

**RESTORATION / REJUVENATION OF
RIVER GANGA
SUGGESTIONS / PROPOSALS FOR
PHASE- I, SEGMENT 'B'
(HARIDWAR DOWN TO KANPUR DOWN)**

**Submitted before
Hon'ble National Green Tribunal (NGT)
in the matter of O.A. No. 501 of 2014 and
in compliance of Order dated 05.07.2016.
&
As Directed in the Chamber Meeting held on 6th
September, 2016
(Meeting held in connection with Yamuna Matter)**



**CENTRAL POLLUTION CONTROL BOARD (CPCB)
DELHI**

(8.09.2016)

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**RESTORATION / REJUVENATION OF WATER QUALITY OF
RIVER GANGA-
(PHASE- I- SEGMENT B- HARIDWAR DOWN TO KANPUR DOWN)**

1. PREAMBLE

- (i) River Ganga has unique water quality ascribing to its bactericidal property and having other elements of importance.
- (ii) Before many years / centuries, the river was not blocked for any purpose and due to limited habitation on the bank of the River, hardly there was disposal of any waste into the River.
- (iii) Now, the River Ganga is blocked / dammed at many places (Upper Himalayan stretches and on the plains such as Haridwar, Bijnor, Narora and Kanpur) and water has been diverted for various uses. As a result, the water quality and ecological sanctity is threatened.
- (iv) Water quality of River Ganga is showing presence of bacterial contamination besides reporting of presence of trace pollutants like heavy metals and pesticides in some of the studies.

2. RESTORATION/ REJUVENATION STATUS AND SUGGESTIONS

(i) That Hon'ble NGT in its Order Dated 26.7.2016 directed that ***“Consequently, we grant one final opportunity to all the Authorities, Ministries and State Governments to put forward their suggestions, proposals and the data within ten days from today”***

(ii) In a chamber meeting held on 6.9.2016 in the matter of Sh. Manoj Mishra Vs Union of India w.r.t to Yamuna pollution it was directed to CPCB to submit a report on Segment B Phase-I of river Ganga. Accordingly, CPCB is submitting the status and suggestions for kind consideration;

River Ganga can be restored and rejuvenated by adopting following means:

- (a) Uninterrupted and enhancing flow;
- (b) Stopping disposal of sewage and industrial effluents into River or if disposed, it should be of bathing river quality standards;
- (c) Both banks of River to be protected for waste disposal, encroachment and ensuring its dredging as per scientifically accepted methods.

3. INDUSTRIAL POLLUTION CONTROL-STATUS

3.1 (i) Details of Industrial Pollution in Phase I, Segment B (As per information of UPSPCB)

Grossly Polluting Industries (GPI) in U.P.(up to Kanpur)

Total GPI	746
o Operational Units	565
o Self-Closed	71
o Closed by Board	110

All operational units have either installed their own ETP or is a member of CETP.

(ii) River wise break-up of operational Grossly Polluting Industries upto Kanpur is as follows

Name of River	No. of Operational Units	E.T.P. installed/ member of CETP	Discharge (MLD)
Ganga	447	447	128.77
Ram Ganga	38	38	31.29
Kali East	80	80	52.36
Total	565	565	212.42

(iii) Seriously Polluting Industries (SPI) (up to Kanpur)

Total SPI	1072
○ Self-Closed	143
○ Closed by Board	189
○ Operational Units	740

All GPI units are covered in SPI list. All operational units have installed their own ETP or member of CETP.

All operational units have either installed their own ETP or member of CETP.

3.2 Online Monitoring

The Central Pollution Control Board (CPCB) on 5th February, 2014 directed the State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs) to further direct 17 categories of highly polluting industries, GPIs in five Ganga River basin States, CETPs, Common Bio-medical Waste Treatment Facilities (CBWTF) and Common Treatment, Storage and Disposal Facilities (TSDF) of hazardous waste to install real-time 24X7 online monitoring devices on or before 30.06.2015. The purpose of the direction was to create self-regulation and comply with the stipulated standards.

The online monitoring system covers 13 effluent parameters like pH, BOD, COD, TSS, Flow, Chromium, Ammonical Nitrogen, Fluoride, Phenol, Cyanide, Temperature, AOX and Arsenic and covers 8 emission parameters like PM, CO, Fluoride, NOx, SO₂, Cl₂, HCl and NH₃.

Periodic monitoring of CEMS is being carried out by the regulatory agencies so as to countercheck to avoid manipulations and ascertain for proper calibration.

**Status of online monitoring system in Ganga basin as on 01.07.2016
(Total GPIs including Phase-I Segment B)**

Sl. No	Category	No of directions issued	No of units installed on line system	No of units in process of installation on line systems	Connectivity
1	Sugar	67	55	2	55
2	Pulp & paper	67	57	2	57
3	Distillery	35	27	1	23
4	Tannery 17 cat	27	18	1	
	Tannery	415	355	0	51
5	Food & Beverages	21	11	8	9
6	Slaughter House	12	5	0	4
7	Textile	63	5	23	5
8	Chemicals (Refinery, Petrochemical, fertiliser and pharmaceutical, pesticide)	28	21	1	21
9	Others	22	0	1	0
10	Thermal Power Plant	4	2	1	
11	Others (Cement)	3	0		
TOTAL		764	556	40	225

It is further submit that industries with ZLD system & those industries connected with CETP are insisted to install flow meter & web camera and the connectivity is to be provided to CPCB.

3.3 Zero Liquid Discharge (ZLD)

“Zero Liquid Discharge refers to installation of facilities and systems to enable industrial effluent for recycling of permeate and converting solute (dissolved organic and in-organic compounds / salts) into residue in the solid form by adopting method of concentration and thermal evaporation. CPCB had issued directions under Section 18(1)(b) to UPPCB for seeking action plan from industries on implementation of ZLD in identified industrial sectors in March and April, 2015. CPCB has also proposed draft environmental standards for notification to MoEF & CC wherein ZLD related aspects have been included. The draft standards were uploaded by the Ministry on its website for inviting public comments and the notification has not yet been finalized”.

CPCB has directed industries to achieve Zero Liquid Discharge (ZLD) in distillery, tannery & textiles. CPCB is of the considered view that to achieve ZLD, there are two steps. At the 1st stage, on industry or a CETP is required to have a full-fledged effluent treatment plant upto tertiary level. The effluents treated at tertiary level with lower Biochemical Oxygen Demand (BOD) and Total Suspended Solid (TSS) levels can be subjected to Reverse Osmosis/Micro/Nano Filtration. Similarly, the concentrated effluents by a process of reverse osmosis or directly can be subjected for Multiple Effect evaporators (Evaporation).The recovered water can be utilized back by the industries and the solids either will have to be reused or disposed of appropriately.

The three (3) sectors namely tanneries, textile and distillery are water polluting in nature and it is required that the pollutants like chromium, total dissolved solid and other chemicals are separated before they are disposed into environment. To prevent

and control the environment disaster due to prospective need is to install Zero liquid discharge.

Suggestions:

The actions need to be taken and to be continued are proposed as under:

- (i) All the industries discharging industrial effluents should transmit online data of their effluent quality on uninterrupted basis to CPCB and SPCBs. These industries should also submit fortnightly data of effluent quality based on samples collected manually and getting it analysed through laboratory recognised under Environment Protection Act.
- (ii) The Chhoiya drain reported to be having coloured water, due to disposal of any or by all three suspected industries; (M/s Mohit Papers, M/s Mohit Petrochemicals, Jain Distillery) should be directed to clean the drain and make it colourless and its cost be borne by these industries.
- (iii) The CETP at Jajmau, Unnao and Banthar should be upgraded to meet the standards of Fixed Dissolved Solids (FDS) and chromium at first instance within 12 months and followed by ZLD system.
- (iv) SPCB of Uttar Pradesh should disseminate pollution control compliance status of all the industries on their website. Similarly, each consented industry should also disseminate their pollution control compliance on the entry gate on daily basis as well as on their website. In future, prior to the granting permission to any industry to operate in the catchment area of Ganga, the industry should not be permitted till it has improved proper system of reutilisation of effluents instead of its discharging into any drain.

4. SEWAGE MANAGEMENT

Status:

- (i) Details of Sewage generation in Phase I, Segment B

Name of River	Sewage Generation (MLD)	Existing STPs (MLD)	STPs under construction (MLD)	STPs Proposed (MLD)
Ganga	497.35	377.26	139.50	249.35
Ram Ganga	210.40	29	58	352
Kali East	674.61	153	13	370
Total	1382.36	559.26	210.50	971.35

- At present 823.1 MLD Sewage is being discharge of without treatment directly into rivers. The gap will be fulfilled after construction of proposed STPs.
- (ii) Drains discharging effluents in river Ganga between Haridwar to Kanpur (Phase-I Segment B).Thirty (30) storm water drains carrying sewage and sullage and other wastes joining River Ganga at various locations as indicated in Appendix-I.

Suggestions:

- (i) Thirty (30) storm water drains carrying sewage and sullage and other wastes joining River Ganga at various locations, should have flow measuring systems at the terminal points for assessing the quantity of waste water being discharged.
- (ii) The identified 30 sewage carrying drains joining River Ganga and any other small or big should be hygienically maintained and properly dredged at regular interval of time. Dredged material should be disposed off properly without having any environmental impacts.
- (iii) Till full-fledged Sewage Treatment Plants (STPs) are set-up, local bodies/ concerned institution responsible for sewage treatment, should set up transitory / intermediary system for treating sewage flowing in the drains on *in-situ* basis to reduce existing pollution load. Such systems should be in-place within 6 months.
- (iv) Sewage treatment plants should meet the criteria of suggested standards of CPCB (< 230 MPN) with reference to fecal coliform bacteria. New STPs planned for future and those existing STPs to be upgraded to meet new standards should have simultaneous plan for utilisation of treated sewage.

5. WATER QUALITY ASSESSMENT

Status:

Water quality data of river Ganga Phase-I Segment B (Year 2011-2016) is indicated in Appendix-II. The water quality of River Ganga indicates presence of high number of fecal coliform bacteria.

Suggestions

CPCB and SPCB of Uttar Pradesh to continue to monitor water quality of river Ganga at various locations and monthly data be published on their websites.

6. FLOW

Suggestions

On experimental and observation basis, the Irrigation Department of Uttar Pradesh, will release of some more quantity of water into River Ganga from Narora barrage and monitoring that this release do not have any consequences on other users like farmers, etc. The Irrigation Department will submit fortnightly report to the Ministry of Water Resources indicating the quantity of water released and quantity of water flowing in River Ganga in various locations from Narora to Kanpur.

7. WATER QUALITY MAINTENANCE FOR TRIBUTARIES

Suggestions

Uttarakhand and Uttar Pradesh SPCBs will enforce programmes related to industrial pollution and sewage management as discussed in the preceding paragraphs to maintain quality of water in Kali east and Ramganga.

SALIENT FEATURES OF SEGMENT 'B' OF RIVER GANGA

1. Length of River from Haridwar to Kanpur : **543Km**

2. Total No. of industries : **746**
565 Operational
71 Self Closed
110 Closed by Board

3. Industrial effluent being disposal : **212.42 MLD**
(565 operational)

4. Total no. of Common Effluent Treatment Plant (CETP)
 - (a) Jajmau (Tanneries) : 36 MLD
Non complying
 - (b) Unnao (Tanners) : 4.5 MLD
Non complying
 - (c) Banther (Tanneries) : 4.15 MLD
Non complying
 - (d) Rumapur : Closed

5. Quality of sewage generation :

No. of STPs : **5** (on Ganga main stem)

3 were non-complying out of
4 monitored.

Total No. of Drains : 30

6. Tributaries joining Ganga : Kali East Ramganga

Drains in UP in Phase-I Segment –B

S. No.	Catchment area	Drain in Stretch (Haridwar to Narora)	Flow (MLD)	Organic Load Based on BOD (TPD)
1.	Sukratal	Banganga River (at confluence with river Ganga)	-	-
2.	Bijnor	Hemraj Drain	-	-
3.		Bijnor Sewage Drain	7.6	0.44
4.		Malan River (at confluence with river Ganga)	16.5	0.08
5.		Chhoiya Drain (at conf. with river Ganga)	124	16.12
Sub-Total			148.1	16.64
6.	Gajrola and Babrala	Bagad River	1.8	0.35
7.	Garh	Garh Drain	14	0.22
8.		Fuldehra Drain (at confluence with river Ganga)	32	3.49
Sub-Total			47.8	3.71
9.	Badaun	Badaun Sewage Drain	29.9	1.38
10.		Sot River	42	0.97
Sub-Total			71.9	2.34
11.	Anupshar	Anupsahar STP Drain-1	0.85	0.01
12.		Anupsahar STP Drain-2	1.75	0.05
Sub-Total			2.6	0.06
Upper Reach in UP			270.4	23.11

SL. No	Catchment region	Drain in S-III (Narora to Kanpur)	Flow (MLD)	Organic Load Based on BOD (TPD)
1.	Bareilly – Aligarh to Kannauj	Nakatiya Nala	319.40	0.01
2.		Chawari Nala	52.00	0.00
3.		Deveranaiya Nala	192.53	0.06
4.		Patta Nala, Kannauj	14.06	0.00
5.		Kasganj drain at Amarpur Village,	47.21	0.00
6.		Cherat Drain near KrisNigyan, Kentra, Aligarh	32.38	0.05
Sub-Total			657.58	0.12
7.	Kanpur (III-A)	Dabka Nalla-1 (Kachha nala)	76.66	12.35
8.		Dabka Nalla-2 (Pakka	6.01	7.58

SL. No	Catchment region	Drain in S-III (Narora to Kanpur	Flow (MLD)	Organic Load Based on BOD (TPD)
		nala)		
9.		Dabka Nalla-3 (Pakka nala)	0.26	0.01
10.		Shetla Bazar(Kachha nala)	29.0	12.35
11.		Wazidpur Nalla	11.23	7.58
12.		Satti Chaura	1.43	0.10
13.		Golaghat Nala	2.91	0.18
14.		Bhagwatdas Nala	10.9	0.76
15.		Sisamau Nala	141.33	11.92
16.		Permiya Nala	186	11.49
Sub-Total			465.73	64.32
17.	Unnao (III-A)	Loni Drain	41.9	4.86
18.		City Jail Drain	35.86	7.21
Sub-Total			77.76	12.07
Total			1201.07	76.51
Total in Phase –I Segment B			1471.4	99.62

Water Quality Data of River Ganga in Phase-I Segment 'B' (Year 2011-2016)																			
Sl. No.	LOCATION	DO (mg/l)						B.O.D (mg/l)						FECAL COLIFORM (MPN/100ml)					
		2011	2012	2013	2014	2015	2016	2011	2012	2013	2014	2015	2016	2011	2012	2013	2014	2015	2016
	Water Quality Criteria	>5 mg/l						< 3 mg/l						< 2500 MPN/100ml					
1.	GANGA AT GARH Mukteshwar	8.2	8.6	9.0	9.1	7.7	8.5	3.4	3.4	2.9	2.8	3	2.8	1162	920	767	725	733	630
2.	GANGA U/S, ANOOPSHAHAR	8.4	9.2			6.9		2.8	3.1	2.6		2.1		673	352				
3.	GANGA D/S, ANOOPSHAHAR	8.3	9.2			6.9		3.6	3.2	2.5		2.1		783	428				
4.	GANGA AT NARORA (BULANDSAHAR)	8.7	9.3			7.5	7.9	3.1	2.6	2.4		2.8	2.8	420	595			430	510
5.	GANGA AT KACHHLA GHAT, ALIGARH	8.3	9.0			8.4		3.7	2.7	2.4		2.6		840	732			370	
6.	GANGA AT KANNAUJ U/S (RAJGHAT)	7.9	8.6	8.2	7.8	8.4	9.7	4.5	4.0	4.0	2.8	3.5	3.3	3042	4673	1210	3500	2270	2550
7.	GANGA AT KANNAUJ D/S, U.P	7.8	8.3	7.9	5.8	7.9	9.4	5.5	4.8	4.3	3.0	3.7	4.2	3508	6045	1517	4000	2930	3500
8.	GANGA AT BITHOOR (KANPUR)	8.7	8.7	8.4	8.1	8.3	9.9	4.0	4.1	3.2	3.3	2.8	3.2	1700	4845	1233	3500	2544	2450
9.	GANGA AT KANPUR U/S (RANIGHAT)	8.6	8.7	8.3	7.8	8.2	8.4	4.3	4.3	3.4	3.5	2.9	4.1	6667	6245	1358	4200	3267	2950
10.	GANGA AT KANPUR D/S (JAJMAU PUMPING STATION)	6.9	6.6	6.7	7.3	6.5	6.7	8.4	8.3	6.8	7.7	5.5	7.1	38942	23927	13567	40000	20889	40000

PHOTO GALLERY



Chhoiya Drain at Bijnor



Bagad River at Gajrola and Babrala



Garh Drain at Garh



Fuldehra Drain at Garh



Badaun Sewage Drain at Badaun



Sot River at Badaun



Anupsahar STP Drain-1 at Anupsahar



Anupsahar STP Drain-2 at Anupsahar



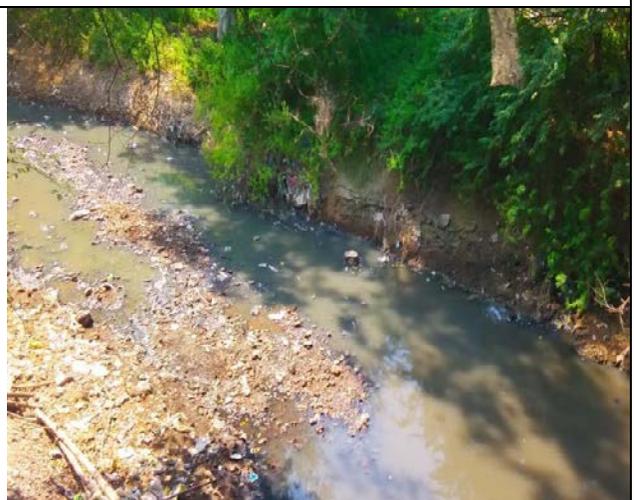
Cherat Drain at Aligarh



Patta Nala at Kannauj



Dabka Nalla-1 (Kachha) at Kanpur



Dabka Nalla-2 (Pakka) at Kanpur



Wazidpur Nalla at Kanpur



Shetla Bazar at Kanpur



Golaghat Nala at Kanpur



Bhagwatdas Nala at Kanpur



Sisamau Nala at Kanpur



Permiya Nala at Kanpur