

**REPORT OF THE OVERSIGHT COMMITTEE WITH REGARD TO MANAGEMENT OF SOLID WASTE,
BIO-MEDICAL WASTE AND STP ETC IN DISTRICT VARANASI, UTTAR PRADESH**

1. The Oversight Committee visited the city of Varanasi and held meeting with officers of district administration, municipal corporation, Regional Officer, UP Pollution Control Board, Varanasi and other concerned officers. The solid waste management system of Varanasi city is being managed by Varanasi Municipal Corporation (VMC). The municipal area of VMC is 82.1 km², which is divided in 90 administrative wards for management of basic services to citizens.
2. Solid waste management is one of the major environmental challenges due to rapid urbanization and population explosion. Changing life style patterns, particularly in urban areas has led to increase in generation of municipal solid waste and also the waste composition. Rapid urban development and population explosion has led to generate thousands of tons of solid waste daily. Inadequate vehicles for transportation of waste and unavailability of suitable land for establishment of waste processing unit in urban area have developed a critical situation for management of solid waste. Disposal of waste on the streets, drains, open spaces, water bodies, etc., is causing adverse impact on all components of the environment and human health. As per MSW Rule, 2016 it is an obligatory duty of municipal authorities to develop scientific landfill for disposal of municipal solid waste (MSW). Poor financial status of municipal corporations causes difficulties in providing the desired level of public services in the urban centres. Waste characterization of Varanasi shows 51.25% biodegradable waste, 15.30% recyclable waste and 33.45% other waste. Recyclable category includes Paper (32.80%), polythene (25.60%), plastic (7.30%), glass (5.70%), metal (5.80%) and others (22.80%).
3. The Regional Officer, UP Pollution Control Board, Varanasi has submitted the existing situation of Solid Waste Management, Bio-Medical Waste Management, Sewage Treatment Plants (STPs) etc in the city as follows:

(A) Existing situation of SWM in Varanasi

a. Quantity of Solid Waste

- Amount of waste generated-750MT/day
- Amount of waste collected-600MT/day (door to door collection not proper and report of collection of 600MT per day not satisfactory.)
- Amount of waste processed 600MT/day (but the compost approximately 95% is lying there)

b. Waste Collection-Presently Varanasi Nagar Nigam is waste handling and disposal

- Total no. of wards-90
- Door to door collection by Nagar Nigam (found and reported not satisfactory)
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c. Waste Treatment Technology-

- Composting
- Refuse derived fuel



- Waste incineration
- Landfill

d. Land fill site-Karsara, Varanasi.

- Lat-25.214725
- Long-82.919495

Waste to Energy plant and its capacity

- 24 Tonne/day "Waste to Energy" plant is established by NTPC at village Karsara situated landfill site premises.
- In addition to above there are 03 Nos "Waste to Energy" plant (5.0 tonne/day) established by Indian Oil Corporation Limited at-
 - a. Bhelupur, Varanasi
 - b. Paharia Mandi, Varanasi
 - c. Adampur, Varanasi

and presently operational for Conversion of municipal organic waste into manure and electricity.

4. It is reported that more than 6 lac MT solid waste has accumulated at Kasera site and disposal in the form of 'Waste to Compost' is 95% for the reason that the compost is not being transferred to anywhere else or there is no policy to sell the compost. It is generating leachate. Leachate generation is a major problem for municipal solid waste (MSW) landfills and causes significant threat to surface water and groundwater. Leachate can be defined as a liquid that passes through a landfill and has extracted dissolved and suspended matter from it. Leachate results from precipitation entering the landfill from moisture that exists in the waste when it is composed. Solid waste landfills may cause severe environmental impacts if leachate and gas emissions are not controlled. Leachate generated in municipal landfill contains large amounts of organic and inorganic contaminants.

5. Leachate may also have a high concentration of metals and contain some hazardous organic chemicals. The removal of organic material based on COD, BOD and ammonium from leachate is the usual prerequisite before discharging the leachates into natural waters.

6. The leachate composition from the transfer station can vary depending on several factors, including the degree of compaction, waste composition, climate and moisture content in waste.

7. As a general rule, leachate is characterized by high values of COD, pH, ammonia nitrogen and heavy metals, as well as strong colour and bad odour. At the same time, the characteristics of the leachate

also vary with regard to its composition and volume, and biodegradable matter present in the leachate against time. All these factors make leachate treatment difficult and complicated.

Obligations of VMC-

- VMC Should ensure delivery of municipal Solid Waste (MSW) in a mixed /segregated manner up to the facility premises and minimum assured quantity of 600MT/D Free of cost.
- VMC should provide **Right of Way (RoW)** for the transmission line connecting the power plant to the nearest suitable grid substation and basis amenities at project site like water supply, sewerage connection and approach road.
- VMC should provide approx.150 KLD treated Waste water of the STP free of cost.
- VMC should provide 25-30Acres of land free of cost.
- VMC should take back the unutilized ash and inert.

Obligations of NTPC-

- Setting up of waste to Energy project free of encumbrance.
- To install a clean plant complying with all Environmental Norms.

Proposal for installing new Waste to Energy plant at Ramana, Varanasi

8. NTPC has expressed its interest in setting up of Waste to Energy facility based on latest incineration technology at Varanasi to address the issue of municipal Solid Waste Management. NTPC shall develop the project on **Build Own Operate (BOO)** basis at a land allocated by Varanasi Municipal Corporation (VMC) at Ramana. As reported, MoU has been signed by NTPC and VMC on 17.07.2019.

(B) SEWAGE GENERATION AND ITS TREATMENT FACILITY IN VARANASI

9. As per rough estimate of U.P. Jal Nigam, approx. 350 MLD of sewage generated from Varanasi which ultimately meets in river either by sewage system or by different drains.

River Ganga

- Total numbers of drains discharging untreated waste water into river Ganga directly -10
- Out of 30 drains meeting to Ganga-20 No's of drains have been tapped and diverted to STP for treatment and the treated effluent is being discharged into river Ganga/Varuna.

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- The major drain named Assi drain meets with river Ganga approx. 50 MLD of domestic sewage at the upstream point of Varanasi without any treatment. For the purpose of tapping, diversion and treatment, a project has been sanctioned by NMCG and this project is under construction. It is expected that the project may be completed upto March 2020 for this purpose a sewage pumping station has been installed at Nagawa and the untreated waste shall be pumped to STP of 50 MLD capacity at Ramana. At the completion of the project the upstream of Varanasi stretch of Ganga, as reported, can be kept pollution free. At the time of inspection, this drain was found directly discharging the sewage water, which is reported to be more than 50 MLD. Seriousness of the matter may be considered that at a distance 600 meter in the downstream of the Assi Drain, abstraction point for potable water supply station is lying.
- STP of 10 MLD capacity at Ramnagar, is proposed for treatment of sewage at the trans site of river Ganga at Ramnagar. The STP is under construction. After completion of the project, the sewage generated from Ramnagar may be treated which is affecting the water quality of Ganga in the up stream of the Varanasi.
- The water used in the famous Lord Vishwanath Temple by devotees for offering with milk and all other puja samagari meets with river Ganga. In the proposed corridor construction, the effluent generated from the Lord Vishwanath temple shall be treated with a proposed STP of capacity of 25 MLD. During visit, a DPR of the corridor was presented by temple administration. It was also reported that the solid waste as flowers and leaves generated from the puja process shall be treated and the material shall be used for producing of Agarbatti and Itra.

DRAINS (TAPPED/ UNTAPPED) DISCHARGING INTO RIVER GANGA

S. No.	Name	Name of Drain	Discharge Jal Nigam (mld)	Current Status	Final Discharge
1	Varanasi	Rajghat Out Fall	118.0	Tapped	Through Dinapur STP (80 MLD) and rest sewage is directly discharge into River Ganga
2.		Rajghat Drain	0.2	Tapped	
3.		Bhainsasur Drain	0.4	Tapped	
4.		Teliya Drain	2.8	Tapped	

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5.		Trilochan ghat Drain	4.5	Tapped
6.		Lalghat Drain	-	Tapped
7.		Bramhaghat	-	Tapped
8.		Panchganga ghat Drain	-	Tapped
9.		Ramghat Drain	-	Tapped
10.		Mehta ghat Drain	-	Tapped
11.		Sanktha ghat Drain	1.5	Tapped
12		Manikarnika ghat Drain	-	Tapped
13.		Jaleshan ghat drain	-	Tapped
14.		Lalita ghat Drain	4.5	Tapped
15.		Meerghat Drain	-	Tapped
16.		Dr. R. P. Ghat Drain	-	Tapped
17.		Pandey ghat Drain	30.0	Tapped
18.		Mansarover ghat Drain	4.5	Tapped



19.		Harishchandra ghat Drain	2.5	Tapped	
20.		Shivala Drain	5	Tapped	
21.		Assi/Nagwan Drain	42.81	Untapped	
22.		Samne ghat Drain	1.170	Untapped	
23.		Nakhi Drain	1.860	Untapped	
1.	Ramnagar	Hanuman ghat Drain	0.09	Untapped	
2.		Salotri ghat Drain	0.34	Untapped	Untreated into River Ganga
3.		Shakti Ghat Drain	0.4	Untapped	
4.		BaluaGhat Drain	0.13	Untapped	
5.		Rambagh Ghat Drain	8.20	Untapped	
1.	Mughalsarai	Railway Drain	9.0	Untapped	
2.		Ganda Drain	3.0	Untapped	

Drains (Tapped/Untapped) Discharging into River Ganga

River Varuna

- Total numbers of drains discharging untreated (Untapped) waste water into river Varuna which ultimately meets river Ganga-08

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- **06** No's of drains have been tapped and diverted to STP for treatment and the treated effluent has been discharged in river Varuna which ultimately meets river Ganga.
- Total quantity of waste water treated through STP -**206 MLD**
- Total quantity of untreated waste water discharging directly into river Ganga-67 MLD
- Total quantity of untreated waste water discharging directly into river Varuna which ultimately meets river Ganga- **27.5 MLD**
- Number of STP's installed and commissioned in Varanasi city-**05**
- Number of STP under construction-**02**

DRAINS(TAPPED/UNTAPPED)DISCHARGING INTO RIVER VARUNA

S. No.	Name of Town	Name of Drain	Discharge Jal Nigam (mld)	Current Status	Final Discharge
1.	Varanasi	Fulwaria Drain	Approx. 25 MLD	Tapped	Through Dinapur STP (140 MLD) to River Varuna
2.		Sadar Bazar Drain		Tapped	
3.		Raja Bazar Drain		Tapped	
4.		Teliya Bag Drain		Tapped	
5.		Nakhi ghat Drain		Tapped	
6.		Narokhaar Drain	7.5 MLD	Tapped	Through Goithahan
7.		Central Jail Drain	Approx. 27.5 MLD	Untapped	Untreated into River Varuna
8.		Sarang Talab Drain		Untapped	
9.		Orderly Bazar Drain		Untapped	
10.		Chamrautha Drain		Untapped	

11.		Khajury Colony Drain		Untapped
12.		Banaras Drain No.-5		Untapped
13.		Hukulganj Drain		Untapped
14.		Nai Basti Drain		Untapped

SEWAGE TREATMENT PLANTS

S. No.	Place of Installation of STP	Capacity (MLD)	Present Status	Discharge Drain
1.	Bhagwanpur	9.8	Operative	Ganga
2.	DLW	12	Operative	Ganga
3.	Dinapur	80	Operative	Ganga
4.	Dinapur	140	Operative	Ganga
5.	Goithahan	120	Operative	Ganga
6.	Ramana	50	Under Construction	Ganga
7.	Ramnagar	10	Under Construction	Ganga
Total Capacity		411.8		

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Recommendations-

10. The State of UP and district administration at Varanasi may be directed to take necessary steps for disposal of solid waste in the following manner:

1. New proposed "Waste to Energy" plant to be established by Agencies should be installed within time frame to mitigate the pollution caused by Municipal Solid waste generated from Varanasi city and it should be included in master plan.
2. 4 Nos Waste to Energy plant of capacity 24TPD ,5TPDx 3 at different places in Varanasi should be operated in such a way so that the energy generated from the process be utilized and the ash/compost be used as organic manure. Efforts should be made to enhance the capacity.
3. Dry waste and wet waste be segregated at source
4. To Reduce, Reuse and Recycle the Waste by the citizens.
5. To provide and maintain necessary infrastructure for Door to Door collection.
6. To transport the waste into enclosed/covered vehicles.
7. To install primary collection centres in isolated areas at least one in each ward.
8. To decentralize the MSW plant operation in different directions of the city in lieu of an integrated plant to minimize the transportation of the waste from the city.
9. To provide the health equipments to each Safai Karamchari.
10. To install ETP for treatment of leachates generated during rainy season from the dump sites.
11. To use lime and chlorinated powders to stop foul odour at dump sites.
12. To notify at least 200 meters periphery of the integrated of the plant area as prohibited zone for residential purposes.
13. To promote the scheme of use of flower waste into making Agarbatti and Itra as has been done in Vishwanath Temple Trust.
14. Efforts and policy are required for disposal of legacy waste and its leachate which is reported to be more than 6 lac MT in Varanasi.

11. We have also seen the untapped drains discharging directly into river Varuna in the form of liquid waste. The district administration may be directed to take steps in the following manner:

1. The STPs of capacities 140 MLD at Dinapur and 120 MLD at Goithaha is operational under capacity. Out of 140 MLD only 70-80 MLD sewage is reaching at Dinapur STP due to lapse in sewerage network. This situation should be eradicated within a reasonable time or within three months.

2. All the drains meeting with river Ganga with pumping facility is meeting directly into the river due to over capacity of old trunk sewerage system which should be diverted to another sewerage system.
3. Approx. 130MLD of sewage is reaching at SPS Koniya. Out of 130 MLD, 80 MLD of sewage is being diverted to 80 MLD STP Dinapur and the rest 50 MLD is discharge in River Ganga. This 50 MLD of sewage should be diverted to 140 MLD STP, Dinapur which is running under capacity.
4. The drains directly discharging the Waste into river Varuna should be tapped and diverted to 120 MLD STP at Goithaha.
5. An STP of sufficient capacity should be installed to treat the effluent generated from Deen Dayal Nagar and Parav which ultimately meets with river Ganga from the Trans site of Varanasi.
6. The treated sewage of each and every STP should be utilized for irrigation and/or dust suppression after achieving the prescribed standards.
7. The capacity of Dinapur STP is 80 MLD but it is reported that it is not fully functional and is overflowing. Untreated water is being discharged directly into river Ganga.
8. Only one electric cremation system has been set up at Harishchandra Ghat. At the time of visit, atleast at 5-6 places, cremation was being performed in open area through wooden fire just at a distance of 1 or 2 meters from the flow of river Ganga.
9. The treated water, which is being discharged in river Ganga, may be reused in irrigation or other purposes. The VMC and Jal Nigam may consider and prepare Action Plan.
10. The main reason for degradation of ambient air is Construction and Demolition Waste or dust in almost all the roads in Varanasi area which contributes 37% of the total, as reported by the Regional Officer, UP Pollution Control Board, Varanasi. Necessary steps may be taken by VMC.
12. It is reported that atleast 10 drains are directly discharging untreated water into river Ganga. Similarly, major drains of Assi are discharging into river Ganga without any treatment. The Project, as reported by the local authorities, which was to be completed before October, 2019, has not been completed as yet. Just at a distance of 600 meter in downstream of Assi, where more than 50 MLD untreated water is discharged into river Ganga, abstraction point for supplying potable water has been installed by the VMC and water is being supplied to the citizens of the city for daily use and drinking purposes.
13. In view of the aforesaid situation, if the Hon'ble Tribunal thinks it proper, a show cause notice be issued to all the above authorities as to why environmental compensation be not imposed on them, not



only for diverting the untreated sewage water to downstream of river Ganga directly but also due to the reason that on the same point, just at a distance of 600 meter, VMC has installed a pump for supply of water to the citizens. The Constructing Agency may also be made responsible to pay environmental compensation at the rate of atleast one lac per day or such penalty as the Hon'ble Tribunal may deem just and proper, with effect from the proposed date of completion to the actual date of completion/the date of actual functional position of the Project, due to the reason that it delayed the Project.

(C) Bio-Medical Waste

14. In the field of bio-medical waste, it was discussed and reported as follows:

- Total number of Health Care Facilities identified in Varanasi – **718**
- Number of Govt. HCF – **59**
- Number of Pvt. HCFs – **659**
- Total Number of **authorised Govt. HCFs – 55**
- Total Number of **Govt. Defaulter HCFs- 04**
- Total number of **authorised Pvt. HCFs – 513**
- Total Number of **Pvt. Defaulter HCFs- 146**
- Total number of beds- **13572**
- Total quantity of bio-medical waste generated – **3441.45 kg per day.**

Bio Medical Waste Treatment-

- Incineration
- Autoclaving
- Microwaving
- Shredding

Bio Medical Waste Treatment Facility-

- There is no individual Bio Medical Waste Treatment Facility.
- In and around Varanasi, there are three Common Bio Medical Waste Treatment Facility.
 1. **M/s Centre for Pollution Control, Mohansari, Varanasi (1250Kg/day)**
 2. **M/s Silicon Welfare Society, Banka, Bahadurganj, Ghazipur (2400 Kg/day)**



3. M/s Sangam Mediserve Pvt. Ltd., Raidipur, Handia, Allahabad (5000kg/day)

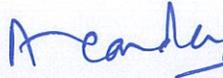
- Number of health care facility obtained membership from CBWTF –568
- HCFs not having membership with the common Bio-medical waste Treatment Facilities –146

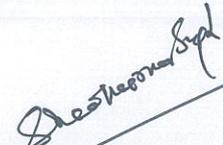
15. In the field of bio-medical waste, we recommend as under:

1. As per BWM Rule, 2016 as amended, each vehicle employed for collection of BMW shall be installed with GPS system for tracking of vehicles so that vehicles may approach with all its waste to CBWTF.
2. Bar coded non-chlorinated poly bags should be used by the every HCFs to handle the waste carefully and segregated as per norms.
3. Every hospital should maintain log books for collection, segregation and handling of waste from HCFs to CBWTF.
4. Every hospital should construct a separate temporary collection centre for collection and segregation of the waste.
5. Water used in the hospital for different purposes generates effluent and effluent should be treated with ETP/STP for mitigating the water pollution of the surface water.
6. Each CBWTF should treat different type of BMW as per provision of BMW Rule, 2016.
7. State board should be vigilant of each HCFs and every CBWTF once in a month to maintain the gaps of BMW generation and treatment.
8. Defaulter HCFs/CBWTF should be imposed with environmental compensation for the defaults and be prosecuted.

16. The report regarding water quality and AQI as submitted by the Regional Officer, UPPCB Varanasi is attached with this report.

17. The Member Secretary, UPPCB is directed to send this report to the Registrar General, National Green Tribunal, Principal Bench, New Delhi for placing the same before the Hon'ble Tribunal with a copy to the Chief Secretary, Govt of UP for necessary action.


19/12/19
(Dr Anup Chandra Pandey)
Member, Oversight Committee


(Justice S.K. Singh)
Chairman, Oversight Committee

AQI Obtained from Automatic Air Quality Monitoring Station of Varanasi f

Jan	AQI	Feb	AQI	March	AQI	April	AQI	May	AQI	June	AQI
1-Jan-19	308	1-Feb-19	338	1-Mar-19	309	1-Apr-19	171	1-May-19	247	1-Jun-19	137
2-Jan-19	308	2-Feb-19	308	2-Mar-19	308	2-Apr-19	210	2-May-19	175	2-Jun-19	162
3-Jan-19	308	3-Feb-19	316	3-Mar-19	247	3-Apr-19	210	3-May-19	168	3-Jun-19	140
4-Jan-19	308	4-Feb-19	308	4-Mar-19	233	4-Apr-19	203	4-May-19	130	4-Jun-19	139
5-Jan-19	315	5-Feb-19	347	5-Mar-19	302	5-Apr-19	203	5-May-19	293	5-Jun-19	139
6-Jan-19	310	6-Feb-19	345	6-Mar-19	146	6-Apr-19	173	6-May-19	233	6-Jun-19	127
7-Jan-19	267	7-Feb-19	314	7-Mar-19	163	7-Apr-19	140	7-May-19	258	7-Jun-19	127
8-Jan-19	326	8-Feb-19	304	8-Mar-19	220	8-Apr-19	126	8-May-19	312	8-Jun-19	168
9-Jan-19	337	9-Feb-19	240	9-Mar-19	180	9-Apr-19	168	9-May-19		9-Jun-19	166
10-Jan-19	317	10-Feb-19	230	10-Mar-19	270	10-Apr-19	152	10-May-19	282	10-Jun-19	166
11-Jan-19	333	11-Feb-19	314	11-Mar-19	280	11-Apr-19	157	11-May-19	246	11-Jun-19	177
12-Jan-19	313	12-Feb-19	335	12-Mar-19	300	12-Apr-19	243	12-May-19	233	12-Jun-19	162
13-Jan-19	325	13-Feb-19	357	13-Mar-19	200	13-Apr-19	311	13-May-19	227	13-Jun-19	205
14-Jan-19	309	14-Feb-19	365	14-Mar-19	187	14-Apr-19	309	14-May-19	243	14-Jun-19	208
15-Jan-19	200	15-Feb-19	293	15-Mar-19	260	15-Apr-19	260	15-May-19	215	15-Jun-19	246
16-Jan-19	307	16-Feb-19	227	16-Mar-19	159	16-Apr-19	332	16-May-19	232	16-Jun-19	282
17-Jan-19	315	17-Feb-19	273	17-Mar-19	193	17-Apr-19	100	17-May-19	279	17-Jun-19	173
18-Jan-19	324	18-Feb-19	267	18-Mar-19	183	18-Apr-19	147	18-May-19	251	18-Jun-19	157
19-Jan-19	325	19-Feb-19	270	19-Mar-19	267	19-Apr-19	155	19-May-19	183	19-Jun-19	233
20-Jan-19	325	20-Feb-19	320	20-Mar-19	273	20-Apr-19	181	20-May-19	290	20-Jun-19	170
21-Jan-19	322	21-Feb-19	306	21-Mar-19	230	21-Apr-19	182	21-May-19	260	21-Jun-19	105
22-Jan-19	319	22-Feb-19	302	22-Mar-19	183	22-Apr-19	196	22-May-19	305	22-Jun-19	49
23-Jan-19	127	23-Feb-19	313	23-Mar-19	158	23-Apr-19	175	23-May-19	305	23-Jun-19	82
24-Jan-19	301	24-Feb-19	154	24-Mar-19	243	24-Apr-19	161	24-May-19	179	24-Jun-19	117
25-Jan-19	100	25-Feb-19	233	25-Mar-19	190	25-Apr-19	215	25-May-19	184	25-Jun-19	155
26-Jan-19	97	26-Feb-19	237	26-Mar-19	137	26-Apr-19	274	26-May-19	196	26-Jun-19	139
27-Jan-19	130	27-Feb-19	129	27-Mar-19	203	27-Apr-19	335	27-May-19	194	27-Jun-19	109
28-Jan-19	297	28-Feb-19	121	28-Mar-19	280	28-Apr-19	294	28-May-19	235	28-Jun-19	158
29-Jan-19	277			29-Mar-19	327	29-Apr-19	290	29-May-19	241	29-Jun-19	138
30-Jan-19	312			30-Mar-19	305	30-Apr-19	307	30-May-19	250	30-Jun-19	122
31-Jan-19	315			31-Mar-19	305			31-May-19	193		
313		287	Poor (Dark Yellow)	239	Poor (Dark Yellow)	213	Poor (Dark Yellow)	240	Poor (Dark Yellow)	166	Moderate (Yellow)

From January-2019 to August-2019

July	AQI	August	AQI	Sep	AQI	Oct	AQI	Standard	
1-Jul-19	101	1-Aug-19	71	1-Sep-19	87	1-Oct-19	118	Remark	Category
2-Jul-19	70	2-Aug-19	89	2-Sep-19	95	2-Oct-19	62	(10 to 50)	Good (Light Green)
3-Jul-19	57	3-Aug-19	80	3-Sep-19	66	3-Oct-19	46	(51 to 100)	Satisfactory (Light Green)
4-Jul-19	57	4-Aug-19	60	4-Sep-19	50	4-Oct-19	78	(101 to 200)	Moderate (Yellow)
5-Jul-19	75	5-Aug-19	60	5-Sep-19	51	5-Oct-19	136	(201 to 300)	Poor (Dark Yellow)
6-Jul-19	67	6-Aug-19	48	6-Sep-19	62	6-Oct-19	156	(301 to 400)	Very Poor (Red)
7-Jul-19	47	7-Aug-19	24	7-Sep-19	57	7-Oct-19	163		
8-Jul-19	45	8-Aug-19	25	8-Sep-19	41	8-Oct-19	164		
9-Jul-19	42	9-Aug-19	41	9-Sep-19	63	9-Oct-19	113		
10-Jul-19	37	10-Aug-19	91	10-Sep-19	64	10-Oct-19	133		
11-Jul-19	63	11-Aug-19	106	11-Sep-19	64	11-Oct-19	155		
12-Jul-19	104	12-Aug-19	85	12-Sep-19	40	12-Oct-19	163		
13-Jul-19	129	13-Aug-19	37	13-Sep-19	30	13-Oct-19	190		
14-Jul-19	126	14-Aug-19	32	14-Sep-19	56	14-Oct-19	191		
15-Jul-19	135	15-Aug-19	59	15-Sep-19	89	15-Oct-19	205		
16-Jul-19	105	16-Aug-19	76	16-Sep-19	99	16-Oct-19	300		
17-Jul-19	106	17-Aug-19	87	17-Sep-19	49	17-Oct-19	263		
18-Jul-19	133	18-Aug-19	69	18-Sep-19	16	18-Oct-19	203		
19-Jul-19	105	19-Aug-19	40	19-Sep-19	57	19-Oct-19	125		
20-Jul-19	80	20-Aug-19	41	20-Sep-19	80	20-Oct-19	199		
21-Jul-19	82	21-Aug-19	64	21-Sep-19	91	21-Oct-19	267		
22-Jul-19	92	22-Aug-19	85	22-Sep-19	55	22-Oct-19	275		
23-Jul-19	103	23-Aug-19	72	23-Sep-19	66	23-Oct-19	268		
24-Jul-19	46	24-Aug-19	71	24-Sep-19	37	24-Oct-19	173		
25-Jul-19	40	25-Aug-19	40	25-Sep-19	27	25-Oct-19	61		
26-Jul-19	65	26-Aug-19	58	26-Sep-19	15	26-Oct-19	108		
27-Jul-19	57	27-Aug-19	46	27-Sep-19	P.F	27-Oct-19	309		
28-Jul-19	42	28-Aug-19	67	28-Sep-19	25	28-Oct-19	355		
29-Jul-19	39	29-Aug-19	70	29-Sep-19	20	29-Oct-19	313		
30-Jul-19	43	30-Aug-19	71	30-Sep-19	21	30-Oct-19	276		
31-Jul-19	46	31-Aug-19	79			31-Oct-19	343		
76	Satisfactory (Light Green)	62	Satisfactory (Light Green)	54	Satisfactory (Light Green)	190	Moderate (Yellow)		

Annexure-1
UTTAR PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VARANASI

RIVER GANGA AT U/S VARANASI (NEAR VISHWASUNDARI BRIDGE)						
Month/Year	pH	DO(mg/l)	BOD(mg/l)	COD(mg/l)	TC(MPN/100ml)	
Dec-18	8.2 5	8.5	2.5	9.6	1100	
Jan-19	8.2 8	8.9	2.2	9.2	1300	
Feb-19	8.3 6	10	1.7	8.4	1100	
Mar-19	8.2 9	8.9	2.4	9	1400	
Apr-19	8.4 2	8.4	2.4	9.2	1400	
May-19	8.4	8	2.7	10.2	1700	
Jun-19	8.4 3	8.4	2.3	9.8	1400	
Jul-19	8.4	7.9	2.8	13.2	2100	
Aug-19	8.1 4	7.2	3.3	13.6	2200	
Sep-19	8.3	7.3	3.1	14.4	2700	
Oct-19	8.2 7	7.2	3.2	14.8	3400	
Nov-19	8.2 2	7.4	3	13.6	3100	

Annexure-1
UTTAR PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VARANASI

Aver.	8.3 1	8.2	2.6	11.3	1900
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Annexure-1
UTTAR PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VARANASI

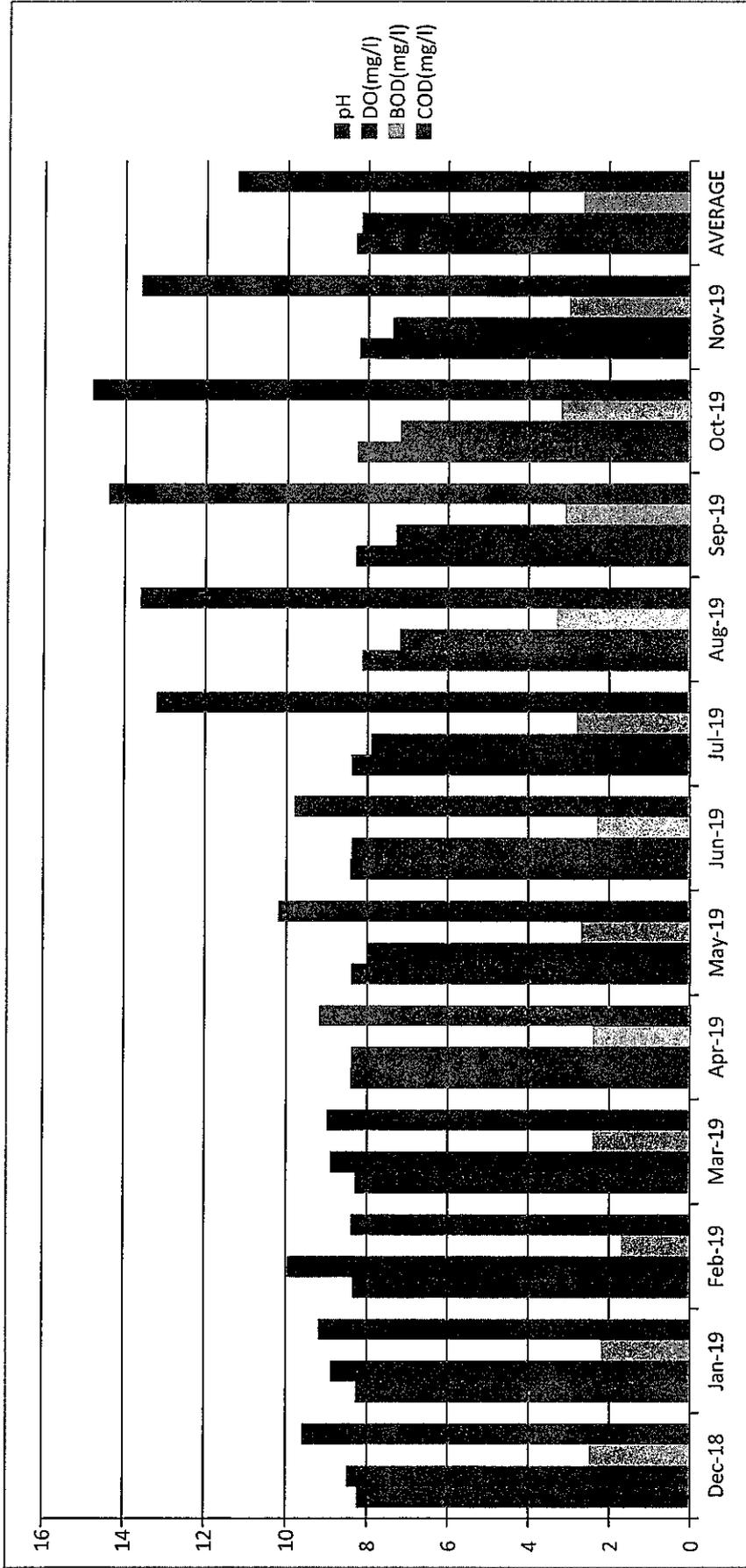


Fig.-1. RIVER GANGA AT U/S VARANASI (NEAR VISHWASUNDARI BRIDGE)

Annexure-1
UTTAR PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VARANASI

RIVER GANGA AT D/S VARANASI (NEAR SARAI MOHANA)						
Month/Year	pH	DO(mg/l)	BOD(mg/l)	COD(mg/l)	TC(MPN/100ml)	
Dec-18	8.1					
	6	6.1	4.5	16.4	46000	
Jan-19	8.2					
	2	6.7	4.1	15.6	43000	
Feb-19	8.2					
	4	7.3	3.4	13.2	31000	
Mar-19	8.1					
	9	7.2	3.6	12.8	31000	
Apr-19	8.2					
	4	7.3	3.6	13.8	34000	
May-19	8.2					
	2	7.4	3.5	15.4	27000	
Jul-19	8.2					
	7	7.3	3.8	19.6	34000	

Annexure-1
UTTAR PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VARANASI

Aug-19	7.9 6	6.5	4.2	17.2	31000
Sep-19	8.1 7	6.8	4.2	20.8	34000
Oct-19	8.2 2	6.5	4.2	20.4	43000
Nov-19	8.1 6	6.8	4.1	19.6	34000
Aver.	8.1 9	6.9	3.9	16.8	35000

Annexure-1
UTTAR PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VARANASI

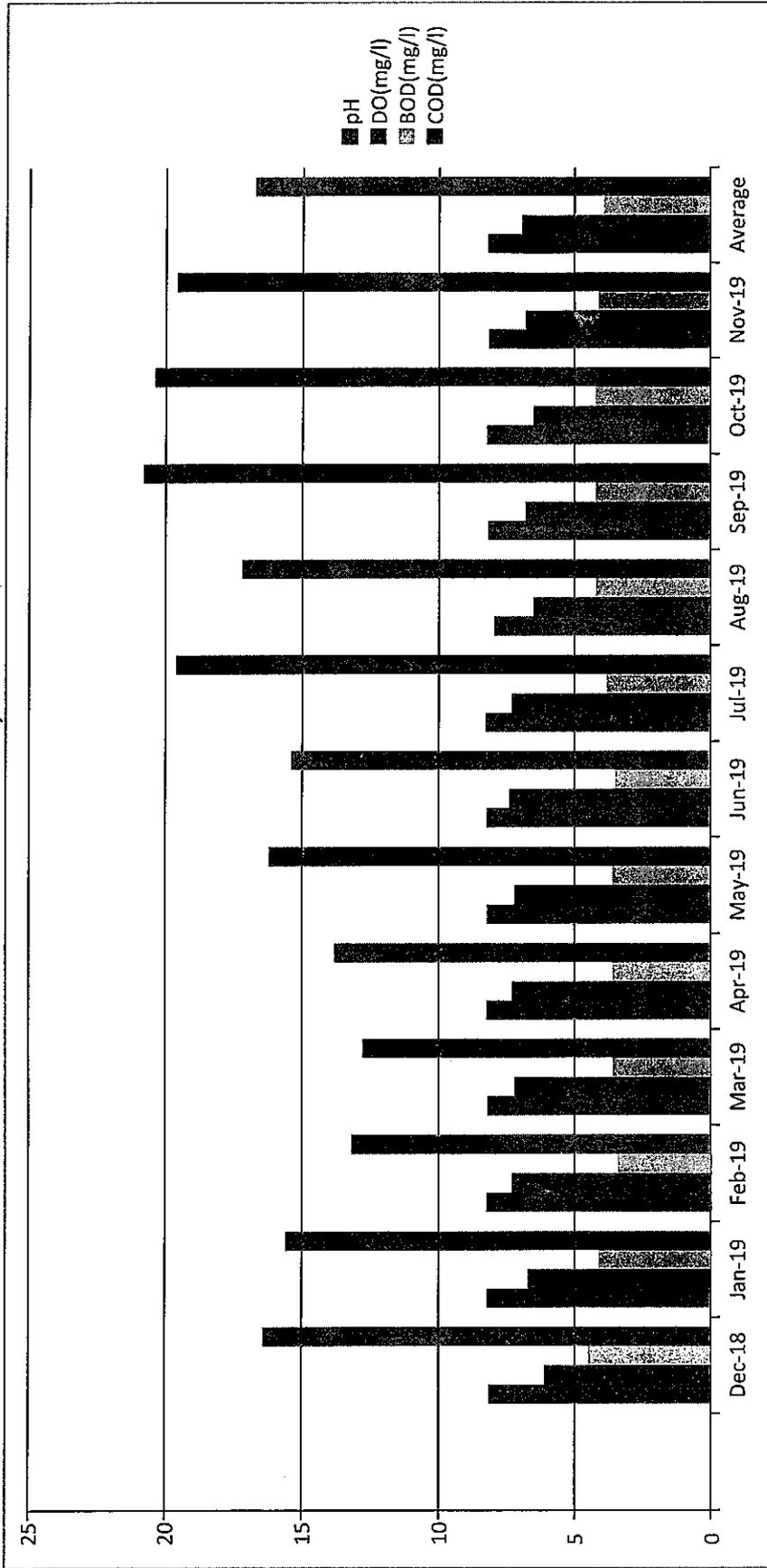


Fig.2. RIVER GANGA AT D/S VARANASI (NEAR SARAI MOHANA)

Annexure-1
UTTAR PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VARANASI

RIVER VARUNA NEAR RAMESHWAR GHAT AT VARANASI				
Month-Year	pH	DO	BOD	COD
Dec-18	(dried) 8.38	(dried) 8.2	(dried) 2.9	(dried) 9.6
Jan-19	8.45	8.4	2.4	9.6
Feb-19	8.38	7.8	3.8	13
Mar-19	8.46	7.6	3.9	14.8
Apr-19	8.44	7.7	3.5	18.4
May-19	8.4	8.1	3.9	17.6
Jun-19	8.42	8	3.2	13.2
Jul-19	8.24	7.5	3.3	12.8
Aug-19	8.34	7.7	3.2	11.2
Sep-19	8.32	7.6	3.3	16.4
Oct-19	8.35	7.8	2.9	12
Nov-19	8.38	7.85	3.3	13.50909
Aver.				

Annexure-1
UTTAR PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VARANASI

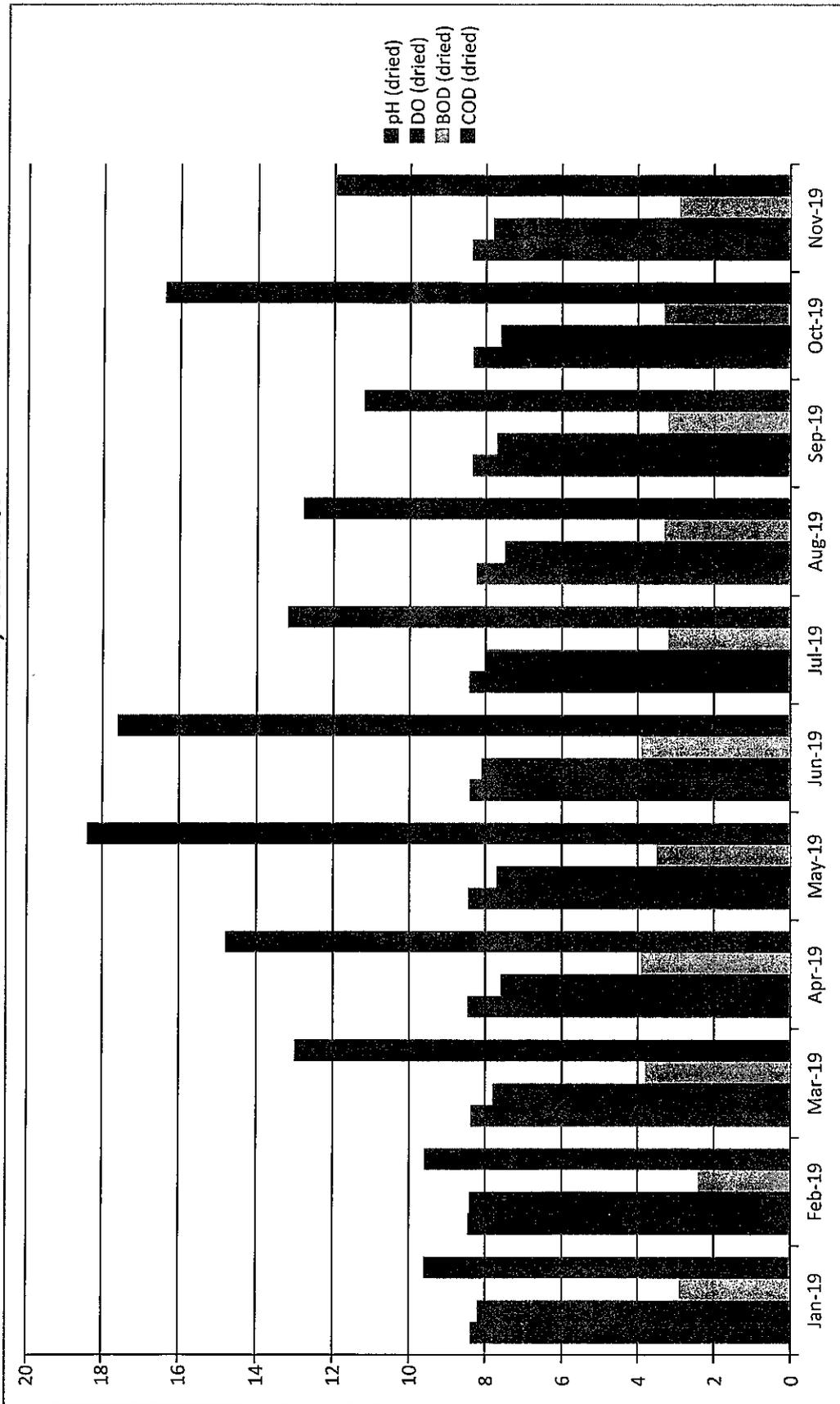


Fig.3 River Varuna Near Rameshwar Ghat At Varanasi

Annexure-1
UTTAR PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VARANASI

RIVER VARUNA B/C RIVER GANGA AT VARANASI					
Month-Year	pH	DO	BOD	COD	
Dec-18	7.68	0.5	42.4	136.8	
Jan-19	8.12	2.6	32.4	120.8	
Feb-19	7.86	2.2	26.2	112.8	
Mar-19	7.78	2.4	24.4	116.8	
Apr-19	7.66	2.5	24.4	96.2	
May-19	7.65	2	28.4	108.2	
Jun-19	7.72	1.6	29.6	112.4	
Jul-19	7.73	2.2	26.4	104.8	
Aug-19	7.62	3.6	16.8	82.4	
Sep-19	7.54	3.4	17.2	76.4	
Oct-19	7.80	4.0	15.6	78.2	
Nov-19	7.74	4.3	13.6	56.4	
Aver.	7.74	2.61	24.78	100.1833	

Annexure-1
UTTAR PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VARANASI

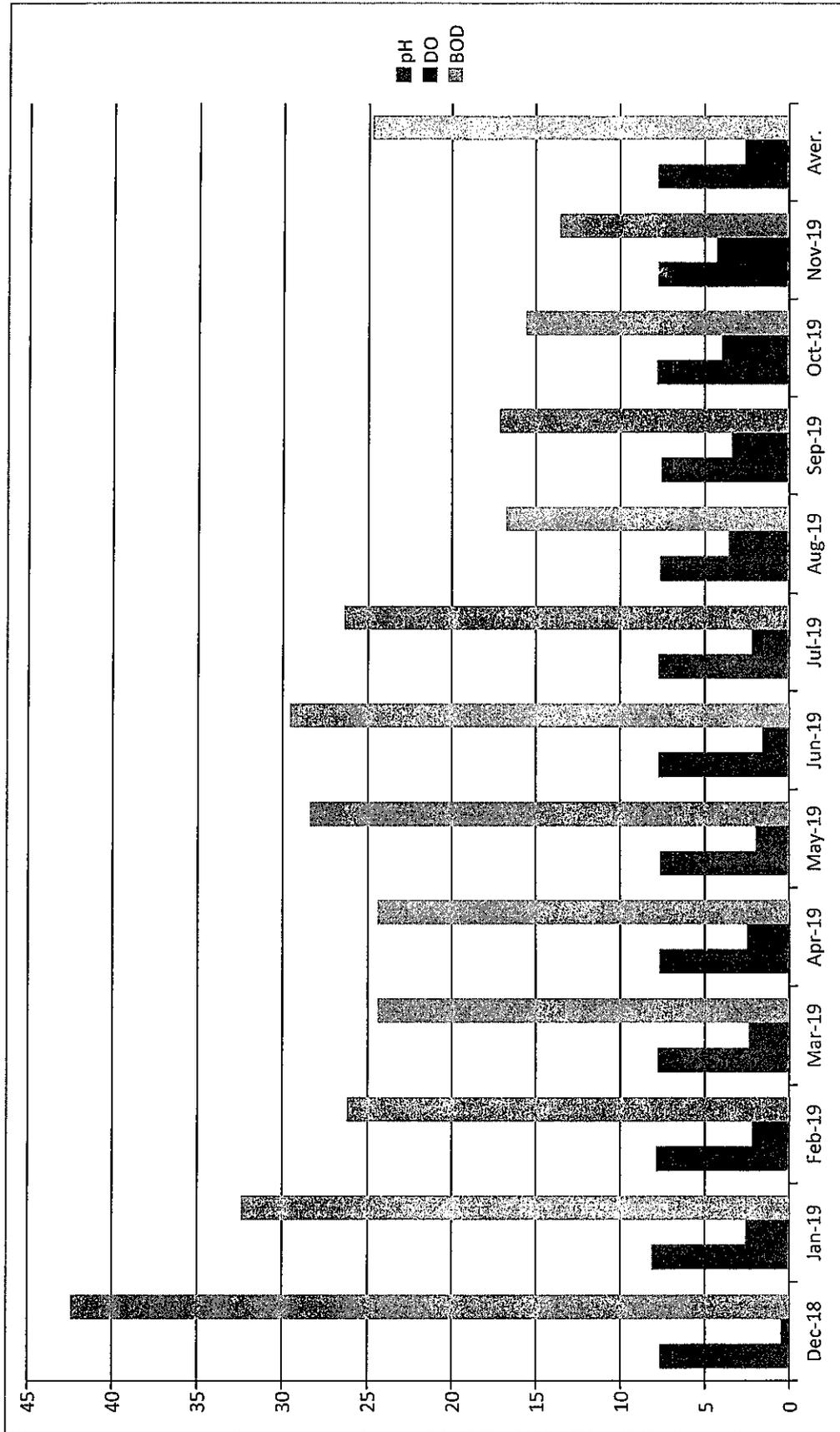


Fig. 4. River Varuna B/C River Ganga At Varanasi

Annexure-1
UTTAR PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VARANASI

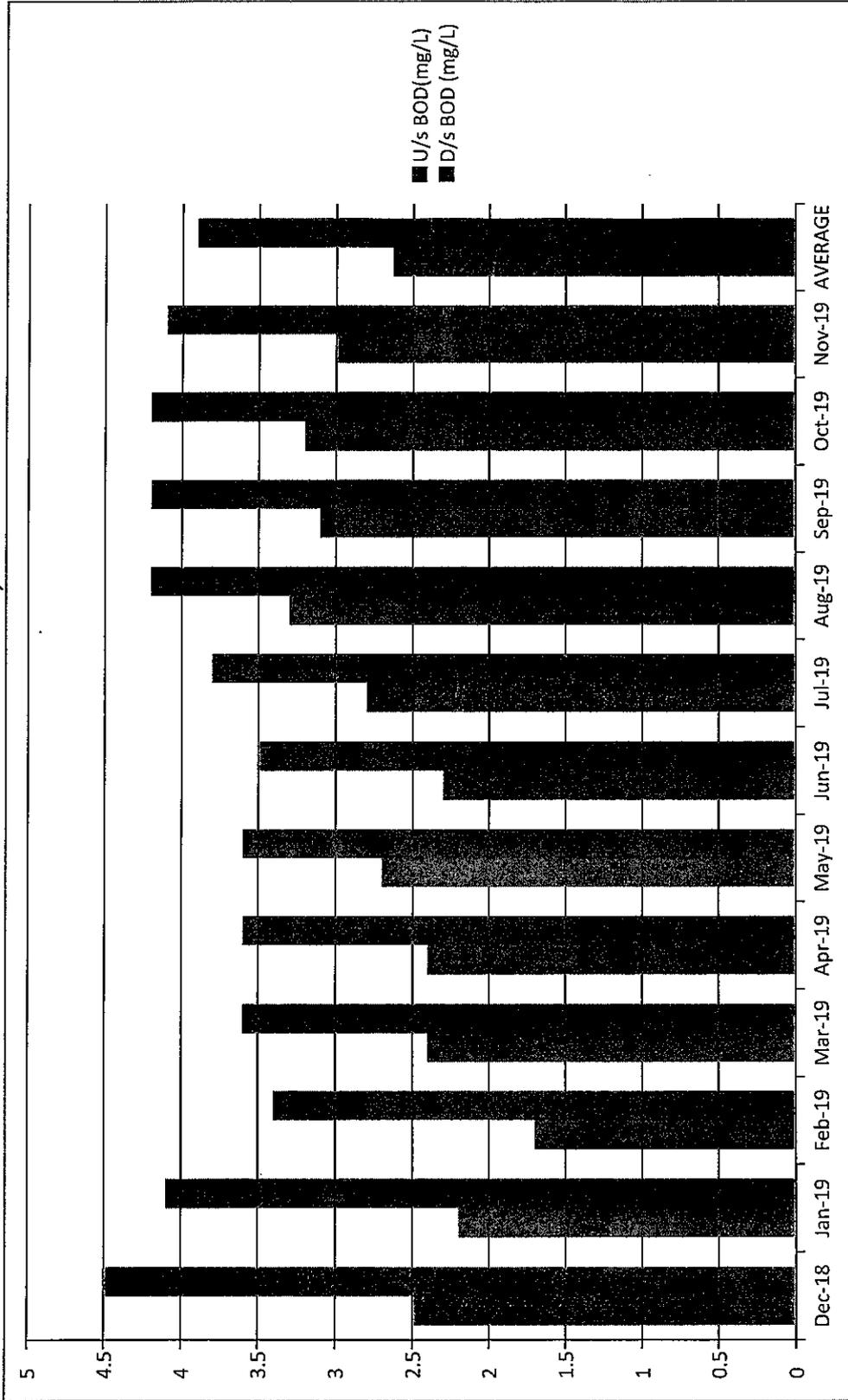


Fig. 5 Graphical Representation of Monthly BOD data River Ganga U/s and D/s

Annexure-1
UTTAR PRADESH POLLUTION CONTROL BOARD
REGIONAL OFFICE, VARANASI

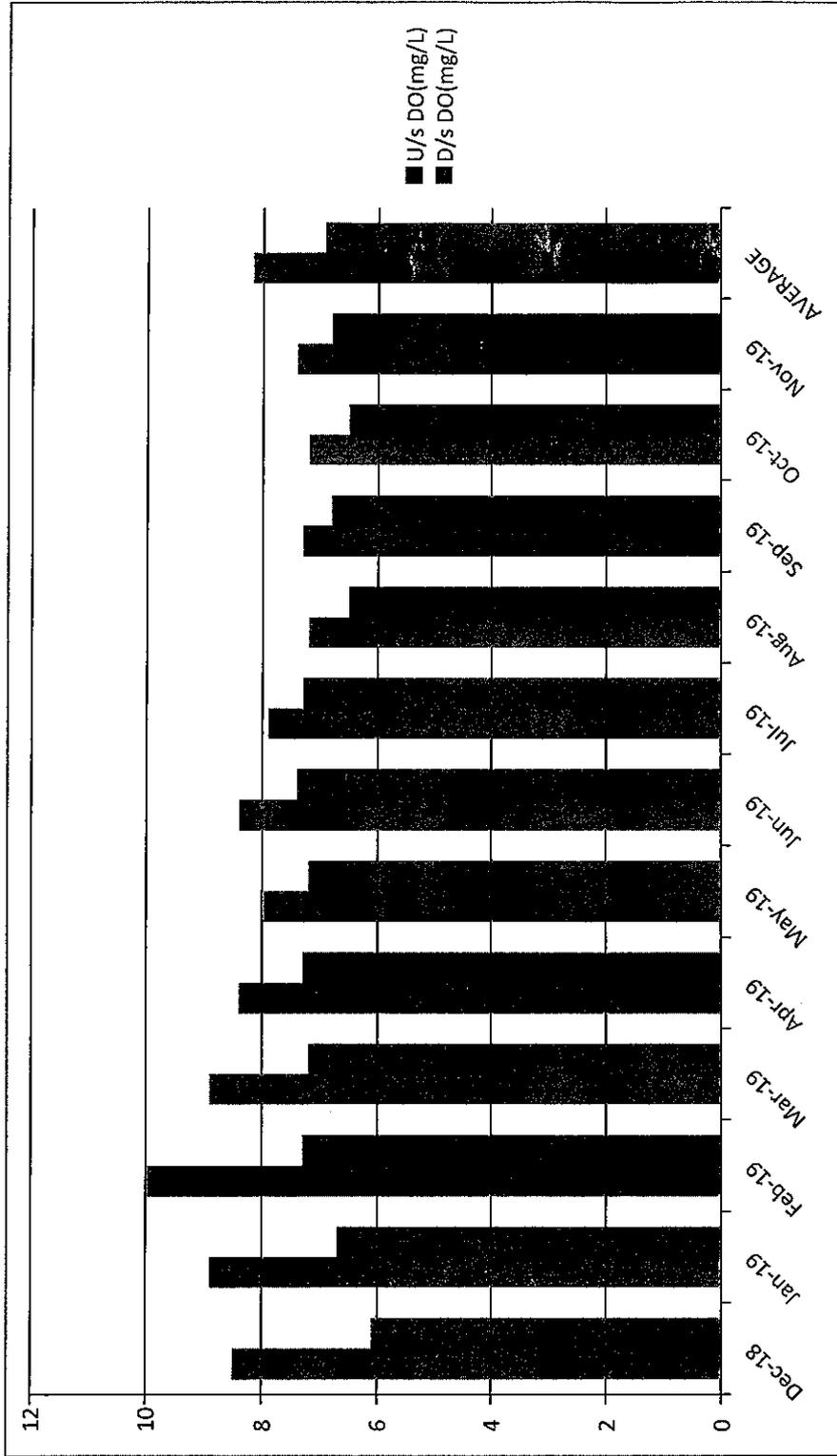


Fig. 6. Graphical Representation of Monthly DO data River Ganga U/s and D/s