER STRETCHES ARE NOW CRITICALLY POLLUTED: CPCB"

Consolidated Status Report on Compliance to Hon'ble NGT Orders dated 20.09.2018, 19.12.2018 and 08.04.2019 in OA No. 673 of 2018 in the matter of news item published in 'the Hindu' authored by Shri. Jacob Koshy titled "More River Stretches are now Critically Polluted: CPCB"

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Consolidated Report on Compliance to Hon'ble NGT Orders dated 20.09.2018, 19.12.2018 and 08.04.2019 in OA No. 673/2018 in the matter of news item published in 'the Hindu' authored by Shri. Jacob Koshy titled "More River Stretches are now Critically Polluted: CPCB"

1. Introduction

Hon'ble National Green Tribunal (NGT) in the matter of O.A. No. 673/2018 in the matter of 'News item published in 'the Hindu' authored by Shri. Jacob Koshy - Titled "more river stretches are now critically polluted: CPCB" passed orders on 20.09.2018, 19.12.2018 and 08.04.2019. Main directions passed by the Hon'ble NGT on 20.09.2018 which are reproduced as follows: -

50. In view of above, we consider it necessary to issue the following directions:

(i) All States and Union Territories are directed to prepare action plans within two months for bringing all the polluted river stretches to be fit at least for bathing purposes (i.e. BOD < 3 mg/L and FC < 500 MPN/100 ml) within six months from the date of finalization of the action plans.

(ii) The action plans may be prepared by four-member Committee comprising, Director, Environment, Director, Urban Development., Director, Industries, Member Secretary, State Pollution Control Board of concerned State. This Committee will also be the Monitoring Committee for execution of the action plan. The Committee may be called "River Rejuvenation Committee" (RRC). The RRC will function under the overall supervision and coordination of Principal Secretary, Environment of the concerned State/Union Territory.

(iii) The action plan will include components like identification of polluting sources including functioning/ status of STPs/ETPs/CETP and solid waste management and processing facilities, quantification and characterization of solid waste, trade and sewage generated in the catchment area of polluted river stretch. The action plan will address issues relating to; ground water extraction, adopting good irrigation practices, protection and management of Flood Plain Zones (FPZ), rain water harvesting, ground water charging, maintaining minimum environmental flow of river and plantation on both sides of the river. Setting up of biodiversity parks on flood plains by removing

encroachment shall also be considered as an important component for river rejuvenation. The action plan should focus on proper interception and diversion of sewage carrying drains to the Sewage Treatment Plant (STP) and emphasis should be on utilization of treated sewage so as to minimize extraction of ground or surface water. The action plan should have speedy, definite or specific timelines for execution of steps. Provision may be made to pool the resources, utilizing funds from State budgets, local bodies, State Pollution Control Board/ Committee and out of Central Schemes.

(iv) The Action Plans may be subjected to a random scrutiny by a task team of the CPCB.

(v) The Chief Secretaries of the State and Administrators/ Advisors to Administrators of the Union Territories will be personally accountable for failure to formulate action plan, as directed.

(vi) All States and Union Territories are required to send a copy of Action Plan to CPCB especially w.r.to Priority I & Priority II stretches for approval.

(vii) The States and the Union Territories concern are directed to set up Special Environment Surveillance Task Force, comprising nominees of District Magistrate, Superintendent of Police, Regional Officer of State Pollution Control Board and one person to be nominated by District Judge in his capacity as Chairman of Legal Services Authority on the pattern of direction of this Tribunal dated 07.08.2018, in Original Application No. 138/2016 (TNHRC), "Stench Grips Mansa's Sacred Ghaggar River (Suo-Motu Case).

(viii) The Task Force will also ensure that no illegal mining takes place in river beds of such polluted stretches.

(ix) The RRC will have a website inviting public participation from educational institutions, religious institutions and commercial establishments. Achievement and failure may also be published on such website. The Committee may consider suitably rewarding those contributing significantly to the success of the project.

(x) *The RRCs will have the authority to recover the cost of rejuvenation in Polluter Pays Principle from those who may be responsible for the pollution, to the extent found necessary. In this regard, principle laid down by this Tribunal in order dated 13.07.2017 in O.A No. 200 of 2014, M.C Mehta Vs. U.O.I will apply. Voluntary donations, CSR contribution, voluntary services and private participation may be considered in consultation with the RRC.*

(xi) *The RRCs will send progress reports by e-mail at filing.ngt@gmail.com on or before 15.12.2018.*

A copy of the Hon'ble NGT order dated 20.09.2018 is enclosed as ***Annexure-I***

Hon'ble National Green Tribunal (NGT) considered the consolidated report filed by CPCB and passed order on 19.12.2018. Relevant portion of the directions passed by the Hon'ble NGT on 19.12.2018 in OA No. 673 of 2019 which are reproduced as follows:

11. ..... *The said States/ UTs may now give revised reports on or before 31.01.2019 to CPCB after complying with the deficiencies. The CPCB shall examine the action plans and only if they meet the scientific and technical yardstick shall approve the same and convey it to the respective States/UTs. The States/ UTs after its approval shall place/host these action plans on the respective website giving clear timelines for its execution, agencies responsible for its execution along with the matching budgetary provisions.*

12. *By way of last opportunity, we extend the time for preparation of action plans till 31.01.2019 with the stipulation that for every delay thereafter, compensation for damage to the environment will be payable by each of the States/ UTs at the rate of Rs. One Crore per month for each of the Priority- I and Priority- II stretches, Rs.50 lacs per month for stretches in Priority- III and Rs. 25 lacs per month each for Priority- IV and Priority- V stretches. The payment will be the responsibility of the Chief Secretaries of the States/Administrators of the UTs and the amount may be recovered from the erring officers. The CPCB may prominently place the names of the defaulting States and UTs and a notice to this effect on its website.*

13. *The SPCBs and Pollution Control Committees of UTs may display the quality of the water of polluted river stretches on their respective websites within one month from today, along with action taken, if any, which may be revised every three months. The CPCB may also display the water quality of the river stretches and action/inaction by such States on its websites. It is made clear that BOD will not be the sole criteria to determine whether a particular river stretch is a polluted river stretch. Other parameters including Faecal Coliform (FC) bacteria will also be the criteria for classifying a stretch as polluted or otherwise. CPCB may devise within two weeks a mechanism for classification wherein two criteria pollutants that is BOD and FC shall henceforth be basis of classification in Priority Classes.*

14. *The CPCB may also examine whether river Rangpo in Sikkim falls in the category of polluted river stretches and if it is so, CPCB may give appropriate directions with regard to the said river also.*

15. *Any incomplete action plan will be treated as non-compliance. Performance guarantees are to be furnished for implementation of action plans within the above stipulated time to the satisfaction of Central Pollution Control Board in the sum of:*

    (i) Rs. 15 Crore for each of Priority I & II stretches
    (ii) Rs. 10 Crore for each of Priority III stretches
    (iii) Rs. 5 Crore for each of Priority IV & V stretches.

16. *The CPCB will be at liberty to take further coercive measures against the States/UTs concerned and furnish a consolidated report to this Tribunal by 28.02.2019 by e-mail at ngt.filing@gmail.com.*

A copy of the Hon'ble NGT order dated 19.12.2019 is enclosed as ***Annexure-II***

Further, CPCB has submitted a consolidated status report on compliance to Hon'ble NGT Directions dated 20.09.2018 and 19.12.2018 before Hon'ble NGT on 27.02.2019 as well as 05.04.2019. The Hon'ble NGT considered the status as well as the recommendations on aspects relating to (A) timelines for compliance to Hon'ble NGT directions dated 20.9.2018 w.r.t preparation of action plans and for bringing all the polluted river stretches to be fit at least for Bathing purposes i.e.

BOD < 3mg/l and FC<500 MPN/100ml within six months from the date of finalisation of the action plans; (B) rivers which are perineal only to be taken up for the rejuvenation; (C) achieving goals of bathing criteria after implementation of action plans; (D) identification of polluted river stretches based on revised criteria; (E) submission of Performance Guarantee for ensuring implementation of action plans within the stipulated timelines. Further, Hon'ble National Green Tribunal (NGT) considered the matter and passed order on 08.04.2019. Relevant portion of the directions passed *by the Hon'ble NGT on 08.04.2019, para-wise are reproduced as follows:*

Para 32 and 41:- We accept the proposal of CPCB to revise the scale of performance guarantee with regard to timeline. We also accept the suggestions of CPCB to extend the timeline for execution of action plans to the extent that upper limit for execution of the action plans will be two years from 01.04.2019 and the monitoring of the action plans may be done not only at the level of the Chief Secretaries of the States/UTs but also by the CPCB. CPCB has further suggested that scale of performance guarantee should be as follows: -

No of Polluted River Stretches in a State/UT	**Suggested Performance Guarantee (in Rupees)**
> 10	15 Crore
5 to 10	10 Crore
< 5	5 Crore

Para 38 :- States of Assam, Manipur and Uttar Pradesh are liable to pay compensation in terms of order dated 19.12.2018 for delay after 31.1.2019 till the action plans are furnished for failing to submit action plan in respect of four river stretches. The said amount may be deposited with the CPCB within one month. CPCB may use the amount for restoration of environment as per law. It will be open to the States to recover the amount from the erring officers. For delay, interest @ 12% will be payable. Responsibility for payment will be of Chief Secretaries. CPCB is at liberty to seek enforcement of this order as decree of Civil Court by civil imprisonment of Chief Secretaries concerned or attachment of salary or assets as per Section 51, Code of Civil Procedure read with Section 25 of the National Green Tribunal Act, 2010. It is also permissible to initiate prosecution under Section 26 of NGT Act, as noncompliance of order of NGT is a criminal offence.

Para 39:- The report of the CPCB further shows that 6 States have furnished incomplete action plan as given in Table 3 quoted above. The said six states i.e. Delhi, Meghalaya, Nagaland, Tamil Nadu, Uttar Pradesh and Uttarakhand are liable to pay compensation as per order dated 19.12.2018 for delay after 31.1.2019 at the scale of 50% of the compensation payable by the States who have failed to submit any action plan. None of the above defaulting States except the State of Uttarakhand is represented before this Tribunal. There is no satisfactory explanation by any of the States, including the State of Uttarakhand who is represented by an officer. This part of order will be governed by earlier para for interest and enforcement. The requirement to pay compensation will continue till action plans are furnished or completed. The action plans may be uploaded on the websites of the CPCB as well as respective States/UTs and the MoEF&CC after former approval by the CPCB

Para 40:- As regards 108 river stretches for which action plans have not still been furnished for Priority-III, Priority-IV and Priority-V river stretches, we direct that same scale of compensation will apply for failure to furnish action plans in further extended timeline up to 30.06.2019. The Action Plans not so far furnished, as required by earlier order of this Tribunal, may also now be furnished up to 30.06.2019

Para 41:- We also accept the suggestions of CPCB to extend the timeline for execution of action plans to the extent that upper limit for execution of the action plans will be two years from 01.04.2019 and the monitoring of the action plans may be done not only at the level of the Chief Secretaries of the States/UTs but also by the CPCB.

Para 42:- We direct that CPCB with SPCBs and PCCs to launch nationwide programme on biodiversity monitoring and indexing of the rivers to assess the efficacy of river cleaning programme. Further, for safety of human health and maintaining sanctity of the rivers, regular hygienic surveys of the rivers should be carried out with reference to faecal coliform and faecal streptococci, as indicated in the primary water quality criteria for bathing waters. Nodal agency will be CPCB

Para 43:- Having given due consideration to the serious issue and inadequacy of success achieved so far, we find it necessary to constitute a Central Monitoring

Committee to undertake a national initiative by way of preparation and enforcement of a national plan to make river stretches pollution free comprising a senior representative of NITI Aayog, Secretaries Ministry of Water Resources, Ministry of Urban Development, Ministry of Environment, Forest and Climate Change, Director General, National Mission for Clean Ganga and Chairman CPCB. Chairman CPCB will be the nodal authority for coordination. Senior most among them will preside over the deliberations.

Para 44:- The Central Monitoring Committee will also co-ordinate with the RRCs of the States and oversee the execution of the action plans, taking into account the timelines, budgetary mechanism and other factors. Chief Secretaries of States will be the nodal agency at State level. The Chief Secretaries of the States may undertake review of progress of RRCs by involving concerned Secretaries of Department of Urban Development, Environment, Industries, Irrigation and Public Health, Health etc.

Para 46:- First meeting of the Central Monitoring Committee may be held by 30.06.2019. The Central Monitoring Committee may consider identifying experts, best practices and models for use of treated water, including plan to supply untreated sewage for a price or otherwise so that the concerned needy party can treat and utilize such water as is reportedly being done at Surat in Gujarat, Nagpur in Maharashtra and Bhiwada in Rajasthan or any other place. Use of treated water for agriculture or other purpose may save potable surface and ground water.

Para 47 :- The Central Monitoring Committee may give its report by 31.07.2019.

A copy of the Hon'ble NGT order dated 08.04.2019 is enclosed as ***Annexure-III.***

Hon'ble NGT in its orders clearly directed that the action plan should be prepared covering the components like identification of polluting sources including functioning/ status of Sewage Treatment Plants (STPs)/Effluent Treatment Plants (ETPs)/Common Effluent Treatment Plants (CETPs) and solid waste management and processing facilities, quantification and characterisation of solid waste, trade and sewage generated in the catchment area of polluted river stretch. The action plan will address issues relating to; ground water extraction, adopting good irrigation practices, protection and management of Flood Plain Zones (FPZ), rain water harvesting, ground water charging, maintaining minimum environmental flow

of river and plantation on both sides of the river. Setting up of biodiversity parks on flood plains by removing encroachment shall also be considered as an important component for river rejuvenation. The action plan should focus on proper interception and diversion of sewage carrying drains to the STP and emphasis should be on utilization of treated sewage so as to minimize extraction of ground or surface water. The action plan should have speedy, definite or specific timelines for execution of steps. Provision may be made to pool the resources, utilizing funds from State budgets, local bodies, State Pollution Control Board (SPCB)/Pollution Control Committee (PCC) and out of Central Schemes.

2. Actions initiated by CPCB for ensuring compliance to the Hon'ble Directions dated 20.09.2018, 19.12.2018 and 08.04.2019

Initiatives taken by CPCB for ensuring compliance to the Hon'ble NGT orders are given in subsequent paras: -

2.1 In pursuance to the Hon'ble National Green Tribunal, Central Pollution Control Board (CPCB) vide letters dated 28.09.2018, 28.11.2018 and 11.12.2018 requested/reminded the concerned State Governments/ UT administrations as well as concerned State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs) for ensuring compliance to Hon'ble NGT orders in O.A. No 673 of 2018.

CPCB vide letter No. A–14011/1/2019-WQM-I/517-590 dated 16.04.2019 as well as vide letter No A – 14011/1/2019-WQM-I/2200-2207 dated 21.05.2019 reminded all the States/UTs for submission of penalties (States namely Assam, Manipur & UP) for delay in submission of action plans as well as compensation for submission of incomplete action plans (States of Delhi, Meghalaya, Nagaland, Tamil Nadu, UP and Uttarakhand).

CPCB requested all the State Governments & UT Administrations for submission of performance guarantee and for submission of revised action plans after incorporating the suggestions of CPCB and as approved subsequently by RRC constituted by the respective State/UT, Status on uploading of approved action plans in their respective websites as well as present status on implementation of approved action plans vide CPCB letters dated 16.04.2019, 17.06.2019 &

18.06.2019. A Copy of CPCB letters are enclosed as **Annexure IV, Annexure-V & Annexure VI**.

2.2 Organised Interaction meeting with North-Eastern States and One Day Workshop in the Year 2019

As there is a delay in preparation of action plans by the North-Eastern States and for providing guidance in preparation of action plans for rejuvenation of identified polluted river stretches especially in the North-Eastern States, CPCB has been organized an interaction meeting at Shillong on 17.05.2019 with the North-Eastern States. During the interaction meet, the officials of CPCB advised for identification of sources of pollution in the identified polluted river stretches, detailed gap analysis with regard to the sewage, industrial effluent and waste management and other aspects to be covered as per directions of Hon'ble NGT while preparation of action plans and also clarified to the queries raised by the participated officials from N-E States.

Also, under National Hydrology Project, a One Day Workshop on Polluted River Stretches entitled "Execution of Action Plans for Polluted River Stretches" has been organized in Bengaluru on 17thJuly 2019 for the officials of SPCBs, PCCs, and other Central & State Level NHP implementation agencies from southern and western region.

2.3 Status on constitution of River Rejuvenation Committees by the State Governments /UT Administration

In pursuance to Hon'ble NGT Orders dated 20.09.2018 and 19.12.2018 in OA No. 673 of 2018, respective 28 State Governments viz., of Andhra Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Haryana, Himachal Pradesh, J & K, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Mizoram, Manipur, Nagaland, Odisha, Punjab, Rajasthan, Sikkim, Tamil Nadu, Telangana, Tripura, Uttar Pradesh, Uttarakhand and West Bengal and 03 UT Administrations viz., Daman Diu D & Dadra Nagar Haveli (DD & DNH), Delhi and Puducherry have constituted 'River Rejuvenation Committees (RRCs) 'and conducting meetings periodically, in the respective State/UT. State-wise details with regard to the constitution of RRCs are given in the **Table 1** below: -

Table 1. State-wise status regarding Constitution of 'River Rejuvenation Committee (RRC) in compliance to Hon'ble NGT Orders dated 20.09.2018 and 19.12.2018 in the matter of OA No. 673 of 2018.

S. No.	STATE/ UNION TERRITORY	Total No. of Identified Polluted River Stretches (P-I to P-V)	Status of RRC Constitution	Date of Constitution
1	ANDHRA PRADESH	5	Yes	05.12.2018
2	ASSAM	44	Yes	24.12.2018
3	BIHAR	6	Yes	31.12.2018
4	CHHATTISGARH	5	Yes	22.11.2018
5	DAMAN, DIU AND DADRA NAGAR HAVELI	1	Yes	08.01.2019
6	DELHI	1	Yes	22.10.2018
7	GOA	11	Yes	21.11.2018
8	GUJARAT	20	Yes	29.11.2018
9	HARYANA	2	Yes	8.11.2018
10	HIMACHAL PRADESH	7	Yes	17.11.2018
11	JAMMU & KASHMIR	9	Yes	15.10.2018
12	JHARKHAND	7	Yes	03.04.2019
13	KARNATAKA	17	YES	24.11.2018
14	KERALA	21	Yes	12.12.2018
15	MADHYA PRADESH	22	Yes	01.11.2018
16	MAHARASHTRA	53	Yes	13.12.2018
17	MANIPUR	9	Yes	05.03.2019
18	MEGHALAYA	7	YES	24.01.2019
19	MIZORAM	9	YES	05.12.2018
20	NAGALAND	6	Yes	06.12.2018
21	ODISHA	19	Yes	12.11.2018
22	PUDUCHERRY	2	Yes	13.11.2018
23	PUNJAB	4	Yes	20.11.2018
24	RAJASTHAN	2	Yes	06.11.2018
25	SIKKIM	4	YES	23.01.2019
26	TAMIL NADU	6	Yes	26.12.2018
27	TELANGANA	8	Yes	29.11.2018
28	TRIPURA	6	Yes	01.11.2018
29	UTTAR PRADESH	12	Yes	14.12.2018
30	UTTARAKHAND	9	Yes	05.12.2018
31	WEST BENGAL	17	Yes	07.01.2019
	Grand Total	**351**		

2.4 Constitution of the Task Team for scrutiny of action plans submitted by the States/UTs

For the purpose of scrutiny of the action plans especially with regard to the Priority –I and Priority-II polluted river stretches to be submitted by the respective State/UT Administration and in compliance to Hon'ble NGT order dated 20.09.2018, CPCB has constituted a 'Task Team' under the Chairmanship of Member Secretary, CPCB, vide CPCB letter dated 14.11.2018.

So far, CPCB has organised seven meetings of the Task Team in CPCB i.e., 1st meeting held on 14.12.2018; 2nd meeting held on 05.01.2019; 3rd meeting held on 25.10.2018; 4th meeting held on 28.03.2019; 5th meeting held on 24.04.2019; 6th meeting held on 31.05.2019; 7th meeting held on 16.07.2019. Action plans received from the States/UTs were considered for approval especially in respect of P-I to P-II identified polluted river stretches. The minutes of Task Team meetings are also uploaded in CPCB website at https://cpcb.nic.in/mcngt-restoration/.

2.5 Status of action plans received and status of approval of action plans submitted by the States/UTs in respect of Priority-I and Priority-II Identified Polluted River Stretches

Out of 351 identified polluted rivers stretches (w.r.t BOD) in 28 States and 3 UTs, 45 (P-I category), 16 (P-II category) and remaining 290 Polluted river stretches fall under category P-III to P-V.

So far, CPCB has received 45 out of 45 action plans (P-I) and 15* out of 16 action plans (P-II) and total 282 ** action plans received w.r.t P-III to P-V polluted river stretches. State-wise Identified Polluted River stretches and the Status of Action Plans received **(as on 24.07.2019)** is given in **Table 2** below.

Table 2. State-wise Identified Polluted River stretches and the Status of Action Plans as received by CPCB (as on 24.07.2019)

Name of the State / UT	Total No. of Identified Polluted River Stretches (PRS)	Priority-I Identified Polluted River Stretches		Priority-II Identified Polluted River Stretches		Priority– III to V Identified Polluted River Stretches		Total Action Plans Received
		No. of P-I PRS	Action Plans received w.r.t P-I PRS	No. of P-II PRS	Action Plans received w.r.t P-II	No. of P-III to P-V PRS	Action Plans received w.r.t P-III to P-V	
Andhra Pradesh	**5**	-	-	-	-	5	5	**5**
Assam	**44**	3	3	1	1	40	40	**44**
Bihar	**6**	-	-	-	-	6	6	**6**
Chhattisgarh	**5**	-	-	-	-	5	5	**5**
DD & DNH	**1**	1	1	-	-	-	-	**1**
Delhi	**1**	1	1	-	-	-	-	**1**
Goa	**11**	-	-	-	-	11	11	**11**
Gujarat	**20**	5	5	1	1	14	14	**20**
Haryana	**2**	2	2	-	-	-	-	**2**
Himachal Pradesh	**7**	1	1	1	1	5	5	**7**
J & K	**9**	-	-	1	1	8	8	**9**
Jharkhand	**7**	-	-	-	-	7	7	**7**
Karnataka	**17**	-	-	-	-	17	17	**17**
Kerala**	**21**	1	1	-	-	20	13**	**14**
Madhya Pradesh**	**22**	3	3	1	1	18	17**	**21**
Maharashtra	**53**	9	9	6	6	38	38	**53**
Manipur	**9**	0	0	1	1	8	8	**9**
Meghalaya	**7**	2	2	-	-	5	5	**7**
Mizoram	**9**	-	-	-	-	9	9	**9**
Nagaland***	**6**	1	1	-	-	5	5	**6**
Odisha	**19**	1	1	-	-	18	18	**19**
Puducherry	**2**	-	-	-	-	2	2	**2**
Punjab	**4**	2	2	-	-	2	2	**4**

Rajasthan	**2**	-	-	-	-	2	2	**2**
Sikkim	**4**	-	-	-	-	4	4	**4**
Tamil Nadu	**6**	4	4	-	-	2	2	**6**
Telangana *	**8**	1	1	2	1	5	5	**7**
Tripura	**6**	-	-	-	-	6	6	**6**
UP	**12**	4	4	-	-	8	8	**12**
Uttarakhand	**9**	3	3	1	1	5	5	**9**
West Bengal	**17**	1	1	1	1	15	15	**17**
Grand Total	**351**	**45**	**45**	**16**	**15**	**290**	**282**	**342**

* *CPCB Task team suggested Telangana State for submission of combined action plan in respect of River Manjeera & River Nakkavagu as polluted river stretch of River Nakkavagu is merging with polluted river stretch of River Manjeera.*

** Madhya Pradesh State has not submitted action plan for identified polluted river stretch of River Kolar as MP State claims that this river stretch falls as a part of River Kalisot.

Kerala State has not submitted action plans in respect of 7 polluted river stretches pertaining to P-III to P-V. Kerala State Pollution Control Board submitted a request to Hon'ble NGT seeking exemption of seven stretches from the list of 20 identified polluted river stretches in the State of Kerala as BOD is within the criteria limit of 3mg/l, vide letter No PCB/HO/EE1/NGT/673/2018 dated 27.6.2019 (**Annexure -VII**). Further, Kerala State Pollution Control Board informed CPCB that action plans for the remaining 7 polluted river stretches (P-III to P-V) are also being prepared and same will be submitted soon, vide letter No. PCB/HO/EE1/NGT/673/2018 dated 15.07.2019 (**Annexure -VIII).**

*** Nagaland Pollution Control Board vide letter No. NPCB/NGT-OA No. 673/2018/2219 dated 19.07.2019 requested for extension of one month time for incorporation of recommendations of CPCB Task Team and for submission of revised action plan, vide letter No. NCP/NGT-OA No. 673/2018/2219 dated 19.07.2019.

State-wise status of action plans received and the action plans recommended for approval by CPCB Task Team is enclosed as **Table 3.**

Table 3. State-wise status of action plans received and the action plans recommended for approval by the CPCB Task Team w.r.t Priority I & Priority II Polluted River Stretches (as on 24.07.2019)

NAME OF THE STATE/UT	Total Identified Polluted River Stretches (PRS) Priority-I & Priority II	Identified PRS Priority-I	Identified PRS Priority- II	Action Plans Not Recommended for approval	Action plans approved subject to conditions
ASSAM	4	3	1	**4**	0
DD AND DNH	1	1	0	-	1
DELHI	1	1	0	**1**	0
GUJARAT	6	5	1	-	6
HARYANA	2	2	0	-	2
HIMACHAL PRADESH	2	1	1	-	2
JAMMU & KASHMIR	1	0	1	-	1
KERALA	1	1	0	-	1
MADHYA PRADESH	4	3	1	-	4
MAHARASHTRA	15	9	6	-	15
MANIPUR	1	0	1	**1**	0
MEGHALAYA	2	2	0	**2**	0
NAGALAND	1	1	0	**1**	0
ODISHA	1	1	0	-	1
PUNJAB	2	2	0	-	2
TAMIL NADU	4	4	0	-	4
TELANGANA	3	1	2	-	3
UTTAR PRADESH	4	4	0	-	4
UTTARAKHAND	4	3	1	-	4
WEST BENGAL	2	1	1	-	2
TOTAL	**61**	**45**	**16**	**09**	**52**

61 out of 61 total action plans received so far, 52 action plans pertaining to the 15 States /UT of DD & DNH [P-I (01)], Gujarat [P-I (5), P-II (01)], Haryana [P-I (01), P-II (01)], Himachal Pradesh [P-I (01), P-II (1)], J & K [P-II (01)], Kerala [P-I (01)], Madhya Pradesh [P-I (03), P-II (1)], Maharashtra [P-I (09), P-II (06)], Odisha [P-I (1], Punjab [P-I (02)], Tamil Nadu [P-I (04)], Telangana [P-I (01), P-II (02)], Uttarakhand [P-I (03), P-II (1)], Uttar Pradesh [P-I (04)] and West Bengal [P-I (01) and P-II (01)] have been approved along with the conditions. 9 action plans received from Assam, Delhi, Manipur, Meghalaya, Nagaland requires further improvement w.r.t. either of the following: -

(i) Identification of polluting sources including drains contributing to river pollution, functioning status of STPs/ETPs/CETP and solid waste management and processing facilities;

(ii) Map showing Polluted River, its tributaries, drains, major towns, industrial estates, location of STPs/CETPs.

(iii) Detailed gap analysis w.r.t town-wise water consumption (including ground water consumption), sewage generation, existing infrastructure in the catchment area of the and the gap analysis.

(iv) Detailed gap analysis w.r.t industrial water consumption, wastewater generation, existing infrastructure for treatment of industrial effluent (both captive ETPs/CETPs and their performance assessment), gap analysis w.r.to the industrial effluent management in the catchment area.

(v) Quantification and characterisation of waste (such as solid waste, industrial hazardous waste, bio-medical waste, E-Waste), STP sludge management, existing infrastructure and detailed gap analysis.

(vi) Latest Water quality of polluted river, its tributaries, drains with flow details and ground water quality in the catchment of polluted river.

(vii) Aspects such as ground water extraction, adopting good irrigation practices, protection and management of Flood Plain Zones (FPZ), rain water harvesting, ground water charging, maintaining minimum environmental flow of river (by having watershed management provisions), plantation on both sides of the river, setting up biodiversity parks on flood

plains by removing encroachment., proper interception and diversion of sewage carrying drains to Sewage Treatment Plant (STP), upgradation of existing sewage treatment plants if not in a position to comply with effluent discharge norms, emphasis on utilization of treated sewage so as to minimize extraction of ground or surface water be included.

(viii) Speedy, definite or specific timelines for execution of action plans and the estimated budget including the monitoring agency.

(ix) Achievable goals with specific timelines for restoration of water quality of polluted rivers.

(x) Organisation-wise action plans with timelines and the estimated budget for implementation of action plans

State-wise and River-wise recommendations of CPCB Task Team are given in **Table 4**.

Table 4. State-wise and River-wise recommendations of CPCB Task Team

Name of The State/UT	Polluted River	Priority	Recommendations Of The CPCB Task Team
ASSAM	Bharalu	I	Not Recommended
	Borsola	I	Not Recommended
	Silsako	I	Not Recommended
	Sorusola	II	Not Recommended
DD & DNH	Damanganga	I	Recommended Subject To Conditions
DELHI	Yamuna	I	Not Recommended
GUJARAT	Amlakhadi	I	Recommended Subject To Conditions
	Bhadar	I	Recommended Subject To Conditions
	Bhogavo	I	Recommended Subject To Conditions
	Khari	I	Recommended Subject To Conditions
	Sabarmati	I	Recommended Subject To Conditions
	Vishwamitri	II	Recommended Subject To Conditions
HARYANA	Ghaggar	I	Recommended Subject To Conditions
	Yamuna	I	Recommended Subject To Conditions
HIMACHAL PRADESH	Sukhana	I	Recommended Subject To Conditions

Name of The State/UT	Polluted River	Priority	Recommendations Of The CPCB Task Team
	Markanda	II	Recommended Subject To Conditions
JAMMU & KASHMIR	Devika	II	Recommended Subject To Conditions
KERALA	Karamana	I	Recommended Subject To Conditions
MADHYA PRADESH	Chambal	I	Recommended Subject To Conditions
	Khan	I	Recommended Subject To Conditions
	Kshipra	I	Recommended Subject To Conditions
	Betwa	II	Recommended Subject To Conditions
MAHARASHTRA	Godavari	I	Recommended Subject To Conditions
	Kalu	I	Recommended Subject To Conditions
	Kundalika	I	Recommended Subject To Conditions
	Mithi	I	Recommended Subject To Conditions
	Morna	I	Recommended Subject To Conditions
	Mula	I	Recommended Subject To Conditions
	Mutha	I	Recommended Subject To Conditions
	Nira	I	Recommended Subject To Conditions
	Vel	I	Recommended Subject To Conditions
	Bhima	II	Recommended Subject To Conditions
	Indrayani	II	Recommended Subject To Conditions
	Mula-Mutha	II	Recommended Subject To Conditions
	Pawana	II	Recommended Subject To Conditions
	Wainganga	II	Recommended Subject To Conditions
	Wardha	II	Recommended Subject To Conditions
MANIPUR	Nambul	II	Not Recommended
MEGHALAYA	Umkhrah	I	Not Recommended
	Umshyrpi	I	Not Recommended
NAGALAND	Dhansiri	I	Not Recommended
ODISHA	Gangua	I	Recommended Subject To Conditions
PUNJAB	Ghaggar	I	Recommended Subject To Conditions

Name of The State/UT	Polluted River	Priority	Recommendations Of The CPCB Task Team
	Satluj	I	Recommended Subject To Conditions
TAMIL NADU	Cauvery	I	Recommended Subject To Conditions
	Sarabanga	I	Recommended Subject To Conditions
	Thirumanimuthar	I	Recommended Subject To Conditions
	Vasista	I	Recommended Subject To Conditions
TELANGANA	Musi	I	Recommended Subject To Conditions
	Manjeera	II	Recommended Subject To Conditions
	Nakkavagu	II	Recommended Subject To Conditions
UTTAR PRADESH	Hindon	I	Recommended Subject To Conditions
	Kalinadi	I	Recommended Subject To Conditions
	Varuna	I	Recommended Subject To Conditions
	Yamuna	I	Recommended Subject To Conditions
UTTARAKHAND	Bhela	I	Recommended Subject To Conditions
	Dhela	I	Recommended Subject To Conditions
	Suswa	I	Recommended Subject To Conditions
	Kichha	II	Recommended Subject To Conditions
WEST BENGAL	Vindhadhari	I	Recommended Subject To Conditions
	Mahananda	II	Recommended Subject To Conditions

2.6 Displaying the water quality of polluted river stretches by the States/UTs on their websites

As per Hon'ble NGT Order dated 19.12.2018, the concerned States/UTs are required to display water quality of identified polluted river stretches within the jurisdiction of the respective State/UT. In pursuance to Hon'ble NGT order, CPCB requested all the concerned States and UTs to display water quality of identified polluted rivers and to provide web link address to CPCB, vide letters dated 31.12.2018, 22.02.2019 and 06.05.2019. Based on the information received, CPCB updated web link addresses in CPCB web site. Reminders were

also sent by email requesting the States/UTs for providing web link addresses. *CPCB vide letter dated 22.02.2019 also requested all concerned States and UTs to provide water quality data relating to identified polluted river stretches on monthly basis and also to update the data periodically (every three months) including trends in water quality to achieve the desired water quality criteria with timelines.* ***As on 24.07.2019, all 28 States and 03 UTs have provided web link details and displaying the water quality of the identified polluted river stretches.*** State-wise details of web link addresses as informed by the States/UTs are given in the **Table 5** below.

Table 5.States/UTs Displaying Water Quality of Identified Polluted River Stretches

S No	State	Web Link Address
1	Andhra Pradesh	http://appcb.ap.nic.in/water-quality-status-of-polluted-river-stretches-of-andhra-pradesh/
2	Assam	https://pcbassam.org/wqi.php
3	Bihar	http://forestonline.bih.nic.in/rrc/Background.aspx
4	Chhattisgarh	http://enviscecb.org/Data/Revised%20Action%20Plan%20for%20Rejuvenation%20of%20River_28_01_19.pdf
5	Delhi	Wazirabad: http://demo.aaxisnano.com/public/default.aspx?sid=15434&uid=21520 Okhla: http://demo.aaxisnano.com/public/default.aspx?sid=17708&uid=21520
6	DD & DNH	https://daman.nic.in/websites/Pollution-Control-Committee/2019/Water-Quality-Data-of-the-Damanganga-River-2015-2018.pdf
7	Goa	http://goaspcb.gov.in/Media/Default/NWMP/polluted_river_stretches_data2017-18.pdf
8	Gujarat	https://gpcb.gujarat.gov.in/webcontroller/viewpage/water-quality-of-polluted-river-stretches-in-gujarat
9	Haryana	http://hspcb.gov.in/watqual.html
10	Himachal Pradesh	http://hppcb.nic.in/NGT/WQPRS.pdf
11	Jammu & Kashmir	https://jkriverrejuvenation.com/2019/02/07/level-of-bod-evaluated-on-different-identified-polluted-river-stretches-in-jammu-region-during-the-year-2018q1-q4/
12	Jharkhand	http://jspcb.nic.in/quicklink/water-quality-status-of-polluted-river-stretches-of-jharkhand.php
13	Karnataka	https://www.kspcb.gov.in/1water%20data.pdf
14	Kerala	https://www.keralapcb.nic.in/cmsadmin/fileUploads/NWMP_August_2018_up_13-02-2019.pdf
15	Madhya Pradesh	http://210.212.156.39/File_upload/view_WQI%20River_report.aspx
16	Maharashtra	http://mpcb.gov.in/river_streches/River_streches.php
17	Manipur	http://manipur.spcb.co.in/
18	Meghalaya	http://megspcb.gov.in/Monthly%20Water%20Quality%20Data%20of%20Identifi

		ed%20Polluted%20River%20Stretches%20in%20Meghalaya.html
19	Mizoram	https://mpcb.mizoram.gov.in/page/polluted-river-data-2019
20	Nagaland	http://npcb.nagaland.gov.in/analysis-report-of-national-water-quality-monitoring-programme-for-december-2018/#
21	Odisha	http://ospcboard.org/environmental-monitoring-data
22	Puducherry	https://dste.py.gov.in/ppccmain.htm
23	Punjab	http://ppcb.gov.in/attachments/environmental%20data/stretchesdec2018.pdf
24	Rajasthan	http://rspcbmis.environment.rajasthan.gov.in/laboratory/lab_SampleMonitoring_NWMPreport.aspx
25	Sikkim	http://sikenvis.nic.in/Database/Pollution_791.aspx
26	Tamil Nadu	http://www.tnpcb.gov.in/pdf_2019/pollutedriverstretches23419.xls
27	Telangana	https://tspcb.cgg.gov.in/pages/envdata.aspx
28	Tripura	https://tspcb.tripura.gov.in/ngt673.html
29	Uttar Pradesh	http://www.uppcb.com/water-quality-data-stretches.htm
30	Uttarakhand	http://ueppcb.uk.gov.in/pages/display/168-water-quality-of-polluted-river-stretch
31	West Bengal	http://emis.wbpcb.gov.in/waterquality/showwqprevdatachoosedist.do

2.7 Criteria for Identification of Polluted Rivers considering BOD and Faecal Coliform

In pursuance to the Hon'ble NGT order dated 19.12.2018, CPCB has prepared draft criteria for prioritisation of polluted river location and the draft has been circulated to all stakeholders seeking comments from State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs) vide CPCB letter No. A-14011/1/2019-WQM-I/14824-14864 dated 09.01.2019, for providing comments or views by January 2019. The draft criteria also placed in public domain on CPCB website.

CPCB was in receipt of comments on the circulated draft criteria for prioritisation of the polluted river location from few States viz., Karnataka, Meghalaya, Mizoram, Odisha, Punjab, Telangana, Uttarakhand, West Bengal and UT namely Puducherry. SPCBs viz., Telangana, Punjab, Odisha and Mizoram as well as Puducherry Pollution Control Committee (PPCC) have *agreed with the proposed draft criteria. A few* SPCBs have given comments or views as summarised below: -

- Criteria for perennial and seasonal rivers may be separated as seasonal rivers have no flowing water or very less flowing water during most of the time. In that case, even if the industries located in the recipient

waterbodies meet with the specified discharge norms, then also it would be difficult to achieve mass bathing norms

- Draft criteria to be modified for prioritisation of water bodies instead of only for rivers.

- Additional parameters namely Dissolved Oxygen (DO) (indicator parameter of water quality) and Electrical Conductivity (EC) (it affects the water used for drinking and irrigation directly) should be taken into consideration to calculate total score

- Suggested revision for weightage as DO (30 %), BOD (30 %), EC (10 %) and FC (30 %) and also suggested score corresponding to the average values of DO, EC, FC and BOD values.

- Criteria may not be applicable for some water bodies especially those locations in the coal mining areas where pH is the most critical parameter. Therefore, suggested to include pH.

Based on the comments received, draft criteria has been revised. As per the revised criteria for categorization of river monitoring location, the water quality data is required to be analysed and primarily mean/average values of Biochemical Oxygen Demand (BOD) and Faecal Coliform (FC) need to be estimated. Then, based on the total score estimated for the parameters BOD (weightage- 70 %) and FC (Weightage- 30 %), the monitoring location is identified as 'polluted' location. The polluted locations in a continuous sequence are defined as 'polluted river stretch'. To estimate actual self-purification distance or assimilative capacity of the river, requisite input parameters to be considered which varies on case-to-case depending on the local conditions. The monitoring locations may be prioritized in five classes from Category I to V i.e., critically polluted to Good or Fit for Bathing. Category –I indicates 'critically polluted'; Category -II indicates 'severely polluted'; Category -III indicates 'moderately polluted'; Category -IV indicates 'less polluted' and Category –V indicates 'Good or Fit for Bathing'. Finalised criteria for categorization of river monitoring location is enclosed as **Annexure –IX.**

2.8 Assessment of river Rangpo in Sikkim falls in Polluted River Category

In pursuance to the Hon'ble NGT order dated 19.12.2018, CPCB requested RD, CPCB (East), Shillong to carryout assessment of the river Rangpo vide CPCB letter dated 01.01.2019. Regional Directorate (East), Central Pollution Control Board, Shillong officials carried out sampling of river Rangpo during January 05-06, 2019 and water samples were collected from Seven (7) locations i.e., Four (4) locations of river Rangpo i.e.,

i. Water from Up-Stream of Rangpo river of Kumrek,
ii. Water from Rangpo river at midstream after Cipla Alkem Unit-I,
iii. Water from midstream of Rangpo river near bridge before confluence with Tista River at Rangpo Town and
iv. Water from Down-Stream of Rangpo river below TBM after Rangpo Town before confluence with Tista River

Apart from the above locations, samples were also collected from three (3) locations of river Tista i.e., Water from Tista river before confluence with Rangpo Rive before Rangpo town; Water from Tista River after confluence with Rangpo river). River Rangpo is located in the East Sikkim District, Sikkim, India. It is a tributary of the River Tista. It is fed by the River Rangpo chu. The river forms the border between two Indian states Sikkim and West Bengal at Rangpo town. The Rangpo town in Sikkim lies on its north bank and West Bengal Check Gate lies on south bank of the river.

Immediately after Rangpo Town, it confluences with River Tista. River Rangpo runs through most of East Sikkim and a few parts of the Darjeeling District of North Bengal. It flows mainly from east to west with a variable channel pattern including braided, meandering, straight, gorge and blocked lake. Landslides are common along the river bank as cliff-like bedrocks are significantly exposed along the river valley wall. Rangpo Chu, Rishi Khola, Pool Khola, Kumrek Khola are tributaries of River Rangpo. There are 21 industries in the catchment of river Rangpo mainly comprising of Alcoholic Beverages and blending units as well as Pharmaceutical formulation units, However, there are no STPs and CETPs in the drainage basin of river Rangpo. But while collection of samples, the visited team observed human activities like outdoor bathing, washing, river rock mining, river

sand mining, open defecation. Mostly bathing activities were observed at all sampling locations.

The analysis results of the collected samples reveal that BOD content in river Rangpo is in the order of 1 to 2.8 mg/l which is less than 3 mg/l and therefore conforming to the bathing water quality criteria w.r.to BOD only. However, Total Coliforms (MPN/100ml) and Faecal Coliform in the river Rangpo are found to be in the order of 7500 to 110000 MPN/100 ml and 1100 to 4400 MPN/100 ml respectively. ***CPCB vide letter dated 07.03.2019 requested Sikkim State Pollution Control Board for further action at their end.*** In response to CPCB letter dated 07.03.2019, Sikkim SPCB vide letter dated 23.07.2019 has informed as detailed below:-

a) Directions have been issued to the Municipal bodies of Rangpo and Singtam Nagar Panchayats to take measures against checking discharge of untreated sewage directly into the river.

b) Directions have been issued to the PCE-cum Secretaries of Water Security & Public Health Engineering Department and Irrigation and Flood Control Department respectively to take measures against checking discharge of untreated sewage directly into the river.

c) SPCB -Sikkim under Forests, Environment and Wildlife Management Department, Government of Sikkim has also notified the Sikkim Idol Immersion Rules,2019 to abate the river and soil pollution.

d) A field inspection was conducted on 9th April 2019 by the newly constituted River Rejuvenation Committee members to survey the river stretches along Rangpo-Singtam highway and respective representatives of Nagar Panchayats were apprised about the various issues related to river pollution. The Sewage Treatment Plants (STPs) were also inspected during the daylong visit and necessary observations made during the visit were also shared with the concern authorities for further improvements in future.

e) Awareness campaign was also stressed upon by the team for cent percent connection of sewage pipelines to the STPs and thereby

increasing user fee and fund provision for proper maintenance of STPs in future.

f) All Pharmaceuticals industries in Sikkim and availing consent to operate from SPCB-Sikkim have been directed to comply with conditions like 'Zero liquid Discharge' from their respective plants and also to install real time online continuous effluent monitoring system.

g) All the Hydro-Electric Projects in Sikkim have been directed to install e-flow meter to maintain the ecological flow of river water downstream during lean season.

h) As per the earlier direction, the River Rejuvenation Action Plan has been uploaded in www.sikenvis.nic.in

i) Necessary directions have been given to the field functionaries by the Forest Department to develop green belt along the blank areas of rivers.

j) The water quality data of the Teesta and Rangit basins has been uploaded in www.sikenvis.nic.in (www.sikenvis.nic.in/Database/water_quality_5201, aspx).

k) SPCB-Sikkim has been directing the slaughter house to comply with necessary stipulated conditions as per the Rules and has also issued show cause notices and directions for necessary compliances.

A copy of the letter dated 23.07.2019 received from Sikkim SPCB is enclosed as **Annexure-X.**

2.9 Status on displaying of approved action plans by the States/ UTs

Hon'ble NGT vide order dated 08.04.2019 also directed that the action plans may be uploaded on the websites of the CPCB as well as respective States/UTs and the MoEF&CC after former approval by the CPCB.

As on 24.07.2019, Tamil Nadu State Pollution Control Board vide letter No. TNPCB/PRS/F.No.6849/WH/2016 dated 23.07.2019 informed that the revised action plans for the polluted river stretches Priority-I (Rivers Sarabanga, Vasista, Thirumanimutharu & Cauvery) were evaluated by CPCB Task Team in 5th review

meeting of the Task Team held on 24.04.2019 at CPCB, Delhi and the same was recommended with conditions. Subsequently, River Rejuvenation Committee (RRC) meeting was convened by the Principal Secretary, Environment & Forests Department Government of Tamil Nadu on 15.07.2019 at the Secretariat, Chennai with the RRC members and Senior Officials of the concerned line departments. In the meeting, the conditions given by CPCB Task team was discussed and the Principal Secretary to Government, Environment & Forests Department instructed the concerned members to furnish the details so as to incorporate the details in the action plans and then the action plans will be hosted in the website after the approval of River Rejuvenation Committee (RRC). The details are awaited from the concerned line departments. Once the details received from the departments the same will be incorporated and hosted in the website after approval of RRC constituted by Tamil Nadu state Government.

Action plans pertaining to P-I and P-II in respect of Assam, Delhi, Manipur, Meghalaya, Nagaland and Tripura are yet to be considered for approval by CPCB as the action plans prepared by the afore-said States requires further improvement as per recommendations of CPCB Task Team.

Mizoram State has submitted action plans (09) in respect of P-III to P-V vide letter dated B.22022/Conf./27/18-MPCB/241 dated 28.06.2019 and CPCB has reviewed the action plans and forwarded comments to the Mizoram State for further action at their end.

As on 24.07.2019, as per the information provided by the States/UTs, state-wise details of web link addresses displaying approved action plans are given in the **Table 6** below.

Table 6. States/UTs displaying approved action plans in respect of identified polluted river stretches

S. No	Name of the State/UT	Whether Approved Action Plans placed in website (Y/N)	Web link Address
1.	Andhra Pradesh	Yes	http://rrc.ap.gov.in/Views/Home.aspx
2.	Bihar	Yes	http://forestonline.bih.nic.in/rrc/Docs/ActionPlan.pdf
3.	Chhattisgarh	Yes	http://enviscecb.org/Reports/Re-Revised%20Action%20Plan%20for%20Rejuvenation%20of%20Polluted%20River%20Stretches%20of%20Chhattisgarh.pdf
4.	Daman Diu and Dadra Nagar Haveli	Yes	http://www.pccdaman.info/pdf/Revised_Action_Plan_on_Damanganga_River.pdf
5.	Goa	Yes	www.goaspcb.gov.in
6.	Gujarat	Yes	https://gpcb.gujarat.gov.in/webcontroller/viewnews/Action-Plan-for-Polluted-River-Stretches-in-OA-6732018-and-River-Rejuvenate-Committee
7.	Haryana	Yes	https://hspcb.gov.in/index
8.	Himachal Pradesh	Yes	https://hppcb.nic.in/NGT/PRS_details.pdf
9.	Jammu & Kashmir	Yes	www.jkriverrejuvenation.com
10.	Jharkhand	Yes	http://jspcb.nic.in/whatsnew/action-plan-for-river-rejuvination-in-the-state-of-jharkhand.php
11.	Karnataka	Yes	https://kspcb.gov.in/action%20plan.html
12.	Kerala	Yes (Partially)	https://www.keralapcb.nic.in/cmsadmin/fileUploads/karamanaaction%20plan%20final.pdf https://www.keralapcb.nic.in/cmsadmin/fileUploads/modified%20action%20plan.pdf
13.	Madhya Pradesh	Yes	http://www.mppcb.nic.in/action-paln-River-Eng.htm
14.	Maharashtra	Yes	http://www.mpcb.gov.in/river_streches/River_streches.php
15.	Odisha	Yes	www.rrcodisha.org
16.	Punjab	Yes	http://ppcb.gov.in/RD.aspx
17.	Puducherry	Yes	https://dste.py.gov.in/polluted_river.htm
18.	Rajasthan	Yes	http://environment.rajasthan.gov.in/content/dam/environment/RPCB/NGTORDERS/Final%20Report%20RRC673-2018.pdf
19.	Sikkim	Yes	http://sikenvis.nic.in/WriteReadData/UserFiles/file/Action%20Plan%20for%20River%20Rejuvination-Sikkim.pdf
20.	Telangana	Yes	https://tspcb.cgg.gov.in/CourtOrders/P-I-VStretches.pdf
21.	Tripura	Yes	https://tspcb.tripura.gov.in/RRC_full_report.pdf
22.	Uttarakhand	Yes	http://ueppcb.uk.gov.in/pages/display/167-action-plan-for-rejuvenation-of-polluted-river-stretch
23.	Uttar Pradesh	Yes	http://www.uppcb.com/action-plan-june2019.htm
24.	West Bengal	Yes	http://www.wbpcb.gov.in/pages/view/266/269-action-plan-(river-rejuvenation-committee)

2.10 Penalty for delay in submission of action plans by the States/UTs

As per Hon'ble NGT order dated 08.04.2019 directed that "we extended the time for preparation of action plans till 31.01.2019 with the stipulation that for delay thereafter, compensation for damage to the environment was to be payable by each of the States/ UTs at the rate of Rs. One Crore per month for each of the Priority- I and Priority- II stretches, Rs. 50 lacs per month for stretches in Priority- III and Rs. 25 lacs per month each for Priority- IV and Priority- V stretches. The payment was to be the responsibility of the Chief Secretaries of the States/Administrators of the UTs and the amount could be recovered from the erring officers. The CPCB was to prominently place the names of the defaulting States and UTs and a notice to this effect on its website".

States of Assam, Manipur and Uttar Pradesh are liable to pay compensation in terms of order dated 19.12.2018 for delay after 31.1.2019 till the action plans are furnished for failing to submit action plan in respect of four river stretches. The said amount may be deposited with the CPCB within one month. CPCB may use the amount for restoration of environment as per law. It will be open to the States to recover the amount from the erring officers. For delay, interest @ 12% will be payable. Responsibility for payment will be of Chief Secretaries. In pursuance to Hon'ble NGT order dated 08.04.2019, CPCB vide letters dated 16.04.2019, 21.05.2019 and 23.07.2019 requested/reminded afore-said States for payment of compensation. ***So far, none of the above three States have submitted compensation to CPCB.***

2.11 Compensation for submission of incomplete action plans by the States/UTs

As per Hon'ble NGT order dated 08.04.2019, six states i.e. Delhi, Meghalaya, Nagaland, Tamil Nadu, Uttar Pradesh and Uttarakhand are liable to pay compensation as per order dated 19.12.2018 for delay after 31.1.2019 at the scale of 50 % of the compensation payable by the States who have failed to submit any action plan. In pursuance to Hon'ble NGT order dated 08.04.2019, CPCB vide letters dated 16.04.2019, 21.05.2019 and 23.07.2019 requested/reminded afore-said States for payment of compensation. **So far, *none of the above states have submitted compensation.***

2.12 Submission of Performance Guarantee by States/ UTs

As per Hon'ble NGT order dated 08.04.2019, performance guarantees are to be furnished for implementation of action plans within the stipulated time to the satisfaction of Central Pollution Control Board as per revised scale prescribed at para no 32 of Hon'ble NGT order dated 08.04.2019. CPCB vide letters dated 16.04.2019, 21.05.2019 and 23.07.2019 requested/reminded all the afore-said States/UTs for submission of performance guarantee. ***As on 24.07.2019, only Delhi and Odisha States have submitted performance guarantee of Rs 5 Crore and 15 Crore respectively. Most of the States have informed that the proposal for submission of performance guarantee in light of the Hon'ble NGT order dated 08.04.2019 is under active consideration of the respective State Government/UT Administration.*** State-wise details of performance guarantee yet to be submitted to CPCB by the States/UTs is given in the following **Table 7 below: -**

Table 7. Performance Guarantee yet to be submitted by State Government or UT Administration as per Hon'ble NGT Order dated 08.04.2019 (As on 24.07.2019)

S. No	NAME OF THE STATE/UT	No of identified Polluted River Stretches	Performance Guarantee to be submitted by State Govt. /UT Administration (Rupees in Crore)
1	ANDHRA PRADESH	5	10
2	ASSAM	44	15
3	BIHAR	6	10
4	CHHATTISGARH	5	10
5	DAMAN, DIU AND DADRA NAGAR HAVELI	1	5
6	GOA	11	15
7	GUJARAT	20	15
8	HARYANA	2	5
9	HIMACHAL PRADESH	7	10
10	JAMMU & KASHMIR	9	10
11	JHARKHAND	7	10
12	KARNATAKA	17	15
13	KERALA	21	15
14	MADHYA PRADESH	22	15
15	MAHARASHTRA	53	15
16	MANIPUR	9	10
17	MEGHALAYA	7	10
18	MIZORAM	9	10
19	NAGALAND	6	10
20	PUDUCHERRY	2	5
21	PUNJAB	4	5
22	RAJASTHAN	2	5
23	SIKKIM	4	5
24	TAMIL NADU	6	10
25	TELANGANA	8	10
26	TRIPURA	6	10
27	UTTAR PRADESH	12	15
28	UTTARAKHAND	9	10
29	WEST BENGAL	17	15

2.13 Biodiversity monitoring and indexing of the rivers as well as to carry out regular hygienic surveys of the rivers

Hon'ble NGT vide order dated 08.04.2019 in O.A. No 673/2019 directed all SPCBs/ PCCs are also required to launch programme relating to Biodiversity monitoring and indexing of the rivers within the State/UT jurisdiction, to assess the efficacy of river cleaning programme apart from carrying out regular hygienic surveys of the rivers w. r. t. Fecal Coliform and Fecal Streptococci as indicated in the primary water quality criteria for bathing waters.

In pursuance to Hon'ble NGT order 08.04.2019, CPCB requested all SPCBs/PCCs vide letter dated 16.4.2019 to launch programme relating to Biodiversity monitoring and indexing of the rivers as well as to carry out regular hygienic surveys of the rivers especially w. r. t. Fecal Coliform (FC) and Fecal Streptococci (FS).

In pursuance to Hon'ble NGT (PB), New Delhi order 5th April, 2019 in Original Application No. 426/2018 in the matter of Mohammed Nayeem Pasha & Anr. Vs State of Telangana & Ors regarding pollution of river Musi in Hyderabad, Telangana CPCB vide letter dated 9th May, 2019 awarded the work to BITS Pilani Hyderabad for carrying out **Quick Hygienic Survey of River Musi** and submission of the completed study report by 31.07.2019 **(Annexure-XI).**

As a part of the aforesaid study, BITS Pilani Hyderabad in association with CPCB and Telangana SPCB, completed five rounds of sampling of River Musi and River Krishna (before and after confluence of river Musi with River Krishna) at selected locations. As one more round of sampling, preparation of final report, preparation of Guidelines for carrying out Quick Hygienic Survey, Hands on training for SPCBs/PCCs yet to be organized by BITS Pilani Hyderabad, the study is expected to be completed by end of August, 2019. Request received from BITS-PILANI, Hyderabad vide letter dated 23.07.2019 requesting CPCB to extend the project time period of one more month to complete the remaining jobs including training for PCB officials in line with work order issued by CPCB **(Annexure-XII)**

3.0 Status on Central Monitoring Committee (CMC) Activities

Hon'ble National Green Tribunal (NGT), Principal Bench, New Delhi vide order dated 08.04.2019 felt necessary to constitute a ***Central Monitoring Committee (CMC)*** to undertake a national initiative by way of preparation and enforcement of a national plan to make river stretches pollution free comprising a (i) Senior representative of NITI Aayog; (ii) Secretary, Ministry of Water Resources; (iii) Secretary, Ministry of Urban Development; (iv) Secretary, Ministry of Environment, Forest and Climate Change; (iv) Director General, National Mission for Clean Ganga; and (vi) Chairman, CPCB. Chairman CPCB will be the nodal authority for coordination. Senior most among them will preside over the deliberations. Following actions to be taken by Central Monitoring Committee (CMC), as per Hon'ble NGT order dated 08.04.2019 and the actions initiated are detailed in subsequent paras.

3.1 First meeting of the Central Monitoring Committee (CMC) may be held by 30.06.2019

In pursuance to Hon'ble NGT order dated 08.04.2019, first meeting of CMC was held under the Chairmanship of Secretary, Environment, Forest & Climate Change (EF & CC) on 11.06.2019 in Ministry of Environment, Forest & Climate Change (MoEF&CC). First meeting of the CMC was attended by Director General, NMCG, representatives of Secretary, MoWR, RD & GR (Now Ministry of Jal Shakti), representative of Secretary, Ministry of Urban Development, Officials of MoEF & CC and CPCB. Representative of Niti Ayog not attended the meeting. Upon deliberations, following decisions were taken in first meeting of the CMC: -

(i) 'National plan for making rivers pollution free' be circulated to all members of CMC to obtain suggestions/views on respective subject matters related to concerned/ NITI Aayog/ NMCG

(ii) Information w.r.t. status of implementation of action plans be obtained from Chief Secretaries of all States/ UTs and status be conveyed to Hon'ble NGT as per the order

(iii) CMC shall have its review meetings once in six months henceforth.

(iv) CMC may request Hon'ble NGT for closure of OA No. 673 of 2018 as monitoring and follow-up action through Chief Secretary of the States/UT Administrations are incorporated in the directions issued in OA No. 606 of 2018. Also, the issue of polluted river stretches is also made an integral part of directions issued in OA No. 606 of 2018.

(v) Targets were proposed for management of Sewage, Industrial Effluent, Waste and other aspects including availability of funds with timelines up to Year 2024 and were agreed upon by CMC as given in **Table 8** below.

Table 8. Targets proposed by CMC for management of Sewage, Industrial Effluent, Waste and other aspects with timelines up to Year 2024

TASK	PRESENT*	As per Hon'ble NGT (2021)	2022 (Proposed)	2024 (Proposed)
Sewage Management				
▪ Treatment capacity	35 %	100%	75%	90 %
▪ Utilisation of treated wastewater	< 2 %	---	20 %	50 %
Industrial Effluent Management				
▪ Treatment Capacity	98 %	100%	100 %	100 %
▪ Utilisation of treated effluent	20 %	---	30 %	40 %
▪ Reduction of fresh water use	---	---	10 %	25 %
Solid Waste Management				
▪ Collection	80 %	100%	100 %	100 %
▪ Treatment	26 %	100%	75 %	100 %
E-Flow Management				
▪ Lean Flow	---	15-20%	15-20%	15-20%

* As per estimates at CPCB

Minutes of the first meeting of CMC as approved by Secretary (EF & CC) were also communicated to all the members vide CPCB letter No A-14011/OA-673/2019-WQM-I/2849-2853 dated 20.06.2019.

Minutes of first meeting of CMC held on 11.06.2019 at MoEF & CC is annexed (**Annexure-XIII**) and is also uploaded in CPCB website at https://cpcb.nic.in/central-monitoring-committee

3.1 Preparation and enforcement of a National Plan for making rivers pollution free

As a follow-up of minutes of first meeting of CMC and in compliance to Hon'ble NGT order dated 08.04.2019, based on the information available, CPCB has prepared 'Draft National Plan for Making River Stretches Pollution Free' and circulated to all the members of CMC with a request provide suggestions/views by 28.06.2019, on the respective subject matter related to concerned/ NITI Aayog/ NMCG vide emails dated 15.06.2019 and 27.06.2019. As no comments/suggestions were received from members of CMC and subsequently based on the updated information, circulated draft guidelines were further revised and revised draft national plan (as on 28.06.2019) was sent to 'Joint Secretary, CP Division, MoEF&CC' with a request to obtain concurrence of Secretary, EF&CC, by email dated 28.06.2019. As the activities relating to National River Conservation Directorate (NRCD) have been transferred from MoEF&CC to Ministry of Jal Shakti, 'Revised Draft National Plan for Making Rivers Pollution Free' is presently under consideration of MoEF&CC.

A copy of the email dated 28.06.2019 and a copy of draft national plan for making river stretches pollution free (as on dated 28.06.2019) communicated to MoEF & CC are enclosed as **Annexure-XIV.**

3.2 Best practices and models for use of treated water

Hon'ble National Green Tribunal vide its order dated 27.11.2018 in OA No 148/2016 in the matter of Mahesh Chandra Saxena vs South Delhi Municipal Corporation & Ors directed as follows:

Para 13:- Before parting with this order, we consider it also necessary to observe that all the States and Union Territories ought to prepare and furnish their action plans for utilization of treated water in their respective States/UTs within three months. Such action plans may be furnished to the CPCB. The CPCB may review such action plans and issue appropriate directions in the matter and furnish a report of compliance to this Tribunal on or before 30th April, 2019 by email at ngt.filing@gmail.com. In compliance to directions issued, Chairman, CPCB has communicated directions of Hon'ble NGT to Chief Secretaries of States and Union Territories to submit the action plan within the time lines indicated in order vide DO letter no. A-14011/1/2019-UPC-I dated 16.01.2019.

CPCB also discussed afore-said issue in 63rd Conference of Chairman & Member Secretaries of Pollution Control Boards and Committees held on 18.03.2019 at New Delhi. Based on the information received, Action Plan on Utilization of Treated Sewage has been compiled and submitted by CPCB before Hon'ble NGT for consideration.

CPCB also obtained information from the State of Gujarat, Maharashtra, Rajasthan, and Tamil Nadu with regard to the case studies on utilisation of treated sewage in the respective States. A copy of information received from afore-said States are annexed **(Annexure-XV to Annexure-XVIII)**

3.4 Identify Experts in the field of utilization of treated wastewater

CPCB identified following experts in the field of utilisation of treated wastewater and apprised in first meeting of CMC. The list of experts is tabulated below in **Table 9** below.

Table 9. Identified Experts in the field of utilization of treated wastewater

S. No	Expert Name & Designation	Organization
1.	Dr. Vinod Tare, Professor,	IIT Kanpur
2.	Prof. A. K. Gosain,	IIT Delhi
3.	Prof Brij Gopal, Biodiversity Expert	Delhi University
4.	Dr. Sharad Kumar Jain, Director,	NIH, Roorkee
5.	Sh. B. Kalyan Chakravarthy IAS, Director General	EPTRI, Hyderabad
6.	Prof. C. R. Babu, Emeritus Professor	Delhi University
7.	Prof. Kazmi Absar Ahmad, Professor	IIT Roorkee
8.	Dr. Shaikh Ahamad, Associate Prof.	IIT Delhi
9.	Dr. Rakesh Kumar, Director	NEERI
10.	Prof. K. Joseph	Anna University, Chennai
11.	Dr. D. D. Basu, Retd. Scientist	CPCB
12.	Dr. Ravi Chopra, Director	People's Science Institute, Dehradun

Above status is submitted for consideration of Hon'ble NGT and for passing further appropriate orders in the matter.

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ANNEXURE - I

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Original Application No. 673/2018

IN THE MATTER OF:

NEWS ITEM PUBLISHED IN 'THE HINDU' AUTHORED BY SHRI. JACOB KOSHY
Titled
"More river stretches are now critically polluted: CPCB"

CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

DATED: 20TH SEPTEMBER, 2018.

ORDER

1. This application has been registered on the basis of a news item dated 17.09.2018 in 'The Hindu" under the heading "More river stretches are now critically polluted: CPCB"[1].

2. According to the news item, 351 polluted river stretches have been noted by the Central Pollution Control Board (CPCB). 117 such stretches are in the States of Assam, Gujarat, and Maharashtra. The CPCB has apprised the concerned States of the extent of pollution in the rivers. According to the news item, most polluted stretches are from Powai to Dharavi – with Biochemical Oxygen Demand (BOD) 250 mg/L; the Godavari - from Someshwar to Rahed – with BOD of 5.0-80 mg/L; the Sabarmati – Kheroj to Vautha – with BOD from 4.0-147 mg/L; and the Hindon – Saharanpur to Ghaziabad – with a BOD of 48-120 mg/L. The CPCB has a programme to monitor the quality of rivers by measuring BOD. BOD greater than or equal to 30mg/L is termed as 'Priority I', while that between 3.1-6 mg/L is 'Priority V'. The CPCB considers a BOD less than 3mg/L an indicator of a healthy river. In its 2015 Report[2], the CPCB had identified 302 polluted stretches on 275 rivers, spanning 28 States and six Union Territories. The number of such stretches has now been found to be 351.

[1] https://www.thehindu.com/news/national/more-river-stretches-critically-polluted cpcb/article24962440.ece
[2] http://cpcb.nic.in/cpcbold/RESTORATION-OF-POLLUTED-RIVER-STRETCHES.pdf

3. The question for consideration is whether any direction is necessary by this Tribunal, if river stretches are polluted as per the report of CPCB, which is a statutory body under the Water (Prevention and Control of Pollution) Act, 1974, (the Water Act).

4. The matter has been considered by the Hon'ble Supreme Court and this Tribunal in several cases to which reference will be made at appropriate place in the order. The matter was recently reviewed in a Chamber Meeting held on 10.09.2018 amongst all the Members of the Tribunal and the representatives of the CPCB, the Department of Water Resources, the Ministry of Environment, Forest & Climate Change, the Niti Ayog, the National Mission for Clean Ganga, Ministry of Housing and Urban Affairs, the representatives of the States of Maharashtra, Gujarat, Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Bihar, Punjab, Uttar Pradesh, NCT of Delhi and the Union Territory of Daman & Diu. The object of the meeting was to discuss as to how the level of fitness for bathing in all the rivers must be achieved at the earliest. The Tribunal was open to consider the matter on judicial side. Accordingly, we proceed to consider the same in the light of inputs available in public domain.

5. There is no dispute with the proposition that the water is the lifeline for existence. Shortage of clean water is a matter of serious concern. Checking of pollution in the rivers is integrally linked not only to the availability of clean potable water but also to the protection of environment.

6. Article 48A of the Constitution casts a duty on the State to protect and improve the environment. Article 51A imposes a fundamental duty on every citizen to protect and improve the environment. The Stockholm Declaration (1972) recommended prevention of pollution by adopting the 'Precautionary Principle', the 'Polluter Pays Principle' and the principle of 'Sustainable Development'.

7. The Water Act was enacted to provide for prevention and control of water pollution. The Central and State Boards have been established under the said Act. The Act

prohibits use of any stream or well for disposal of polluting matter. Standards to be maintained can be laid down. The Parliament has passed the Environment (Protection) Act, 1986 to protect and improve the quality of environment. The Central Government is authorized to issue appropriate directions for protection of environment to the concerned authorities.

8. Considering the issue of pollution in River Ganga by the leather industry at Kanpur, the Hon'ble Supreme Court of India in *M.C. Mehta Vs. Union of India &Ors.*[3], held that the discharge of the pollutants in Ganga could not be permitted directly or indirectly.

9. Again, in *M.C. Mehta Vs. Union of India &Ors.*[4], directions to enforce the statutory provisions by the municipal bodies and the industries by stopping discharge of untreated sewage and effluents in River Ganga were issued. It was noted that the water pollution caused serious diseases, including Cholera and Typhoid. Water pollution could not be ignored and adequate measures for prevention and control are necessary. It was also observed that the educational institutions must teach atleast for one hour in a week lessons relating to protection and improvement of environment. Awareness should be created by organizing suitable awareness programs. In the same matter, the issue of Calcutta tanneries was considered in *M.C Mehta Vs. Union of India And Ors.*[5], *(Calcutta Tanneries' Matter)*. The tanneries were directed to be shifted by adopting the 'Precautionary Principle' so as to prevent discharge of effluents in the River Ganga.

10. Dealing with the control of pollution in river Pallar in Tamil Nadu, the Hon'ble Supreme Court in *Vellore Citizen' Welfare Forum Vs. Union of India*, (1996) 5 SSC 647 observed:

> *"13. The Precautionary Principle and the Polluter Pays Principle have been accepted as part of the law of the land. Article 21 of the Constitution of India guarantees protection of life and personal liberty. Articles 47, 48-A and 51-A(g) of the Constitution are as under:*

[3] (1987) 4 SCC 463 ¶14
[4] (1988) 1 SCC 471
[5] (1997) 2 SSC 411

"47. Duty of the State to raise the level of nutrition and the standard of living and to improve public health.—The State shall regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties and, in particular, the State shall endeavour to bring about prohibition of the consumption except for medicinal purposes of intoxicating drinks and of drugs which are injurious to health.
48-A. Protection and improvement of environment and safeguarding of forests and wildlife.—The State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country.

51-A. (g) to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures."

Apart from the constitutional mandate to protect and improve the environment there are plenty of post-independence legislations on the subject but more relevant enactments for our purpose are: the Water (Prevention and Control of Pollution) Act, 1974 (the Water Act), the Air (Prevention and Control of Pollution) Act, 1981 (the Air Act) and the Environment (Protection) Act, 1986 (the Environment Act). The Water Act provides for the constitution of the Central Pollution Control Board by the Central Government and the constitution of the State Pollution Control Boards by various State Governments in the country. The Boards function under the control of the Governments concerned. The Water Act prohibits the use of streams and wells for disposal of polluting matters. It also provides for restrictions on outlets and discharge of effluents without obtaining consent from the Board. Prosecution and penalties have been provided which include sentence of imprisonment. The Air Act provides that the Central Pollution Control Board and the State Pollution Control Boards constituted under the Water Act shall also perform the powers and functions under the Air Act. The main function of the Boards, under the Air Act, is to improve the quality of the air and to prevent, control and abate air pollution in the country. We shall deal with the Environment Act in the latter part of this judgment.

16. The constitutional and statutory provisions protect a person's right to fresh air, clean water and pollution-free environment, but the source of the right is the inalienable common law right of clean environment. It would be useful to quote a paragraph from Blackstone's commentaries on the Laws of England (Commentaries on the Laws of England of Sir William Blackstone) Vol. III, fourth edition published in 1876. Chapter XIII, "Of Nuisance" depicts the law on the subject in the following words:
"Also, if a person keeps his hogs, or other noisome animals, or allows filth to accumulate on his premises, so near the house of another, that the stench incommodes him and makes the air unwholesome, this is an injurious nuisance, as it tends to deprive him of the use and benefit of his house. A like injury is, if one's neighbour sets up and exercises any offensive trade; as a tanner's, a tallow-chandler's, or the like; for though these are lawful and necessary trades, yet they should be exercised in remote places; for the rule is, 'sic uteretuo, utalienum non leodas'; this therefore is an actionable nuisance. And on a similar principle a constant ringing of bells in one's immediate neighbourhood may be a nuisance.

> *... With regard to other corporeal hereditaments; it is a nuisance to stop or divert water that used to run to another's meadow or mill; to corrupt or poison a watercourse, by erecting a dye-house or a lime-pit, for the use of trade, in the upper port of the stream; to pollute a pond, from which another is entitled to water his cattle; to obstruct a drain; or in short to do any act in common property, that in its consequences must necessarily tend to the prejudice of one's neighbour. So closely does the law of England enforce that excellent rule of gospel-morality, of 'doing to others, as we would they should do unto ourselves'."*

11. The Central Government was directed to constitute an Authority under section 3 (3) of the Environment Act which can take measures to reverse the damage and recover the cost from the individuals responsible.

12. In *S. Jagannath Vs. Union of India &Ors.*[6], effluents discharged by commercial shrimp culture farms were directed to be controlled. An authority was directed to be constituted headed by former Judge of the High Court to protect fragile coastal areas.

13. In the news item published in Hindustan Times titled "And Quiet Flows The Maily Yamuna"[7], steps were directed to be taken to check pollution in river Yamuna.

14. In *Tirupur Dyeing Factory Owners Association Vs. Noyyal River Ayacutdars Protection Association &Ors.*[8], directions were issued to check pollution in river Noyyal in the State of Tamil Nadu. A Committee headed by a former Judge of the High Court was appointed to assess the extent of damage and to identify the victims and based on the said report direction to cover damages and to stop pollution were issued by the High Court. Upholding the said directions, it was observed that if the pollution is not checked, the industrial activity has to be closed; cost for restoration has to be covered from those responsible for the pollution.

15. Inspite of directions in several Judgments, discharge of untreated sewage and industrial effluents in rivers and water bodies is continuing at a large scale. Sewage treatment capacity is disproportionate to the sewage generated. Reports have

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[6] (1997) 2 SCC 87
[7] (2009) 17 SSC 720
[8] (2009) 9 SSC 737

found high level of Coliform in water bodies. According to some estimates, 75 to 80 % water is polluted in India. Number of polluted river stretches is on the increase. It is patent that statutory framework is inadequate or those who man the statutory authorities are not able to perform the duties assigned to them. This aspect has to be reviewed by the concerned Governments.

16. We may also refer to some of orders of this Tribunal on the subject.

17. In *Manoj Mishra Vs. Union of India*[9], the Tribunal dealt with the pollution of river Yamuna in the light of directions of the Hon'ble Supreme Court. The Tribunal noted that right to clean and healthy environment was a Fundamental Right of the inhabitants. In violation of the said Right, the debris and solid waste were being dumped on the river bed. Encroachments have taken place, resulting in damage to the environment. Storm water drains which were polluted, were meeting the river at several points without being cleaned. The failure to manage extraction of ground water and diverting the river water for irrigation and other purposes beyond reasonable norms was resulting in obstructing the flow of the river. Dumping of untreated sewerage and industrial effluents was a major source of pollution.

18. An Expert Committee was appointed which suggested setting up of STPs to tackle this problem. It was seen that on account of pollution, vegetables grown in the area, irrigated by the polluted water were a health hazard and caused diseases like cancer. The Committee appointed by the Tribunal recommended that solid waste dump should be removed from the flood plains and construction activities on the flood plains should be stopped. All Settlements on the flood plains should be relocated. Construction of new barrages and roads, railways and metro bridges, and embankments and bunds should not be permitted. In exceptional cases, if it is permitted, a critical assessment of their potential impact should be assessed. Environmental clearance should be made necessary. High level of lead was found in 23% of the children as a result of pollution adversely affecting their health. The food crops were contaminated. The ground water was contaminated. Mercury

[9] O.A. No. 6/2012, 2015 ALL(I) NGT REPORTER (1) (DELHI) 139

concentration was 200 times the standards on account of location of thermal power plant. The Faecal Coliform- bacteria were 30 times the standards. There was presence of high level of pesticides, heavy metals and other harmful matters in the vegetables/vegetation grown on the river bank.

19. Accordingly, the Tribunal issued several directions for cleaning the river and protecting the flood plains. The implementation of above directions was monitored from time to time in the last three years.

20. On 26.07.2018, the Tribunal recorded that there was a failure of the Administration in complying with the directions, even after more than three years, which made it necessary for the Tribunal to exercise power as an Executing Court under Section 25 of the National Green Tribunal Act, 2010. The Tribunal directed constitution of a two-member Monitoring Committee, comprising a former Chief Secretary of Delhi and a former Expert Member of the Tribunal so that the said Committee could prepare a time bound action plan and closely oversee the execution of the order of this Tribunal on a regular basis.

21. The Tribunal also dealt with the problem of level of pollution in river Ganga which is 2025 km. The two main sources of pollution, which were noted, are the industrial pollution and the municipal sewage. Apart from this, diversion of water and extraction of groundwater reduced the flow of the river which adversely affected its eco-system and vitality. The serious industrial pollution was caused by the leather industries at Jajmau, Kanpur and Unnao. The Tribunal considered the initiatives taken by the Central Government by way of Ganga Action Plan-I and Ganga Action Plan-II. It was also noted that the said initiatives had failed to bring about the desired results. The Tribunal disposed of the matter on 10.12.2015 with regard to Phase-I, Segment-A i.e. from Gaumukh to Haridwar. The rest of the matter was dealt with by subsequent Judgement dated 13.07.2017 in *M.C. Mehta Vs. Union of India*[10].

[10]O.A No. 200 of 2014, 2017 NGTR (3) PB 1

The directions issued by the Tribunal included regulation of dumping of municipal solid waste and other wastes, prevention and control of sewage and industrial effluents, encroachments of floodplains, regulation of diversion of water and extraction of groundwater, cleaning of the drains meeting the river Ganga, maintaining environmental flow of the river, checking constructions on floodplains, setting up of regulating or stopping industrial activity of polluting nature, checking mining activities and disposal of bio-medical and other wastes, etc.

22. The implementation of the above directions was taken up from time to time. It was found that inspite of huge expenditure already incurred and efforts of the Committees monitoring the directions of this Tribunal as well as initiatives of the Government authorities, the requisite result has not been achieved. The water did not meet the requisite standards. The Tribunal had to appoint a Committee headed by a former High Court Judge vide order dated 06.08.2018.

23. On an earlier date on 27.07.2018, the Tribunal directed that the results of tests of water samples at various locations should be displayed on the website of Central Pollution Control Board (CPCB). It was noted that water from Haridwar to Kanpur was unfit for drinking and with few exceptions, even unfit for bathing. There was dumping of Chromium at and around Jajmau and Kanpur. There was violation of provisions of the Water Act, 1974 requiring closing of industries and prosecution. The Tribunal hoped that at one point of time the red sign in the map which was displayed on the website of the CPCB will be converted to green with the improvement in water quality. Till then, the progress could not be held to be satisfactory.

24. On 13.07.2018, in *Mahendra Pandey Vs. Union of India &Ors.*[11], pollution in river Ramganga was considered. River Ramganga is a tributary of River Ganga. It was found that in surface water samples, there was presence of heavy metals like Iron (Fe), Zinc (Zn), Copper (Cu) and Mercury (Hg). The level of Mercury was found above the screening levels (i.e. Indian Drinking Water standard). The stand of the

[11]O.A. No. 58/2017

Uttar Pradesh Pollution Control Board was that there was difficulty in locating the site for construction of secured landfill. The Tribunal noted that the hazardous waste was required to be disposed of in a scientific manner. Illegal dumping of e-waste was required to be stopped. It was noted that pollution was being caused by electronic waste processing which was generating Milled Black Powder. This resulted in contamination of water with heavy metals.

25. On 24.07.2018 in *Sobha Singh &Ors. Vs. State of Punjab &Ors.*[12], the Tribunal considered the issue of pollution of River Sutlej and River Beas. The pollution resulted in toxicity and accumulation of Chromium, Nickel, Zinc and pesticides. The polluted drains were found meeting River Sutlej. The untreated industrial waste as well as the domestic waste was being dumped without any adequate action being taken by the Pollution Control Boards. Failure to check pollution was established by various inspections. Inspite of steps taken in four years, with almost fifty adjournments and the directions of the Tribunal, the situation did not improve as expected. Accordingly, the Tribunal constituted an Independent Monitoring Committee which included a social activist to oversee the execution of directions of the Tribunal.

26. On 31.07.2018 in *Nityanand Mishra Vs. State of M.P. &Ors.*[13], pollution of Son river was considered. Illegal sand mining activity was found to be resulting in affecting the flow of the river. Construction of barrage and operation of industries were affecting the habitat and breeding of *Gharials*. The Tribunal issued directions to stop illegal pollution for protection of the river and the wildlife near the Bansagar Dam and constituted a Committee to oversee the compliance of the directions of the Tribunal.

27. As already noted, on 06.08.2018, after reviewing the progress in the matter of River Ganga and finding that the progress did not meet the expectations of the Tribunal, the Tribunal exercised its jurisdiction under Section 25 of the National Green Tribunal Act, 2010 and constituted a Monitoring Committee headed by a former

[12] O.A.No. 101/2014
[13] O.A. No. 456/2018

Judge of the High Court to execute the directions already issued in a time bound manner. It was also observed that public education and public involvement were required to be considered.

28. On 07.08.2018 in "Stench Grips Mansa's Sacred Ghaggar River (Suo-Moto Case)[14]", this Tribunal considered pollution of river Ghaggar and failure of the authorities to check the same. The report of the Joint Inspection Committee showed that the pollution in the river was beyond the prescribed standards. There was failure on the part of the Pollution Boards in checking the pollution. Inspite of several directions in the last four years by the Tribunal, the situation has not improved. The Tribunal directed that a Special Task Force (STF) must be constituted in every District and in every State. In a District, the STFs should comprise of District Magistrate, Superintendent of Police, Regional Officer of the State Pollution Control Boards in concerned District and one person to be nominated by the District Judge in every District in his capacity as Head of the District Legal Services Authority. At the State level, it was to comprise of the Chief Secretary, the Environment Secretary, the Secretary of Urban Development and Secretary of Local Bodies. The STFs were required to publish reports on the website. The Tribunal also constituted a Committee headed by a former Judge to oversee the compliance of the directions.

29. On 08.08.2018, in *Doaba Paryavaran Samiti Vs. State of U.P. &Ors.*[15], pollution in river Hindon was the subject matter of consideration. The matter was taken up on the allegation that 71 persons in Baghpat district died and more than 1000 persons were affected by diseases on account of pollution. The Tribunal noted that there was contamination of groundwater on account of pollution caused by sugar, paper, distilleries and tannery industries. An inspection team, appointed by the Tribunal, found that 124 industries were causing pollution. It was noted that no punitive action has been initiated. The pollution caused included discharge of Mercury. The Tribunal observed that sources of contaminated water are required to be closed. The victims of diseases are required to be rehabilitated. A statement that there are

[14] O.A. No. 138/2016 (T_{NHRC})
[15] O.A. No. 231/2014

302 river stretches in the country was noted and the CPCB was directed to identify atleast 10 most critical stretches and prepare an action plan, in similar format as that of river Hindon.[16] The directions issued by the Tribunal include making functionaries of the statutory authorities accountable for their failure, making potable water available, sources of contamination being closed, action plans being prepared at District, State and National levels for restoration of water quality and reversing the damage. The Committee headed by a former Judge of High Court was also constituted to oversee the execution of the directions.

30. On 17.08.2018, in *Arvind Pundalik Mhatre Vs. Ministry of Environment, Forest and Climate Change &Ors.*[17], the matter of pollution of River Kasardi was considered and directions were issued to remedy the situation and the Tribunal appointed a Committee headed by a former Judge of the High Court to oversee the compliance of the directions.

31. On 23.08.2018 *in Meera Shukla Vs. Municipal Corporation, Gorakhpur &Ors.*[18], pollution of Ramgarh Lake, Ami River, Rapti River and Rohani River in and around District Gorakhpur on account of discharge of untreated sewage and industrial effluents was considered. It was noted that there was no proper management of solid waste disposal, leading to vector borne diseases and health problems. The pollution was caused, inter-alia, by sugar industries and other factories. The underground water was contaminated with arsenic. In the year 2012, 557 persons died with encephalitis deaths. In the last 30 years, 50,000 people had died. A financial package of Rs. 4,000 crore was given by the Central Government to fight the said diseases but there is no proper utilization of the amount. Apart from the 557 death in Gorakhpur District, more deaths had taken place in the area as stated in the news report dated 16.07.2013. The total deaths reported were 1256 in the year 2012. The Tribunal accordingly directed necessary steps to be taken to remedy

[16] Hindon action plan prepared by CPCB is explained in para 46
[17] O.A. No. 125/2018,
[18] O.A. No. 116/2014,

the situation and also appointed a Committee headed by a former Judge of the High Court to oversee the compliance of directions of the Tribunal.

32. On 24.08.2018, in *Amresh Singh Vs. Union of India &Ors.*[19], the matter of pollution of the Chenab and Tawi Rivers was considered and directions were issued to remedy the situation which was to be overseen by a Committee headed by a former High Court Judge.

33. Similarly, in respect of river *Subarnarekha in Sudarsan Das Vs. State of West Bengal &Ors.*[20], this Tribunal considered the matter and also appointed a Committee headed by a former Judge of the High Court to oversee the compliance of the directions.

34. There are instances of many other cases involving pollution of rivers which have come up for consideration before this Tribunal. It is not necessary to refer to all the cases.

35. We are of the view that the situation is far from satisfactory and action is required to be taken on war footing. Once statutory framework in the form of Water Act and the Environment Act is in place and the standards have been laid down by the Central Pollution Control Board, the matter cannot rest at ascertaining and identification of polluted stretches. There has to be meaningful further action to restore the minimum prescribed standards for all the rivers of the country. The polluter has to pay the cost of restoring the damage.

36. Without casting any aspersions on the statutory bodies, it is an acknowledged fact that the Pollution Control Boards have not been able to take adequate steps for keeping the standards of water within the prescribed limits. They have not been able to stop dumping of wastes, discharge of municipal or industrial effluents in rivers and water bodies. One of the reasons which has been frequently highlighted is the unsatisfactory manning of the Pollution Control Boards. This aspect was

[19] Execution Application No. 32/2016 in O.A. No. 295/2016,
[20] O.A.No. 173 of 2018

considered by the Hon'ble Supreme Court in *TechiTagi Tara Vs. Rajendra Singh Bhandari &Ors.* [21] as follows:

> *"33. Unfortunately, notwithstanding all these suggestions, recommendations and guidelines the SPCBs continue to be manned by persons who do not necessarily have the necessary expertise or professional experience to address the issues for which the SPCBs were established by law. The Tata Institute of Social Sciences in a Report published quite recently in 2013 titled "Environmental Regulatory Authorities in India: An Assessment of State Pollution Control Boards" had this to say about some of the appointments to the SPCBs: "An analysis of data collected from State Pollution Control Boards, however, gives a contrasting picture. It has been observed that time and again across state governments have not been able to choose a qualified, impartial, and politically neutral person of high standing to this crucial regulatory post. The recent appointments of chairpersons of various State Pollution Control Boards like Karnataka (A a senior BJP leader), Himachal Pradesh (B a Congress party leader and former MLA), Uttar Pradesh (C appointed on the recommendation of SP leader X), Arunachal Pradesh (D a sitting NCP party MLA), Manipur Pollution Control Board (E a sitting MLA), Maharashtra Pollution Control Board (F a former bureaucrat) are in blatant violation of the apex court guidelines. The apex court has recommended that the appointees should be qualified in the field of environment or should have special knowledge of the subject. It is unfortunate that in a democratic set up, key enterprises and boards are headed by bureaucrats for over a decade. In this connection, it is very important for State Governments to understand that filling a key regulatory post with the primary intention to reward an ex-official through his or her appointment upon retirement, to a position 9 Item Nos. 07-08 July 20, 2018 dv for which he or she may not possess the essential overall qualifications, does not do justice to the people of their own states and also staffs working in the State Pollution Control Boards. The primary lacuna with this kind of appointment was that it did not evoke any trust in the people that decisions taken by an ex-official of the State or a former political leader, appointed to this regulatory post through what appeared to be a totally non-transparent unilateral decision. Many senior environmental scientists and other officers of various State Pollution Control Boards have expressed their concern for appointing bureaucrats and political leader as Chairpersons who they feel not able to create a favourable atmosphere and an effective work culture in the functioning of the board. It has also been argued by various environmental groups that if the government is unable to find a competent person, then it should advertise the post, as has been done recently by states like Odisha. However, State Governments have been defending their decision to appoint bureaucrats to the post of Chairperson as they believe that the vast experience of IAS officers in handling responsibilities would be easy. Another major challenge has been appointing people without having any knowledge in this field. For example, the appointment of G with maximum qualification of Class X as Chairperson of State Pollution Control Board of Sikkim was clear violation of Water Pollution and Prevention Act, 1974."*
>
> *34. The concern really is not one of a lack of professional expertise – there is plenty of it available in the country – but the lack of dedication and willingness to take advantage of the resources available and instead benefit someone close to the powers that be. With this couldn't care-less attitude, the environment and public trust are the immediate casualties. It is unlikely that with such an attitude, any substantive effort can be made to*

[21] (2018) 11 SCC 734

tackle the issues of environment degradation and issues of pollution. Since the NGT was faced with this situation, we can appreciate its frustration at the scant regard for the law by some State Governments, but it is still necessary in such situations to exercise restraint as coutioned in State of U.P. v. Jeet S. Bisht.

35.. Keeping the above in mind, we are of the view that it would be appropriate, while setting aside the judgment and order of the NGT, to direct the Executive in all the States to frame appropriate guidelines or recruitment rules within six months, considering the institutional requirements of the SPCBs and the law laid down by statute, by this Court and as per the reports of various committees and authorities and ensure that suitable professionals and experts are appointed to the SPCBs. Any damage to the environment could be permanent and irreversible or at least long-lasting. Unless (2007) 6 SCC 586 corrective measures are taken at the earliest, the State Governments should not be surprised if petitions are filed against the State for the issuance of a writ of quo warranto in respect of the appointment of the Chairperson and members of the SPCBs. We make it clear that it is left open to public spirited individuals to move the appropriate High Court for the issuance of a writ of quo warranto if any person who does not meet the statutory or constitutional requirements is appointed as a Chairperson or a member of any SPCB or is presently continuing as such."

37. This Tribunal also considered this matter in order dated 20.07.2018,in the case of *Satish Kumar vs. U.O.I &Ors.,*[22]and observed as follows:

"Accordingly, we suggest that the Central Government as well as State Governments may appoint persons with judicial background to deal with the issues which may require the knowledge of legal and judicial system in the Pallution Control Boards and the local authorities. Such persons can also advise such bodies on manner of compliance of law so that such bodies can be saved from unnecessary litigation and charges of failure to comply with law.

24. Presence of a person with judicial background will help the Pollution Control Boards as well as local bodies to effectively discharge their administrative and judicial functions in an efficient manner. We are informed that in some of the Pollution Control Boards and Local Bodies, Judicial officers are already being engaged.

25. We thus call upon the Central Government and all the State Governments to take a call on this issue consistent with the observation of the Hon'ble Supreme Court in Techi Tagi Tara (Supra)"

38. In order to do so, an officer of Superior Judicial Services may have to be taken on deputation by requesting the concerned High Court on the pattern of Law Secretaries of States.

39. As already noted, well known causes of pollution of rivers are dumping of untreated sewage and industrial waste, garbage, plastic waste, e-waste, bio-medical waste, municipal solid waste, diversion of river waters, encroachments of catchment areas and floodplains, over drawl of groundwater, river bank erosion on account of illegal sand mining. Inspite of directions to install Effluent Treatment Plants (ETPs),

[22]O.A No. 56 (T_{HC}) of 2013

Common Effluent Treatment Plants (CETPs), Sewage Treatment Plants (STPs), and adopting other anti-pollution measures, satisfactory situation has not been achieved. Tough governance is the need of the hour. If pollution does not stop, the industry has to be stopped. If sewage dumping does not stop, locals have to be made accountable and their heads are to be prosecuted. Steps have to be taken for awareness and public involvement.

40. River Water is considered to be fit for bathing when it meets the criteria of having Bio-chemical Oxygen Demand (BOD) less than 3.0 mg/L, Dissolved Oxygen more than 5.0 mg/L and Faecal Coliform bacteria to be less than 500 MPN/100 ml.

41. According to the "Restoration of Polluted River Stretches- Concept & Plan" published by CPCB in January, 2018, 30,042 million litres per day (MLD) of domestic sewage is generated from urban areas along the polluted river stretches. The installed sewage treatment capacity is about 16,846 MLD, leaving a gap of about 13,196 MLD (43.9%). There is a large gap in sewage treatment capacity and generation of sewage in urban areas.

42. As already noted, according to latest assessment by the CPCB, there are 351 polluted river stretches in India i.e. where the BOD content is more than 3mg/L. The plan of CPCB is to target enhancement of river flow. The plan for restoration of polluted river stretches is proposed to be executed through two-fold concepts. One concept is to target enhancement of river flow through interventions on the water sheds/catchment areas for conservation and recharge of rain water for subsequent releases during lean flow period in a year. This concept will work on dilution of pollutants in the rivers and streams to reduce concentration to meet desired level of water quality. Other concept is of regulation and enforcement of standards in conjunction with the available flow in rivers /streams and allocation of discharges with stipulated norms.

43. The water quality assessment of aquatic resources by CPCB, on long term basis, has provided information on the segments of rivers that are not meeting water quality

criteria and have been identified as polluted. Assessment studies carried out on the sources of Restoration of Polluted River Stretches pollution in the rivers has highlighted the need for creation of infrastructure facilities (STPs /CETPs/ETPs) for management of wastewater in line with low flow or no flow of fresh water in the rivers and streams. In order to have a practical solution to augment non-monsoon availability of water, CPCB has suggested four phases for full scale water shed management in the upper reaches of catchment of the rivers and streams. The suggested phases for water shed management may be (a) Recognition phase (b) Restoration phase (c) Protection phase (d) Improvement phase.

(a) Recognition Phase is identification and recognition of the problem, analysis of the cause of the problem and its effect and development of alternative solutions of problem.

(b) Restoration Phase includes two main steps viz. selection of best solution to problems identified and application of the solution to the problems of the land.

(c) Protection Phase takes case of the general health of the watershed and ensures normal functioning. The protection is against all factors, which may cause determined in watershed condition.

(d) Improvement Phase deals with overall improvement in the watershed and all land is covered.

44. Attention is paid to agriculture and forest management and production, forage production and pasture management, socio-economic conditions to achieve the objectives of watershed management.

45. The river action plans are designed for control of pollution and to restore the water quality of the rivers. The infrastructure development for treatment of sewage always remains short of the waste water generation. The ever growing population and increasing water use in the urban centres has outpaced the plan for creation of infrastructure. The river action plans although have not improved the quality of the

water resources, however in absence of such plans, the quality of aquatic resources would have been further deteriorated.

46. River Hindon has been taken up as a model for preparation of action plan for restoration of water quality.[23] Salient features of the Action Plan are:

i. Execution of field surveys to assess pollution load generated by industries and sewage generated in a city or town discharging sewage and trade effluent into river Hindon and its tributaries.

ii. Collating water quality monitoring data of Hindon and its tributaries and assigning the class as per primary water quality criteria.

iii. Water quality assessment of river in context of sewage/industrial drain outfalls with dilution and distance factors.

iv. Laying time-limes for regulating industrial pollution control by ensuring consent compliance and closing the defaulting industries till they comply with the norms stipulated to them.

v. Setting up of STPs in towns located in the river catchment and emphasis on utilization of treated sewage.

vi. Adopting water conservation practices, ground water regulation, flood plain zone management and maintaining environmental flow.

47. The polluted river stretches have been divided in five priority categories i.e., I, II, III, IV, V depending upon the level of BOD. Following are the parameters for assessing the criteria:

I. <u>Criteria for Priority I</u>

(a) Monitoring locations exceeding BOD concentration 30 mg/L has been considered as it is the standard of sewage treatment plant and in river it appears without dilution.(River locations having water quality exceeding discharge standards for BOD to fresh water sources)

(b) All monitoring locations exceeding BOD concentration 6 mg/L on all occasions.

(c) Monitoring locations exceeding 3 mg/L BOD are not meeting desired water quality criteria but does not affect to Dissolved

[23] http://cpcb.nic.in/NGT/CPCB-Reply-Affidavit-Report-on-Hindon-Action-Plan.pdf

Oxygen level in water bodies. If BOD exceeds 6mg/L in water body, the Dissolved Oxygen is reduced below desired levels.

(d) The raw water having BOD levels upto 5 mg/L are does not form complex chemicals on chlorination for municipal water supplies. Hence the water bodies having BOD more than 6 mg/L are considered as polluted and identified for remedial action.

II. Criteria for Priority II

(a) Monitoring locations having BOD between 20-30 mg/L.
(b) All monitoring locations exceeding BOD concentration 6 mg/L on all occasions.

III. Criteria for Priority III

(a) Monitoring locations having BOD between 10-20 mg/L.
(b) All monitoring locations exceeding BOD concentration 6 mg/L on all occasions.

IV. Criteria for Priority IV

(a) Monitoring locations having BOD between 6-10 mg/L.

V. Criteria for Priority V

(a) Monitoring locations having BOD between 3-6 mg/l.
(b) The locations exceeding desired water quality of 3mg/l BOD.

Polluted River Stretches- State wise-Priority wise						
STATE	I	II	III	IV	V	Grand Total
ANDHRA PRADESH				2	3	5
ASSAM	3	1	4	3	33	44
BIHAR			1		5	6
CHHATTISGARH				4	1	5
DAMAN, DIU AND DADRA NAGAR HAVELI	1					1
DELHI	1					1
GOA			1	2	8	11
GUJARAT	5	1	2	6	6	20
HARYANA	2					2
HIMACHAL PRADESH	1	1	1		4	7
JAMMU & KASHMIR		1	2	2	4	9
JHARKHAND				3	4	7
KARNATAKA			4	7	6	17
KERALA	1			5	15	21
MADHYA PRADESH	3	1	1	3	14	22
MAHARASHTRA	9	6	14	10	14	53
MANIPUR		1			8	9
MEGHALAYA	2			3	2	7
MIZORAM			1	3	5	9
NAGALAND	1		1	2	2	6
ODISHA	1		3	2	13	19
PUDUCHERRY				1	1	2

PUNJAB	2			1	1	4
RAJASTHAN			1		1	2
SIKKIM					4	4
TAMIL NADU	4			1	1	6
TELANGANA	1	2	2	2	1	8
TRIPURA					6	6
UTTAR PRADESH	4		1	2	5	12
UTTARAKHAND	3	1	1	4		9
WEST BENGAL	1	1	3	4	8	17
Grand Total	**45**	**16**	**43**	**72**	**175**	**351**

Polluted River Stretches- Priority I & Priority II				
STATE	**RIVER NAME**	**RIVER STRETCH**	**BOD RANGE/ MAX VALUE (mg/L)**	**PRIORITY**
ASSAM	BHARALU	GUWAHATI TO CHILARAI NAGAR	52.0	I
	BORSOLA	ALONG SARABBHATTI, GUWAHATI	34.0	I
	SILSAKO	ALONG CHACHAL, GUWAHATI	34.0	I
	SORUSOLA	ALONG PALTAN BAZAR, GUWAHATI	30.0	II
DAMAN, DIU AND DADRA NAGAR HAVELI	DAMANGANGA	SILVASSA TO DAMAN JETTY, MOTI DAMAN	10 - 80	I
DELHI	YAMUNA	WAZIRABAD TO ASGARPUR	9 - 80	I
GUJARAT	AMLAKHADI	PUNGUM TO BHARUCH	40 - 45	I
	BHADAR	JETPUR VILLAGE TO SARAN VILLAGE	426.0	I
	BHOGAVO	SURENDRANAGAR TO NANA KERALA	67.0	I
	KHARI	LALI VILLAGE TO KASHIPURA	235.0	I
	SABARMATI	KHEROJ TO VAUTHA	4 - 147	I
	VISHWAMITRI	VADODARA TO ASOD	6 - 21	II
HARYANA	GHAGGAR	RORKI TO SIRSA	6 - 482	I
	YAMUNA	PANIPAT TO SONEPAT	4 - 55	I
HIMACHAL PRADESH	SUKHANA	SUKHNA TO PARWANOO	54.0	I
	MARKANDA	KALA AMB TO NARAYANPUR	3.2 - 24	II
JAMMU & KASHMIR	DEVIKA	GURU RAVIDAS TEMPLE TO NAINSU	3.4-22	II
KERALA	KARAMANA	MALEKKDU TO THIRUVALLAM	56.0	I
MADHYA PRADESH	CHAMBAL	NAGDA TO RAMPURA	12 - 80	I
	KHAN	KABIT KHEDI TO KHAJRANA	30.8 - 80	I
	KSHIPRA	SIDDHAWAT TO TRIVENISANGAM	4 - 38	I
	BETWA	MANDIDEEP TO VIDISHA	3.3 - 20.2	II
MAHARASHTRA	GODAVARI	SOMESHWAR TEMPLE TO RAHED	5.0-88	I
	KALU	ALONG ATALE VILLAGE	75.0	I
	KUNDALIKA	SALAV TO ROHA	3.8-65	I
	MITHI	POWAI TO	250.0	I

		DHARAVI		
	MORNA	AKOLA TO TAKALIJALAM	52.8	I
	MULA	BOPODI TO AUNDH GAON	33-35	I
	MUTHA	SHIVAJI NAGAR TO KHADAKWASLA DAM	5.0-42.5	I
	NIRA	SANGAVI TO SHINDEWADI	12.5-35	I
	VEL	NHAVARE TO SHIKARPUR	30.2	I
	BHIMA	VITHALWADI TO TAKLI	8.0-22.0	II
	INDRAYANI	MOSHIGAON TO ALANDIGAON	12.5-22	II
	MULA-MUTHA	THEUR TO MUNDHWA BRIDGE	14-22	II
	PAWANA	DAPODI TO RAVET	15.5-24	II
	WAINGANGA	TUMSA TO ASHTI	10.4-22.4	II
	WARDHA	GHUGHUS TO RAJURA	7.0-22.0	II
MANIPUR	NAMBUL	SINGDA DAM TO BISHNUPUR	3.6-23.7	II
MEGHALAYA	UMKHRAH	MAWLAI TO SHILLONG	30-90.2	I
	UMSHYRPI	UMSHYRPI BRIDGE TO DHANKETI	38.5-95.0	I
NAGALAND	DHANSIRI	CHECK GATE TO DIPHU BDG	7.0-50.0	I
ODISHA	GANGUA	D/S BHUWANESHWAR	14-39	I
PUNJAB	GHAGGAR	SARDULGARH TO MUBARAKPUR	9.0-380	I
	SATLUJ	RUPNAGAR TO HARIKA BRIDGE	3.8-108	I
TAMIL NADU	CAUVERY	METTUR TO MAYILADUTHURAI	3.3-32	I
	SARABANGA	THATHAYAMPATTI TO T.KONAGAPADI	78.0	I
	THIRUMANIMUTHAR	SALEM TO PAPPARAPATTI	190.0	I
	VASISTA	MANIVILUNDHAN TO THIYAGANUR	675.0	I
TELANGANA	MUSI	HYDRABAD TO NALGONDA	4.0-60.0	I
	MANJEERA	GOWDICHARLA TO NAKKAVAGU	5.0-26	II
	NAKKAVAGU	GANDILACHAPET TO SEVALAL THANDA	26.0	II
UTTAR PRADESH	HINDON	SAHARANPUR TO GHAZIABAD	48-120	I
	KALINADI	MUZAFFAR NAGARTO GULAOTHI TOWN	8 - 78	I
	VARUNA	RAMESHWAR TO CONF WITH GANGA, VARANASI	4.5-45.2	I
	YAMUNA	ASGARPUR TO ETAWAH SHAHPUR TO ALLAHABAD (BALUA GHAT)	12.0-55	I
UTTARAKHAND	BHELA	KASHIPUR TO RAJPURA ATNDA	6.0-76.0	I
	DHELA	KASHIPUR TO GARHUWALA, THAKURDWARA	12 - 80	I
	SUSWA	MOTHROWALA TO RAIWALA	37.0	I
	KICHHA	ALONG KICHHA	28.0	II
WEST BENGAL	VINDHADHARI	HAROA BRIDGE TO MALANCHA BURNING GHAT	26.7-45.0	I
	MAHANANDA	SILIGURI TO BINAGURI	6.5-25	II

Polluted River Stretches- Priority III, IV & V				
STATE	RIVER NAME	RIVER STRETCH	BOD RANGE/ MAX VALUE (mg/L)	PRIORITY
ANDHRA PRADESH	KUNDU	NANDYAL TO MADDURU	7.7	IV
	TUNGABHADRA	MANTHRALAYAM TO BAVAPURAM	3.2 - 6.7	IV
	GODAVARI	RAYANPETA TO RAJAHMUNDRI	3.1 - 3.4	V
	KRISHNA	AMRAVATHI TO HAMSALA DEEVI	3.2	V
	NAGAVALI	ALONG THOTAPALLI	3.2	V
ASSAM	DEEPAR BILL	DEEPAR BILL TO GUWAHATI	10.6	III
	DIGBOI	LAKHIPATHE, RESERVE FOREST	14.0	III
	KAMALPUR	ALONG KAMALPUR	18.6	III
	PANCHNAI	ORANG TO BORSALA	11.4	III
	BRAHAMPUTRA	KHERGHAT TO DHUBRI	3.2 - 6.4	IV
	KHARSANG	ASSAM-ARUNANCHAL BORDER TO LONGTOM-1	7.2	IV
	PAGLDIA	NALBARI TO KHUDRA SANKARA	8.2	IV
	BARAK	PANCHGRAM TO SILCHAR	3.5 - 4.2	V
	BAROI	DOWNSTREAM OF BRIDGE AT NH-52	3.6	V
	BEGA	ALONG MANGALDOI	4.5	V
	BEKI	BARPETA ROAD TO JYOTI GAON	3.5	V
	BHOGDOI	JORHAT TO DULIAGAON	4.5	V
	BOGINADI	LAKHIMPUR TO DIBRUGARH	4.2	V
	BORBEEL	ALONG RAMNAGAR, DIGBOI	3.8	V
	BORDOIBAM BEELMUKH	ALONG BEELMUKH BIRD SANCTUARY, DHEMAJI	5.2	V
	BURHIDIHING	MARGHERITA TO TINSUKIA	4 - 4.6	V
	DHANSIRI	GOLAGHAT TO KATHKETIA	4.3 - 5.6	V
	DIKHOW	NAGINI MORA TO DIKHOMUKH	3.2	V
	DIKRONG	ALONG BANDARDEWA	3.2	V
	DIPLAI	ALONG SILGARA, KOKRAJHAR	3.2	V
	DISANG	DILLIGHAT TO GUNDAMGHAT	4.2	V
	GABHARU	ALONG TUMIUKI, SONITPUR	5.4	V
	HOLUDUNGA	ALONG SOMARAJAN, DHEMA JI	4.8	V
	Jai Bharali	ALONG SONITPUR	3.1	V
	JHANJI	JORHAT TO CHAWDANG	3.8	V
	KALONG	NAGAON TO MORI KALONG	3.7 - 4.3	V
	KAPILI	NAGAON TO KAMPUR TOWN	5.5	V
	KILLING	ALONG MOREGAON	5.8	V
	KOHORA	KOHORA TO MOHPARA	4.4	V
	KULSI	ALONG CHAYGAON	3.6	V
	MALINI	ALONG RAMNAGAR, SILCHAR	5.3	V
	MORA BHARALI	ALONG TEZPUR	5.2	V

	PARASHALI	ALONG DEMORIA	4.0	V
	PUTHIMARI	ALONG PUTHIMARI	4.8	V
	RANGA	ALONG GERAMUKH	3.8	V
	SAMAGURI	ALONG SAMAGURI, NAGAON	4.0	V
	SANKOSH	ALONG GOLAKGANJ	3.3	V
	SON	ALONG DEODHAR, KARIMGANJ	4.3	V
	SONAI	SONAI TO DAKSHIN MOHANPUR	4.4	V
	TENGA PUKHURI	ALONG KUKURACHOWA GAON	4.0	V
BIHAR	SIRSIA	RUXOL TO KOIREA TOLA (RAXAUL)	20.0	III
	FARMAR	ALONG JOGBANI	3.6	V
	GANGA	BUXAR TO BHAGALPUR	3.2 - 4.2	V
	POONPUN	GAURICHAK TO FATUHA	3.3	V
	RAM REKHA	HARINAGAR TO RAMNAGAR	5.0	V
	SIKRAHNA	ALONG NARKATIAGANJ	4.5	V
CHHATTISGARH	HASDEO	KORBA TO URGA	3.6 - 7	IV
	KHAROON	BUNDRI TO RAIPUR	3.3 - 7.2	IV
	MAHANADI	ARRANG TO SIHAWA	3.3 - 8	IV
	SEONATH	SHIMGA TO BEMTA	3.4 - 8.4	IV
	KELO	RAIGARH TO KANAKTORA	3.8	V
GOA	SAL	KHAREBAND TO MOBOR	4.2 - 16.8	III
	MANDOVI	MARCELA TO VOLVOI	3.3 - 6.2	IV
	TALPONA	ALONG CANACONA	6.8	IV
	ASSONORA	ASSONORA TO SIRSAIM	3.3	V
	BICHOLIM	BICHOLIM TO CURCHIREM	4.8	V
	CHAPORA	PERNEM TO MORJIM	3.5 - 5.2	V
	KHANDEPAR	PONDA TO OPA	3.4	V
	SINQUERIM	ALONG CANDOLIM	3.6	V
	TIRACOL	ALONG TIRACOL	3.9	V
	VALVANT	SANKLI – BICHOLIM TO PORIEM	4.3	V
	ZUARI	CURCHOREM TO MADKAI	3.2 - 5.1	V
GUJARAT	DHADAR	KHOTDA TO CHANDPURA	16.0	III
	TRIVENI	TRIVENI SANGAM TO BADALPARA	11.0	III
	AMRAVATI (TRIBUTARY OF NARMADA)	ALONG DADHAL, ANKALESHWAR	10.0	IV
	DAMANGANGA	KACHIGAON TO VAPI	8.0	IV
	KOLAK	KIKARLA TO SALVAV	8.0	IV
	MAHI	SEVALIA TO BAHADARPUR	4.5 - 7	IV
	SHEDHI	DHAMOD TO KHEDA	9.0	IV
	TAPI	KHADOD (BARDOLI) TO SURAT	8.0	IV
	ANAS	DAHOD TO FATEHPURA	5.0	V
	BALEHWAR KHADI	PANDESARA TO KAPLETHA	4.0	V
	KIM	SAHOL BRIDGE TO HANSOL	3.1	V
	MESHWA	ALONG SHAMLAJI	4.0	V
	MINDHOLA	ALONG SACHIN	6.0	V
	NARMADA	GARUDESHWAR TO BHARUCH	5.0	V
HIMACHAL PRADESH	SIRSA	NALAGARH TO SOLAN	8 - 16	III
	ASHWANI	ALONG YASHWANT NAGAR	3.2	V
	BEAS	KULLU TO DEHRAGOPIPUR	6.0	V

	GIRI	ALONG SAINJ	4.4 - 6	V
	PABBAR	ALONG ROHRU	3.6 - 4	V
JAMMU & KASHMIR	BANGANGA	PONY SHED TO BATHING GHAT	6 - 14	III
	CHUNT KOL	MAULANA AZAD BRIDGE TO KANIKADAL	14.5	III
	GAWKADAL	GAWKADAL BRIDGE TO NOHATA	9.0	IV
	TAWI	SURAJNAGAR TO BELICHARANA	5 - 8.3	IV
	BASANTER	SAMBA TO CHAKMANGARAKWAL	5 - 6	V
	CHENAB	JAL PATAN TO PARGAWAL	5.0	V
	JHELAM	CHATTABAL WEIR TO ANANTNAG	3.2 - 5.5	V
	SINDH	ALONG DUDERHAMA	3.7	V
JHARKHAND	GARGA	ALONG TALMUCHU	6.2	IV
	SANKH	KONGSERABASAR TO BOLBA	8.4	IV
	SUBARNAREKHA	HATIA DAM TO JAMSHEDPUR	3.4 - 10	IV
	DAMODAR	PHUSRO ROAD BDG TO TURIO	3.9	V
	JUMAR	KANKE DAM TO KADAL	3.3	V
	KONAR	ALONG TILAYA AND KONAR	3.4 - 3.6	V
	NALKARI	ALONG PATRATU	3.8	V
KARNATAKA	ARKAVATHI	HALLI RESERVOIR TO KANAKAPURA TOWN	14.0	III
	LAKSHMANTIRTHA	KATTEMALAVADI TO HUNSUR	7.1 - 12.4	III
	MALPRBHA	KHANAPUR TO DHARWAD	7.3 - 17.3	III
	TUNGABHADRA	HARIHAR TO KORLAHALLI	4 - 19	III
	BHADRA	HOLEHUNNUR TO BHADRAVATHI	5.5 - 7.8	IV
	CAUVERY	RANGANATHITTU TO SATHYAMANGALAM BRIDGE	3.1 - 6.7	IV
	KABINI	NANJANAGUD TO HEJJIGE	3.6 - 6.5	IV
	KAGINA	SHAHABAD TO HONGUNTA	4.6 - 7.4	IV
	KALI	HASAN MAAD (WEST COAST PAPER MILL) TO BOMMANAHALLI RESERVOIR	6.5	IV
	KRISHNA	YADURWADI TO TINTINI BRIDGE	3.1 - 6.2	IV
	SHIMSHA	YEDIYAR TO HALAGUR	4 - 10	IV
	ASANGI NALLA	ALONG ASANGI	4.4	V
	BHIMA	GHANAPUR TO YADGIR	3.3 - 6	V
	KUMARDHARA	ALONG UPPINANGADI	4.0	V
	NETRAVATHI	UPPINANGADI TO MANGALURU	4.0	V
	TUNGA	SHIVAMOGA TO KUDLI	4.3	V
	YAGACHI	ALONG YAGACHI, HASSAN	4.0	V
KERALA	BHARATHAPUZHA	ALONG PATAMBI	6.6	IV
	KADAMBAYAR	MANCKAKADAVU TO BRAHMAPURAM	5.9 - 6.4	IV
	KEECHERI	PULIYANNOR TO KECHERY	6.4	IV
	MANIMALA	KALLOOPARA TO THONDRA	6.3 - 6.4	IV
	PAMBA	MANNAR TO THAKAZHY	3.3 - 7.8	IV
	BHAVANI	ALONG ELACHIVAZHY	5.4	V
	CHITRAPUZHA	IRUMPANAM TO KARINGACHIRA	4.6	V

	KADALUNDY	ALONG HAJIRAPPALLY/ HAJIYARPALLI	3.6	V
	KALLAI	THEKEPURAM TO ARAKKINAR	4.5	V
	KARUVANNUR	ALONG KARUVANNUR	3.5	V
	KAVVAI	ALONG KAVVAI	3.9	V
	KUPPAM	THALIPARAMBA TO VELICHANGOOL	3.1 - 3.8	V
	KUTTIYADY	ALONG KUTTIYADY	5.0	V
	MOGRAL	ALONG MOGRAL	3.1	V
	PERIYAR	ALWAYE-ELOOR TO KALAMASSERY	3.2 - 5.1	V
	PERUVAMBA	ALONG PERUVAMBA	3.9	V
	PUZHACKAL	OLARIKKARA TO PUZHACKAL	3.8	V
	RAMAPURAM	ALONG RAMAPURAM	3.3	V
	THIRUR	NADUVILANGADI TO THALAKKADATHUR	3.6	V
	UPPALA	POYYA TO MULINJA	3.2	V
MADHYA PRADESH	SONE	ALONG AMLAI	12.4	III
	GOHAD	GOHAD DAM TO GORMI	6.3	IV
	KOLAR	SURAJNAGAR TO SHIRDIPURAM	7.5	IV
	TAPI	NEPANAGAR TO BURHANPUR	4.6 - 8	IV
	BICHIA	SILPARI TO GADHAWA	3.5	V
	CHAMLA	ALONG BADNAGAR, UJJAIN	4.0	V
	CHOUPAN	ALONG VIJAIPUR	3.4	V
	KALISOT	MANDIDEEP TO SAMARDHA VILLAGE	4.1	V
	KANHAN	KANHAN IN CHINDWARA DISTRICT BOUNDRY	3.2	V
	KATNI	ALONG KATNI	3.5	V
	KUNDA	KHARGONE TO KHEDI KHURD	4.0	V
	MALEI	JAORA TO BARAUDA	3.5	V
	MANDAKINI (MP)	ALONG CHITRAKUT	5.8	V
	NEWAJ	ALONG SHUJALPUR	4.0	V
	PARVATI	BATAWADA TO PILUKHEDI	3.2	V
	SIMRAR	ALONG KATNI	3.9	V
	TONS	CHAKGHAT TO CHAPPAR	3.5	V
	WAINGANGA	CHINDWARA TO BALAGHAT	3.2	V
MAHARASHTRA	GHOD	ANNAPUR TO SHISHUR	10.2	III
	KANHAN	BHANDARA TO NAGPUR	9.8-16.4	III
	KOLAR (MAH)	ALONG KORADI	18.0	III
	KRISHNA	SHINDI TO KURUNDWAD	3.4-14.0	III
	MOR	JALGAON TO AMODA	16.0	III
	PATALGANGA	KHADEPADA TO KOPOLI	5.0-18	III
	PEDHI	NARAYANPUR TO BHATKULI	20.0	III
	PENGANGA	MEHKAR TO UMARKHED	8.6-20	III
	PURNA	DHUPESHWAR TO ASEGAON	10.2-18.4	III
	TAPI	RAVER TO SHAHADA	8.0-12.0	III
	URMODI	DHANGARWADI TO NAGTHANE	12.4	III
	VENNA	MAHABALESHWAR TO MAHULI	7.2-12.5	III
	WAGHUR	SUNASGAON TO SAKEGAON	18.0	III
	WENA	KAWADGHAT TO HINDONGHAT	10.2-13.8	III

	BINDUSAR	SWARAJ NAGAR TO SNEHNAGAR	8.0	IV
	BORI	ALONG AMALNER	9.2	IV
	CHANDRABHAGA	PANDHARPUR TO SHEGAON DHUMALA	7.5-9.5	IV
	DARNA	IGATPURI TO SANSARI	5.0-9.0	IV
	GIRNA	MALEGAON TO JALGAON	6.6-9.0	IV
	HIWARA	PACHORA TO NIMBORA	8.6	IV
	KOYNA	KARAD TO PAPDARDE	8.6	IV
	PEHLAR	PELHAR DAM TO GOLANI NAKA	7.0	IV
	SINA	SOLAPUR TO BANKALAGI	8.5	IV
	TITUR	ALONG CHALISGAON, JALGAON	7.8	IV
	AMBA	BENSE TO ROHA	4.8	V
	BHATSA	SHAHAPUR TO BHADANE	4.8-6.0	V
	GOMAI	LONKHEDA TO SHAHDA	6.0	V
	KAN	KAVATHE TO SAKARI	5.0	V
	MANJEERA	LATUR TO NANDED BRIDGE	5.0	V
	PANCHGANGA	SHIROL TO KOLHAPUR	3.2-5.8	V
	PANZARA	VARKHEDE TO DHULE	6.0	V
	RANGAVALI	TINTEMBA TO NAVAPUR	5.0	V
	SAVITRI	DADLI TO MUTHAVALI	3.2-5.0	V
	SURYA	DHAMNI DAM TO PALGHAR	4.4-5.0	V
	TANSA	ALONG THANE	6.0	V
	ULHAS	KALYAN TO BADLAPUR	4.0-5.0	V
	VAITARNA	GANDHRE TO SARASHI	4.0	V
	VASHISTI	KHERDI TO DALVATNE	3.2-3.4	V
MANIPUR	IMPHAL	KANGLA MOAT TO SAMUROU	3.4-6.4	V
	IRIL	KANGLA SIPHAI TO UKHRUL	3.2	V
	KHUGA	KHUGA LAKE TO CHURACHANDPUR	3.1-3.6	V
	KHUJAIROK	MOREH TO MAOJANG	4.3	V
	LOKCHAO	BISHNUPUR TO LOKTAK LAKE	4.5	V
	MANIPUR	SEKMAIJAN TO THOUBAL	3.6-4.3	V
	THOUBAL	SHONG KONG TO PHADOM	3.5	V
	WANGJING	WANGJING TO HEIROK	4.1-4.3	V
MEGHALAYA	KYRHUKHLA	SUTNGA TO KHLIERIAT	10.0	IV
	NONBAH	NANGSTOIN TO WAHRIAT	6.0-7.5	IV
	UMTREW	BYRNIHAT TO MORANG DALA	6.2-8.0	IV
	LUKHA	MYNDIHATI TO SHYMPLONG	6.0	V
	MYNTDU	JOWAI TO PAMHADEM	5.2	V
MIZORAM	TIAU	ALONG CHAMPHAI	11.3	III
	TLAWNG	ALONG ZOBAWK, SAIRANG TO BAIRABI	3.1-6.7	IV
	TUIPUI	ALONG CHAMPHAI	8.2	IV
	TUIVAWL	ALONG KEIFANG	6.8	IV
	CHITE	ALONG ARMED VENG	3.7	V
	MAT	ALONG SERCHHIP	5.5	V
	SAIKAH	ALONG LAWNGTLAI	4.4	V
	TUIKUAL	ALONG SERCHHIP	6.0	V

	TUIRIAL	ALONG TUIRIAL, AIZWAL	3.4-4.6	V
NAGALAND	DZUNA	ALONG KOHIMA	6.0-13.0	III
	CHATHE	MEDZIPHEMA TO, DIMAPUR	7.0	IV
	DZU	KOHIMA TO DZUKO VALLEY	7.0	IV
	DZUCHA	ALONG KOHIMA	4.0	V
	SANO	ALONG KOHIMA	4.0	V
ODISHA	GURADIH NALLAH	ALONG ROURKELA	11.3	III
	KATHAJODI	CUTTACK TO URALI	5.8-11.2	III
	NANDIRAJHOR	D/S TALCHER	2.7 - 13	III
	DAYA	BHUBANESWAR TO BARAGARH	4.0-7.3	IV
	KUAKHAI	URALI TO BHUBANESWAR	6.7-7.7	IV
	BANGURU NALLAH	ALONG TALCHER RENGALI	3.2	V
	BHEDEN	ALONG BHEDEN	3.6	V
	BRAHAMANI	ROURKELA TO BIRITOL	5.8-6.0	V
	BUDHABALNAGA	MAHULIA TO BARIPADA	3.5	V
	KUSUMI	ALONG ANGUL TALCHER	3.2	V
	MAHANADI	SAMBALPUR TO PARADEEP	3.6	V
	MANGALA	ALONG PURI	5.7	V
	NAGAVALLI	JAYKAYPUR TO RAYAGADA	3.5	V
	NUNA	ALONG BIJIPUR, PURI	3.1	V
	RATNACHIRA	ALONG BHUBHNESHWAR, PURI	3.3	V
	RUSHIKULYA	PRATAPPUR TO GANJAM	3.4	V
	SABULIA	ALONG JAGANNATHPATNA, RAMBHA	5.0	V
	SERUA	KHANDAETA TO SANKHATRASA	4.8	V
PUDUCHERRY	ARASALAR	ALONG KARAIKAL	7.0	IV
	CHUNNAMBAR	ALONG ARIYANKUPPAM	6.0	V
PUNJAB	KALI BEIN	SULTANPUR LODHI TO CONF TO BEAS	9.0	IV
	BEAS	ALONG MUKERIAN	3.8	V
RAJASTHAN	BANAS	ALONG BISALPUR DAM, SWAROOPGANJ, NEWTA DAM	13.2	III
	CHAMBAL	SAWAIMADHOPUR TO KOTA	3.2-4.8	V
SIKKIM	MANEY KHOLA	ADAMPOOL TO BURTUKK	3.2-4.5	V
	RANGIT	DAM SITE (NHPC) TO TREVENI	3.2-3.8	V
	RANICHU	NAMLI TO SINGTAM	3.8-4.0	V
	TEESTA	MELLI TO CHUNGTHANG	4.0-4.3	V
TAMIL NADU	BHAVANI	SIRUMUGAI TO KALINGARAYAN	3.3-6.6	IV
	TAMBIRAPANI	PAPPANKULAM TOARUMUGANERI	3.1-4.0	V
TELANGANA	KARAKAVAGU	ALONG PALWANCHA	18.0	III
	MANER	WARANGAL TO SOMNAPALLI	6-20.0	III
	GODAVARI	BASAR TO KHAMMAM	4.0-9.0	IV
	KINNERSANI	ALONG PALWANCHA	10.0	IV
	KRISHNA	THANGADIGI TO WADAPALLY	5.0-6.0	V
TRIPURA	BURIGAON	ALONG BISHALGARH	3.9	V
	GUMTI	TELKAJILA TO AMARPUR	3.9	V
	HAORA	AGARTALA TO BISHRAMGANJ	3.2-4.0	V
	JURI	ALONG	4.9	V

		DHARMANAGAR		
	KHOWAI	ALONG TELIAMURA	3.3	V
	MANU	ALONG KAILASHAHAR	3.5-3.6	V
UTTAR PRADESH	GOMTI	SITAPUR TO VARANASI	3.1-18.0	III
	GANGA	KANNAUJ TO VARANASI	3.5-8.8	IV
	RAMGANGA	MURADABAD TO KANNAUJ	6.6	IV
	BETWA	HAMIRPUR TO WAGPURA	3.5-4.2	V
	GHAGHARA	BARHALGANJ TO DEORIA	4.0-4.5	V
	RAPTI	DOMINGARH TO RAJGHAT	4.7-5.9	V
	SAI	UNNAO TO JAUNPUR	4.0-4.5	V
	SARYU	AYODHYA TO ELAFATGANJ	4.3	V
UTTARAKHAND	KALYANI	D/S PANT NAGAR	16.0	III
	GANGA	HARIDWAR TO SULTANPUR	6.6	IV
	KOSI	SULTANPUR TO PATTIKALAN	6.4	IV
	NANDOUR	ALONG SITARGANJ	5.6-8.0	IV
	PILKHAR	IN THE VICINITY OF RUDRAPUR	10.0	IV
WEST BENGAL	CHURNI	SANTIPUR TOWN TO MAJHADIA	10.3-11.3	III
	DWARKA	TARAPITH TO SADHAK BAMDEB GHAT	5.6-17.0	III
	GANGA	TRIBENI TO DIAMOND HARBOUR	5.0-12.2	III
	DAMODAR	DURGACHAKM TO DISHERGARH	4.4-8.2	IV
	JALANGI	LAAL DIGHI TO KRISHNA NAGAR	8.3	IV
	KANSI	MIDNAPORE TO RAMNAGAR	9.9	IV
	MATHABHANGA	MADHUPUR TO GOBINDAPUR	8.5	IV
	BARAKAR	KULTI TO ASANSOL	5.7	V
	DWARAKESHWAR	ALONG BANKURA	1-5.6	V
	KALJANI	BITALA TO ALIPURDWAR	6.0	V
	KAROLA	JALPAIGURI TO THAKURER KAMAT	3.9	V
	MAYURKASHI	SURI TO DURGAPUR	5.2	V
	RUPNARAYAN	KOLAGHAT TO BENAPUR	3.1-5.8	V
	SILABATI	GHATAL TO NISCHINDIPUR	3.8	V
	TEESTA	SILIGURI TO PAHARPUR	3.3	V

48. In view of above, it is absolutely necessary that Action Plans are prepared to restore the polluted river stretches to the prescribed standards. The Action Plans may cover the following:

A) Source control

Source control includes industrial pollution control and treatment and disposal of domestic sewage as detailed below:-

(a) Industrial pollution control

(i) Inventorisation of industries

(ii) Categories of industry and effluent quality

(iii) Treatment of effluents, compliance with standards and mode of disposal of effluents

(iv) Regulatory regime.

(b) Channelization, treatment, utilization and disposal of treated domestic sewage.

(i) Identification of towns in the catchment of river and estimation of quantity of sewage generated and existing sewage treatment capacities to arrive at the gap between the sewage generation and treatment capacities;

(ii) Storm water drains now carrying sewage and sullage joining river and interception and diversion of sewage to STPs,

(iii) Treatment and disposal of septage and controlling open defecation,
(iv) Identification of towns for installing sewerage system and sewage treatment plants.

(B) River catchment/Basin Management-Controlled ground water extraction and periodic quality assessment

(i) Periodic assessment of groundwater resources and regulation of ground water extraction by industries particularly in over exploited and critical zones/blocks.

(ii) Ground water re-charging /rain water harvesting

(iii) Periodic ground water quality assessment and remedial actions in case of contaminated groundwater tube wells/bore wells or hand pumps.

(iv) Assessment of the need for regulating use of ground water for irrigation purposes.

(C) Flood Plain Zone.

(i) Regulating activities in flood plain zone.
(ii) Management of Municipal, Plastic, Hazardous, Bio-medical and Electrical and Electronic wastes.
(iii) Greenery development- Plantation plan.

(D) Ecological/Environmental Flow (E-Flow)

(a) Issues relating to E-Flow
(b) Irrigation practices

(E) Such other issues which may be found relevant for restoring water quality to the prescribed standards.

49. Model Action Plan for Hindon River, already prepared by the CPCB, may also be taken into account.

50. In view of above, we consider it necessary to issue the following directions:

i) All States and Union Territories are directed to prepare action plans within two months for bringing all the polluted river stretches to be fit at least for bathing purposes (i.e BOD < 3 mg/L and FC < 500 MPN/100 ml) within six months from the date of finalisation of the action plans.

ii) The action plans may be prepared by four-member Committee comprising, Director, Environment., Director, Urban Development., Director, Industries., Member Secretary, State Pollution Control Board of concerned State. This Committee will also be the Monitoring Committee for execution of the action plan. The Committee may be called "River Rejuvenation Committee" (RRC). The RRC will function under the overall supervision and coordination of Principal Secretary, Environment of the concerned State/Union Territory.

iii) The action plan will include components like identification of polluting sources including functioning/ status of STPs/ETPs/CETP and solid waste management and processing facilities, quantification and characterisation of solid waste, trade and sewage generated in the catchment area of polluted river stretch. The action plan will address issues relating to; ground water extraction, adopting good irrigation practices, protection and management of Flood Plain Zones (FPZ), rain water harvesting, ground water charging, maintaining minimum environmental flow of river and plantation on both sides of the river. Setting up of biodiversity parks on flood plains by removing encroachment shall also be considered as an important component for river rejuvenation. The action plan should focus on proper interception and diversion of sewage carrying drains to the Sewage Treatment Plant (STP) and emphasis should be on utilization of treated sewage so as to minimize extraction of ground or surface water. The action plan should have speedy, definite or specific timelines for execution of steps. Provision may be made to pool the resources, utilizing funds from State budgets, local bodies, State Pollution Control Board/ Committee and out of Central Schemes.

iv) The Action Plans may be subjected to a random scrutiny by a task team of the CPCB.

v) The Chief Secretaries of the State and Administrators/ Advisors to Administrators of the Union Territories will be personally accountable for failure to formulate action plan, as directed.

vi) All States and Union Territories are required to send a copy of Action Plan to CPCB especially w.r.t Priority I & Priority II stretches for approval.

vii) The States and the Union Territories concern are directed to set up Special Environment Surveillance Task Force, comprising nominees of District Magistrate, Superintendent of Police, Regional Officer of State Pollution Control Board and one person to be nominated by District Judge in his capacity as Chairman of Legal Services Authority on the pattern of direction of this Tribunal dated 07.08.2018, in *Original Application No. 138/2016 (T_{NHRC}), "Stench Grips Mansa's Sacred Ghaggar River (Suo-Matu Case).*

viii) The Task Force will also ensure that no illegal mining takes place in river beds of such polluted stretches.

ix) The RRC will have a website inviting public participation from educational institutions, religious institutions and commercial establishments. Achievement and failure may also be published on such website. The Committee may consider suitably rewarding those contributing significantly to the success of the project.

x) The RRCs will have the authority to recover the cost of rejuvenation in Polluter Pays Principle from those who may be responsible for the pollution, to the extent found necessary. In this regard, principle laid down by this Tribunal in order dated 13.07.2017 in *O.A No. 200 of 2014, M.C Mehta Vs. U.O.I* will apply. Voluntary donations, CSR contribution, voluntary services and private participation may be considered in consultation with the RRC.

51. We understand that the State Pollution Control Boards or other authorities are having funds deposited under the order of the Tribunal besides funds available

under Consent Mechanism. The said funds may be utilized for the purpose of expenditure for the Committees, including preparation and execution of action plans in accordance with the provisions contained in the Water Act, 1974.

52. A copy of this be sent by e-mail to all the concerned i.e. the Ministry of Water Resources, Ministry of Environment, Forest & Climate Change, Ministry of Housing and Urban Affairs, the Niti Ayog, National Mission for Clean Ganga, Central Pollution Control Board, Chief Secretaries of all the States and Union Territories for compliance.

53. The RRCs will send progress reports by e-mail at filing.ngt@gmail.com on or before 15.12.2018.

54. Needless to say, that order of National Green Tribunal is binding as a decree of Court and non-compliance is actionable by way of punitive action including prosecution, in terms of the National Green Tribunal Act, 2010.

55. Put up for consideration of the Report on 19th December, 2018.

....., CP
(Adarsh Kumar Goel)

.....,JM
(S.P. Wangdi)

.....,EM
(Dr. Nagin Nanda)

New Delhi
September 20, 2018

ANNEXURE-II

Item Nos. 04 & 05 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Original Application No. 673/2018
(M.A. No. 1777/2018)

WITH

Original Application No. 727/2018

News item published in "The Hindu" authored by Shri Jacob Koshy

Titled

"More river stretches are now critically polluted: CPCB

WITH

Dr. Tudi Indrasena Reddy & Anr. Applicant(s)

Versus

Union of India & Ors. Respondent(s)

Date of hearing: 19.12.2018

CORAM: **HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON**
HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER
HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

For Applicant(s): Mr. Sravan Kumar, Advocate in Original Application No. 727/2018

For Respondent(s): Mrs. Sharmila Upadhyay and Mr. Krishna Kanodia, Advocates for CPCB
Mr. Pradeep Misra, Advocate for UPPCB
Mrs. G. Indira, Mr. K.V. Jagdishvari and Ms. Mrinal K. Mondal, Advocates for Andeman & Nicobar Administration
Mr. Dinesh Jindal, LO GNCTD
Mr. Rajshree Choudhary, Mr. Guntur Pramod Kumar, Advocates for State of A.P.
Mr. Sanjay Kumar, Advocate for HPSPCB
Mr. Deepak K. Singh, Advocate for State of Telangana
Mr. Dhananjay Baijal and Mr. Nikhil Nayyar, Advocates for APPCB and TSPCB

ORDER

1. The issue taken up for consideration in this matter is abatement of pollution in 351 river stretches in the country, identified as such by the Central Pollution Control Board (CPCB). The said river stretches

are not meeting the prescribed standards of the water quality in terms of Bio-chemical Oxygen Demand (BOD). Existence of polluted river stretches is evidence to show that the State Pollution Control Boards (SPCBs) have failed to perform their statutory obligation to take appropriate action to achieve the objects of the Water (Prevention and Control of Pollution) Act, 1974.

2. Having regard to the importance of the issue and in the light of judgments of the Hon'ble Supreme Court in *M.C. Mehta Vs. Union of India & Ors.*[1], *M.C. Mehta Vs. Union of India And Ors.*[2] *(Calcutta Tanneries' Matter), Vellore Citizen' Welfare Forum Vs. Union of India*[3], *S. Jagannath Vs. Union of India & Ors.*[4], *And Quiet Flows The Maily Yamuna*[5], *Tirupur Dyeing Factory Owners Association Vs. Noyyal River Ayacutdars Protection Association & Ors.*[6] and *TechiTagi Tara Vs. Rajendra Singh Bhandari & Ors.*[7] and of this Tribunal in *Manoj Mishra Vs. Union of India*[8], *M.C. Mehta Vs. Union of India*[9], *Mahendra Pandey Vs. Union of India &Ors.*[10], *Sobha Singh & Ors. Vs. State of Punjab & Ors.*[11], *Nityanand Mishra Vs. State of M.P. & Ors*[12], Stench Grips Mansa's Sacred Ghaggar River (Suo-Moto Case)[13], *Doaba Paryavaran Samiti Vs. State of U.P. & Ors.*[14], *Arvind Pundalik Mhatre Vs. Ministry of Environment, Forest and Climate Change & Ors.*[15], *Meera Shukla Vs. Municipal Corporation, Gorakhpur & Ors.*[16], *Amresh Singh Vs. Union of India & Ors.*[17], *Sudarsan Das Vs. State of West Bengal & Ors.*[18], *Satish Kumar vs. U.O.I & Ors.*[19], this Tribunal noted

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[1] (1987) 4 SCC 463 ¶14 & (1988) 1 SCC 471
[2] (1997) 2 SSC 411
[3] (1996) 5 SSC 647
[4] (1997) 2 SCC 87
[5] (2009) 17 SSC 720
[6] (2009) 9 SSC 737
[7] (2018) 11 SCC 734
[8] O.A. No. 6/2012, 2015 ALL(I) NGT REPORTER (1) (DELHI) 139
[9] O.A No. 200 of 2014, 2017 NGTR (3) PB 1
[10] O.A. No. 58/2017
[11] O.A.No. 101/2014
[12] O.A. No. 456/2018
[13] O.A. No. 138/2016 (T_{NHRC})
[14] O.A. No. 231/2014
[15] O.A. No. 125/2018
[16] O.A. No. 116/2014
[17] Execution Application No. 32/2016 in O.A. No. 295/2016
[18] O.A.No. 173 of 2018
[19] O.A No. 56 (T_{HC}) of 2013

the need for steps to check discharge of untreated sewage and effluents, plastic waste, e-waste, bio-medical waste, municipal solid waste, diversion of river waters, encroachments of catchment areas and floodplains, over drawal of groundwater, river bank erosion on account of illegal sand mining. There is need for installation of Effluent Treatment Plants (ETPs), Common Effluent Treatment Plants (CETPs), Sewage Treatment Plants (STPs), Solid Waste Treatment and processing facilities etc.

3. It was also noted that BOD was required to be less than 3.0 mg/l, Dissolved Oxygen more than 5.0 mg/l and Faecal Coliform bacteria less than 500 MPN/100 ml.

4. The Tribunal also noted that as per data published by the CPCB in January, 2018, 30,042 million litres per day (MLD) of domestic sewage is generated from urban areas along the polluted river stretches. The installed sewage treatment capacity is about 16,846 MLD, leaving a gap of about 13,196 MLD (43.9%). There is a large gap in sewage treatment capacity and generation of sewage in urban areas.

5. The Tribunal also noted that on the one hand, there is need to enhance the river flow through intervention on the water sheds/catchment areas for conservation and recharge of rain water for subsequent releases during lean flow period in a year and on the other hand, there in need to dilute the pollutants in the rivers and streams so as reduce concentration to meet the desired level of water quality and extent of flow as per prescribed norms. This called for preparation of action plan including the water shed management by way of (a) Recognition phase (b) Restoration phase (c) Protection phase (d) Improvement phase. Attention was also required for agriculture and forest management and production, forage

production and pasture management, socio-economic conditions to achieve the objectives of watershed management.

6. The object of the action plan should be to restore the water quality for which model action plan prepared for river Hindon could be taken into account. Salient features of the action plan are to be:
   i. Execution of field surveys to assess pollution load generated by industries and sewage generated in a city or town discharging sewage and trade effluent into river Hindon and its tributaries.
   ii. Collating water quality monitoring data of river Hindon and its tributaries and assigning the class as per primary water quality criteria.
   iii. Water quality assessment of river in context of sewage/industrial drain outfalls with dilution and distance factors.
   iv. Laying time-limes for regulating industrial pollution control by ensuring consent compliance and closing the defaulting industries till they comply with the norms stipulated to them.
   v. Setting up of STPs in towns located in the river catchment and emphasis on utilization of treated sewage.
   vi. Adopting water conservation practices, ground water regulation, flood plain zone management and maintaining environmental flow.

7. The Tribunal also referred to different actions to be taken for different categories of the priorities for the action plan to deal with the source control, treatment of sewage, ground water, regulation, activities in flood plain zone, e-flow and other issues.

8. The direction issued by the Tribunal was to constitute River Rejuvenation Committee (RRC) comprising of Directors of Environment, Urban Development, Industries and Member

Secretaries of the SPCBs so as to identify pollution sources, functioning/status of STPs/ETPs/CETP and solid waste management and processing facilities, quantification and characterisation of solid waste, trade and sewage generated in the catchment areas of polluted river stretch. The action plan is to address issues relating to ground water extraction, adopting good irrigation practices, protection and management of Flood Plain Zones (FPZ), rain water harvesting, ground water charging, maintaining minimum environmental flow of river and plantation on both sides of the river, setting up of bio-diversity parks, interception and diversion of sewage carrying drains to the STP. The Chief Secretaries of States were to be personally accountable for failure to formulate the action plans.

9. This Tribunal directed action plans to be prepared within two months with the contemplation that water quality will be fit for bathing purposes within six months from the date of the action plan. We are informed that out of 29 States and 7 Union Territories (UTs), total of 16 States/UTs have prepared the draft action plans and 15 have failed to do so.

10. As already noted, contamination of water and deterioration of water quality are matters to be taken seriously as they affect public health and right of citizen to have access to potable drinking water. Unfortunately, in spite of categorical directions of this Tribunal in the order dated 20.09.2018 based on earlier judgments of the Hon'ble Supreme Court and this Tribunal, 15 States and UTs have failed to carry out the order of this Tribunal. The said States and UTs have not even taken the first requisite step of preparing an action plan, showing total insensitivity to such a serious matter and

public issue. With great regret, we may be left with no opinion but to take coercive action, if there is further failure.

11. We also find that for 16 States/UTs which have prepared action plans, the action plans are not complete. Base line data has not been given, preparation of action plans has been assigned to third parties, details of STPs etc. are also not given, timelines given are too long, status of e-flow has not been given, action plans are not proposed to be placed on websites to involve educational and other institutions and the public at large. The said States/ UTs may now give revised reports on or before 31.01.2019 to CPCB after complying with the deficiencies. The CPCB shall examine the action plans and only if they meet the scientific and technical yardstick shall approve the same and convey it to the respective States/UTs. The States/ UTs after its approval shall place/host these action plans on the respective website giving clear timelines for its execution, agencies responsible for its execution along with the matching budgetary provisions.

12. By way of last opportunity, we extend the time for preparation of action plans till 31.01.2019 with the stipulation that for every delay thereafter, compensation for damage to the environment will be payable by each of the States/ UTs at the rate of Rs. One Crore per month for each of the Priority- I and Priority- II stretches, Rs. 50 lacs per month for stretches in Priority- III and Rs. 25 lacs per month each for Priority- IV and Priority- V stretches. The payment will be the responsibility of the Chief Secretaries of the States/Administrators of the UTs and the amount may be recovered from the erring officers. The CPCB may prominently place the names of the defaulting States and UTs and a notice to this effect on its website.

13. The SPCBs and Pollution Control Committees of UTs may display the quality of the water of polluted river stretches on their respective websites within one month from today, alongwith action taken, if any, which may be revised every three months. The CPCB may also display the water quality of the river stretches and action/inaction by such States on its websites. It is made clear that BOD will not be the sole criteria to determine whether a particular river stretch is a polluted river stretch. Other parameters including Faecal Coliform (FC) bacteria will also be the criteria for classifying a stretch as polluted or otherwise. CPCB may devise within two weeks a mechanism for classification wherein two criteria pollutants that is BOD and FC shall henceforth be basis of classification in Priority Classes.

14. The CPCB may also examine whether river Rangpo in Sikkim falls in the category of polluted river stretches and if it is so, CPCB may give appropriate directions with regard to the said river also.

15. Any incomplete action plan will be treated as non-compliance. Performance guarantees are to be furnished for implementation of action plans within the above stipulated time to the satisfaction of Central Pollution Control Board in the sum of:

    (i) Rs. 15 crore for each of Priority I & II stretches

    (ii) Rs. 10 crore for each of Priority III stretches

    (iii) Rs. 5 crore for each of Priority IV & V stretches.

16. The CPCB will be at liberty to take further coercive measures against the States/UTs concerned and furnish a consolidated report to this Tribunal by 28.02.2019 by e-mail at ngt.filing@gmail.com.

List for further consideration on 08.04.2019.

Adarsh Kumar Goel, CP

S.P. Wangdi, JM

K. Ramakrishnan, JM

Dr. Nagin Nanda, EM

December 19, 2018
Original Application Nos. 673/2018 & 727/2018
R

ANNEXURE – III

Item No. 01 Court No. 1

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI

Original Application No.673/2018
(M.A. No. 1777/2018)

News item published in "The Hindu"authored by Shri Jacob Koshy titled
"More river stretches are nowcritically polluted : CPCB

Date of hearing: 08.04.2019

CORAM: **HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON**
HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

For Applicant(s): None

For Respondent (s): Ms. Sharmila Upadhyay, Advocate for CPCB
Dr. S.D. Singh, APCCF, Uttarakhand

ORDER

1. The question for consideration is the remedial action to tackle the major problem of rivers pollution which is manifested in the form of 351 identified polluted river stretches based on the data compiled by the Central Pollution Control Board (CPCB) on the basis of analysis of sample by the State Pollution Control Boards (State PCB) as per National Water Quality Monitoring Programme (NWQMP) undertaken by the CPCB.

2. The Tribunal considered the matter by way of chamber meeting on 10.09.2018 with the participation of all the Members of the Tribunal and the representatives of CPCB, the Ministry of Water Resources

74

(MoWR), the Ministry of Environment, Forest & Climate Change (MoEF&CC), the NITI Aayog, the National Mission for Clean Ganga (NMCG), Ministry of Housing and Urban Affairs (MoHUA), States of Maharashtra, Gujarat, Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Bihar, Punjab, Uttar Pradesh, NCT of Delhi and the Union Territory of Daman & Diu. (Some of the States appeared by video conferencing.

3. Present proceedings were initiated based on a news item dated 17.09.2018 in 'The Hindu" under the heading "More river stretches are now critically polluted: CPCB"[1].

4. According to the news item, 351 polluted river stretches have been noted by the Central Pollution Control Board (CPCB). 117 such stretches are in the States of Assam, Gujarat, and Maharashtra. The CPCB has apprised the concerned States of the extent of pollution in the rivers. Most polluted stretches are from Powai to Dharavi – with Biochemical Oxygen Demand (BOD) 250 mg/L; the Godavari - from Someshwar to Rahed – with BOD of 5.0-80 mg/L; the Sabarmati – Kheroj to Vautha – with BOD from 4.0-147 mg/L; and the Hindon – Saharanpur to Ghaziabad – with a BOD of 48-120 mg/L. The CPCB has a programme to monitor the quality of rivers by measuring BOD. BOD greater than or equal to 30mg/L is termed as 'Priority I', while that between 3.1-6 mg/L is 'Priority V'. The CPCB considers BOD less than 3mg/L an indicator of a healthy

[1] https://www.thehindu.com/news/national/more-river-stretches-critically-polluted cpcb/article24962440.ece

river. In its 2015 Report[2], the CPCB had identified 302 polluted stretches on 275 rivers, spanning 28 States and six Union Territories. The number of such stretches has now been found to be 351 in 2018.

5. The Water (Prevention and Control of Pollution) Act, 1974 prohibits use of any stream or well for disposal of polluted matter. Any person doing so is punishable.

6. Article 48A of the Constitution casts a duty on the State to protect and improve the environment. Article 51A imposes a fundamental duty on every citizen to protect and improve the environment. The Stockholm Declaration (1972) recommended prevention of pollution by adopting the 'Precautionary Principle', the 'Polluter Pays Principle' and the principle of 'Sustainable Development'.

7. In spite of above, in flagrant violation of law of the land, polluted water in the form of sewage, industrial effluents or otherwise has continued to be discharged in the water bodies including the rivers or the canals meeting the rivers. Violation of law is not only by private citizens but also statutory bodies including the local bodies and also failure of the regulatory authorities in taking adequate steps.

8. Above situation led to consideration of the matter by the Hon'ble Supreme Court in the context of pollution of river pallar in Tamil

[2]http://cpcb.nic.in/cpcbold/RESTORATION-OF-POLLUTED-RIVER-STRETCHES.pdf

Nadu[3] and river Noyyal. In M.C. Mehta Vs. Union of India & Ors.[4], directions to enforce the statutory provisions by the municipal bodies and the industries by stopping discharge of untreated sewage and effluents in River Ganga were issued by the Hon'ble Supreme Court. It was noted that the water pollution caused serious diseases, including Cholera and Typhoid. Water pollution could not be ignored and adequate measures for prevention and control are necessary. It was also observed that the educational institutions must teach at least for one hour in a week lessons relating to protection and improvement of environment. Awareness should be created by organizing suitable awareness programs. In the same matter, the issue of Calcutta tanneries was considered in M.C Mehta Vs. Union of India And Ors.[5], (Calcutta Tanneries' Matter). The tanneries were directed to be shifted by adopting the 'Precautionary Principle' so as to prevent discharge of effluents in the River Ganga.

9. This Tribunal also considered the issue of pollution of river Yamuna, in *Manoj Mishra Vs. Union of India*[6], river Ganga in *M.C. Mehta Vs. Union of India*[7], river Ramganga which is a tributary of river Ganga in *Mahendra Pandey Vs. Union of India & Ors.*[8], rivers Sutlej and Beas in the case of *Sobha Singh & Ors. Vs. State of Punjab & Ors.*[9], river Son in *Nityanand Mishra Vs. State of M.P. & Ors.*[10], river

[3] *Vellore Citizen' Welfare Forum v. Union of India*, (1996) 5 SSC 647
[4] (1988) 1 SCC 471
[5] (1997) 2 SSC 411
[6] *O.A. No. 6/2012, 2015 ALL(I) NGT REPORTER (1) (DELHI) 139*
[7] O.A No. 200 of 2014, 2017 NGTR (3) PB 1
[8] O.A. No. 58/2017
[9] O.A.No. 101/2014
[10] O.A. No. 456/2018

Ghaggar in Stench Grips Mansa's Sacred Ghaggar River (Suo-Moto Case)[11]", river Hindon in *Doaba Paryavaran Samiti Vs. State of U.P. & Ors.*[12], river Kasardi in *Arvind Pundalik Mhatre Vs. Ministry of Environment, Forest and Climate Change & Ors.*[13], River Ami, Tapti, Rohani and Ramgarh lake in *Meera Shukla Vs. Municipal Corporation, Gorakhpur & Ors.*[14], rivers Chenab and Tawi in the case of *Amresh Singh Vs. Union of India & Ors.*[15] and *Subarnarekha in Sudarsan Das Vs. State of West Bengal & Ors.*[16] and issued directions from time to time.

10. On 08.08.2018, in Doaba Paryavaran Samiti Vs. State of U.P. & Ors.[17], pollution in river Hindon was the subject matter of consideration. The matter was taken up on the allegation that 71 persons in Baghpat district died and more than 1000 persons were affected by diseases on account of pollution. The Tribunal noted that there was contamination of groundwater on account of pollution caused by sugar, paper, distilleries and tannery industries. An inspection team appointed by the Tribunal, found that 124 industries were causing pollution. It was noted that no punitive action has been initiated. The pollution caused included discharge of Mercury. The Tribunal observed that sources of contaminated water are required to be closed. The victims of diseases are required to be rehabilitated. A statement that there are 302 river stretches in the

[11] O.A. No. 138/2016 (T_{NHRC})
[12] O.A. No. 231/2014
[13] O.A. No. 125/2018,
[14] O.A. No. 116/2014,
[15] Execution Application No. 32/2016 in O.A. No. 295/2016,
[16] O.A.No. 173 of 2018
[17] O.A. No. 231/2014

country was noted and the CPCB was directed to identify at least 10 most critical stretches and prepare an action plan, in similar format as that of river Hindon[18]. The directions issued by the Tribunal include making functionaries of the statutory authorities accountable for their failure, making potable water available, sources of contamination being closed, action plans being prepared at District, State and National levels for restoration of water quality and reversing the damage. The Committee headed by a former Judge of High Court was also constituted to oversee the execution of the directions.

11. As already noted, well known causes of pollution of rivers are dumping of untreated sewage and industrial waste, garbage, plastic waste, e-waste, bio-medical waste, municipal solid waste, diversion of river waters, encroachments of catchment areas and floodplains, over drawl of groundwater, river bank erosion on account of illegal sand mining. In spite of directions to install Effluent Treatment Plants (ETPs), Common Effluent Treatment Plants (CETPs), Sewage Treatment Plants (STPs), and adopting other anti-pollution measures, satisfactory situation has not been achieved. Tough governance is the need of the hour. If pollution does not stop, the industry has to be stopped. If sewage dumping does not stop, local bodies have to be made accountable and their heads are to be prosecuted. Steps have to be taken for awareness and public involvement.

[18]Hindon action plan prepared by CPCB is explained in para 46

12. River Water is considered to be fit for bathing when it meets the criteria of having Bio-chemical Oxygen Demand (BOD) less than 3.0 mg/L, Dissolved Oxygen more than 5.0 mg/L and Faecal Coliform bacteria to be less than 500 MPN/100 ml.

13. As already noted, according to latest assessment by the CPCB, there are 351 polluted river stretches in India i.e. where the BOD content is more than 3mg/L. The plan of CPCB is to target enhancement of river flow. The plan for restoration of polluted river stretches is proposed to be executed through two-fold concepts. One concept is to target enhancement of river flow through interventions on the water sheds/catchment areas for conservation and recharge of rain water for subsequent releases during lean flow period in a year. This concept will work on dilution of pollutants in the rivers and streams to reduce concentration to meet desired level of water quality. Other concept is of regulation and enforcement of standards in conjunction with the available flow in rivers /streams and allocation of discharges with stipulated norms.

14. In view of above, this Tribunal found it necessary to take up the matter and direct preparation and execution of river action plans to control pollution and restore water quality of the river as per norms within reasonable time. There have been successful river cleaning programmes in other countries such as relating to rivers Thames(England), Rhine(Germany) and Danube(France). There is no reason why our polluted river stretches cannot be restored.

15. Accordingly, vide order dated 20.09.2018, the Tribunal issued following directions:-

" i) *All States and Union Territories are directed to prepare action plans within two months for bringing all the polluted river stretches to be fit at least for bathing purposes (i.e BOD < 3 mg/L and FC < 500 MPN/100 ml) within six months from the date of finalisation of the action plans.*

ii) *The action plans may be prepared by four-member Committee comprising, Director, Environment, Director, Urban Development., Director, Industries., Member Secretary, State Pollution Control Board of concerned State. This Committee will also be the Monitoring Committee for execution of the action plan. The Committee may be called "River Rejuvenation Committee" (RRC). The RRC will function under the overall supervision and coordination of Principal Secretary, Environment of the concerned State/Union Territory.*

iii) *The action plan will include components like identification of polluting sources including functioning/ status of STPs/ETPs/CETP and solid waste management and processing facilities, quantification and characterisation of solid waste, trade and sewage generated in the catchment area of polluted river stretch. The action plan will address issues relating to; ground water extraction, adopting good irrigation practices, protection and management of Flood Plain Zones (FPZ), rain water harvesting, ground water charging, maintaining minimum environmental flow of river and plantation on both sides of the river. Setting up of biodiversity parks on flood plains by removing encroachment shall also be considered as an important component for river rejuvenation. The action plan should focus on proper interception and diversion of sewage carrying drains to the Sewage Treatment Plant (STP) and emphasis should be on utilization of treated sewage so as to minimize extraction of*

ground or surface water. The action plan should have speedy, definite or specific timelines for execution of steps. Provision may be made to pool the resources, utilizing funds from State budgets, local bodies, State Pollution Control Board/ Committee and out of Central Schemes.

iv) *The Action Plans may be subjected to a random scrutiny by a task team of the CPCB.*

v) *The Chief Secretaries of the State and Administrators/ Advisors to Administrators of the Union Territories will be personally accountable for failure to formulate action plan, as directed.*

vi) *All States and Union Territories are required to send a copy of Action Plan to CPCB especially w.r.t Priority I & Priority II stretches for approval.*

vii) *The States and the Union Territories concern are directed to set up Special Environment Surveillance Task Force, comprising nominees of District Magistrate, Superintendent of Police, Regional Officer of State Pollution Control Board and one person to be nominated by District Judge in his capacity as Chairman of Legal Services Authority on the pattern of direction of this Tribunal dated 07.08.2018, in Original Application No. 138/2016 (TNHRC), "Stench Grips Mansa's Sacred Ghaggar River (Suo-Motu Case).*

ix) *The Task Force will also ensure that no illegal mining takes place in river beds of such polluted stretches.*

x) *The RRC will have a website inviting public participation from educational institutions, religious institutions and commercial establishments. Achievement and failure may*

82

also be published on such website. The Committee may consider suitably rewarding those contributing significantly to the success of the project."

16. The Tribunal suggested that action plan prepared for River Hindon could be taken as a model for restoration of water quality.[19] Salient features of the said Action Plan are:

i. Execution of field surveys to assess pollution load generated by industries and sewage generated in a city or town discharging sewage and trade effluent into river Hindon and its tributaries.

ii. Collating water quality monitoring data of Hindon and its tributaries and assigning the class as per primary water quality criteria.

iii. Water quality assessment of river in context of sewage/industrial drain outfalls with dilution and distance factors.

iv. Laying time-limes for regulating industrial pollution control by ensuring consent compliance and closing the defaulting industries till they comply with the norms stipulated to them.

v. Setting up of STPs in towns located in the river catchment and emphasis on utilization of treated sewage.

vi. Adopting water conservation practices, ground water regulation, flood plain zone management and maintaining environmental flow.

[19] http://cpcb.nic.in/NGT/CPCB-Reply-Affidavit-Report-on-Hindon-Action-Plan.pdf

17. The data for the polluted river stretches indicated that the river stretches were identified in 5 categories as follows:-

I. <u>Criteria for Priority I</u>

(a) Monitoring locations exceeding BOD concentration 30 mg/L has been considered as it is the standard of sewage treatment plant and in river it appears without dilution.(River locations having water quality exceeding discharge standards for BOD to fresh water sources)

(b) All monitoring locations exceeding BOD concentration 6 mg/L on all occasions.

(c) Monitoring locations exceeding 3 mg/L BOD are not meeting desired water quality criteria but does not affect to Dissolved Oxygen level in water bodies. If BOD exceeds 6mg/L in water body, the Dissolved Oxygen is reduced below desired levels.

(d) The raw water having BOD levels upto 5 mg/L are does not form complex chemicals on chlorination for municipal water supplies. Hence the water bodies having BOD more than 6 mg/L are considered as polluted and identified for remedial action.

II. <u>Criteria for Priority II</u>

(a) Monitoring locations having BOD between 20-30 mg/L.

(b) All monitoring locations exceeding BOD concentration 6 mg/L on all occasions.

III. <u>Criteria for Priority III</u>

(a) Monitoring locations having BOD between 10-20 mg/L.

(b) All monitoring locations exceeding BOD concentration 6 mg/L on all occasions.

IV. <u>Criteria for Priority IV</u>

(a) Monitoring locations having BOD between 6-10 mg/L.

V. Criteria for Priority V

(a) Monitoring locations having BOD between 3-6 mg/l.
(b) The locations exceeding desired water quality of 3mg/l BOD.

18. Table showing location and categories are reproduced in the said order. The action plans were required to cover the following:-

A) Source control

Source control includes industrial pollution control and treatment and disposal of domestic sewage as detailed below:-

(a) Industrial pollution control

(i) Inventorisation of industries

(ii) Categories of industry and effluent quality

(iii) Treatment of effluents, compliance with standards and mode of disposal of effluents

(iv) Regulatory regime.

(b) Channelization, treatment, utilization and disposal of treated domestic sewage.

(i) Identification of towns in the catchment of river and estimation of quantity of sewage generated and existing sewage treatment capacities to arrive at the gap between the sewage generation and treatment capacities;

(ii) Storm water drains now carrying sewage and sullage joining river and interception and diversion of sewage to STPs,

(iii) Treatment and disposal of septage and controlling open defecation,

(iv) Identification of towns for installing sewerage system and sewage treatment plants.

(B) River catchment/Basin Management-Controlled ground water extraction and periodic quality assessment

(i) Periodic assessment of groundwater resources and regulation of ground water extraction by industries particularly in over exploited and critical zones/blocks.

(ii) Ground water re-charging /rain water harvesting

(iii) Periodic ground water quality assessment and remedial actions in case of contaminated groundwater tube wells/bore wells or hand pumps.

(iv) Assessment of the need for regulating use of ground water for irrigation purposes.

(C) Flood Plain Zone.

(i) Regulating activities in flood plain zone.
(ii) Management of Municipal, Plastic, Hazardous, Bio-medical and Electrical and Electronic wastes.
(iii) Greenery development- Plantation plan.

(D) Ecological/Environmental Flow (E-Flow)

(a) Issues relating to E-Flow
(b) Irrigation practices

(E) Such other issues which may be found relevant for restoring water quality to the prescribed standards.

19. The matter was thereafter taken up for consideration on 19.12.2018. It was noted that contamination of water and deterioration of water quality are matters to be taken seriously as they affect public health and right of citizen to have access to potable drinking water. Unfortunately, in spite of categorical directions of this Tribunal in the order dated 20.09.2018 based on earlier judgments of the Hon'ble Supreme Court and this Tribunal, 15 States and UTs failed to carry out the order of this Tribunal. The said States and UTs had not even taken the first requisite step of preparing action plans, showing total insensitivity to such a serious matter and public issue.

20. We also found that for 16 States/UTs which had prepared action plans, the action plans are not complete. Base line data was not been given, Preparation of action plans was assigned to third parties. Details of STPs etc. were not given. Timelines given were too long. Status of e-flow was not been given, action plans were not proposed to be placed on websites to involve educational and other institutions and the public at large. The said States/ UTs were directed to give revised reports on or before 31.01.2019 to CPCB after complying with the deficiencies. The CPCB was to examine the action plans and if they met the scientific and technical yardstick, was to approve the same and convey it to the respective States/UTs. The States/ UTs, after approval were to place/host these action plans on the respective website giving clear timelines for execution, agencies responsible for execution along with the matching budgetary provisions.

21. By way of last opportunity, we extended the time for preparation of action plans till 31.01.2019 with the stipulation that for delay thereafter, compensation for damage to the environment was to be payable by each of the States/ UTs at the rate of Rs. One Crore per month for each of the Priority- I and Priority- II stretches, Rs. 50 lacs per month for stretches in Priority- III and Rs. 25 lacs per month each for Priority- IV and Priority- V stretches. The payment was to be the responsibility of the Chief Secretaries of the States/Administrators of the UTs and the amount could be recovered from the erring officers. The CPCB was to prominently

place the names of the defaulting States and UTs and a notice to this effect on its website.

22. The SPCBs and Pollution Control Committees of UTs were to display the quality of the water of polluted river stretches on their respective websites within one month, along with action taken, if any, which was to be revised every three months. The CPCB was also to display the water quality of the river stretches and action/inaction by such States on its websites. It was made clear that BOD will not be the sole criteria to determine whether a particular river stretch is a polluted river stretch. Other parameters including Faecal Coliform (FC) bacteria will also be the criteria for classifying a stretch as polluted or otherwise. CPCB was to devise within two weeks a mechanism for classification wherein two criteria pollutants that is BOD and FC shall henceforth be basis of classification in Priority Classes.

23. The Tribunal directed that the CPCB may also examine whether river Rangpo in Sikkim falls in the category of polluted river stretches and if it is so, CPCB may give appropriate directions with regard to the said river also.

24. Further direction in the order dated 19.12.2018 is that any incomplete action plan will be treated as non-compliance. Performance guarantees are to be furnished for implementation of action plans within the above stipulated time to the satisfaction of Central Pollution Control Board in the sum of:

88

(i) Rs. 15 crore for each of Priority I & II stretches

(ii) Rs. 10 crore for each of Priority III stretches

(iii) Rs. 5 crore for each of Priority IV & V stretches.

25. We have taken up the matter for consideration to consider further progress. Apart from response of other parties, consolidated and updated reports have been filed by the CPCB on 05.04.2019.

26. Before proceeding further, we may also note that vide order dated 16.01.2019 in Original Application No. 606 of 2018, dealing with the issue of compliance of Municipal Solid Waste Management Rules and other important issues, the Tribunal directed presence of Chief Secretaries of all States/ Union Territories on specified dates before this Tribunal in person after monitoring the progress in their respective States on several issues, including the issue of polluted river stretches. By now, Chief Secretaries of Himachal Pradesh, Haryana, Punjab, Delhi, Bihar, Odisha, Uttarakhand, and West Bengal and Advisor to Administrator, Chandigarh have appeared in person before this Tribunal and indicated progress in the said States/UTs which was not found to be satisfactory and further directions have been issued on 05.03.2019, 06.03.2019, 07.03.2019, 11.03.2019, 15.03.2019, 26.03.2019, 07.03.2019, 26.03.2019 and 02.04.2019.

27. Coming to the updated consolidated report dated 05.04.2019 filed by the CPCB, we find that 28 States and 3 Union Territories have constituted River Rejuvenation Committees (RRCs). The CPCB

constituted a 'Task Team' for scrutiny of the action plans under the Chairmanship of Member Secretary, CPCB. So far, CPCB has received 41 out of 45 action plans with reference to P-I, 14 out of 16 action plans with reference to P-II and total 182 action plans received with reference to P-III to P-V polluted river stretches. 6 out of 61 action plans in respect of P-I and P-II have not been received from the States of Assam (P-I: 3 viz., Bharalu, Borsola, Silsako) and P-II:1 (Sorusola)), Manipur (P-II: 1 viz., Nambu) and Uttar Pradesh (P-I: viz., river Hindon). It is also submitted that the action plan in respect of River Hindon is required to be implemented by the Government of Uttar Pradesh in compliance to the Hon'ble NGT Orders passed in Original Application No. 231/2014 & Original Application No.66/2015. State-wise Identified Polluted River stretches and the Status of Action Plans received (as on 03.04.2019) is given in Table 2.

"Table 2. State-wise Identified Polluted River stretches and the Status of Action Plans as received by CPCB (as on 04.04.2019)

Name of the State / UT	Total No. of Identified Polluted River Stretches (PRS)	Priority I Identified Polluted River Stretches		Priority II Identified Polluted River Stretches		Priority – III to V Identified Polluted River Stretches		Total Action Plans Received
		No. of P-I PRS	Action Plans received w.r.to P-I	No. of P-II PRS	Action Plans received w.r.to P-II	No. of P-III to P-V	Action Plans received w.r.to P-III to P-V	
Andhra Pradesh	5	0	0	0	0	5	5	5
Assam	***44***	***3***	***0***	***1***	***0***	***40***	***1***	***1***
Bihar	6	0	0	0	0	6	6	6
Chhattisgarh	5	0	0	0	0	5	5	5
DD & DNH	1	1	1	0	0	0	0	1

Delhi	1	1	1	0	0	0	0	1
Goa	11	0	0	0	0	11	9	9
Gujarat	20	5	5	1	1	14	14	20
Haryana	2	2	2	0	0	0	0	2
Himachal Pradesh	7	1	1	1	1	5	5	7
Jammu & Kashmir	9	0	0	1	1	8	8	9
Jharkhand	7	0	0	0	0	7	7	7
Karnataka	17	0	0	0	0	17	17	17
Kerala	21	1	1	0	0	20	0	1
Madhya Pradesh	22	3	3	1	1	18	0	4
Maharashtra	53	9	9	6	6	38	38	53
Manipur	***9***	***0***	***0***	***1***	***0***	***8***	***0***	***0***
Meghalaya	7	2	2	0	0	5	5	7
Mizoram	9	0	0	0	0	9	0	0
Nagaland	6	1	1	0	0	5	5	6
Odisha	19	1	1	0	0	18	8	9
Puducherry	2	0	0	0	0	2	2	2
Punjab	4	2	2	0	0	2	2	4
Rajasthan	2	0	0	0	0	2	2	2
Sikkim	4	0	0	0	0	4	4	4
Tamil Nadu	6	4	4	0	0	2	2	6
Telangana	8	1	1	2	2	5	5	8
Tripura	6	0	0	0	0	6	6	6
Uttar Pradesh	***12***	***4***	***3***	***0***	***0***	***8***	***6***	***9***
Uttarakhand	9	3	3	1	1	5	5	9
West Bengal	17	1	1	1	1	15	15	17
Grand Total	**351**	**45**	**41**	**16**	**14**	**290**	**182**	**237**

28. State-wise status of action plans received and the action plans recommended for approval by the CPCB Task Team is enclosed as Table 3.

"Table 3. State-wise status of action plans received and the action plans recommended for approval by the CPCB Task Team w.r.t Priority I & Priority II Polluted Rivers (as on 03.04.2019)

STATE	Total Identified Polluted River	Identified PRS Priority	Identified Priority	No. of Action Plans	No. of Action Plans Not	Action Plans Not	Action plans approved subject

	Stretches (PRS) Priority-I & Priority II	-I	- II	Received	Received	Recommended for approval	to conditions
ASSAM	4	3	1	0	4	-	0
DAMAN, DIU AND DADRA NAGAR HAVELI	1	1	0	1	0	-	1
DELHI	1	1	0	1	0	1	0
GUJARAT	6	5	1	6	0	-	6
HARYANA	2	2	0	2	0	-	2
HIMACHAL PRADESH	2	1	1	2	0	-	2
JAMMU & KASHMIR	1	0	1	1	0	-	1
KERALA	1	1	0	1	0	-	1
MADHYA PRADESH	4	3	1	4	0	-	4
MAHARASHTRA	15	9	6	15	0	-	15
MANIPUR	1	0	1	0	1	-	0
MEGHALAYA	2	2	0	2	0	2	0
NAGALAND	1	1	0	1	0	1	0
ODISHA	1	1	0	1	0	-	1
PUNJAB	2	2	0	2	0	-	2
TAMIL NADU	4	4	0	4	0	4	0
TELANGANA	3	1	2	3	0	-	3
UTTAR PRADESH	4	4	0	3	1	3	0
UTTARAKHAND	4	3	1	4	0	4	0
WEST BENGAL	2	1	1	2	0	-	2
TOTAL	**61**	**45**	**16**	**55**	**6**	**15**	**40**

29. 55 out of 61 total action plans received so far, 40 action plans pertaining to the States /UT of Daman [P-I (01)], Gujarat [P-I (5), P-

II (01)], Haryana [P-I (01), P-II (01)], Himachal Pradesh [P-I (01), P-II (1)], J & K [P-II (01)], Kerala [P-I (01)], Madhya Pradesh [P-I (03), P-II (1)], Maharashtra [P-I (09), P-II (06)], Odisha [P-I (1], Punjab [P-I (02)], Telangana [P-I (01), P-II (02)] and West Bengal [P-I (01) and P-II (01)] have been approved along with the conditions. 15 action plans received require further improvement with reference to either of the following:

(i) Identification of polluting sources including drains contributing to river pollution, functioning status of STPs/ETPs/CETP and solid waste management and processing facilities;

(ii) Map showing Polluted River, its tributaries, drains, major towns, industrial estates, location of STPs/CETPs

(iii) Detailed gap analysis w.r.t town-wise water consumption (including ground water consumption), sewage generation, existing infrastructure in the catchment area of the and the gap analysis;

(iv) Detailed gap analysis w.r.t industrial water consumption, wastewater generation, existing infrastructure for treatment of industrial effluent (both captive ETPs/CETPs and their performance assessment), gap analysis w.r.to the industrial effluent management in the catchment area;

(v) Quantification and characterisation of waste (such as solid waste, industrial hazardous waste, bio-medical waste, E-Waste), STP sludge management, existing infrastructure and detailed gap analysis;

(vi) Latest Water quality of polluted river, its tributaries, drains with flow details and ground water quality in the catchment of polluted river;

(vii) Aspects such as ground water extraction, adopting good irrigation practices, protection and management of Flood

Plain Zones (FPZ), rain water harvesting, ground water charging, maintaining minimum environmental flow of river (by having watershed management provisions), plantation on both sides of the river, setting up biodiversity parks on flood plains by removing encroachment., proper interception and diversion of sewage carrying drains to Sewage Treatment Plant (STP), upgradation of existing sewage treatment plants if not in a position to comply with effluent discharge norms, emphasis on utilization of treated sewage so as to minimize extraction of ground or surface water be included,

(viii) Speedy, definite or specific timelines for execution of action plans and the estimated budget including the monitoring agency

(ix) Achievable goals with specific timelines for restoration of water quality of polluted rivers

(x) Organisation-wise action plans with timelines and the estimated budget for implementation of action plans.

30. It has also been stated that water quality of polluted river stretches has not been displayed by Manipur, Sikkim, Tamil Nadu and Delhi UT on their respective websites.

31. CPCB has suggested that as against the timeline laid down by this Tribunal, longer timeline may be required where infrastructure has to be set up and where no infrastructure was possible, the polluted river stretches be diluted by using fresh water, preventing disposal of waste or adoption of bio-remediation/provision of green bridges/proper O&M of existing STPs, ensuring proper disposal of STP sludges, ODF, etc. In case of industries, 100 % strict compliance to the discharge norms by the industries should be

ensured and in case of non-compliance, penalty or environmental compensation as per guidelines of CPCB on such industries should be levied in addition to prosecution under various provisions of Rules, as necessary.

32. CPCB has further suggested that scale of performance guarantee should be as follows:

"

No. of Polluted River Stretches in a State/UT	Suggested Performance Guarantee (in Rupees)
> 10	15 Crore
5 to 10	10 Crore
< 5	5 Crore

"

33. We have heard Mr. A. Sudhakar, Scientist-E, In-charge Member Secretary, CPCB and Dr. A.B. Akolkar, Member of Task Team, CPCB. They have assisted this Tribunal by highlighting various aspects of the problem. None appears for any other State/UT or authority.

34. As already noted, pollution of 351 river stretches has caused serious threat to safety of water and environment. On account of use of polluted water in irrigation, there is threat to food safety. On account of consumption of polluted water in absence of any other source of drinking water being available and partly on account of ignorance of the persons consuming such water, health of human being is threatened, apart from the aquatic flora and fauna, animals wild and domestic who may consume such water. It is therefore,

necessary to have regular hygienic survey of the rivers particularly with reference to pathogenic organisms having impact on human health directly or indirectly. It is also important to note that biological health of the rivers is an important aspect. Much of the important biodiversity is lost on account of severe pollution in the rivers. There has to be a regular study of the Indian rivers with regard to biological heath and its diversity. We understand that bio-mapping of rivers and setting biological goals/criteria is part of River Rejuvenation Programmes in some countries. There is threat to the environmental rule of law of the country.

35. These are substantial questions relating to the environment. For enforcing legal right to clean environment, which is also a fundamental right, this Tribunal has to pass appropriate orders for relief to the victims of pollution and for restoration of the environment even in absence of an identified victim. All the States and UTs have been duly put to notice of the present case.

36. In this endeavor, this Tribunal directed constitution of RRCs by the concerned States/UTs by including Departments of Environment, Urban Development, Industries and the Pollution Control Boards/Pollution Control Committees and further directions to the Chief Secretaries of the States/UTs to monitor the progress. At the national level, CPCB has been required to assist the Tribunal by way of compiling the data and furnishing its views. A copy of order dated 29.09.2018 was directed to be forwarded to the Niti Ayog, Ministry of

Water Resources, Ministry of Environment, Forest & Climate Change, Ministry of Housing and Urban Affairs, National Mission for Clean Ganga, apart from other authorities as the said authorities were represented in a chamber meeting before this Tribunal to consider the problem of pollution of rivers.

37. Having regard to the exercise already undertaken in pursuance of orders of this Tribunal, we find that while substantial number of States have framed their action plans within the extended time i.e. 31.01.2019, some have defaulted in spite of clear stipulation that failure will require this Tribunal to direct payment of compensation for the damage to the environment on account of inaction of the said States.[20] No explanation has been given by defaulting States. The order has attained finality.

38. Accordingly, States of Assam, Manipur and Uttar Pradesh are liable to pay compensation in terms of order dated 19.12.2018 for delay after 31.1.2019 till the action plans are furnished for failing to submit action plan in respect of four river stretches. The said amount may be deposited with the CPCB within one month. CPCB may use the amount for restoration of environment as per law. It will be open to the States to recover the amount from the erring officers. For delay, interest @ 12% will be payable. Responsibility for payment will be of Chief Secretaries. CPCB is at liberty to seek enforcement of this order as decree of Civil Court by civil imprisonment of Chief Secretaries concerned or attachment of salary

[20]Para 12, Order dated 31.01.2019

or assets as per Section 51, Code of Civil Procedure read with Section 25 of the National Green Tribunal Act, 2010. It is also permissible to initiate prosecution under Section 26 of NGT Act, as noncompliance of order of NGT is a criminal offence.

39. The report of the CPCB further shows that 6 States have furnished incomplete action plan as given in Table 3 quoted above. The said six states i.e. Delhi, Meghalaya, Nagaland, Tamil Nadu, Uttar Pradesh and Uttarakhand are liable to pay compensation as per order dated 19.12.2018 for delay after 31.1.2019 at the scale of 50% of the compensation payable by the States who have failed to submit any action plan.

None of the above defaulting States except the State of Uttarakhand is represented before this Tribunal. There is no satisfactory explanation by any of the States, including the State of Uttarakhand who is represented by an officer. This part of order will be governed by earlier para for interest and enforcement. The requirement to pay compensation will continue till action plans are furnished or completed. The action plans may be uploaded on the websites of the CPCB as well as respective States/UTs and the MoEF&CC after former approval by the CPCB.

40. As regards 108 river stretches for which action plans have not still been furnished for Priority-III, Priority-IV and Priority-V river stretches, we direct that same scale of compensation will apply for

failure to furnish action plans in further extended timeline upto 30.06.2019. The Action Plans not so far furnished, as required by earlier order of this Tribunal, may also now be furnished upto 30.06.2019.

41. We accept the proposal of CPCB to revise the scale of performance guarantee with regard to timeline. We also accept the suggestions of CPCB to extend the timeline for execution of action plans to the extent that upper limit for execution of the action plans will be two years from 01.04.2019 and the monitoring of the action plans may be done not only at the level of the Chief Secretaries of the States/UTs but also by the CPCB.

42. We direct that CPCB with SPCBs and PCCs to launch nationwide programme on biodiversity monitoring and indexing of the rivers to assess the efficacy of river cleaning programme. Further, for safety of human health and maintaining sanctity of the rivers, regular hygienic surveys of the rivers should be carried out with reference to fecal coliform and fecal streptococci, as indicated in the primary water quality criteria for bathing waters. Nodal agency will be CPCB.

43. Having given due consideration to the serious issue and inadequacy of success achieved so far, we find it necessary to constitute a Central Monitoring Committee to undertake a national initiative by way of preparation and enforcement of a national plan to make river stretches pollution free comprising a senior representative of NITI

Aayog, Secretaries Ministry of Water Resources, Ministry of Urban Development, Ministry of Environment, Forest and Climate Change, Director General, National Mission for Clean Ganga and Chairman CPCB. Chairman CPCB will be the nodal authority for coordination. Senior most among them will preside over the deliberations.

44. The Central Monitoring Committee will also co-ordinate with the RRCs of the States and oversee the execution of the action plans, taking into account the timelines, budgetary mechanism and other factors. Chief Secretaries of States will be the nodal agency at State level. The Chief Secretaries of the States may undertake review of progress of RRCs by involving concerned Secretaries of Department of Urban Development, Environment, Industries, Irrigation and Public Health, Health etc.

45. We also direct the MoEF & CC to consider a policy for giving environmental awards to outstanding persons (natural and juristic) and Institutions/States and introducing dis-incentives for non compliant states. Such scheme may be framed preferably before 30.06.2019.

46. First meeting of the Central Monitoring Committee may be held by 30.06.2019. The Central Monitoring Committee may consider identifying experts, best practices and models for use of treated water, including plan to supply untreated sewage for a price or

otherwise so that the concerned needy party can treat and utilize such water as is reportedly being done at Surat in Gujarat, Nagpur in Maharashtra and Bhilwada in Rajasthan or any other place. Use of treated water for agriculture or other purpose may save potable surface and ground water.

47. The Central Monitoring Committee may give its report by 31.07.2019.

A copy of this order be furnished to CPCB for being mailed to all concerned.

List for further consideration on 05.08.2019.

Adarsh Kumar Goel, CP

K. Ramakrishnan, JM

Dr. Nagin Nanda, EM

April 08, 2019
Original Application No.673/2018
(M.A. No. 1777/2018)
A & DV

ANNEXURE - IV

HON'BLE NGT MATTER
TIME BOUND
Date: 16.04.2019

F No- A-14011/1/2019-WQM-I 517-590 **By Speed Post**

To

1. PS to Chief Secretary, (All States/ UTs)
2. The Member Secretary, (All States/ UTs)

Sub: Hon'ble NGT order dated 08.04.2019 in O. A. No 673 of 2018 in the matter of 'News item published in the Hindu authored by Shri Jacob Koshy titled "More river Stretches are now critically polluted: CPCB', with Dr. Tudi Indrasena Reddy &Ors. Versus UOI & Ors-reg

Sir,

Kindly refer to Hon'ble NGT order dated 08.04.2019 in O. A. No.673 of 2018 on the captioned subject. The afore-said order may be downloaded from Hon'ble NGT website or CPCB website at https://cpcb.nic.in/NGTMC/NGT-Order-08.04.2019.pdf. As per the afore-said Hon'ble NGT order dated 08.04.2019:-

- Assam/ Manipur/ Uttar Pradesh State are liable to pay compensation in terms of order dated 19.12.2018 for delay in submission of action plans within a month to CPCB. Details are enclosed as **Annexure – I.**
- Delhi/ Meghalaya/ Nagaland/ Tamil Nadu/ Uttar Pradesh/ Uttarakhand State/UT are liable to pay compensation as per order dated 19.12.2018 for delay at the scale of 50% of the compensation payable by the States which have failed to submit complete action plans. Details are enclosed as **Annexure – II**:
- States/UTs, after approval of action plans by CPCB, were to place the action plans on their respective websites giving clear timelines for execution, implementing agencies, Budget Estimates and Pooling of resources from State Budget, Local Bodies, SPCB and out of the central schemes if any, whichever is applicable.
- States/UTs which are yet to submit action plans for Priority-III, Priority-IV and Priority-V river stretches, are required to take action for submission to CPCB by 30.06.2019.
- All SPCBs/ PCCs are also required to launch programme relating to Biodiversity monitoring and indexing of the rivers within the State/UT jurisdiction, to assess the efficacy of river cleaning programme apart from carrying out regular hygienic surveys of the rivers w. r. to Fecal Coliform and Fecal Streptococci as indicated in the primary water quality criteria for bathing waters.
- All the approved action plans to be implemented within 2 years w.e. from 01.04.2019 by the concerned States/ UTs so as to achieve desired water quality goals.
- States/ UTs are also required to submit performance guarantee as per revised scale prescribed at para no 32 of Hon'ble NGT order dated 08.04.2019 i.e. for No. of Polluted River Stretches in a State/UT > 10; 5 to 10 & < 5, the performance guarantee in Rupees 15 Crore, 10 Crore & 5 Crore respectively. (State wise performance guarantee to be submitted is annexed as **Annexure - III.**

All the action plans where infrastructure is required to be created are required to be executed within two years with effect from 01.04.2019 and monitoring of action plans may be done at the level of respective Chief Secretary of State Govt. /UT Administration.

It is requested to take necessary action for ensuring compliance to Hon'ble NGT order dated 08.04.2019 within the stipulated timelines and action taken reports also be filed before Hon'ble NGT periodically, with a copy endorsed to CPCB to apprise Hon'ble NGT accordingly.

Yours faithfully,

(A. Sudhakar)
Member Secretary

Encl: As above

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निर्गत.....
दिनांक...

102

2094 ANNEXURE-V

HON'BLE NGT MATTER

TIME BOUND

F No- A-14011/1/2019-WQM-I 2506-2531 **Date: 17.06.2019**

To

PS to Chief Secretary

All States/UTS having P-I & P-II polluted river stretches (Assam, Daman, Diu & Dadra & Nagar Haveli, Delhi, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Punjab, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand, West Bengal)

Sub: Submission of approved Action Plan, Performance Guarantee and present status of approved action plan in compliance to Hon'ble NGT orders dated 20.09.2018, 19.12.2018 and 08.04.2019 in O. A. No 673 of 2018 in the matter of 'News item published in the Hindu authored by Shri Jacob Koshy titled "More river Stretches are now critically polluted: CPCB', with Dr. Tudi Indrasena Reddy & Ors. Versus UOI & Ors

Ref: CPCB letter No: F No- A-14011/1/2019-WQM-I/517-590 dated 16.04.2019

Sir,

Kindly refer to CPCB letter date 16.04.2019 vide which CPCB requested your State/UT for submission and placing of approved action plan(s) on websites of State Government including SPCB in compliance to Hon'ble NGT orders dated 20.09.2018, 19.12.2018 and 08.04.2019 and your State/UT is also required to submit performance guarantee of Rs ..Crore based no polluted river stretches identified in your State/UTS.

Further, your State/UT is also required to submit present status of implementation of approved action plan with respect to sewage industrial effluent and solid waste management and all other aspects as per Hon'ble NGT order dated 08.04.2019 in OA no 673/2018 including adoption of good irrigation practices being followed, utilization of treated sewage to minimize abstraction of groundwater, flood Plain zone protection and management, rain water harvesting, ground water recharge, setting up of biodiversity parks, removal of encroachment and plantation on both sides of river

In view of the above, i) revised action plans (both hard and soft copies) after incorporating the suggestions of CPCB and as approved by RRC in respect of P-I to P-II polluted river stretches along with performance guarantee of Rs... Crore ii) Status on uploading of approved action plans in the respective websites and iii) Present status on implementation of action plans in terms of compliance be arranged to send to CPCB, at an early date to enable CPCB to apprise Hon'ble NGT before next date of hearing on the afore-said matter.

Yours faithfully,

(A. Sudhakar)
Division Head, WQM-I

Copy to:

1. PS to MS : For information of 'MS' please
2. All RDs : For information and follow up with respective States/UTs please
3. All SPCB/PCCs : For information and necessary action please
4. Law Officer, CPCB : For information please

(A. Sudhakar)

18/06/19

123

2097 ANNEXURE-VI

HON'BLE NGT MATTER
TIME BOUND

F No- A-14011/1/2019-WQM-I 2677-2691 **Date: 18.06.2019**

To

PS to Chief Secretary (Andhra Pradesh, Bihar, Chhattisgarh, Goa, Jharkhand, Karnataka, Mizoram, Puducherry, Rajasthan, Sikkim, Tripura)

Sub: Submission of approved Action Plan, Performance Guarantee and present status of approved action plan in compliance to Hon'ble NGT orders dated 20.09.2018, 19.12.2018 and 08.04.2019 in O. A. No 673 of 2018 in the matter of 'News item published in the Hindu authored by Shri Jacob Koshy titled "More river Stretches are now critically polluted: CPCB', with Dr. Tudi Indrasena Reddy & Ors. Versus UOI & Ors

Ref: CPCB letter No: F No- A-14011/1/2019-WQM-I/517-590 dated 16.04.2019

Sir,

Kindly refer to CPCB letter date 16.04.2019 vide which CPCB requested your State/UT for submission and placing of approved action plan(s) on websites of State Government including SPC/PCC in compliance to Hon'ble NGT orders dated 20.09.2018, 19.12.2018 and 08.04.2019 and your State/UT is also required to submit performance guarantee of Rs Crore as no of polluted river stretches identified in your State/UT.

Further, your State/UT is also required to submit present status of implementation of approved action plan with respect to sewage, industrial effluent and solid waste management and all other aspects as per Hon'ble NGT order dated 08.04.2019 in OA no 673/2018 including adoption of good irrigation practices being followed, utilization of treated sewage to minimize abstraction of groundwater, flood Plain zone protection and management, rain water harvesting, ground water recharge, setting up of biodiversity parks, removal of encroachment and plantation on both sides of identified polluted river stretch

In view of the above, i) performance guarantee of Rs... Crore ii) Status on uploading of approved action plans in the respective websites and iii) Present status on implementation of action plans in terms of compliance be arranged to send to CPCB, at an early date to enable CPCB to apprise Hon'ble NGT before next date of hearing on the afore-said matter.

Yours faithfully,

(A. Sudhakar)
Division Head, WQM-I
O/e

Copy to:

1. PS to MS : For information of 'MS' please
2. All RDs : For information and follow up with respective States/UTs please
3. All SPCB/PCCs : For information and necessary action please
4. Law Officer, CPCB : For information please

(A. Sudhakar)
O/e

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
19/6/2019

2099 ANNEXURE-VII

☎: General: 0471- 2312910, 2318153, 2318154, 2318155 Chairman: 2318150 Member Secretary: 2318151
e-mail: ms.kspcb@gov.in FAX: 0471 2318134, 2318152 web: www.keralapcb.nic.in

KERALA STATE POLLUTION CONTROL BOARD

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

Pattom P.O., Thiruvananthapuram – 695 004
പട്ടം പി.ഒ., തിരുവനന്തപുരം - 695 004

PCB/HO/EE1/NGT/673/2018 Date: 27 /06/2019

From

The Member Secretary

To

The Registrar
Hon'ble National Green Tribunal
Principal Bench, Faridkot House
Copernicus Marg, NewDelhi-110001

Sub: Hon'ble NGT Orders in OA No.673/2018 –Action Plan on Polluted River Stretches- reg

Ref: 1) Hon'ble NGT Order dated 20/09/2018 in OA No.673/2018
2) Hon'ble NGT Order dated 08/04/2019 in OA No.673/2018
3) G.O.(Rt) No.135/2018/Envt dated 12/12/2018
4) This Office letter of even no. dated 17/04/2019 addressed to CPCB
5) This Office letter of even no. dated 26/06/2019 addressed to CPCB
6) River Rejuvenation Committee meeting held on 22.06.2019

Sir,

Kind attention is invited to the Hon'ble NGT order vide ref(1);wherein the Hon'ble NGT as per the Order dated 20.09.2018 directed to submit the action plan for 21 polluted river stretches identified in Kerala. Of which 20 stretches falls in Priority IV & V. Also the Hon'ble NGT as per the Order dated 08.04.2019 approved the action plan for Karamana river (Priority I) with conditions and directed to furnish the action plan for remaining 20 polluted river stretches within the extended timeline up to 30.06.2019.

Kindly note that out of these 20 stretches, BOD is within the standard of 3mg/l as per the water quality report for the 7 stretches during 2017-18. This was already intimated to CPCB vide ref(4) & requested to exempt those stretches from the polluted river stretches. This matter has been considered by the RRC held on 22.06.2019 and RRC approved for exempting them except

'Kuppam' from the polluted river stretches .This was also intimated to CPCB vide ref (5).The copy of the same is enclosed.

The action plan for the following Polluted river stretches (Priority IV & V) approved by the River Rejuvenation Committee(RRC) formed vide ref(3) is submitted herewith for further necessary action.

Sl. No.	Rivers	Priority	Stretches
1.	Bharthapuzha	IV	Along pattambi
2.	Kadambrayar	IV	Manckakadavu to Brahmapuram
3.	Keecheri	IV	Puliyanoor to Kechery
4.	Chitrapuzha	V	Irumpanam to Karingachira
5.	Kadalundy	V	Along Hajirappally / Hajirappally
6.	Kallai	V	Thekepuram to Arakkinar
7.	Karuvannur	V	Along Karuvannur
8.	Kuppam	V	Thaliparamba to Velichangool
9.	Periyar	V	Alwaye Eloor to Kalamassery
10.	Puruvamba	V	Along Puruvamba
11.	Puzhackal	V	Olarikkara to Puzhakkal
12.	Ramapuram	V	Along Ramapuram
13.	Thirur	V	Neduveliangadi to Thalakkadathur

Yours faithfully
Sd/-
MEMBER SECRETARY

Encl: As above

ANNEXURE-VIII

☎: General: 0471- 2312910, 2318153, 2318154, 2318155 Chairman: 2318150 Member Secretary: 2318151
E-mail: ms.kspcb@gov.in FAX: 0471 – 2318134, 2318152 web: www.keralapcb.nic.in

KERALA STATE POLLUTION CONTROL BOARD
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
Pattom P.O., Thiruvananthapuram – 695 004
പട്ടം പി.ഒ., തിരുവനന്തപുരം - 695 004

PCB/HO/EE1/NGT/673/2018 Date: 15.07.2019

From

The Member Secretary

To

Sri.J.C.Babu
Scientist(E) / Additional Director
WQM-I Division
Central Pollution Control Board
Parivesh Bhavan, East Arjun Nagar
Delhi-110032

Sub:- Status on compliance to the Hon'ble NGT Orders dated 08.04.2019 in OA No.673/2018-reg

Ref:- 1. Email from CPCB dated 04.07.2019
2. Hon'ble NGT order dated 08.04.2019 in OA No.673/2018
3. This office letter of even no. dated 26/06/2019 addressed to CPCB
4. Clarification from CPCB over phone on 09/07/2019

Sir,

Kind attention is invited to the letter under ref(1); wherein the information on action taken in compliance to Hon'ble NGT Order vide ref(2) in the desired format was sought.The desired information in the specified format is enclosed. Also kindly note that vide ref(3), the action plans for 13 polluted river stretches were submitted to CPCB and also requested to exempt the remaining 7 stretches from the list of Polluted River Stretches as the BOD is within 3mg/l. Vide ref(4), CPCB clarified that exemption is not possible and the action plans for the remaining 7 stretches are also be submitted urgently. Accordingly the action plans for the remaining 7 polluted river stretches are also being prepared and the same will be submitted soon.

Yours faithfully,

MEMBER SECRETARY

Encl: As above

ANNEXURE - IX

CRITERIA FOR CATEGORISATION OF RIVER MONITORING LOCATION

1. Introduction

Water Quality monitoring is an essential component to maintain and restore the wholesomeness of resources by way of prevention and control of pollution as prescribed under the Water (Prevention and Control of Pollution) Act, 1974. However, the Water (Prevention and Control of Pollution), Act, 976 does not define the level of wholesomeness to be maintained or restored in different water bodies of the country. In view of the said reason, the Central Pollution Control Board (CPCB) has tried to define the wholesomeness of water in terms of safe human uses, and thus, taken human uses of water as base for identification of water quality objectives for different water bodies in the Country. It is considered ambitious to maintain or restore all natural water body at pristine level which is possible only by taking proper control measures. The level and degree of treatment required can be decided depending on the categorization of the polluted river locations/stretch, as per the criteria detailed below: -

2. Categorization of River Monitoring Location

The water quality data is required to be analyzed and primarily mean or average values of Biochemical Oxygen Demand (BOD) and Faecal Coliform (FC) need to be estimated. Then, based on the total score estimated for the parameters BOD (weightage- 70 %) and FC (Weightage- 30 %), based on the criteria, the monitoring location is categorized as 'polluted' location. The polluted monitoring locations in a continuous sequence are defined as 'polluted river stretch'. However, actual self-purification distance need to be estimated based on the requisite input parameters which depend on the case-to-case and the local conditions.

The monitoring locations may be categorized in five classes from Category I to Category –V. i.e., critically polluted to Good or Fit for Bathing i.e., Category –I indicates 'critically polluted'; Category-II indicates 'severely polluted'; Category-III indicates 'moderately polluted', Category –IV indicates 'less polluted', Category – V indicates 'Good' or Fit for Bathing'

Above suggested criteria is intended only for categorization of the river monitoring locations. However, if any State/UT desires to identify any other water body such as lakes, tanks may also apply these criteria depending on the need and the requisite achievable goals for rejuvenation of such water bodies.

Table 1 to Table 3 gives the mean or average BOD/Faecal Coliform values or range and the corresponding scores as well as categorization of the monitoring location

Table 1. Observed Mean or Average BOD Value in mg/l and corresponding BOD Score

S. No	*Mean or Average* BOD (Weightage-70 %)	
	Mean or Average BOD (in mg/l)	BOD Score (X)
1	> 48	100
2	24-48	80
3	12-24	60
4	6-12	40
5	< 6	20

Table 2. Observed Mean or Average Faecal Coliform (in MPN/100 ml) and corresponding FC Score

S. No	Mean or Average Faecal Coliform (Weightage -30 %)	
	Mean or Average Faecal Coliform (in MPN/100 ml)	FC Score (Y)
(1)	> 5,00,000	100
(2)	50000 to 5,00,000	80
(3)	5000 to 50,000	60
(4)	500 to 5000	40
(5)	<500	20

Table 3. Total Score and corresponding Category of River Monitoring Location

S. No	Total Score* (Z')	Category Class of the Monitoring location	Category of Monitoring location
(1)	81-100	Category -I	Critically Polluted
(2)	61-80	Category--II	Severely Polluted
(3)	41-60	Category -III	Moderately Polluted
(4)	21-40	Category -IV	Less Polluted
(5)	< 20	Category -V	Good or Fit For Bathing

Note:

(i) Above criteria must be considered only for the river locations having monitored at least for 2 years and 8 observations in each year covering at least pre-monsoon and post-monsoon period;

(ii) *Above criteria is a preliminary screening criteria for categorizing monitoring locations. However, comprehensive assessment needs to be done by States/UTs to arrive at the extent of contamination;*

(iii) *Please refer to the procedure for estimation of Total Score given in S.No 3.;*

2.1 **Criteria for Category- I – Critically Polluted: -** If the Total score is 81-100, then the monitoring location is categorized as **'Critically Polluted'.**

2.2 **Criteria for Category- II – Severely Polluted: -** If the Total score is 61-80, then the monitoring location is categorized as **'Severely Polluted'**

2.3 **Criteria for Category- III-Moderately Polluted: -** If the Total score is 41-60, then the monitoring location is categorized as **'Moderately Polluted'**

2.4 **Criteria for Category-IV –Less Polluted: -** If the Total score is 21-40, then the monitoring location is categorized as **'Less Polluted'**.

2.5 **Criteria for Category -V-Good or Fit for Bathing:**-If the Total score is ≤ 20, then the monitoring location is categorized as **'Good or Fit for Bathing'.**

*For easy understanding, flow chart given in **Figure 1** and steps for calculating the total score may also be referred in the subsequent paras: -*

3. Steps for calculating total score and categorizing of monitoring location: -

(i) *Depending on the average BOD measured value, assign the BOD score (X) as given in **Table 1.***

(ii) *Similarly depending on the average FC measured value, assign the FC Score (Y) as given in **Table 2.***

(iii) *Total score **(Z)** is estimated as: BOD Score **(X) X** (Weightage of BOD i.e., 70 %) + FC Score **(Y) X** (Weightage for FC i.e., 30 %). and*

(iv) *Now compare calculated Total Score (Z) with the **Z'** Value given in the Table 3 and the monitoring location is categorized suitably.*

For easy understanding, an Example 1 and Table 4 may be referred as given in the subsequent paras.

E.g. (1): *At a particular monitoring location, the average values of BOD and the FC values are observed as 6 mg/l and 9000 MPN/100 ml respectively. Then, the total score is calculated as*

- *X is the BOD Score corresponding to the mean BOD value of 6 mg/l as per* ***Table 1*** *= 20*
- *Y is the FC Score corresponding to the average FC value of 9000 MPN/100 ml as per* ***Table 2*** *= 60*
- *Calculated Total Score* ***(Z)*** *=* ***X*** *X* ***Weightage of BOD*** *+* ***Y*** *X* ***Weightage of FC*** *i.e.,20 X 0.7 + 60 X 0.3 = 14 + 18= 32.*
- *Compare 39 value with the* ***Z'*** *values given in* ***Table 3*** *to decide on the Category of the Monitoring Location. In this case, monitoring location is Category-IV i.e., 'Less Polluted',*

Table 4. Categorisation of Monitoring Location with Examples

Sl. No (I)	Mean or Average of BOD (mg/L) (II)	Mean or Average of Faecal Coliform (MPN/100mL) (III)	BOD Score (as per Table 1) (IV)	FC Score (as per Table 2) (V)	Calculation of Total score (Z) [0.70(Column IV) + 0.30(Column V)] (VI)	Monitoring Location Category Class (VII)
1	6.0	9000	20	60	32	IV
2	2.0	45	20	20	20	V
3	2.0	550000	20	100	44	III
4	45.0	80	80	20	62	II
5	24.0	200000	60	80	66	II
6	63.3	127500	100	80	94	I

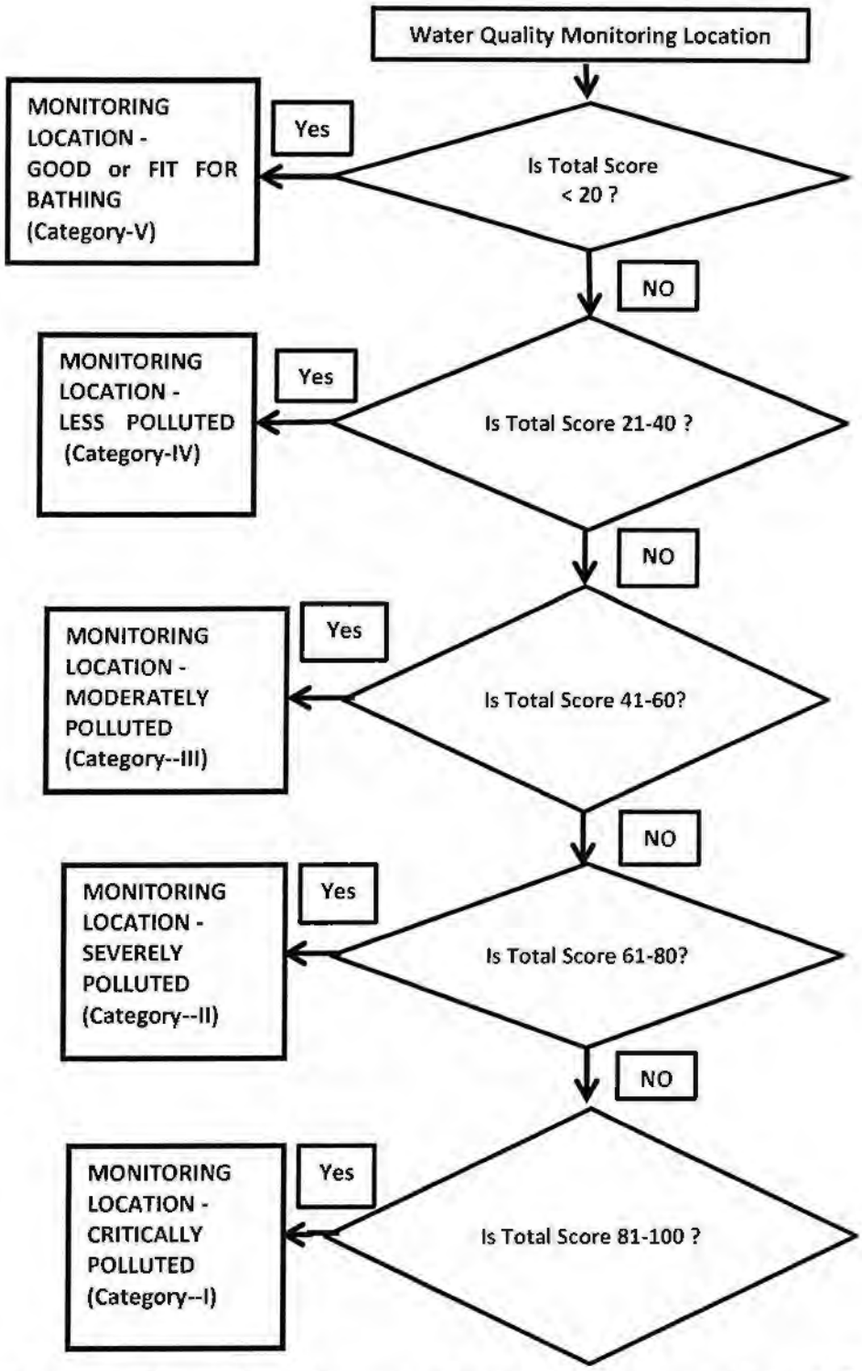


Figure 1. Flow Chart Showing Criteria for Categorization of River Monitoring Location

ANNEXURE-X

Phone: 281015, 281913

Fax: 03592 -281913

Email: spcbsikkim@gmail.com

STATE POLLUTION CONTROL BOARD SIKKIM

DEPARTMENT OF FORESTS ENVIRONMENT & WILDLIFE MANAGEMENT
GOVERNMENT OF SIKKIM
DEORALI - 737101

F. No. - /SPCB/1009 Dated: 23/7/2019

To,

Shri J.C. Babu,
Additional Director,
Central Pollution Control Board,
Parivesh Bhawan- Shahdra
East Arjunnagar
New Delhi-110032

Subject: Action Taken Report on rejuvenation of polluted river stretches (priority-V) and river Rangpo in the State of Sikkim.

Sir,

I have been directed to enclose herewith the **Action Taken Report (ATR)** on the rejuvenation of polluted river stretches – (priority V) and river Rangpo in the State of Sikkim.

The details of ATR is outlined below:

1. Directions have been issued to the Municipal bodies of Rangpo and Singtam Nagar Panchayats to take measures against checking discharge of untreated sewage directly into the river.
2. Directions have been issued to the PCE-cum Secretaries of Water Security & Public Health Engineering Department and Irrigation and Flood Control Department respectively to take measures against checking discharge of untreated sewage directly into the river.
3. SPCB -Sikkim under Forests, Environment and Wildlife Management Department, Government of Sikkim has also notified the Sikkim Idol Immersion Rules,2019 to abate the river and soil pollution.
4. A field inspection was conducted on 9th April 2019 by the newly constituted River Rejuvenation Committee members to survey the river stretches along Rangpo-Singtam highway and respective representatives of Nagar Panchayats were apprised about the various issues related to river pollution. The Sewage Treatment Plants (STPs) were also inspected during the daylong visit and necessary observations made during the visit were also shared with the concern authorities for further improvements in future. Awareness campaign was also stressed upon by the team for cent percent connection of sewage pipelines to the STPs and thereby increasing user fee and fund provision for proper maintenance of STPs in future.

STATE POLLUTION CONTROL BOARD * GOVT. OF SIKKIM, GANGTOK *

5. All Pharmaceuticals industries in Sikkim and availing consent to operate from SPCB-Sikkim have been directed to comply with conditions like Zero liquid discharge from their respective plants and also to install real time online continuous effluent monitoring system.
6. All the Hydro-Electric Projects in Sikkim have been directed to install e-flow meter to maintain the ecological flow of river water downstream during lean season.
7. As per the earlier direction, the River Rejuvenation Action Plan has been uploaded in *www.sikenvis.nic.in*
8. Further, on the basis of deliberations and discussions held during meeting of River Rejuvenation Action Plan on 17th May 2019 at Sylvan House, Shillong, Department of Forest, all the recommendations and suggestions were incorporated in the Revised Action Plan and the same has been submitted to CPCB on 27th June 2019.
9. Necessary directions have been given to the field functionaries by the Forest Department to develop green belt along the blank areas of rivers.
10. The water quality data of the Teesta and Rangit basins has been uploaded in *www.sikenvis.nic.in (www.sikenvis.nic.in/Database/water_quality_5201.aspx)*
11. SPCB-Sikkim has been directing the slaughter house to comply with necessary stipulated conditions as per the Rules and has also issued showcause notices and directions for necessary compliances.

Submitted for kind information and further necessary action from your end please.

Thanking you

Yours faithfully,

Kusum Gurung
Joint Director
SPCB-Sikkim
FEWMD.
Govt. of Sikkim.

STATE POLLUTION CONTROL BOARD
GOVT. OF SIKKIM, GANGTOK

ANNEXURE-XI

113

By Speed Post

F.No.14011/ WQM – I/ 2019 / 1813 **09.05.2019**

To

Prof Suman Kapur,
Dean, International Programmes and Collaborations,
Senior Professor, Department of Biological Sciences,
BITS Pilani, Hyderabad Campus, Jawahar Nagar, Shameer pet,
Hyderabad-500078, RR District, Telangana.

Sub:- Hon'ble NGT order dated 05.04.2019 in OA No.426/2018 (M.A. No. 986/2018) in the matter of pollution in Musi river at Telangana, Hyderabad- Award of work-for carrying out quick hygienic survey of river Musi and river Krishna (at selected locations)

Sir,

This has reference to Hon'ble National Green Tribunal (NGT), Principal Bench, New Delhi order dated 05.04.2019 in OA No. 426 pf 2018 (MA No. 986of 2018) in the matter of pollution in River Musi directing Central Pollution Control Board (CPCB) & Telangana State Pollution Control Board (TSPCB) to carrying out 'quick hygienic survey of river Musi' in association with Prof. Suman Kapoor, Dean, International Programmes and Collaborations, BITS Pilani, Hyderabad.

In this connection, it is to inform that the competent authority in Central Board has approved to carry out the quick hygienic survey of river Musi through 'BITS Pilani, Hyderabad campus', at a total cost of Rs. 9.5 lacs subject to following Terms of Reference: -

1. The quick hygienic survey assessment is required to be carried out in consultation with CPCB as well as TSPCB. Samples collected during study period also need to be extracted and preserved by BITS-PILANI for further analysis of antibiotic concentration at CPCB, Delhi.

2. Based on the assessment, 'guidelines for carrying out quick hygienic survey of rivers' which is expeditious, reliable and cost-effective also be prepared and submitted to CPCB

3. Based on the sampling and analysis of river Musi and river Krishna at locations identified in consultation with CPCB and TSPCB till mid of June 2019 of the study period, an interim report is required to be prepared & submitted to CPCB on or before 20.06.2019 and findings also be presented either at CPCB, Delhi or at Telangana SPCB, Hyderabad;

4. CPCB will release the payment as per mode of payment proposed in the proposal;

5. A one-day training programme also be conducted for the officials of CPCB, SPCBs/PCCs followed by sampling in July, 2019 (tentatively 2nd - 3rd week of July, 2019) and course materials also be circulated to the participants. However, total expenses to participate in the one-day training at BITS-Pilani, Hyderabad campus will be borne by the respective parent organisation of the participant.

6. The assessment is required to be completed and detailed assessment report is required to be submitted by 31st July, 2019 to CPCB in compliance to Hon'ble NGT order dated 05.04.2019. If required, findings also be presented in CPCB, Delhi; and

Contd...2/

7. The assessment and detailed assessment report is required to be completed and submitted by 31st July, 2019 to CPCB in compliance to Hon'ble NGT order dated 05.04.2019.

8. BITS-Pilani is also required to submit duly certified Fund Utilisation Certificate as per CPCB format (Copy enclosed) upon completion of the study

It is also requested that timelines for carrying out 'quick hygienic survey of river Musi and river Krishna (at selected locations)' be adhered strictly and detailed assessment report be submitted to CPCB on or before 31.07.2019 to enable to submit the findings before Hon'ble NGT.

Yours faithfully,

(A. Sudhakar)
DH, WQM-I Division

Encl.: As above

Copy to:

1	Director, BITS-Pilani, Hyderabad Campus, Jawahar Nagar, Shameerpet Mandal, District Ranga Reddy, Telangana-500078	:	For information please
2	The Regional Director Central Pollution Control Board, Regional Directorate (South), A-Block Nisarga Bhawan, I[st] & 2[nd] Floors, 7[th] D Cross, Thimmaiah Road, Shivanagar, Bengaluru-560079, Karnataka	:	For information and further necessary action please.
3	Member Secretary, Telangana State Pollution Control Board, Payavaran Bhawan, A-III, Industrial Estate, Sanath Nagar, Hyderabad – 500 018, Telangana	:	For information and with a request to analyze collected samples during the study period for general parameters as well as TC, FC and Faecal Streptococci
4	PS to 'MS'	:	For information of 'MS' please.
5	Law Officer (Mrs. UT), CPCB	:	For information and record, pl.
6	I/C F & A, CPCB, Delhi	:	For information and with a request to release I[st] instalment i.e. 53% of total cost of Rs. 9.5 Lacs, to the 'Director, BITS-PILANI, Hyderabad Campus' please

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
निर्गत N Singh
दिनांक 10/5/19

(A. Sudhakar)

151

F.No.14011/ WQM – I/ 2019/3161 **26.06.2019**

To
Prof Suman Kapoor,
Dean, International Programmes and Collaborations,
Senior Professor, Department of Biological Sciences,
BITS Pilani, Hyderabad Campus, Jawahar Nagar, Shameer pet,
Hyderabad-500078, RR District, Telangana, India

Sub: Hon'ble NGT order dated 05.04.2019 in OA No.426/2018 in the matter of Mohammed Nayeem Pasha & Anr. Vs State of Telangana & Ors regarding pollution of river Musi river at Telangana, Hyderabad

Sir,

In continuation of CPCB letter dated 9. 5. 2019, this is to inform that competent authority has approved to conduct the study at a total cost of Rs. 9.5 Lakh (excluding taxes as applicable) subject to completion of study on quick hygienic survey of river Musi by 31.07.2019 in compliance with Hon'ble NGT order dated 05.04.2019 and submission of report.

Further, it is requested that based on the sampling and analysis carried out so far, an interim report be prepared & sent to CPCB at an early date. Also, BITS Pilani, Hyderabad campus may organise one day training programme for the officials of SPCBs/ PCCs on the quick hygienic survey. A tentative schedule of training programme may please be informed so that nominations from SPCB/PCC could be sought in time.

Yours faithfully,

(A. Sudhakar)
DH, WQM-I Division

Copy to:

1. Director, BITS Pilani Hyderabad Campus : For information , please
2. The Member Secretary,
   Telangana State Pollution Control Board
   Payavarana Bhavan,
   A-3, Industrial Estate, Sanathnagar,
   Hyderabad – 500 018 : For information with a request to arrange for a meeting in TSPCB, Hyderabad to present findings of interim report and communicate the date of review meeting to CPCB office, please
3. PS to 'MS' : For information of 'MS' please.
4. The Regional Director
   Central Pollution Control Board,
   Regional Directorate (South),
   A-Block Nisarga Bhawan,
   1st &2nd Floors, 7th D cross, Thimmaiah Road,
   Shivanagar, Bengaluru-560079 : For information, and with a request to collect extracted samples from BITS Pilani and forward the same for analysis of antibiotic concentrations at CPCB, Delhi
5. I/C Finance & Accounts, CPCB : For information, please

(A. Sudhakar)

MS 28/6/19
WQM-I

117

ANNEXURE-XII

Birla Institute of Technology & Science, Pilani
Hyderabad Campus

To,

23rd July 2019

The Member Secretary
Central Pollution Control Board
Parivesh Bhawan, East Arjun Nagar, Delhi-110032

Subject: Extension of Work-Order for a period of 1 month in connection with the Hon'ble NGT court order dated 5.4.2019 with OA no. 426/2018

Dear Sir,

The work-order concerned with "A Quick Hygienic Survey of River Musi" was awarded to BITS-Pilani, Hyderabad Campus under the supervision of Dr. Suman Kapur, Senior Professor, Department of Biological Sciences after an order was passed by the Honourable NGT court.

I am writing to request you to extend the project of a period of 1 month (till 31st August 2019) for the following reasons:

1. Delay in sampling for the last round: In a joint meeting held on 02.05.2019 at TSPCB, Sanath Nagar, Hyderabad, between the representatives of CPCB, TSPCB and BITS, a mutual agreement was reached to collect water samples for six individual days. However, the last round of sample collection is still due and the same will be carried out on 23rd July 2019. The second instalment of funds has not been released, which has delayed the other necessary experimentation needed to complete the final report. The interim report submitted by Dr. Suman Kapur has been reviewed and CPCB has assured to release the funds in this week.

2. As per the work order a training session has to be organized at BITS for CPCB and other state PCB nominated representatives. As the nominations and procedural formalities from the CPCB and respective state boards will take some time, it is proposed to conduct the training in the 3rd week of August as per telephonic consultation with CPCB officials.

Due to the above mentioned reasons, I request you to extend the project for a period of one month to complete the remaining jobs including training for PCB officials in line with the work order issued. I also request you to sanction necessary funds (Rs 65,000) for supporting the scholars working in this consultancy project for one more month.

Sincerely yours

Suman Kapur

Dr. Suman Kapur, Senior Professor, Department of Biological Sciences
BITS-Pilani, Hyderabad Campus

Birla Institute of Technology & Science, Pilani
Hyderabad Campus, Jawahar Nagar, ShameerpetMandal
Hyderabad 500078, Andhra Pradesh, India

Tel: +91 40 6630 3999
Fax: +91 40 6630 3998
Web: www.hyderabad.bits-pilani.ac.in

ANNEXURE-XIII

CENTRAL POLLUTION CONTROL BOARD
(Ministry of Environment, Forest & Climate Change, Govt. of India)
Parivesh Bhawan, East Arjun Nagar,
Delhi – 110032
****

Minutes of First Meeting of Central Monitoring Committee (CMC) held on 11.06.2019 in 'Kaveri Hall, MoEF&CC' to ensure compliance to Hon'ble National Green Tribunal (NGT) Order dated 08.04.2019 in Original Application No. 673/2018 in the matter of news item published in 'The Hindu' titled "More river stretches are now critically polluted: CPCB"

First meeting of the Central Monitoring Committee (CMC) constituted by Hon'ble NGT vide Order dated 08.04.2019 was held on 11.6.2019 at Kaveri Hall, Indira Paryavaran Bhawan, Ministry of Environment, Forest & Climate Change (MoEF & CC), Delhi under the Chairmanship of 'Secretary, Environment, Forest & Climate Change (EF&CC). No representative of NITI Aayog attended the meeting. List of officials attended the meeting is attached at **Annexure I**.

Chairman, Central Board (CCB) welcomed all Members of CMC and briefed about orders of Hon'ble NGT dated 08.04.2019, 19.12.2018 & 20.09.2018 in O.A. No. 673/2018 which include 351 identified river stretches requiring restoration, at least to be fit for bathing purposes within six months (thereafter time was extended till 31.03.2021 as per recommendation of CPCB). As per order, all concerned 28 States & 3 UTs are required to constitute River Rejuvenation Committee (RRC) comprising Director, Environment; Director, Urban Development; Director, Industries; and Member Secretary, State Pollution Control Board of concerned State. RRCs are required to prepare and monitor action plans under the supervision of Principal Secretary, Environment of State Govt./ UT Administration.

Main role of CMC is (i) preparation and enforcement of a National Plan to make rivers pollution free; (ii) co-ordinate with the RRCs of the States and oversee execution of the action plans; (iii) need for identification of experts in the field of utilization of treated wastewater; (iv) best practices and models for use of treated waste water and (v) to file first report by 31.07.2019.

Chairman, CPCB, elaborated on the focus areas for finalization of National Plan mainly covering municipal sewage management, industrial pollution control, waste management, E- flow & watershed management and utilisation of treated wastewater as these have direct bearing on river water quality. He stated that National Plan to make rivers free from pollution will be finalized in consultation with major stakeholders. It was also informed that CPCB has already approved action plans for polluted rivers stretches to achieve water quality at least fit for bathing purpose

Targets proposed for management of sewage, industrial effluent, waste and other aspects including availability of funds were also discussed with timelines up to 2024 **(Annexure-II)** and were agreed upon by CMC. Secretary, EF&CC emphasised the

need for industries to come forward and step up use of treated effluents to decrease pressure on fresh water consumption.

To a query of Secretary, EF&CC on the requirement of consultant or institution for preparation of National plan, CCB apprised the preparation of a draft National Plan has already been initiated by CPCB and that draft shall be communicated to all members of CMC for suggestions, comments and for providing feedback before its finalisation.

It was informed that CMC is also required to co-ordinate with RRCs of States and UTs and to oversee execution of approved action plans, identify experts in the field of utilization of treated wastewater and to consider best practices and models for presentation and sustainable conservation of waterbodies. Secretary, EF&CC asked CPCB to seek quarterly action taken reports from all RRCs and apprise Hon'ble NGT.

As regards issues relating to (i) gaps in compliance of Waste Management Rules 2016 (such as Solid Waste, Hazardous Waste, Bio-Medical Waste, Plastic Waste); (ii) air pollution in 102 Non-attainment cities, (iii) pollution in 100 polluted industrial clusters, and (iv) illegal and unscientific sand mining, Secretary (EF & CC) observed that information be updated regularly and that in case of sand-mining, information w.r.t existing policies or guidelines and the implementation status may be ascertained from respective State Govt. / UT Administration.

Sh. Rohit Kakkar, Deputy Advisor (CPHEEO), MoHUA representing Secretary (MoHUA) informed that in most developed countries and even in Malaysia, treated wastewater use is not more than 50 to 60% and expressed a view that septage management may be exempted as its contribution is only 2-3% of the total sewage generation. Also, depending on the availability of funds, various options for treatment & utilization of treated wastewater should be included in the National Plan such that fresh water consumption is reduced by 25% of the present consumption by the year 2024. As regards Municipal Solid Waste (MSW), recycling may be promoted.

Sh. Rohit Kakkar, Representative of MoHUA and Sh. Rajiv Ranjan Mishra, Director General, NMCG (Member) opined that presently most of the municipalities are utilising treated water for horticulture and flushing of roads or pavements and such water is also used by Thermal Power Plants for cooling purposes. Actions already taken and such available information also be compiled and included in the report of the Committee.

Upon deliberations following decisions were taken by the CMC: -

(i) National plan for making rivers pollution free be circulated to all members of CMC to obtain suggestions/views on respective subject matters related to concerned/ NITI Aayog/ NMCG

(ii) Information w.r.t. status of implementation of action plans be obtained from Chief Secretaries of all States/ UTs and status be conveyed to Hon'ble NGT as per the order

(iii) CMC shall have its review meetings once in six months henceforth.

(iv) CMC may request Hon'ble NGT for closure of OA No. 673 of 2018 as monitoring and follow-up action through Chief Secretary of the States/UT Administrations are incorporated in the directions issued in OA No. 606 of 2018. Also, the issue of polluted river stretches has been made an integral part of directions issued in OA No. 606 of 2018.

Meeting ended with vote of thanks to the Chair.

-- OO --

Annexure-I

List of Participants

1. Sh. Chandra Kishore Mishra, Secretary, MoEF&CC (Chairman, CMC)
2. Sh. Rajiv Ranjan Mishra, Director General, NMCG (Member)
3. Sh. S. P. S. Parihar, Chairman, CPCB (Nodal Authority, CMC)
4. Sh. Jigmet Takpa, Joint Secretary, MoEF&CC
5. Sh. Rohit Kakkar, Deputy Advisor (CPHEEO), MoHUA (representative of MoH &UA)
6. Sh. A. Sudhakar, Scientist E, CPCB, Delhi
7. Sh. Lalit Bokolia, Additional Director, NRCD, MoEF&CC
8. Dr. R. M. Bhardwaj, Consultant, NMCG
9. Sh. Deepender Singh, Data Consultant, NMCG
10. Sh. Ishwer Singh, Advocate (Consultant), NMCG
11. Sh. J. C. Babu, Scientist E, CPCB, Delhi.

Annexure-II

Proposed Targets for Making Rivers Pollution Free

TASK	PRESENT*	NGT (2021)	2022 (Proposed)	2024 (Proposed)
Sewage Management				
▪ Treatment Capacity	35 %	100%	75%	90 %
▪ Utilisation of Treated Wastewater	< 2 %	---	20 %	50 %
Industrial Effluent Management				
▪ Treatment Capacity	98 %	100%	100 %	100 %
▪ Utilisation of Treated Effluent	20 %	---	30 %	40 %
▪ Reduction of Fresh Water use	---	---	10 %	25 %
Solid Waste Management				
▪ Collection	80 %	100%	100 %	100 %
▪ Treatment	26 %	100%	75 %	100 %
E-Flow Management				
▪ Lean Flow	---	15-20%	15-20%	15-20%

ANNEXURE-XIV

Subject: **National Plan for making River Stretches Pollution Free**
To: JIGMET TAKPA <takpa.jigmet@gov.in>
Cc: secy-moef@nic.in, ccb.cpcb <ccb.cpcb@nic.in>, mscb.cpcb@nic.in, Sudhakar Arekatla <asudhakar.cpcb@nic.in>

Date: 06/28/19 07:40 PM
From: "J Chandra Babu" <jcb.cpcb@nic.in>

National Plans to Make River Stretches Pollution F... (90kB)

Dear Sir

I am directed to forward a document.entitled 'National Plan for Making Rivers Pollution Free (pl. find attached) as finalised by CPCB, for kind perusal.

CCB desires that the concurrence of Secretary (EF & CC) may please be obtained on the afore-said document so that finalised National Plans shall be presented before Hon'ble NGT in compliance to Hon'ble NGT Order dated 08.04.2019 in O.A.No. 673 of 2018

Regards

(J.C.Babu)
Scientist 'E', WQM-I Division
Central Pollution Control Board
Parivesh Bhawan, East Arjun Nagar
DELHI-110 032
Ll:011-43102322

CENTRAL POLLUTION CONTROL BOARD
(Ministry of Environment, Forest and Climate Change)
Parivesh Bhawan, East Arjun Nagar,
Delhi-110032
******

National Plans to Make River Stretches Pollution Free
(Draft as on 28.06.2019)

1. Preamble

India is a riverine country and has numerous lakes, ponds, wells apart from ground water resources which are acting as most important resources for supporting life. Most of the rivers being fed by monsoon rains, which are limited to only three to four months of the year, run dry rest of the year. Due to rapid rise in population and growing economy of the country, there will be continuous increase in demand for water. The stress on water demand leads to endangering the quality of our scarce natural water resources apart from grave implications for public health as well as environmental quality. Poor water management and sanitation practices, inadequate funds for operation and maintenance existing infrastructure for treatment of municipal sewage, lack of adequate institutional reforms and ineffective implementation of existing provisions leading to conversion of all the natural drains into drains for carrying sewage or industrial effluent and there by attributing to river pollution. Future predictions which include worsening of the present situation due to a disturbed hydrological cycle and regional climatic variability and such a scenario would call for having reliable, justifiable, implementable national initiatives for making identified polluted river stretches free from pollution for ensuring to make available the pristine water sources for all the future generations.

2. Existing Regulatory Framework for Prevention and Control of River Pollution

Government of India has enacted various Acts and assigned functions to Ministries of Water Resources, Urban Development, Environment, Forest & Climate Change as well as Central/State Governments to achieve sustainable consumptions and usage of water resources.

2.1 *The Water (Prevention and Control of Pollution) Act, 1974*

The Water (Prevention and Control of Pollution) Act, 1974 (the "Water Act") has been enacted for prevention and control of water pollution and to maintain or restore wholesomeness of water in the country through State Boards at the State level and CPCB at the Central level. The Water Act also prohibits discharge of pollutants into water bodies beyond a given standard through SPCB consent mechanism, and lays down penalties for non-compliance. At the Centre, under

Water Act, CPCB was set up which lays down standards for prevention and control of water pollution. The Water Act mandates the Boards to plan and execute nationwide programme for prevention, control or abatement of pollution, disseminate information and knowledge by publishing technical documents and lay down standards for regulatory purpose. The regulatory provisions under The Water Act, 1974 are enshrined in section 18 for the Central Govt and Central Board. Water being the state subject, the enforcement is largely confined to the State Govt. Authorities [(i.e. State Pollution Control Board (SPCB)/Pollution Control Committee (PCC)].

2.2 *Environment (Protection) Act, 1986*

In the wake of the Bhopal Tragedy, the Government of India enacted Environment (Protection) Act of 1986 under Article 253 of the Constitution. Passed in March 1986, it came into force on 19 November 1986. The Act is an "umbrella" legislation provides for the protection and improvement of environment. The Environment (Protection) Act establishes the framework for studying, planning and implementing long-term requirements of environmental safety and laying down a system of speedy and adequate response to situations threatening the environment. Under the Environment (Protection) Act, the Central Government is empowered to take measures necessary to protect and improve the quality of environment by setting standards for emissions and discharges of pollution in the atmosphere by any person carrying on an industry or activity; regulating the location of industries; management of hazardous wastes, and protection of public health and welfare. In case of any non-compliance or contravention of the Environment (Protection) Act, or of the rules or directions under the said Act, the violator will be punishable with imprisonment as prescribed under the Act.

However, both Water Act and Environment (Protection) Act, 1986 (i) does not specify voluntary compliance to the discharge norms by all the industry, (ii) the penalties stipulated under the Environment (Protection) Act, 1986 are nominal; (iii) all the industrial activities which are likely to cause river pollution have not been covered through consent mechanism by the SPCBs/PCCs; (iv) States/UTs are not enforcing need based stringent norms to the industry keeping in view protection of water resources; (v) Water Act allows SPCBs/PCCs for collection of samples manually and for verification of compliance to the discharge norms, considering the work load given under various provisions, industries might be rarely inspected by the authorised authorities of SPCBs/PCCs which urges adoption of well-established new technologies which includes adoption of continuous online effluent monitoring systems, automatic closure of industry ETP outlets, initiating actions under the provisions against the violating industries with heavy penalties; and (vi) Discharge standards for STPs notified under the E (P) Act, 1986 to be made applicable after review in compliance to the Hon'ble NGT orders.

2.3 Solid Waste Management Rules

The Union Ministry of Environment, Forests and Climate Change (MoEF &CC) notified Solid Waste Management Rules (SWM), 2016 in supersession of

Municipal Solid Wastes (Management and Handling) Rules, 2000. The new SWM rules have mandated source segregation of waste in order to channelize the waste to wealth by adopting recovery, reuse and recycle principles. All waste generators including bulk waste generators would now have to segregate waste at source into three streams- Biodegradables, Dry (Plastic, Paper, metal, Wood, etc.) and Domestic hazardous waste (diapers, napkins, mosquito repellants, cleaning agents etc.) before handing it over to the collector or agency, for final disposal as specified by the local authority in accordance with these rules. The new rules also specify distance criteria for location of sanitary landfills (in plain and in hilly areas), standards for leachate generated from sanitary landfills, amended incineration emission standards, compost standards in line with Fertiliser Control Order and also specifies bio-mining and capping of existing dumpsites for ensuring environmentally sound management of municipal solid waste. *However, proper management of municipal solid waste is still in the preliminary stage and long way to go for ensuring proper management of municipal solid waste in the country and the existing scenario also attributing to water pollution in the country.*

Apart from the above, various rules were notified under the Environment (Protection) Act, 1986 which include (i) Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016 and amendments made thereof; (ii) Bio-medical Waste Management Rules, 2016 and amendments made thereof (iii) E-Waste Management Rules, 2016 and amendments made thereof (iv) Plastic Waste Management Rules, 2016 and amendments made thereof, and (v) Construction and Demolition Waste Management Rules 2016, for environmentally sound management of such waste.

3. Sources of River Pollution and the Existing Scenario

Sources of river pollution are broadly categorized as point sources and non-point sources. Point sources impacting the water resources in a significant manner whereas non-point sources are contributing only during the monsoon season or the rainy days which are confined to 40 monsoon days in the large part of Indian sub-continent. Thus the control of pollution from point sources is the prime requirement and accordingly required to be prioritized.

3.1 Gaps in Municipal Sewage Management

India, being an economy in transition from developing to developed nation, is faced with two problems. On one side, lack of infrastructure and on the other, an ever-increasing urban population. The urban population in India was about 387 million in 2011 and rose to about 420 million by 2017. It is estimated that by 2050, more than 50% of the country's population estimated as 1000 million will live in cities and towns and thus the likely demand for infrastructure facilities including fresh water for drinking and resultant wastewater discharges are expected to rise sharply posing a challenge to urban planners, policy makers, environmental regulators and managers. As per the assessment carried out by CPCB in the year 2015, it is estimated that 61948 million litres per day (MLD) of domestic sewage is generated from urban areas. At present, there are 816 Sewage Treatment Plants (STPs) and

installed sewage treatment capacity is about 23277 MLD (37.57%) and capacity utilisation of STPs is about 18883 MLD (30.48 %). Gap in sewage generation and actual treatment of sewage is about 43065 MLD (69.51 %). 522 out of 816 STPs are operational and 79 STPs are non-operational. Hence, treated/untreated and partially treated municipal wastewater is flowing into nearby rivers causing river pollution in the downstream reaches. *Apart from the above, there are issues with regard to regular operation of these STPs and non-compliance to discharge standards, which are attributed mainly due to (i) lack of dedicated sewerage systems for collection and conveyance of sewage (open storm water drains carry city sewage in many cities); (ii) inappropriate technology and capacity of STPs; (iii) non-prioritization of wastewater treatment (focus has been on supply of drinking water rather than wastewater treatment); (iv) no revenue source to meet the management cost of sewage ; (v) limitation of skilled manpower, technical know-how on operation; (vi) non-sustainable approach in design of sewage management projects ; (vii) treated water not considered as valuable resources and the concept of Reuse, Recycle & Recovery not imbibed in project design; (viii) energy recovery potential not envisaged (there is a potential to meet up to 50% of the energy requirement through captive generation); (ix) multiple agencies are not making efforts for meeting the objectives; (x) ULBs are so far immune to enforcement and regulatory provisions; (xi) lack of awareness on consequences*

3.2 Gaps in Industrial Effluents Management: -

There are 88 prominent industrial clusters, 43 industrial clusters in 17 States having Comprehensive Environmental Pollution Index (CEPI) score of 70 and above are identified as Critically Polluted Areas (CPAs). Further, 32 industrial clusters with CEPI scores between 60 & below 70 are categorized as Severely Polluted Areas (SPAs).

As per an estimate carried by CPCB in the year 2005, about 11000 MLD of wastewater is generated alone from 17 categories of medium and large scale industries. The quantity of industrial discharge has increased many folds over the years in all sectors thus requires comprehensive assessment. Discharge of untreated industrial wastewater through open drains has potential for soil and groundwater contamination. One of the main challenges in control of wastewater pollution from industries is non-compliance to discharge standards.

To ensure compliance to the effluent discharge norms, most of the industry adopts either captive effluent treatment plants or disposes through common effluent treatment plants (CETPs). Having limited financial resources at their disposal in individual capacity especially in case of small scale industrial (SSI) sector, CETPs are a viable option for management of cluster origin industrial wastewater. Various schemes of Government of India have been facilitating and encouraging CETPs, over past 2 decades.

The number of CETPs increased from 88 facilities (with a capacity of 560 MLD) in the year 2005 to 194 facilities with treatment capacity of 1475 ~~1500~~ MLD spreaded across 18 States and one UT (Delhi). Tamilnadu State has 41 CETPs followed by

Gujarat (32), Maharashtra (28), Rajasthan (15), Delhi (13), Haryana (13), Karnataka (11), UP (08), Kerala (07), AP (06), Telangana (06), Punjab (04), Uttarakhand (03), M.P (02), H.P, J &K, Jharkhand, Tripura and West Bengal each 01 CETP. 124 out of 194 CETPs are connected with online continuous effluent monitoring system (OCEMS) and 29 CETPs have adopted 'Zero Liquid Discharge' systems. *However, achievement of satisfactory performance has been a challenge, including non-compliance to standards due to (i) discharge of recalcitrant effluent from heterogeneous chemical industrial sources; (ii) non-compliance to inlet effluent quality by member industries and (iii) 11 States viz., Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Goa, Meghalaya, Manipur, Mizoram, Nagaland, Odisha, Sikkim and 05 UTs viz., Andaman & Nicobar Islands, Chandigarh, Daman, Diu, Dadra & Nagar Haveli, Puducherry, Lakshadweep, yet to come up CETPs in the respective State/UTs*

3.3 Gaps in Waste Management: -

Gaps in Waste Management are detailed in subsequent paras: -

3.3.1 Hazardous Waste Management Scenario: -

As per Information received from SPCBs/PCCs for 2016-17, there are 56,350 numbers of hazardous waste (HW) generating industries in the country authorized under Hazardous and other Wastes (Management and Transboundary Movement) Rules, 2016 (HOWM, 2016), to generate about 25.46 Million Metric Tonnes (MT) of hazardous wastes. As per annual returns submitted by the occupiers, about 7.17 Million MT of hazardous waste have been generated during April, 2016-March, 2017. Quantity of hazardous waste disposed in Hazardous Waste Treatment, Storage and Disposal Facilities (TSDFs):2.84 Million MT (39.65 %), quantity of HW recycled/utilized-3.68 Million MT (51.30 %) which includes recycling of commonly recyclable hazardous wastes-1 Million MT as per Schedule –VI of the HOWM Rules, 2016; Co-processing in Cement Kilns: 0.55 Million MT; Captive Utilisation: -1.66 Million MT; Non-Captive Utilisation (under Rule 9 of the HWM Rules, 2016)-0.47 Million MT. There are 1,733 authorized recyclers for recycling of commonly recyclable hazardous wastes (used oil/waste oil/non-ferrous scraps/etc.) listed under Schedule-IV of HOWM, Rules, 2016, having authorized capacity of 6.99 Million MT. 65 Cement Plants having authorized capacity of 7.22 Million MT are utilizing hazardous waste in the country by co-processing. Apart from utilization of hazardous waste in cement plants, there are 224 facilities for utilization of various categories of hazardous waste as a resource/energy recovery, having authorized capacity of 2.32 Million MT. There are 42 Common Hazardous Waste Treatment, Storage and Disposal Facilities (TSDFs) in 17 States and 01 UT. Out of 42 TSDFs, 18 are integrated TSDFs having both Secured Landfills (SLFs) and Incinerators; 10 have only common incinerators, and 14 have only Secured Landfills. *Still States viz., N-E States, Bihar, Chhattisgarh, Jharkhand, J & K, Goa and UTs viz., Delhi, Puducherry, Lakshadweep, A & N Islands, Chandigarh yet to develop their own TSDFs although few states have tied up with the neighboring states.*

3.3.2 Bio-medical Waste Management: -

As per annual report information for the year 2017, there are 2, 38,259 no. of Health Care Facilities (HCFs) out of which 87,281 no. of HCFs are bedded and 1,51,302 no. of HCFs are non-bedded. The total generation of bio-medical waste is about 559 Tonnes per day. 84,805 no. of HCFs have granted authorization under the BMW Rules. There are 198 no. of Common Bio-medical Waste Treatment Facilities (CBWTFs) in operation (24 under construction) and 9,841 no. of HCFs are having captive bio- medical waste treatment and disposal facilities, which are involved in treatment and disposal of 518 Tonnes out of 559 Tonnes per day bio-medical waste. As reported, 23,942 no. of HCFs/CBWTFs observed to be violating the provisions of the BMW Rules. *7 nos. of States/UTs (Andaman Nicobar, Arunachal Pradesh, Goa, Lakshadweep, Mizoram, Nagaland, and Sikkim) are not having CBWTFs for treatment of biomedical waste.*

3.3.3 Solid Waste Management: -

As per CPCB, total municipal solid waste generation in 28 SPCBs/PCCs is about 119350.835 Tonnes Per Day (TPD), out of generated municipal solid waste, 106318.037 TPD is collected (89.08 %), 31318.745 TPD (26.24 %) is treated and about 46982.251 TPD (39.36 %) of solid waste is landfilled.

There are total 3091 urban local bodies (ULBs) in 28 States are responsible for implementation of Solid Waste Management Rules, 2016 (SWM Rules, 2016). There are 2027 composting facilities, 6 Waste-To-Energy (WtE) plants are operational in 3 States namely Delhi (3 nos.), Jabalpur (1 nos.) and Maharashtra (2 nos.) apart from total 2121 dumpsites present out of which 11 are capped and 30 are converted into sanitary landfill.

At present, there are no adequate number of scientific secured landfill facilities in the Country for disposal of municipal solid waste. Most of the generated solid waste is disposed of in dumpsites and causing soil, ground groundwater contamination apart from causing nuisance to the public, though SWM Rules 2016 prescribed that landfill site should preferably be used only for depositing inert waste and rejects.

3.3.4 E-Waste Management

As per the Global E-waste Monitor report of 2017 of United Nation University the e-waste generation in the Country in the year 2016 was 2 million metric tonnes. Inventory on generation of e-waste is being prepared by various SPCBs/PCCs and only six states namely Goa, J & K, Himachal Pradesh, Madhya Pradesh, Chhattisgarh and Punjab has prepared the inventory of e-waste generation. To ensure environmentally sound management of e-waste 301 dismantler& recycler have been granted authorization in 18 States. The total authorised capacity of these authorised dismantler & recycler is 780864.6 MT per annum.

3.3.5 Plastic Waste Management

As per the information provided by the States/UTs to CPCB, total estimated plastic waste generation during the year 2017-18 in the 29 States/UTs is 22,94,734 Tons. To minimize and regulate the generation of plastic waste 18 States/UTs have imposed complete ban on plastic carry bags/products and 5 States namely Andhra Pradesh, Gujarat, Jammu & Kashmir, Kerala and West Bengal have imposed partial ban on plastic carry bags/products at religious/historical places. There are 5066 (5015-Plastic, 11-Compostable, & 40-Recycling) Registered units in 27 States/UTs and ~ 756 unregistered plastic manufacturing/recycling units are running in 12 States/UTs, namely; Bihar, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra, Odisha, Puducherry, Punjab, Tamil Nadu, Uttar Pradesh & Uttarakhand respectively.

3.3.6 Construction and Demolition Waste (C & D Waste)

C & D waste generation in India accounts up to 23.75 million tonnes annually and these figures are likely to double fold up to 2016. (Source: International Society of Waste Management, India).

4.0 Action Plan to make river stretches free from Pollution

Based on the assessment carried out and the analysis of water quality data of 521 rivers for the years 2016 & 2017, CPCB has identified 351 polluted river stretches on 323 rivers based on exceedance of water quality criteria with respect to indicator of organic pollution i.e. Biochemical Oxygen Demand (BOD) (3mg/l) in 28 States and 3 Union Territories (UTs).

Among the five priorities, highest pollution levels in rivers grouped in Priority-I and Priority-II (61 identified polluted river stretches) due to mostly untreated or partially treated sewage discharges from urban agglomerations. The large volume of sewage in the big cities along these stretches requires huge financial resources. Accordingly, allocation of funds to address the problem of these polluted stretches requires to be assessed based on detailed studies (DPR). In other river stretches falling in Priority –III to Priority-V (290 stretches), restoration with relatively smaller efforts and less funds can be achieved in view of smaller organic pollution load. More application of conventional sewage treatment plant alone is not expected to produce results. A combination of factors and treatment options will have to be examined to ensure required treatment is provided and also treated sewage water is reused.

4.1 Review of Regulatory Frame Work

The legal and institutional provisions are provided in Water (Prevention and Control of Pollution) Act, 1974 wherein standards are developed and enforced for treatment of municipal wastewater by Pollution Control Boards. There are provisions for tightening of standards by State Pollution Control Board for site specific requirements, in view of low flow or no flow in stretches of rivers or streams

and for critically polluted areas in view of high concentration of pollution loads in a specific area. The need based directions for zero discharge are prescribed for grossly polluting industrial units. However, such enforcements are not practical in case of municipal bodies. The concept of delinking of sewer to river is gaining momentum in river conservation plans and may bring visible improvement in water quality of recipient's water bodies. There is a need to make these rivers and streams perennial by introduction of minimum/environmental/ecological flows for maintaining the ecosystem of aquatic resources through institutional provisions. In addition to the above, *suggested plans relating to review of legal frame work are:* -

a) Designated Best Use (DBU) criteria also be notified under E (P) Rules, 2016 as done in case of bathing criteria under E (P) Rules, 1986, as it helps the States/UTs to categorize rivers in the State and to take requisite remedial measures for ensuring the rivers fit for DBU.

b) Ban illegal industrial operations, empower the District Magistrate to dismantle such industrial premises in a time frame.

c) No industrial discharge shall be allowed without valid consent to operate from SPCB/PCC.

d) Installation of continuous online effluent monitoring systems (COEMS) should be made mandatory for all the wastewater generating industries irrespective of type of industry sector and quantum of wastewater generation;

e) Adoption of environmentally sound technologies for lower specific water consumption and less wastewater generation;

f) Levying of heavy penalties based on the polluter pays principles (based on the environment compensation for the damages caused to the environment as per CPCB guidelines). Also, the assessment cost incurred by the SPCBs/PPCs/CPCB should be recovered from the industry.

g) Validation of continuous online effluent monitoring systems and for initiating actions against the violating industries.

h) Inventorisation of all the industrial sectors generating wastewater so as to cover under the consent mechanism (at least one time obtaining of consent under Water Act, 1974) for ensuring proper treatment and disposal of industrial effluents generated from such industries.

i) Revisit effluent discharge norms for STPs in light of the directions passed by Hon'ble NGT.

j) Ban on discharge of untreated effluent into the water bodies in any form.

4.2 Municipal Sewage Management

There is a need to limit water consumption from all available resources including wastewater by recycling, reuse, recharging and storages, which includes operating on-site treatment and its reuse by the generators. There is an urgent need to plan strategies and give thrust to policies giving equal weightage to augmentation of water supplied and development of wastewater treatment facilities. Municipal wastewater collection, treatment and disposal are still not a priority by the municipalities/ state governments as compared to water supply. In absence of sewer lines, untreated wastewater is flowing in the storm water drains and poses health hazards to citizens inhabited near the drain, which is a great concern.

Although municipal waste water treatment is given impetus under National River Conservation Plan (NRCP) of Ministry of Environment, Forest and Climate Change, Government of India to provide sewage treatment plant to cities discharging wastewater in rivers, there is a huge gap between wastewater generation and its treatment. Also, the operation and maintenance of STPs/ETUs are not satisfactory due to uninterrupted power supply/ lack of backup power supply, municipal authorities do not have the adequate funds for spares, payment of electricity bills, lack of skilled manpower and most of the plants are underutilized due to lack of sewer network. Low-cost, decentralized, wetland-based bio-treatment systems have high potential to improve the water quality and sanitation problems. Scientific research has shown that well designed bio-treatment systems demonstrated good performance in terms of removing pollutants from municipal wastewater. Moreover, there are low-cost and easy to operate and maintain, making them ideal for India's sanitation context. These can be used extensively in rural areas, small towns, semi-urban areas of large cities, industrial townships or institutional campuses, as well as for certain types of industries such as agro-food/beverage.

In addition to contribution towards improved public health and water quality, this approach has additional potential co-benefits such as employment generation and availability of treated wastewater for irrigation that can increase farm productivity and income. However, these potential benefits can only be realized if such bio-treatment systems are deployed widely. Prospects of large scale deployment of bio-treatment systems including potential challenges, sources of finance, manpower, appropriate government interventions and civil society support needs to be considered. These approaches have the potential to contribute significantly to the goal of important government programs such as the Swatch Bharat Mission as well as our commitment to Sustainable Development Goals. *Suggested plans for municipal sewage management are:-*

(a) Area-wise gap analysis to be carried out at least once in five years by the Ministry of Urban Development in association with the ULBs/SPCBs/PCCs to estimate the requirement of STPs

(b) Commissioning of adequate capacity STPs based on area-wise gap analysis and the requirements for requisite facilities

(c) All the natural drains should be restored by interception and diversion of drains carrying sewage to the nearby existing STPs or upcoming STPs.

(d) Removal of the encroachments for allowing the drains (till 500 m on both side of the river banks) to have natural flows especially during monsoon.

(e) Upgradation of existing STPs with state-of-the art-technology, to ensure that the treated sewage meets STP effluent discharge norms notified under E (P) Act, 1986. The waste stabilization ponds (oxidation pond, maturation pond and duckweed pond) are most appropriate and rugged systems for small towns having land availability for treatment plant and use of treated wastewater in agriculture land.

In large urban settlements having land scarcity for establishment of sewage treatment plant and application of treated sewage for farm application, mechanical treatment systems viz. activated sludge process, trickling filter, up flow anaerobic sludge blanket (UASB), and aerated lagoons are appropriate and produce good results. There are success stories of treatment plants producing reasonably good quality water which is being used in the industrial sector for process as well as cooling purposes thereby reducing demand for fresh water.

(f) Provision of having on-site STP by all the bulk generators such as residential apartments or welfare associations and to encourage to utilize such treated sewage for useful purposes within the residential premises;

(g) Mandatory utilisation of treated sewage for non-potable urban and industrial use such as horticulture, cleaning of pavements, gardening, golf courts, building and road construction activities, flushing of water closets by adopting dual pipe system and agriculture by having dedicated irrigation channels;

(h) Ensuring proper O & M of existing STPs by allocating adequate budget;

(i) Awareness and training for the authorities operating STPs

(j) Utilisation of the generated sludge from STPs meeting the manure quality criteria as prescribed under Solid Waste Management Rules, 2016.

(k) R & D on in-situ remediation technologies for on-site treatment of sewage.

(l) Only pipe line network be used for carrying sewage from source to the point of treatment and sewage carrying tanker system should not be allowed;

(m) STPs should have a provision for holding of untreated sewage for suitable and adequate time period especially for temporary storage during

maintenance or temporary shutdown period rather than by-passing of untreated sewage.

(n) Metered water supply and levying of charges on the consumer depending on the metered water consumption pattern which envisages adequate funds with the local and urban authorities.

(o) Sludge generated from STPs, Septic Tanks/Soak Pits, waste from Dairy farms should be collected only through authorized Tankers/Transporter fitted with GPS provision and only such tankers or transporter should be allowed to transport only to the dedicated Bio-gas plants for methane recovery.

4.3 Industrial Effluent Management

a) Periodic gap analysis is required to be carried out at least once in five years w.r.t inventory of industrial effluent generation and the existing infrastructure (both captive ETPs and Common Effluent Treatment Plants) in the country by all the States/UTs in association with CPCB/Industry Associations/FICCI/CII to prepare strategies for management of industrial effluent generated in the country.

b) Adoption of clean technologies or environmentally sound state-of-the-art technologies by the industries;

c) Adoption of automatic shutdown valve provisions at the outlet of industry in the event of non-complying to the prescribed effluent discharge norms and for control of intentional discharge of untreated effluents by the industries;

d) Establishment of CETPs of adequate capacity in all the industrial clusters or estates and use of treated wastewater for non-potable urban and industrial use;

e) Ensuring proper operation and maintenance of captive ETPs or CETPs;

f) Notification of PETP Standards under E (P) Rules, 1986 for all the industrial sectors connected to CETPs;

g) Adoption of ZLD or Adoption of new technology as per guidelines of CPCB which can reduce huge water consumption, whichever is feasible.

h) Renewal of consents subject to time targeted reduction of wastewater generation and recycling of treated wastewater.

i) Dedicated closed drain system for conveyance of PETP industrial effluent from industrial clusters and routed through CETPs for ensuring treatment and disposal of industrial effluent complying to the discharge norms for final disposal as permitted by the States/UTs under the consent mechanism.

j) Environmental Surveillance Squads to be constituted by the States/UTs comprising experts from concerned departments, expert institutions for periodic surprise inspections and assessment of compliance to the conditions of consents.

4.4 Waste Management

4.4.1 Municipal Solid Waste Management

a) Periodic gap analysis is required to be carried out at least once in five years w.r.t inventory of municipal solid waste generation and the existing infrastructure in the country by all the States/UTs in association with ULBs/ Expert Institutions such as NEERI, Nagpur to formulate strategies for management of municipal solid waste in accordance with the Municipal Solid Waste Management Rules, 2016 and amendments made thereof

b) As a source control measures, all the bulk waste generators (Hotels/Restaurants/Market Yards/Fruit Juice Makers/ Commercial Centers/Residential Colonies or Apartment) should have on-site waste processing facilities for conversion of bio-degradable waste into manure by adopting vermiculture or by suitable plant and machinery and such converted manure should be used for horticulture

c) Development of adequate number of integrated municipal sanitary landfills with a provision of Refuse-Derived Fuel (RDF), bio-composting, recycling, methane recovery from ~~MSW~~ sanitary landfills, leachate management and Waste-To-Energy provision

d) Use of recyclable waste material from segregated from solid waste for road construction/ oil recovery/ use in Waste-To-Energy Plants and to ensure that only inert and rejects are disposed in sanitary landfills in accordance with the SWM Rules, 2016;

e) Bio-mining and capping of all the existing municipal solid waste dumpsites as per SWM Rules, 2016.

f) All the solid waste rag pickers should be made as a part of the urban local bodies for ensuring proper collection, transportation and disposal of solid waste to provide employment and improvement in economic and social security of such workers.

4.4.2 Hazardous Waste Management

a) Periodic inventory of hazardous waste generating industries in the country based on scientific principles approach (at least once in five years) by all the States/UTs in association with CPCB and to carryout detailed gap analysis w.r.t hazardous waste generation and existing treatment and

disposal capacity, for formulation of strategies keeping in view proper management of generated hazardous waste in accordance with the HOWM Rules, 2016.

b) An enforcement framework for effective enforcement of HOWM Rules, 2016 based on principle of proportionality and also precautionary principle with a view to remove ambiguity in regulatory actions and to bring transparency, predictability and consistency in enforcement for actions.

c) IT based solutions to be evolved for tracking HW in place of existing manifest under HOWM Rules, 2016 for the purpose of integrated data handling and management solution in a time bound manner.

d) Disposal of any industrial waste illegally be penalized with heavy penalties in accordance with the polluter pays principles on the responsible generators or operators or recycler or reuser. All the concerned industries are made responsible for cleaning up of such sites.

e) Development of adequate capacity of Hazardous Waste TDSFs especially in the States/UTs which are yet to develop such facilities in accordance with the Hazardous Waste (Management & Transboundary Movement) Rules, 2016 as amended or to tie up with the neighboring States having such facilities by adopting manifest system.

f) All the identified and prioritized contaminated sites to be remediated in a time bound manner based on the polluter pays principles wherever generator is identified or by the concerned State Government or UT Administration.

4.4.3 Bio-medical Waste Management: -

a) Periodic inventory of bio-medical waste generating industries in the country based on scientific principles approach (at least once in five years) by all the States/UTs in association with CPCB and to carryout detailed gap analysis w.r.t bio-medical waste generation and existing treatment and disposal capacities, for formulation of strategies keeping in view proper management of bio-medical waste in accordance with BMWM Rules, 2016.

b) All the bio-medical waste generating HCFs (bedded and non-bedded), other than hospitals/clinics such as Veterinary Hospitals, Animal Houses, AYUSH Hospitals irrespective of the quantum of bio-medical waste generation should be covered under the authorization mechanism as prescribed under BMWM Rules, 2016 to ensure proper management of bio-medical waste in the country, by all the States/UTs.

c) Bad code system for tracking of bio-medical waste from its source to the treatment and disposal facility should be implemented with immediate effect

as per the guidelines issued by CPCB and as prescribed under BMWM Rules, 2016, by States/UTs namely Andaman Nicobar, Arunachal Pradesh, Assam, J & K, Lakshadweep, Mizoram, Orissa, Puducherry, Sikkim, Uttar Pradesh and West Bengal.

d) In the States/UTs (viz., Arunachal Pradesh, Andaman & Nicobar, Goa, Lakshadweep, Mizoram, Nagaland and Sikkim) where CBWTFs yet to come up, till such time, HCFs shall be authorised to dispose of in designated captive deep burial pits having specifications in accordance with BMWM Rules, 2016

e) All the HCFs (Bedded) having more than ten beds (i) which are either connected with sewerage network without terminal sewage treatment plant or not connected to public sewers, such HCFs shall have to comply with the effluent discharge standards stipulated under Schedule –II of the BMWM Rules, 2016; (ii) For discharge into public sewers with terminal facilities, the general standards as notified under the E (P) Act, 1986 shall be applicable; (iii) Health Care Facilities having less than ten beds shall have to install Sewage Treatment Plant by the 31st December 2019; (iv) Non-bedded occupiers shall dispose infectious liquid wastes only after treatment by disinfection as per Schedule-II of the BMWM Rules, 2016 as

f) Disposal of any bio-medical waste illegally be penalized with heavy penalties in accordance with the polluter pays principles on the responsible occupier or operators of CBWTF

g) Development of adequate number and capacity of CBWTFs in accordance with the guidelines issued by CPCB based on the coverage area–wise gap analysis with regard to the inventory of bio-medical waste generation and the existing infrastructure for treatment and disposal of generated bio-medical waste.

4.4.4 E-Waste Management: -

a) Inventorisation of e-waste generation which include identification of producers who have obtained/ not obtained Extended Producer Responsibility (EPR), verification of quantity of e-waste collected by producers, verification of systems provided by producers for collection and channelization of e-waste, informal trading, dismantling and recycling activities, adequacy of infrastructure available with the existing dismantlers/recyclers, system of collection of e-waste from consumers by the manufacturers by the SPCBs/PCCs/CPCB/ Custom department, Ministry of commerce and Ministry of electronics & Telecommunication

b) Development of captive state-of-the-art recycling facilities or disposal through authorised e-waste recyclers by the Electrical and Electronic manufacturers and also plugging of unauthorized e-waste recycling facilities.

4.4.5 Plastic Waste Management:-

a) SPCBs/PCCs are ensured that action is taken against unregistered plastic manufacturing/recycling units and & no unit will be operated in non-conforming/residential areas.

b) All Producers/Brand-owners/Importers who are applying to CPCB/SPCB for Registration as a Brand–owners/Producer have to work out modalities for waste collection system based on Extended Producer Responsibilities.

4.5 E-Flows and Watershed Management

Suggested plans for maintaining E-Flows and Water shed management: -

a) Based on the river basin study of 6 river basins i.e. Siang River Basin, Twang River Basin, Bichom River Basin, Subansiri River Basin, Dibang River Basin and Lohit River Basin, MoEF & CC has recommended the minimum flow of the river to be 18% of the average of lean season flow of the river. However, in some of the cases, it has stated to be even 20%. Hon'ble NGT already passed orders that all the rivers in the country shall maintain minimum 15 % to 20% of the average lean season flow of that river. States and UTs should strictly ensure to comply with the requirement.

b) A successful programme adopted for restoring all the minor irrigation tanks and lakes in Telangana State called Mission Kakatiya. Such mission also be adopted by the States and UTs under the water shed management. The programme helped in rejuvenating 46,531 tanks and lakes, storing 265 TMC water across the state in a period of five years. As a part of the Mission Kakatiya , the tanks and lakes are dug to remove silt for increasing water storage capacity. The household agricultural income has also increased 78.50% in the tank ayacut area.

4.6. **Assessment of status of improvement** in water quality due to execution of plans for prevention and control of contamination of water resources through (i) evaluation of effectiveness of pollution control measures already in existence; (ii) evaluate water quality trend over a period of during execution of approved action plans; (iii) assess improvements in assimilative capacity of rivers.

4.7 **Awareness on irrigation practices-** Considering limited water resources, awareness or training is required to be imparted to the farmers periodically on aspects relating to (i) judicial use of water; (ii) auditing performance of existing irrigation practices; (iii) best irrigation methods which can be adopted including optimum water applications depending on the crops;(iv) Changes in crop patterns which can be adopted depending on the local conditions; (v) methods to prevent

agricultural runoff; (vi) water conservation equipment; (vii) methods of storage of excess rain water within their fields etc.,

4.8. **Other measures** such as Protection of Flood Plain Zones (FPZ) by regulating activities in flood protection zone, removal of encroachment, adoption of rain water harvesting, ground water charging, greenery or plantation on both sides of the river up to 500 m, setting up biodiversity parks on flood plains by removing encroachments, may be given more attention.

Above action plans prepared are implemented by all the concerned authorities in a time bound manner for ensuring pollution free identified river stretches as per the time targets given in Table 1

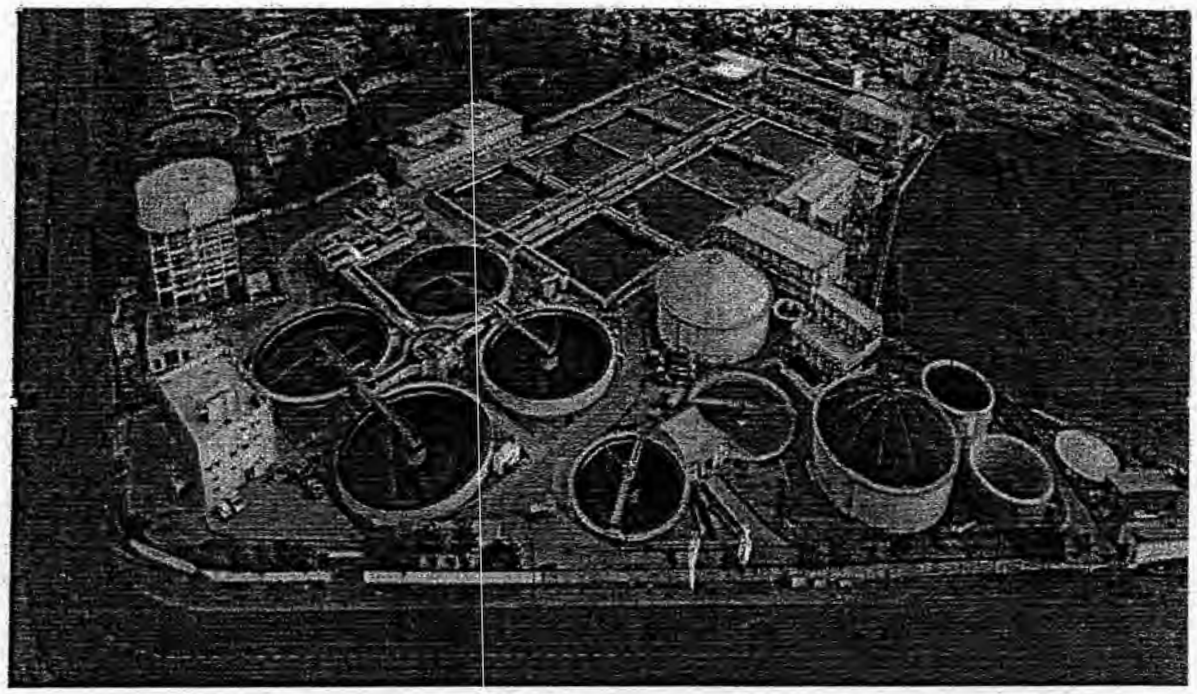
Table 1. Proposed Targets for Making Rivers Pollution Free

TASK	PRESENT*	NGT (2021)	2022 (Proposed)	2024 (Proposed)
Sewage Management				
▪ Treatment Capacity	35 %	100%	75%	90 %
▪ Utilisation of Treated Wastewater	< 2 %	---	20 %	50 %
Industrial Effluent Management				
▪ Treatment Capacity	98 %	100%	100 %	100 %
▪ Utilisation of Treated Effluent	20 %	---	30 %	40 %
▪ Reduction of Fresh Water use	---	---	10 %	25 %
Solid Waste Management				
▪ Collection	80 %	100%	100 %	100 %
▪ Treatment	26 %	100%	75 %	100 %
E-Flow Management				
▪ Lean Flow	---	15-20%	15-20%	15-20%

-- OO --

ANNEXURE-XV

130 MLD SEWAGE REUSE PROJECT FOR WATER SUPPLY TO 3 X600 MW KORADI TPS EXPANSION BHANDEWADI, NAGPUR



Maharashtra Pollution Control Board

MAHAGENCO (Maharashtra State Power Generation Corporation Ltd) has signed a Memorandum of Understanding (MoU) with Nagpur Municipal Corporation (NMC) to supply treated water from municipal sewage plant as the water linkage to meet additional demand of MAHAGENCO's proposed expansion plan. MAHAGENCO has agreed to pay NMC Rs 150 million (15 crores) every year for the next 15 years as royalty fee. MAHAGENCO has two existing thermal power plants (TPP) near Nagpur City. One of the TPP is 840 MW capacity at Khaperkheda, and the other is of 1100 MW is at Koradi. MAHAGENCO has planned for three new power units – one at Khaperkheda and two at Koradi, each with 660 MW capacity. Requirement of water for the expansion project was 130 MLD.

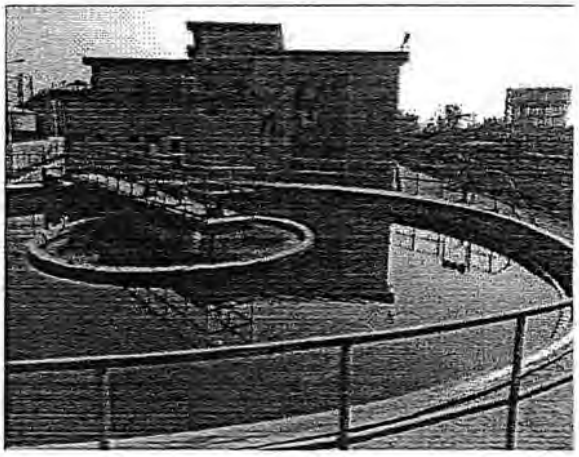
Nagpur Municipal Corporation is having population of about 27.41 Lacs as per census 2011. Presently Nagpur city is generating about 505 MLD sewage. Nallas Carrying sewage opens into Nag River & its tributaries.

MPC Board has issued direction to Nagpur Municipal Corporation install sewage treatment plants & provide sewerage system for treatment of entire sewage generated from Nagpur city.

MAHAGENCO had the existing allocation from Pench River for 55 Million m^3/ year. With the addition of three new power units, MAHAGENCO was looking for additional water requirement of 58 Mm^3/ year.

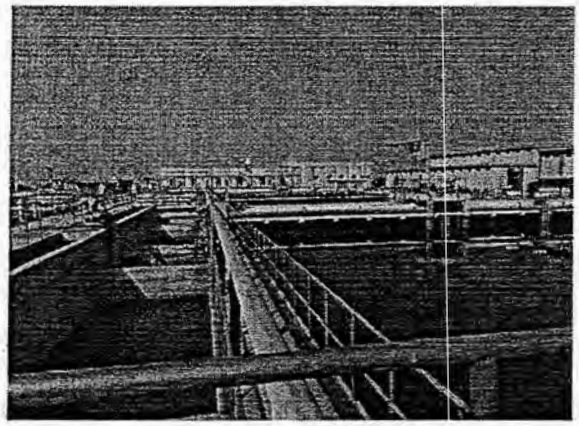
Following a request from MAHAGENCO, the Irrigation department of Government of Maharashtra, increased the water allocation from 55 to 67 Mm^3/year with a maximum use of 75 Mm^3/year within 10 percent variation. However, this was projected to be insufficient for all three units, and there was no additional freshwater allocation available for MAHAGENCO from any other source. No additional water reservation was available from the existing Kamptee Khairee Pench project. Considering the water scarcity in the Vidharbha Region and huge water demand for upcoming power plants, MAHAGENCO decided to go for an alternate unconventional source.

Idea of using treated sewage water as a water linkage for TPP stemmed from the concept of NEXUS. NEXUS is a concept and an approach that aims to boost potential to increase overall resource use efficiency and benefits in production and consumption by addressing externalities across sectors.



To resolve the issue of water availability for MAHAGENCO, USAID, through its project titled Water Energy NEXUS Phase – II (WENEXA – Phase II), initiated a feasibility study that included demand assessment and evaluation of alternate water sources. The study assessed feasibility of use of high quality tertiary treated water from the city of Nagpur's wastewater plant. WENEXA – Phase II project also implemented a six month long pilot plant

to showcase achievable output water quality and get buy-in from both NMC as well as MAHAGENCO that reuse is effective and feasible.



USAID conducted a feasibility study for re-use of treated sewage from Nagpur city for its use in a Thermal Power Station. MAHAGENCO found the proposal feasible and economical. MoU signed between NMC and MAHAGENCO for "Construction and Operating Agreement of Treatment and Transmission Facilities for Reclaimed Water Usage". MoU between MAHAGENCO and NMC has been signed in year 2009 based on results of this study, pilot plant data and the potential for getting good quality reclaimed water in short period of time. Based on this agreement, NMC being a municipality, approached the central Government and received a grant for a sum of Rs 900 million towards the project under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), while the remainder of the cost Rs 900 million to be borne by MAHAGENCO. Grant of Rs. 90 Cr received from JnNURM & land required for the project has been handed over to MAHAGENCO for construction of STP by NMC. NMC is supplying 110 MLD (+10%) sewage to MAHAGENCO @ Rs 15 Crs./ year. MAHAGENCO has also agreed to construct a new sewage treatment plant with tertiary treatment capability with the capacity to pump the treated water to its thermal power stations.

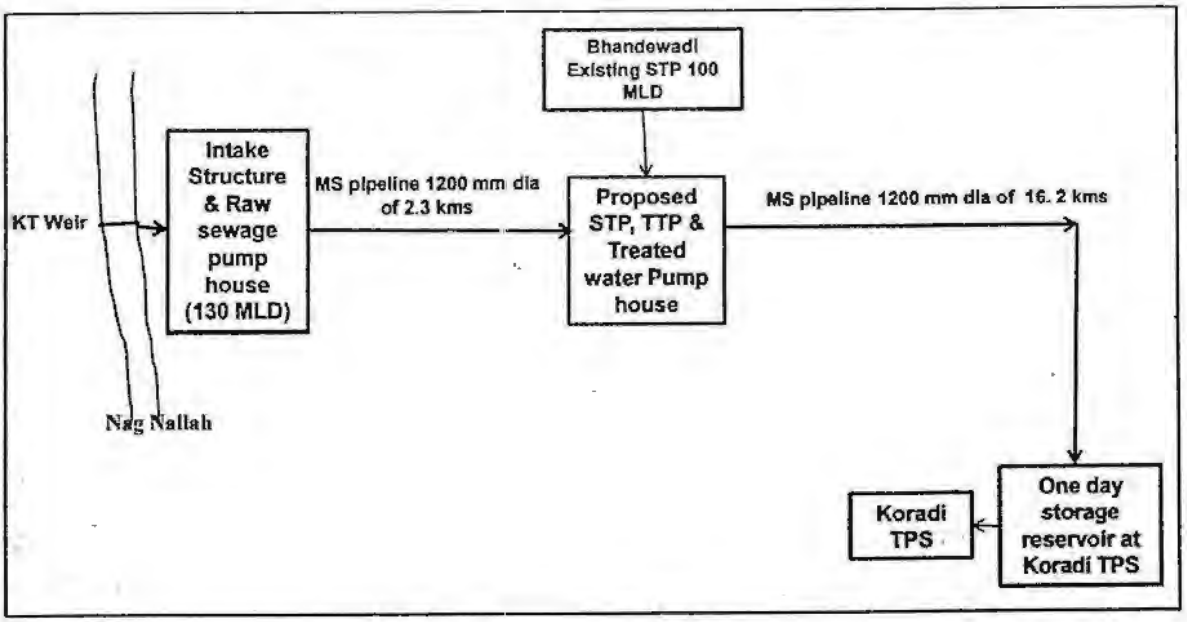
TREATMENT PROCESS:

Intake Works:

KT Weir, Raw Sewage Pumping Station at Nag Nallah & M.S. Transmission Pipe Line (1200mm dia, 2.3 Km) from Nag Nallah to STP at Bhandewadi.

Sewage Treatment Plant at Bhandewadi:

- **Primary treatment :** Parshall Flume & Primary Clarifiers
- **Secondary treatment (Biological Treatment) :** Sequential Batch Reactor
- **Tertiary Treatment:** Deep Bed Multi-Media Filters, Chlorination, Sludge Handling System
- Treated water Pumping Station at Bhandewadi.
- M.S. Transmission Pipe line (1200mm dia, 16.2 Km) from Bhandewadi to one day storage reservoir at Koradi Thermal power station.

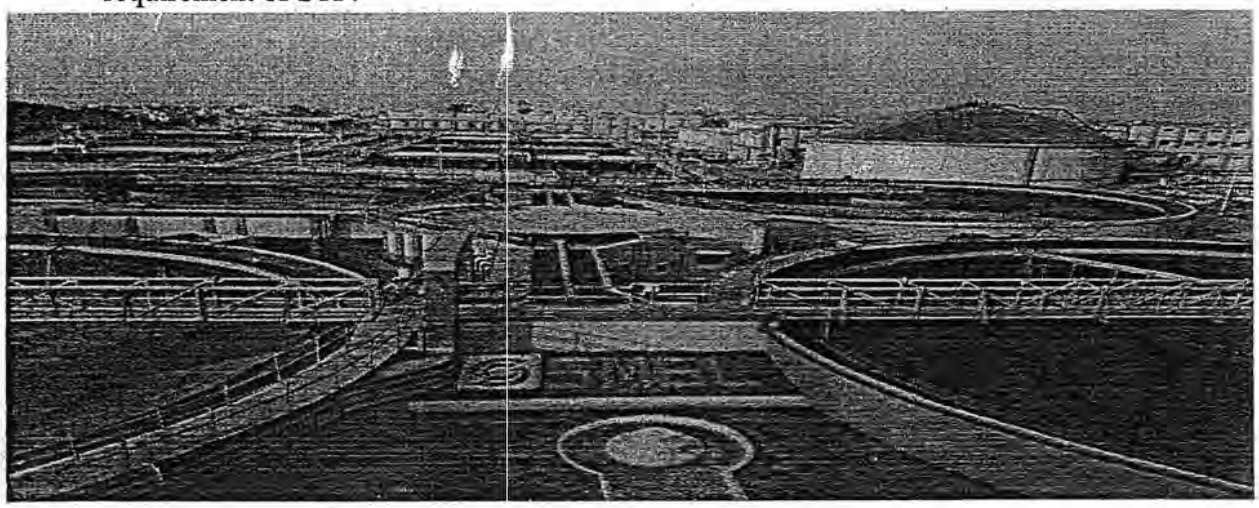


COST OF DELIVERED WATER:

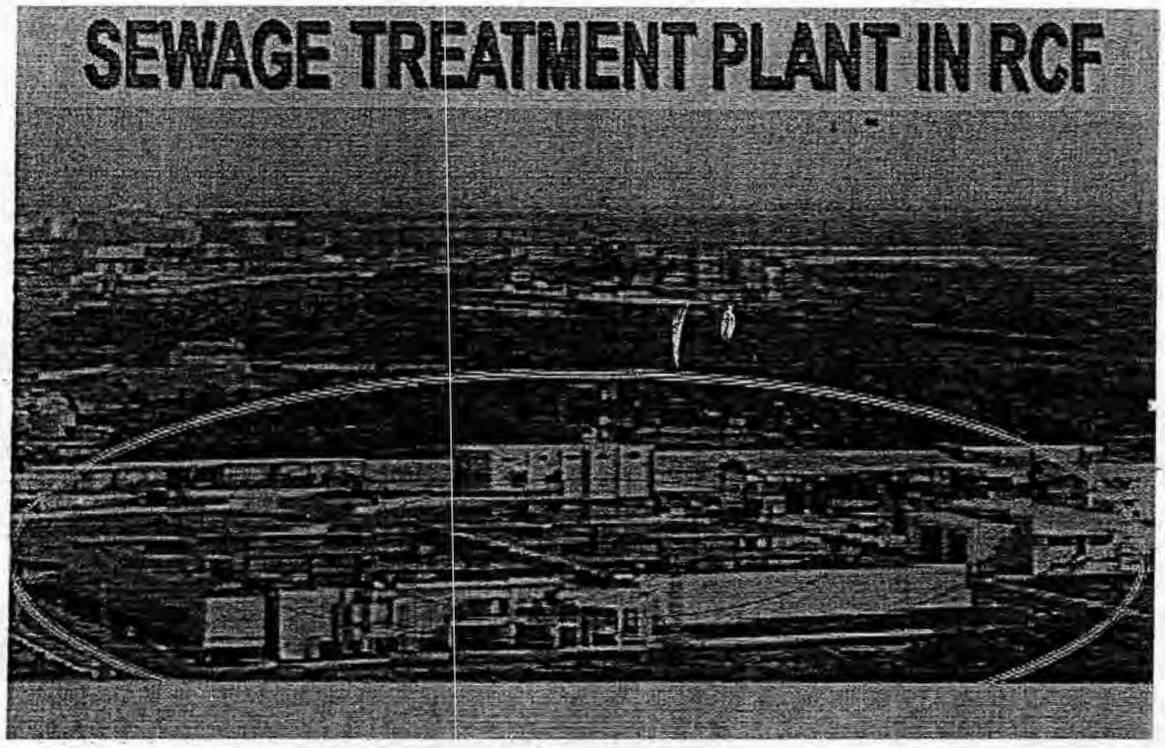
- Capital Cost of the Project (130MLD) : Rs. 180 Cr
  - JnNURM Grant: Rs. 90 Cr
  - MAHAGENCO Share: Rs. 90 Cr
- Operation and Maintenance Cost : Rs. 1.50 Cr/Year
- Payment to NMC for raw sewage purchase : Rs. 15 Cr/Year
- Cost of water to MAHAGENCO: Rs. 3.40 per Cum.
- Cost of fresh water from irrigation department: Rs. 1.20 to 9.60 per Cum.

PROJECT BENEFITS:

- Saving of fresh water.
- New STP of 130 MLD has improve ecology and environment of surrounding water bodies.
- Reliable and economical source of water supply for power plant.
- In future, power generation from STP sludge is also envisaged to make the power requirement of STP.



SEWAGE TREATMENT PLANT AT RASHTRIYA CHEMICALS AND FERTILIZERS TROMBAY UNIT TO TREAT AND REUSE SEWAGE OF MUMBAI CITY

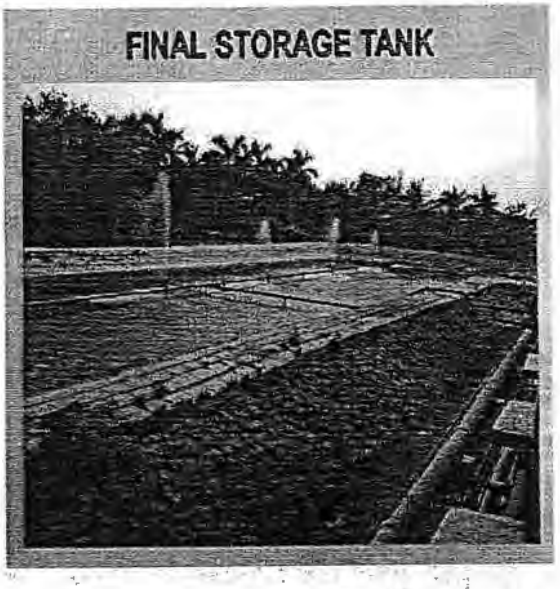


Maharashtra Pollution Control Board

RCF has developed a Novel scheme to generate Process water by treating Municipal Sewage water of Mumbai City in this process the leading Fertilizer Company of Govt of India has taken a Giant step of treating Sewage water of Mumbai City making it free from pollution and using it in the process to manufacture Fertilizers and Chemicals. In this process RCF,

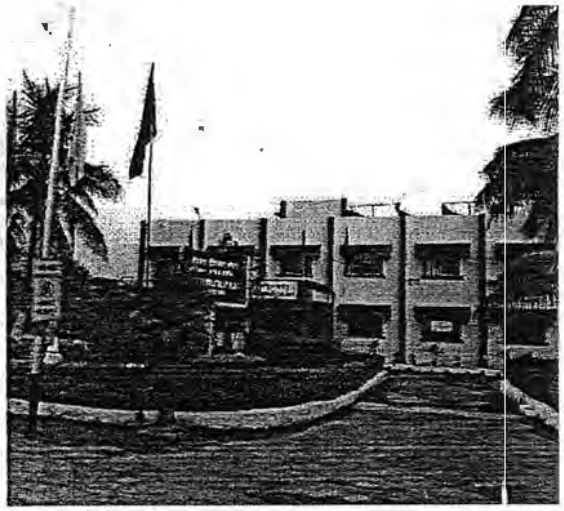
Trombay has not only become self-reliant in water but the 18 MLD of water which was drawn from BMC is made available as drinking water to residents of Mumbai.

The water requirement of RCF plant was met by Municipal Corporation Water Distribution Network available in the area, which supplies high quality drinking water. Since this water is better used by ever growing population of the area, the enlightened and foresighted management of RCF in cooperation with civic authorities decided to implement a sewage treatment project, wherein, they could procure sewage from Municipal Corporation Network and treat the same to their required standards.



In RCF Trombay unit, Sewage treatment plant was set up in the year 2000.

This plant promotes zero waste, recycling & reuse of materials. The plant has a treatment capacity of 5 MGD (23 MLD). The raw sewage from Municipal Corporation is used as a raw material. About 3.5 MGD (18 MLD) of good quality water is produced by treating this 5 MGD sewage.



The plant is designed in two streams each capable of handling 475 m^3/hr of design flow. The whole process is divided in two stages. In Stage I, suspended solids, biodegradable organic matter, Ammonical & Total Kjeldhal nitrogen and oil & grease is removed. In stage II, balance suspended and dissolved inorganic salts are removed.

Primary, secondary and tertiary treatment followed by Reverse Osmosis for removal of total dissolved solids (TDS) is given in Sewage Treatment Plant.

About 80-90% of water requirement of factory is met by in house Sewage Treatment Plant. Water reclaimed over last 3 years' span is tabulated as under:

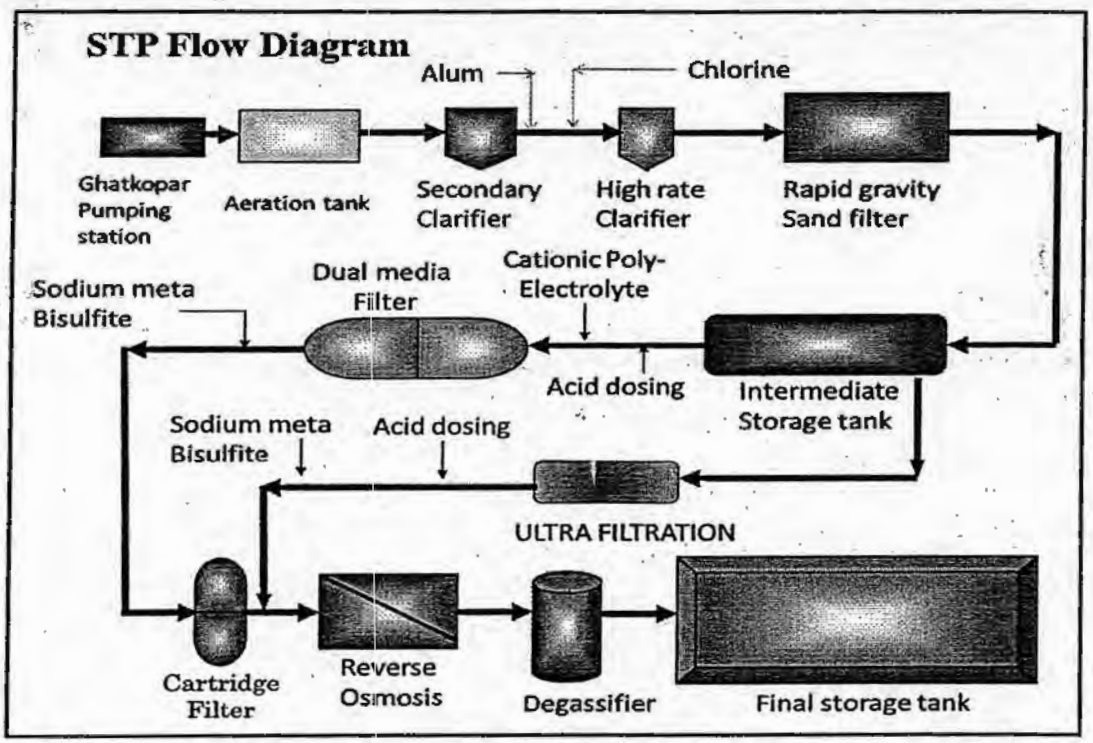
Year	Raw Sewage Treated(m3)	STP water produced(m3)
2016-17	54,94,820	49,79,430

2017-18	57,14,250	54,36,430
2018-19	60,83,660	55,75,120

The treated water produced in Sewage treatment plant is having better quality from the point of view of conductivity and used for BFW water, cooling water makeup process water for various dilution and Fertilizer manufacturing process and for other all industrial applications

Apart from installation of sewage treatment plant to reduce fresh water consumption of the unit, following steps are adopted to conserve the fresh water:

- Installed one new RO skid in existing sewage treatment plant to further recover water from reject stream.
- Reject from RO Process is further treated for recovery the remaining small portion is used for cleaning, washing and for gardening purpose in the factory.
- Efforts are taken to conserve each and every drop of water. Natural pond is developed in factory premises for rain water harvesting.
- All the domestic sewage generated in factory is sent to the existing sewage treatment plant for treatment. Thus reducing the sewage treatment load of Municipal cooperation.

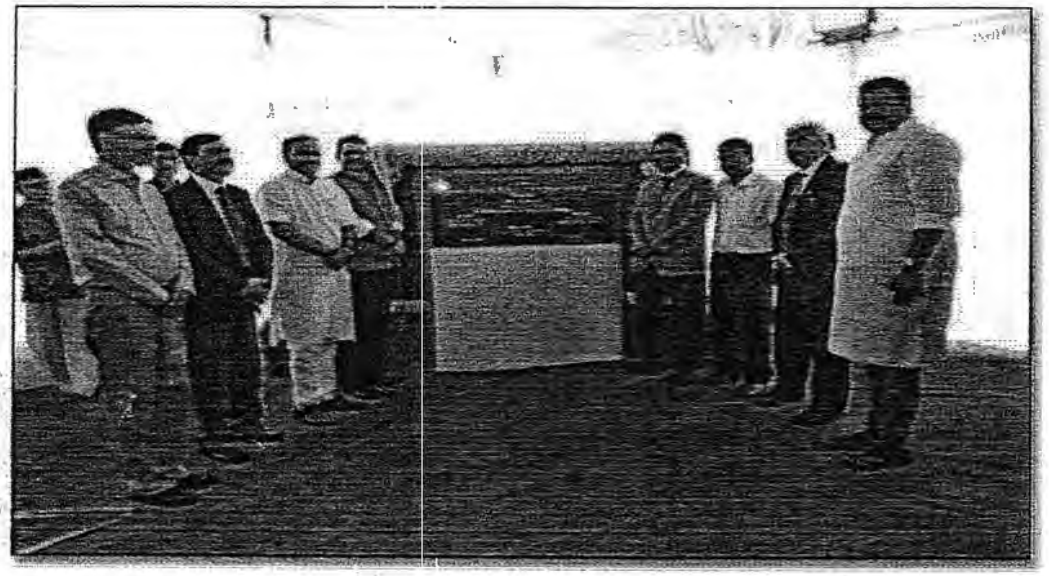


- RCF Trombay Unit is setting up second stream of Sewage Treatment Plant (STP) adjacent to the existing STP with a capacity to treat 22.75 Million Litres per Day (MLD) of Municipal Sewage to produce about 15 MLD of treated water. The project is expected to be commissioned by Dec 2019.

BENEFIT:

- Saving of 3.5 MGD (18 MLD) water for the use of citizens of Mumbai (where water is in short supply).
- Reduction in cost of disposal of 5 MGD (23 MLD) sewage to sea as pollutant by Municipal Corporation of Greater Mumbai.
- Assured supply of process water to plants in RCF, Trombay complex.
- Reduction in blow down from process plants due to better quality of water.

Inauguration of New Sewage Treatment Plant



Consent to Operate of Rashtriya Chemicals and Fertilizers, Trombay Unit:

MAHARASHTRA POLLUTION CONTROL BOARD

Phone : 4010437/4020781 /4037124/4035273
Fax : 24044532/4024068 /4023516
Email : enquiry@mpcb.gov.in
Visit At : http://mpcb.gov.in

Kalpataru Point, 3rd & 4th floor, Sion- Matunga Scheme Road No. 8, Opp. Cine Planet Cinema, Near Sion Circle, Sion (E), Mumbai - 400 022

Consent order No :- Format1.0/ BO/CAC-Cell/ UAN No 0000005429/6th CAC/ 1701000979
Date- 18/01/2017

To,
M/s Rastriya Chemicals & Fertilizers Ltd,
Trombay Unit, Mahul Village Road,
Chembur, Mumbai-400074

Subject: Renewal of consent to operate under RED category.
Ref :1. Earlier Consent granted vide no MPCBHQ/JD-PAMS/Mumbai/CAC/R-CAC-106 dtd 23.12.2011
2. Your application approved in CAC meeting held on 16.12.2016.

Your application: 0000005429
Dated: 26.05.2016
For: Renewal of consent to operate
under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 and Authorization under Rule 6 of the Hazardous & Other Wastes (M & T) Rules 2016 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule II III & IV annexed to this order:

1. **The consent is granted for a period from 02.08.2016 to 31.07.2021.**
2. **The actual capital investment of the industry is Rs.1755.4 Crs. (As per Undertaking submitted by industry).**
3. **The Consent is valid for the manufacture of –**

Sr. No.	Product Name	Maximum Quantity in MT/A
1	Ammonia	465000
2	Conc. Nitric acid	27000
3	Phosphoric acid	37200
4	Methanol	69960
5	Methylamine	5242
6	Ammonium Bicarbonate	25000
7	Sodium Nitrate nitrite	5230
8	Sulphuric acid	111600
9	Nitric acid 100%	398040
10	Biola	1200
11	Microla	1200
12	Sulala	22200
13	Urea	483600
14	Complex Fertilizer Suphala + ANP	855600
15	Treated water from sewage	4932000

Consent to Operate of Municipal Corporation of Greater Mumbai:

MAHARASHTRA POLLUTION CONTROL BOARD

Tel: 24010437/24020781/24014701
Fax: 24024068 /24023515
Website: http://www.mpcb.gov.in
E-mail: enquiry@mpcb.gov.in

Kalpataru Point, 2nd - 4th Floor,
Opp. Cine Planet Cinema,
Near Sion Circle, Sion (E)
Mumbai - 400 022

Consent order No: - format 1.0 / BO/JD (WPC)/CC/ - 1805001473
Date: 28/05/2018

To,
M/s. Municipal Corporation of Greater Mumbai,
Mahapalika Marg,Fort, Mumbai 400001.

Sub: Renewal of Consent for STPs at Ghatkopar, Bhandup, Varsova, Malad, Charkop, Colaba, Worli, Bandra.

Ref: 1. Board Consent granted vide No. BO/JD (WPC)/ CC/1703001394 dated 21/03/2017
2. Your Application for Renewal of Consent vide No. UAN No. 38515 dated 22.012.2017
3. Minutes of Consent Committee Meeting held on 23/03/18 and 24/03/2018

For: Consent to Operate Renewal for STPs at Ghatkopar, Bhandup, Varsova, Malad, Charkop , Colaba, Worli, Bandra (386.0, 280.0,180.0,280.0,6.0,41.0,757.0&797.0 MLD) under Section 26 of the Water (Prevention & Control of Pollution) Act, 1974 & under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 is considered and the consent is hereby granted subject to the following terms and conditions and as detailed in the schedule I, II & III annexed to this order.

1. **The Consent to operate for Renewal is granted Period from 1.01.2018 to 31.12.2020.**

2. The Consent is granted for collection, treatment and disposal of domestic effluent generated from your local body.

3. **Conditions under Water (P&CP), 1974 Act for discharge of effluent:**

Sr. No.	Description	Permitted quantity of discharge (MLD)	Standards to be achieved	Disposal
A(i)	**Total Domestic effluent**	**2727.0**	As per schedule – I	
	STPs		As per schedule – I	Thane Creek
1	Ghatkoper STP	386.0	As per schedule – I	
2	Bhandup STP	280.0	As per schedule – I	
3	Varsova STP	180.0	As per schedule – I	Malad Creek
4	Malad STP	280	As per schedule – I	Malad Creek
5	Charkop STP	6.0	As per schedule – I	Gorai Creek
A(ii)	**STPs**			
1	Colaba STP	41.0	As per schedule – I	Open sea through marine Outfall
2	Worli STP	757.0	As per schedule – I	
3	Bandra STP	797.0	As per schedule – I	

150

ANNEXURE-XVI

Success Story: Utilization of Treated sewage in textile industrial cluster located at Pandesara Surat, Gujarat.

Background:

Surat is a city located on the western part of India in the state of Gujarat. Surat is one of the cleanest city of India and is also well-known as "THE SILK CITY", "THE DIAMOND CITY", "CLEAN CITY", "THE GREEN CITY" etc. It has a most vibrant present era with an equally varied heritage of the past. It is one of the most dynamic cities of India with one of the fastest population growth rate. The City has witnessed a tremendous growth in textile and diamond industries in past three decades.

Pandesara GIDC Industrial area; a major industrial cluster with water based industries; is situated in southern part of Surat city. There are approximately 600 Industries in Pandesara area, out of which approximately 130 industries are water based industries comprising of mainly textile processing units and chemical industries. These textile processing units cater almost 40% of total demand of synthetic yarn made sarees and dress materials of our entire country. They require huge quantity of soft water with continuous supply from reliable source for their process of manufacturing.

Since year 1998, Surat Municipal Corporation is providing average 55 MLD continuous water supply to these industries for about 20-22 hours daily on volumetric basis at a water usage tariff as per agreement made with their association. Revenue income generated from water supply to these industries formed a sizable chunk in the total earnings from water supply to Surat Municipal Corporation, which helped in increasing capital expenditure outlay to improve the water supply infrastructure for the benefit of all the citizens of Surat.

The Water demand of Pandesara industries is approximately 90 – 100 MLD, comprising about 80 – 85 MLD of process water requirement and 10-15 MLD of potable quality water demand. Of the total demand, nearly 55 MLD was met through SMC potable water supply. The remaining demand was met through private sources including bore wells and water tankers. Furthermore, the Industrial units does not requires quality of water as pure as potable water for industrial use, hence considering the acceptable parameters for industrial grade water, SMC had decided to implement a project to supply industrial grade water by tertiary treatment of sewage from the Bamroli Sewage Treatment Plant (STP) to Pandesara Industrial Estate through a Public Private Partnership (PPP).

But after evaluating various offers on PPP model and considering various aspects & revenue generation from this project, SMC decided to execute this project on its own. Hence SMC invited tenders for Design, Build & Operate Tertiary Treatment Plant to treat secondary treated water from Bamroli Sewage Treatment Plant to generate Industrial Grade Water for Pandesara Industrial Estate on turnkey basis.

After evaluating various bids received from various bidders, the work was awarded to Enviro Control Associates (I) Pvt. Ltd, Surat, which is a one of the leading company in the field of wastewater treatment & recycling in India. The Company has designed, engineered and executed many Water, Wastewater & Industrial Effluent Treatment plants in India.

Thus, Surat Municipal Corporation has constructed 40 MLD capacity Tertiary Sewage Treatment Plant to treat secondary treated water from Bamroli Sewage Treatment Plant and to recycle, generate & supply Industrial Grade Water for Pandesara Industrial Estate at a capital cost of Rs.85.10 Crores.

Treated industrial grade water from the outlet of TTP is then supplied to existing underground storage reservoir of 450 Lacs liters capacity at Pandesara water distribution station. The stored water blended with potable grade of water & then about 80 MLD of mixed water supplied to industries for non-potable use.

For this new system SMC has made some necessary changes in the existing pipeline network to cater potable water supply of about 5-10 MLD for potable use to the industries with separate pipelines.

The plant was commissioned in February 2014 and is functional since then.

- Project
  - Design, Build & Operate (for 10 years) 40 MLD capacity Tertiary Treatment Plant to treat secondary treated water from Bamroli Sewage Treatment Plant to generate Industrial Grade Water for Pandesara Industrial Estate, Surat.
- Project Features :
  - Capital Project cost : Rs. 85.10 crores
  - Operation & Maintenance Cost for 10 Years : Rs. 80.00 Crores
  - Project duration : 18 months
  - Capacity of Tertiary Treatment Plant : 40 MLD
  - Project Completion Date : February – 2014
  - Total Recycle water Supply to Industries : 53795ML

    till March - 19.

Treatment Technology Used :

The following types of tertiary treatments are being used at Bamroli tertiary treatment plant to achieve the desired tertiary treated industrial grade water parameters.

- Sand Filtration

- Ultra-filtration
- Reverse Osmosis (RO)
- Activated Carbon Filtration (ACF)

Scale and Coverage :

- The project is envisaged to be implemented in a phased manner with an initial capacity of Tertiary Treatment Plant of 40 MLD with an option to scale up in a modular fashion to 80 MLD subject to growth in demand for Industrial process water, increase in output of Bamroli STP and progressive reduction in SMC water supply.
- Recycled waste water & Potable water is supplied separately to Pandesra industrial Estate by dual piping system for industrial & for potable purpose.

Result :

After commissioning of Tertiary Treatment Plant at Bamroli, SMC is now able to spare about 40 MLD potable water, which was earlier supplied to Pandesara industries. It has helped to increase potable water supply to the citizens of new areas included in Surat. Tertiary plant delivers required quality of treated water for industrial use. Resulted quality parameters of treated water are shown below.

Sr. No.	Parameter	Unit	Feed water/ Secondary Treated Sewage	Tertiary Treated Industrial Grade Water
1	Colour	Hazen units	55	<5
2	Turbidity	NTU	16	<5
3	pH	-	6.5-7.5	6.0-7.5
4	Total Hardness as CaCO3	mg/l	750	<300
5	Iron as Fe	mg/l	0.63	<0.25
6	Manganese as Mn.	mg/l	0.12	<0.10
7	TDS	mg/l	2100	<500
8	BOD5	mg/l	20	<5
9	COD	mg/l	100	<50
10	Suspended Solids	mg/l	30	<2
11	Total Nitrogen as N	mg/l	14	<10
12	Total Phosphrous	mg/l	8	<6

The most advantageous result of implementation of this project is its contribution towards reducing the dependency on conventional resources of water for the benefit of environment.

Revenue income from the water supply is also in line with the requirement. The rate of potable water is Rs.23/- per kl and the base rate of tertiary treated water was Rs.18.20/- per kl with indexation base rise every year. The weighted average rate is now being considered as per the actual consumption. Meter reading, checking, monitoring & surveillance activities are performed regularly departmentally. Computerized bills are generated and issued bi-monthly.

Benefits :

- Reuse of waste water.
- Contribution towards reducing the dependency on conventional resources of water.
- Facilitates recycling of wastewater - an environmentally sound and progressive advance practice.
- It has enabled SMC to free up potable water earlier supplied to Pandesara Industrial area, which is being used to supply as a drinking water to the citizens of newly merged area in the city.
- Dependence of Pandesara Industrial Units on bore-wells and private tanker operators has been minimised.
- It has reduced pressure on ground water resources in the city for the benefit of environment.
- Conserve valuable ground water resources for future generation.
- Assured resource for Pandesara during scarcity.
- Guaranteed revenue generation for Surat Municipal Corporation.

Replicability :

After success of the project, SMC has started the following projects,

- 35 MLD capacity at Bamroli (Phase – II) to cater need of Sachin Industrial Estate.
- 40 MLD capacity at Dindoli to cater additional need of Pandesara Industrial Estate.
- To explore further use of Tertiary Treated Sewage Water for Gardening, Lake Development, One TTP of 1 MLD capacity is completed as pilot project at Kavi Kalapi Garden, West Zone of Surat.
- For new proposed Six (06) EWS Housing Scheme having more than 3000 units under SMART City Mission, SMC has initiated to establish TTP to treat the Domestic Sewage and Re-use it for Toilet flushing & Gardening.
- Reuse of Secondary Treated Sewage Water for plants on Road Divider.

Waste Water Recycle Project By
M/s. Welspun, Anjar, Gandhidham, Gujarat

STP Capacity: 30 MLD,
Sewage received from: Gandhidham, Adipur & Anjar Municipalities.

STP Location: Welspun City, Anjar.

Sewage conveyance pipe line: 18 KM from Gandhidham/Adipur & 5.6 KM from Anjar Municipality.

Total Pumping Stations: Numbers of pumping station 6.

Plant Establishment:
14TH DECEMBER 2018 and Inaugurated by **SHRI VIJAY RUPANI HORNABLE CHIEF MINISTER OF GUJARAT.**

Total Project Cost.

Particulars	Total amount (in Crores)
• Sewage Treatment Plant of 30 MLD capacity • Sewage conveyance Pipe Line of 18 Kms, Sewage Pumping Stations (6 nos.) and associated works. • Sewage Treatment Plant of 30 MLD capacity including Civil, Mechanical & Electrical works.	**51.0** **70.0**
TOTAL	**121.0 Cr**

Present Sewage arrivals quantity: 23MLD.

Primary & Secondary: -
Treatment technology adopted: Screening àGrit chamber àAnaerobic zone àExtended oxidation processà Clarification à pre-chlorination à Deep media filter à post chlorination.

Tertiary treatment: Ultrafiltration & RO Processes (the above Project cost mentioned not included the RO & UF operation and establishment cost).

Percentage recovery of Sewage 85% and the remaining 15% is reject will be discharged into the deep sea after meeting the GPCB/ CPCB norms.

Treatment cost: Pumping station & STP O & M : Rs. 12/- Per KL.
UF & RO Operation Rs.38/- per KL.

Reject Management Cost: Pumping cost to Sea Rs.5/-/KL.

Total Operation Costs:-Rs.55/-per KL

Sludge Management:
Total sludge generation 35 MT 25% dry and 75% moisture per day; 5-10 MT is used as a Boiler fuel after drying; 30MT is used as agriculture manure in Welspun city and also supplied to farmers.

Benefits of STP Plant:

- Elimination of untreated sewage waters going from the above municipality to the water body / portion of Nakti Creek and sea.
- Revenue to Municipalities through Royalty from Welspun Rs. 0.40 paise per KL of untreated Sewage.
- Entire wastewater is being recycled & reused for production activities through STP, UF & RO Process by Welspun.
- Zero water Pollution & sludge generation
- Excess bio-sludge is used as a Boiler Fuel manure for plantations.
- Around 20MLD of Narmada water was previously used by Welspun units for various production activities and presently Narmada water consumption by Welspun is Zero. The entire Narmada water previously used by Welsun now been diverted to the local farmers & industries by GWIL.

Remarks: Narmada Canal eater costs them about ₹42 per KL. However, the reuse of treated sewage helped them to sustain the industrial operations due to shortage of water. Narmada water nowadays not supplying to industrial use.

ANNEXURE-XVII

Subject: **Success stories from Rajasthan on utilization of treated sewage**
To: Jathikartha Chandra Babu <jcb.cpcb@nic.in>

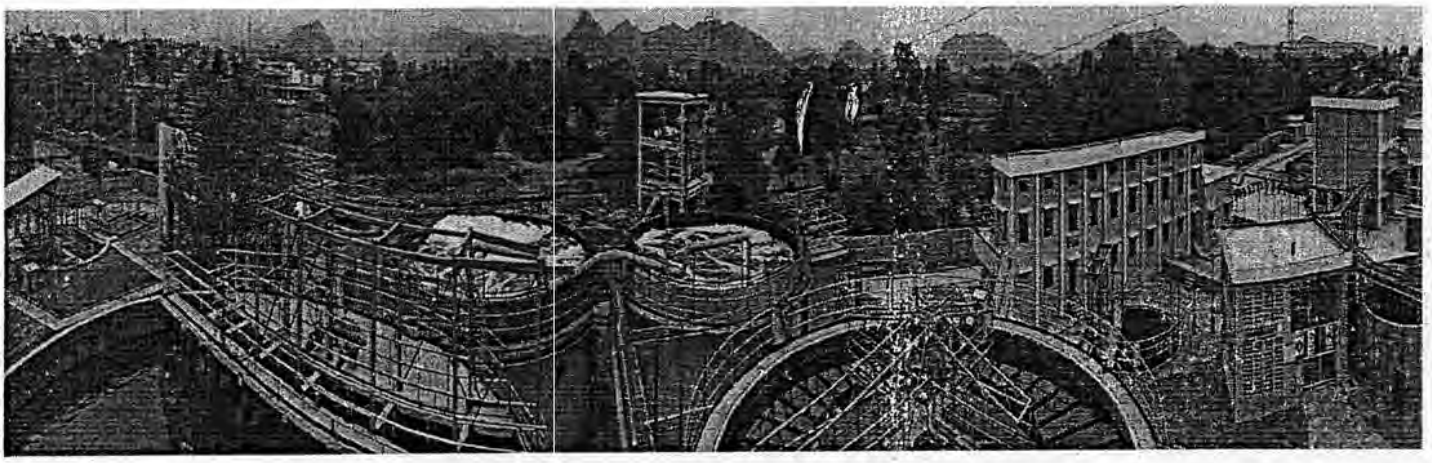
Date: 04/17/19 07:13 PM
From: Vijai Singhal <singhalvijai@gmail.com>

IMG-HZL_1.jpg (116kB) IMG-Jindal saw_1.jpg (101kB) IMG-HZL_2.jpg (133kB) IMG-Jindal Saw_2.jpg (142kB)
CSTP_HZL.pdf (644kB) 10 MLD STP_Jindal saw.pdf (4.3MB)

As discussed, pl find attached two write ups and photographs on STPs installed by M/s Hindustan Zinc Ltd, Udaipur and M/s Jindal Saw Ltd, Bhilwara where municipal sewage from the respective towns is being treated by these units and being used as raw water.
Regards

--
Dr. Vijai Singhal
M.E.(Env), Ph.D
Chief Environmental Engineer
Rajasthan State Pollution Control Board
Jaipur

— IMG-HZL_1.jpg



— IMG-Jindal saw_1.jpg

157

- Project/Program Name:

Innovative public-private partnership to enhance water security – A step towards sustainable Environmental existence

- Project/Program Brief :

Udaipur is a popular tourist destination located in the economically active yet severely water scarce Indian state of Rajasthan. The city had failing wastewater infrastructure and was struggling to maintain the cleanliness of its lakes, which had been historically absorbing raw residential sewage. In September 2012, a court order was issued to hotels and the municipality to deal with the problem and improve sanitation as well as tourist's attraction for the lakes. At the same time, the major corporate zinc mining company Hindustan Zinc (a subsidiary of Vedanta Group Ltd) was increasing production and exploring options for additional water resources, which would reduce their dependence on fresh water withdrawal.

A forward-thinking public-private partnership (PPP) deal between the Hindustan Zinc and the local government (Udaipur Municipal Corporation and Rajasthan State-Owned Urban Improvement Trust) was formed in May 2012 to develop the city`s first Wastewater Treatment Plant (WWTP) which addressed both stakeholder's objectives.

Commissioned in April 2014 (20 MLD) and Feb 2019 (25 MLD), the plant has a treatment capacity which equates to substantial quantity of Udaipur's daily wastewater. The treated effluent is then reused in Hindustan Zinc`s Rajpura Dariba Mining & Smelting complex, situated 80km outside of the city.

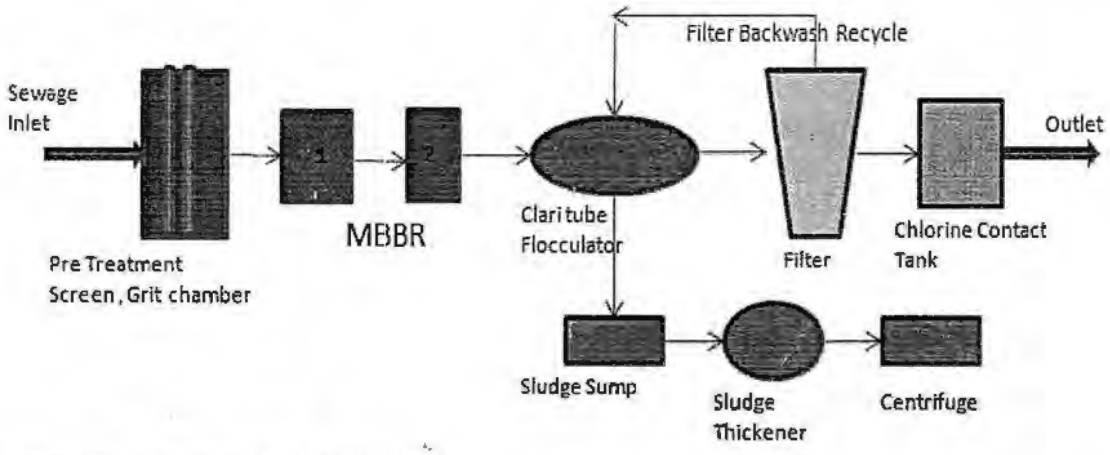
STP is commissioned on MBBR (Moving Bed Biofilm Reactor), the function of the MBBR Reactor is to convert the soluble organic matter in the waste water to suspended organic matter/bio-mass plus respiration products. The air required for biological treatment is provided through Air Blowers. Major advantages of MBBR systems are as follows:

- The moving bed biofilm reactor could operate at Higher Volumetric loading (10-15 times) and at shorter HRT (10-30 times)
- Recirculation is not required and has very low pressure drooped oxygen transfer
- Auto-regulation of biofilm thickness
- Simple distribution of liquid flow that enables raw unsettled wastewater to be treated directly
- More user friendly because it does not require sludge recycle.
- Less Sludge production and safe disposal of sludge without any further biological treatment.

Going further additional 10 MLD & 5 MLD is under construction which serves the approach for Sustainable water security model and support to the community at large.

- Location of the Project/Program: Eklingpura, Udaipur, Rajasthan, India (around 12 km from Udaipur)

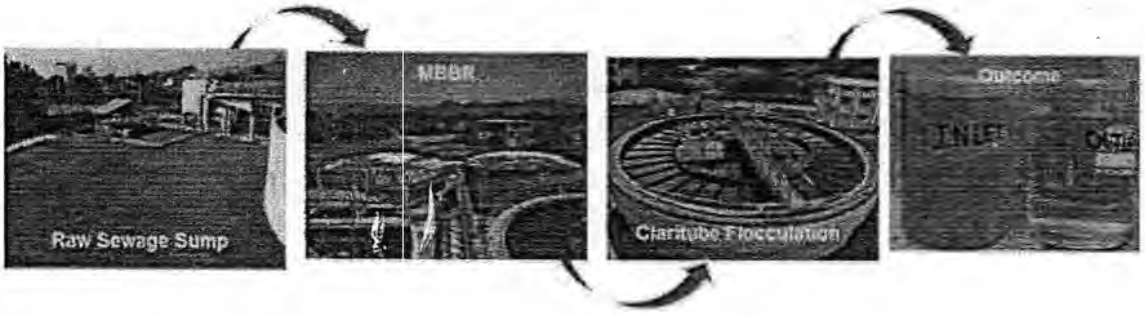
Piping Network- An extensive piping network was constructed from city to STP. A new Pipeline and pumping system was laid for utilization of this treated water at Rajpura Dariba Complex of HZL (80 km).



Process Flow Diagram for the MBBR plant

Brief of the treatment process

The sewage of city reaches to STP through the underground trunk pipe lines laid for this project. Sewage is collected in a wet well followed by an inlet chamber and screen chamber of raw sewage pumping station. From this wet well, the raw sewage is pumped and being sent to Treatment Plant units where it gets treated using MBBR (Moving Bed Bio Reactor) technology. Treated raw water is then collected in treated raw water sump and the sludge collected is taken for dewatering. After dewatering, the dewatered sludge cakes are disposed off safely at a prescribed location.



Major Outcomes of the project:

- Wastewater previously disposed into the lakes, substantial amount of this is now collected and treated effluent is used for industrial production, released into the river during summer months and applied in horticulture/agriculture which facilitates the dependent communities living nearby
- Fresh water abstraction at Rajpura Dariba Complex is reduced by 85% enabling this water to be available for community
- Production of manure (approximately 120 tons per year) is sold and used in agriculture by local farmers enabling usage of organic manure
- Water quality improvement of the Ahar River, Pichola and Udai Sagar lakes due to reduced volume of wastewater discharges.
- Biological Oxygen Demand improved.

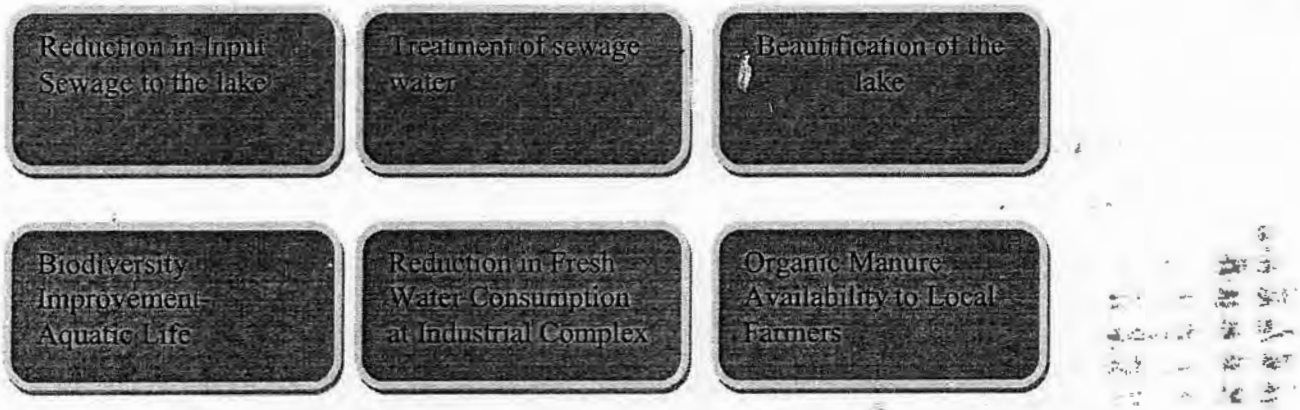
159

- Conserving the aquatic biodiversity of river and lakes.
- It has also contributed to "Swachh Bharat Abhiyan" by facilitating a channelized sewage flow which enhances city hygiene and water also put to resourceful use.
- Project also funds for greening Udaipur through plantation.

At STP site Continuous monitoring of outlet treated water parameter like Flow, pH, TSS, BOD & COD and the record is being maintained for the quantity of treated water provided for industrial use.

Impact:

There were following major Impact of the programme on the beneficiaries and other stakeholders



On the basis of this project HZL has received National & International recognition: -

- Asia Corporate Excellence and Sustainability Awards, 2016 for STP, Udaipur
- "Noteworthy Water Efficient Unit", "within the fence" category in "National Award for Excellence in Water Management 2016" by CII for DSC.
- 2nd prize in the 'Water Stewardship' category in the Corporate Governance & Sustainability Vision Awards 2017 by The Indian Chamber of Commerce (ICC) to DSC.
- Dariba smelter received "Excellence award for the best sustainable water management" by Advance Water Digest 2016-17.
- HZL-STP Udaipur received Water Stewardship Award - 2015 by Global Water Awards (UK).
- Case study published in World Water Forum 2030.

10 MLD (5.5+4.5 MLD) Sewage Treatment Plant
Jindal Saw Limited-Bhilwara

General:

Sewage Treatment Plant of 10 MLD (5.5+4.5 MLD) is being operated by M/s Jindal Saw Limited (JSAW) at Bhilwara city, Rajasthan. This Sewage Treatment Plant is treating the Sewage of Bhilwara city and the Treated clean water is completely being used for Mining, Mineral Beneficiations, Dust suppression, Cooling , Horticulture / Plantation etc. in JSAW plant located near Village Pur, at Bhilwara.

JSAW, Bhilwara is continuously making efforts to conserve the natural resources as well as environment by adopting Clean and Green technology in the process. Sewage Treatment Plant at Bhilwara city helps in reducing Sewerage water pollution and at the same time meets the water requirement for plant operation. By doing so and adopting the zero discharge system in the plant, JSAW is conserving the natural water resources.

The treatment scheme shall consist of Coarse & Fine Screening, De-gritting, Equalization, Biological Treatment Units based on Cyclic Activated Sludge / Sequential Batch Reactor (SBR) technology, Constructed Soil Filters, Chlorination System and Sludge Handling System.

M/s SFC Environmental Technologies Pvt Ltd, are the technology provider for Cyclic Activated Sludge / Sequential Batch Reactor (SBR) technology and offer the most advanced Cyclic Activated Sludge Technology called **"C-Tech"**. SBR technology is extensively used for treatment of domestic sewage and industrial wastewater to highest possible quality at a very low cost of treatment and by using minimum space. **C-Tech** has installations in almost all countries in the world, Including, USA, UK, Germany, France, Austria, China, Russia, Australia, Thailand, Malaysia and most importantly India.

Energy Conserving and Environment Friendly Technology:

Cyclic Activated Sludge process based on activated sludge process. In SBR process all critical components like decanters, fine bubble type diffuse air systems are non corrosive.

1. Conventional aerobic process consumes more power/electricity than the SBR process in SBR technology having "OUR" system means Oxygen Uptake Rate Control System which is controlling air provision as per BOD level in sewage.

2. Activated sludge ratio is also less means lower capacity pump is required as compare to conventional aerobic process to maintain MLSS hence further reduction of power consumption.

3. SBR technology base plant consumes less space say 1/3 of the conventional process and having very less moving parts/components means drastically reduction in plant lighting cost compare to conventional process.

Treatment Philosophy:

The Bhilwara sewage water is pumped from two points to the Sewage Treatment Plant. The raw sewage is being collected and pumped into the Primary Treatment Units comprising Inlet Chamber, Coarse & Fine Screen Channels and Grit Removal Units etc. The primary treated sewage is taken into C-Tech Basins. The C-Tech Basins has Air Blowers, Diffusers, Grid Piping, Return Activated Sludge (RAS) Pumps, Surplus Activated Sludge (SAS) Pumps, Stainless Steel Decanters, Auto Valves and PLC etc.

The primarily clarified water is passed to two aeration tanks in sequence, one after other. In aeration tank air is blown through blowers for two hours. For next two hours, the dirt is allowed to settle and water is decanted. The entire process takes four hours. All cycles will be automatically controlled using PLC.

Excess sludge at a consistency level of **0.8%** will be pumped intermittently with the help of SAS Pumps. This can be taken further for Sludge Dewatering or

Drying as per process requirement. The decanted water after filtration and chlorination is pumped through 23 kms pipeline to the Jindal saw Ltd. plant located near Village Pur, at Bhilwara.

Operation and Maintenance is being carried out by reputed and qualified agency like M/s UEM Group and M/s Clean Enviro System. Plant is running smoothly & achieving the desired outlet parameters. The inlet and outlet parameters of sewage water are being tested on daily basis by environment engineer in the laboratory. MoEF and NABL approved lab is also testing the inlet and outlet water quality twice in a week.

Raw Sewage Intake System:

There are two no. Intake point safely established by Jindal saw Limited for collection and transfer of Raw Sewage Water in 10 MLD (5.5+4.5 MLD) Sewage Treatment Plant. The detail of sewage water intake pumping station is mentioned below:

1. Intake one on Sanganer Drain (approx length 1.5 km)

   Pump Capacity : 02 Nos. pumps of 235 m3/hr capacity each
   : 02 Nos. pumps of 120 m3/hr capacity each

2. Intake two on Tankika Balaji drain (approx length 5.0 km)
   (Yet to be commercialized due lack of Power connection)

   Pump Capacity : 02 Nos. pumps of 235 m3/hr capacity each
   : 02 Nos. pumps of 120 m3/hr capacity each

STP Treatment Process:

1. The activated sludge process configuration is designed using Cyclic Activated Sludge Technology which operates on extended aeration activated sludge

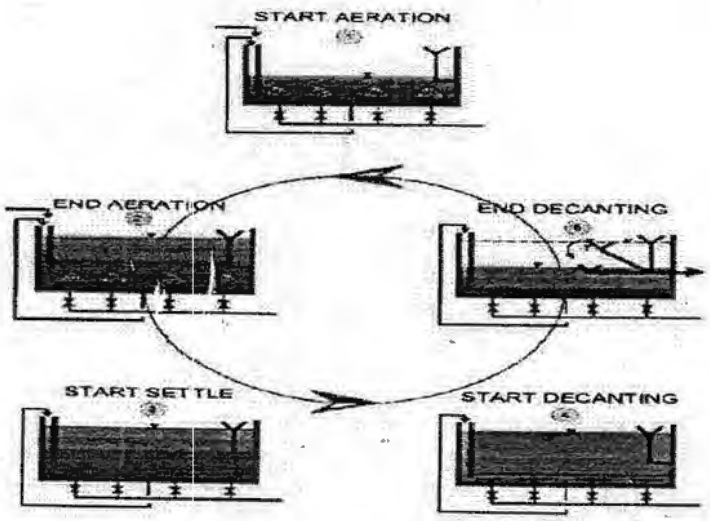
principle for BOD reduction, Nitrification. De-nitrification as well as biological phosphorous removal, using energy efficient fine bubble membrane diffused aeration system, with automatic control of oxygen uptake rate, resulting in 20-30% power savings.

2. Nitrogen and phosphorous removal has been optimized using cyclic activated sludge technology by simultaneous nitrification-De-nitrification and biological phosphorus removal.

3. The system operates in a batch reactor mode, which eliminates all the inefficiencies of the Continuous processes.

   The system makes use of the variable volume treatment in combination with a biological Selector and operated in a batch-fed reactor mode. The complete biological operation is divided into various cyclic modes. Each basic cycle comprises of the followings:

   - **Aeration**
   - **Sludge Settling**
   - **Decanting**



BOD removal, Co Current Nitrification & De-Nitrification and Enhanced Phosphorus Uptake in Aeration zone

BOD removal:

The aeration zone of C-Tech is provided with diffused aeration system to oxidize the organic matter by activated sludge.

The activated sludge in aeration zone is capable of converting most organic wastes to stable inorganic forms or to cellular mass. In this process, the soluble and colloidal organic material is metabolized by a diverse group of microorganisms to carbon dioxide and water. At the same time, a sizeable fraction of incoming organic matter is converted to cellular mass that can be separated from the effluent by settling.

Activated sludge comprises a mixed microbial culture wherein the bacteria are responsible for Oxidizing the organic matter, while protozoa consume the dispersed un-flocculated bacteria and rotifers consume the unsettled small bio-flocs in the treated wastewater, performing the role of effluent polishers.

Nitrification

1. Pre aeration system, with high sludge retention time (0) and DO > 2.0 mg/L ensures uniform nitrification. Nitrification results from the oxidation of ammonia present in the sewage by Nitrosaminas to nitrite and the subsequent oxidation of the nitrite to nitrate by Nitrobacter. The nitrifying organisms are strict aerobes and require more than 2 mg,/L DO in the basin to avoid oxygen limitation.

2. The diffused aeration system is sized in such a way that sufficient oxygen is provided for carbonaceous oxidation, sludge stabilization, nitrification by maintaining the DO at the specified level of 2 mg/L. The capacity of diffused aeration in each basin will be sufficient to ensure good and uniform mixing conditions during Fill-Aeration phase of the cycle of operation.

De-Nitrification:

De-nitrification releases nitrogen which escapes off as an inert gas to the atmosphere.

Raw Sewage Characteristics:

Sr. No.	Parameter	Measuring Unit	Raw Sewage Character
01	pH	-	7.19-8.16
02	TDS	mg/l	1500-3000
03	TSS	mg/l	300
04	COD	mg/l	450
05	BOD	mg/l	250
06	Ammonical Nitrogen (as NH3)	mg/l	20-45
07	Total Kjehdal Nitrogen (TKN)	mg/l	90

Treated Water Characteristics:

Sr. No.	Parameter	Measuring Unit	Treated Water Character
01	pH	-	7-8.5
02	TDS	mg/l	1600-1750
03	TSS	mg/l	10
04	COD	mg/l	<100
05	BOD	mg/l	<10
06	Ammonical Nitrogen (as NH3)	mg/l	<10
07	Total Kjehdal Nitrogen (TKN)	mg/l	<9-15

Note: Inlet and Outlet water quality report received from MoEF and NABL approved lab is attached as annexure-1

Sludge Digestion Facility:

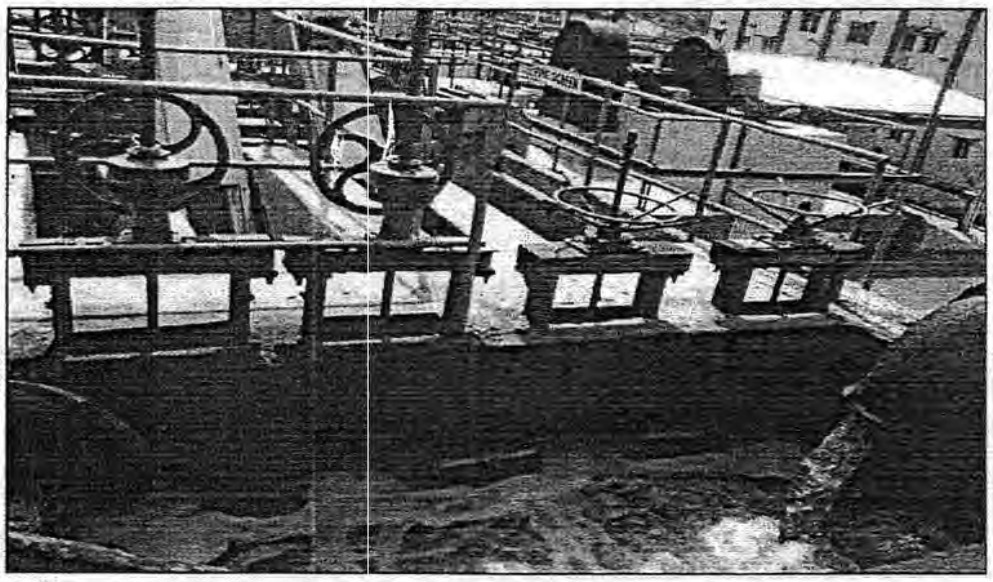
The Sewage Treatment process is Cyclic activated sludge process/ SBR which is based on Sequential Batch Reactor Technology. The raw sewage is being collected and pumped into the primary treatment units. After primary treatment the sewage is taken into parallel Cyclic Activated Sludge Process/SBR Technology basins for biological degradation of organics in single stage Cyclic Activated Sludge Process/ SBR technology Basins.

It is noted that the sludge generated in the cyclic Activated Sludge process/SBR technology is fully digested and does not require any further digestion. The sludge is withdrawn at 0.8 - 1% consistency and taken directly into centrifuge for dewatering to 20% truck able quality. The centrate from the centrifuge is taken back into the primary unit.

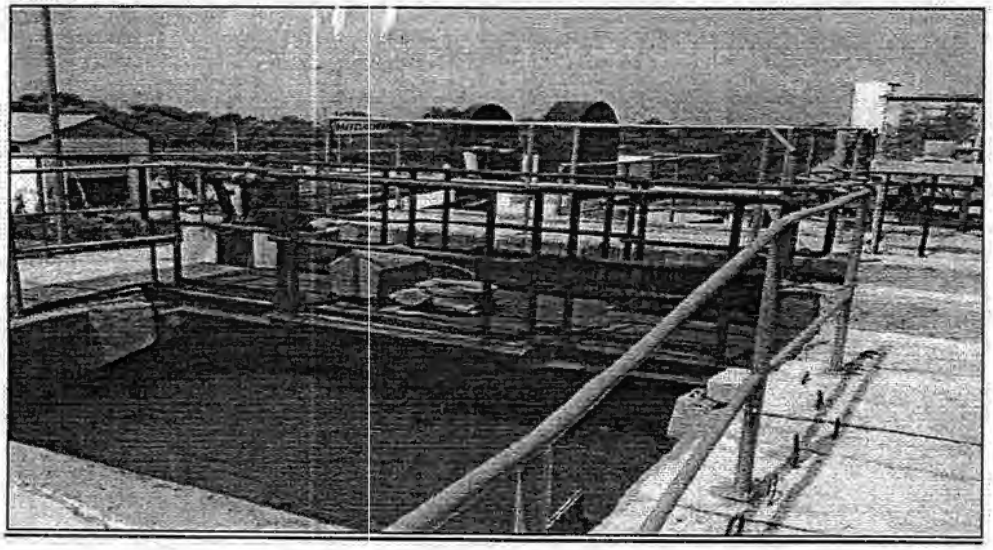
Sludge Disposal arrangement:

Generated Sludge is being used as compost for plantation and green belt development in JSAW, Pur Plant and balance quantity is being sent to nearby farmers for agriculture purpose. The digested sludge cake generated through centrifuge sent in a covered tanker.

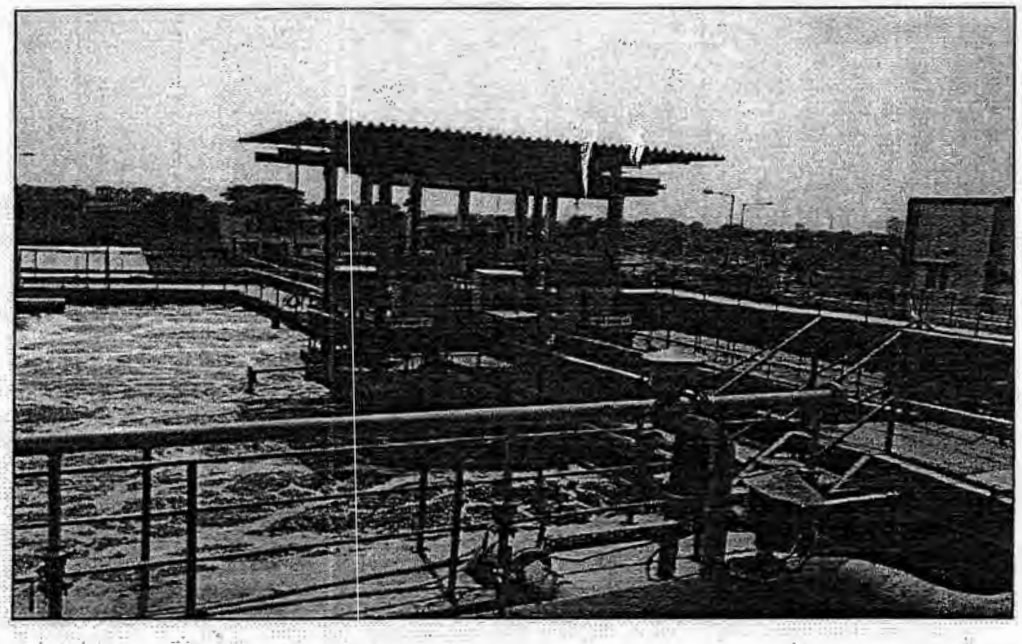
Photographs of Each Stage of Raw water Treatment:-



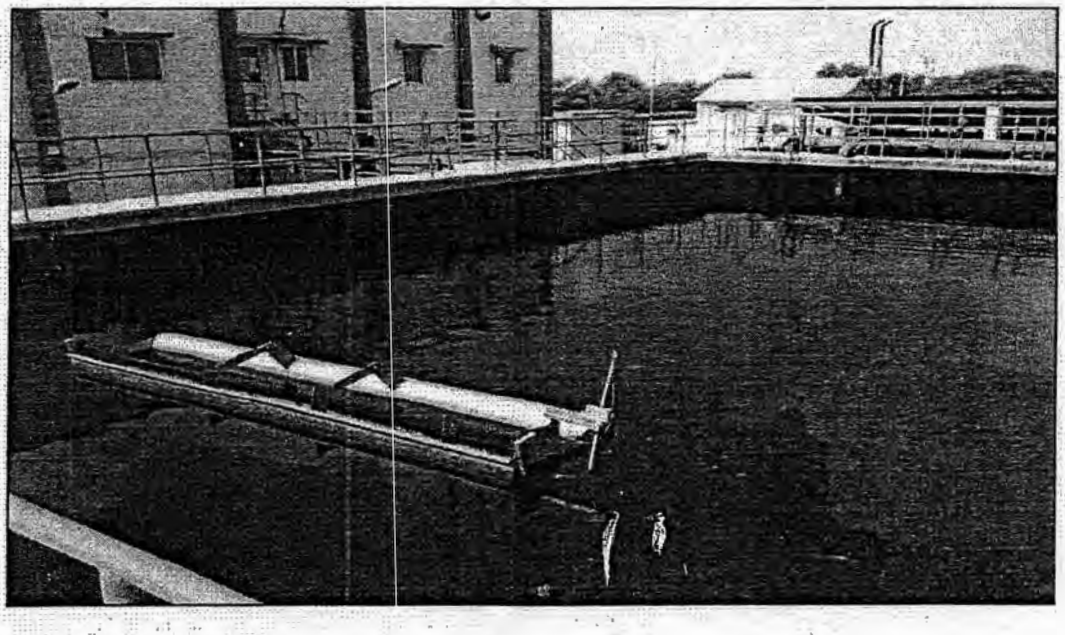
1. **Raw Water Inlet, Fine Screen**



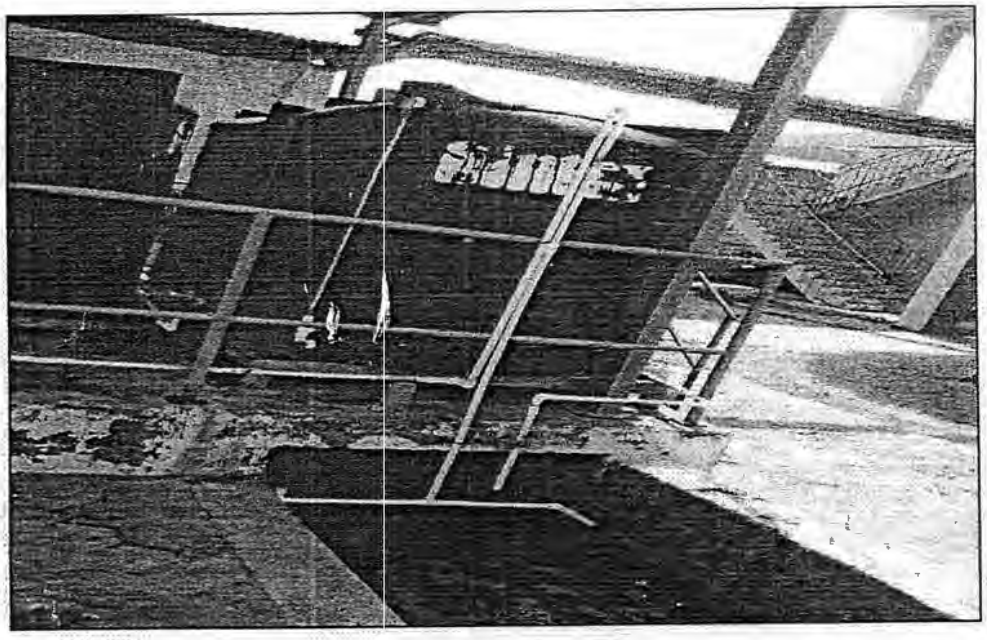
2. **Grit removal system**



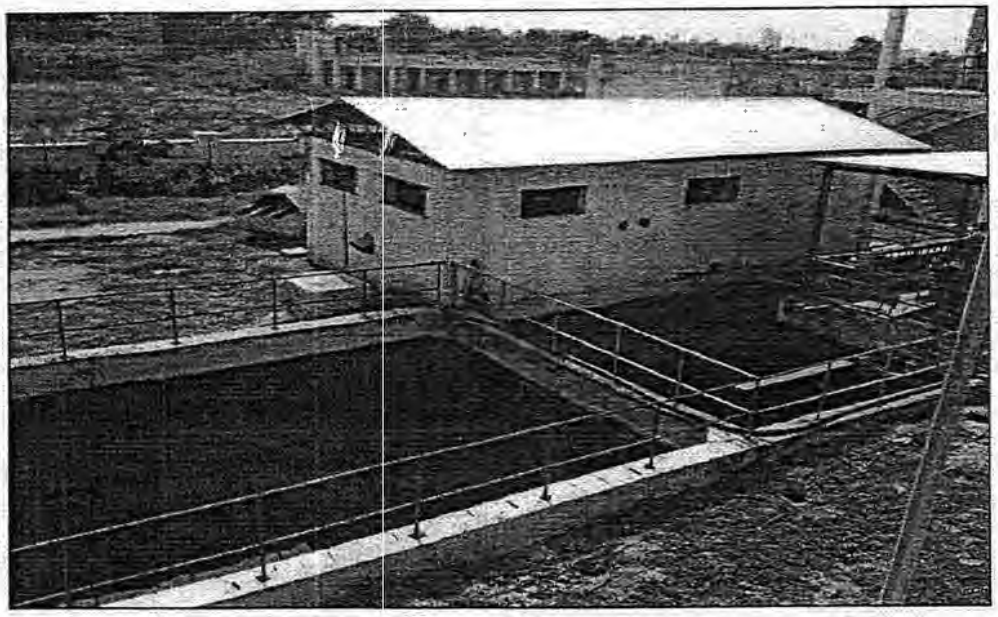
3. **Filtration, Aeration, and Nitrification / RAS, SAS and DO Monitoring System**



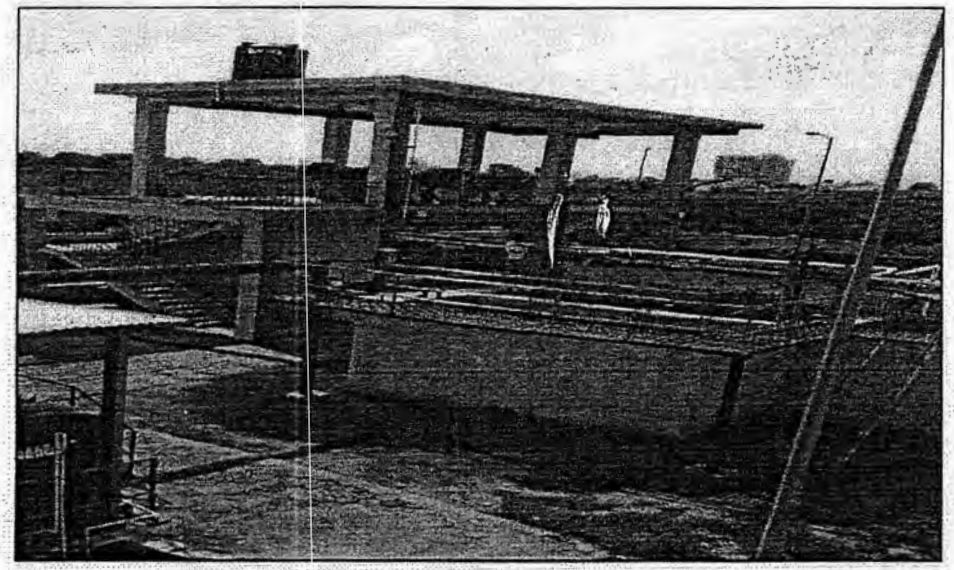
4. Processed Water Decanting



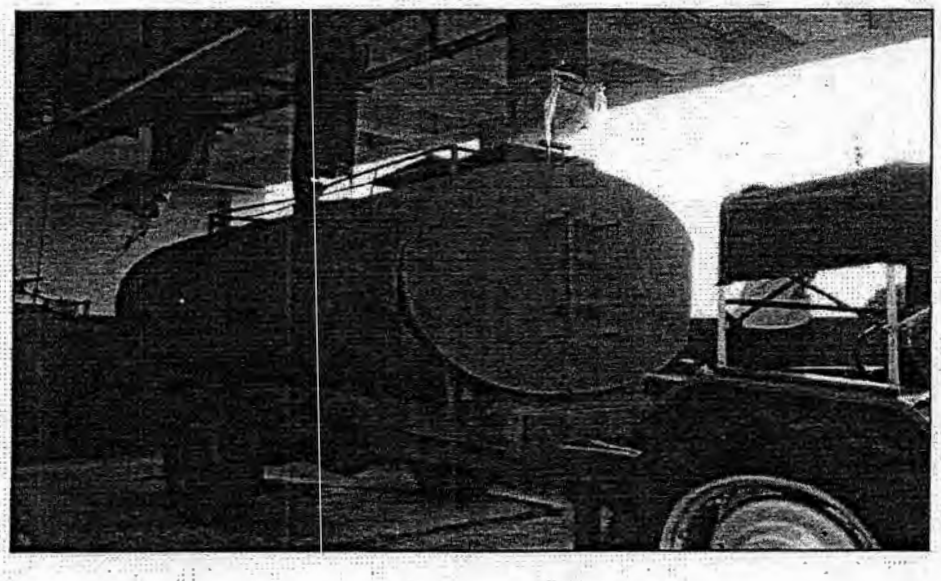
5. Hypo (NaOCl) dosing system



6. C.C tank & pumping station Treated water sent to JSL Pur Plant through 23 KM underground pipe line laid from STP Plant



7. Sludge Sump and Centrifuge Unit



8. Centrifuge Sludge Collection

Annexure-I

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

T-1763, T-2276

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

NABL RSPCB ISO 9001:2008 OHSAS 18001:2007 JDA/UDH

Office : E-65, Chitranjan Marg,
C-Scheme, Jaipur-302001
Phone : 0141-2369980, 2771865
Website : www.teamtesthouse.com

Lab.: G1-584, Sitapura Industrial Area
Tonk Road, JAIPUR-302022 Raj.
Ph.: 94602-22039, 94602-22049
E-mail : teamtesthouse@gmail.com
E-mail : director@teamtesthouse.com

TEST REPORT

Report No. :	WW/NABL/444
Job Identification. :	5637
Date :	07-10-2015
Issued To :	M/S Jindal Saw Limited (STP Site) Khasra No.338, Village : Kewara. Tehsil & District : Bhilwara (Rajasthan 311802)
Type of Unit :	Mines
Type of Sample :	Wastewater Sample
Date of Sample Collection/Monitoring :	19-09-2015
Date of Sample Receipt :	28-09-2015
Date of Test :	28-09-2015 to 07-10-2015
Sample Collected By :	Darwesh Kumar
Point of Collection :	STP Inlet

RESULTS

S.No	Parameters	Observed Value	Testing Protocol
1	Suspended Solids [mg/l]	101	APHA.2012:2540-E
2	Biochemical Oxygen Demand (BOD) [mg/l]	50	APHA 2012:5210-B
3	Chemical Oxygen Demand (COD) [mg/l]	282.77	APHA:2012 : 5220-C
4	pH	7.69	APHA:2012 : 4500 H+B
5	Oil & Grease [mg/l]	14	APHA-2012 :5520-B
6	Phosphorous [mg/l]	1.37	APHA : 2012

Notes :-

\# The results listed refer only to the tested sample (s) & parameters (s). Endorsement of products is neither inferred nor implied.

* This report is not to be reproduced wholly or in part and can not be used evidence in the court of law and should not be used in any advertising media without our special permission in writing.

\# The samples will be destroyed after 15 days from the date of issue of test report unless otherwise specified.

DR. CHANDAN SINGH
Senior Analyst

Rajesh Maheshwari
Authorized Signatory
(Report No: WW/NABL/444)

172

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

T-1763, T-2276

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

NABL RSPCB ISO 9001:2008 OHSAS 18001:2007 JDA/UDH

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Phone : 0141-2369980, 2771865
Website : www.teamtesthouse.com

Lab : G1-584, Sitapura Industrial Area
Tonk Road, JAIPUR-302022 Raj
Ph.: 94602-22039, 94602-22049
E-mail : teamtesthouse@gmail.com
E-mail : director@teamtesthouse.com

TEST REPORT

Report No. :	WW/NABL/711
Job Identification. :	8180
Date :	06-01-2016
Issued To :	M/S Jindal Saw Limited (STP Site) Khasra No.338, Village : Kewara, Tehsil & District : Bhilwara (Rajasthan 311802)
Type of Unit :	Mines
Type of Sample :	Wastewater Sample
Date of Sample Collection/Monitoring :	21-12-2015
Date of Sample Receipt :	24-12-2015
Date of Test :	24-12-2015 to 05-01-2016
Sample Collected By :	Darwesh Kumar
Point of Collection :	STP Inlet

RESULTS

S.No	Parameters	Observed Value	Testing Protocol
1	Suspended Solids [mg/l]	149	APHA.2012:2540-E
2	Biochemical Oxygen Demand (BOD) [mg/l]	145	APHA 2012:5210-B
3	Chemical Oxygen Demand (COD) [mg/l]	276.58	APHA:2012 : 5220-C
4	pH	7.42	APHA:2012 : 4500 H+B
5	Oil & Grease [mg/l]	14	APHA-2012 :5520-B
6	Phosphorous [mg/l]	3.15	APHA 2012 : 4500-P C

Notes :-

\# The results listed refer only to the tested sample (s) & parameters (s). Endorsement of products is neither inferred nor implied.

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\$ The samples will be destroyed after 15 days from the date of issue of test report unless otherwise specified.

Puran Mal Yogi
Senior Analyst

Rajesh Maheshwari
Authorized Signatory
(Report No: WW/NABL/711)

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E-mail : director@teamtesthouse.com

TEST REPORT

Report No. :	WW/NABL/445
Job Identification. :	5638
Date :	07-10-2015
Issued To	M/S Jindal Saw Limited (STP Site) Khasra No.338, Village : Kewara, Tehsil & District : Bhilwara (Rajasthan 311802)
Type of Unit :	Mines
Type of Sample :	Wastewater Sample
Date of Sample Collection/Monitoring :	19-09-2015
Date of Sample Receipt :	28-09-2015
Date of Test :	28-09-2015 to 07-10-2015
Sample Collected By :	Darwesh Kumar
Point of Collection :	STP Outlet

RESULTS

S.No	Parameters	Observed Value	Testing Protocol	Limits as per Environment protection rules, 1986
1	Suspended Solids [mg/l]	38	APHA.2012:2540-E	100
2	Biochemical Oxygen Demand (BOD) [mg/l]	8.2	APHA 2012:5210-B	30
3	Chemical Oxygen Demand (COD) [mg/l]	76.72	APHA:2012 : 5220-C	250
4	pH	7.82	APHA:2012 : 4500 H+B	5.5 - 9.0
5	Oil & Grease [mg/l]	5	APHA-2012 :5520-B	10
6	Phosphorous [mg/l]	1.28	APHA : 2012	2.0

Notes :

The results listed refer only to the tested sample (s) & parameters (s). Endorsement of products is neither inferred nor implied.

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* The samples will be destroyed after 15 days from the date of issue of test report unless otherwise specified

Senior Analyst

Rajesh Mathur
Authorized Signatory
(Report No WW/NABL/445)

174

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

T-1763, T-2276

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TEST REPORT

Report No. :	WW/NABL/712
Job Identification. :	8181
Date :	06-01-2016
Issued To :	M/S Jindal Saw Limited (STP Site) Khasra No.338, Village : Kewara, Tehsil & District : Bhilwara (Rajasthan 311802)
Type of Unit :	Mines
Type of Sample :	Wastewater Sample
Date of Sample Collection/Monitoring :	21-12-2015
Date of Sample Receipt :	24-12-2015
Date of Test :	24-12-2015 to 05-01-2016
Sample Collected By :	Darwesh Kumar
Point of Collection :	STP Outlet

RESULTS

S.No	Parameters	Observed Value	Testing Protocol	Limits as per Environment protection rules, 1986
1	Suspended Solids [mg/l]	28	APHA.2012:2540-E	100
2	Biochemical Oxygen Demand (BOD) [mg/l]	13.6	APHA 2012:5210-B	30
3	Chemical Oxygen Demand (COD) [mg/l]	63.3	APHA:2012 : 5220-C	250
4	pH	7.62	APHA:2012 ; 4500 H+B	5.5 - 9.0
5	Oil & Grease [mg/l]	4	APHA-2012 :5520-B	10
6	Phosphorous [mg/l]	2.48	APHA 2012 ; 4500-P C	5.0

Notes :-

- The results listed refer only to the tested sample (s) & parameters (s). Endorsement of products is neither inferred nor implied.
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- The samples will be destroyed after 15 days from the date of issue of test report unless otherwise specified.

Puran Mal Vinal
Senior Analyst

Rajesh Maheshwari
Authorized Signatory
(Report No: WW/NABL/712)

ANNEXURE-XVIII

TAMIL NADU POLLUTION CONTROL BOARD

From

Thiru D. Sekar, M. Tech.,
Member Secretary,
Tamil Nadu Pollution Control Board,
76, Mount Salai, Guindy,
Chennai – 600 032.

To

The Member Secretary
Central Pollution Control Board
Parivesh Bhawan,
East Arjun Nagar,
Delhi – 110 032

Letter No. TNPCB/P&D/F. 009607/2018, Dated: 23.04.2019

Sir,

Sub: TNPCB - P&D - Utilization of Treated Sewage in Maharashtra, Gujarat, Rajasthan and Tamil Nadu in any other State / UT - Reg.

Ref: Mail received from CPCB dated: 12.04.2019

With reference to the letter cited above, I am to enclose herewith the Details of industries utilizing treated sewage water for beneficial purpose in Tamil Nadu for kind information.

Encl: As above

23/04/2019

For Member Secretary

234

76, MOUNT SALAI, GUINDY, CHENNAI - 600 032.
Tel : 22353134, 22353135, 22353136, 22353137, 22353138, 22353139, 22353140, 22353141
Fax : 044-22353063
Email : tnpcb@md3.vsnl.net.in Web : www.tnpcb.gov.in

DETAILS OF INDUSTRIES UTILIZED SEWAGE WATER FOR THEIR PROCESS ACTIVITIES IN AMBATTUR DISTRICT OFFICE

Sl. No.	Name of the Industry	Source of sewage water	Quantity (KLD)	Utilization	Remarks
1	M/s. Manali Petrochemicals Ltd- Plant-I (MPL-Plant I)	Kodungaiyur common STP of CMWSSB	600 KLD	Used in Process.	The secondary treated sewage is subjected to tertiary treatment consisting of filtration process.
2	M/s. Manali Petrochemicals Ltd- Plant –II (MPL-Plant II)	Kodungaiyur common STP of CMWSSB.	1500 KLD	Used in Process.	
3	M/s. Chennai Petroleum Corporation Ltd (CPCL)	Kodungaiyur common STP of CMWSSB.	1545 KLD	1) 1000 KLD of R.O Reject sent to MPL-Plant- II 2) 545 KLD is utilized into various process activities of CPCL.	The secondary treated sewage received from the Kodungaiyur STP is further treated in Tertiary treatment plant of CPCL (CPCL-TTP).
4	M/s. Madras Fertilizers Ltd (MFL)	Kodungaiyur common STP of CMWSSB.	11280 KLD	1) R.O Permeate is used in process. 2) R.O Reject - 1200 KLD is sent to MPL Plant – I.	The secondary treated sewage received from the Kodungaiyur STP is further treated in Tertiary treatment plant of MFL (MFL-TTP).
5.	M/s Nagai Power Private Limited, Nagapattinam, (Thermal Power Plant)	Secondary treated water of Nagapattinam Municipality sewage treatment plant	720 KLD	Used in process	The secondary treated sewage is subjected to tertiary treatment and treated water is utilized for domestic and industrial purposes.

23/04/2019

For Member Secretary

23/4

177