

BEFORE THE NATIONAL GREEN TRIBUNAL SOUTHERN ZONE, CHENNAI

Original Application No. 111 of 2022 (SZ)

IN THE MATTER OF:

Tribunal on its own motion Suo Motu based on
the news Item in Tamil Newspaper Dinamalar Chennai Edition Dt.13.07.2020,
“Frothing of Chemical Foam in the River Thenpennai”

....Applicant

Versus

The Principal Secretary to Government, Public Works Department, Chennai & Ors.

.....Respondents

AFFIDAVIT FILED ON BEHALF 6TH RESPONDENT

It is most humbly submitted as follows:

1. It is submitted that the 6th Respondent herein is filing an updated Action Taken Report. The KSPCB had requested BWSSB for an Action Taken Report with respect to the improvements in the STPs located in Hebbal valley and K&C Valley, and the same is filed as Annexure I here. The BWSSB is summarised below:
 - (a) The sewage network and STP's in the newly added 110 villages are not yet provided. Hence, the sewage generated in those areas is entering storm water drains. However, the sewage pipeline laying is in progress and is estimated to be completed in all villages by 2024.
 - (b) BWSSB had planned to link the sewage lines to the STPs to increase the flow to the plants to its designed capacities. Accordingly, BWSSB has taken up and completed linking works to stop the sewage, entering the lakes. The completion of STP's has enabled BWSSB to arrest wastewater directly flowing to lakes.

- (c) Apart from sewage generated from 110 villages area, around 5% of the sewage is not possible to arrest which is entering the lake diversion channel due to Site constraints and non-availability of buffer zones for carrying out the routine desilting works of the sewer lines which are running in the SWDs. In view of difficulties and practical problems and more site constraints and in such places the competent authority shall have to provide any alternative land for carrying out the works of shifting of sewer lines on either side of the drains in the buffer zones.
- (d) In this regard several meetings were conducted with the engineers of BWSSB, BBMP, BDA and Consultants and it was decided to highlight the issue to other stakeholders and to government for further directions.
- (e) The sewers which were laid inside the SWDs in K&C Valley is 50.37 kms. V Valley is 84 Km and Hebbal Valley is 18 Km BWSSB will take up similar Projects such as K100 or DTSS, etc. in phased manner to arrest the remaining sewage flowing in SWD.
- (f) Upgradation of STPs: The BWSSB has taken up upgradation work as per the orders of Hon'ble Tribunal.** The work of Design, Upgradation and Rehabilitation of existing 248 MLD Used Water Treatment Plants capacity at K&C Valley, Bengaluru including Commissioning, Operation & Maintenance for a period of 5 years along with O&M during Design, Upgradation and Rehabilitation period has been entrusted to M/s. SUEZ India Pvt Ltd on tender basis with awarded cost of INR 610.50 Crore (Work Value INR 494.37 + 2 year O&M cost INR 14.36 Crore plus 5 year O&M NR 101.76 Crore) with the date of commencement and date of completion as 27-04-2022 and 26-04-2024 (24 Months duration) respectively. The project is having 24 Months O&M during Construction and 60 Months O&M post construction.
- (g) In the upgradation works the plant will be complied to BNR Removal and effluent parameters will be complied as per the directions of the Hon'ble NGT. Further, sludge handling structures will be added to treat the**

generated sludge. The total capital cost for upgradation of all these 20 plants will be Rs.141 1.00 crore which includes physical contingencies, provisional sum, PMC and escalation charges. In the Budget speech of Hon'ble Chief Minister for the year 2022-23 in the Joint session it was mentioned that Rs.1500.00 crore have been allotted for the upgradation works of wastewater treatment plants of the city. The Proposal have been submitted to Govt. of Karnataka for approval and seeking funds.

2. It is most humbly submitted that on the Joint Committee had suggested a performance study of the STPs to the Monitoring Committee constituted under O.A.No. 125/2017. However, the Monitoring Committee constituted under the OA referred is not of existence anymore as the case was closed on 12.03.2021. However, the jurisdictional offices of KSPCB have inspected the catchment area of the Thenpennai River. They have inspected 10 Red Category, 7 Orange Category and collected samples. The results of the tests conducted on the samples is attached with the Action Taken Report as Annexure – II. 3 areas are non-conforming to the standards, the jurisdictional offices have been notified and action is being taken. The non-conforming areas are:
 - (a) Goodrich Aerospace Services 066. Pvt Ltd., Sy No. 14/1, 14/2 & 15/1 Maruthi Hoody Village, 3 Indl Estate LR K.R.Puram, Bangalore East Taluk - 48.
 - (b) Molex India Limited., Plot No. 6A, Sadaramangala Indl. Area, Kadugodi Post, Bengaluru - 560 067
 - (c) Reliance Jio Infocomm Ltd., No. 1155, 3rd Wing, Block - C, HM Tech Park, Hope Farm Circle, Whitefield, Bengaluru.
3. It is humbly submitted that KSPCB has imposed EC of Rs. 288.80 Cr. on 496 Apartment/Commercial Establishments and Rs. 1,40,00,000/- has been collected so far. KSPCB has issued Memo to ROs in this regard 1895, dated: 14.06.2022. As a result Rs. 48.076 Cr EC has been levied on vide No. various BWSSB STPs. The list has been enclosed Annexure-3.

4. It is humbly submitted that KSPCB has installed continuous online water quality monitoring system at the border of Karnataka and TamilNadu near Mugulur Bridge for monitoring quality of water flowing in River Thenppenai. The water quality report for the months April - June, 2022 is enclosed herein as Annexure IV.

Dated at Chennai on this the 12th day of July, 2022

A handwritten signature in black ink, reading "M.R. Srinivasan". The signature is written in a cursive style and is positioned above a solid horizontal line.

Counsel for the 6th Respondent Board

**Action Taken Report for the Quarter Ended on 30.06.2022
(Period 01.04.2022 to 30.06.2022) as per the Honorable NGT Order dated 27.05.2022.**

Sl No.	Action points	Present status	Proposed action by the Joint committee	Actions taken by KSPCB
1	<i>Study of Performance evaluation of sewage Treatment Plants in Bangalore by engaging a CSIR Institute.</i>	<i>The performance of the STPs located in Koramangla and Challaghatta, Hebbal Valleys are being assessed based on its capacity utilized and characteristics by BWSSB. However, the treated waste water quality needs to be ascertained. Further, Water quality of water (treated water by BWSSB) diverted for irrigation to Chikkaballapura and Kolar Districts through Minor irrigation Department is required to be assessed.</i>	<i>BWSSB may engage a CSIR Institute like CLRI or NEERI or others for evaluating performance of STPs located in K&C and Hebbal valleys. (viz., there are 32 STPs in Bangalore including 21 STPs in Koramangla & Challaghatta and Hebbal Valleys). The same may be supervised by KSPCB. The final report may be submitted to KSPCB for review.</i>	<i>KSPCB had addressed letter to BWSSB on 14.06.2022, requesting them furnish action taken by them in improving the performance of their STPs located in Hebbal valley and K & C valley, as per evaluation report submitted by IISc to them. As a response BWSSB has submitted their reply letter dated: 22.06.2022 delineating action taken by them in this regard. Copies of the KSPCB & BWSSB letters are enclosed as Annexure-1</i>
2		<i>Therefore, there is need to conduct audit of the data of quantity of sewage generation, Sewage treatment capacity installed vs actually operated and treated wastewater characteristics.</i>	<i>The outcome of the performance study of STPs may be submitted as Status of Compliance of the State Functionaries of Karnataka to the Monitoring Committee constituted in the matter of O.A 125/2017, for review and reporting.</i> <i>Among the industries those that are Red/Orange category (small, medium and large) with treated effluent discharge option as surface water/sewer</i>	<i>The Monitoring Committee constituted in the matters related to OA No. 125/2017 is no more existing with quashing of the case on 12.03.2021.</i> <i>The Jurisdictional Offices of KSPCB having Thenpennai River catchment area have inspected 10 red category industries and 7 orange category industries. 08 number of effluent</i>

			<p><i>drain/others (which includes industries having ZLD) in River basin of Thenpennai be monitored for effluent characteristics by concerned SPCBs, so as to ascertain the quality of treated effluent discharge as per the Consent Conditions of SPCBs. The details of the compliance status and action taken report be placed in public domain (TNPCB and KSPCB website).</i></p>	<p>samples have been collected out of which 3 are non conforming and notices were issued to such organizations by the concerned Jurisdictional Regional Offices.</p> <p>Annexure -2</p>
3	<p><i>Environmental Compensation be imposed by SPCBs after evaluating performance of STPs and identification of defaulters upon Random verification.</i></p>	<p><i>Performance evaluation of STPs by BWSSB and random inspection industries is required to be carried out by KSPCB/TNPCB with specific reference to River Thenpennai.</i></p>	<p><i>EC be calculated and imposed based on the Performance Evaluation of STPs and Random Verification of Grossly Polluting Industries.</i></p> <p><i>Calculation of EC by the three member Committee comprising of CPCB, TNPCB and KSPCB, after submission of Reports by the concerned authorities (BWSSB, KSPCB, TNPCB)</i></p>	<p>KSPCB has imposed EC of Rs. 288.80 Cr. On 496 Nos of Apartment/Commercial establishment and Rs. 1.40 Cr. has been collected so far.</p> <p>Joint Committee has been constituted by KSPCB on 25.04.2022 for Calculating Environmental Compensation in respect of Defaulting BWSSB STPs.</p> <p>Further, KSPCB has issued Memo to ROs in this regard vide No. 1895, dated: 14.06.2022. As a result Rs. 48.076 Cr EC has been levied on various BWSSB STPs. List enclosed as Annexure-3</p>

4	<i>Regular Water Quality Monitoring at important locations.</i>	<i>Water Quality is being monitored by KSPCB by installing real time monitoring stations in Bellandur and Varthur. Further, Mugulur Bridge and Sokkarasanapalli is being monitored under National Water Quality Monitoring Programme.</i>	<i>The trend of water quality and its improvement at major confluence points may be monitored for the year 2021-22 on a monthly basis and a report be submitted to CPCB to ensure the quality of water flowing in River Thenpennai.</i>	<i>KSPCB has installed continuous online water quality monitoring system at the border of Karnataka & Tamilnadu near Mugulur Bridge for monitoring quality of water flowing in River Thenpennai. The water quality report for the months of April, May and June 2022 is enclosed herewith (Annexure-4).</i>
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✓ Senior Environmental Officer



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Karnataka State Pollution Control Board

"ಪರಿಸರ ಭವನ", 1 ರಿಂದ 5ನೇ ಮಹಡಿಗಳು, ನಂ. 49, ಚರ್ಚ್ ಸ್ಟ್ರೀಟ್, ಬೆಂಗಳೂರು - 560 001, ಕರ್ನಾಟಕ ರಾಜ್ಯ, ಭಾರತ
"Parisara Bhavan", 1st to 5th Floor, # 49, Church Street, Bangalore - 560 001, Karnataka State, India

No. PCB NGT OA 111/2020 / 1894

Date: 14 JUN 2022

To
Mr. B. C. Gangadhar,
Chief Engineer, BWS & SB,
Wastewater Division,
5th Floor, Cauvery Bhavana,
KG Road, Bengaluru 560 009.

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Sir,

Subject:

Furnishing progress report in respect of National Green Tribunal matter related to South Pinakini River – Regarding.

References:

1. National Green Tribunal, Southern Zone, Chennai, Suo Moto case OA No 111 of 2020.
2. Joint Committee Report of November 2020.
3. NGT Order dated 28.06.2021.

You are aware that in the matter of Original Application No. 111 of 2020 related to South Pinakini River, a joint Committee had been constituted as per the direction of the National Green Tribunal for rejuvenating the said river. As per the NGT Order dated: 28.06.2021, the progress report on the recommendations made by the Joint Committee shall have to be filed before the Tribunal every quarter And as per the recommendations of the Committee BWS & SB has engaged IISc for evaluation of their STPs located in Hebbal & K&C Valleys.

In view of the above you are here by requested to furnish the progress made by BWS & SB in improving the performance of the said STPs for the period up to June 2022, as per the suggestions made in the STP upgradation report submitted by IISc. As per the suggestions of the Joint Committee BWS & SB is also required to submit final report to the KSPCB on the action initiated on the recommendations of IISc Report.

o/c
Yours faithfully

Senior Environmental Officer

Email: cewwm@bwssb.gov.in

Ph: 080-22945106



ಬೆಂಗಳೂರು ನೀರು ಸರಬರಾಜು ಮತ್ತು ಒಳಚರಂಡಿ ಮಂಡಳಿ

BANGALORE WATER SUPPLY & SEWERAGE BOARD
O/o Chief Engineer(WWM), 5th Floor, Cauvery Bhavan, Bangalore-560009.

No. BWSSB/CE(WWM)/ACE(WWM)-1/DCE(WWM)/TA-1/ 546/2022-23 Date : 22/06/22

To

Member Secretary
Karnataka State Pollution Control Board
Parisara Bhavan, 1st to 5th Floor,
49, Church Street,
Benagaluru -560001.

Sir.

Sub: Visit of Chairperson Hon'ble National Green Tribunal, Principal Bench,
New Delhi to Bengaluru from July 17-24, 2022 – Reg

Ref: No.KSPCB/CEO-1/2022/94/Dt:09-06-2022

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With reference to the above as desired in the letter cited at reference please find herein enclosed a brief note on the works of BWSSB for your information and needful action.

Yours faithfully,


Chief Engineer(WWM)(I/C)
BWSSB.

Encl: As above

SECRET
S. KSPCB.
MTH/26
28/6

Agenda Points for the meeting with Chairperson, Hon'ble NGT, Principal Bench, New Delhi

At present Bangalore city is receiving 1460 MLD of water from all the Cauvery water supply schemes. The water extracted through public and private borewell is 400 MLD. The total water consumed by Bangalore is 1860 MLD. The total **Sewage generated** is about 80% of the total water supplied i.e., **1488 MLD** which is generated from three Major Valleys.

The capacity of the Sewage treatment plants, Sewage generated and Sewage treated in Bangalore city is tabulated below:

Total Capacity in MLD	Total Sewage Generated in MLD	Total Sewage Treated	
		in MLD	%
1527.50	1488.00	1274.15	85.63

After commissioning of the CWSS V Stage Work during 2024 additional 775 MLD of water will be supplied to newly added 110 villages of Bangalore City. The total Water supplied to Bangalore will be 2175 MLD. The total **Sewage generated** is about 80% of the total water supplied i.e., **1740 MLD** which is generated from three Major Valleys.

Sl. No	Name	Capacity in MLD				Sewage Generated in 2024 in MLD
		Existing	Under Construction	Proposed	Total	
1	K&C Valley	664.50	39.00	0.00	703.50	1740.00
2	V-Valley	576.00	53.00	29.00	718.00	
3	Hebbal Valley	287.00	44.00	130.00	461.00	
	Total	1527.50	136.00	159.00	1882.50	

- **Sewage entering into the Storm Water Drains from newly added 110 villages to BBMP jurisdiction.**

The sewage network and STP's in newly added 110 villages are not yet provided. Hence the sewage generated in those area is entering into Storm water drains. The Sewage flow from the 110 Villages will be augmented after completion of the works taken up under CWSS 5th stage under JICA funding's. At present laying of

lateral pipes, submains, trunk mains and construction of STPs are in progress which are planned to complete by 2024.

- **Non availability of Buffer zones to access the Sewage network inside Storm Water Drains for maintenance.**

BWSSB had planned to link the sewage lines to the STPs to increase the flow to the plants to its designed capacities. Accordingly, BWSSB has taken up and completed linking works to stop the sewage entering the lakes. The completion of STP's has enabled BWSSB to arrest wastewater directly flowing to lakes.

Further, apart from sewage generated from 110 villages area, around 5% of the sewage is not possible to arrest which is entering the lake diversion channel due to site constraints and non-availability of buffer zones for carrying out the routine desilting works of the sewer lines which are running in the SWDs. In most of the buffer zones the buildings have been constructed and it is not possible to deploy sewer cleaning machines for carrying out the routine cleaning of such sewer lines.

In view of difficulties and practical problems and more site constraints and in such places the competent authority shall have to provide any alternative land for carrying out the works of shifting of sewer lines on either side of the drains in the buffer zones. In this regard several meetings were conducted with the engineers of BWSSB, BBMP, BDA and Consultants and it was decided to highlight the issue to other stakeholders and to government for further directions.

In many locations the encroachments and non-availability of space on either side of the SWD, the work of shifting of sewer lines is not possible from SWDs. Thus, it is essential for the stake holders to provide proper space on either sides of SWD to maintain the sewer lines and to lay the sewer lines outside the SWD to arrest the sewage flowing in SWD's to the sewer network.

The sewers which were laid inside the SWDs in K&C Valley is 50.37 kms.
V Valley is 84 Km and Hebbal Valley is 18 Km

BWSSB will take up similar Projects such as K100 or DTSS, etc. in phased manner to arrest the remaining sewage flowing in SWD.

- **Upgradation of existing STPs**

The work of Design, Upgradation and Rehabilitation of existing 248 MLD capacity Used Water Treatment Plants at K&C Valley, Bengaluru including Commissioning,

Operation & Maintenance for a period of 5 years along with O&M during Design, Upgradation and Rehabilitation period has been entrusted to M/s. SUEZ India Pvt Ltd on tender basis with awarded cost of INR 610.50 Crore (Work Value INR 494.37 + 2 year O&M cost INR 14.36 Crore plus 5 year O&M INR 101.76 Crore) with the date of commencement and date of completion as 27-04-2022 and 26-04-2024 (24 Months duration) respectively. The project is having 24 Months O&M during Construction and 60 Months O&M post construction.

Further as per the orders of the Hon'ble National Green Tribunal in O.A. No.1069/2018 it is required for the Board to take up similar upgradation works of the other old existing 20 wastewater treatment plants of the City. In the upgradation works the plant will be complied to BNR Removal and effluent parameters will be complied as per the directions of the Hon'ble NGT. Further, sludge handling structures will be added to treat the generated sludge.

The total capital cost for upgradation of all these 20 plants will be Rs.1411.00 crore which includes physical contingencies, provisional sum, PMC and escalation charges. In the Budget speech of Hon'ble Chief Minister for the year 2022-23 in the Joint session it was mentioned that Rs.1500.00 crore have been allotted for the upgradation works of wastewater treatment plants of the city. The Proposal have been submitted to Govt. of Karnataka for approval and seeking funds.



Chief Engineer (WWM)



Annexure-2

SI No	Name & Address of the industry	Size & category	Number of effluent samples collected during inspection
1	Kalyani Motors Pvt. Ltd., Sy. No. 129/4, Kalyani Platina Tech Park, Kundalahalli Village, Bengaluru 560 066.	MO	The treated wastewater is recycled back for washing of vehicles. Hence, the sample not collected.
2	M/s. Exxon Mobil Company India Private Limited, Plot No. 05, Road No. 8, EPIP, Whitefield, Bangalore Urban District, Bangalore - 560 066.	LR	Sewage is being disposed in to Septic tank and Soak pit
3	Goodrich Aerospace Services Pvt Ltd Sy No. 14/1, 14/2 & 15/1 Maruthi Indl Estate, Hoody Village, K.R.Puram, B'lore-48 Bangalore East Taluk	LR	01 (Collected from STP) Non-conforms to the prescribed standards
4	Bioplus Life Sciences Pvt Ltd, Sy No.10-1a, Hoodi VilageOpp Bhagini Restaurant, KR.Puram Hobli Bangalore East Taluk	LO	Sewage is being disposed in to Septic tank and Soak pit
5	HAL Foundry & Forge Division, Sy No. 93 to 102, HAL (BC), P.B.No.1791 Vimanapura (PO), Old Airport Road Bangalore East Taluk	LR	02 (Collected from STP & ETP) Both Conforms to prescribed Standards
6	Grindwell Norton Ltd, Sy No. 110, Devanahalli Road, Opp. Old Madras Rad, Bangalore East Taluk	LO	01 (Collected from ETP) Conforms to prescribed Standards
7	M/s Arna Dairy, Sy No. 80/3, Kyalasanahalli Village, Kothnur Post, KR puram Hobli, Bengaluru East Taluk	SO	02 (Collected on 31/05/2022 as per Water Act, 1974 at 1) Treated trade effluent collected from outlet of ETP & 2) Partially treated trade effluent collected from the open drain being discharged into stream)

8	Reliance Jio Infocomm Limited No. 1155, 3rd wing Block-C, HM tech park, Hope farm circle, Whitefield, Bengaluru	LR	01 (Collected from Common STP of HM Techpark at Site no.12/1B & 13/1A Pattandur Agrahara village, Whitefield, K.R.Puram hobli, Bengaluru East) Non-Conforms to prescribed Standards
9	M/s Baxter Innovations And Business Solution Pvt. Ltd., - Prestige Shantiniketan located at Tower B, 7th Floor, Crescent - 3 & 4 tower of Prestige Shantiniketan, Sy. No.70,71,72,73,74,77 & 78 of Sadaramangala and Sy. No. 129 & 130 of Hoodi Village, K. R. Puram Hobli, Bengaluru East Taluk Bengaluru	LO	Sewage is being treated in Common STP of Prestige Shantiniketan & trade effluent is being disposed to CETP
10	Molex India Limited., Plot No.6A, Sadaramangala Indl Area, Kadugodi Post, Bengaluru -560 067	LR	01 (Collected from STP) Non-conforms to the prescribed Standards
11	Ecron Acunova Pvt Ltd, SJR I Park, Hoody Village EPIP, K.R.Puram, Whitefield Bangalore East Taluk	LR	Sewage is being treated in Common STP of SJR I Park
12	Ion Exchange Service Limited, No. C-72 & 83, Devasandra Indl Area ITI Ancillary Indl Estate Bangalore East Taluk	SR	The trade effluent is being handing over to authorized CETP.
13	ISRO Satellite Integration and Establishment, Sy No 96 to 99, 105 to 116, 147 & 148, Karthik Nagar, Near Doddanekundi, Marathahalli Airport, Whitefield Road, ISRO Satellite Centre, Group head, C and MG, Old Airport Road, Bengaluru 560 017	LR	01 (Collected from STP) The report is awaited

14	HAL Airport Services Centre, Gate No.30,Vimanapura Post, HAL, Bangalore East Taluk	LO	Not collected the samples. Because the sewage is being treated in the Common Sewage Treatment Plant located at HAL, FMD, Post Box No. 1730, Vimanapura Post, Bangaluru East Taluk, Bangaluru.
15	Universal Flexible Private Limited, No.2c, 4th Cross, dyvasandra Industrial Area,Whitefield Road, Bangalore East Taluk	LR	during inspection ETP has been dismantled. Now sought for change of category from Red to Green.
16	Krishna Industries, Sy. No. 115, Devasandra Indl Area, Whitefield Road, Bangalore East Taluk	SR	The trade effluent is being handing over to authorized CETP.
17	M/s. Wipro GE Healthcare Private Limited (Formerly Known as M/s GE Medical Systems (India) Pvt. Ltd.), Plot No. 122 (Part-1), Export Promotion Industrial Park, Whitefield, Bangalore – 560 066	LO	01 (Collected from STP) The analysis report is awaited

Annexure-3

Information on Environmental Compensation levied and its status

Sl. No	Regional Office	Number of BWSSB STP's	Environmental Compensation levied	Remarks
1	RO, Bengaluru City South	2	3,22,50,000/-	Yet to collect
2	RO, Bommanahalli	6	19,11,00,000/-	Yet to collect
3	RO, Hoskote	1	2,35,37,500/-	Yet to collect
4	RO, Yalahanka	6	9,03,00,000/-	Yet to collect
5	RO, Mahadevapura	3	8,62,20,000/-	Yet to collect
6	RO, Bengaluru City East	2	5,73,60,000/-	Yet to collect

Annexure- 4

Dakshina Pinakini River Mugalur Bridge-2022-23

Sl. No	Parameters	Units	05.04.2022	10.05.2022	09.06.2022
1	pH@25C		6.9	6.9	7.1
2	Tempeature	C	25	25	25
3	Conductivity @25 ⁰ C	us/cm	1273	1446	1087
4	Total Coliform	MPN/100ml	540x10 ⁵	540x10 ⁵	540x10 ⁵
5	Fecal Coliform	MPN/100ml	39x10 ⁵	63x10 ⁵	33x10 ⁵
6	Dissolved oxygen	mg/L	BDL	3.4	1.8
7	BOD	mg/L	146	16	29
8	COD	mg/L	380	172	192
9	Nitrates as N	mg/L	6.54	4	4
10	Ammonia as N		22	25	23
11	Ammicals Nittrogen NH4-N	mg/L			
12	Turbidity	mg/L	46.4	13.9	18
13	Total Hardnees as CaCO3	mg/L	300	240	232
14	Calcium as CaCO3	mg/L	152	132	120
15	Magnesium as CaCO3	mg/L	148	108	112
16	Chloride as Cl	mg/L	204	148	128
17	Sodium as Na	mg/L	142	112	94
18	potassium as K	mg/L	11	24	22
19	Sulphate as SO4	mg/L	34	20	13
20	P-Alkalinty as CaCO3	mg/L	Nil	Nil	Nil
21	T-Alkalinty as CaCO3	mg/L	460	292	280
22	TDS	mg/L	866	694	750
23	Total Phoshate as P	mg/L	0.5	BDL	1
24	Fluoride as F	mg/L	0.18	BDL	0.23
25	Boron as B	mg/L	BDL	BDL	BDL
26	Bicarbonate(HCO3)	mg/L	460	292	
27	Carbonate(CO3)	mg/L	Nil	Nil	Nil
28	Total Chromium as Cr	mg/L	0.022		
29	Cadmium	mg/L	0.004		
30	Copper	mg/L	0.075		
31	Lead	mg/L	0.012		
32	Nickel	mg/L	0.044		
33	Zinc	mg/L	0.131		
34	Iron	mg/L	3.433		
35	Manganese	mg/L	0.517		
36	Sodium absorpition ratio				
37	Fecal Streptococi	mg/L			
	INFERENCE		Class"E"	Class"E"	Class"E"