MONITORING, SAMPLING AND ANALYSIS FOR STACK AMBIENT AIR QUALITY, SURFACE WATER QUALITY AND GROUND WATER QUALITY IN 100 POLLUTED INDUSTRIAL AREAS

DURING 2019-2020

Environmental Quality Monitoring Report For Chandrapur, Maharashtra

Maharashtra Pollution Control Board

Kalptaru Point, Sion East, Mumbai – 400 022

March, 2020

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By undertaking this project and completing in schedule time, we consider ourselves very lucky since we have helped the mankind by giving the data on pollution load and further action by the Board, to bring down the pollution level.

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Abbreviations:

APHA	American Public Health Association
BDL	Below Detection Limit
BOD	Biochemical Oxygen Demand
CEPI	Comprehensive Environmental Pollution Index
CETP	Common Effluent Treatment Plant
COD	Chemical Oxygen Demand
CPA	Critically Polluted Areas
SPA	Severely Polluted Areas
DO	Dissolved Oxygen
ETP	Effluent Treatment Plant
MIBK	Methyl Isobutyl Ketone
MPCB	Maharashtra Pollution Control Board
NAAQS	National Ambient Air Quality Standards
NO_x	Oxides of Nitrogen
BDL	Not Detected
PAH	Poly Aromatic Hydrocarbons
PCB	Poly Chlorinated Biphenyls
PCT	Poly Chlorinated Terphenyls
PM_{10}	Particulate Matter (size less than 10 µm)
$PM_{2.5}$	Particulate Matter (size less than 2.5 µm)
SO_2	Sulphur Dioxide
STAP	Short Term Action Plan
WHO	World Health Organization

1. Introduction:

Over the years, urbanization and industrialization have led to major pollution-related issues due to increased human activities. Lack of planning and a basic understanding of the ecology affects its balance leading to pollution of water, air, soil, and other natural resources. The pollution load in respect of air quality is of relatively high order in metropolitan cities. It is associated with higher rates of several health disorders too. The development of manufacturing, especially near cities and industrial zones, is changing the environment and the natural composition of water. Pollution of natural environment not only affects people but also have adverse impact on economic growth in the long run. Analysis of pollution load shows that there are few industries in the country which contribute to more than 90percent of the pollution. Hence, scientists are exploring the quantum of pollution load as well as to device certain strategies and technologies so that our sustainable development would not be jeopardized otherwise our long cherished dream of establishing eco-socialism on this watery planet could not come true.

Industrial pollution takes on many faces. It contaminates many sources of drinking water, releases unwanted toxins into the air and reduces the quality of soil all over the world. Every litre of waste water discharged by our industries pollutes eight times the quantity of fresh water. The extent of pollution varies with the size of the industry, the nature of the industry, the type of products used and produced etc. In view of this, Central Pollution Control Board (CPCB) has evolved the concept of Comprehensive Environmental Pollution Index (CEPI) during 2009-10 as a tool for comprehensive environmental assessment of prominent industrial clusters and formulation of remedial Action Plans for the identified critically polluted areas.

CEPI bridges the perceptive gap between experts, public, and government departments by simplifying the complexity of environmental issues. It aims at categorizing critically polluted industrial areas based on scientific criteria, so as to ascertain various dimensions of pollution. This is a combined framework used to evaluate the impacts caused by industrial clusters on the nearby environment, as a numerical value.

The index captures the various dimensions of environment including air, water and land. Comprehensive Environmental Pollution Index (CEPI), which is a rational number to characterize the environmental quality at a given location following the algorithm of source, pathway and receptor have been developed. Later-on proposals were received from the SPCBs, State Governments, and Industrial Associations and concerned Stake-holders for revisiting the criteria of assessment under CEPI concept. After careful examination and consideration of the suggestions of concerned stake-holders, it was decided to prepare the revised concept of CEPI by eliminating the subjective factors but retaining the factors which can be measured precisely. Hence, revised concept came into existence, which is termed as Revised CEPI Version 2016.

The present report is also based on the revised CEPI version 2016. The results of the application of the Comprehensive Environmental Pollution Index (CEPI) to selected industrial clusters or areas are presented in this report. The main objective of the study is to identify polluted industrial clusters or areas in order to take concerted action and to centrally monitor them at the national level to improve the current status of their environmental components such as air and water quality data, ecological damage, and visual environmental conditions. A total of 88 industrial areas or clusters have been selected by the Central Pollution Control Board (CPCB) in consultation with the Ministry of Environment & Forests Government of India for the study. The index captures the various dimensions of environment including air, water and land. Comprehensive Environmental Pollution Index (CEPI), which is a rational number to characterize the environmental quality at a given location following the algorithm of source, pathway and receptor have been developed.

2. Scope of Work

The Scope of Work consisted of the following:

Monitoring, Sampling, Analysis for Stack, Ambient Air Quality, Surface Water, Waste Water, and Ground Water Quality at identified locations in Chandrapur, Maharashtra with a gap of one or two days.

Details regarding the works are provided as below:

Industrial Cluster/ Area	**No. of Stack sites**	**Parameter of Stack**	**No. of AAQM sites**	**Parameter of AAQM**	**Numbers of water quality monitoring site**		**Parameter of Water**
					Surface water	**Ground water**	
Chandrapur	**25**	PM, SO_2, NO_2, NH_3 and CO	**16**	PM_{10}, $PM_{2.5}$, SO_2, NO_2, NH_3, O_3, C_6H_6, CO, BAP, Pb, Ni, As	**17**	**12**	**(i) Simple Parameters** Sanitary Survey, General Appearance, Colour, Smell, Transparency and Ecological **(ii) Regular Monitoring Parameters** pH, O & G, Suspended Solids, DO, COD, BOD, Electrical Conductivity, Total Dissolved Solids, Nitrite–Nitrogen, Nitrate-Nitrogen, (NO_2+NO_3) total nitrogen, Free Ammonia, Total Residual Chlorine, Cyanide, Fluoride, Chloride, Sulphate, Sulphides, Total Hardness, Dissolved Phosphates, SAR, Total Coliforms, Faecal Coliform, **(iii) Special Parameters** Total Phosphorous, TKN, Total Ammonia (NH_4+NH_3)-Nitrogen, Phenols, Surface Active Agents, Anionic detergents, Organo-Chlorine Pesticides, PAH, PCB and PCT, Zinc, Nickel, Copper, Hexa-valent Chromium, Chromium (Total), Arsenic (Total), Lead, Cadmium, Mercury, Manganese, Iron, Vanadium, Selenium, Boron **(iv) Bio-assay (zebra Fish)** Test – For specified samples only.

2.1 Frequency of Sampling:

Parameter	Round of Sampling	Frequency on each Round
Ambient Air Quality Monitoring		
Particulate Matter (size less than 10 µm) or PM_{10}	03	3 Shifts of 8 hrs each
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	03	1 Shifts of 24 hr
Sulphur Dioxide (SO2)	03	6 Shifts of 4 hrs each
Nitrogen Dioxide (NO2)	03	6 Shifts of 4 hrs each
Ammonia (NH3)	03	6 Shifts of 4 hrs each
Ozone (O3)	03	24 Shifts of 1 hr each
Benzene (C6H6)	03	1 Shifts of 24 hr
Carbon Monoxide (CO)	03	24 Shifts of 1 hr each
Benzo (a) Pyrene (BaP) – particulate phase only	03	3 Shifts of 8 hrs each
Lead (Pb)	03	3 Shifts of 8 hrs each
Arsenic (As)	03	3 Shifts of 8 hrs each
Nickel (Ni)	03	3 Shifts of 8 hrs each
Ground Water		
As Mentioned Above	03	01 samples at each round
Surface Water		
As Mentioned Above	03	01 samples at each round

2.2 Methodology followed in Sampling and Analysis

Industries, places and locations that have been chosen for the sampling are representative of the city/ area. Sampling has been done at the potential polluted areas so as to arrive at the CEPI. This will further help the authorities to monitor the areas in order to improve the current status of their environmental components such as air and water quality data, ecological damage and visual environmental conditions. Methodology for sampling, preservation and analysis have been done according to the references incorporated. Methodology of various types of parameters is presented under following annexure:

1. Stack Emission Sampling and Analysis Methodology – **Annexure I**
2. Ambient Air Sampling and Analysis Methodology **- Annexure II**
3. Surface Water/ Ground water Sampling and Analysis Methodology - **Annexure III**

3. Monitoring Locations at Chandrapur

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
AAQM Stations at Chandrapur						
	MIDC Chandrapur					
1.	Behind Earth Green Tech Pvt. Ltd.	N 19° 58' 46.8"	E 79° 13' 53.6"	22.02.2020	24.02.2020	26.02.2020
2.	Multi Organics.	N 19° 58' 51.5"	E 79° 13' 55.4"	22.02.2020	24.02.2020	26.02.2020
3.	Opposite Super Hygienic CBMW Site	N 19° 58' 19.2"	E 79° 14' 21.4"	22.02.2020	24.02.2020	26.02.2020
4.	Near HPCL.	N 19° 59' 12.7"	E 79° 15' 36.3"	22.02.2020	24.02.2020	26.02.2020
	MIDC Tadali					
1.	Boundary Wall of Dhariwal Infrastructure Ltd.	N 20° 01' 01.3"	E 79° 11 57.9"	17.02.2020	19.02.2020	21.02.2020
2.	MIDC WTP Building	N 20° 01' 04.3"	E 79° 11' 34.9"	17.02.2020	19.02.2020	21.02.2020
3.	NAMP Growth Center	N 20° 59' 15.8"	E 79° 11' 08.7"	17.02.2020	19.02.2020	21.02.2020
4.	Near Chaman Metalic Boundary Wall	N 19° 00' 50.9"	E 79° 11' 05.0"	17.02.2020	19.02.2020	21.02.2020
	MIDC Ballarpur					
1.	Ram Mandir, Near BILT Mangal Karyalaya	N 19° 52' 17.0''	E 79° 20' 38.8''	17.02.2020	19.02.2020	21.02.2020
2.	Estate Office, BILT Colony	N 19° 52' 07.9''	E 79° 20' 22.8''	17.02.2020	19.02.2020	21.02.2020
3.	NAMP Nagar Parishad	N 19° 52' 08.2''	E 79° 20' 17.8''	17.02.2020	19.02.2020	21.02.2020
4.	WCL Office, Ballarpur on Sasti Road	N 19° 50' 23.2''	E 79° 20' 49.0''	17.02.2020	19.02.2020	21.02.2020

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
	MIDC Ghugus					
1.	Terrace of Transit Hostel Rajiv Colony WCL	N 19° 57′ 02.0″	E 79° 06′ 23.8″	17.02.2020	19.02.2020	21.02.2020
2.	WTP Water Supply Tank	N 19° 56′ 26.8″	E 79° 07′ 13.0″	17.02.2020	19.02.2020	21.02.2020
3.	(NAMP) Near Gram Panchayat	N 19° 56′ 22.8″	E 79° 06′ 50.9″	17.02.2020	19.02.2020	21.02.2020
4.	Guest House of ACC Cement	N 19° 55′ 41.4″	E 79° 06′ 45.3″	17.02.2020	19.02.2020	21.02.2020
Surface Water Sampling Locations at Chandrapur						
	MIDC Chandrapur					
1.	Nallah Opposite Manidhari Industry	N 19° 58′ 46.5″	E 79° 13′ 57.7″	18.02.2020	20.02.2020	22.02.2020
2.	Nallah Near Gagangiri Village	N 19° 58′ 03.5″	E 79° 14′ 50.5″	18.02.2020	20.02.2020	22.02.2020
3.	Nallah at Dhanora Bridge	N 19° 57′ 37.1″	E 79° 15′ 40.5″	18.02.2020	20.02.2020	22.02.2020
	MIDC Tadali					
1.	Tadali Village Lake	N 20° 01′ 48.0″	E 79° 11′ 21.8″	17.02.2020	19.02.2020	21.02.2020
2.	Nallah adjacent to Grace Industries	N 20° 00′ 28.1″	E 79° 11′ 11.1″	17.02.2020	19.02.2020	21.02.2020
3.	Raw Water of MIDC WTP	N 20° 00′ 26.6″	E 79° 11′ 11.3″	17.02.2020	19.02.2020	21.02.2020
	MIDC Ballarpur					
1.	Nallah Near Petrol Pump at Ballarpur Bamni Road	N 19° 50′ 41.4″	E 79° 21′ 29.1″	17.02.2020	19.02.2020	21.02.2020
2.	Bagirathi Nallah Bridge, Gondpipari Road, Near Bamni Proteins	N 19° 51′ 11.8″	E 79° 20′ 45.8″	17.02.2020	19.02.2020	21.02.2020

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
3.	Wardha River upstream at Ballarpur	N 19° 51' 10.5''	E 79° 20' 20.3''	17.02.2020	19.02.2020	21.02.2020
4.	(NWMP) Wardha River downstream, Near Rajura Bridge	N 19° 48' 52.8''	E 79° 22' 39.2''	17.02.2020	19.02.2020	21.02.2020
5.	Nallah Near MSW Municipal Corporation, Near Railway line	N 19° 50' 23.5''	E 79° 21' 23.9''	17.02.2020	19.02.2020	21.02.2020
6.	Nallah of Muncipal Council Ballarpur, Beside of HP Petrol Pump	N 19° 51' 26.5''	E 79° 20' 45.1''	17.02.2020	19.02.2020	21.02.2020
	MIDC Ghugus					
1.	Wardha river Near WCL WTP Ghugus OCM	N 19° 57' 25.8''	E 79° 06' 11.4''	18.02.2020	20.02.2020	22.02.2020
2.	Domestic Effluent Nallah Near lokhandi bridge at WTP of Ghugus OCM.	N 19° 57' 23.3''	E 79° 06' 14.5''	18.02.2020	20.02.2020	22.02.2020
3.	(NWMP) Wardha River behind ACC plant	N 19° 54' 16.7''	E 79° 06' 54.9''	18.02.2020	20.02.2020	22.02.2020
4.	Nallah at Usgaon, Shengaon road	N 19° 55' 18.5''	E 79° 07' 57.5''	18.02.2020	20.02.2020	22.02.2020
5.	Nallah Water down site of ACC Colony.	N 19° 55' 42.3''	E 79° 06' 54.7''	18.02.2020	20.02.2020	22.02.2020
Ground Water Sampling Locations at Chandrapur						
	MIDC Chandrapur					
1.	Dugwell Water at Gagangiri Village	N 19° 58' 07.8''	E 79° 14' 53.8''	18.02.2020	20.02.2020	22.02.2020
2.	Hand Pump water Mahada Colony	N 19° 58' 13.4''	E 79° 15' 02.7''	18.02.2020	20.02.2020	22.02.2020

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
3.	Hand Pump water Near Datala Grampanchayat	N 19° 58' 8.8''	E 79° 15' 40.6''	18.02.2020	20.02.2020	22.02.2020
	MIDC Tadali					
1.	Borewell water at Yerur village	N 19° 59' 46.1''	E 79° 11' 28.7''	17.02.2020	19.02.2020	21.02.2020
2.	Dugwell water Near Tadali Lake Janata School Tadali.	N 20° 01' 48.4''	E 79° 11' 22.1''	17.02.2020	19.02.2020	21.02.2020
3.	Dugwell Water at Yerur Village	N 19° 59' 46.9''	E 79° 11' 28.0''	17.02.2020	19.02.2020	21.02.2020
	MIDC Ballarpur					
1.	Borewell Water at Gramin Rugnalaya, Ballarpur	N 19° 51' 11.6''	E 79° 20' 58.0''	17.02.2020	19.02.2020	21.02.2020
2.	Borewell water Near Fire Station, Ballarpur	N 19° 51' 11.8''	E 79° 20' 45.8''	17.02.2020	19.02.2020	21.02.2020
3.	Borewell Water at Visapur Village	N 19° 53' 13.7''	E 79° 19' 49.7''	17.02.2020	19.02.2020	21.02.2020
	MIDC Ghugus					
1.	Hand Pump water Tukdoji Nagar, Ghugus	N 19° 56' 20.6''	E 79° 07' 11.3''	18.02.2020	20.02.2020	22.02.2020
2.	Hand Pump water Nakoda Village.	N 19° 54' 57.9''	E 79° 06' 42.1''	18.02.2020	20.02.2020	22.02.2020
3.	Dugwell water Usgaon Village.	N 19° 54' 45.3'	E 79° 07' 36.4''	18.02.2020	20.02.2020	22.02.2020
Stack Emission monitoring at Chandrapur						
	MIDC Chandrapur					
1.	Multi Organic Pvt. Ltd.	N 19° 58' 52.4''	E 79° 13' 58.0''	22.02.2020	24.02.2020	26.02.2020

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
2.	Multi Organic Pvt. Ltd.	N 19° 58' 51.5''	E 79° 13' 57.9''	22.02.2020	24.02.2020	26.02.2020
3.	Super Hygienic Pvt. Ltd.	N 19° 58' 22.8''	E 79° 14' 04.1''	22.02.2020	24.02.2020	26.02.2020
4.	Maharashtra Carbon Pvt. Ltd.	N 19° 58' 39.8''	E 79° 14' 12.7''	22.02.2020	24.02.2020	26.02.2020
5.	Vinar Ispat Ltd.	N 19° 58' 26.9''	E 79° 14' 32.1''	22.02.2020	24.02.2020	26.02.2020
6.	Lucky Petrolium	N 19° 58' 31.5''	E 79° 14' 10.9''	22.02.2020	24.02.2020	26.02.2020
	MIDC Tadali					
1.	Dhariwal Infrastructure Ltd.	N 20° 01' 4.1"	E 79° 11' 29.8"	17.02.2020	19.02.2020	21.02.2020
2.	Dhariwal Infrastructure Ltd.	N 20° 00' 15.8"	E 79° 11' 8.7"	17.02.2020	19.02.2020	21.02.2020
3.	Gopani Iron & Power (I) Pvt. Ltd.	N 20° 00' 49.1"	E 79° 13' 12.9"	17.02.2020	19.02.2020	21.02.2020
4.	Gopani Iron & Power (I) Pvt. Ltd.	N 20° 01' 19.2"	E 79° 10' 26.6"	18.02.2020	20.02.2020	22.02.2020
5.	Grace Industries Ltd.	N 20° 00' 18.0"	E 79° 11' 01.3"	18.02.2020	20.02.2020	22.02.2020
6.	Grace Industries Ltd.	N 20° 00' 17.8"	E 79° 11' 00.3"	18.02.2020	20.02.2020	22.02.2020
	MIDC Ballarpur					
1.	Bamani Proteins Ltd.	N 19° 50' 18.5''	E 79° 23' 09.0"	17.02.2020	19.02.2020	21.02.2020
2.	Bamani Proteins Ltd.	N 19° 50' 18.8''	E 79° 23' 08.4''	17.02.2020	19.02.2020	21.02.2020
3.	BILT Graphic Paper Product Ltd.	N 19° 51' 54.0''	E 79° 20' 18.8''	17.02.2020	19.02.2020	21.02.2020
4.	BILT Graphic Paper Product Ltd.	N 19° 51' 52.6''	E 79° 20' 19.1''	18.02.2020	20.02.2020	22.02.2020

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
5.	BILT Graphic Paper Product Ltd.	N 19° 51' 45.0''	E 79° 20' 26.8''	18.02.2020	20.02.2020	22.02.2020
6.	BILT Graphic Paper Product Ltd.	N 19° 51' 30.6''	E 79° 20' 30.8''	18.02.2020	20.02.2020	22.02.2020
7.	BILT Graphic Paper Product Ltd.	N 19° 51' 28.8''	E 79° 20' 30.2''	17.02.2020	19.02.2020	21.02.2020
	MIDC Ghugus					
1.	ACC Cement Limited	N 19° 55' 27.5''	E 79° 06' 50.1''	17.02.2020	19.02.2020	Shutdown
2.	ACC Cement Limited	N 19° 91' 89.1''	E 79° 11' 57.7''	18.02.2020	20.02.2020	22.02.2020
3.	ACC Cement Limited	N 19° 91' 92.0''	E 79° 11' 64.0''	18.02.2020	20.02.2020	22.02.2020
4.	Lloyds Metals & Energy Ltd.	N 19° 55' 50.0''	E 79° 07' 07.5''	18.02.2020	20.02.2020	22.02.2020
5.	Lloyds Metals & Energy Ltd.	N 19° 55' 49.1''	E 79° 07' 08.5''	18.02.2020	20.02.2020	22.02.2020
6.	Lloyds Metals & Energy Ltd.	N 19° 55' 54.1''	E 79° 07' 13.9''	18.02.2020	20.02.2020	22.02.2020
VOCs Emission monitoring at Chandrapur						
	MIDC Chandrapur					
1.	Multi Organic Pvt. Ltd.	N 19° 58' 51.0''	E 79° 13' 55.0''	22.02.2020	24.02.2020	26.02.2020
2.	Super Hygienic	N 19° 58' 22.8''	E 79° 14' 04.1''	22.02.2020	24.02.2020	26.02.2020
	MIDC Tadali					
1.	Gopani Iron & Power (I) Pvt. Ltd.	N 20° 01' 19.2"	E 79° 10' 26.6"	18.02.2020	20.02.2020	22.02.2020
2.	Grace Industries Ltd.	N 20° 00' 18.0"	E 79° 11' 01.3"	18.02.2020	20.02.2020	22.02.2020
	MIDC Ballarpur					
1.	Bamani Proteins Ltd., Bamani	N 19° 50' 18.8''	E 79° 23' 08.4''	17.02.2020	19.02.2020	21.02.2020

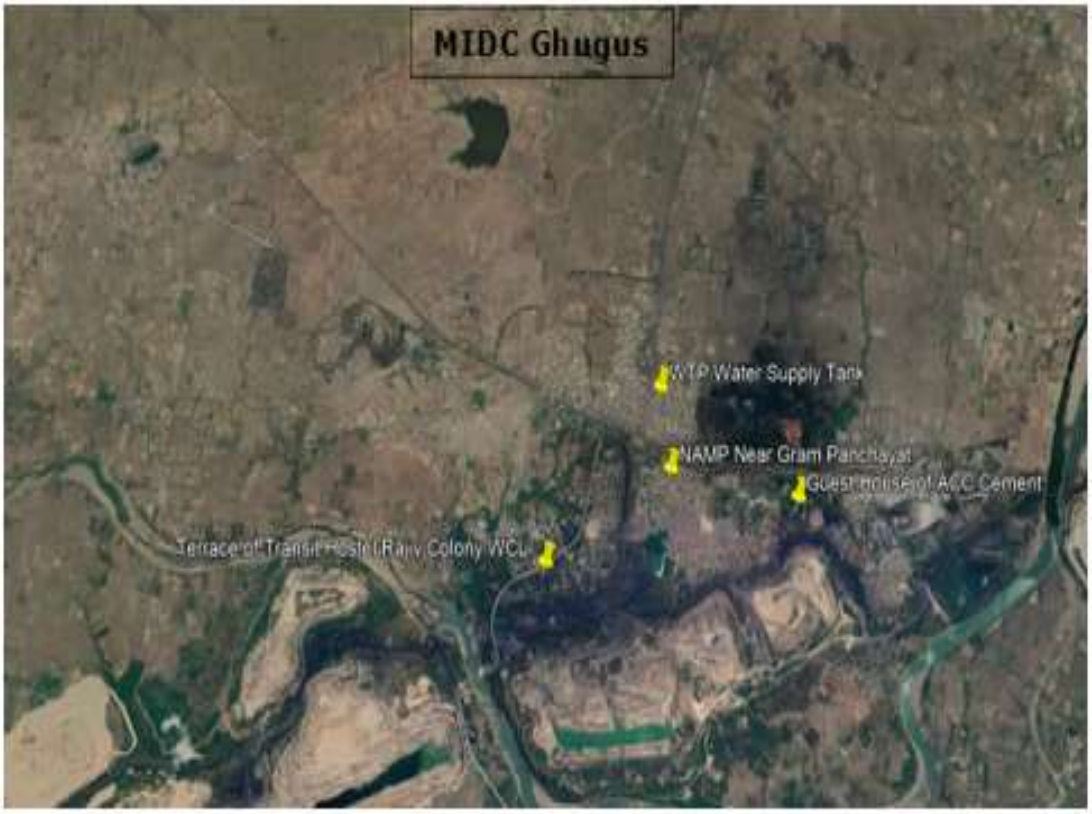
Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
2.	BILT Graphic Paper Product Ltd.	N 19° 51' 30.6"	E 79° 20' 30.8"	18.02.2020	20.02.2020	22.02.2020
	MIDC Ghugus					
1.	ACC Cement Limited	N 19° 91' 89.1"	E 79° 11' 57.7"	18.02.2020	20.02.2020	22.02.2020
2.	Lloyds Metals & Energy Ltd.	N 19° 55' 50.0"	E 79° 07' 07.5"	18.02.2020	20.02.2020	22.02.2020

3.1 Mapping of the locations monitored

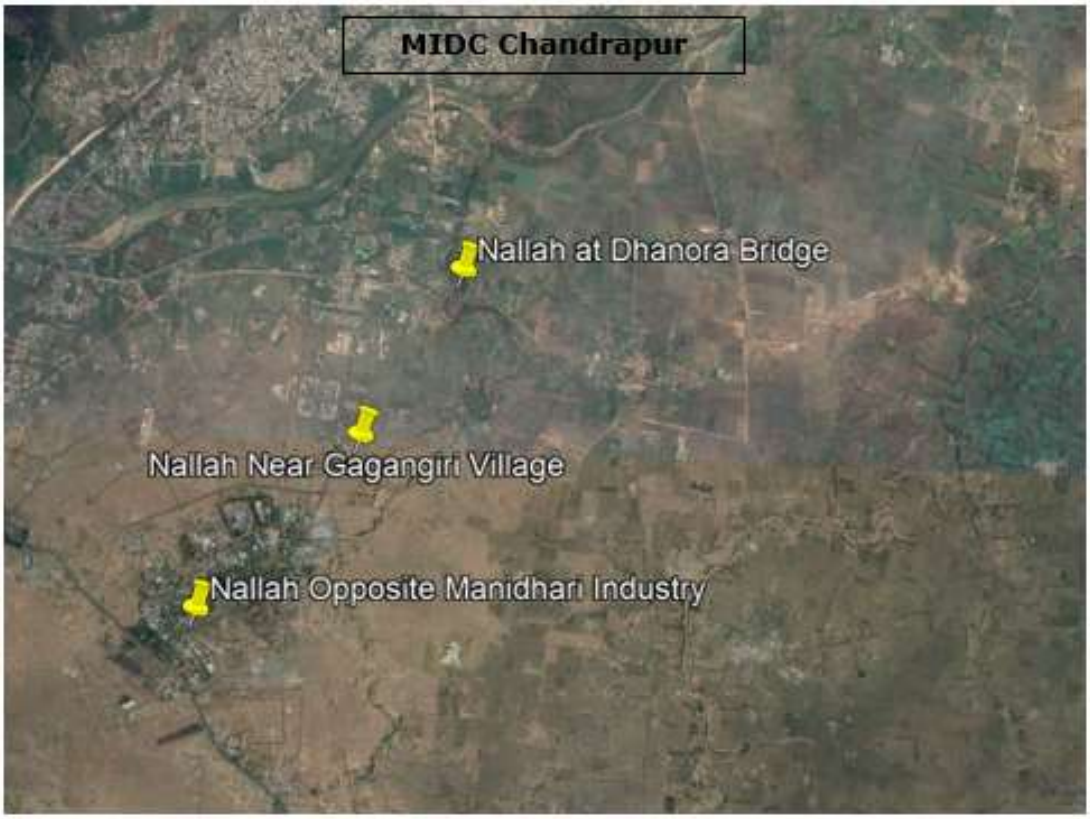
AAQM Stations at Chandrapur


MIDC Tadali
NAMP Growth Center
MIDC WTP Building
Boundary Wall of Dhariwal Infrastructure Ltd.
Near Chaman Metalic Boundary Wall


MIDC Ballarpur
NAMP Nagar Parishad

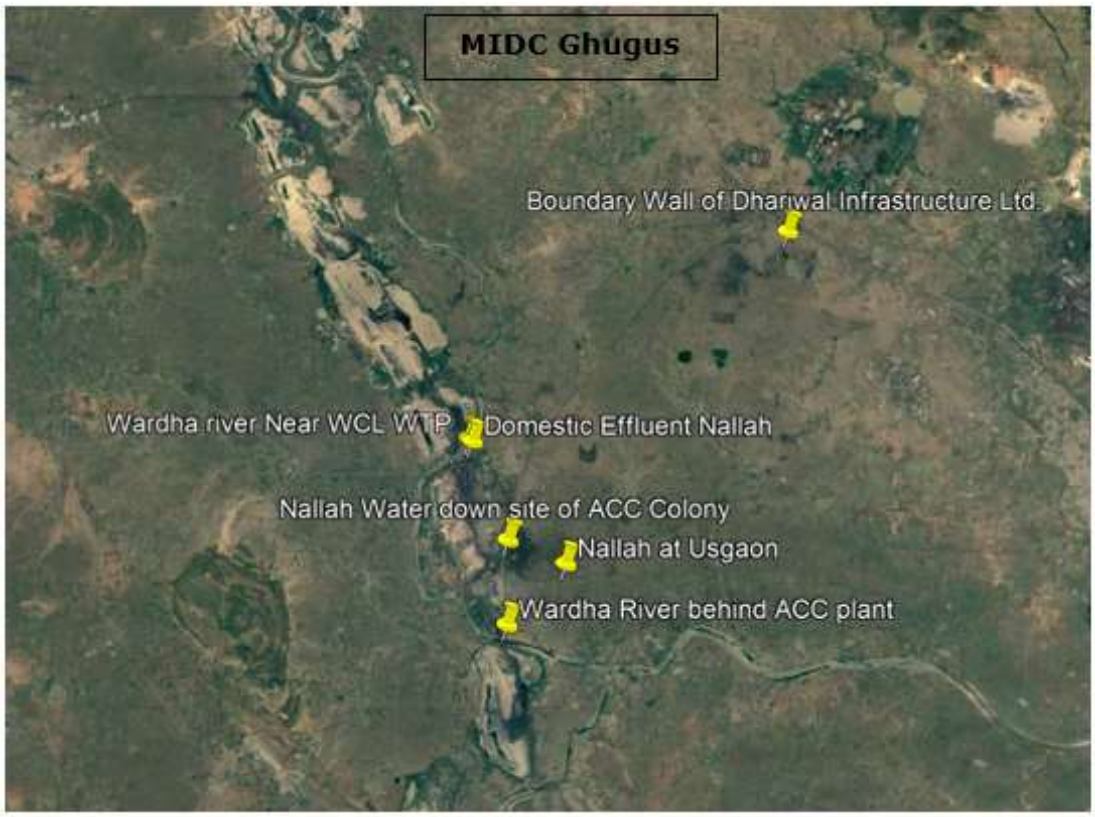


Surface water sampling locations at Chandrapur

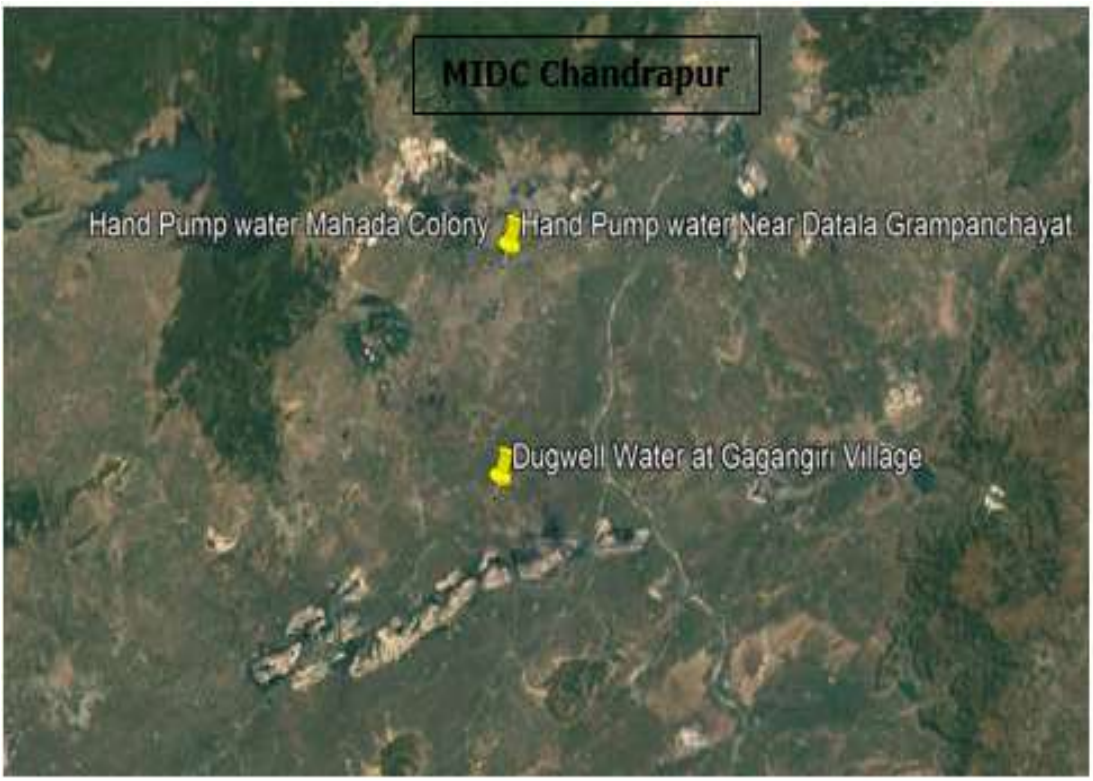



MIDC Tadali
Tadali Village Lake
Boundary Wall of Dhariwal Infrastructure Ltd
Nallah adjacent to Grace Industries
Raw Water of MIDC WTP


MIDC Ballarpur
Wardha River downstream
Nallah Near Petrol Pump at Ballarpur
Nallah Near MSW
Bagirathi Nallah Bridge
Nallah of Muncipal Council
Wardha River upstream



Ground water sampling locations at Chandrapur




MIDC Tadali
Dugwell water Near Tadali Lake
Boundary Wall of Dhariwal Infrastructure Ltd
Dugwell Water at Yerur Village
Borewell water at Yerur village


MIDC Ballarpur
Borewell Water at Gramin Rugnalaya
Borewell water Near Fire Station
Borewell Water at Visapur Village


MIDC Ghugus
Hand Pump water Tukdoji Nagar
Hand Pump water Nakoda Village
Dugwell water Usgaon Village

4. Result of Analysis:

Results of Analysis are tabulated below for Stack Emission Monitoring, Ambient Air Quality Monitoring, Waste Water Analysis and Water Analysis. These are followed by their respective graphical representation.

***Kindly note:**

- *N.A specifies the sample is not analyzed for the specific parameter.*
- *BDL specifies that the result obtained is below detection limit.*
- *Also, industrial clusters observed with below detection limit parameters are NOT included into the graphs*

4.1 Stack Emission:

Stack Emission Monitoring Results are compared against The Environment (Protection) Rules, 1986 General Emission Standard - Part D.

Name of the Industry: Multi Organic Pvt. Ltd. Boiler B2606 (MIDC Chandrapur)

Parameters	Units	Results		
		Round-1 (22.02.2020)	**Round-2 (24.02.2020)**	**Round-3 (26.02.2020)**
Particulate Matter	mg/Nm^3	14	16	11
Sulphur Dioxide (SO_2)	mg/Nm^3	15400	8.21	10.3
	kg/day	8992	5.01	6.41
Nitrogen dioxide (NO_2)	mg/Nm^3	19.8	17	20.3
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Multi Organic Pvt. Ltd. Boiler B2604 (MIDC Chandrapur)

Parameters	Units	Results		
		Round-1 (22.02.2020)	**Round-2 (24.02.2020)**	**Round-3 (26.02.2020)**
Particulate Matter	mg/Nm^3	32	20	11
Sulphur Dioxide (SO_2)	mg/Nm^3	8	16.4	10.3
	kg/day	1.63	3.07	2.12
Nitrogen dioxide (NO_2)	mg/Nm^3	17	28.3	22.7
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Super Hygienic Pvt. Ltd. (MIDC Chandrapur)

Parameters	Units	Results		
		Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Particulate Matter	mg/Nm^3	21	26	18
Sulphur Dioxide (SO_2)	mg/Nm^3	6.15	8.23	6.15
	kg/day	0.3	0.48	0.311
Nitrogen dioxide (NO_2)	mg/Nm^3	11.3	17.1	14.2
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Maharashtra Carbon Pvt. Ltd. (MIDC Chandrapur)

Parameters	Units	Results		
		Round-1 (23.02.2020)	Round-2 (25.02.2020)	Round-3 (27.02.2020)
Particulate Matter	mg/Nm^3	16	11	12
Sulphur Dioxide (SO_2)	mg/Nm^3	8.21	8.1	8
	kg/day	0.302	0.203	0.343
Nitrogen dioxide (NO_2)	mg/Nm^3	17	17	17
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Lucky Petroleum Boiler Stack (MIDC Chandrapur)

Parameters	Units	Results		
		Round-1 (23.02.2020)	Round-2 (25.02.2020)	Round-3 (27.02.2020)
Particulate Matter	mg/Nm^3	21	17	BDL
Sulphur Dioxide (SO_2)	mg/Nm^3	BDL	BDL	BDL
	kg/day	BDL	BDL	BDL
Nitrogen dioxide (NO_2)	mg/Nm^3	11.4	11.4	11.3
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Vinar Ispat Ltd. (MIDC Chandrapur)

Parameters	Units	Results		
		Round-1 (23.02.2020)	Round-2 (25.02.2020)	Round-3 (27.02.2020)
Particulate Matter	mg/Nm^3	22	13	11
Sulphur Dioxide (SO_2)	mg/Nm^3	8.16	8.21	9.79
	kg/day	6.83	7.5	8.9
Nitrogen dioxide (NO_2)	mg/Nm^3	17	17.1	19.8
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Dhariwal Infrastructure Ltd. Unit II (MIDC Tadali)

Parameters	Units	Results		
		Round-1 (17.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Particulate Matter	mg/Nm^3	BDL	BDL	BDL
Sulphur Dioxide (SO_2)	mg/Nm^3	9372	1114	9.11
	kg/day	244571	30923	243
Nitrogen dioxide (NO_2)	mg/Nm^3	BDL	BDL	19.9
Ammonia	mg/Nm^3	8.08	75.7	BDL

Name of the Industry: Dhariwal Infrastructure Ltd. Unit I (MIDC Tadali)

Parameters	Units	Results		
		Round-1 (17.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Particulate Matter	mg/Nm^3	BDL	11	BDL
Sulphur Dioxide (SO_2)	mg/Nm^3	21.5	404	5737
	kg/day	543	9506	128677
Nitrogen dioxide (NO_2)	mg/Nm^3	42.8	BDL	25.7
Ammonia	mg/Nm^3	6.06	BDL	BDL

Name of the Industry: Gopani Iron & Power (I) Pvt. Ltd. Kiln 1 & 2 (MIDC Tadali)

Parameters	Units	Results		
		Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Particulate Matter	mg/Nm^3	12	BDL	25
Sulphur Dioxide (SO_2)	mg/Nm^3	1456	7.35	8.08
	kg/day	2067	9.82	9.93
Nitrogen dioxide (NO_2)	mg/Nm^3	36.2	BDL	14.1
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Grace Industries Ltd. WHRBs Kiln 1 & 2 (MIDC Tadali)

Parameters	Units	Results		
		Round-1 (18.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Particulate Matter	mg/Nm^3	11	13	16
Sulphur Dioxide (SO_2)	mg/Nm^3	27.3	1700	9.11
	kg/day	97.6	6128	36.2
Nitrogen dioxide (NO_2)	mg/Nm^3	42.4	31.3	19.9
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Grace Industries Ltd. WHRBs Kiln 3 & 4 (MIDC Tadali)

Parameters	Units	Results		
		Round-1 (18.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Particulate Matter	mg/Nm^3	12	12	BDL
Sulphur Dioxide (SO_2)	mg/Nm^3	20.2	170	8.1
	kg/day	199	1847	89.2
Nitrogen dioxide (NO_2)	mg/Nm^3	15.1	BDL	17.1
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Gopani Iron & Power (I) Pvt. Ltd. WHRBs Kiln 3 & 4 (MIDC Tadali)

Parameters	Units	Results		
		Round-1 (18.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Particulate Matter	mg/Nm^3	13	13	BDL
Sulphur Dioxide (SO_2)	mg/Nm^3	19.2	1900	8.1
	kg/day	28.3	2895	13.5
Nitrogen dioxide (NO_2)	mg/Nm^3	BDL	BDL	17.2
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Bamani Proteins Ltd. Boiler Stack (MIDC Ballarpur)

Parameters	Units	Results		
		Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Particulate Matter	mg/Nm^3	14	14	15
Sulphur Dioxide (SO_2)	mg/Nm^3	54.1	198	12.3
	kg/day	10.5	38.4	2.38
Nitrogen dioxide (NO_2)	mg/Nm^3	14.2	14.1	22.7
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Bamani Proteins Ltd. HTF Stack (MIDC Ballarpur)

Parameters	Units	Results		
		Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Particulate Matter	mg/Nm^3	21	39	17
Sulphur Dioxide (SO_2)	mg/Nm^3	14.4	BDL	6.15
	kg/day	2.43	BDL	1.09
Nitrogen dioxide (NO_2)	mg/Nm^3	63.1	BDL	11.4
Ammonia	mg/Nm^3	48.5	BDL	BDL

Name of the Industry: BILT Graphic Paper product Ltd. Boiler No. 9 (MIDC Ballarpur)

Parameters	Units	Results		
		Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Particulate Matter	mg/Nm^3	13	29	12
Sulphur Dioxide (SO_2)	mg/Nm^3	2940	3680	6560
	kg/day	10392	13841	23720
Nitrogen dioxide (NO_2)	mg/Nm^3	48.1	22.6	25.5
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: BILT Graphic Paper product Ltd. Boiler No. 3 (MIDC Ballarpur)

Parameters	Units	Results		
		Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (21.02.2020)
Particulate Matter	mg/Nm^3	11	BDL	11
Sulphur Dioxide (SO_2)	mg/Nm^3	185	267	347
	kg/day	1405	2142	2736
Nitrogen dioxide (NO_2)	mg/Nm^3	142	11.3	BDL
Ammonia	mg/Nm^3	11.6	614	BDL

Name of the Industry: BILT Graphic Paper product Ltd. Lime Kiln – 1 (MIDC Ballarpur)

Parameters	Units	Results		
		Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Particulate Matter	mg/Nm^3	18	12	BDL
Sulphur Dioxide (SO_2)	mg/Nm^3	18.1	198	12.3
	kg/day	17.9	199	6.68
Nitrogen dioxide (NO_2)	mg/Nm^3	32.5	BDL	25.6
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: BILT Graphic Paper product Ltd. CFB – 8 (MIDC Ballarpur)

Parameters	Units	Results		
		Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Particulate Matter	mg/Nm^3	11	11	BDL
Sulphur Dioxide (SO_2)	mg/Nm^3	271	2000	1453
	kg/day	806	6201	4460
Nitrogen dioxide (NO_2)	mg/Nm^3	92	BDL	22.7
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: ACC Cement Limited Kiln RABH Stack (MIDC Ghugus)

Parameters	Units	Results		
		Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (Shutdown)**
Particulate Matter	mg/Nm^3	15	BDL	
Sulphur Dioxide (SO_2)	mg/Nm^3	6.78	1000	
	kg/day	131	16995	
Nitrogen dioxide (NO_2)	mg/Nm^3	56.7	BDL	
Ammonia	mg/Nm^3	526	BDL	

Name of the Industry: Lloyds Metal & Energy WHRBS 30MW Power Plant (MIDC Ghugus)

Parameters	Units	Results		
		Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Particulate Matter	mg/Nm^3	20	15	BDL
Sulphur Dioxide (SO_2)	mg/Nm^3	77.3	44.7	9.49
	kg/day	619	371	81.5
Nitrogen dioxide (NO_2)	mg/Nm^3	120	BDL	18.7
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Lloyds Metal & Energy 100 TPD Kiln 1 & 2 (MIDC Ghugus)

Parameters	Units	Results		
		Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (21.02.2020)
Particulate Matter	mg/Nm^3	15	12	BDL
Sulphur Dioxide (SO_2)	mg/Nm^3	447	28	9.49
	kg/day	743	45.4	15.5
Nitrogen dioxide (NO_2)	mg/Nm^3	BDL	BDL	15.6
Ammonia	mg/Nm^3	32.3	BDL	BDL

Name of the Industry: Lloyds Metal & Energy 100 TPD Kiln 3 & 4 (MIDC Ghugus)

Parameters	Units	Results		
		Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Particulate Matter	mg/Nm^3	258	16	BDL
Sulphur Dioxide (SO_2)	mg/Nm^3	173	22.7	8.14
	kg/day	305	41.4	14.2
Nitrogen dioxide (NO_2)	mg/Nm^3	28.8	BDL	18.6
Ammonia	mg/Nm^3	24.2	BDL	BDL

Name of the Industry: ACC Cement Limited 15 MW CPP (MIDC Ghugus)

Parameters	Units	Results		
		Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (21.02.2020)
Particulate Matter	mg/Nm^3	13	BDL	BDL
Sulphur Dioxide (SO_2)	mg/Nm^3	339	276	1693
	kg/day	1036	872	4556
Nitrogen dioxide (NO_2)	mg/Nm^3	26.7	16.7	21.3
Ammonia	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: ACC Cement Limited 25 MW Boiler (MIDC Ghugus)

Parameters	Units	Results		
		Round-1 (18.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Particulate Matter	mg/Nm^3	12	BDL	12
Sulphur Dioxide (SO_2)	mg/Nm^3	637	400	8
	kg/day	2202	1387	27.2
Nitrogen dioxide (NO_2)	mg/Nm^3	37.4	BDL	18.7
Ammonia	mg/Nm^3	115	BDL	BDL

VOCs Results

Name of the Industry: Multi Organic Pvt. Ltd. Process Stack (MIDC Chandrapur)

Parameters	Units	Results		
		Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Super Hygienic (Bio Medical Waste Disposal Unit) Incinerator Stack (MIDC Chandrapur)

Parameters	Units	Results		
		Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL
Xylene	mg/Nm^3	BDL	BDL	BDL

Parameters	Units	Results		
		Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Grace Industries Ltd. WHRB Kiln 1 & 2 (MIDC Tadali)

Parameters	Units	Results		
		Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Gopani Iron & Power (I) Pvt. Ltd. Kiln 3 & 4 (MIDC Tadali)

Parameters	Units	Results		
		Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Bamani Proteins Ltd. HTF Stack (MIDC Ballarpur)

Parameters	Units	Results		
		Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: BILT Graphic Paper Product Lime Kiln 1 (MIDC Ballarpur)

Parameters	Units	Results		
		Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

Name of the Industry: Lloyds Metal & Energy Kiln 1 & 2 (MIDC Ghugus)

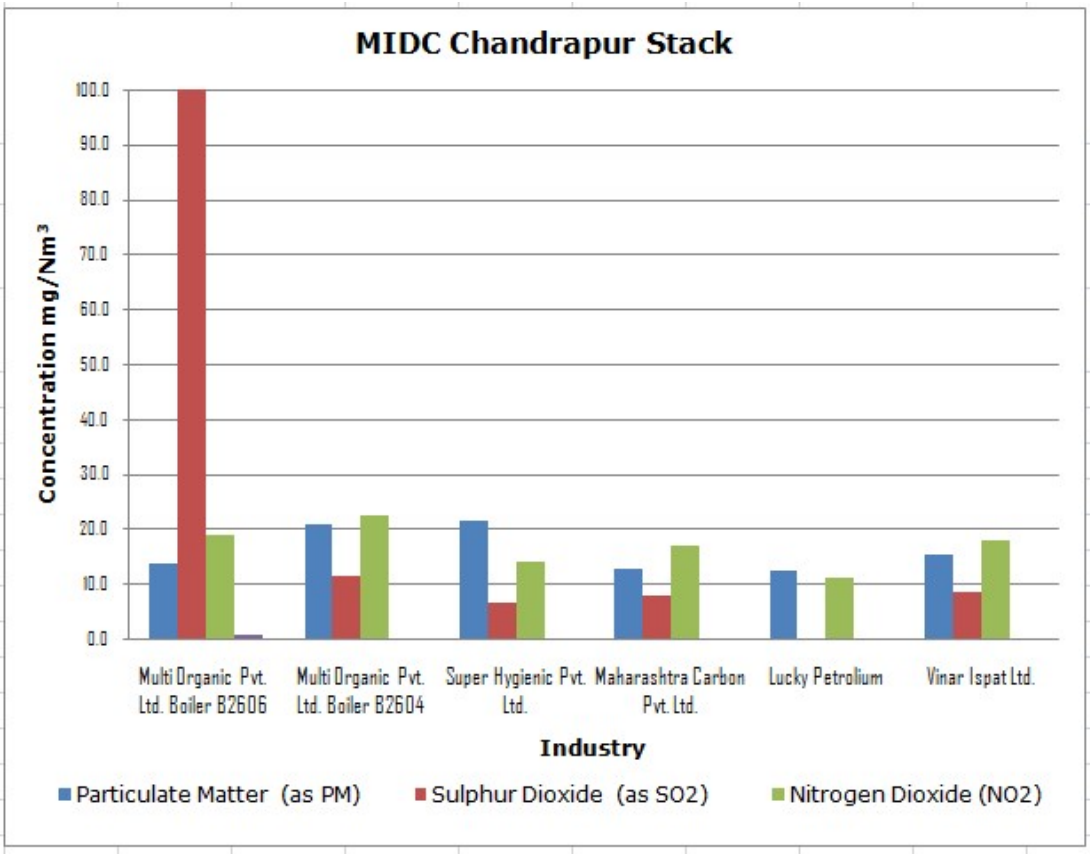
Parameters	Units	Results		
		Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL

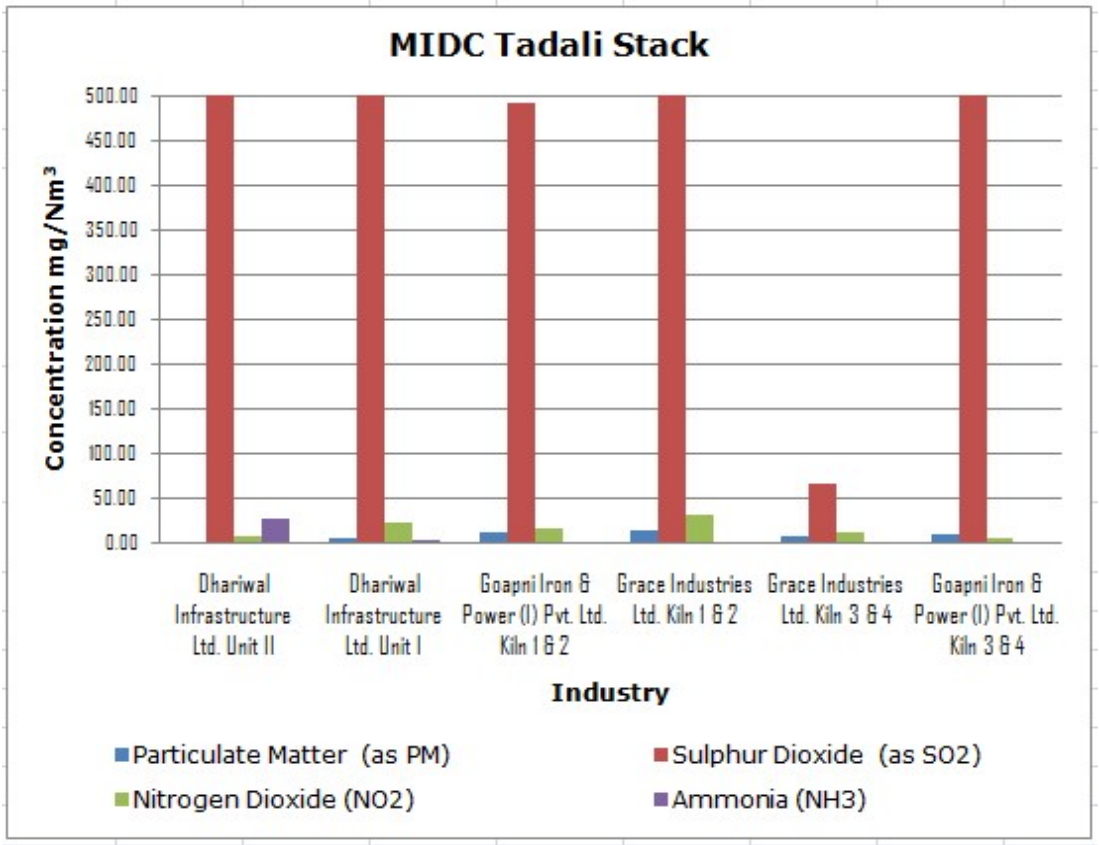
Parameters	Units	Results		
		Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

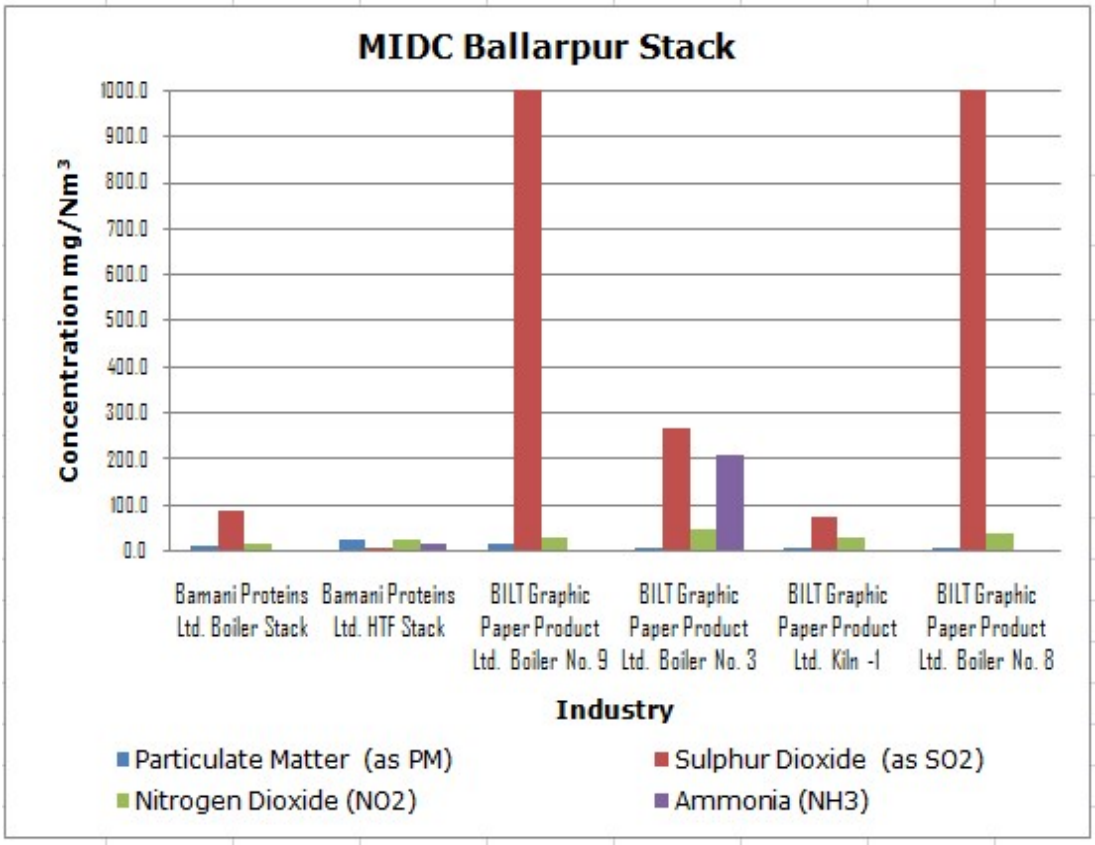
Name of the Industry: ACC Cement Limited 15 MW CPP (MIDC Ghugus)

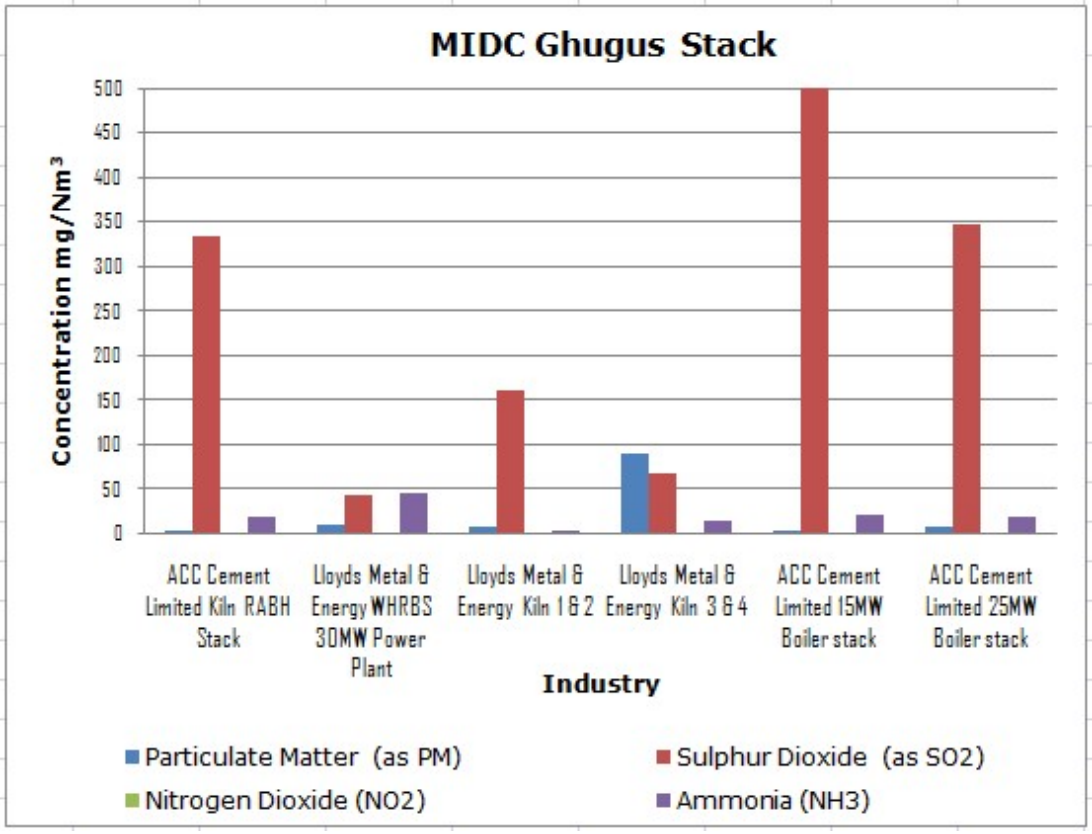
Parameters	Units	Results		
		Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Methyl Isobutyl Ketone	mg/Nm^3	BDL	BDL	BDL
Benzene	mg/Nm^3	BDL	BDL	BDL
Toulene	mg/Nm^3	BDL	BDL	BDL
Xylene	mg/Nm^3	BDL	BDL	BDL
Ethyl Benzene	mg/Nm^3	BDL	BDL	BDL
Ethyl Acetate	mg/Nm^3	BDL	BDL	BDL
Isopropyl Alcohol	mg/Nm^3	BDL	BDL	BDL

Graphs: Stack Monitoring for Chandrapur:






MIDC Ballarpur Stack
Concentration mg/Nm³
1000.0
900.0
800.0
700.0
600.0
500.0
400.0
300.0
200.0
100.0
0.0
Bamani Proteins Ltd. Boiler Stack
Bamani Proteins Ltd. HTF Stack
BILT Graphic Paper Product Ltd. Boiler No. 9
BILT Graphic Paper Product Ltd. Boiler No. 3
BILT Graphic Paper Product Ltd. Kiln -1
BILT Graphic Paper Product Ltd. Boiler No. 8
Industry
Particulate Matter (as PM)
Sulphur Dioxide (as SO2)
Nitrogen Dioxide (NO2)
Ammonia (NH3)


MIDC Ghugus Stack
Concentration mg/Nm³
500
450
400
350
300
250
200
150
100
50
0
ACC Cement Limited Kiln RABH Stack
Lloyds Metal & Energy WHRBS 30MW Power Plant
Lloyds Metal & Energy Kiln 1 & 2
Lloyds Metal & Energy Kiln 3 & 4
ACC Cement Limited 15MW Boiler stack
ACC Cement Limited 25MW Boiler stack
Industry
Particulate Matter (as PM)
Sulphur Dioxide (as SO2)
Nitrogen Dioxide (NO2)
Ammonia (NH3)

4.2 Ambient Air Quality:

In order to arrive at conclusions, the Ambient Air Quality Monitoring Results are compared against National Ambient Air Quality Standards, 2009 (**Annexure IV**).

Location: Behind Earth Green Tech Pvt. Ltd. (MIDC Chandrapur)

Parameters	**Unit**	**Std. Limit (NAAQS 2009)**	**Results**		
			Round-1 (22.02.2020)	**Round-2 (24.02.2020)**	**Round-3 (26.02.2020)**
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	13	15	43
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	**60**	6	5	12
Ozone (O_3)	$\mu g/m^3$	**100**	28	21	BDL
Lead (Pb)	$\mu g/m^3$	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	BDL	BDL	2.47
Ammonia (NH_3)	$\mu g/m^3$	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	$\mu g/m^3$	**5**	5.42	8.46	1.44
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.488	BDL	BDL
Nickel (Ni)	ng/m^3	**20**	4.57	7.25	BDL

Location: Multi Organics (MIDC Chandrapur)

Parameters	**Unit**	**Std. Limit (NAAQS 2009)**	**Results**		
			Round-1 (22.02.2020)	**Round-2 (24.02.2020)**	**Round-3 (26.02.2020)**
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	15	86	75

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	6	24	20
Ozone (O_3)	µg/m^3	**100**	29.4	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	BDL	1.54	2.37
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	BDL	1.28	1.79
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	BDL	BDL
Nickel (Ni)	ng/m^3	**20**	7.56	7.51	BDL

Location: Opposite Super Hygienic CBMW Site (MIDC Chandrapur)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	17	82	75
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	6	19	17
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	BDL	1.65	2.01
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	5.4	8.77	1.41

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.539	BDL	BDL
Nickel (Ni)	ng/m^3	**20**	21.5	7.61	BDL

Location: Near HPCL (MIDC Chandrapur)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (22.02.2020)	Round-2 (24.02.2020)	Round-3 (26.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	14	84	85
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	5	23	23
Ozone (O_3)	µg/m^3	**100**	28	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	BDL	1.65	2.27
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	6.63	BDL	3.33
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.92	BDL	BDL
Nickel (Ni)	ng/m^3	**20**	17.8	7.49	BDL

Location: Boundary Wall of Dhariwal Infrastructure Ltd. (MIDC Tadali)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	7.89	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	11.5	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	94	106	91
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	**60**	20	30	24
Ozone (O_3)	$\mu g/m^3$	**100**	BDL	BDL	BDL
Lead (Pb)	$\mu g/m^3$	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	13	BDL	BDL
Ammonia (NH_3)	$\mu g/m^3$	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	$\mu g/m^3$	**5**	2.65	BDL	2.89
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	BDL	0.548
Nickel (Ni)	ng/m^3	**20**	BDL	BDL	BDL

Location: MIDC WTP Building (MIDC Tadali)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	5.2	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	15.3	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	106	91	96
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	**60**	24	20	23
Ozone (O_3)	$\mu g/m^3$	**100**	BDL	BDL	BDL
Lead (Pb)	$\mu g/m^3$	**1**	BDL	BDL	BDL

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Carbon Monoxide (CO)	mg/m^3	**4**	167	BDL	BDL
Ammonia (NH_3)	$\mu g/m^3$	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	$\mu g/m^3$	**5**	BDL	1.84	24.8
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	BDL	0.727
Nickel (Ni)	ng/m^3	**20**	3.6	BDL	BDL

Location: (NAMP) Tadali MIDC Growth Center (MIDC Tadali)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	4.9	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	9	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	530	140	97
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	**60**	125	36	25
Ozone (O_3)	$\mu g/m^3$	**100**	BDL	BDL	BDL
Lead (Pb)	$\mu g/m^3$	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	2.61	BDL	BDL
Ammonia (NH_3)	$\mu g/m^3$	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	$\mu g/m^3$	**5**	3.4	BDL	16.1
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	BDL	0.568
Nickel (Ni)	ng/m^3	**20**	3.96	BDL	BDL

Location: Near Chaman Metalic Boundary Wall (MIDC Tadali)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	BDL	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	194	90	62
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	45	25	18
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	2.76	BDL	BDL
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	BDL	7.82	BDL
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	BDL	0.645
Nickel (Ni)	ng/m^3	**20**	3.98	BDL	BDL

Location: Ram Mandir Near BILT Mangal Karayalaya (MIDC Ballarpur)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	7.3	7.54	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	142	60	94
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	41	13	25
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	2.12	BDL	BDL
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	BDL	6.77	8.18
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	BDL	0.664
Nickel (Ni)	ng/m^3	**20**	BDL	BDL	4.54

Location: Estate Office BILT Colony (MIDC Ballarpur)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	6.1	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	6.5	7.78	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	350	79	45
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	82	17	10
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	3.5	BDL	BDL
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	BDL	7.09	12.4
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	BDL	0.594
Nickel (Ni)	ng/m^3	**20**	3.62	3.96	BDL

Location: (NAMP) Nagar Parishad (MIDC Ballarpur)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	9.7	7.54	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	97	88	96
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	**60**	20	25	26
Ozone (O_3)	$\mu g/m^3$	**100**	BDL	BDL	BDL
Lead (Pb)	$\mu g/m^3$	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	3.14	BDL	BDL
Ammonia (NH_3)	$\mu g/m^3$	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	$\mu g/m^3$	**5**	BDL	9.97	9.47
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	BDL	0.778
Nickel (Ni)	ng/m^3	**20**	3.7	BDL	BDL

Location: WCL Office on Sasti Road (MIDC Ballarpur)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Sulphur Dioxide (SO_2)	$\mu g/m^3$	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	**80**	9	7.07	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	$\mu g/m^3$	**100**	160	93	80
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	$\mu g/m^3$	**60**	42	21	19
Ozone (O_3)	$\mu g/m^3$	**100**	BDL	BDL	BDL

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	245	BDL	BDL
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	BDL	8.79	7.41
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	BDL	0.713
Nickel (Ni)	ng/m^3	**20**	BDL	BDL	BDL

Location: Terrace of Transist Hostel Rajiv Colony (MIDC Ghugus)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	15.8	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	173	215	115
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	40	51	30
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	3.89	BDL	BDL
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	BDL	9.47	9.42
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	BDL	0.621
Nickel (Ni)	ng/m^3	**20**	3.54	3.29	BDL

Location: WTP Water Supply Tank (MIDC Ghugus)

Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	9.7	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	330	118	83
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	80	27	24
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	3.65	BDL	BDL
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	BDL	3.02	23.4
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	0.3	BDL	0.585
Nickel (Ni)	ng/m^3	**20**	3.97	5.17	BDL

Location: (NAMP) Near Gram Panchayat (MIDC Ghugus)

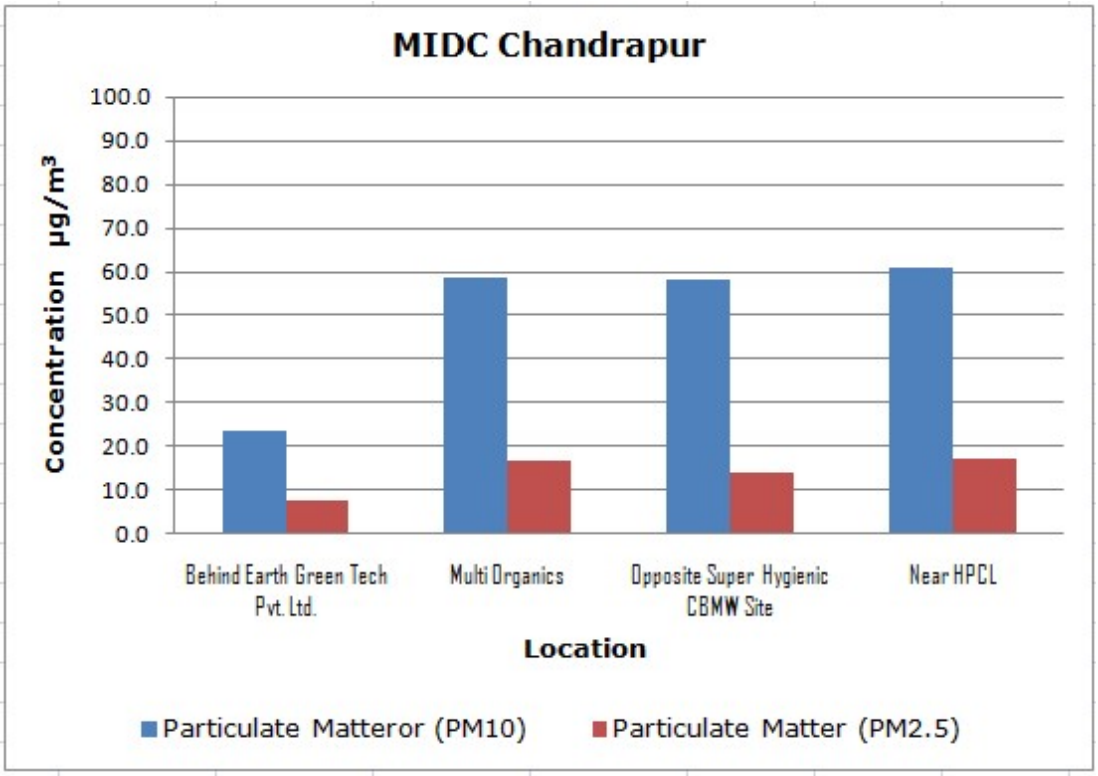
Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	11.8	BDL	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	561	182	93
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	141	40	25
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL

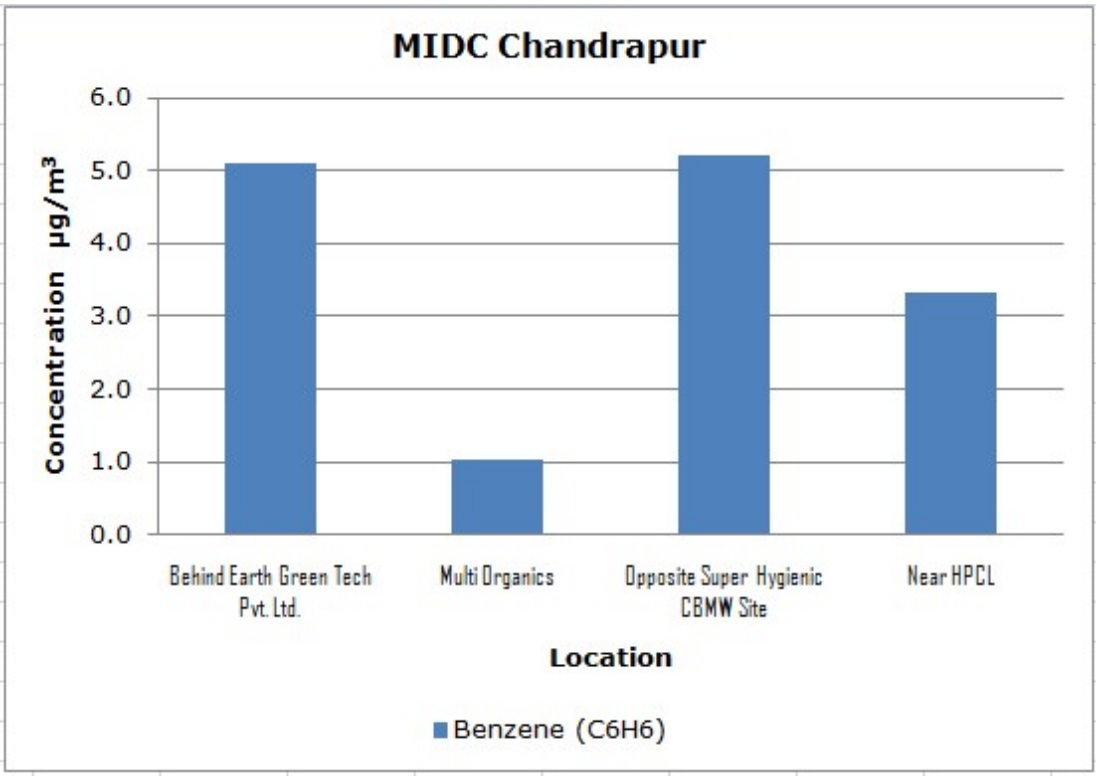
Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Lead (Pb)	µg/m^3	**1**	BDL	BDL	0.031
Carbon Monoxide (CO)	mg/m^3	**4**	5.45	BDL	BDL
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	BDL	4.62	24.5
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	BDL	0.577
Nickel (Ni)	ng/m^3	**20**	BDL	6.96	4.13

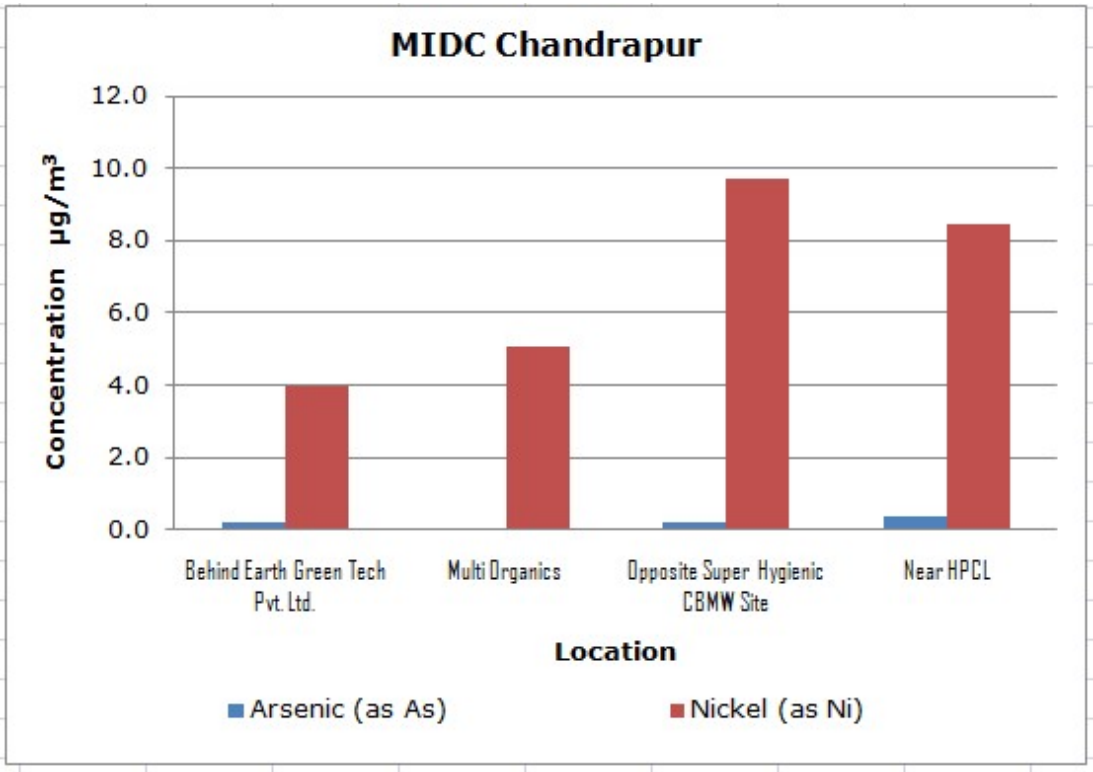
Location: Guest House ACC Cement (MIDC Ghugus)

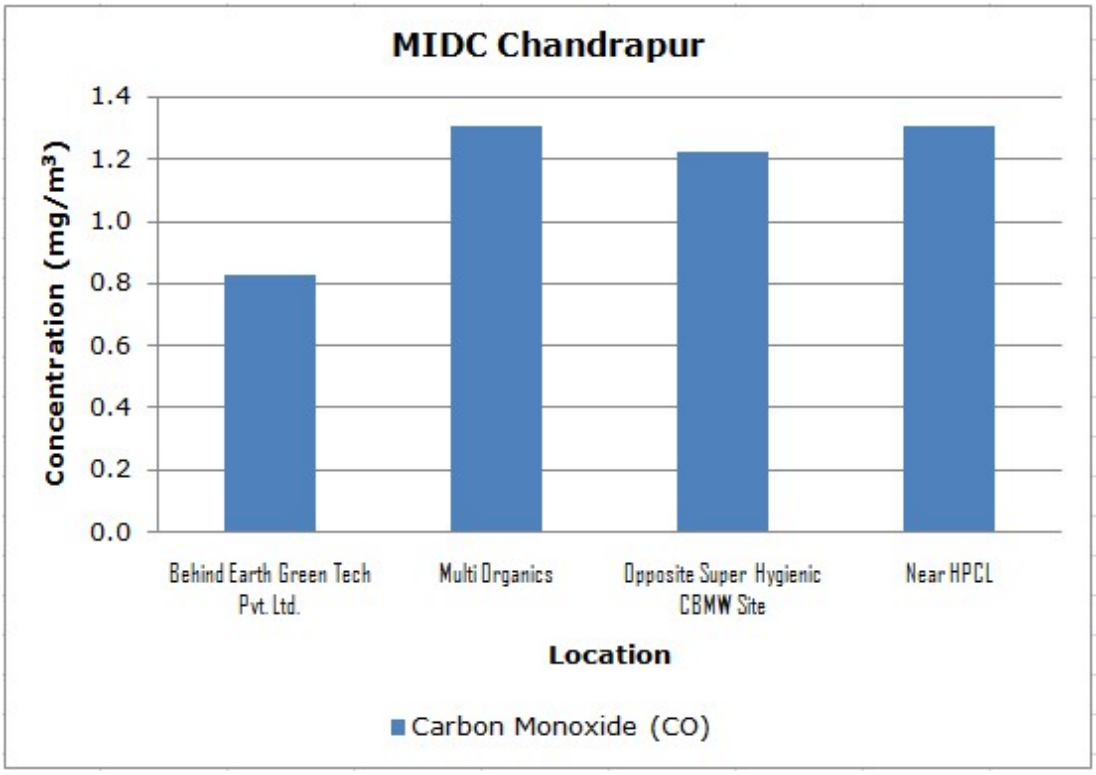
Parameters	Unit	Std. Limit (NAAQS 2009)	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Sulphur Dioxide (SO_2)	µg/m^3	**80**	BDL	BDL	BDL
Nitrogen Dioxide (NO_2)	µg/m^3	**80**	18.4	9.2	BDL
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	**100**	283	170	99
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	**60**	75	43	27
Ozone (O_3)	µg/m^3	**100**	BDL	BDL	BDL
Lead (Pb)	µg/m^3	**1**	BDL	BDL	BDL
Carbon Monoxide (CO)	mg/m^3	**4**	4.73	BDL	BDL
Ammonia (NH_3)	µg/m^3	**400**	BDL	BDL	BDL
Benzene (C_6H_6)	µg/m^3	**5**	BDL	2.87	19.1
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	**1**	BDL	BDL	BDL
Arsenic (As)	ng/m^3	**6**	BDL	0.365	0.585
Nickel (Ni)	ng/m^3	**20**	3.73	21.7	BDL

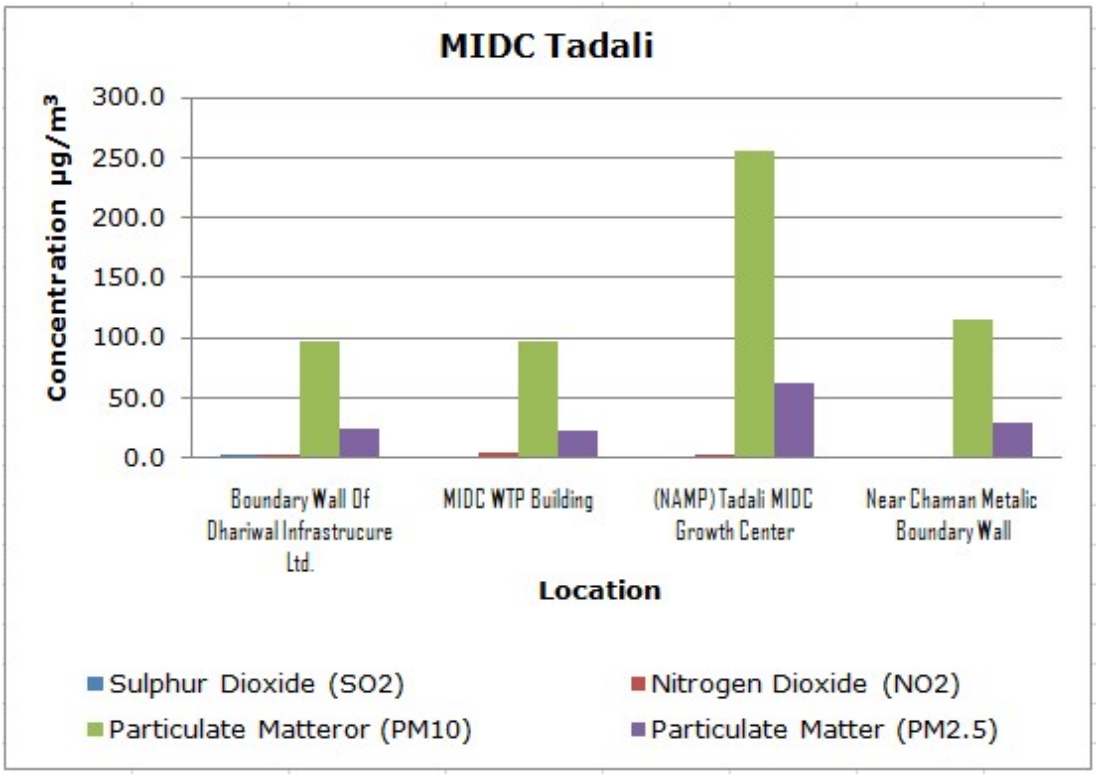
Graphs: Ambient Air Quality Monitoring for Chandrapur:

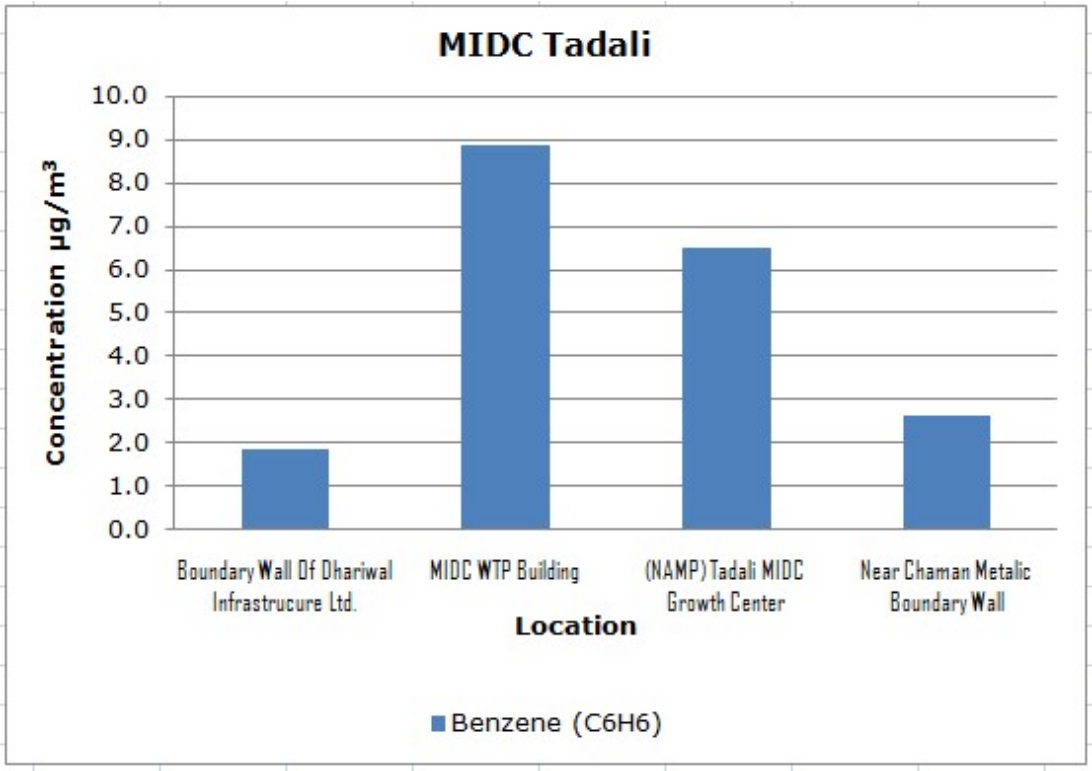


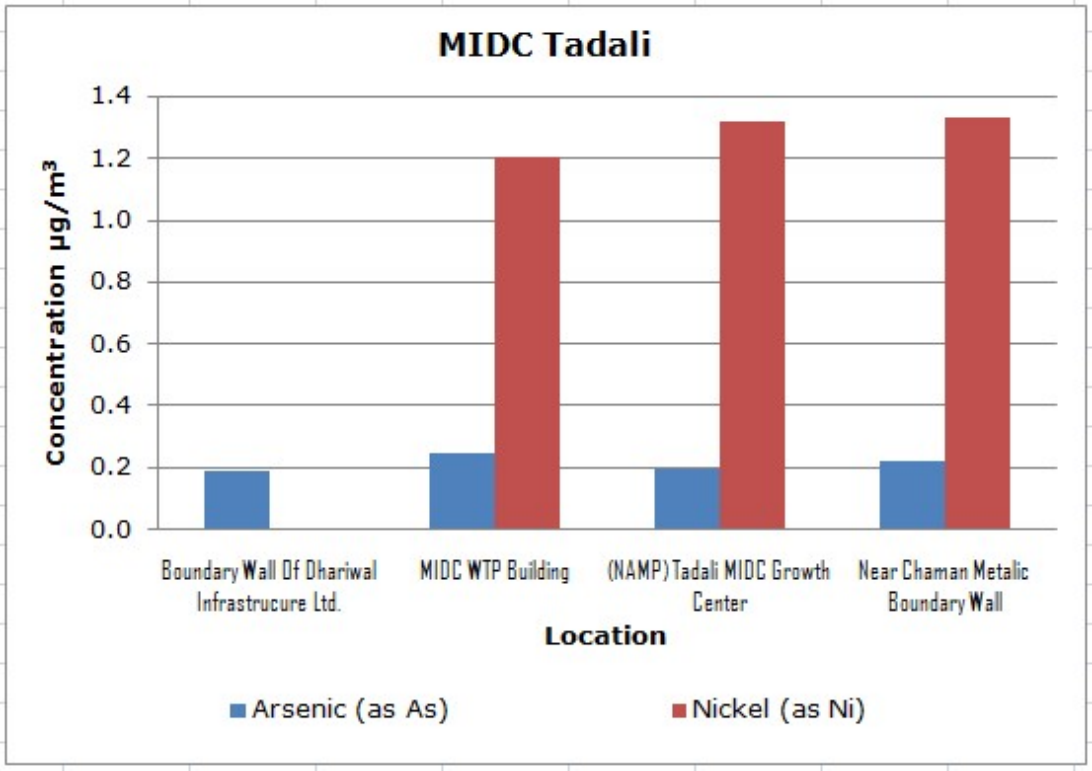


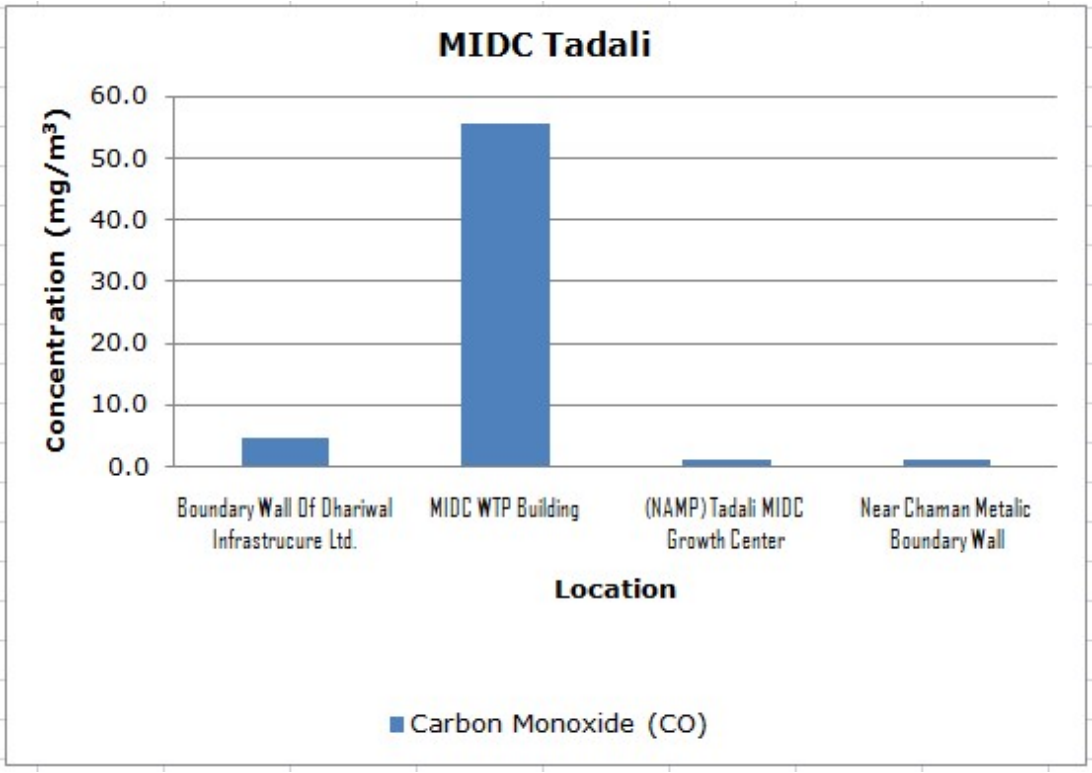

MIDC Chandrapur
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Concentration µg/m³
Behind Earth Green Tech Pvt. Ltd.
Multi Organics
Opposite Super Hygienic CBMW Site
Near HPCL
Location
Arsenic (as As)
Nickel (as Ni)

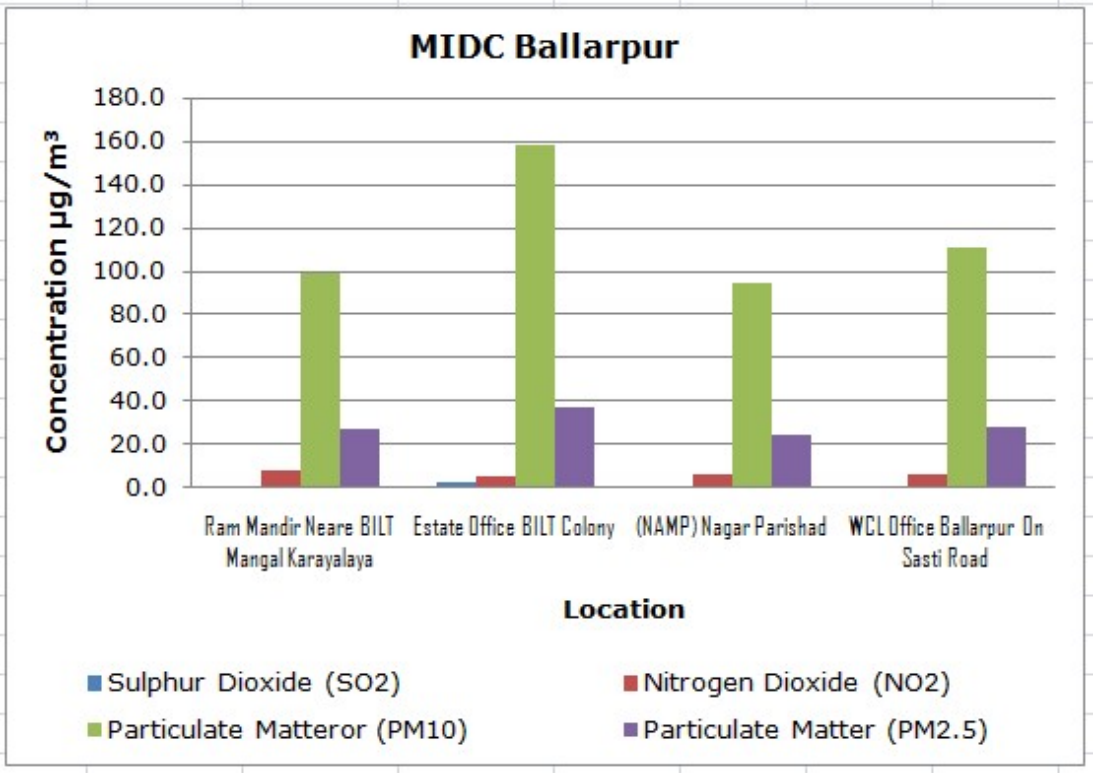

MIDC Chandrapur
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Concentration (mg/m³)
Behind Earth Green Tech Pvt. Ltd.
Multi Organics
Opposite Super Hygienic CBMW Site
Near HPCL
Location
Carbon Monoxide (CO)

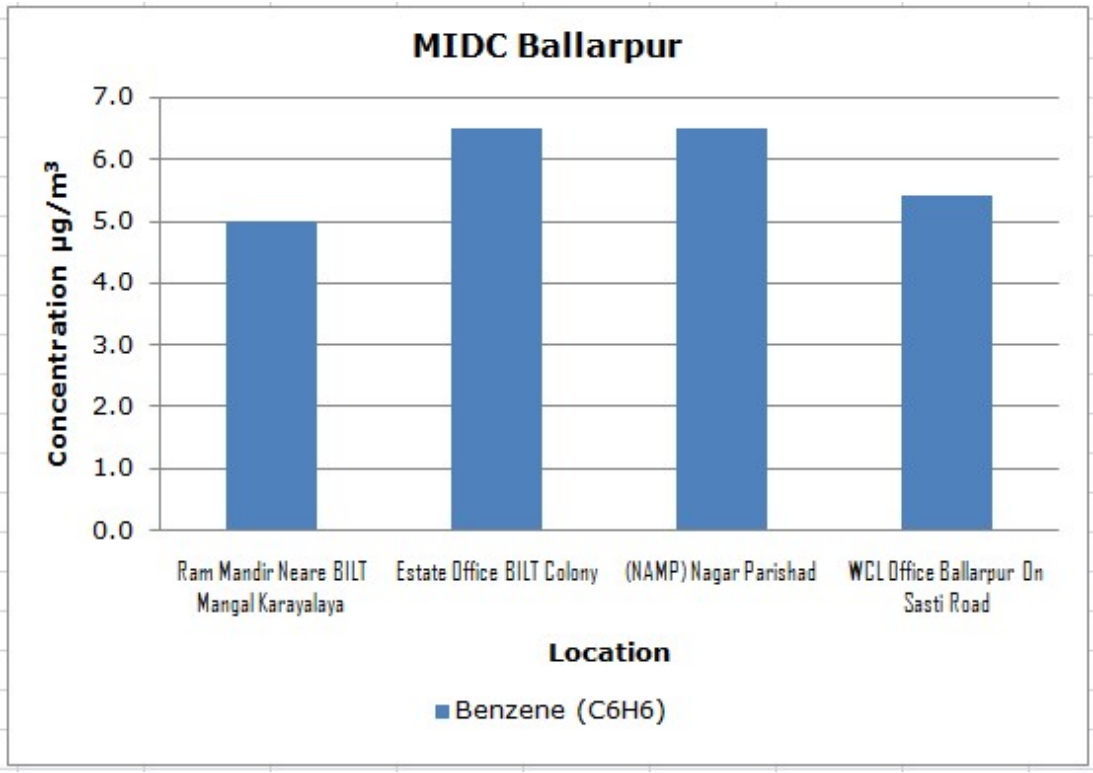

MIDC Tadali
Concentration µg/m³
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Boundary Wall Of Dhariwal Infrastrucure Ltd.
MIDC WTP Building
(NAMP) Tadali MIDC Growth Center
Near Chaman Metalic Boundary Wall
Location
Sulphur Dioxide (SO2)
Nitrogen Dioxide (NO2)
Particulate Matteror (PM10)
Particulate Matter (PM2.5)

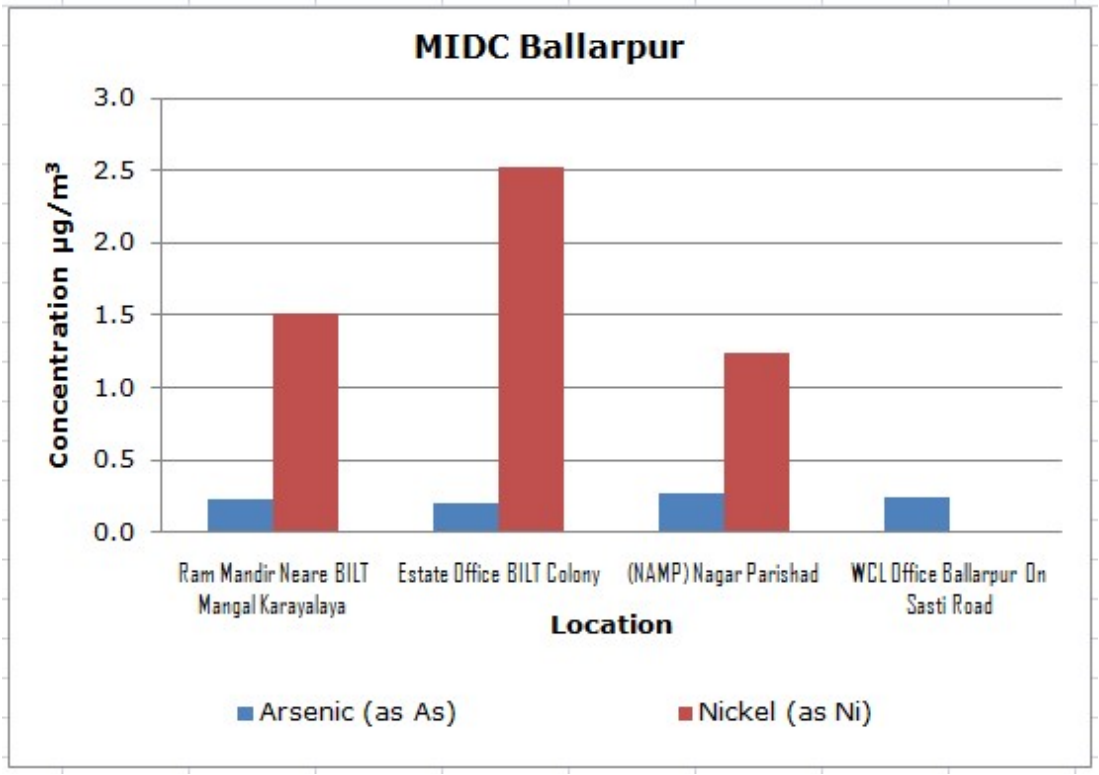

MIDC Tadali
Concentration µg/m³
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Boundary Wall Of Dhariwal Infrastrucure Ltd.
MIDC WTP Building
(NAMP) Tadali MIDC Growth Center
Near Chaman Metalic Boundary Wall
Location
Benzene (C6H6)

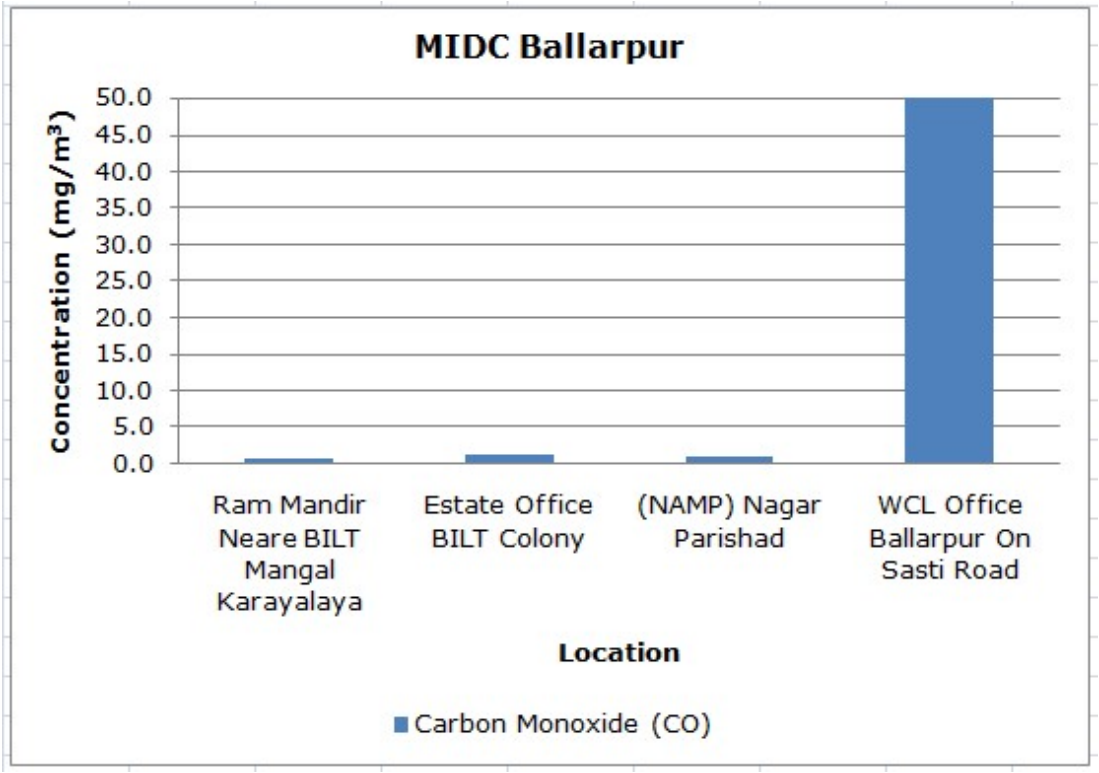

MIDC Tadali
Concentration µg/m³
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Boundary Wall Of Dhariwal Infrastrucure Ltd.
MIDC WTP Building
(NAMP) Tadali MIDC Growth Center
Near Chaman Metalic Boundary Wall
Location
Arsenic (as As)
Nickel (as Ni)

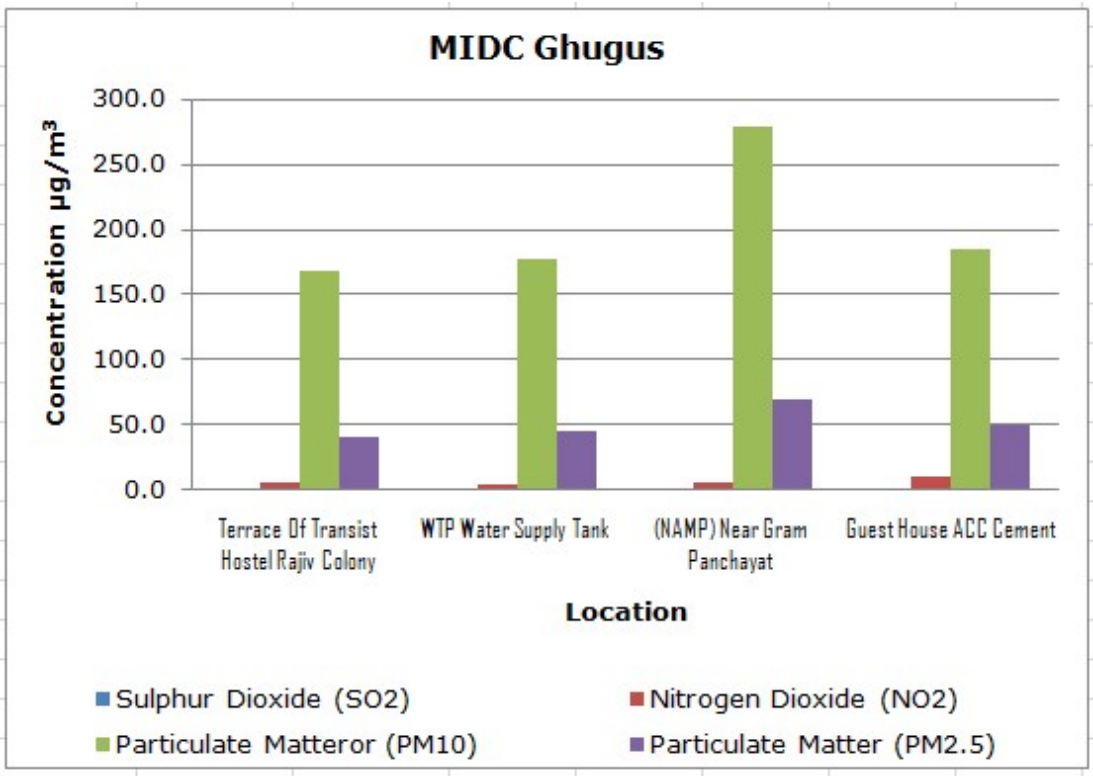

MIDC Tadali
Concentration (mg/m³)
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Boundary Wall Of Dhariwal Infrastrucure Ltd.
MIDC WTP Building
(NAMP) Tadali MIDC Growth Center
Near Chaman Metalic Boundary Wall
Location
Carbon Monoxide (CO)

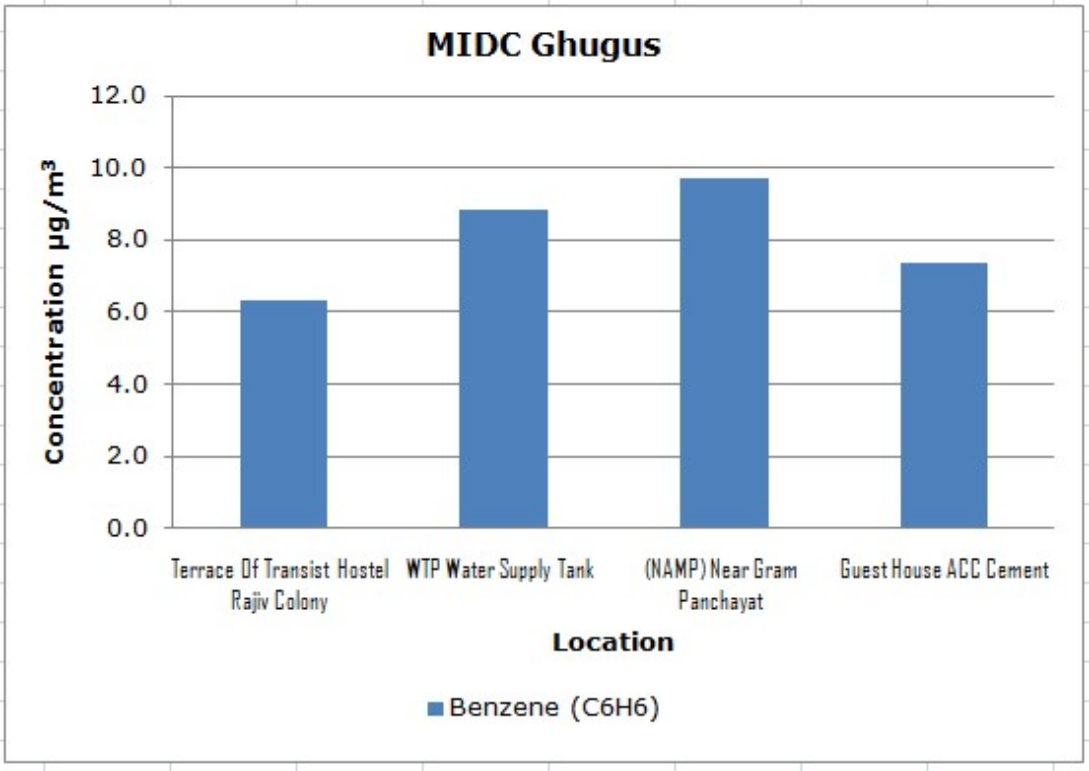

MIDC Ballarpur
Concentration µg/m³
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Ram Mandir Neare BILT Mangal Karayalaya
Estate Office BILT Colony
(NAMP) Nagar Parishad
WCL Office Ballarpur On Sasti Road
Location
Sulphur Dioxide (SO2)
Nitrogen Dioxide (NO2)
Particulate Matteror (PM10)
Particulate Matter (PM2.5)

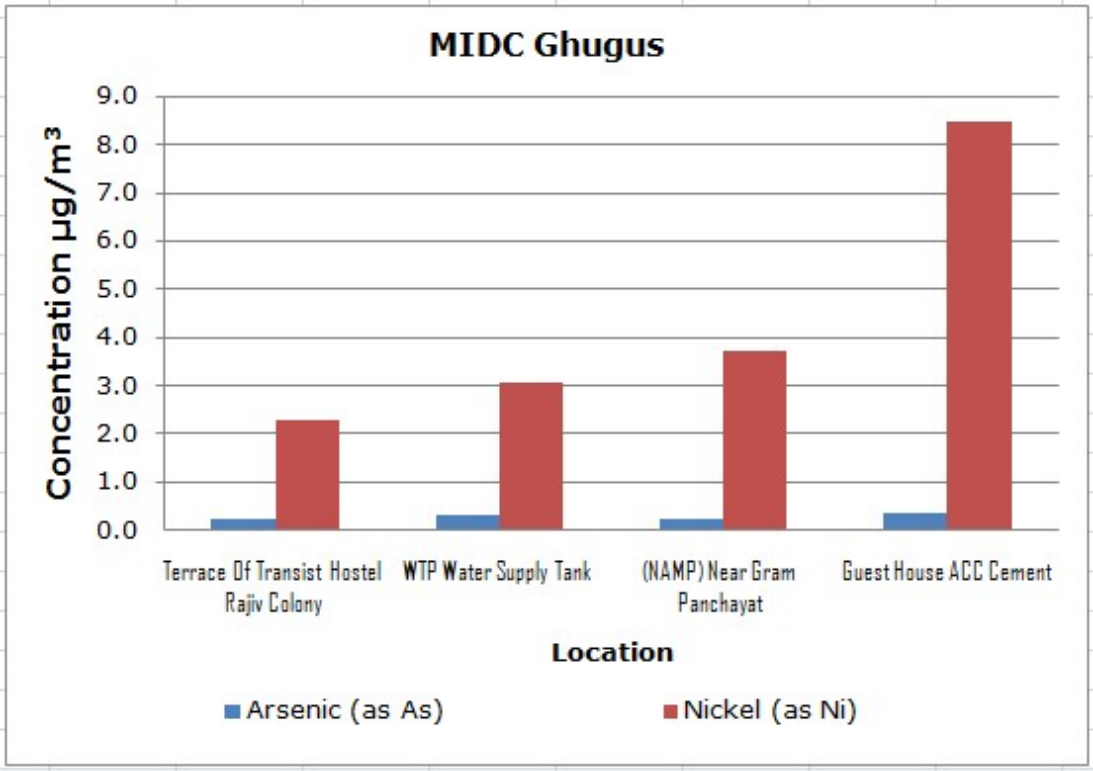

MIDC Ballarpur
Concentration µg/m³
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Ram Mandir Neare BILT Mangal Karayalaya
Estate Office BILT Colony
(NAMP) Nagar Parishad
WCL Office Ballarpur On Sasti Road
Location
Benzene (C6H6)

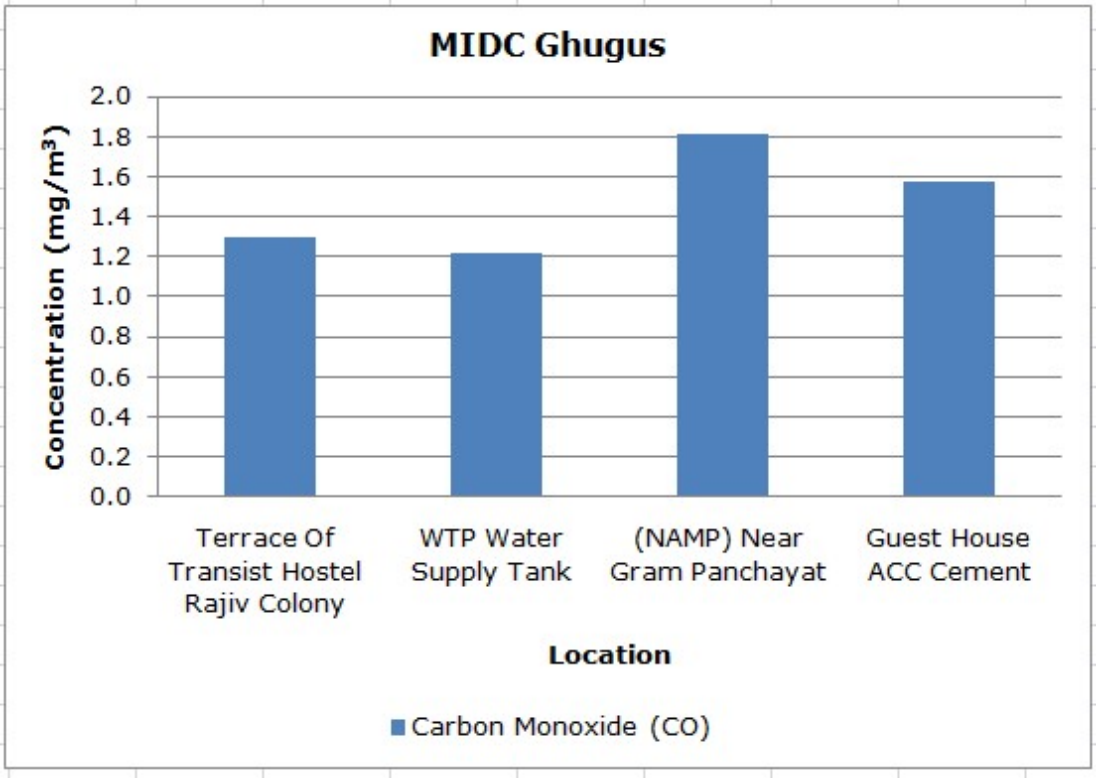

MIDC Ballarpur
Concentration µg/m³
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Ram Mandir Neare BILT Mangal Karayalaya
Estate Office BILT Colony
(NAMP) Nagar Parishad
WCL Office Ballarpur On Sasti Road
Location
Arsenic (as As)
Nickel (as Ni)


MIDC Ballarpur
Concentration (mg/m³)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Ram Mandir Neare BILT Mangal Karayalaya
Estate Office BILT Colony
(NAMP) Nagar Parishad
WCL Office Ballarpur On Sasti Road
Location
Carbon Monoxide (CO)


MIDC Ghugus
Concentration µg/m³
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Terrace Of Transist Hostel Rajiv Colony
WTP Water Supply Tank
(NAMP) Near Gram Panchayat
Guest House ACC Cement
Location
Sulphur Dioxide (SO2)
Nitrogen Dioxide (NO2)
Particulate Matteror (PM10)
Particulate Matter (PM2.5)


MIDC Ghugus
Concentration µg/m³
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Terrace Of Transist Hostel Rajiv Colony
WTP Water Supply Tank
(NAMP) Near Gram Panchayat
Guest House ACC Cement
Location
Benzene (C6H6)


MIDC Ghugus
Concentration µg/m³
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Terrace Of Transist Hostel Rajiv Colony
WTP Water Supply Tank
(NAMP) Near Gram Panchayat
Guest House ACC Cement
Location
Arsenic (as As)
Nickel (as Ni)


MIDC Ghugus
Concentration (mg/m³)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Terrace Of Transist Hostel Rajiv Colony
WTP Water Supply Tank
(NAMP) Near Gram Panchayat
Guest House ACC Cement
Location
Carbon Monoxide (CO)

4.3 Surface Water Quality:

Water Analysis Results are compared against CPCB document on criteria for Comprehensive Environmental Assessment of Industrial Clusters-Water Quality Parameters Requirement and Classification **(Annexure IX)**, CPCB Water Quality Criteria **(Annexure VIII)** and Drinking Water Specification, IS 10500:2012 **(Annexure VII)**, Wastewater Analysis Results are compared with General Standards for Discharge of Environmental Pollutants Part A: Effluents, The Environment (Protection) Rules, 1986, Schedule VI **(Annexure V)**.

Location: Nallah Op. Mahindhari Industry, Plot No. C-2 (MIDC Chandrapur)

Parameters	**Unit**	**Std. Limit**	**Results**		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	6.35	7.29	7.75
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	38	48	89
Dissolved Oxygen (% Saturation)	%	**60-140**	38	29	19
Chemical Oxygen Demand	mg/L	**250**	12	BDL	31
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	3	BDL	8
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1440	479	1029
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	17.2	16.2	20.2
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	17.2	16.2	20.2
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Fluoride (as F)	mg/L	**2**	0.7	1.6	0.93
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	3.8	BDL	BDL
Sodium Absorption Ratio	-		2.29	0.48	3.69
Total Coliforms	MPN index/ 100 mL		9.2 X103	1600	920
Faecal Coliforms	MPN index/ 100 mL		2.2 X103	350	47
Total Phosphorous (as P)	mg/L		4.5	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	41.1	1.45	5.93
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	2.34
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	0.002	BDL
Manganese (as Mn)	mg/L	**2**	0.179	0.027	0.195
Iron (as Fe)	mg/L	**3**	0.353	BDL	0.162
Vanadium (as V)	mg/L	**0.2**	0.016	BDL	BDL
Selenium (as Se)	mg/L	**0.05**	0.009	BDL	BDL
Boron (as B)	mg/L		0.116	BDL	BDL
Total Nitrogen	mg/L		44.9	5.01	10.3
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	100

Location: Gangangiri Village, Bridge (MIDC Chandrapur)

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	6.34	6.85	7.98

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	32	32	32
Dissolved Oxygen (% Saturation)	%	**60-140**	47	39	25
Chemical Oxygen Demand	mg/L	**250**	22	11	16
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	6	3	7
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	649	1388	864
Nitrite Nitrogen (as NO_2)	mg/L	**5**	0.68	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	7.72	19.8	16.7
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	8.4	19.8	16.7
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.2	0.65	0.8
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	0.37	BDL
Sodium Absorption Ratio	-		3.76	5.02	3.81
Total Coliforms	MPN index/ 100 mL		920	13	49
Faecal Coliforms	MPN index/ 100 mL		170	BDL	17

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Total Phosphorous (as P)	mg/L		BDL	0.67	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	1	1.46	2.01
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	0.42
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	0.007	0.005	0.006
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	0.005	BDL
Manganese (as Mn)	mg/L	**2**	0.594	BDL	BDL
Iron (as Fe)	mg/L	**3**	0.962	BDL	BDL
Vanadium (as V)	mg/L	**0.2**	0.011	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Selenium (as Se)	mg/L	**0.05**	0.009	BDL	BDL
Boron (as B)	mg/L		0.119	BDL	BDL
Total Nitrogen	mg/L		2.89	5.81	5.68
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	100

Location: Dhanora Bridge (MIDC Chandrapur)

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	6.23	6.84	8.22
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	30	18	14
Dissolved Oxygen (% Saturation)	%	**60-140**	75	70	75
Chemical Oxygen Demand	mg/L	**250**	48	22	16
Biochemical Oxygen Demand (3 days, 27^{o}C)	mg/L	**30**	16	6	4
Electrical Conductivity (at 25^{o}C)	µmho/cm	**4000**	818	612	1158

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	16.5	8.34	5.13
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	16.5	8.34	5.13
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	1.11	0.54	0.94
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL
Sodium Absorption Ratio	-		4.24	3.91	2.32
Total Coliforms	MPN index/ 100 mL		9.2 X 103	140	140
Faecal Coliforms	MPN index/ 100 mL		2.2 X 103	27	79
Total Phosphorous (as P)	mg/L		BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	BDL	4.81	2.8
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	0.21
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	0.00017	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	0.008	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	0.003	BDL
Manganese (as Mn)	mg/L	**2**	0.311	0.042	0.024
Iron (as Fe)	mg/L	**3**	0.182	BDL	BDL
Vanadium (as V)	mg/L	**0.2**	BDL	0.013	BDL
Selenium (as Se)	mg/L	**0.05**	0.005	BDL	BDL
Boron (as B)	mg/L		0.137	BDL	0.238
Total Nitrogen	mg/L		3.63	6.64	3.93

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Bioassay Test on fish	% survival	90% survival of fish after 96 hours in 100% effluent	100	100	100

Location: Tadali Village Lake (MIDC Tadali)

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (22.02.2020)
Colour	Hazen		1	5	1
Smell	-		Agreeable	Disagreeable	Agreeable
pH	-	5.5 -9.0	8.26	7.15	7.27
Oil & Grease	mg/L	10	BDL	BDL	BDL
Suspended Solids	mg/L	100	12	22	10
Dissolved Oxygen (% Saturation)	%	60-140	80	80	85
Chemical Oxygen Demand	mg/L	250	20	14	11
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	30	6	4	3
Electrical Conductivity (at 25°C)	µmho/cm	4000	365	330	380
Nitrite Nitrogen (as NO_2)	mg/L	5	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	10	2.53	2.71	3.45
(NO_2 + NO_3)-Nitrogen	mg/L	15	2.53	2.71	3.45

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (22.02.2020)**
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.6	1.14	0.85
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL
Sodium Absorption Ratio	-		0.66	0.45	0.97
Total Coliforms	MPN index/ 100 mL		49	350	220
Faecal Coliforms	MPN index/ 100 mL		33	280	47
Total Phosphorous (as P)	mg/L		BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	0.95	2.46	2.8
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (22.02.2020)
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (22.02.2020)**
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	0.008	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.026	BDL	BDL
Iron (as Fe)	mg/L	**3**	0.142	BDL	BDL
Vanadium (as V)	mg/L	**0.2**	BDL	0.031	BDL
Selenium (as Se)	mg/L	**0.05**	BDL	BDL	BDL
Boron (as B)	mg/L		BDL	0.148	0.124
Total Nitrogen	mg/L		1.5	3	3.56
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	100

Location: Nallah Adjecent to Grace Industries (MIDC Tadali)

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (22.02.2020)**
Colour	Hazen		1	1	6
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	7.77	7.78	7.28
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	18	38	20
Dissolved Oxygen (% Saturation)	%	**60-140**	47	41	55
Chemical Oxygen Demand	mg/L	**250**	6	9	12
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	3	2	4
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	662	4340	2900
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	6.29	12.4	13.3
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	6.29	12.4	13.3
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	1.47	0.59	1.26
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	0.22	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (22.02.2020)**
Sodium Absorption Ratio	-		11.9	6.1	16.6
Total Coliforms	MPN index/ 100 mL		540	920	920
Faecal Coliforms	MPN index/ 100 mL		110	350	350
Total Phosphorous (as P)	mg/L		0.26	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	1	2.69	7.72
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (22.02.2020)**
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	0.086
Nickel (as Ni)	mg/L	**200**	0.018	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (22.02.2020)
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.218	BDL	BDL
Iron (as Fe)	mg/L	**3**	0.156	BDL	BDL
Vanadium (as V)	mg/L	**0.2**	0.02	0.031	0.017
Selenium (as Se)	mg/L	**0.05**	0.01	0.007	0.005
Boron (as B)	mg/L		0.215	0.149	0.261
Total Nitrogen	mg/L		2.38	5.41	10.6
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	100

Location: Raw Water MIDC WTP (MIDC Tadali)

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (22.02.2020)
Colour	Hazen		1	1	8
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	8.01	7.94	7.37
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	10	12	14
Dissolved Oxygen (% Saturation)	%	**60-140**	85	70	85

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (22.02.2020)**
Chemical Oxygen Demand	mg/L	**250**	7	5	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	2	2	BDL
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	456	496	645
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	6.15	7.55	8
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	6.15	7.55	8
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.5	0.81	0.88
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	0.12	BDL	BDL
Sodium Absorption Ratio	-		0.72	0.65	0.98
Total Coliforms	MPN index/ 100 mL		BDL	BDL	23
Faecal Coliforms	MPN index/ 100 mL		BDL	BDL	23
Total Phosphorous (as P)	mg/L		0.16	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	7.6	2.12	5.3

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (22.02.2020)**
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (22.02.2020)**
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	0.106	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.021	BDL	BDL
Iron (as Fe)	mg/L	**3**	0.257	0.078	BDL
Vanadium (as V)	mg/L	**0.2**	0.021	0.017	0.018
Selenium (as Se)	mg/L	**0.05**	0.006	0.006	BDL
Boron (as B)	mg/L		0.359	BDL	BDL
Total Nitrogen	mg/L		1.85	3.78	7.06

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (22.02.2020)
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	100

Location: Nalla Near Petrol Pump at Ballarpur Bamni Road (MIDC Ballarpur)

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Colour	Hazen		1	3	1
Smell	-		Agreeable	Disagreeable	Agreeable
pH	-	**5.5 -9.0**	7.12	7	6.85
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	BDL	54	16
Dissolved Oxygen (% Saturation)	%	**60-140**	80	22	30
Chemical Oxygen Demand	mg/L	**250**	82	59	50
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	26	22	18
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	2470	2300	1910
Nitrite Nitrogen (as NO_2)	mg/L	**5**	0.06	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	24.1	21.6	8.85
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	24.1	21.6	8.85

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.85	0.81	1.08
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	0.3
Sodium Absorption Ratio	-		6.36	1.23	8.05
Total Coliforms	MPN index/ 100 mL		1.6 X 104	240	1600
Faecal Coliforms	MPN index/ 100 mL		3.5 X 103	130	280
Total Phosphorous (as P)	mg/L		BDL	BDL	0.42
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	7.72	7.28	6.16
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	0.11
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	0.118	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.342	0.379	0.505
Iron (as Fe)	mg/L	**3**	BDL	BDL	0.409
Vanadium (as V)	mg/L	**0.2**	0.02	0.023	BDL
Selenium (as Se)	mg/L	**0.05**	0.009	0.008	0.008
Boron (as B)	mg/L		BDL	BDL	BDL
Total Nitrogen	mg/L		13	12	8.07
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	100

Location: Wardha River, Upstream (MIDC Ballarpur)

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	8.29	7.58	7.69
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	10	22	14
Dissolved Oxygen (% Saturation)	%	**60-140**	75	90	80
Chemical Oxygen Demand	mg/L	**250**	11	59	5
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	3	16	2
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	484	514	466
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	0.51	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	5.24	4.96	2.94
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	5.24	5.47	2.94
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.5	0.31	1.52
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	0.12	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Sodium Absorption Ratio	-		1.16	0.84	1.95
Total Coliforms	MPN index/ 100 mL		170	280	240
Faecal Coliforms	MPN index/ 100 mL		94	220	27
Total Phosphorous (as P)	mg/L		0.2	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	2.1	2.24	2.46
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Mercury (as Hg)	mg/L	**1**	BDL	0.003	BDL
Manganese (as Mn)	mg/L	**2**	0.026	BDL	BDL
Iron (as Fe)	mg/L	**3**	0.168	BDL	BDL
Vanadium (as V)	mg/L	**0.2**	0.019	0.015	0.015
Selenium (as Se)	mg/L	**0.05**	BDL	BDL	BDL
Boron (as B)	mg/L		BDL	BDL	BDL
Total Nitrogen	mg/L		3.25	3.48	3.11
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	100

Location: (NWMP) Wardha River Downstream Near Rajana Bridge (MIDC Ballarpur)

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Colour	Hazen		3	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	7.94	7.12	7.44
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	12	36	40
Dissolved Oxygen (% Saturation)	%	**60-140**	75	65	70

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Chemical Oxygen Demand	mg/L	**250**	14	18	18
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	5	5	5
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	624	663	625
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	0.41	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	6.05	7.11	5.84
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	6.05	7.52	5.84
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.6	0.5	0.42
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL
Sodium Absorption Ratio	-		1.47	1.09	2.41
Total Coliforms	MPN index/ 100 mL		79	130	130
Faecal Coliforms	MPN index/ 100 mL		49	7.8	79
Total Phosphorous (as P)	mg/L		BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	6	3.92	4.03

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	0.23	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	0.011	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.109	BDL	BDL
Iron (as Fe)	mg/L	**3**	BDL	BDL	BDL
Vanadium (as V)	mg/L	**0.2**	0.011	0.017	0.015
Selenium (as Se)	mg/L	**0.05**	0.014	BDL	BDL
Boron (as B)	mg/L		BDL	BDL	BDL
Total Nitrogen	mg/L		7.33	5.6	5.31

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	100

Location: Nalla Near MSW Municipal Corporation Near Railway Line (MIDC Ballarpur)

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	7.33	6.93	7.08
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	10	14	40
Dissolved Oxygen (% Saturation)	%	**60-140**	55	27	43
Chemical Oxygen Demand	mg/L	**250**	57	51	41
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	30	15	12
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1776	1681	1642
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	15.5	34.7	7.44
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	15.5	34.7	7.44

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.85	0.63	0.4
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	0.24
Sodium Absorption Ratio	-		4.5	2.35	7.53
Total Coliforms	MPN index/ 100 mL		140	1.6 x 104	540
Faecal Coliforms	MPN index/ 100 mL		130	1.6 x 104	130
Total Phosphorous (as P)	mg/L		0.14	<0.1	0.46
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	7.7	5.4	5.04
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	0.14
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Nickel (as Ni)	mg/L	**200**	0.011	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	0.001	BDL
Manganese (as Mn)	mg/L	**2**	0.108	0.133	0.423
Iron (as Fe)	mg/L	**3**	BDL	0.072	0.161
Vanadium (as V)	mg/L	**0.2**	0.01	0.016	BDL
Selenium (as Se)	mg/L	**0.05**	0.005	BDL	BDL
Boron (as B)	mg/L		BDL	BDL	BDL
Total Nitrogen	mg/L		11.1	13	6.67
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	100

Location: Nallah of Municipal Council Ballarpur, Beside of HP Petrol Pump, (MIDC Ballarpur)

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	7.84	7.18	7.31
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	12	48	42
Dissolved Oxygen (% Saturation)	%	**60-140**	48	32	28
Chemical Oxygen Demand	mg/L	**250**	48	59	31
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	13	15	8
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	730	850	758
Nitrite Nitrogen (as NO_2)	mg/L	**5**	0.01	0.12	<0.02
Nitrate Nitrogen (as NO_3)	mg/L	**10**	4.29	10.8	2.2
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	4.3	10.9	2.2
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	1.2	1.96	1.3
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Sodium Absorption Ratio	-		1.58	1.16	2.17
Total Coliforms	MPN index/ 100 mL		140	9.2 x 103	1600
Faecal Coliforms	MPN index/ 100 mL		140	5.4 x 103	240
Total Phosphorous (as P)	mg/L		0.1	0.38	<0.1
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	9.9	4.7	3.25
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	0.007	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Mercury (as Hg)	mg/L	**1**	BDL	0.002	BDL
Manganese (as Mn)	mg/L	**2**	0.096	0.107	0.093
Iron (as Fe)	mg/L	**3**	0.356	BDL	0.192
Vanadium (as V)	mg/L	**0.2**	BDL	BDL	BDL
Selenium (as Se)	mg/L	**0.05**	BDL	BDL	0.006
Boron (as B)	mg/L		BDL	BDL	BDL
Total Nitrogen	mg/L		10.8	7.1	3.73
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	100

Location: Wardha River near WTP of WCL Ghugus Opencast Mine, (MIDC Ghugus)

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	7.48	7.48	8.07
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	BDL	14	32
Dissolved Oxygen (% Saturation)	%	**60-140**	70	75	85
Chemical Oxygen Demand	mg/L	**250**	66	6	8

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	19	2	3
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	620	612	466
Nitrite Nitrogen (as NO_2)	mg/L	**5**	0.02	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	3.55	3.84	2.61
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	3.55	3.84	2.61
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.6	1.1	0.42
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL
Sodium Absorption Ratio	-		1.08	1.03	1.41
Total Coliforms	MPN index/ 100 mL		170	23	350
Faecal Coliforms	MPN index/ 100 mL		79	7.8	40
Total Phosphorous (as P)	mg/L		0.26	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	2.01	4.25	4.59
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	0.13	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	0.005
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	0.002	BDL
Manganese (as Mn)	mg/L	**2**	BDL	BDL	BDL
Iron (as Fe)	mg/L	**3**	0.208	BDL	BDL
Vanadium (as V)	mg/L	**0.2**	0.02	0.018	0.018
Selenium (as Se)	mg/L	**0.05**	0.006	BDL	BDL
Boron (as B)	mg/L		BDL	BDL	BDL
Total Nitrogen	mg/L		2.78	5.48	5.16

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	70

Location: Domestic effluent nallah near lokhadi bridge at WTP of Ghugus opencast mine (MIDC Ghugus)

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Colour	Hazen		1	5	3
Smell	-		Agreeable	Disgreeable	Agreeable
pH	-	**5.5 -9.0**	7.98	7.83	7.97
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	10	48	34
Dissolved Oxygen (% Saturation)	%	**60-140**	40	80	67
Chemical Oxygen Demand	mg/L	**250**	7	BDL	8
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	4	BDL	2
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	607	618	470
Nitrite Nitrogen (as NO_2)	mg/L	**5**	0.02	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	3.28	3.84	2.85
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	3.3	3.84	2.85

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	0.5	0.96	0.78
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	0.11	BDL	BDL
Sodium Absorption Ratio	-		1.02	0.7	1.41
Total Coliforms	MPN index/ 100 mL		1.6 X 104	23	350
Faecal Coliforms	MPN index/ 100 mL		3.5 X 103	13	39
Total Phosphorous (as P)	mg/L		0.12	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	0.11	3.5	1.79
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	0.13	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	0.003	BDL
Manganese (as Mn)	mg/L	**2**	BDL	BDL	BDL
Iron (as Fe)	mg/L	**3**	0.209	BDL	BDL
Vanadium (as V)	mg/L	**0.2**	0.021	0.019	0.019
Selenium (as Se)	mg/L	**0.05**	BDL	BDL	BDL
Boron (as B)	mg/L		BDL	BDL	BDL
Total Nitrogen	mg/L		0.84	4.34	2.41
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	70

Location: (NWMP) Wardha river behind ACC plant (MIDC Ghugus)

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	7.81	7.75	7.56
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	33	24	18
Dissolved Oxygen (% Saturation)	%	**60-140**	82	80	70
Chemical Oxygen Demand	mg/L	**250**	11	8	6
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	3	2	3
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	634	418	600
Nitrite Nitrogen (as NO_2)	mg/L	**5**	0.11	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	5.94	4.73	7.52
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	6.05	4.73	7.53
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	1.22	1.92	0.5
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL
Sodium Absorption Ratio	-		1.57	0.59	1.54

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Total Coliforms	MPN index/ 100 mL		220	23	140
Faecal Coliforms	MPN index/ 100 mL		110	7.8	32
Total Phosphorous (as P)	mg/L		0.12	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	1	0.9	11.6
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	0.35
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	0.059
Nickel (as Ni)	mg/L	**200**	BDL	BDL	0.059
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	0.003	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Manganese (as Mn)	mg/L	**2**	0.036	0.028	0.946
Iron (as Fe)	mg/L	**3**	BDL	BDL	BDL
Vanadium (as V)	mg/L	**0.2**	0.018	0.016	BDL
Selenium (as Se)	mg/L	**0.05**	BDL	BDL	BDL
Boron (as B)	mg/L		BDL	BDL	BDL
Total Nitrogen	mg/L		2.42	1.13	13.2
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	60

Location: Nallah at Usgaon, Shengaon Road (Behind Gupta Energy Power Ltd) (MIDC Ghugus)

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	7.65	7.42	7.9
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	14	10	22
Dissolved Oxygen (% Saturation)	%	**60-140**	90	35	70
Chemical Oxygen Demand	mg/L	**250**	13	11	8

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	3	3	3
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1199	1652	1018
Nitrite Nitrogen (as NO_2)	mg/L	**5**	0.04	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	2.73	2.94	2.85
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	2.77	2.96	2.85
Free Ammonia (as NH_3-N)	mg/L	**5**	BDL	BDL	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	1.5	0.5	0.5
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	0.37	0.37
Sodium Absorption Ratio	-		1.69	0.94	2.79
Total Coliforms	MPN index/ 100 mL		350	33	94
Faecal Coliforms	MPN index/ 100 mL		34	33	26
Total Phosphorous (as P)	mg/L		BDL	0.62	0.39
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	1.23	4.3	9.07
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	BDL	BDL	BDL
Iron (as Fe)	mg/L	**3**	0.096	0.085	BDL
Vanadium (as V)	mg/L	**0.2**	0.021	0.017	0.02
Selenium (as Se)	mg/L	**0.05**	0.012	BDL	0.008
Boron (as B)	mg/L		0.212	0.188	0.209
Total Nitrogen	mg/L		1.84	4.95	9.69

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	80

Location: Nallah water Down Site of ACC Colony (MIDC Ghugus)

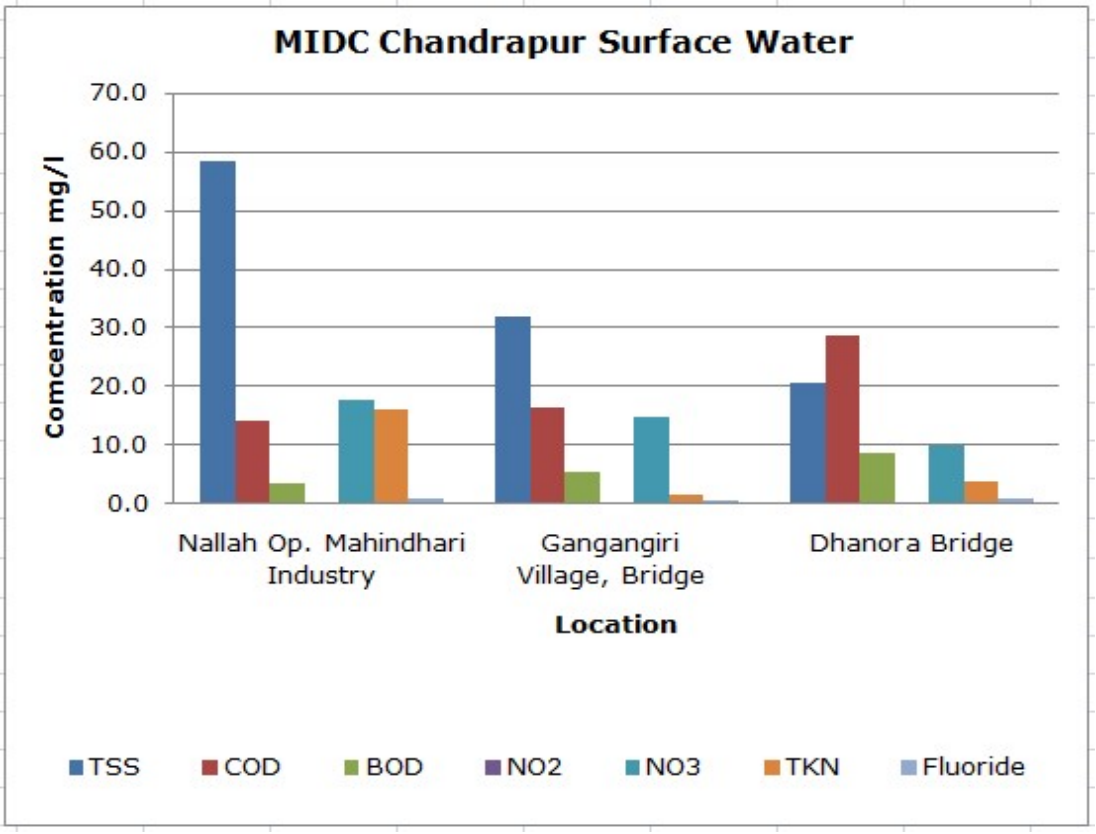
Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**5.5 -9.0**	7.67	6.82	7.64
Oil & Grease	mg/L	**10**	BDL	BDL	BDL
Suspended Solids	mg/L	**100**	28	38	42
Dissolved Oxygen (% Saturation)	%	**60-140**	22	20	70
Chemical Oxygen Demand	mg/L	**250**	46	21	21
Biochemical Oxygen Demand (3 days, 27°C)	mg/L	**30**	13	5	9
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1442	1101	855
Nitrite Nitrogen (as NO_2)	mg/L	**5**	BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L	**10**	6.39	20.6	28.5
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	6.39	20.6	28.5

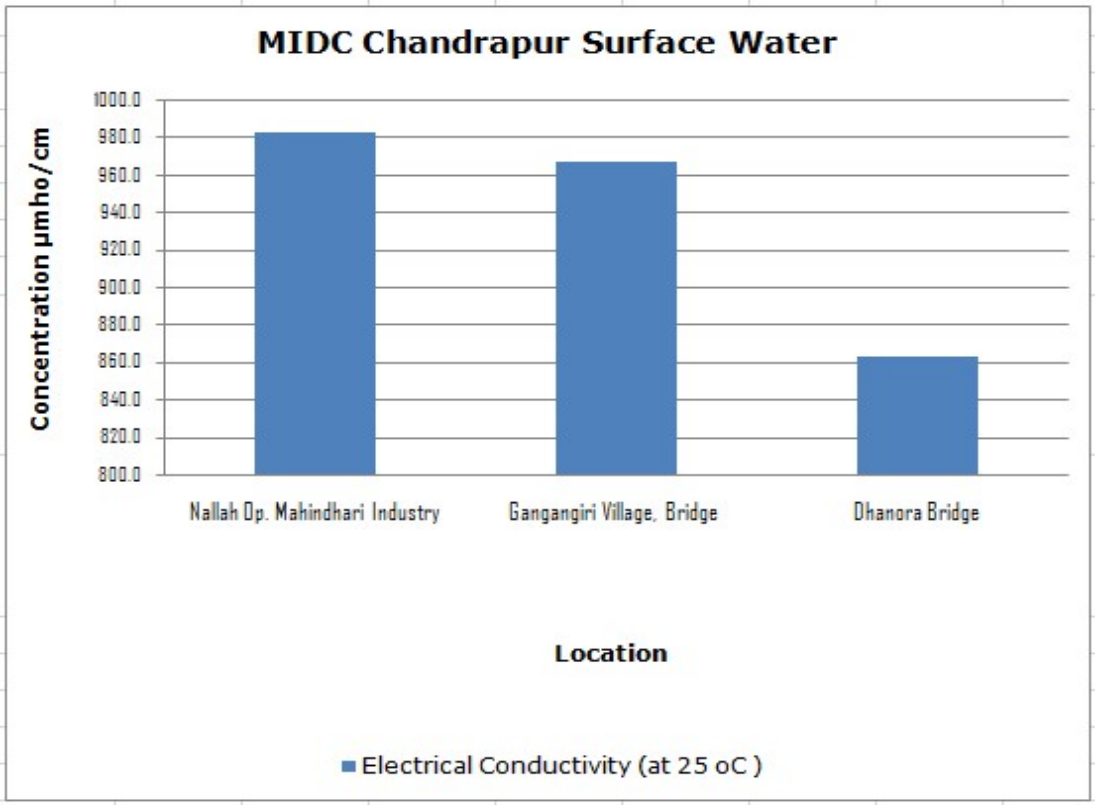
Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Free Ammonia (as NH_3-N)	mg/L	**5**	0.46	0.46	BDL
Total Residual Chlorine	mg/L	**1**	BDL	BDL	BDL
Cyanide (as CN)	mg/L	**0.2**	BDL	BDL	BDL
Fluoride (as F)	mg/L	**2**	1.1	1.39	0.6
Sulphide (as S^{2-})	mg/L	**2**	BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L	**5**	BDL	BDL	BDL
Sodium Absorption Ratio	-		3	1.85	1.82
Total Coliforms	MPN index/ 100 mL		140	1600	170
Faecal Coliforms	MPN index/ 100 mL		94	40	24
Total Phosphorous (as P)	mg/L		BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**100**	8.85	11.2	8.73
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL

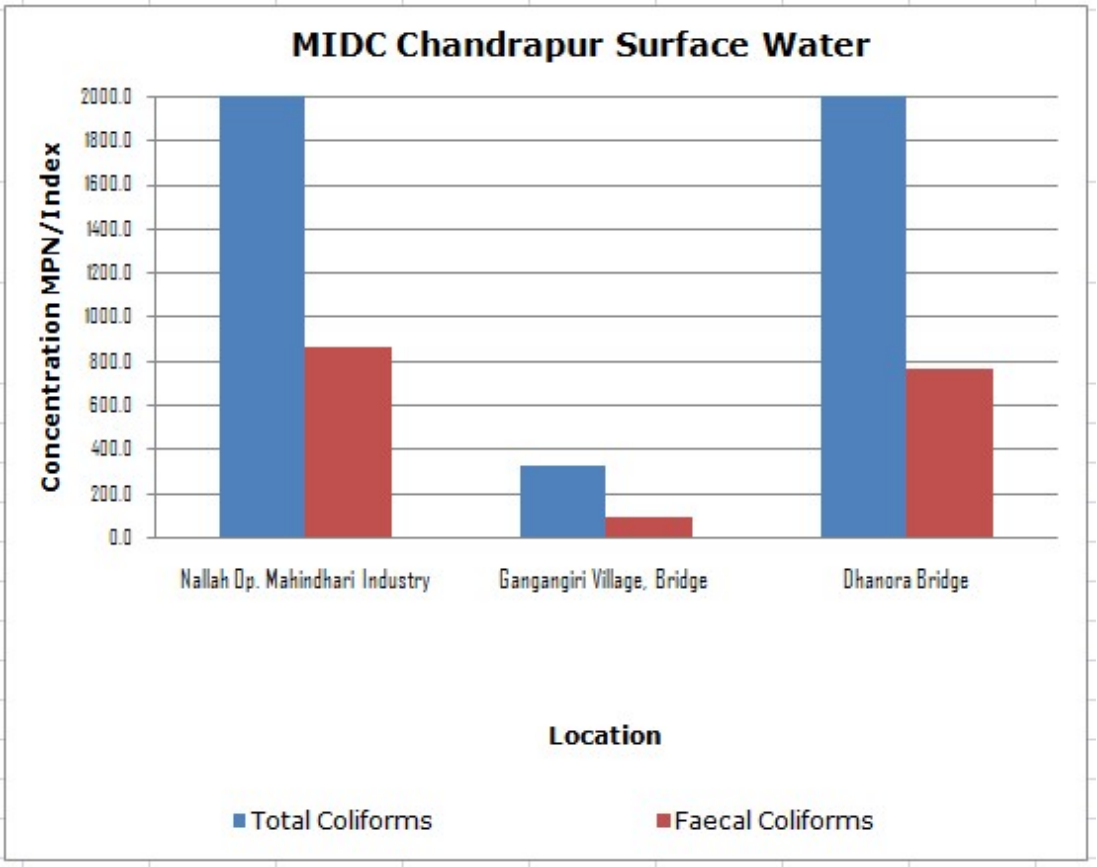
Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	0.005	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L	**2**	0.257	BDL	0.26
Iron (as Fe)	mg/L	**3**	0.246	BDL	BDL
Vanadium (as V)	mg/L	**0.2**	BDL	BDL	BDL
Selenium (as Se)	mg/L	**0.05**	BDL	BDL	BDL
Boron (as B)	mg/L		0.113	BDL	0.109
Total Nitrogen	mg/L		2.24	15.7	15
Bioassay Test on fish	% survival	**90% survival of fish after 96 hours in 100% effluent**	100	100	60

Graphs: Surface Water Quality Monitoring for Chandrapur:






MIDC Chandrapur Surface Water
Concentration MPN/Index
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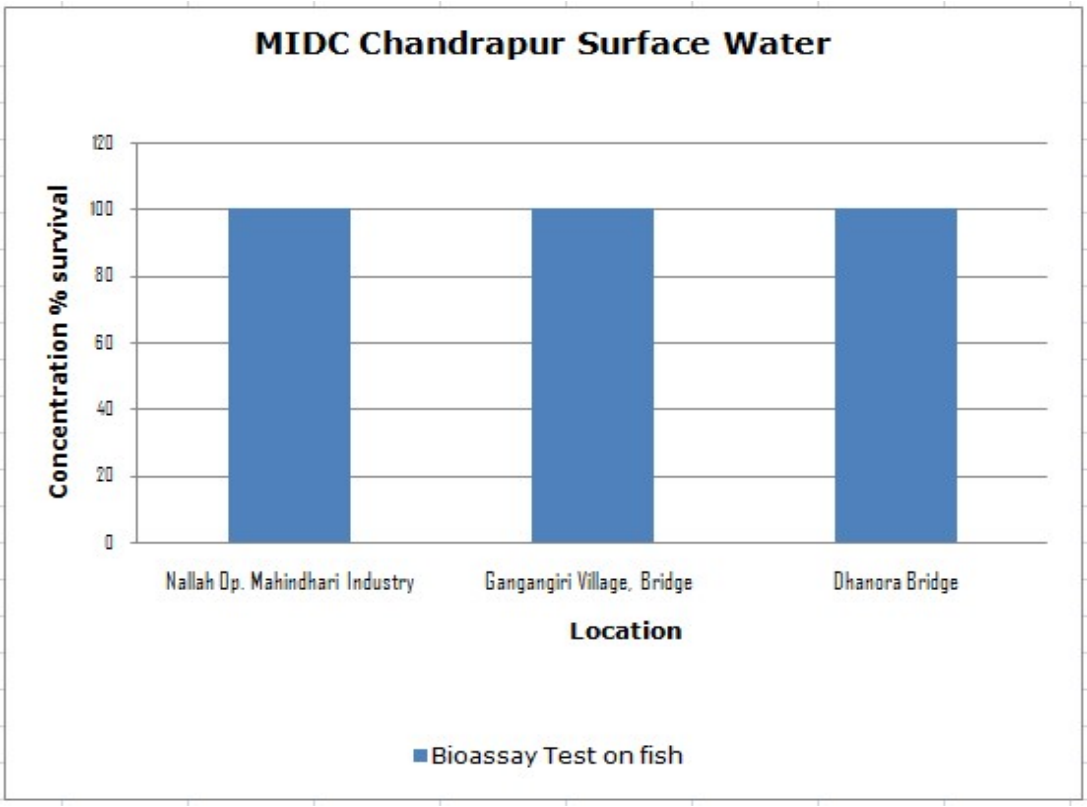
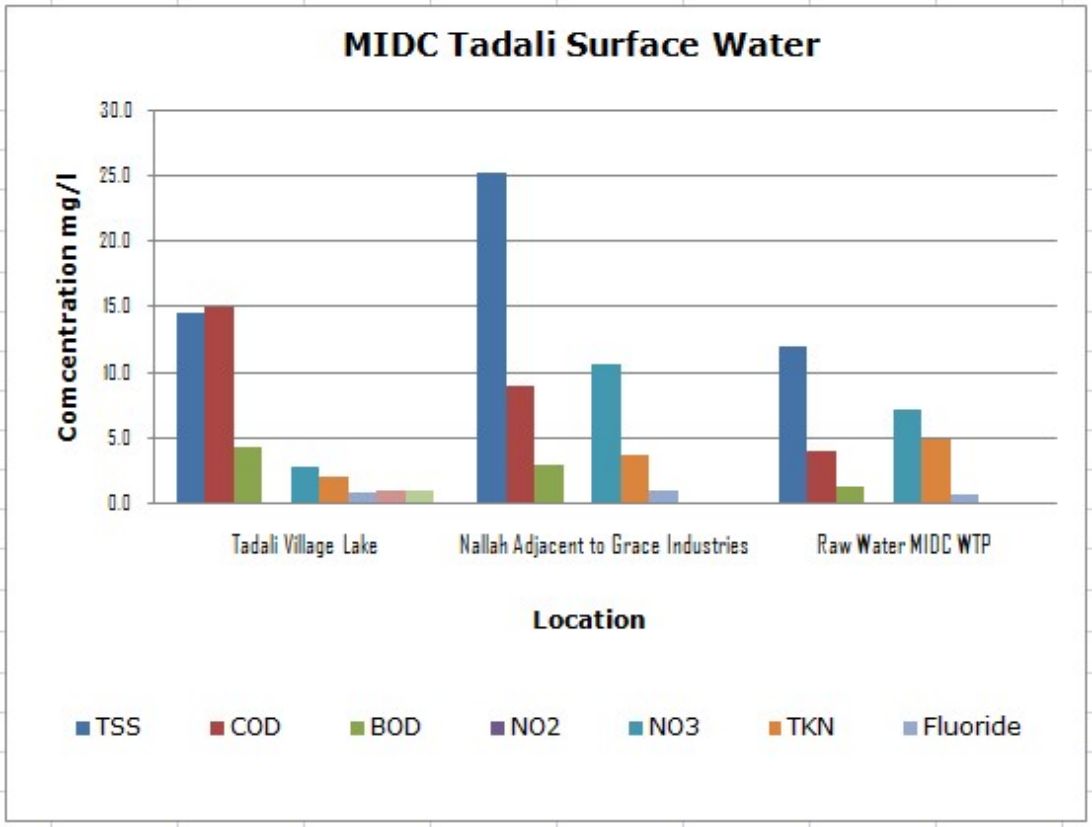
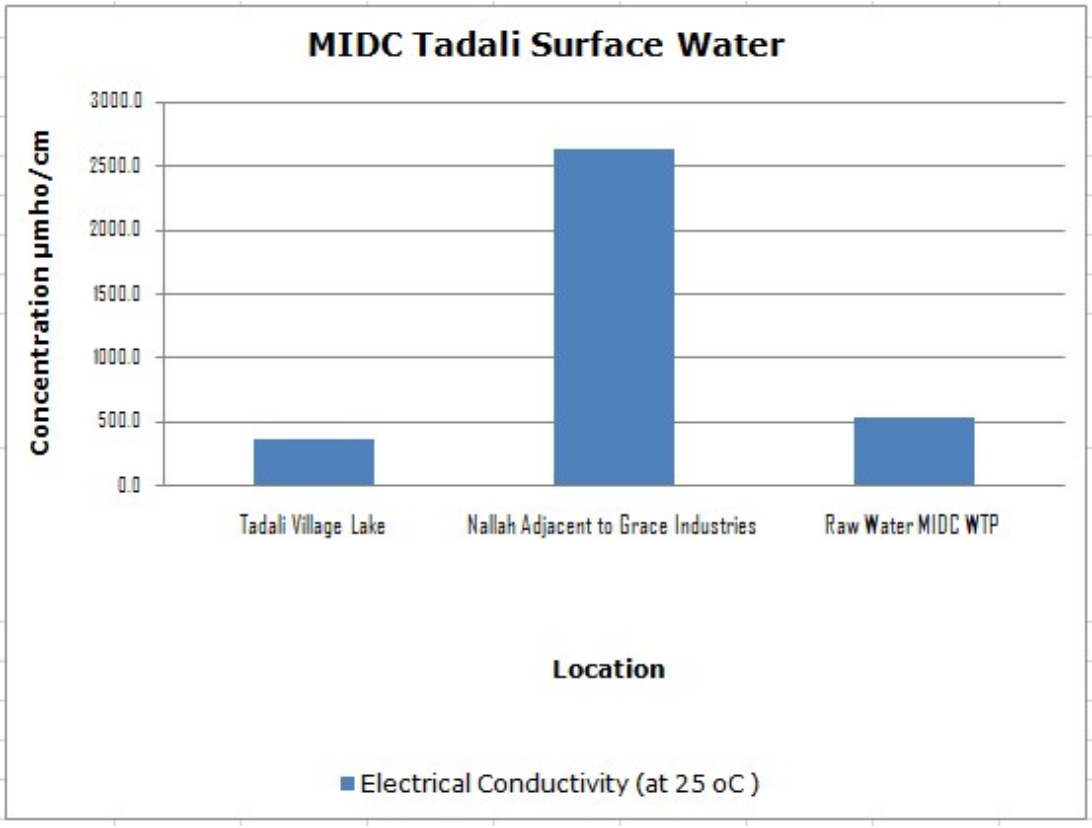
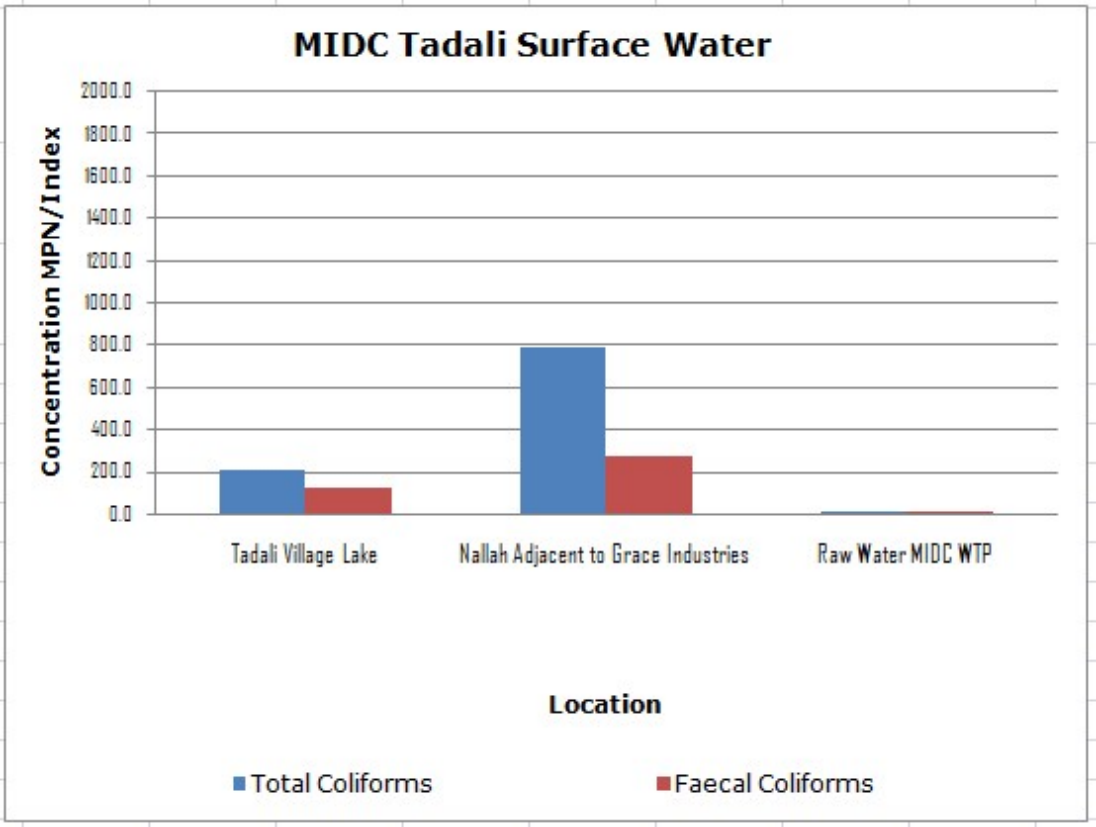
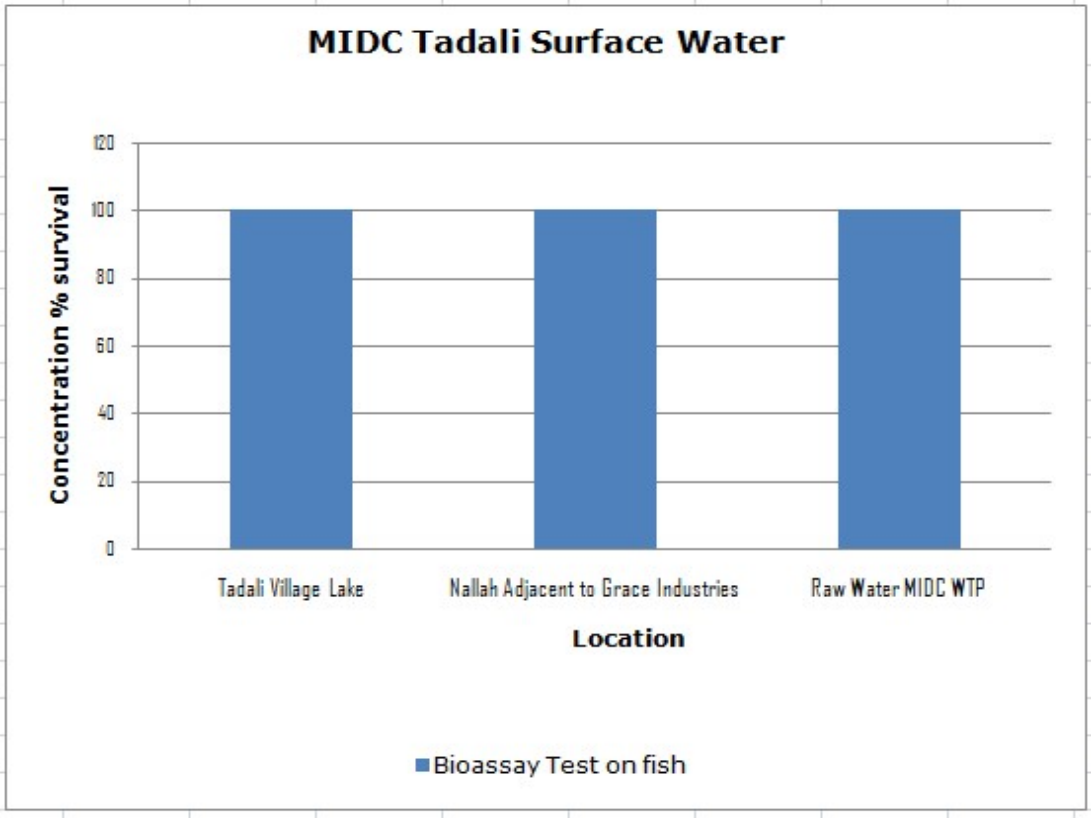
1800.0
1600.0
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
Nallah Dp. Mahindhari Industry
Gangangiri Village, Bridge
Dhanora Bridge
Location
Total Coliforms
Faecal Coliforms

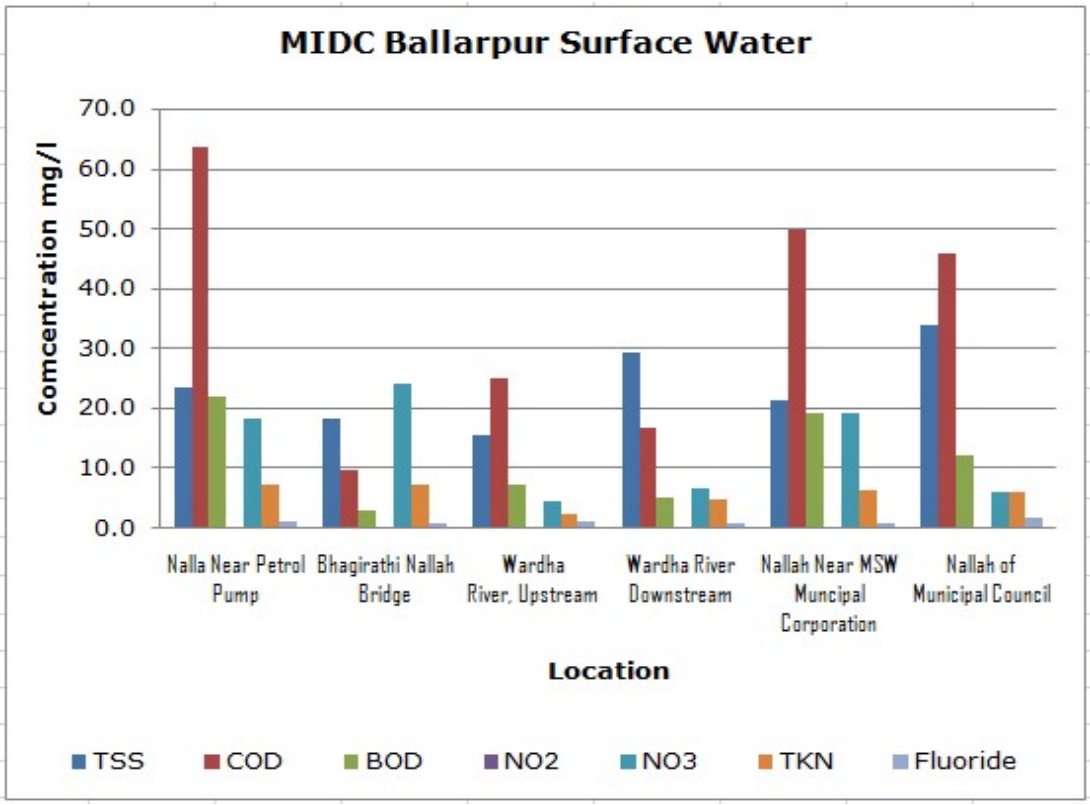

MIDC Chandrapur Surface Water
Concentration % survival
120
100
80
60
40
20
0
Nallah Dp. Mahindhari Industry
Gangangiri Village, Bridge
Dhanora Bridge
Location
Bioassay Test on fish

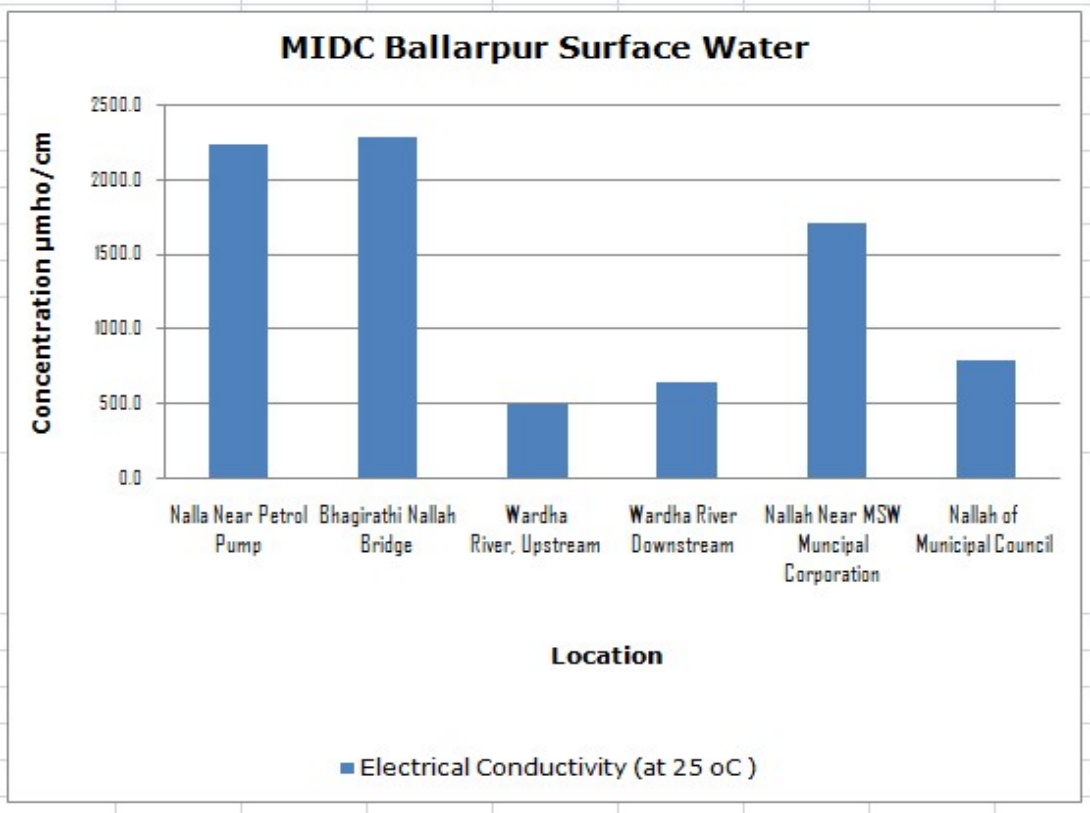

MIDC Tadali Surface Water
Comcentration mg/l
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Tadali Village Lake
Nallah Adjacent to Grace Industries
Raw Water MIDC WTP
Location
TSS
COD
BOD
NO2
NO3
TKN
Fluoride

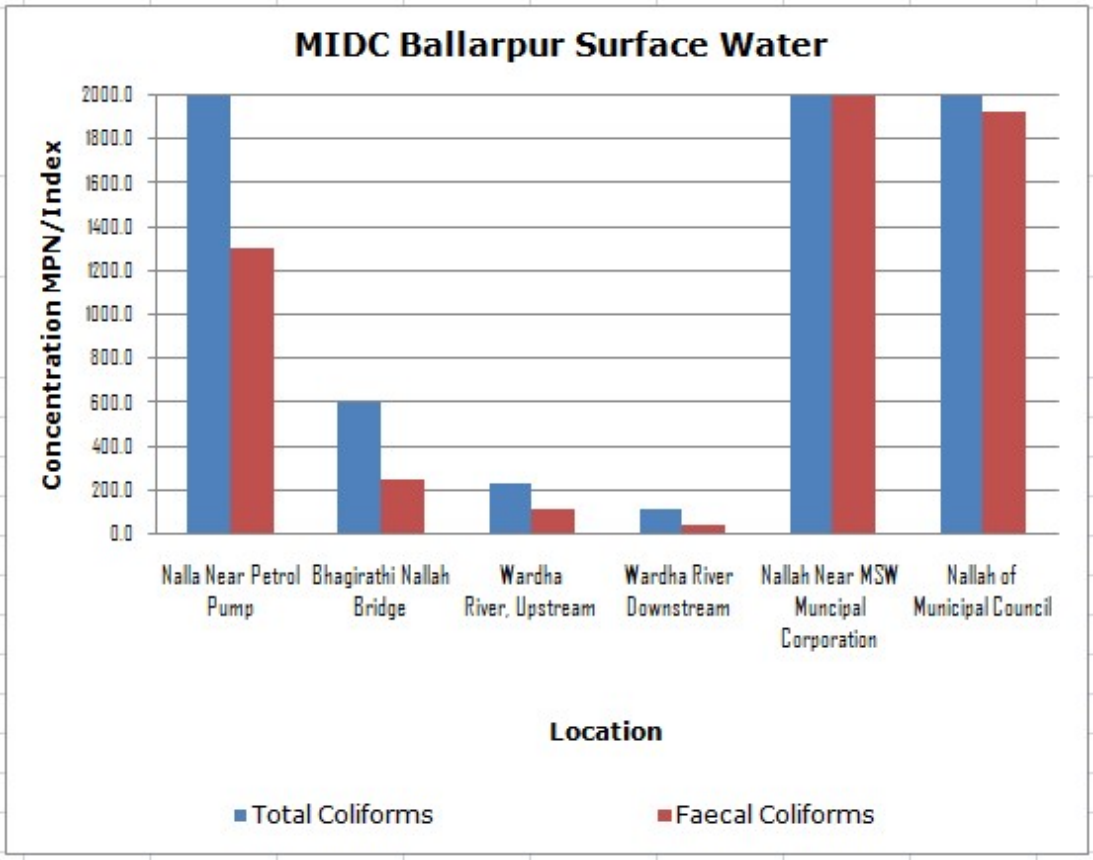

MIDC Tadali Surface Water
Concentration µmho/cm
3000.0
2500.0
2000.0
1500.0
1000.0
500.0
0.0
Tadali Village Lake
Nallah Adjacent to Grace Industries
Raw Water MIDC WTP
Location
Electrical Conductivity (at 25 oC)

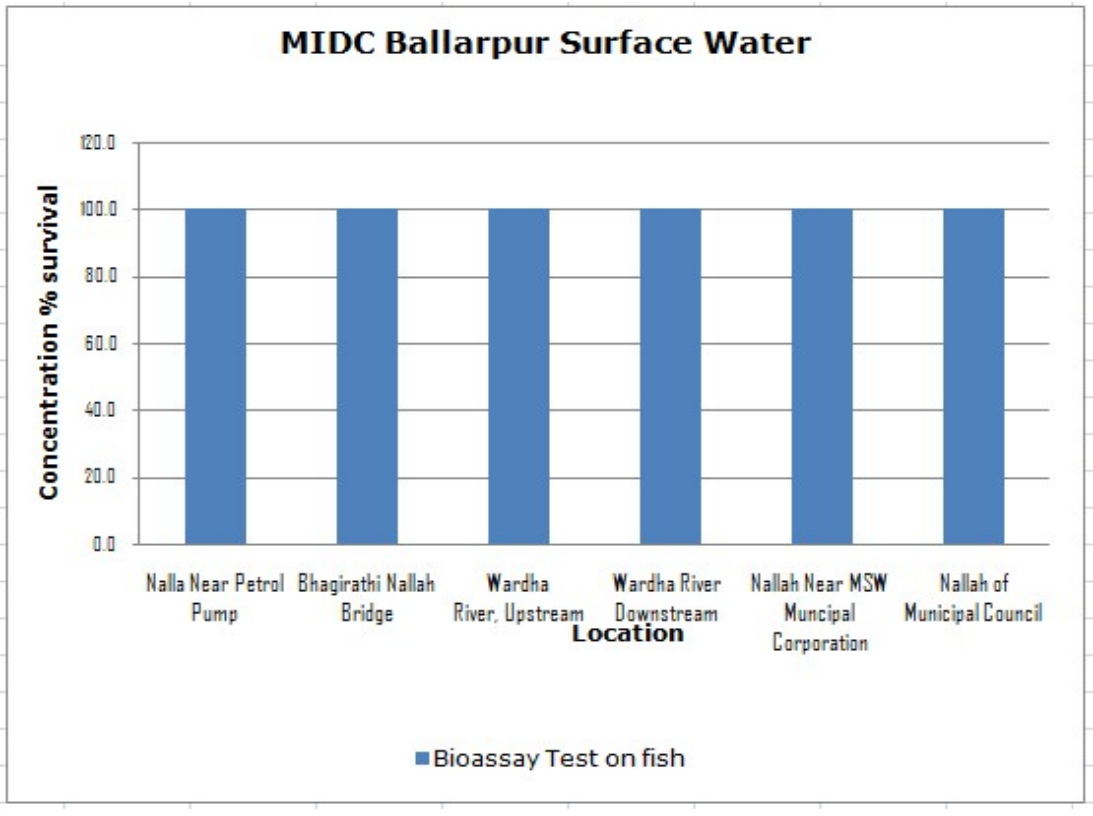

MIDC Tadali Surface Water
Concentration MPN/Index
2000.0
1800.0
1600.0
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
Tadali Village Lake
Nallah Adjacent to Grace Industries
Raw Water MIDC WTP
Location
Total Coliforms
Faecal Coliforms

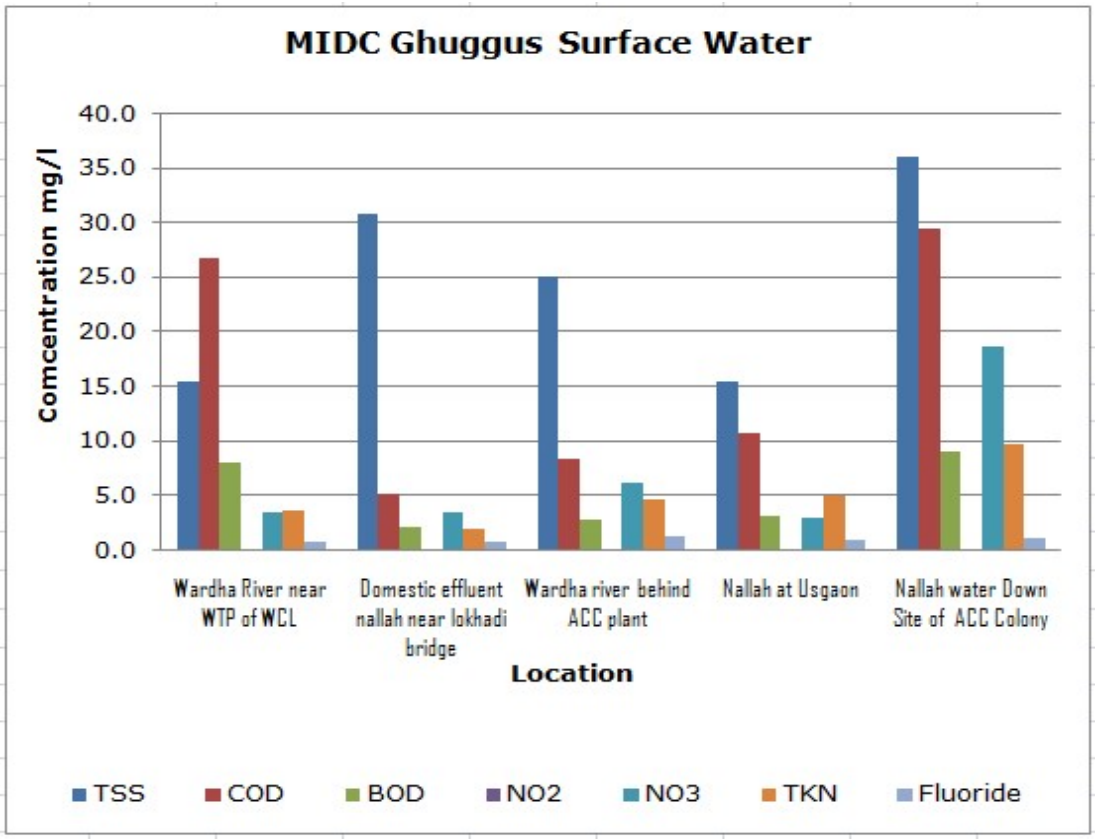

MIDC Tadali Surface Water
Concentration % survival
120
100
80
60
40
20
0
Tadali Village Lake
Nallah Adjacent to Grace Industries
Raw Water MIDC WTP
Location
Bioassay Test on fish

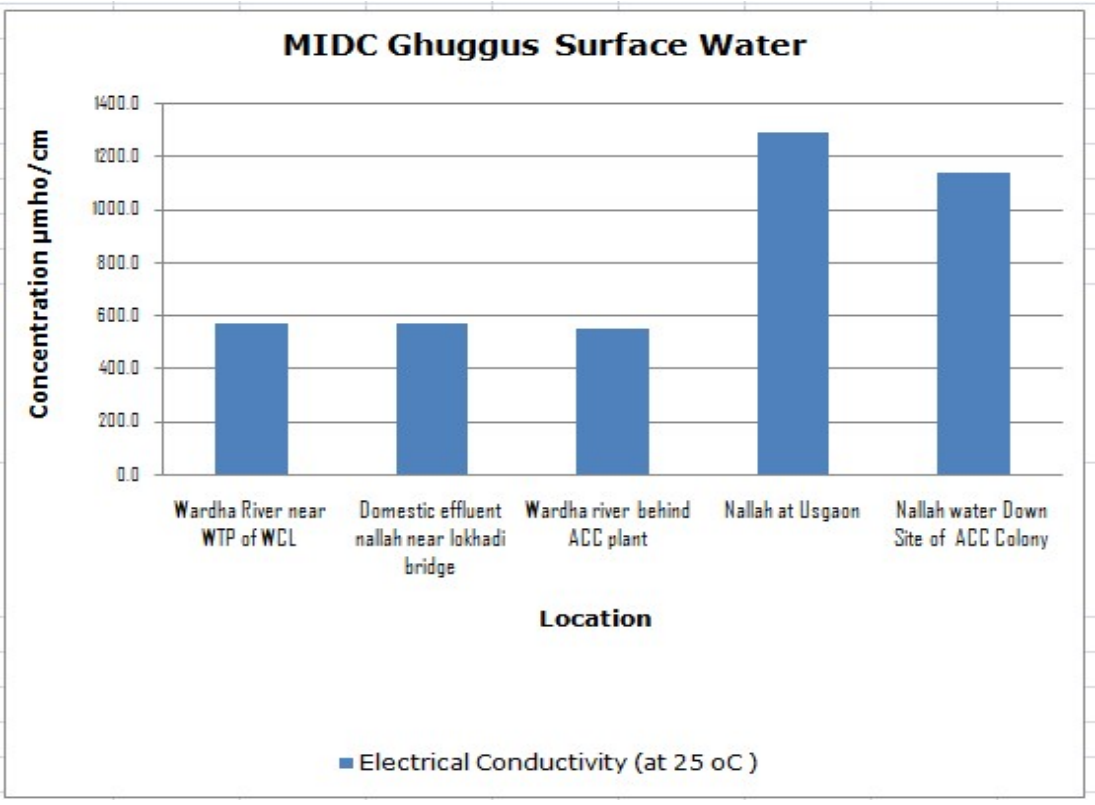

MIDC Ballarpur Surface Water
Comcentration mg/l
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Nalla Near Petrol Pump
Bhagirathi Nallah Bridge
Wardha River, Upstream
Wardha River Downstream
Nallah Near MSW Muncipal Corporation
Nallah of Municipal Council
Location
TSS
COD
BOD
NO2
NO3
TKN
Fluoride

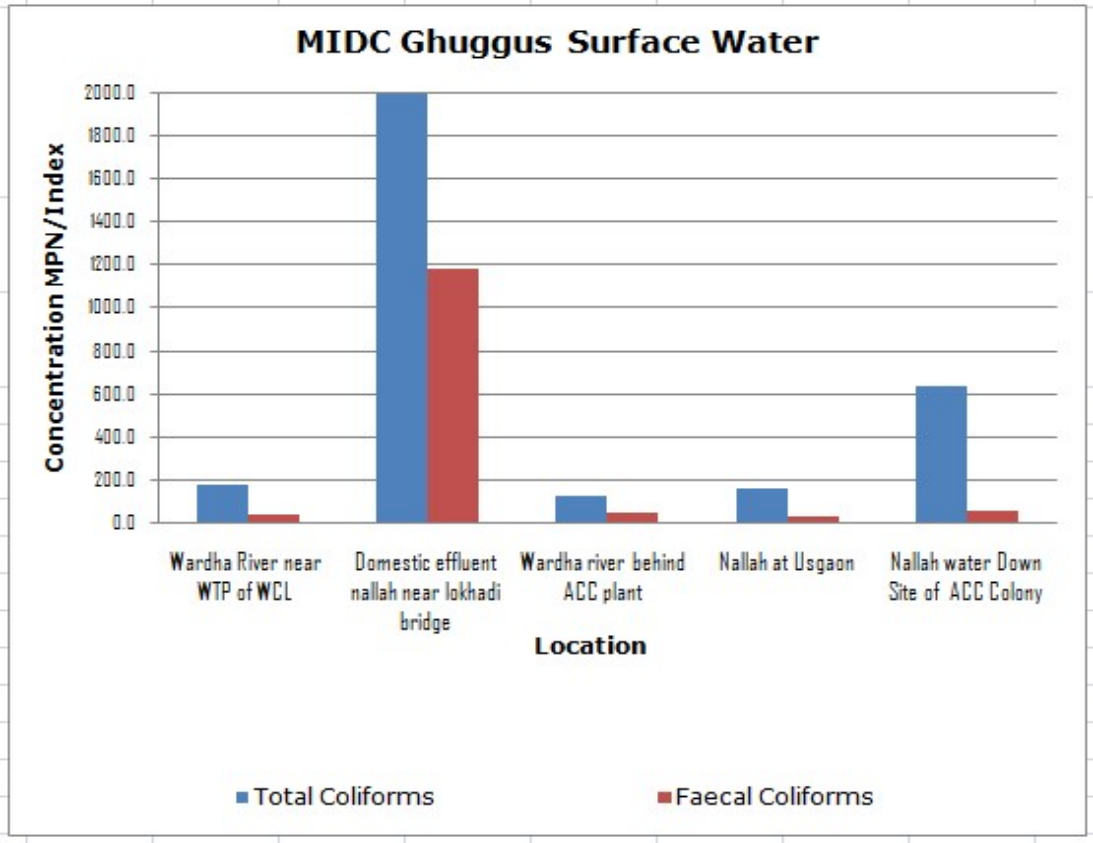

MIDC Ballarpur Surface Water
Concentration µmho/cm
2500.0
2000.0
1500.0
1000.0
500.0
0.0
Nalla Near Petrol Pump
Bhagirathi Nallah Bridge
Wardha River, Upstream
Wardha River Downstream
Nallah Near MSW Muncipal Corporation
Nallah of Municipal Council
Location
Electrical Conductivity (at 25 oC)

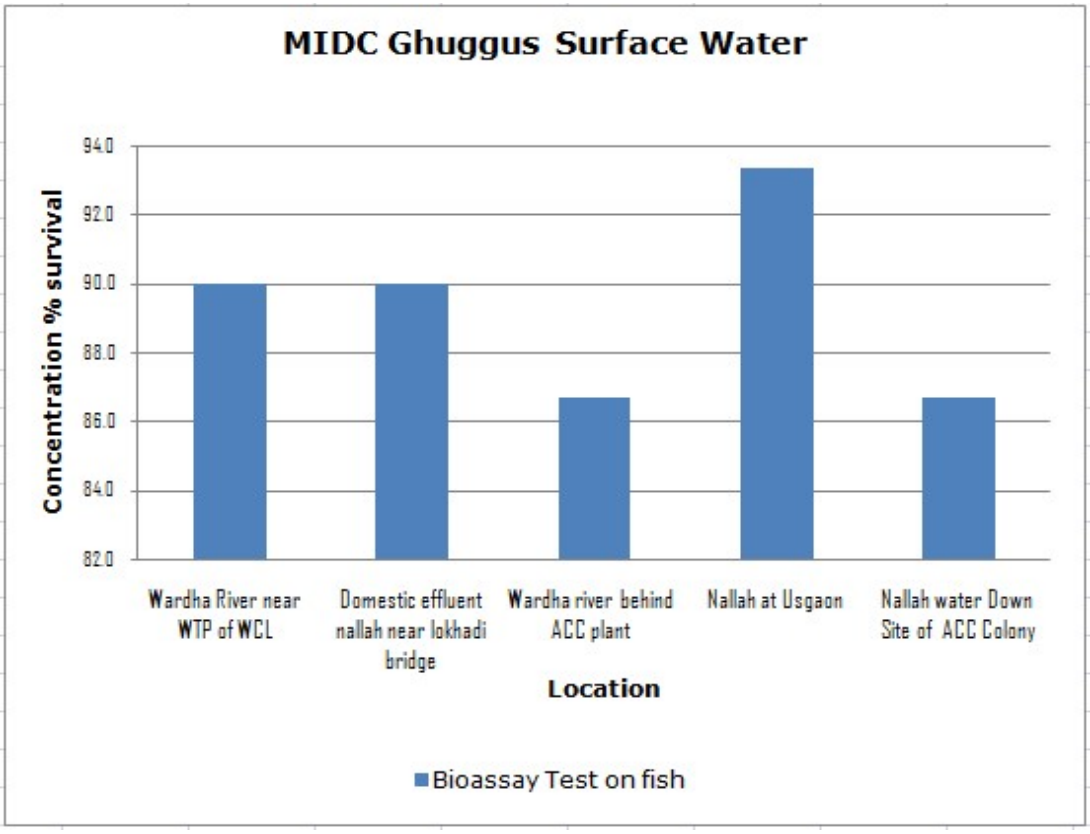

MIDC Ballarpur Surface Water
Concentration MPN/Index
2000.0
1800.0
1600.0
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
Nalla Near Petrol Pump
Bhagirathi Nallah Bridge
Wardha River, Upstream
Wardha River Downstream
Nallah Near MSW Muncipal Corporation
Nallah of Municipal Council
Location
Total Coliforms
Faecal Coliforms


MIDC Ballarpur Surface Water
Concentration % survival
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Nalla Near Petrol Pump
Bhagirathi Nallah Bridge
Wardha River, Upstream
Wardha River Downstream
Nallah Near MSW Muncipal Corporation
Nallah of Municipal Council
Location
Bioassay Test on fish


MIDC Ghuggus Surface Water
Comcentration mg/l
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Wardha River near WTP of WCL
Domestic effluent nallah near lokhadi bridge
Wardha river behind ACC plant
Nallah at Usgaon
Nallah water Down Site of ACC Colony
Location
TSS
COD
BOD
NO2
NO3
TKN
Fluoride


MIDC Ghuggus Surface Water
Concentration µmho/cm
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
Wardha River near WTP of WCL
Domestic effluent nallah near lokhadi bridge
Wardha river behind ACC plant
Nallah at Usgaon
Nallah water Down Site of ACC Colony
Location
Electrical Conductivity (at 25 oC)


MIDC Ghuggus Surface Water
Concentration MPN/Index
2000.0
1800.0
1600.0
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
Wardha River near WTP of WCL
Domestic effluent nallah near lokhadi bridge
Wardha river behind ACC plant
Nallah at Usgaon
Nallah water Down Site of ACC Colony
Location
Total Coliforms
Faecal Coliforms


MIDC Ghuggus Surface Water
Concentration % survival
94.0
92.0
90.0
88.0
86.0
84.0
82.0
Wardha River near WTP of WCL
Domestic effluent nallah near lokhadi bridge
Wardha river behind ACC plant
Nallah at Usgaon
Nallah water Down Site of ACC Colony
Location
Bioassay Test on fish

4.4 Ground Water Quality:

Location: Dugwell Water Gagangiri Village (MIDC Chandrapur)

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.57	7.25	7.96
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	12	12	22
Chemical Oxygen Demand	mg/L		5	5	5
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		2	2	2
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	906	612	688
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		1.17	1.07	1.65
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	1.17	1.07	1.65
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		1.21	1.05	0.59
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		1.55	1.92	2.44
Total Coliforms	MPN index/ 100 mL		49	49	79
Faecal Coliforms	MPN index/ 100 mL		17	33	27
Total Phosphorous (as P)	mg/L	**0.3**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	BDL	BDL	BDL
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		0.073	BDL	BDL
Vanadium (as V)	mg/L		BDL	BDL	BDL
Selenium (as Se)	mg/L		0.011	0.006	BDL
Boron (as B)	mg/L		0.222	BDL	BDL
Total Nitrogen	mg/L		0.25	3.43	4.05
Bioassay Test on fish	% survival		100	100	100

Location: Hand Pump Water from Mhada Colony (MIDC Chandrapur)

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
pH	-	**6.5-9.0**	6.14	6.81	7.37
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	6	8	12
Chemical Oxygen Demand	mg/L		8	BDL	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		2	BDL	1
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1510	668	1361
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		1.13	1.05	19
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	1.13	1.05	19
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		1	2.4	1.8
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		5.46	3.03	7.01
Total Coliforms	MPN index/ 100 mL		1.6 X 10^4	BDL	130
Faecal Coliforms	MPN index/ 100 mL		5.4 X 10^3	BDL	49
Total Phosphorous (as P)	mg/L	**0.3**	BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	1.23	3.13	4.03
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Zinc (as Zn)	mg/L	**300**	0.128	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	0.002	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		0.154	BDL	BDL
Vanadium (as V)	mg/L		BDL	BDL	BDL
Selenium (as Se)	mg/L		BDL	BDL	BDL
Boron (as B)	mg/L		0.224	0.309	0.329
Total Nitrogen	mg/L		1.48	3.36	8.21
Bioassay Test on fish	% survival		100	100	100

Location: Hand Pump Water from Datal Gram Panchayat (MIDC Chandrapur)

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.68	7.02	8.23
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	BDL	6	19

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	**Round-2 (20.02.2020)**	**Round-3 (22.02.2020)**
Chemical Oxygen Demand	mg/L		5	BDL	5
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		2	BDL	2
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1829	813	1301
Nitrite Nitrogen (as NO_2)	mg/L		0.03	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		32	1.4	38.1
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	32	1.4	38.1
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		1.1	0.99	1.42
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		4.74	6.18	2.21
Total Coliforms	MPN index/ 100 mL		240	4.5	34
Faecal Coliforms	MPN index/ 100 mL		130	BDL	27
Total Phosphorous (as P)	mg/L	**0.3**	BDL	0.2	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	19.3	4.36	4.26
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	0.128	0.109	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (18.02.2020)	Round-2 (20.02.2020)	Round-3 (22.02.2020)
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		BDL	BDL	BDL
Vanadium (as V)	mg/L		BDL	BDL	BDL
Selenium (as Se)	mg/L		0.012	BDL	BDL
Boron (as B)	mg/L		0.393	0.347	0.342
Total Nitrogen	mg/L		26.3	4.66	12.6
Bioassay Test on fish	% survival		100	100	100

Location: Borewell Water, Yerur Village (MIDC Tadali)

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Colour	Hazen		1	1	3
Smell	-		Agreeable	Agreeable	Disagreeable
pH	-	**6.5-9.0**	8.32	7.42	7.48
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	20	6	12
Chemical Oxygen Demand	mg/L		21	9	9
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		8	2	3

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	1823	1048	2250
Nitrite Nitrogen (as NO_2)	mg/L		1.57	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		6.38	54.2	42.5
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	7.95	54.2	42.5
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		0.6	1.34	1.44
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		1.36	0.83	3.79
Total Coliforms	MPN index/ 100 mL		540	1600	79
Faecal Coliforms	MPN index/ 100 mL		130	920	79
Total Phosphorous (as P)	mg/L	**0.3**	BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	7.3	1	6.72
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	0.2	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	0.327	0.311
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		0.053	0.028	BDL
Iron (as Fe)	mg/L		0.219	0.084	BDL
Vanadium (as V)	mg/L		BDL	BDL	BDL
Selenium (as Se)	mg/L		0.01	0.017	0.01
Boron (as B)	mg/L		BDL	0.632	0.459
Total Nitrogen	mg/L		9.2	17.6	16.07
Bioassay Test on fish	% survival		100	100	100

Location: Dugwell Water near Tadali Lake & Janata School (MIDC Tadali)

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Colour	Hazen		1	1	7
Smell	-		Agreeable	Agreeable	Disagreeable
pH	-	**6.5-9.0**	8.09	7.36	7.19
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	6	14	20
Chemical Oxygen Demand	mg/L		BDL	6	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		BDL	2	BDL
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	465	607	812
Nitrite Nitrogen (as NO_2)	mg/L		BDL	0.17	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Nitrate Nitrogen (as NO_3)	mg/L		5.04	4.82	39.1
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	5.04	4.82	39.3
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		1	0.52	0.8
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		0.73	0.93	5.02
Total Coliforms	MPN index/ 100 mL		23	22	BDL
Faecal Coliforms	MPN index/ 100 mL		13	17	BDL
Total Phosphorous (as P)	mg/L	**0.3**	BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	2.12	42.5	11
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	0.011	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Mercury (as Hg)	mg/L	1	BDL	BDL	BDL
Manganese (as Mn)	mg/L		0.102	BDL	BDL
Iron (as Fe)	mg/L		BDL	BDL	BDL
Vanadium (as V)	mg/L		0.017	BDL	BDL
Selenium (as Se)	mg/L		0.012	0.008	BDL
Boron (as B)	mg/L		0.204	0.108	BDL
Total Nitrogen	mg/L		3.22	43.5	19.6
Bioassay Test on fish	% survival		100	100	100

Location: Dugwell Water at Yerur Village (MIDC Tadali)

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Colour	Hazen		1	1	6
Smell	-		Agreeable	Agreeable	Disagreeable
pH	-	6.5-9.0	7.83	7.38	7.42
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	100	6	9	10
Chemical Oxygen Demand	mg/L		12	11	BDL
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		5	3	BDL
Electrical Conductivity (at 25°C)	µmho/cm	4000	1652	613	1800
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	0.17
Nitrate Nitrogen (as NO_3)	mg/L		32.4	31.6	41.7
(NO_2 + NO_3)-Nitrogen	mg/L	15	32.4	31.6	41.87
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		0.94	1.34	0.81
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		3.07	1.09	2.88
Total Coliforms	MPN index/ 100 mL		140	49	1600
Faecal Coliforms	MPN index/ 100 mL		39	49	540
Total Phosphorous (as P)	mg/L	**0.3**	BDL	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	8.6	3.6	5.82
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	BDL	BDL	BDL
Nickel (as Ni)	mg/L	**200**	BDL	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	BDL	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	BDL	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Vanadium (as V)	mg/L		0.011	BDL	BDL
Selenium (as Se)	mg/L		0.015	0.013	0.015
Boron (as B)	mg/L		0.336	0.339	0.351
Total Nitrogen	mg/L		15.7	10.5	15.04
Bioassay Test on fish	% survival		100	100	100

Location: Borewell Water, Gramin Rugnalaya (MIDC Ballarpur)

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.45	7.24	6.62
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	BDL	7	6
Chemical Oxygen Demand	mg/L		7	BDL	6
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		3	BDL	2
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	618	526	557
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		22.5	26	6.46
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	22.5	26	6.46
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		0.5	1	1.9

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		1.12	2.33	1.98
Total Coliforms	MPN index/ 100 mL		9.2×10^3	920	240
Faecal Coliforms	MPN index/ 100 mL		2.2×10^3	540	130
Total Phosphorous (as P)	mg/L	**0.3**	0.12	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	3	4.5	2.8
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	0.063	BDL	BDL
Nickel (as Ni)	mg/L	**200**	0.015	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	0.008	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	0.001	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		0.188	BDL	BDL
Vanadium (as V)	mg/L		BDL	BDL	BDL
Selenium (as Se)	mg/L		BDL	BDL	BDL
Boron (as B)	mg/L		BDL	BDL	BDL

Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Total Nitrogen	mg/L		7.95	10.2	4.22
Bioassay Test on fish	% survival		100	100	100

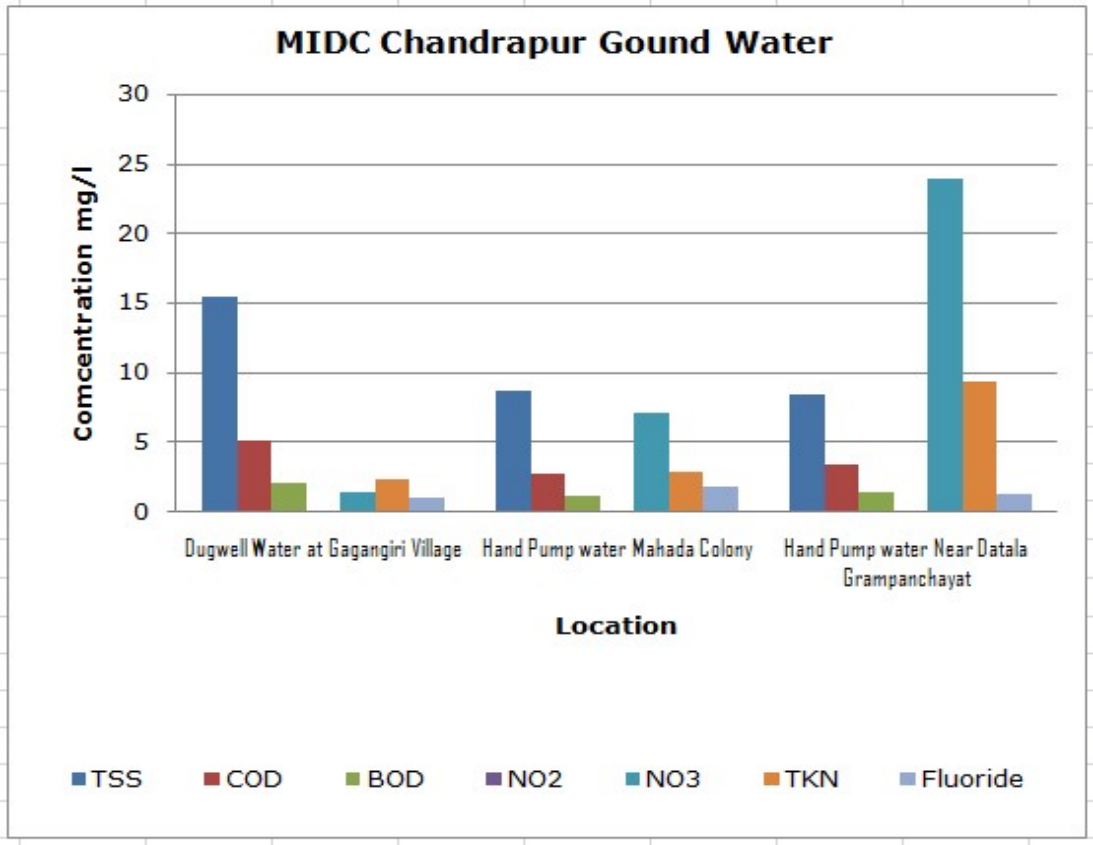
Location: Borewell Water, Gramin Rugnalaya (MIDC Ballarpur)

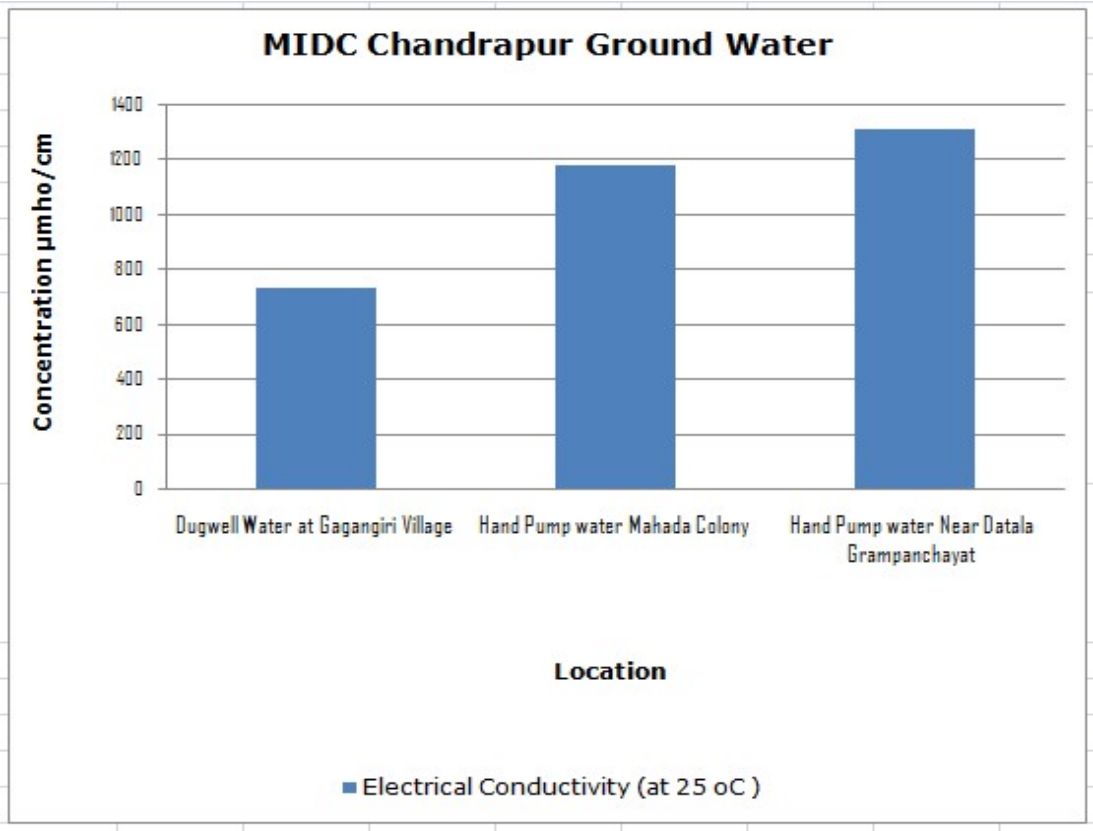
Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
Colour	Hazen		1	1	1
Smell	-		Agreeable	Agreeable	Agreeable
pH	-	**6.5-9.0**	7.45	7.24	6.62
Oil & Grease	mg/L		BDL	BDL	BDL
Suspended Solids	mg/L	**100**	BDL	7	6
Chemical Oxygen Demand	mg/L		7	BDL	6
Biochemical Oxygen Demand (3 days, 27°C)	mg/L		3	BDL	2
Electrical Conductivity (at 25°C)	µmho/cm	**4000**	618	526	557
Nitrite Nitrogen (as NO_2)	mg/L		BDL	BDL	BDL
Nitrate Nitrogen (as NO_3)	mg/L		22.5	26	6.46
(NO_2 + NO_3)-Nitrogen	mg/L	**15**	22.5	26	6.46
Free Ammonia (as NH_3-N)	mg/L		BDL	BDL	BDL
Total Residual Chlorine	mg/L		BDL	BDL	BDL
Cyanide (as CN)	mg/L		BDL	BDL	BDL
Fluoride (as F)	mg/L		0.5	1	1.9
Sulphide (as S^{2-})	mg/L		BDL	BDL	BDL
Dissolved Phosphate (as P)	mg/L		BDL	BDL	BDL
Sodium Absorption Ratio	-		1.12	2.33	1.98

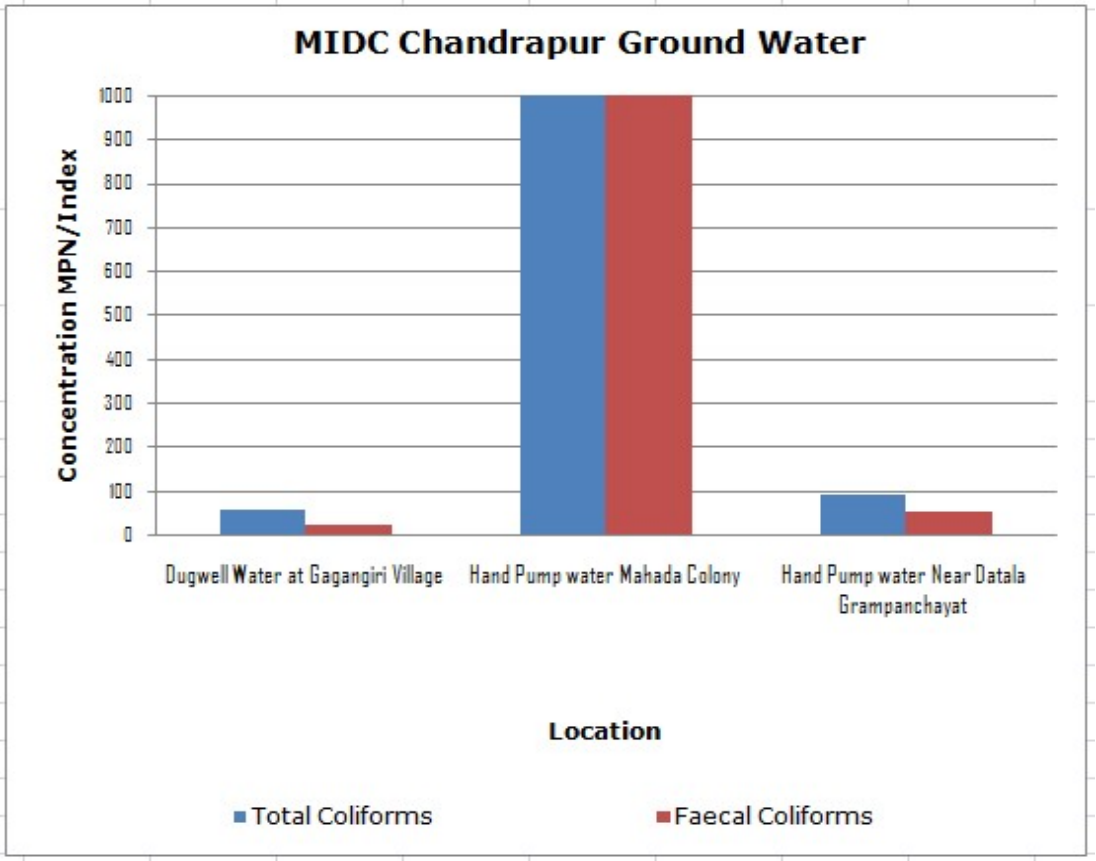
Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	**Round-2 (19.02.2020)**	**Round-3 (21.02.2020)**
Total Coliforms	MPN index/ 100 mL		9.2×10^3	920	240
Faecal Coliforms	MPN index/ 100 mL		2.2×10^3	540	130
Total Phosphorous (as P)	mg/L	**0.3**	0.12	BDL	BDL
Total Kjeldahl Nitrogen (as N)	mg/L	**3**	3	4.5	2.8
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	**1.5**	BDL	BDL	BDL
Phenols (as C_6H_5OH)	mg/L	**10**	BDL	BDL	BDL
Surface Active Agents (as MBAS)	mg/L	**200**	BDL	BDL	BDL
Organo Chlorine Pesticides					
Alachlor	µg/L		BDL	BDL	BDL
Atrazine	µg/L		BDL	BDL	BDL
Aldrin	µg/L		BDL	BDL	BDL
Dieldrin	µg/L		BDL	BDL	BDL
Alpha HCH	µg/L		BDL	BDL	BDL
Beta HCH	µg/L		BDL	BDL	BDL
Delta HCH	µg/L		BDL	BDL	BDL
Butachlor	µg/L		BDL	BDL	BDL
Chlorpyriphos	µg/L		BDL	BDL	BDL
p,p DDT	µg/L		BDL	BDL	BDL
o,p DDT	µg/L		BDL	BDL	BDL
p,p DDE	µg/L		BDL	BDL	BDL
o,p DDE	µg/L		BDL	BDL	BDL
p,p DDD	µg/L		BDL	BDL	BDL

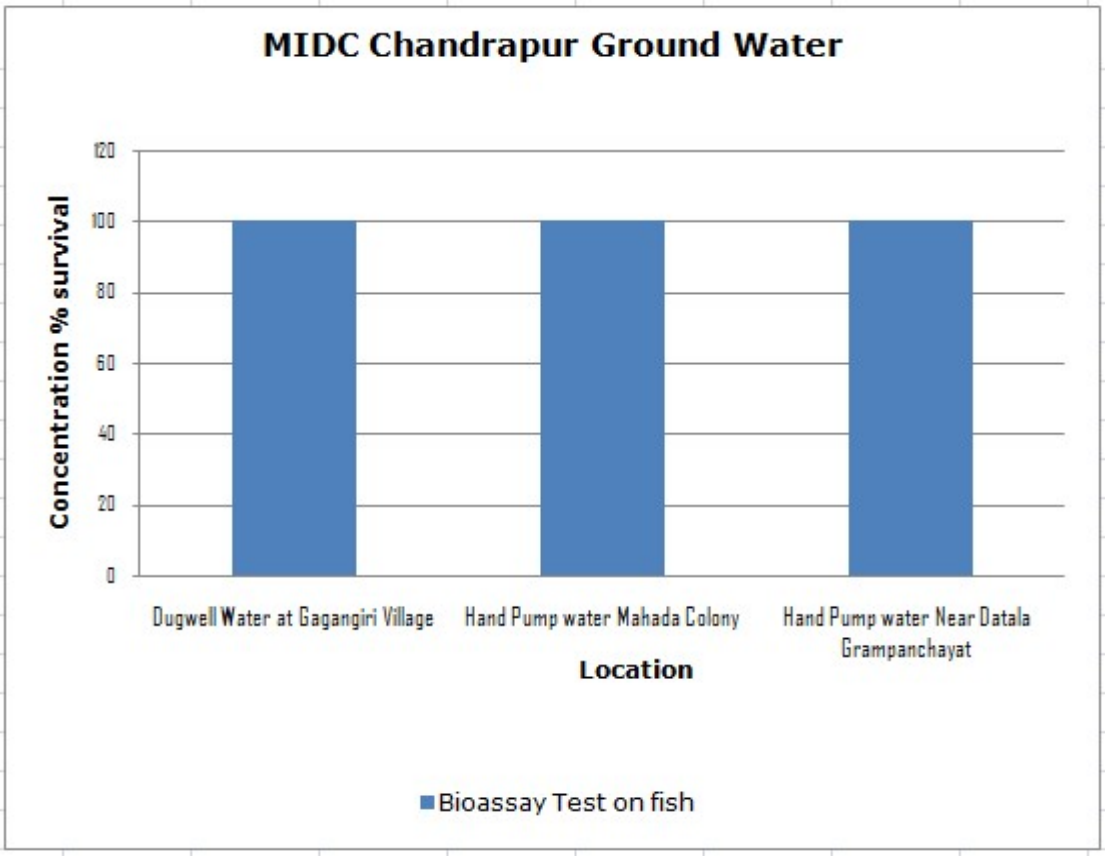
Parameters	Unit	Std. Limit	Results		
			Round-1 (17.02.2020)	Round-2 (19.02.2020)	Round-3 (21.02.2020)
o,p DDD	µg/L		BDL	BDL	BDL
Alpha Endosulfan	µg/L		BDL	BDL	BDL
Beta Endosulfan	µg/L		BDL	BDL	BDL
Endosulfan Sulphate	µg/L		BDL	BDL	BDL
Y HCH (Lindane)	µg/L		BDL	BDL	BDL
Polynuclear aromatic hydrocarbons (PAH)	µg/L	**0.2**	BDL	BDL	BDL
Polychlorinated Biphenyls (PCB)	µg/L	**0.02**	BDL	BDL	BDL
Zinc (as Zn)	mg/L	**300**	0.063	BDL	BDL
Nickel (as Ni)	mg/L	**200**	0.015	BDL	BDL
Copper (as Cu)	mg/L	**100**	BDL	BDL	BDL
Hexavalent Chromium (as Cr^{6+})	mg/L		BDL	BDL	BDL
Total Chromium (as Cr)	mg/L	**100**	BDL	BDL	BDL
Total Arsenic (as As)	mg/L	**100**	BDL	BDL	BDL
Lead (as Pb)	mg/L	**100**	BDL	0.008	BDL
Cadmium (as Cd)	mg/L	**5**	BDL	BDL	BDL
Mercury (as Hg)	mg/L	**1**	BDL	0.001	BDL
Manganese (as Mn)	mg/L		BDL	BDL	BDL
Iron (as Fe)	mg/L		0.188	BDL	BDL
Vanadium (as V)	mg/L		BDL	BDL	BDL
Selenium (as Se)	mg/L		BDL	BDL	BDL
Boron (as B)	mg/L		BDL	BDL	BDL
Total Nitrogen	mg/L		7.95	10.2	4.22
Bioassay Test on fish	% survival		100	100	100

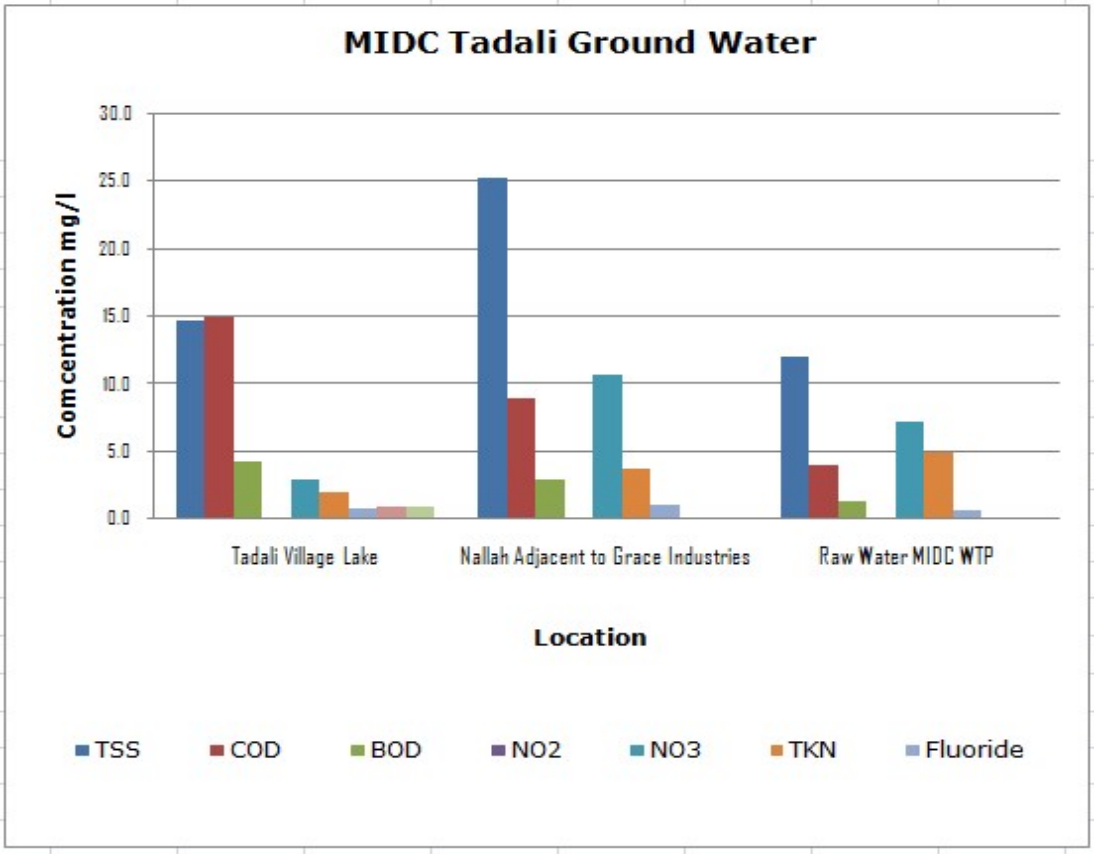
Graphs: Water/Waste Water Quality Monitoring for Chandrapur:

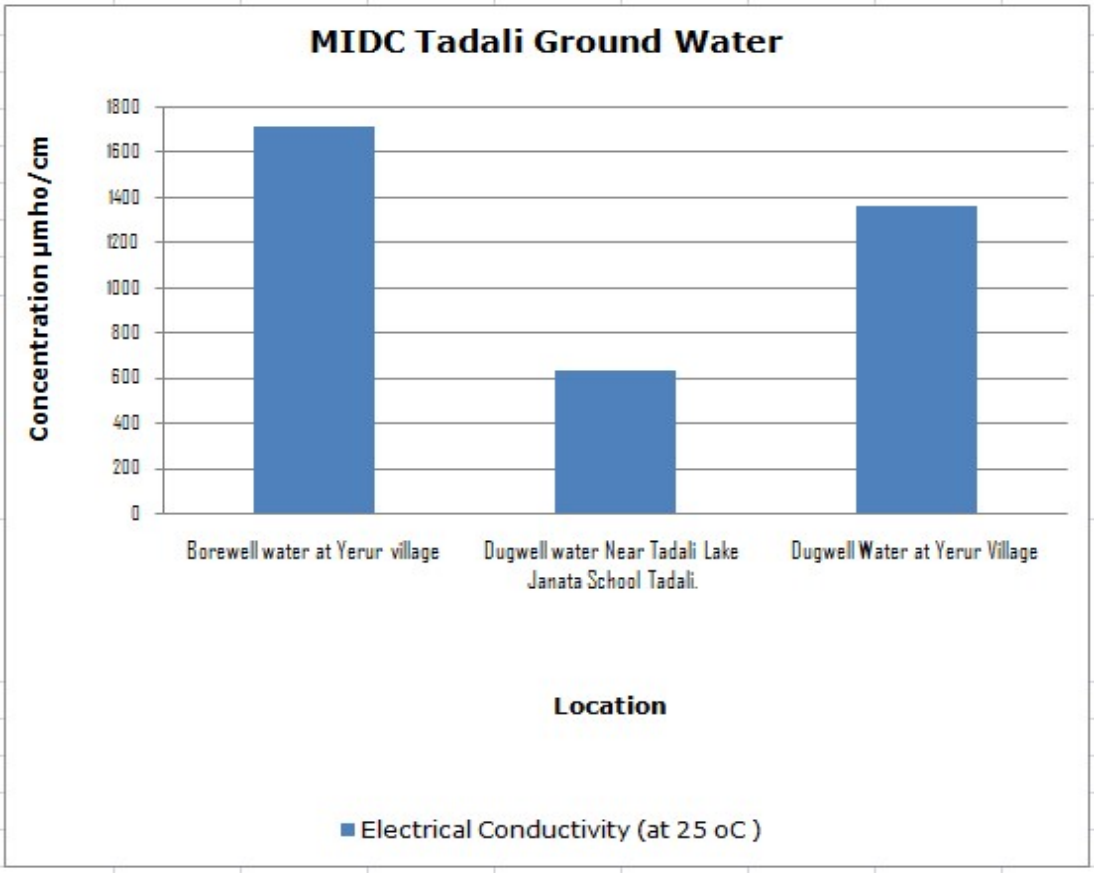


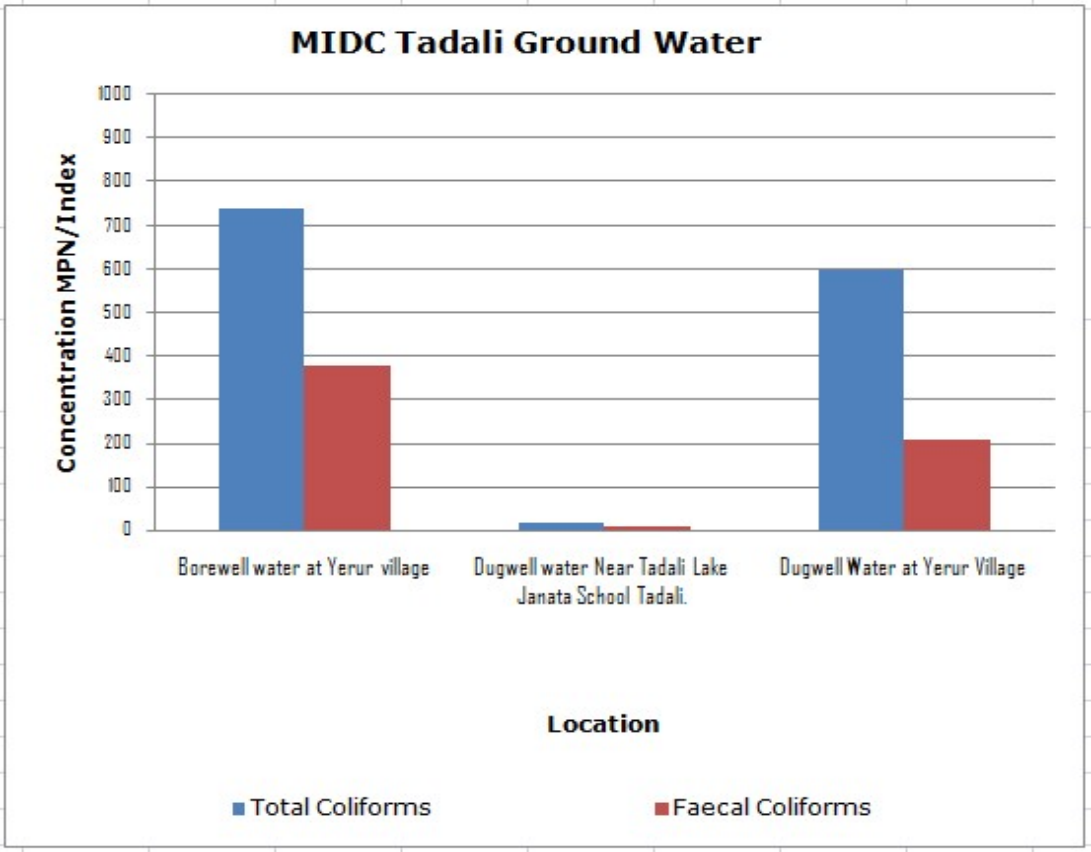


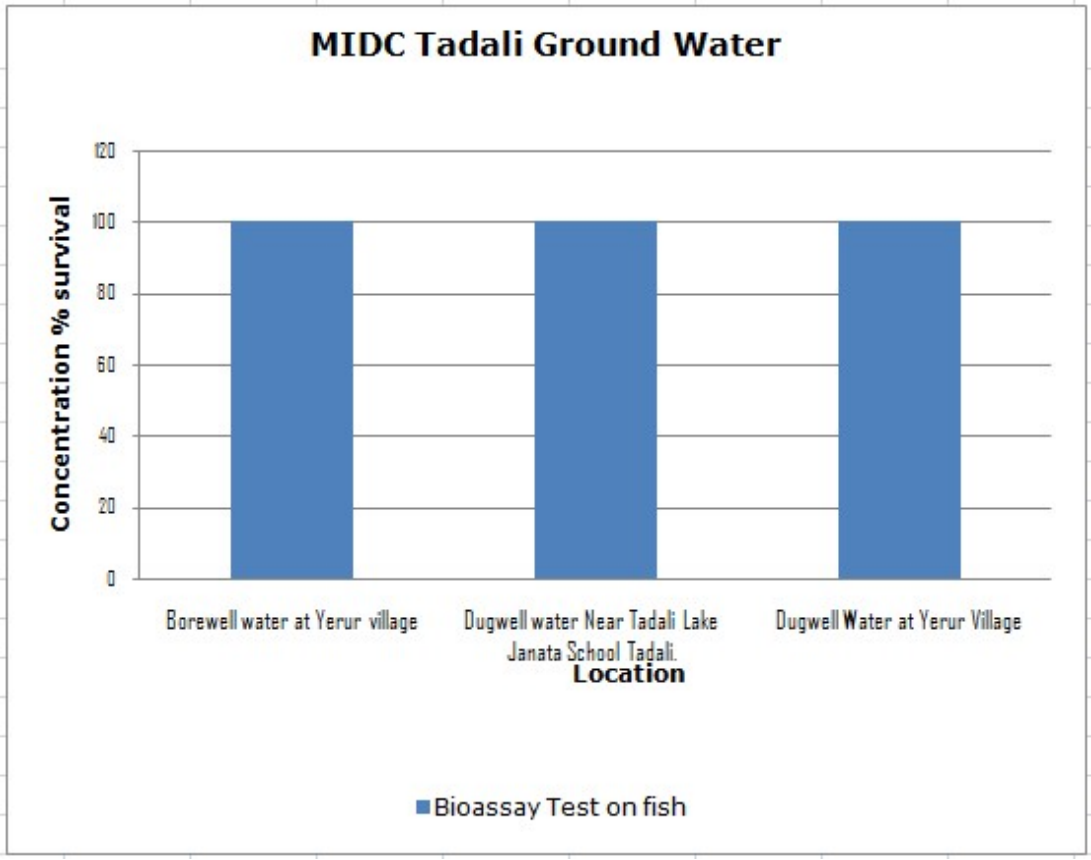

MIDC Chandrapur Ground Water
Concentration MPN/Index
1000
900
800
700
600
500
400
300
200
100
0
Dugwell Water at Gagangiri Village
Hand Pump water Mahada Colony
Hand Pump water Near Datala Grampanchayat
Location
Total Coliforms
Faecal Coliforms

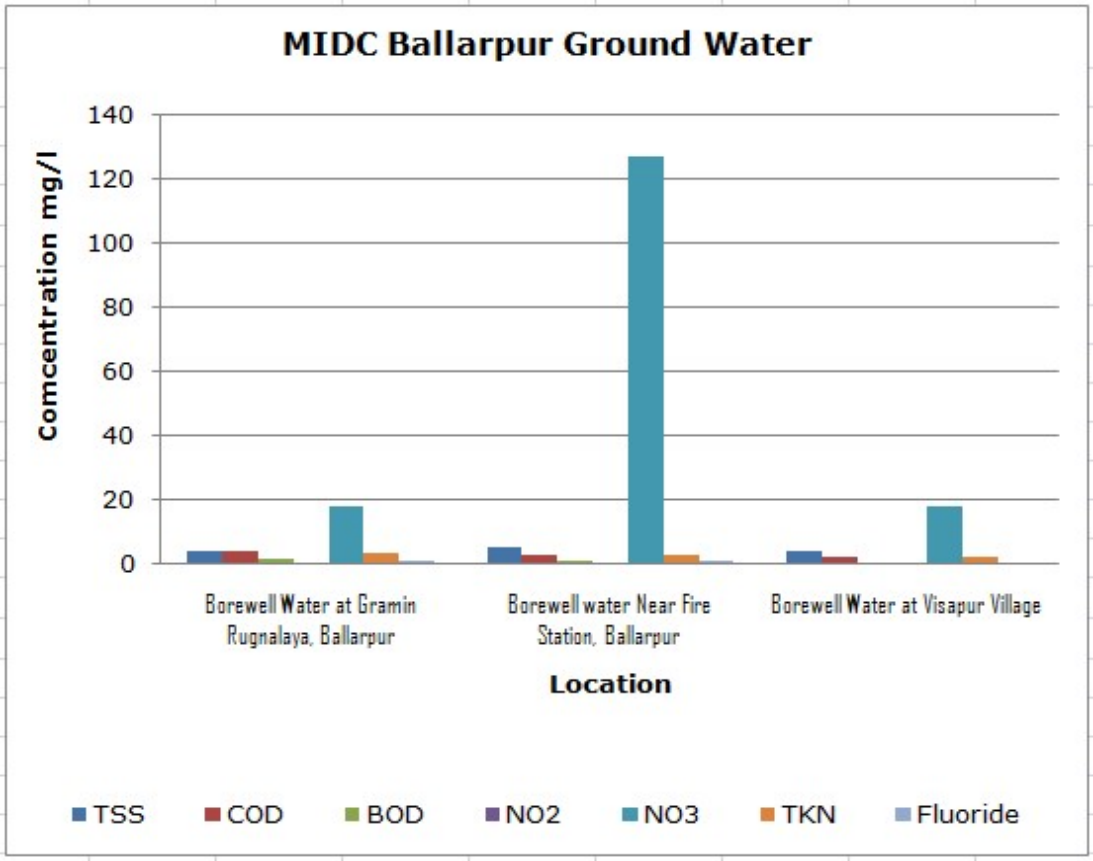

MIDC Chandrapur Ground Water
Concentration % survival
120
100
80
60
40
20
0
Dugwell Water at Gagangiri Village
Hand Pump water Mahada Colony
Hand Pump water Near Datala Grampanchayat
Location
Bioassay Test on fish

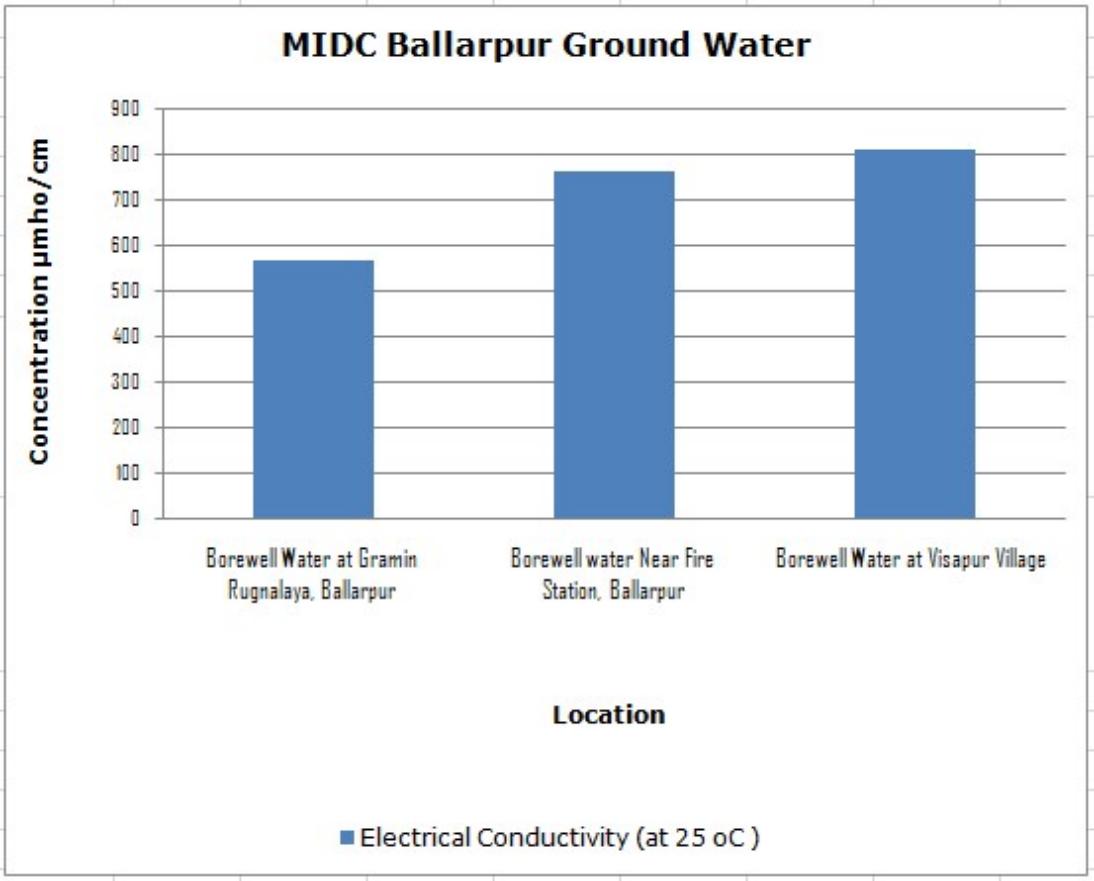

MIDC Tadali Ground Water
Comcentration mg/l
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Tadali Village Lake
Nallah Adjacent to Grace Industries
Raw Water MIDC WTP
Location
TSS
COD
BOD
NO2
NO3
TKN
Fluoride

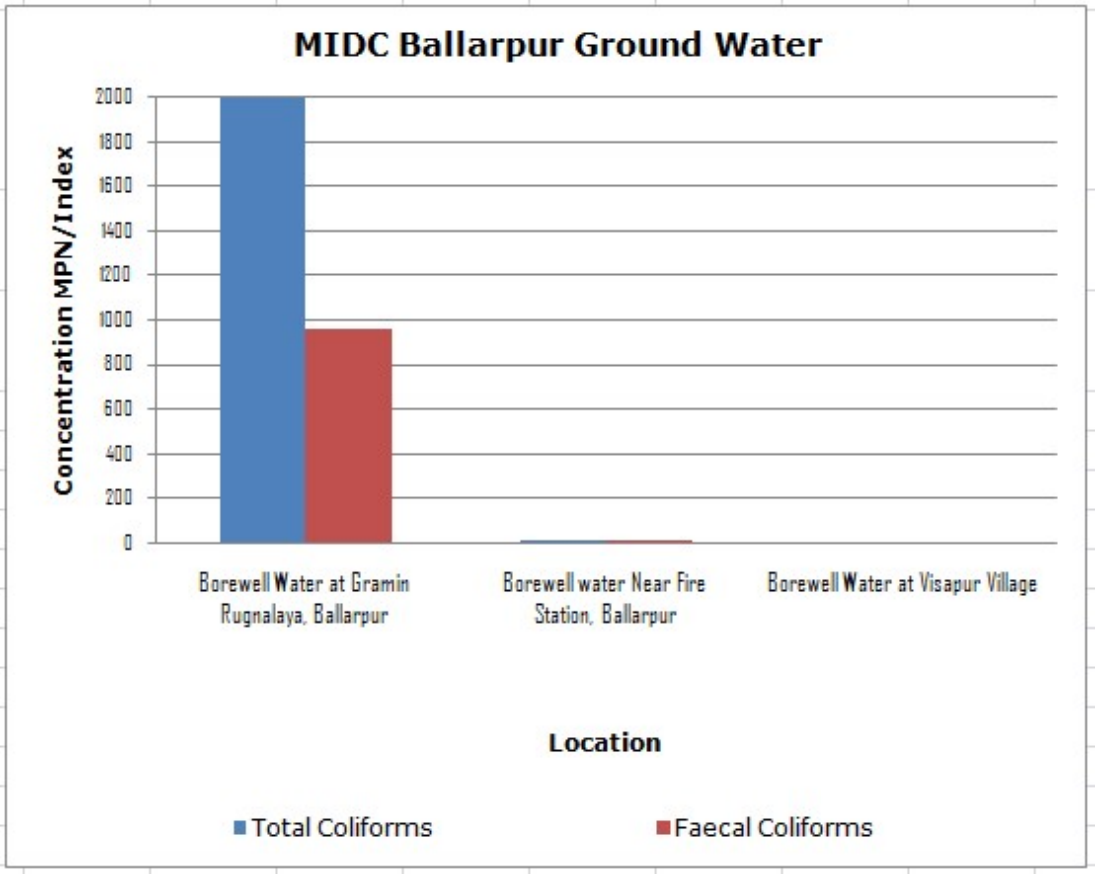

MIDC Tadali Ground Water
Concentration µmho/cm
1800
1600
1400
1200
1000
800
600
400
200
0
Borewell water at Yerur village
Dugwell water Near Tadali Lake Janata School Tadali.
Dugwell Water at Yerur Village
Location
Electrical Conductivity (at 25 oC)

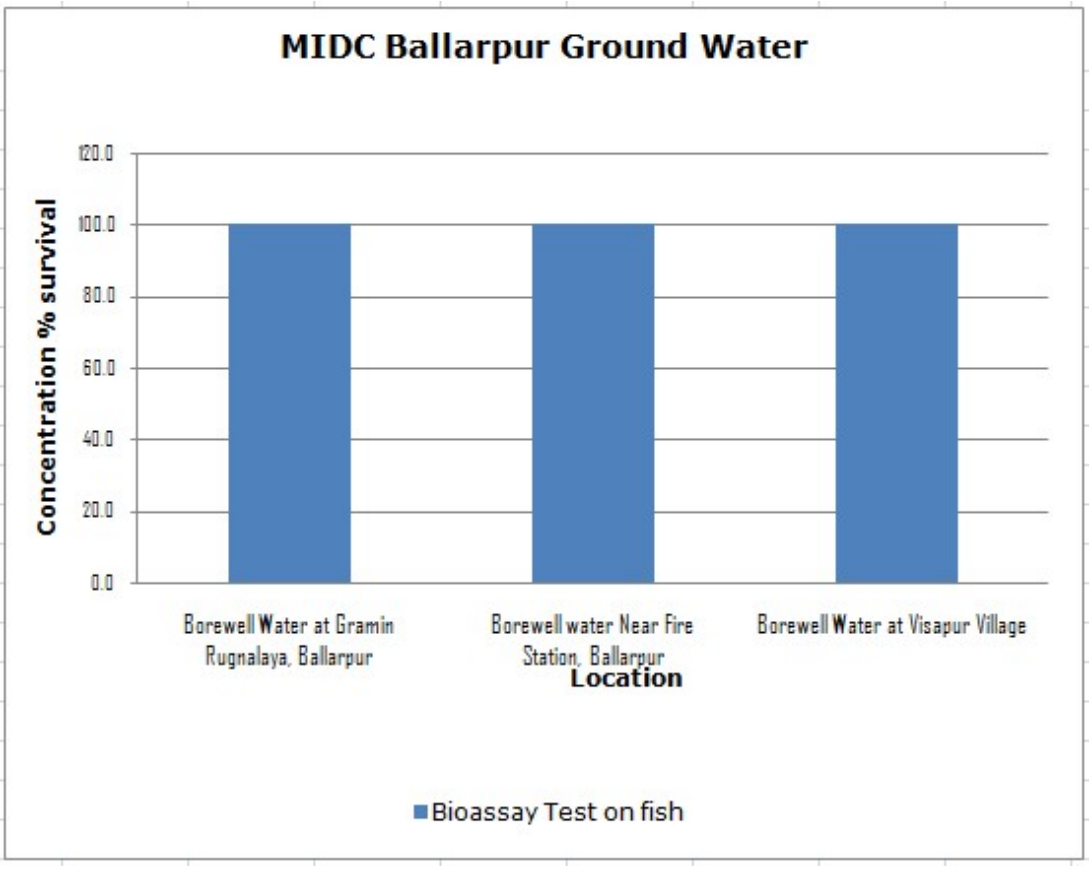

MIDC Tadali Ground Water
Concentration MPN/Index
1000
900
800
700
600
500
400
300
200
100
0
Borewell water at Yerur village
Dugwell water Near Tadali Lake Janata School Tadali.
Dugwell Water at Yerur Village
Location
Total Coliforms
Faecal Coliforms

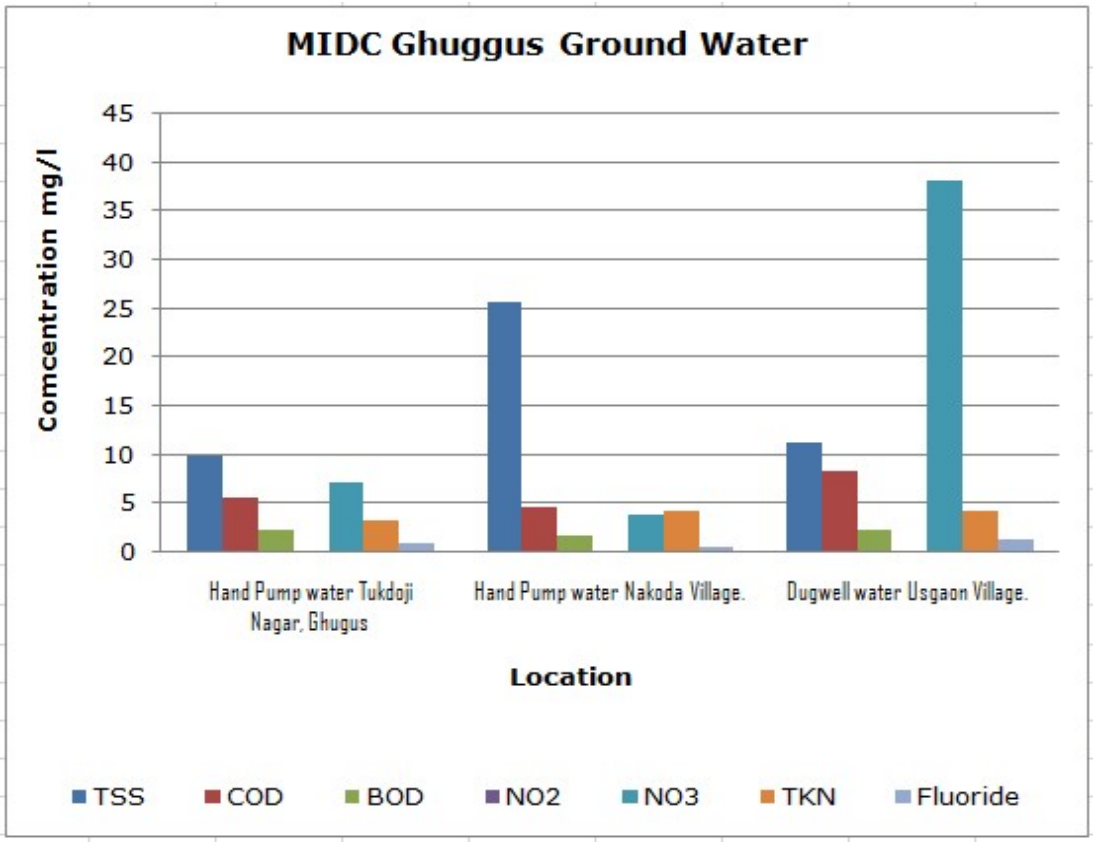

MIDC Tadali Ground Water
Concentration % survival
120
100
80
60
40
20
0
Borewell water at Yerur village
Dugwell water Near Tadali Lake Janata School Tadali.
Dugwell Water at Yerur Village
Location
Bioassay Test on fish

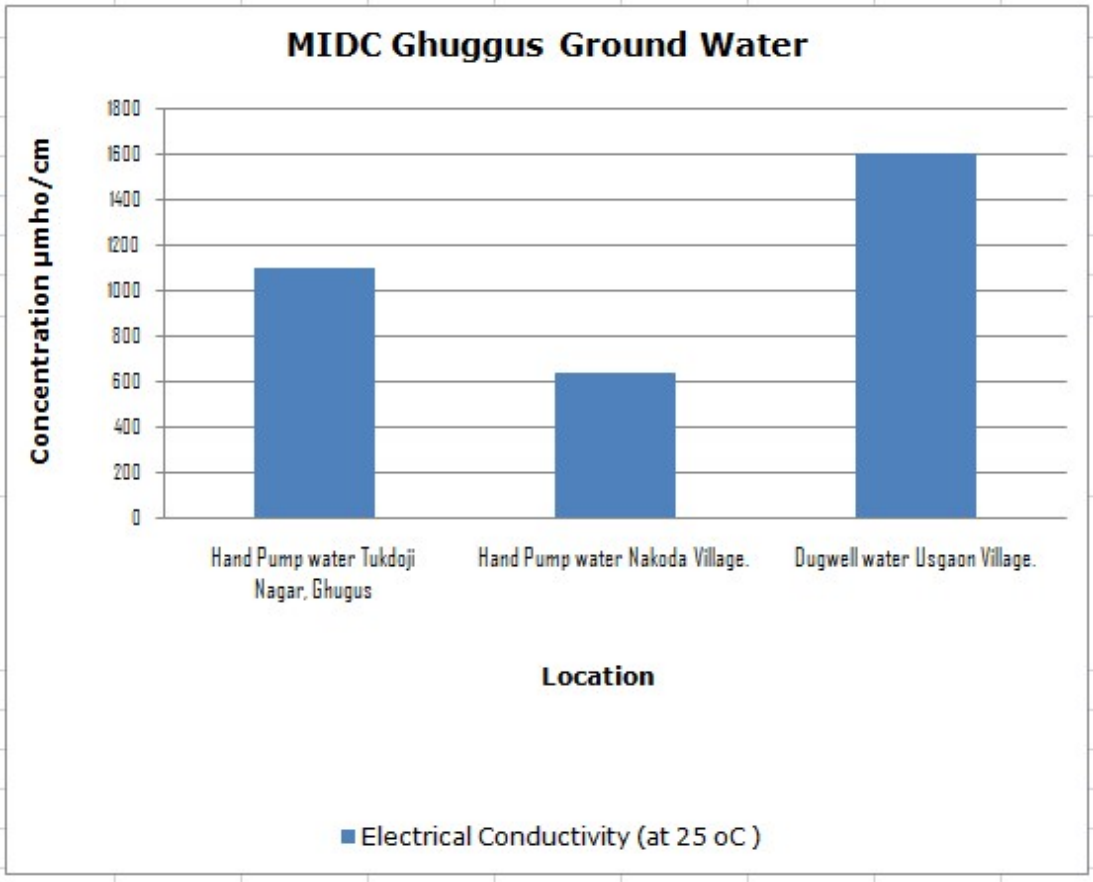

MIDC Ballarpur Ground Water
Comcentration mg/l
140
120
100
80
60
40
20
0
Borewell Water at Gramin Rugnalaya, Ballarpur
Borewell water Near Fire Station, Ballarpur
Borewell Water at Visapur Village
Location
TSS
COD
BOD
NO2
NO3
TKN
Fluoride

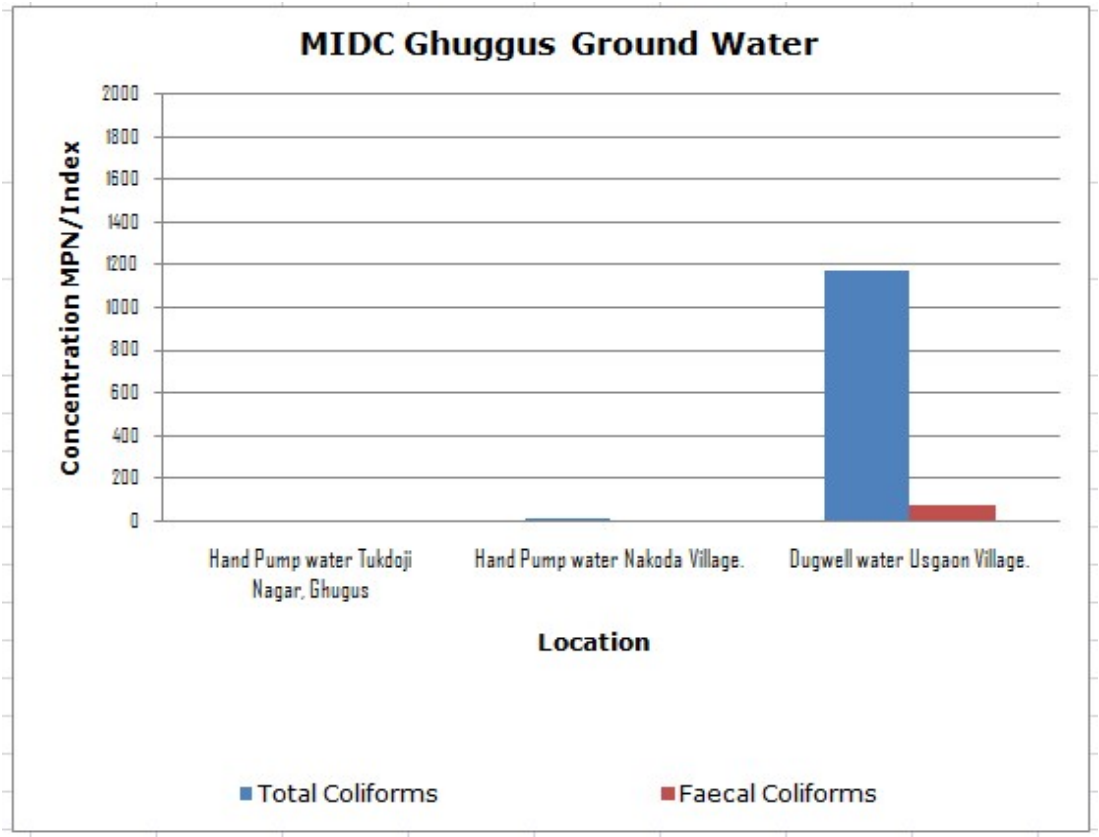

MIDC Ballarpur Ground Water
Concentration µmho/cm
900
800
700
600
500
400
300
200
100
0
Borewell Water at Gramin Rugnalaya, Ballarpur
Borewell water Near Fire Station, Ballarpur
Borewell Water at Visapur Village
Location
Electrical Conductivity (at 25 oC)

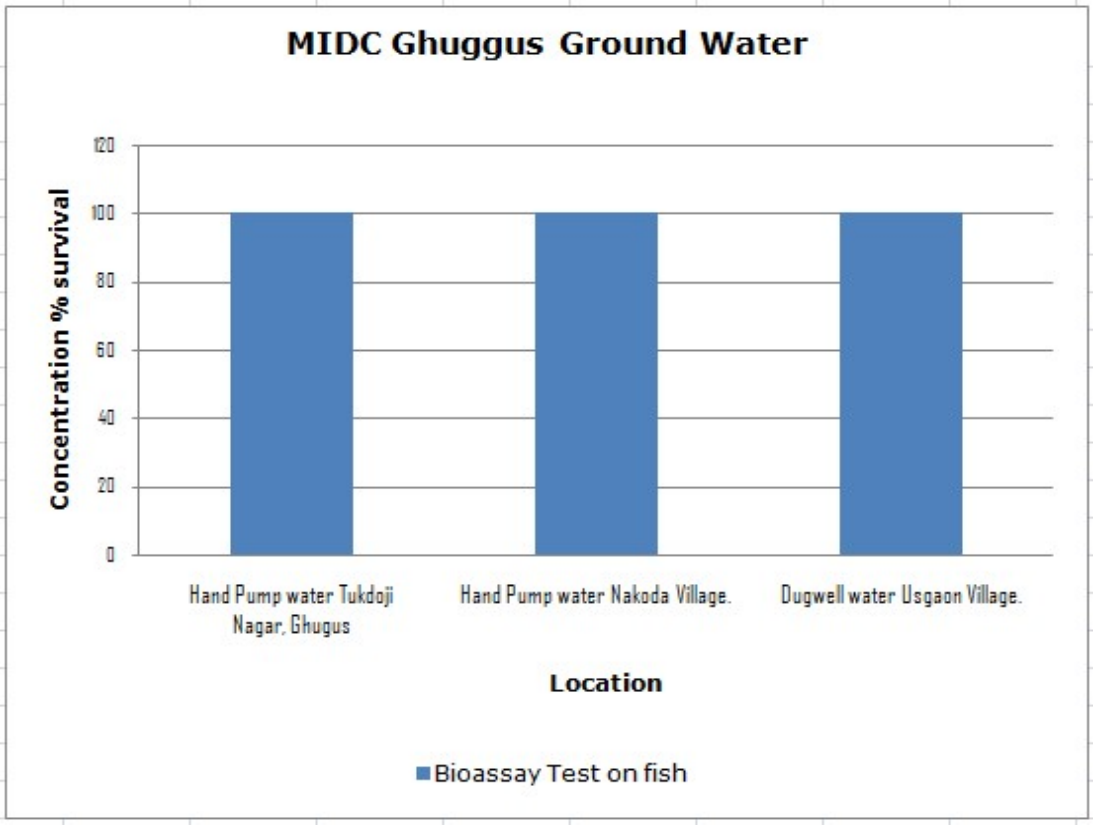

MIDC Ballarpur Ground Water
Concentration MPN/Index
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Borewell Water at Gramin Rugnalaya, Ballarpur
Borewell water Near Fire Station, Ballarpur
Borewell Water at Visapur Village
Location
Total Coliforms
Faecal Coliforms


MIDC Ballarpur Ground Water
Concentration % survival
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Borewell Water at Gramin Rugnalaya, Ballarpur
Borewell water Near Fire Station, Ballarpur
Borewell Water at Visapur Village
Location
Bioassay Test on fish


MIDC Ghuggus Ground Water
Comcentration mg/l
45
40
35
30
25
20
15
10
5
0
Hand Pump water Tukdoji Nagar, Ghugus
Hand Pump water Nakoda Village.
Dugwell water Usgaon Village.
Location
TSS
COD
BOD
NO2
NO3
TKN
Fluoride


MIDC Ghuggus Ground Water
Concentration µmho/cm
1800
1600
1400
1200
1000
800
600
400
200
0
Hand Pump water Tukdoji Nagar, Ghugus
Hand Pump water Nakoda Village.
Dugwell water Usgaon Village.
Location
Electrical Conductivity (at 25 oC)


MIDC Ghuggus Ground Water
Concentration MPN/Index
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Hand Pump water Tukdoji Nagar, Ghugus
Hand Pump water Nakoda Village.
Dugwell water Usgaon Village.
Location
Total Coliforms
Faecal Coliforms


MIDC Ghuggus Ground Water
Concentration % survival
120
100
80
60
40
20
0
Hand Pump water Tukdoji Nagar, Ghugus
Hand Pump water Nakoda Village.
Dugwell water Usgaon Village.
Location
Bioassay Test on fish

5. Summary of the results

Based on the study done, the results are summarised and concluded as follows:

5.1 Stack Emission Monitoring:

A) Tadali MIDC

At Tadali MIDC, six samples were collected from different industries.

1. **Particulate Matter**: At all locations monitored, particulate matter was within the limit.
2. **Sulphur Dioxide:** The concentration of sulfur dioxide varied between minimum of 66.10 mg/Nm^3 to 3498.37 mg/Nm^3. This however, will depend on the fuel used and load allotted in the consent. Maximum concentration was found at Dhariwal Infra.
3. **Nitrogen Dioxide**: Values range between 5.73 mg/Nm^3 to 31.20 mg/Nm^3.
4. **Ammonia**: Ammonia was detected only at two locations out of the 6 locations monitored.
5. **Volatile Organic Compounds:** Stacks in the Tadali region showed below detectable limit of Volatile organic compounds at 2 locations monitored.

B) Chandrapur MIDC:

At Chandrapur MIDC, six samples were collected from different industries.

1. **Particulate Matter**: At all locations monitored, particulate matter was within the limit.
2. **Sulphur Dioxide:** The concentration of sulfur dioxide varied between minimum of 6.8 mg/Nm^3 to 5139.5 mg/Nm^3. Maximum concentration was found at Multi Organic Pvt. Ltd.
3. **Nitrogen Dioxide**: Values range between 11.4 mg/Nm^3 to 22.7 mg/Nm^3.
4. **Ammonia**: Ammonia was below detectable limit at all 6 locations monitored.
5. **Volatile Organic Compounds:** Stacks in the Chandrapur region also showed below detectable limit of Volatile organic compounds at 2 locations monitored.

C) Ghugus MIDC:

Six different industries were selected for stack monitoring. Three stacks were monitored for Lloyds Metal and Energy Ltd and three stacks of ACC Cement Ltd.

1. **Particulate Matter**: At all locations monitored, particulate matter was within the limit.
2. **Sulphur Dioxide:** The concentration of sulfur dioxide varied between minimum of 43.8 mg/Nm^3 to 769.3 mg/Nm^3. Maximum concentration was found at ACC Cement Limited 15MW Boiler stack.
3. **Nitrogen Dioxide**: Values range between 5.2 mg/Nm^3 to 46.2 mg/Nm^3.
4. **Ammonia**: The highest level of Ammonia is observed at ACC Cement Limited Kiln RABH Stack with 175.3 mg/Nm^3.
5. **Volatile Organic Compounds:** Stacks in the Ghugus region also showed below detectable limit of Volatile organic compounds at 2 locations monitored.

D) Ballarpur MIDC:

Six different stacks of Ballarpur Paper industries were monitored for the aforesaid parameters.

1. **Particulate Matter**: At all locations monitored, particulate matter was within the limit.
2. **Sulphur Dioxide:** The concentration of sulfur dioxide varied between minimum of 6.9 mg/Nm^3 to 4393.3 mg/Nm^3. Maximum concentration was found at BILT Graphic Paper Product Ltd. Boiler No. 9.
3. **Nitrogen Dioxide**: Values range between 17 mg/Nm^3 to 51.1 mg/Nm^3.
4. **Ammonia**: The concentration of Ammonia was observed only at two out of the six locations monitored. The highest level of Ammonia is observed at BILT Graphic Paper Product Ltd. Boiler No. 3 with 208.5 mg/Nm^3.
5. **Volatile Organic Compounds:** Stacks in the Ballarpur region also showed below detectable limit of Volatile organic compounds at 2 locations monitored.

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5.2 Ambient Air Quality Monitoring:

A) MIDC Tadali: In Tadali, four locations were monitored for 12 parameters as per NAAQS.

1. **Sulphur Dioxide (SO_2):** Concentration of Sulphur dioxide in Tadali MIDC Area varied between lowest of 1.6 µg/m^3 to maximum of 2.6 µg/m^3.
2. **Nitrogen Dioxide (NO_2):** Concentration varied between 3 µg/m^3 and 5.1 µg/m^3 which is well below the standard laid down by CPCB.
3. **Particulate Matter (PM_{10})**: Particulate matter in this area has exceeded at two locations namely (NAMP) Tadali MIDC Growth Center with 255.7 µg/m^3 concentration and Near Chaman Metallic Boundary Wall with 115.3 µg/m^3.
4. **Particulate Matter ($PM_{2.5}$):** Concentration of $PM_{2.5}$ exceeded only at (NAMP) Tadali MIDC Growth Center with 62 µg/m^3 concentration.
5. **Ozone (O_3)**: Ozone concentration was below detectable limit at all 4 locations monitored.
6. **Lead (Pb):** Concentration of Lead was also below detectable limit at all 4 locations monitored.
7. **Carbon Monoxide (CO):** Concentration of Carbon Monoxide ranges between maximum of 0.9 mg/m^3 and 55.7 mg/m^3 highest value being obtained at MIDC WTP Building.
8. **Ammonia (NH_3):** Concentration of Ammonia was also below detectable limit at all 4 locations monitored.
9. **Benzene (C_6H_6):** Sampling and analysis at these location show, Benzene value has exceeded at places namely MIDC WTP building (8.9 µg/m^3) and at (NAMP) Tadali MIDC Growth Center (6.5 µg/m^3)
10. **Benzo (a) Pyrene (BaP):** BaP was also below detectable limit at all 4 locations.
11. **Arsenic (As):** Concentration of Arsenic was well below the standard prescribed by CPCB.
12. **Nickel (Ni):** The concentration of Nickel at MIDC Tadali was also well within the standard prescribed by CPCB.

B) MIDC Chandrapur: At Chandrapur MIDC, four locations were monitored for ambient air quality. Following are the findings based on the analytical values:

1. **Sulphur Dioxide (SO_2):** The concentration of SO_2 was below detectable limit at all 4 locations monitored.
2. **Nitrogen Dioxide (NO_2):** The concentration of NO_2 was also below detectable limit at all 4 locations monitored.
3. **Particulate Matter (PM_{10}):** The concentration of PM_{10} was well below the standard prescribed by CPCB at all 4 locations monitored.
4. **Particulate Matter ($PM_{2.5}$):** The concentration of $PM_{2.5}$ was also well below the standard prescribed by CPCB at all 4 locations monitored.
5. **Ozone (O_3):** Ozone was detected at 3 locations out of the four locations monitored and the concentration was well below the standard prescribed by CPCB.
6. **Lead (Pb):** Lead was also below detectable limit at all 4 locations.
7. **Carbon Monoxide (CO):** The concentration of CO was also well below the standard prescribed by CPCB at all 4 locations monitored.
8. **Ammonia (NH_3):** Ammonia was also below detectable limit at all 4 locations.
9. **Benzene (C_6H_6)**: At two locations, value exceeded the concentration of 5.0 µg/m^3 standard value.
10. **Benzo (a) Pyrene** (**BaP):** BaP was also below detectable limit at all 4 locations.
11. **Arsenic (As):** Concentration of Arsenic at all the four locations of Chandrapur MIDC is within the stipulated limits.
12. **Nickel (Ni):** Concentration of Nickel also at all the four locations of Chandrapur MIDC is within the stipulated limits.

C) MIDC Ghugus: At MIDC Ghugus four locations of ambient air quality were monitored.

1. **Sulphur Dioxide (SO_2):** The concentration of SO_2 was below detectable limit at all 4 locations monitored.
2. **Nitrogen Dioxide (NO_2):** Values of Nitrogen dioxide ranged between 3.2 µg/m^3 and 9.2 µg/m^3 at WTP Water Supply Tank and at Guest House ACC Cement respectively.
3. **Particulate Matter (PM_{10}):** With reference to the concentration of PM_{10} values, it has exceeded at all four locations monitored and ranged from 167.7 µg/m^3 to 278.7 µg/m^3.
4. **Particulate Matter ($PM_{2.5}$):** At one place i.e. (NAMP) Near Gram Panchayat, value slightly exceeds the limit i.e., 68.7 µg/m^3.
5. **Ozone (O_3):** Concentration of Ozone was below detectable limit at all 4 locations monitored.
6. **Lead (Pb)**: Concentration of lead also was below detectable limit at all 4 locations monitored.
7. **Carbon Monoxide (CO):** The concentration of CO was also well below the standard prescribed by CPCB at all 4 locations monitored.
8. **Ammonia (NH_3)**: Concentration of ammonia also was below detectable limit at all 4 locations monitored.
9. **Benzene (C_6H_6)**: At all 4 locations value exceeded the concentration of 5.0 µg/m^3 standard value and ranged from 6.3 to 9.7 µg/m^3.
10. **Benzo (a) Pyrene (BaP):** BaP was also below detectable limit at all 4 locations.

11. **Arsenic (As) and Nickel (As):** Values of both metals at all the four locations of MIDC Ghugus is within the stipulated limits.

D) MIDC Ballarpur: MIDC Ballarpur area four locations of ambient air quality were monitored

1. **Sulphur Dioxide (SO_2)**: The concentration of SO_2 was detected only at one out of four locations monitored.
2. **Nitrogen Dioxide (NO_2)**: The concentration of NO_2 was well below the standard prescribed by CPCB at all 4 locations monitored.
3. **Particulate Matter (PM_{10}):** The concentration of PM_{10} values exceeded at 2 out of four locations in the area, ranging between 93.7 µg/m^3 and 158 µg/m^3.
4. **Particulate Matter ($PM_{2.5}$):** The concentration of $PM_{2.5}$ was also well below the standard prescribed by CPCB at all 4 locations monitored.
5. **Ozone (O_3):** Concentration of Ozone was below detectable limit at all 4 locations monitored.
6. **Lead (Pb):** Concentration of Lead was below detectable limit at all 4 locations monitored.
7. **Carbon Monoxide (CO):** Near WCL Office Ballarpur On Sasti Road, the concentration of CO was very high with 81.7 mg/m^3.
8. **Ammonia (NH_3)**: Concentration of ammonia also was below detectable limit at all 4 locations monitored.
9. **Benzene(C_6H_6)**: Concentration of Benzene exceeds at 3 out of four locations monitored.
10. **Benzo (a) Pyrene (BaP):** BaP was also below detectable limit at all 4 locations.
11. **Arsenic (As)**: Values are below the standard values.
12. **Nickel (Ni)**: The concentration of Nickel was also well below the standard prescribed by CPCB at all 4 locations monitored.

5.3 Surface Water Quality Monitoring:

A) MIDC Chandrapur:

1. **Suspended solids:** The concentration of suspended solids was well below the standard at all 3 locations monitored.
2. **pH:** pH level also was well within the limits at all three locations monitored and ranged from 7.05 to 7.13.
3. **Oil & Grease:** Oil and Grease concentration was below detectable limit at all 3 locations monitored.
4. **Total Residual Chlorine:** Total Residual Chlorine concentration was also below detectable limit at all 3 locations monitored.
5. **Total Ammonia:** Total Ammonia concentration was also below detectable limit at all 3 locations monitored.
6. **Total Kjeldhal Nitrogen**: It is well within the limit.
7. **Free Ammonia**: Free Ammonia concentration was also below detectable limit at all 3 locations monitored.
8. **Biochemical Oxygen Demand**: BOD also was well within the limits at all three locations monitored and ranged from 3.7 to 8.7 mg/L.

9. **Chemical Oxygen Demand:** COD also was well within the limits of 250 mg/L at all three locations monitored and ranged from 14.3 to 28.7 mg/L.
10. **Mercury:** Concentration of Mercury is well below the limit at all places.
11. **Lead:** Lead concentration was also below detectable limit at all 3 locations monitored.
12. **Cadmium, Chromium Hexa and Total Chromium**: Values are below detectable limit.
13. **Copper & Zinc:** Values of both metals are below detectable limit.
14. **Nickel:** Concentration of Nickel also are below detectable limit
15. **Cyanide:** Values of Cyanide are either above or below the detection limit.
16. **Fluoride**: Value of fluoride are well within the limits at all three locations monitored and ranged from 0.6 to 1.1 mg/L.
17. **Dissolved Phosphorus**: Dissolved phosphorus was observed only at 2 out of the 3 locations monitored and was well within the limits.
18. **Sulphide:** At all locations monitored the concentration of Sulphide was below detectable limit.
19. **Manganese:** Manganese also was well within the limits at all three locations monitored.
20. **Iron:** Iron also was well within the limits at all three locations monitored.

B) Tadali MIDC:

1. **Suspended Solids**. Values range between less than 12 mg/L and maximum of 25.3 mg/L which was well within the limit of 100 mg/L.
2. **pH**: Is in the range of 7.6 and 7.8. As per IS 10500-2012, it is acceptable.
3. **COD**: Chemical oxygen demand varies between minimum of 4 mg/L and maximum of 15 mg/L.
4. **BOD:** Values range between 1.3 mg/L to 4.3 mg/L which are well within the limits.
5. **Nitrates:** Within the acceptable standard of drinking water IS 10500:2012.
6. **Surface Active Agent:** Well below the acceptable value as per IS 10500:2012.
7. **Residual Chlorine:** It is below the detectable level
8. **Sulphide**: Less than 0.08 mg/L
9. **Metals**: All metals like Zinc, Nickel, Copper, Hexavalent Chromium, Total Chromium, Lead, Cadmium, Mercury are below the prescribed limits.
10. **Cyanide and Phenol**: Are all within the prescribed limits.
11. **Pesticides:** All analysed pesticides concentration are below the standards.
12. **PAH & PCBs:** Also lie below the standard.

C) Ballarpur MIDC:

1. **Suspended Solids**: Values range between, minimum of 15.3 mg/L at Wardha River and maximum of 34 mg/L Nallah of Municipal Council.
2. **pH**: pH Values lie between 6.5 at Nalla outside Grace Industry and maximum of 7.9 at Nalla near Madhuban Board mill.
3. **Oil and Grease**: Values are at below detectable level BDL (1.0 mg/L).
4. **Residual Chlorine**: Values are at BDL Level (0.1 mg/L).
5. **Biochemical Oxygen Demand**: Varies between minimum of 2.7 mg/L at Bhagirathi Nallah Bridge and maximum of 22 mg/L at Nalla Near Petrol Pump.
6. **Chemical Oxygen Demand:** COD also was well within the limits of 250 mg/L at all six locations monitored and ranged from 9.7 to 63.7 mg/L.
7. **Metals:** Metals like Arsenic, Mercury, Lead, Cadmium, Hexavalent Chromium, Copper, and Zinc all within the acceptable range. Cyanide, Fluoride and Phenol are within the acceptable range.
8. **Sulphide:** Values range between 0.08 mg/L at Nallah at Yeur village and 2.2 mg/L at Nallah at backside of Gopani Iron.
9. **Iron:** Values range between 0.08 mg/L at Nalla on Yeur village road 1.641 at Nalla at Grace Industry.
10. **PAH & PCB**: Below the standard limit.
11. **Pesticides**: All pesticides analysed, individually below the general standards.

D) Ghugus MIDC

1. **Suspended Solids**: Values range between minimum of 8 mg/L at River water near intake well WCL OCM and maximum of 54 mg/L at Nalla water.
2. **pH**: Variation of pH range is within the narrow range between 7 and 8. At all places pH is within the acceptable range.
3. **Oil and Grease:** Values are below the detectable level of 1.0 mg/L.
4. **Total Residual Chlorine:** It is below 0.1 mg/L as against the acceptable standard of 0.1 mg/L.
5. **Ammonical Nitrogen, Total Kjeldhal Nitrogen and Free Ammonia:** All Values are within the acceptable limits.
6. **Chemical Oxygen Demand:** Values lie between minimum of 16 mg/L at River water near intake well WCL OCM and maximum of 168 mg/L at Nallah water
7. **Biochemical Oxygen Demand**: Values are between 6.5 mg/L at Wardha River near AC Ltd, Coal Mines Road.
8. **Metals**: All values of metals are within the acceptable range.
9. **Cyanide and Fluoride**: Values of these two parameters are within the acceptable standards.
10. **Phenol**: Meets the requirement of standard.
11. **Dissolved Phosphate:** All the values of dissolved phosphate at all locations are within the acceptable standards.
12. **PAH and PCB:** are within the acceptable range of standard values.
13. **Pesticides**: analysed show their analytical values within the range.

5.4 Ground Water Quality Monitoring:

A) MIDC Chandrapur:

1. **Suspended solids:** The concentration of suspended solids was well below the standard at all 3 locations monitored.
2. **pH:** pH level also was well within the limits at all three locations monitored and ranged from 6.14 to 8.23.
3. **Oil & Grease**: Oil and Grease concentration was below detectable limit at all 3 locations monitored.
4. **Total Residual Chlorine:** Total Residual Chlorine concentration was also below detectable limit at all 3 locations monitored.
5. **Total Ammonia**: Total Residual Chlorine concentration was also below detectable limit at all 3 locations monitored.
6. **Total Kjeldhal Nitrogen**: It is well within the limit.
7. **Free Ammonia**: Free ammonia concentration was below detectable limit at all 3 locations monitored.
8. **Biochemical Oxygen Demand**: BOD was well within the limit at all 3 locations.
9. **Chemical Oxygen Demand:** COD was also well within the limit at all 3 locations.
10. **Mercury:** Concentration of Mercury was below detectable limit at all 3 locations monitored.
11. **Lead:** Concentration of Lead was also below detectable limit at all 3 locations monitored.
12. **Cadmium Chromium Hexa and Total Chromium**: Values are below the detectable limit.
13. **Copper & Zinc:** Values of both metals are below the detectable limit.
14. **Nickel:** Concentration of Nickel is below detectable limit.
15. **Cyanide:** Values of Cyanide are below the detection limit.
16. **Fluoride**: Value of fluoride was well within the limits at all 3 locations.
17. **Dissolved Phosphorus**: Values are below the detectable limit.
18. **Sulphide:** Values are below the detectable limit.
19. **Manganese:** Values are below the detectable limit.
20. **Iron:** Values are below the detectable limit.

B) Tadali MIDC:

1. **Colour**: Colour in the range 1 to 3 Hazen units.
2. **pH**: Is in the range of 7.19 and 8.32. As per IS 10500-2012, it is acceptable.
3. **Suspended Solids**. Values range between 8.3 mg/L to 13.3 mg/L.
4. **COD**: Chemical oxygen demand varies between minimum of 2 mg/L Dugwell water Near Tadali Lake Janata School and maximum of 13 mg/L at Borewell water at Yerur village.
5. **BOD:** Values range from 0.7 mg/L to 4.3 mg/L.
6. **Nitrates:** Within the acceptable standard of drinking water IS 10500:2012.
7. **Surface Active Agent:** Well below the acceptable value as per IS 10500:2012.

8. **Residual Chlorine:** It is below the detectable level (DL 0.1 mg/L)
9. **Sulphide**: It is below the detectable level.
10. **Metals**: All metals like Zinc, Nickel, Copper, Hexavalent Chromium, Total Chromium, Lead, Cadmium, Mercury are below detectable level.
11. **Cyanide and Phenol**: Are all below detectable level.
12. **Pesticides:** All analysed pesticides concentration are below detectable level.

C) Ballarpur MIDC:

1. **Suspended Solids**: Values ranged from 4 mg/L to 5.3 mg/L.
2. **pH**: pH level was within the limit at all 3 locations monitored.
3. **Oil and Grease**: Values are below detectable level at all 3 locations.
4. **Residual Chlorine**: Values are below detectable level at all 3 locations.
5. **Biochemical Oxygen Demand**: Varies between minimum of 0.7 mg/L at Borewell Water at Visapur Village and maximum of 1.7 mg/L at Borewell Water at Gramin Rugnalaya.
6. **Chemical Oxygen Demand:** Values are well within the limits at all 3 locations monitored.
7. **Metals:** Metals like Arsenic, Mercury, Lead, Cadmium, Hexavalent Chromium, Copper, and Zinc all are below the detectable limit. Cyanide, Fluoride and Phenol are within the acceptable range.
8. **Sulphide:** Values are below detectable level at all 3 locations.
9. **Iron:** Values are below detectable level at all 3 locations.
10. **PAH & PCB**: Values are below detectable level at all 3 locations.

D) Ghugus MIDC

1. **Suspended Solids**: Values range between minimum of 10 mg/L at Hand Pump water Tukdoji Nagar and maximum of 25.6 mg/L at Hand Pump water Nakoda Village.
2. **pH**: Variation of pH range is within the narrow range between 7 and 8. At all samples pH is within the acceptable range.
3. **Oil and Grease:** Values are below the detectable limit.
4. **Total Residual Chlorine:** Values are below detectable level at all locations.
5. **Ammonical Nitrogen, Total Kjeldhal Nitrogen and Free Ammonia:** All Values are within the acceptable limits.
6. **Chemical Oxygen Demand:** Values lie between minimum of 4.6 mg/L at Hand Pump water Nakoda Village and maximum of 8.3 mg/L at Dugwell water Usgaon Village.
7. **Biochemical Oxygen Demand**: Values are well within the limits at all locations monitored.
8. **Metals**: All values of metals are below the detectable limit.
9. **Cyanide and Fluoride**: Values of these two parameters are within the acceptable standards.
10. **Phenol**: Meets the requirement of standard.
11. **Dissolved Phosphate:** All the values of dissolved phosphate at all locations are within the acceptable standards.

12.PAH and PCB: are within the acceptable range of standard values.

6. CEPI Score

Comprehensive Environmental Pollution Index (CEPI) is intended to act as early warning tool which helps in categorization of industrial clusters/ areas in terms of priority of needing attention.

CPCB had evolved certain methodology to calculate CEPI, in which a score has been fixed for different environmental components based on the level of pollution. The scoring system involves an algorithm that takes into account the basic selection criteria. This approach is based on the basic hazard assessment logic that can be summarized as below.

Hazard = pollutant source, pathways, and receptor

CPCB has calculated CEPI for the identified critically polluted industrial clusters. It is calculated separately for air, water, and land. The basic framework and scoring system of the CEPI – based on three factors namely pollutant, pathway, and receptor – has been described further under this section.

To overcome the subjectivity, revised concept is proposed by eliminating the subjective factors as described in the previous section but retaining the factors which can be measured precisely.

I. Revised concept is prepared by eliminating the debatable factors but retaining the factors which can be measured precisely.

II. It is decided to develop the Comprehensive Environmental Pollution Index (CEPI) retaining the existing algorithm of Source, Pathway and Receptor.

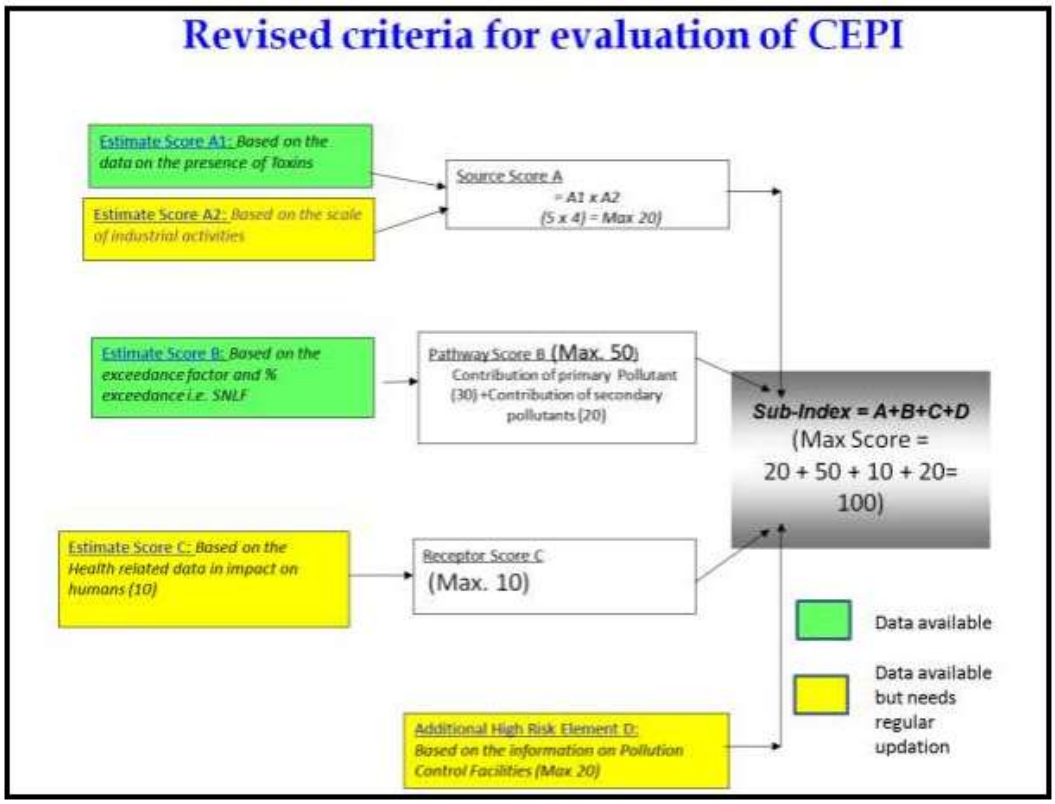
III. Health component was also retained in the revised concept in line with the suggestions of Secretary, MoEFCC during the meeting held in MoEF.

Outlines of revised CEPI 2016 criteria

The outlines of the revised CEPI criteria are as follows:

1. It is proposed to develop the Comprehensive Environmental Pollution Index (CEPI) based on Sources of pollution, real time observed values of the pollutants in the ambient air, surface water and ground water in & around the industrial cluster and health related statistics.
2. For assessment of the environmental quality of the area i.e. CEPI score, the concept of SNLF i.e. a surrogate number which represents the level of exposure (a function of percentage sample Exceedance & Exceedance Factor) shall be used.
3. Health component to be evaluated based on the health data available from major hospitals in the area was also retained in the revised concept.

The evaluation criterion of the revised CEPI version 2016 is described in the flowchart given below:



Here, health data collected for Receptor Score C is included in Annexure I

Based on Sub-Index Score (score of individual environmental component like air, water etc.):

- **Score more than 63:** A Critical Level of Pollution in the respective level of environmental component
- **Score between 51-63:** Severe to critical level of pollution with reference to respective environmental component

Cut-off Score

- **Score 50:** Severely Polluted Industrial Clusters/areas
- **Score 60:** Critically Polluted Industrial Clusters/areas

Based on Aggregated CEPI Score (score includes sub-index score of all individual environmental components together):

- **Aggregated CEPI score >70:** Critically polluted areas
- **Aggregated CEPI score between 60-70:** Severely polluted areas

Since the inception of the programme, MPCB has also formulated Action Plans to mitigate the environmental pollution problems for each of the 8 Critically Polluted Areas (CPAs) in Maharashtra. Based on available information, parameters selected and monitored in continuation with this, CEPI has been calculated and Short-Term Action Plan (STAP) as well as Long Term Action Plan (LTAP) was prepared in 2010 and every year review was taken on the same.

Subsequently NAAQS 2009 came in force. List of parameters to be considered increased and expanded including more critical and hazardous pollutants like benzene, BaP, Metals, etc. existing in the environment. There was revision of standards (limiting values) as well. In this present report of 2016 prepared by MPCB, CEPI is calculated considering all these revised standards' limiting values, list of parameters and complete scope of monitoring.

6.1 Comparison of CEPI scores:

The result shows that CEPI score of present report is 66.6. The present study is the compilation of post monsoon season, which also affects the score value. This time CEPI is observed lower than the CPCB CEPI score February 2018.

	Air Index	**Water Index**	**Land Index**	**CEPI**
CEPI score March 2020	65	22	21	**66.6**
CPCB CEPI score Feb 2018	75	23.75	23.75	**76.41**

7. Conclusion

Higher concentration of PM_{10}, $PM_{2.5}$, Benzene and CO in many samples collected as per NAAQS. This is due to the increase in the vehicles and vehicular emissions.

Higher concentration of Total Kjeldahl Nitrogen, Iron, BOD and Total phosphates was observed in the surface water samples collected. This will be complied as already the specified industry have been notified and asked to take necessary action.

Ground water samples were collected from different Dug well, well and Bore well in the region. In the ground water samples collected, Total Kjeldahl Nitrogen, Iron and zinc was found in higher concentration.

Collective efforts of MPCB, administration and environmental organizations have finally paid off and pollution levels in Chandrapur are on the decline. Cumulative CEPI score which was initially 88.83 in 2009 has declined to 81.90 by 2013. In this report the CEPI score have even more reduced to 66.6.

	A1	**A2**	**A**	**B**	**C**	**D**	**CEPI**
Air Index	4.5	4	18	42	0	5	**65**
Water Index	1.75	4	7	10	0	5	**22**
Land Index	1.5	4	6	10	0	5	**21**
						Aggregated CEPI	**66.6**

8. Photographs

MIDC Chandrapur



03
03


माता मंदिर


मणिधारी इंडस्ट्रीज
MANIDHARI INDUSTRIES

MIDC Ghugus

MIDC Ballarpur


03
03
HARSH ENVIRO TECH


01
01
HARSH ENVIRO TECH

MIDC Tadali

9. Annexures

Annexure I Health related data in impact on humans

C: Receptor

Component C (Impact on Human Health) 10	
Main - 10	
% increase in cases	**Marks**
<5%	**0**
5-10%	**5**
>10%	**10**

- % increase is evaluated based on the total no. of cases recorded during two consecutive years.
- For Air Environment, total no. of cases related to Asthma, Bronchitis, Cancer, Acute respiratory infections etc. are to be considered.
- For surface water/ ground water Environment, cases related to Gastroenteritis, Diarrhoea, renal (kidney) malfunction, cancer etc are to be considered.
- For the above evaluation, the previous 5 years records of 3-5 major hospitals of the area shall be considered.

Attached below health data collected for the region

INFORMATION ON HEALTH STATISTICS IN PIA

1. Name of the polluted industrial area (PIA): BALLARPUR
2. Name of the major health center/organization: BILT HOSPITAL, BALLARPUR

3. Name & designation of the contact person : DR. VIJAY WANJARI, CMO
4. Address: BILT, BALLARPUR
5. Year of establishment: 1953

Sr. No.	Air Born Diseases	No. of Patients reported for the years.	
		2018-2019	April-2019 to January-2020
1	Asthma	2	2
2	Acute Respiratory Infection	85	87
3	Bronchitis	10	12
4	Cancer (Lung)	Nil	Nil
	Water Born Diseases		
5	Gastroenteritis	30	28
6	Diarrhea	70	65
7	Renal diseases/Typhoid	Nil	Nil
8	Cancer (Pulmonary)	Nil	Nil

Health status data received from the hospital.

Dr. Vijay V. Wanjari M.B.B.S.

Signature of Hospital Head/Superintendent

Chief Medical Officer BILT Hospital, Ballarpur

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INFORMATION ON HEALTH STATISTICS IN PIA

1. Name of the polluted industrial area (PIA) : Chandrapur
2. Name of the major health center/organization : Govt. Medical College & Hospital, Chandrapur
3. Name & designation of the contact person :
4. Address :
5. Year of establishment :

Sr. No.	Air Born Diseases	No. of Patients reported for the years.	
		2018-2019	April-19 To Jan 2020
1	Asthma	1076	874
2	Acute Respiratory Infection	16840	9532
3	Bronchitis	694	301
4	Cancer (Lung)	4	09
	Water Born Diseases		
5	Gastroenteritis	8925	8796
6	Diarrhea	381	679
7	Renal diseases/ Typhoid	2688/303	3467/730
8	Cancer (Pulmonary)	0	0

Health status data received from the hospital.

25/2/2020
अधिसेविका
शासकीय वैद्यकीय महाविद्यालय व रुग्णालय
चंद्रपूर

Signature of Hospital Head/Superintendent

Medical Superintendent
Govt. Medical College & Hospital
Chandrapur

Scanned with CamScanner

INFORMATION ON HEALTH STATISTICS IN PIA

1. Name of the polluted industrial area (PIA): Chandrapur
2. Name of the major health center/organization: CHL Chandrapur Healthcare & Multi speciality Hospital & Research Centre, Mul Road.
3. Name & designation of the contact person : Dr Rohan Ainchwar
4. Address: Chandrapur city
5. Year of establishment: 2012

Sr. No.	Air Born Diseases	No. of Patients reported for the years.	
		2018-2019	April-2019 to January-2020
1	Asthma	4	2
2	Acute Respiratory Infection	61	70
3	Bronchitis	0	0
4	Cancer (Lung)	1	2
	Water Born Diseases		
5	Gastroenteritis	19	27
6	Diarrhea	19	27
7	Renal diseases/Typhoid	1	1
8	Cancer (Pulmonary)	1	2

Health status data received from the hospital.

CHL MULTISPECIALITY HOSPITAL & RESEARCH CENTRE * Reg. 132

Signature of Hospital Head/Superintendent

DR. ROHAN V. AINCHWAR
M.D. (Medicine); D.M. (Cardiology)
MMC Reg.No.2004/03/2011

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INFORMATION ON HEALTH STATISTICS IN PIA

1. Name of the polluted industrial area (PIA): - GANI AREA
2. Name of the major health center/organization: - RRCH, GHUGGUS
3. Name & designation of the contact person : - DR. Adhitya Nedoom
4. Address:
5. Year of establishment: - RRCH, GHUGGUS

Sr. No.	Air Born Diseases	No. of Patients reported for the years.	
		2018-2019	April-2019 to January-2020
1	Asthma	36	29
2	Acute Respiratory Infection	3	6
3	Bronchitis	7	3
4	Cancer (Lung)	Nil	1
	Water Born Diseases		
5	Gastroenteritis	76	61
6	Diarrhea	16	5
7	Renal diseases/Typhoid	8/24	3/15
8	Cancer (Pulmonary)	Nil	Nil

Health status data received from the hospital.

Signature of Hospital Head/Superintendent

Dr. Adhitya

Annexure II: Stack Emission Sampling and Analysis Methodology

Sr.	Parameters	Method References	Techniques	Detection Limit
1.	Acid Mist (as Sulphuric Acid)	US EPA Method no.m-8	Barium thorine titration Method	0.6 mg/Nm^3
2.	Ammonia	IS 11255 (Part 6):1999, Reaffirmed 2003	Titration/ Nessler Reagent/ Spectrophotometric Method	1 mg/Nm^3
3.	Carbon Monoxide	USEPA Method 10B	GC-FID Method	0.2 mg/Nm^3
4.	Chlorine	US EPA Method 26 for sampling	Titrimetric	0.001 mg/Nm^3
5.	Fluoride (Gaseous)	US EPA Method 13 A	SPADNS Zirconium Lake Spectrophotometric Method	0.025 mg/Nm^3
6.	Fluoride (Particulate)	US EPA Method 13 A	SPADNS Zirconium Lake Spectrophotometric Method	0.005 mg/Nm^3
7.	Hydrogen Chloride	US EPA Method 26 for sampling	Titrimetric	0.25 mg/Nm^3
8.	Hydrogen Sulphide	IS 11255 (Part 4):1985	Titrimetric	1 mg/Nm^3
9.	Oxides of Nitrogen	IS 11255 (Part 7): 2005	PDSA Colorimetric Method	10 mg/Nm^3
10.	Oxygen	IS 13270 : 1992	ORSAT Apparatus	1 %
11.	Poly Aromatic Hydrocarbons (Particulate)	IS 5182 (Part 12) : 2004, Reaffirmed 2009 CPCB Guidelines, May 2011, Page No.39	GC-FID Method	0.25 mg/Nm^3
12.	Suspended Particulate Matter	IS 11255 (Part 1):1985, Reaffirmed 2003	Gravimetric Method	10 mg/Nm^3
13.	Sulphur Dioxide	IS 11255 (Part 2): 1985, Reaffirmed 2003	Titrimetric IPA thorine Method	5.0 mg/Nm^3 0.02 kg/day

Sr.	Parameters	Method References	Techniques	Detection Limit
14.	BTX (Benzene, Toluene, Xylene)	NIOSH (NMAM) 1501	Adsorption and Desorption followed by GC-FID analysis	0.001 mg/Nm^3
15.	VOC (Volatile Organic Compounds)	NIOSH (NMAM) 1501 for sampling	Adsorption and Desorption followed by GC-FID or GC/ MS analysis	-
i	Methyl Isobutyl Ketone	-	-	0.001 mg/Nm^3
ii	Benzene	-	-	0.001 mg/Nm^3
iii	Toluene	-	-	0.001 mg/Nm^3
iv	Xylene	-	-	0.001 mg/Nm^3
v	Ethyl Benzene	-	-	0.001 mg/Nm^3
vi	Ethyl Acetate	-	-	0.001 mg/Nm^3

Annexure III: Ambient Air Sampling and Analysis Methodology

Sr.	Parameters	Method References	Techniques	Detection Limit
1.	Sulphur Dioxide (SO_2)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No.1	Improved West & Gaeke Method	4 µg/m^3
2.	Nitrogen Dioxide (NO_2)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No.7	Modified Jacob & Hochheiser Method	3 µg/m^3
3.	Particulate Matter (size less than 10 µm) or PM_{10}	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No.11	Gravimetric Method	2 µg/m^3
4.	Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No. 15	Gravimetric Method	0.4 µg/m^3
5.	Ozone (O_3)	APHA, Method No. 820, Page no. 836	Chemical Method	19.6 µg/m^3
6.	Lead (Pb)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No. 47	AAS Method	0.02 µg/m^3
7.	Carbon Monoxide (CO)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume II, May 2011, Page No. 16	Non Dispersive Infra Red (NDIR) spectroscopy	0.05 mg/m^3
8.	Ammonia (NH_3)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No. 35	Indophenol Blue Method	4.0 µg/m^3
9.	Benzene (C_6H_6)	IS 5182 (Part 11):2006	Adsorption and Desorption followed by GC-FID analysis	1.0 µg/m^3

Sr.	Parameters	Method References	Techniques	Detection Limit
10.	Benzo (a) Pyrene (BaP) – particulate phase only,	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No. 39	Solvent extraction followed by GC-FID analysis	0.2 ng/m^3
11.	Arsenic (As)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No. 47	AAS Method	0.3 ng/m^3
12.	Nickel (Ni)	CPCB Guidelines for the Measurement of Ambient Air Pollutants, Volume I, May 2011, Page No. 47	AAS Method	3.0 ng/m^3

Annexure IV: Water/Wastewater Sampling and Analysis Methodology

Sr.	Parameters	Methods References	Techniques	Detection Limit
1.	Sampling Procedure for Chemical Parameters	IS 3025 (Part 1): 1987, Reaffirmed 1998, Amds.1& APHA, 22nd Ed., 2012, 1060 B, 1-39	-	-
2.	Sampling Procedure for Microbiological Parameters	APHA, 22nd Ed., 2012, 1060 B, 1-39, 9040, 9-17, and 9060B, 9-35	-	-
3.	Temperature	APHA, 22nd Ed., 2012, 2550-B, 2-69	By Thermometer	-
4.	Colour	APHA, 22nd Ed., 2012, 2120-B, 2-26	Visible Comparison Method	1 Hazen Unit
5.	Odour	IS 3025 (Part 5): 1983, Reaffirmed 2006	Qualitative Method	-
6.	pH	APHA, 22nd Ed., 2012, 4500-H^+- B, 4-92	By pH Meter	1
7.	Oil & Grease	APHA, 22nd Ed., 2012, 5520-B, 5-40	Liquid -liquid Partition-Gravimetric Method	1.0 mg/l
8.	Suspended Solids	IS 3025 (Part 17): 1984, Reaffirmed 2006, Amds.1	Filtration /Gravimetric Method	5.0 mg/l
9.	Dissolved Oxygen	IS 3025 (Part 38): 1989, Reaffirmed 2009	Iodometric Method-Azide modification	0.05 mg/l
10.	Chemical Oxygen Demand	APHA, 22nd Ed., 2012, 5220-B, 5-17	Open Reflux Method	5.0 mg/l
11.	Biochemical Oxygen Demand	IS 3025 (Part 44): 1993, Reaffirmed 2009, Amds.1	Iodometric Method	5.0 mg/l
12.	Electrical Conductivity	APHA, 22nd Ed., 2012, 2510- B, 2-54	By Conductivity Meter	0.1 µmho/cm
13.	Nitrite-Nitrogen	APHA, 22nd Ed., 2012, 4500-NO_2-B, 4-120	Colorimetric Method	0.006 mg/l

Sr.	Parameters	Methods References	Techniques	Detection Limit
14.	Nitrate-Nitrogen	APHA, 22nd Ed., 2012, 4500-NO_3, B-4-122	UV Spectrophotometer Screening Method	0.2 mg/l
15.	(NO_2 + NO_3)-Nitrogen	APHA, 22nd Ed., 2012, 4500-NO_2-B, 4-120 APHA, 22nd Ed., 2012, 4500-NO_3, B-4-122	Colorimetric Method V Spectrophotometer Screening Method	0.2 mg/l
16.	Free Ammonia	APHA, 22nd Ed., 2012, 4500 NH_3, F, 4 -115	Colorimetric Method	0.006 mg/l
17.	Total Residual Chlorine	IS 3025 (Part 26): 1986, Reaffirmed 2009, Ed. 2.1 (2004-02)	Iodometric Method	0.1 mg/l
18.	Cyanide (CN)	APHA, 22nd Ed., 2012,4500-CN, C & E, 4-41 & 4-43	Colorimetric Method	0.001 mg/l
19.	Fluoride (F)	APHA, 22nd Ed., 2012, 4500-F, D, 4-87	SPADNS Method	0.05 mg/l
20.	Sulphide (S^{2-})	APHA, 22nd Ed., 2012, 4500 –S^2, C-4-175, F-4-178	Iodometric Method	0.08 mg/l
21.	Dissolved Phosphate (P)	APHA, 22nd Ed., 2012, 4500 P,E, 4-155	Ascorbic Acid Method	0.03 mg/l
22.	Sodium Absorption Ratio	IS11624: 1986, Reaffirmed 2006	By Calculation	0.3
23.	Total Phosphorous (P)	APHA,22nd Ed., 2012, 4500 P,E, 4-155	Ascorbic Acid Method	0.03 mg/l
24.	Total Kjeldahl Nitrogen	APHA, 22nd Ed., 2012, 4500 NH_3, B & C, 4 -110, 4-112	Titrimetric Method	0.1 mg/l
25.	Total Ammonia (NH_4 +NH_3)-Nitrogen	APHA, 22nd Ed., 2012, 4500 NH_3, F, 4 - 115	Colorimetric Method	0.001 mg/l

Sr.	Parameters	Methods References	Techniques	Detection Limit
26.	Phenols (C_6H_5OH)	APHA, 22nd Ed., 2012, 5530- B & C, 5-44 & 5-47	Chloroform Extraction Method	0.001 mg/l
27.	Surface Active Agents	APHA, 22nd Ed., 2012, 5540-B & C, 5-50	Methylene Blue Extraction Method	0.1 mg/l
28.	Organo Chlorine Pesticides	APHA, 22nd Ed., 2012, 6410B, 6-74	GC MS-MS Method	0.01 µg/L
29.	Polynuclear aromatic hydrocarbons (PAH)	APHA, 22nd Ed., 2012, 6410B, 6-74	GC MS-MS Method	0.01 µg/L
30.	Polychlorinated Biphenyls (PCB)	APHA, 22nd Ed., 2012, 6410B, 6-74	GC MS-MS Method	0.01 µg/L
31.	Zinc (Zn)	IS 3025 (Part 2): 2004	ICP Method	0.1 mg/l
32.	Nickel (Ni)	IS 3025 (Part 2): 2004	ICP Method	0.05 mg/l
33.	Copper (Cu)	IS 3025 (Part 2): 2004	ICP Method	0.03 mg/l
34.	Hexavalent Chromium (Cr^{6+})	APHA, 22nd Ed., 2012, 3500-Cr, B, 3-69	Colorimetric Method	0.02 mg/l
35.	Total Chromium (Cr)	IS 3025 (Part 2): 2004	ICP Method	0.02 mg/l
36.	Total Arsenic (As)	IS 3025 (Part 2): 2004	ICP Method	0.005 mg/l
37.	Lead (Pb)	IS 3025 (Part 2): 2004	ICP Method	0.008 mg/l
38.	Cadmium (Cd)	IS 3025 (Part 2): 2004	ICP Method	0.002 mg/l
39.	Mercury (Hg)	IS 3025 (Part 2): 2004	ICP Method	0.0008 mg/l
40.	Manganese (Mn)	IS 3025 (Part 2): 2004	ICP Method	0.02 mg/l
41.	Iron (Fe)	IS 3025 (Part 2): 2004	ICP Method	0.06 mg/l

Sr.	Parameters	Methods References	Techniques	Detection Limit
42.	Vanadium (V)	IS 3025 (Part 2): 2004	ICP Method	0.05 mg/l
43.	Selenium (Se)	IS 3025 (Part 2): 2004	ICP Method	0.005 mg/l
44.	Boron (B)	IS 3025 (Part 2): 2004	ICP Method	0.1 mg/l
45.	Total Coliforms	APHA, 22nd Ed., 2012, 9221-B, 9-66	Multiple tube fermentation technique (MPN/100ml)	1.1 MPN/100ml
46.	Faecal Coliforms	APHA, 22nd Ed., 2012, 9221-E, 9-74	Multiple tube fermentation technique (MPN/100ml)	1.1 MPN/100ml
47.	Bioassay (Zebra Fish) Test	IS 6582, 1971, Reaffirmed 1987	Static Technique	-

Annexure V: National Ambient Air Quality Standards, 2009

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National Ambient Air Quality Standards: Central Pollution Control Board

In exercise of the powers conferred by Sub-section (2) (h) of section 16 of the Air (Prevntion and Control of Pollution) Act, 1981 (Act No.14 of 1981), and in suppression of the Notification No(s). S.O.384(E), dated 11th April, 1994 and S.O.935(E), dated 14th October, 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards **with immediate effect**, namely:

Sr. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Areas (Notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO_2) µg/m^3	Annual *	50	20	– Improved West and Gaeke – Ultraviolet fluorescence
		24 hours **	80	80	
2	Nitrogen Dioxide (NO_2) µg/m^3	Annual *	40	30	– Modified Jacob & Hochheiser (Na-Arsenite) – Chemilminescence
		24 hours **	80	80	
3	Particulate Matter (size less than 10 µm) or PM_{10} µg/m^3	Annual *	60	60	– Gravimetric – TOEM – Beta attenuation
		24 hours **	100	100	
4	Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$ µg/m^3	Annual *	40	40	– Gravimetric – TOEM – Beta attenuation
		24 hours **	60	60	
5	Ozone (O_3) µg/m^3	8 hours **	100	100	– UV photometric – Chemiluminescence – Chemical Method
		1 hour **	180	180	
6	Lead (Pb) µg/m^3	Annual *	0.50	0.50	– AAS/ICP method after sampling on EPM 2000 or equivalent filter paper – EDXRF using Teflon filter
		24 hours **	1.0	1.0	
7	Carbon Monoxide (CO) mg/m^3	8 hours **	02	02	– Non Dispersive Infra Red (NDIR) spectroscopy
		1 hour **	04	04	
8	Ammonia (NH_3) µg/m^3	Annual *	100	100	– Chemiluminescence – Indophenol blue method
		24 hours **	400	400	
9	Benzene (C_6H_6) µg/m^3	Annual *	05	05	– Gas Chromatography based continuous analyzer – Adsorption and Desorption followed by GC analysis
10	Benzo (a) Pyrene (BaP) – particulate phase only, ng/m^3	Annual *	01	01	– Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As) ng/m^3	Annual *	06	06	– AAS/ICP method after sampling on EPM 2000 or equivalent filter paper.
12	Nickel (Ni) ng/m^3	Annual *	20	20	– AAS/ICP method after sampling on EPM 2000 or equivalent filter paper.

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2 % of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

SANT PRASAD GAUTAM, Chairman, Central Pollution Control Board [ADVT-III/4/184/09/Exty.]

Note: The notifications on National Ambient Air Quality Standards were published by the Central Pollution Control Board in the Gazette of India. Extraordinary vide notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October,1998.

µg/m^3: micro-gram/m^3 i.e. 10^{-6}gm/m^3 ng/m^3 : nano-gram/m^3 i.e. 10^{-9}gm/m^3

Annexure VI: General Standards for Discharge of Environmental Pollutants, Part A: Effluents (The Environment (Protection) Rules, 1986, Schedule VI)

Sr.	Parameter	Standards			
		Inland surface Water	**Public Sewers**	**Land for Irrigation**	**Marine Coastal Areas**
1.	Colour and Odour	See Note 1	--	See Note I	See Note 1
2.	Suspended solids, mg/l, Max.	100	600	200	a) For process waste water - 100 b) For cooling water effluent- 10 percent above total suspended mailer of influent cooling water.
3.	Particle size of suspended solids	Shall pass 850 micron IS Sieve			a. Floatable solids, Max 3 mm b. Settleable solids Max 850 microns
4.	Dissolved solids (Inorganic), mg/l, Max.	2100	2100	2100	--
5.	pH value	5.5 -9.0	5.5 -9.0	5.5 -9.0	5.5-9.0
6.	Temperature °C, Max	Shall not exceed 40 in any section of the stream within 15 mts. Downstream from the effluent outlet	45 at the point of discharge	--	45 at the point of discharge

Sr.	Parameter	Standards			
		Inland surface Water	**Public Sewers**	**Land for Irrigation**	**Marine Coastal Areas**
7.	Oil and Grease mg/l, Max	10	20	10	20
8.,	Total Residual chlorine, mg/l, Max	1.0	--	--	1.0
9.	Ammonical Nitrogen (as N), mg/l, Max	50	50	--	50
10.	Total Kjeldahl Nitrogen (as N), mg/l, Max.	100	--	--	100
11.	Free Ammonia (as NH_3), mg/l, Max	5.0	--	--	5.0
12.	Biochemical oxygen demand (5 days, at 20° c) mg/l, Max	30	350	100	100
13.	Chemical oxygen demand, mg/l, Max	250	--	--	250
14.	Arsenic (as As), mg/l, Max	0.2	0.2	0.2	0.2
15.	Mercury (as Hg). Mg/l, Max	0.01	0.01	--	0.01
16.	Lead (as Pb), mg/l, Max	0.1	1.0	-	1.0
17.	Cadmium (as Cd), mg/l,	2.0	1.0	--	2.0
18.	Hexavalent Chromium (as Cr^{+6}) mg/l, Max	1	2.0	--	1.0
19.	Total Chromium (as Cr), mg/l, Max	2.0	2.0	--	2.0

Sr.	Parameter	Standards			
		Inland surface Water	**Public Sewers**	**Land for Irrigation**	**Marine Coastal Areas**
20.	Copper (as Cu), mg/l, Max.	3.0	3.0	--	3.0
21.	Zinc (as Zn), mg/l, Max.	5.0	15	0--	15
22	Selenium (as Se), mg/l, Max.	0.05	0.05	--	0.05
23	Nickel (as Ni), mg/l, Max.	3.0	3.0	--	5.0
24	Boron (as B), mg/l, Max.	2.0	2.0	2.0	--
25.	Percent Sodium, Max.	--	60	60	--
26.	Residual Sodium carbonate, mg/l, Max.	--	--	5.0	--
27.	Cyanide (as Cn), mg/l, Max.	0.2	2.0	0.2	0.2
28.	Chloride (as Cl), mg/l, Max.	1000	1000	600	--
29.	Fluoride (as F), mg/l, Max.	2.0	15	--	15
30.	Dissolved Phosphate (as P), mg/l, Max.	5.0	--	--	--
31.	Sulphate (as SO_4), mg/l, Max.	1000	1000	1000	--
32.	Sulphide (as S), mg/l, Max.	2.0	--	--	5.0
33.	Pesticides	Absent	Absent	Absent	Absent
34.	Phenolic compounds (as C_6H_5OH), mg/l, Max.	1.0	5.0	--	5.0

Sr.	Parameter	Standards			
		Inland surface Water	**Public Sewers**	**Land for Irrigation**	**Marine Coastal Areas**
35.	Radioactive materials:				
	a. Alpha emitters MC/ml., Max.	10^{-7}	10^{-7}	10^{-8}	10^{-7}
	b. Beta emitters µc/ml., Max	10^{-6}	10^{-6}	10^{-7}	10^{-6}

Annexure VII: Drinking Water Specification-IS 10500:2012

Sr.	Characteristic	Unit	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
Table 1	**Organoleptic and Physical Parameters**			
1.	Colour	Hazen units	Max 5	Max 15
2.	Odour	-	Agreeable	Agreeable
3.	pH value	-	6.5-8.5	No relaxation
4.	Taste	-	Agreeable	Agreeable
5.	Turbidity	NTU	Max 1	Max 5
6.	Total dissolved solids	mg/l	Max 500	Max 2000
Table 2	**General parameters concerning substances undesirable in excessive amounts**			
7.	Aluminium (as Al)	mg/l	Max 0.03	Max 0.2
8.	Ammonia (as total ammonia- N)	mg/l	Max 0.5	No relaxation
9.	Anionic detergents (as MBAS)	mg/l	Max 0.2	Max 1.0
10.	Barium (as Ba)	mg/l	Max 0.7	No relaxation
11.	Boron (as B)	mg/l	Max 0.5	Max 1.0
12.	Calcium (as Ca)	mg/l	Max 75	Max 200
13.	Chloramines (as $C1_2$)	mg/l	Max 4.0	No relaxation
14.	Chlorides (as Cl)	mg/l	Max 250	Max 1000
15.	Copper (as Cu)	mg/l	Max 0.05	Max 1.5
16.	Fluoride (as F)	mg/l	Max 1.0	Max 1.5
17.	Free residual chlorine	mg/l	Min 0.2	Min 1
18.	Iron (as Fe)	mg/l	Max 0.3	No relaxation

Sr.	Characteristic	Unit	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
19.	Magnesium (as Mg)	mg/l	Max 30	Max100
20.	Manganese (as Mn)	mg/l	Max 0.1	Max 0.3
21.	Mineral Oil	mg/l	Max 0.5	No relaxation
22.	Nitrate (as NO_3)	mg/l	Max 45	No relaxation
23.	Phenolic compounds (as C_6H_5OH)	mg/l	Max 0.001	Max 0.002
24.	Selenium (as Se)	mg/l	Max 0.01	No relaxation
25.	Silver (as Ag)	mg/l	Max 0.1	No relaxation
26.	Sulphate (as SO_4)	mg/l	Max 200	Max 400
27.	Sulphide (as H_2S)	mg/l	Max 0.05	No relaxation
28.	Total Alkalinity as calcium carbonate	mg/l	Max 200	Max600
29.	Total hardness (as $CaCO_3$)	mg/l	Max 200	Max 600
30.	Zinc (as Zn)	mg/l	Max 5	Max15
Table 3	**Parameters Concerning Toxic Substances**			
31.	Cadmium (as Cd)	mg/l	Max 0.003	No relaxation
32.	Cyanide (as CN)	mg/l	Max 0.05	No relaxation
33.	Lead (as Pb)	mg/l	Max 0.01	No relaxation
34.	Mercury (as Hg)	mg/l	Max 0.001	No relaxation
35.	Molybdenum (as Mo)	mg/l	Max 0.07	No relaxation
36.	Nickel (as Ni)	mg/l	Max 0.02	No relaxation
37.	Pesticides	mg/l	See Table 5	No relaxation
38.	Polychlorinated biphenyls	mg/l	Max 0.0005	No relaxation
39.	Poly nuclear aromatic Hydrocarbons (as PAH)	mg/l	Max 0.0001	No relaxation
40.	Total Arsenic(as As)	mg/l	Max 0.01	Max0.05

Sr.	Characteristic	Unit	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
41.	Total Chromium (as Cr)	mg/l	Max 0.05	No relaxation
42.	Trihalomethanes			
a)	Bromoform	mg/l	Max 0.1	No relaxation
b)	Dibromochloro Methane	mg/l	Max 0.1	No relaxation
c)	Bromodichloromethane	mg/l	Max 0.06	No relaxation
d)	Chloroform	mg/l	Max 0.2	No relaxation
Table 4	**Parameters Concerning Radioactive Substances**			
43.	Radioactive Materials			
a)	Alpha emitters	Bq/L	Max 0.1	No relaxation
b)	Beta emitters	Bq/L	Max 1.0	No relaxation
Table 5	**Pesticide Residues Limits and Test Method**			
i)	Alachor	µg/L	20	No relaxation
ii)	Atrazine	µg/L	2	No relaxation
iii)	Aldrin/ Dieldrin	µg/L	0.03	No relaxation
iv)	Alpha HCH	µg/L	0.01	No relaxation
v)	Beta HCH	µg/L	0.04	No relaxation
vi)	Butachlor	µg/L	125	No relaxation
vii)	Chlorpyriphos	µg/L	30	No relaxation
viii)	Delta HCH	µg/L	0.04	No relaxation
ix)	2,4- Dichlorophenoxyacetic acid	µg/L	30	No relaxation
x)	DDT (o,p & p,p — Isomers of DDT, DDE and DDD)	µg/L	1	No relaxation
xi)	Endosulfan (α, β & sulphate)	µg/L	0.4	No relaxation
xii)	Ethion	µg/L	3	No relaxation

Sr.	Characteristic	Unit	Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
xiii)	Gamma - HCH (Lindane)	µg/L	2	No relaxation
xiv)	Isoproturon	µg/L	9	No relaxation
xv)	Malathion	µg/L	190	No relaxation
xvi)	Methyl parathion	µg/L	0.3	No relaxation
xvii)	Monocrotophos	µg/L	1	No relaxation
xviii)	Phorate	µg/L	2	No relaxation
Table 6	**Bacteriological Quality of Drinking Water**			
44.	E.coli or thermotolerant coliform bacteria	/100	Not detectable	-
45.	Total coliform bacteria	/100 mL	Not detectable	-
	Virological Requirements			
46.	MS2 phage	/1 L	Absent	-
	Biological Requirements			
47.	Cryptosporidium	/10 L	Absent	-
48.	Giardia	/10 L	Absent	-
49.	Microscopic organisms such as algae, zooplanktons, flagellates, parasites and toxin producing organisms		Free from microscopic organisms	-

Annexure VIII: CPCB Water Quality Criteria:

Designated best use	Quality Class	Primary Water Quality Criteria
Drinking water source without conventional treatment but with chlorination	A	➢ Total coliform organisms (MPN*/100 ml) shall be 50 or less ➢ pH between 6.5 and 8.5 ➢ Dissolved Oxygen 6 mg/l or more, and ➢ Biochemical Oxygen Demand 2 mg/l or less
Outdoor bathing (organized)	B	➢ Total coliform organisms (MPN/100 ml) shall be 500 or less ➢ pH between 6.5 and 8.5 ➢ Dissolved Oxygen 5 mg/l or more, and ➢ Biochemical Oxygen Demand 3 mg/l or less
Drinking water source with conventional treatment	C	➢ Total coliform organisms (MPN/100ml) shall be 5000 or less ➢ pH between 6 and 9 ➢ Dissolved Oxygen 4 mg/l or more, and ➢ Biochemical Oxygen Demand 3 mg/l or less
Propagation of wildlife and fisheries	D	➢ pH between 6.5 and 8.5 ➢ Dissolved Oxygen 4 mg/l or more, and ➢ Free ammonia (as N) 1.2 mg/l or less
Irrigation, industrial cooling, and controlled disposal	E	➢ pH between 6.0 and 8.5 ➢ Electrical conductivity less than 2250 micro mhos/cm, ➢ Sodium Absorption Ratio less than 26, ➢ and Boron less than 2 mg/l.
	Below E	➢ Not Meeting A, B, C, D & E Criteria

Annexure IX: Water Quality Parameters Requirements and Classification

Water quality parameters are classified into three categories, given in Table (i), (ii) and (iii) (Source: CPCB, 2002, "Water Quality Criteria and Goals", Monitoring of Indian National aquatic Resources Series: MINARS/17/2001-2002).

Table: Basic Water Quality Requirement and Classification (Surface Water + Ground Water)

i) Simple Parameters:

Sr.	Parameters	Requirement for Waters of Class		
		A-Excellent	**B-Desirable**	**C-Acceptable**
(i)	Sanitary Survey	Very Clean neighborhood and catchment	Reasonably clean neighborhood	Generally clean neighborhood
(ii)	General Appearance	No floating matter	No floating matter	No floating matter
(iii)	Colour	Absolutely Colourless	Almost colourless, very light shade if any	No colour of anthropogenic origin
(iv)	Smell	Odourless	Almost odourless	No unpleasant odour
(v)	Transparency	>1.0 depth	>0.5 to 0.1m depth	>0.2 to 0.5 m depth
(vi)	Ecological* (Presence of Animals)	Fish & Insects	Fish & Insects	Fish & Insects

* Applicable to only surface water

ii) Regular Monitoring Parameters:

Sr.	Parameters	Requirement for Waters of Class		
		A Excellent	**B-Desirable**	**C-Acceptable**
(i)	pH	7.0 to 8.5	6.5 to 9.0	6.5 to 9.0
(ii)	DO (% Saturation)	90-110	80-120	60-140
(iii)	BOD, mg/l	Below 2	Below 5	Below 8
(iv)	EC, µmhos/cm	<1000	<2250	<4000
(v)	(NO_2+NO_3)-Nitrogen, mg/l	<5	<10	<15
(vi)	Suspended solid, mg/l	<25	<50	<100

Sr.	Parameters	Requirement for Waters of Class		
		A Excellent	B-Desirable	C-Acceptable
(vii)	Fecal Coliform, MPN/ 100 ml	<20 per 100 ml	<200 per 100 ml	<2000 per 100 ml
(viii)	Bio-assay (Zebra Fish)	No death in 5 days	No death in 3 days	No death in 2 days

Note:

1. Dissolved Oxygen (DO) not applicable for ground waters.
2. Dissolved Oxygen in eutrophicated waters should include measurement for diurnal variation.
3. Suspended solid limit is applicable only during non-monsoon period.
4. Faecal Coliform values should meet for 90% times.
5. Static Bio-Assay method may be adopted.

iii) Specific Parameters: (Only in case of need/apprehensions)

Sr.	Parameters	Requirement for Waters of Class		
		A- Excellent	B-Desirable	C-Acceptable
(i)	Total Phosphorous	<0.1 mg/l	<0.2 mg/l	<0.3 mg/l
(ii)	T.K.N	<1.0 mg/l	<2.0 mg/l	<3.0 mg/l
(iii)	Total Ammonia (NH4 + NH3)-Nitrogen	<0.5 mg/l	<1.0 mg/l	<1.5 mg/l
(iv)	Phenols	<2 µg/l	<5 µg/l	<10 µg/l
(v)	Surface Active Agents	<20 µg/l	<100 µg/l	<200 µg/l
(vi)	Organo Chlorine Pesticides	<0.05 µg/l	<0.1 µg/l	<0.2 µg/l
(vii)	PAH	<0.05 µg/l	<0.1 µg/l	<0.2 µg/l
(viii)	PCB and PCT	<0.01 µg/l	<0.01 µg/l	<0.02 µg/l
(ix)	Zinc	<100 µg/l	<200 µg/l	<300 µg/l
(x)	Nickel	<50 µg/l	<100 µg/l	<200 µg/l
(xi)	Copper	<20 µg/l	<50 µg/l	<100 µg/l
(xii)	Chromium (Total)	<20 µg/l	<50 µg/l	<100 µg/l
(xiii)	Arsenic (Total)	<20 µg/l	<50 µg/l	<100 µg/l

Sr.	Parameters	Requirement for Waters of Class		
		A- Excellent	**B-Desirable**	**C-Acceptable**
(xiv)	Lead	<20 µg/l	<50 µg/l	<100 µg/l
(xv)	Cadmium	<1.0 µg/l	<2.5 µg/l	<5.0 µg/l
(xvi)	Mercury	<0.2 µg/l	<0.5 µg/l	<1.0 µg/l