Monitoring, Sampling and Analysis for Ambient Air Quality, Surface Water Quality and Ground Water Quality in Critically/Severely/Other Polluted

AURANGABAD

Post-Monsoon (December 2023 to February 2024)

Maharashtra Pollution Control Board

Kalptaru Point, Sion East, Mumbai – 400 022

Index

ABBREVIATIONS

CPCB	Central Pollution Control Board
MPCB	Maharashtra Pollution Control Board
CEPI	Comprehensive Environmental Pollution Index
EPA	Environmental Protection Act, 1986
APHA	American Public Health Association
ASTM	American Society for Testing and Materials
BIS	Bureau of Indian Standards
BLQ	Below the Limit of Quantification
CAAQMS	Continuous Ambient Air Quality Monitoring Station
CEMS	Continuous Emission Monitoring System
CETP	Common Effluent Treatment Plant
VOCs	Volatile Organic Compounds
MIDC	Maharashtra Industrial Development Corporation
NWMP	National Water Quality Monitoring Program
NAAQS	National Ambient Air Quality Standard
ZLD	Zero Liquid Discharge
CPA	Critically Polluted Area
SPA	Severely Polluted Area

1. Executive Summary

Aurangabad CEPI area includes four Maharashtra Industrial development Corporations (MIDCs) namely, MIDC Shendra, MIDC Chikalthana, MIDC Waluj and MIDC Paithan were monitored for Ambient Air Quality, Ground and Surface Water quality. Based on the data collected by monitoring, a Comprehensive Environmental Pollution Index (CEPI) Score [as per latest directions 120 of Letter No. B-29012/ESS (CPA)/2015-16 dated 26th April 2016 of Central Pollution Control Board (CPCB)] was calculated. Maharashtra Pollution Control Board (MPCB) has carried out monitoring at CPCB locations with the additional locations of sampling for ambient air, surface and ground water in consideration with the previous CEPI monitoring and covering the entire CEPI Impact Zone. The post monsoon monitoring was carried out during the period of December 2023 to February 2024 to assess the ambient air quality, surface water quality and ground water quality.

The Ambient Air Quality stations were identified considering the upwind and cross wind direction in the CEPI impact area. Ambient Air Quality was monitored at sixteen locations. The concentration of all ambient air parameters was found well within the limits prescribed by NAAQS, 2009. Twenty four locations for surface water and twelve for ground water were monitored for the study. Concentration values of Selenium is observed higher than its permissible limit in the surface water as well as in the ground water. Ground water parameters were found to be within the permissible limits when compared with IS10500:2012 drinking water standards.

Based on the study conducted by CPCB during the period January 2018, the CEPI score of Aurangabad region as per the revised guidelines of CEPI (2016) was 69.85 (Air Index–45, Water Index-65.38 and Land Index–28.75). However, the present study reports aggregated CEPI score of Aurangabad region of post-monsoon season (March, 2024). Based on the study, present CEPI score is 58.1 (Air Index–25.0, Water Index-43.3 and Land Index–53.0). The CEPI score is the combination of A, B, C and D factors. Here, C factor represents the health data and D factor represents the initiatives taken by MPCB in past few years to mitigate the pollution. As regional office of MPCB has taken various initiatives like installation of CAAQMS, CETPs, online VOC analysers, enforcing stricter emission standards, promoting renewable energy adoption, enhancing waste management practices and conducting public awareness campaigns for sustainable practices in the past few years to control and mitigate the air and water pollutants. This has contributed to the factor D, hence reduced the CEPI score of the region over the years.

The analysis of the aggregated CEPI score shows that the pollution in Aurangabad industrial clusters has reduced over the years. Approximately 16% decrease in CEPI score is observed from 69.85 in 2018 to 58.1 in the present study.

2. Introduction

In the vibrant tapestry of India's industrial landscape, the state of Maharashtra stands as a testament to both the promise and perils of rapid economic development. With countless number of industrial clusters, Maharashtra has witnessed unprecedented growth and prosperity in recent decades. However, this surge in industrial activity has come at a significant environmental cost, with pollution emerging as a pressing concern in many regions across the state.

Simultaneously, the Comprehensive Environmental Pollution Index (CEPI) has emerged as a beacon of assessment and action in India's environmental landscape. Introduced as a standardized methodology for evaluating and addressing pollution in industrial clusters across the nation, the CEPI represents a significant step towards achieving the delicate balance between economic growth and environmental sustainability. Developed through collaborative efforts between environmental scientists, regulatory authorities, and community stakeholders, the CEPI serves as a vital instrument for identifying, prioritizing, and mitigating pollution in industrial areas. By systematically monitoring, sampling, and analyzing pollution parameters such as ambient air quality, surface water quality, and groundwater quality, the CEPI empowers policymakers and regulators to make informed decisions and allocate resources effectively.

In Maharashtra, where industrial activities drive economic growth and employment opportunities, the importance of the CEPI cannot be overstated. Through strategic monitoring, sampling, and analysis efforts, the CEPI aims to provide a comprehensive assessment of pollution levels and their impacts on environmental health in critically, severely, and other polluted industrial areas across the state.

Moreover, the application of the CEPI extends beyond mere assessment, serving as a catalyst for targeted interventions and regulatory enforcement in polluted industrial areas. By identifying pollution hotspots and vulnerable communities, the CEPI enables authorities to implement remedial measures, enforce pollution control norms, and monitor progress towards environmental sustainability.

In the following sections, we delve into the methodology, findings, and implications of both the CEPI assessment and the Monitoring, Sampling, and Analysis for Ambient Air Quality, Surface Water Quality, and Groundwater Quality in Polluted Industrial Areas of Chembur in Mumbai, Maharashtra. The present CEPI study includes Aurangabad region, which is a place of great importance due to its location on the famous Silk Route that traversed across the breadth of Asia to reach Europe. Aurangabad city typifies the landscape and the climatic conditions of the entire Marathwada region and is the Divisional Head Quarters of the Marathwada Region. The city is situated on the bank of river Kham a tributary of the Godavari River. s situated on the bank of river Kham a tributary of the Godavari River. The city is surrounded by hills of the Vindhya Ranges and the river Kham passes through it.

Aurangabad accounts for 4 MIDCs about with 1045 red category industries, 596 orange category industries and 3058 green category industries of various category engaged in the manufacturing of chemicals, dyes, dye-intermediates, Bulk drugs, pharmaceuticals, Textile

auxiliaries, Pesticides, Petrochemicals, Iron and steel, Textile processors, Engineering units etc. Besides the industries, there are other sources which are major contributors of pollution like emissions by transport and construction activities etc.

The present report is also based on the revised CEPI version 2016. 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. The CEPI reports serve as a roadmap for targeted interventions, regulatory enforcement, and community engagement aimed at mitigating pollution and safeguarding public health in the area. Despite the persistent challenges, ongoing initiatives guided by the CEPI action plan reports offer hope for addressing environmental concerns and fostering sustainable development in Aurangabad.

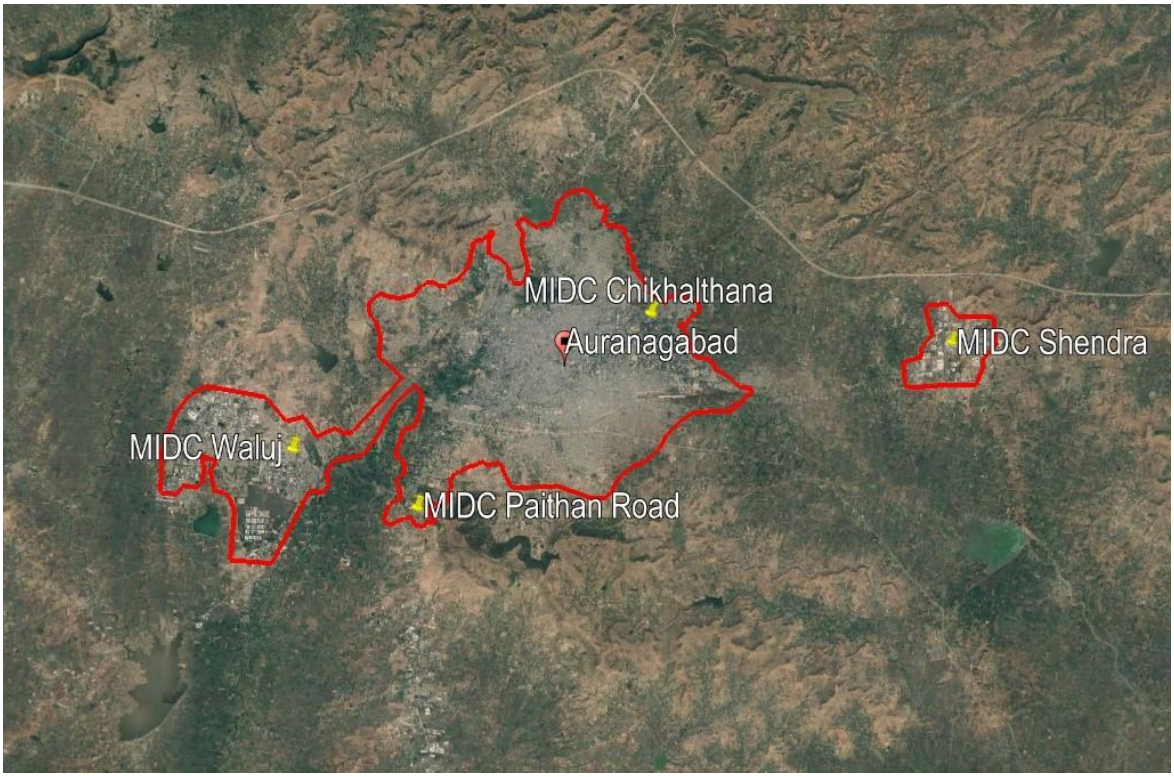


Fig: Aurangabad region CEPI monitoring zone

3. Scope of Work

The major scope of work includes:

I. The scope of the present study is to perform three (3) rounds of "Monitoring, Sampling and Analysis for Ambient Air Quality, VOCs in Ambient Air, Surface Water Quality & Ground Water Quality in the selected Pollution Industrial Areas (PIAs) of Aurangabad, Maharashtra" with a gap of one or two days. The analysis of the collected samples was carried out by the standard methods (CPCB, BIS, APHA, USEPA).

II. To Collect health-related data in the CEPI region.

III. To calculate the Comprehensive Environmental Pollution Index (CEPI) Score as per Revised CEPI-2016 issued by Central Pollution Control Board (CPCB).

The sampling details and frequency of sampling in Ambient Air, VOCs, Surface Water and Ground Water are given in Table 3.1 and Table 3.2 respectively.

Table 3.1 Sampling Details of Aurangabad

Sampling Criteria	Number of sites	Total Sites	Monitoring Parameters
Ambient Air Quality	• MIDC Shendra-04 • MIDC Chikalthana - 04 • MIDC Waluj - 04 • MIDC Paithan Road - 04	**16**	PM_{10}, $PM_{2.5}$, SO_2, NO_2, NH_3, O_3, C_6H_6, CO, BaP, Pb, Ni, As
Volatile Organic Compounds (VOCs)	• MIDC Shendra-02 • MIDC Chikalthana - 02 • MIDC Waluj - 02 • MIDC Paithan Road - 02	**08**	Dichloromethane,Chloroform,CarbonTetrachloride, Trichloroethylene, Bromodichloromethane, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 1,3-Dichlorobenzene, 1,2-Dichlorobenzene, 1,2-Dibromo-3-Chloropropane, Napthalene, Bromobenzene,1,2,4-Trimethylbenzene,2-Chlorotoluene, Tert-Butylbenzene, SEC-Butylbenzene, P-Isopropyltoluene, M-Xylene, P-Xylene, Styrene, Cumene 1,2,3-Trichloropropane,N-Propylbenzene, Dibromochloromethane, 1,2-Dibromoethane, Chlorobenzene, 1,1,1,2-Tetrachloroethane, Ethylbenzene, 1,1-Dichloropropylene, 1,2-Dichloroethane, 1,2-Dichloropropane, Trans-1,3-Dichloropropene, CIS 1,3-Dichloropropene, 1,1,2-Trichloroethane, Tetrachloroethylene, 1,3,5-Trimethylbenzene, N-Butylbenzene,1,2,3-

Sampling Criteria	Number of sites	Total Sites	Monitoring Parameters
			Trichlorobenzene, Hexachlorobutadiene, 1,2,4-Trichlorobenzene, 2,2-Dichloropropane, Dibromomethane, Toluene, O-Xylene, Bromoform, 1,1,2,2-Tetrachloroethane, 4-Chlorotoluene, 1,1-Dichloroethylene, Trans-1,2-Dichloroethylene, 1,1-Dichloroethane, CIS-1,2-Dichloroethylene, Bromochloromethane, 1,1,1-Trichloroethane
Water Quality Monitoring	**Surface water** • MIDC Shendra-06 • MIDC Chikalthana -06 • MIDC Waluj - 06 • MIDC Paithan Road - 06	**24**	**(i) Simple Parameters** Sanitary Survey, General Appearance, Colour, Smell, Transparency and Ecological **(ii) Regular Monitoring Parameters** pH, O & G, Suspended Solids, DO, COD, BOD, TDS, 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, 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.
	Ground water • MIDC Shendra-03 • MIDC Chikalthana - 03 • MIDC Waluj - 03 • MIDC Paithan Road - 03	**12**	

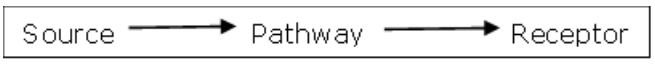
Table 3.2 Frequency of Sampling

	Parameter	Round of Sampling	Frequency in Each Round
A	**Ambient Air Quality Monitoring**		
1.	Particulate Matter (size less than 10 µm) or PM_{10}	03	3 Shifts of 8 hrs each

	Parameter	Round of Sampling	Frequency in Each Round
2.	Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	03	1 Shift of 24 hrs
3.	Sulphur Dioxide (SO_2)	03	6 Shifts of 4 hrs each
4.	Nitrogen Dioxide (NO_2)	03	6 Shifts of 4 hrs each
5.	Ammonia (NH_3)	03	6 Shifts of 4 hrs each
6.	Ozone (O_3)	03	24 Shifts of 1 hr each
7.	Benzene (C_6H_6)	03	1 Shifts of 24 hrs
8.	Carbon Monoxide (CO)	03	24 Shifts of 1 hr each
9.	Benzo (a) Pyrene (BaP) – particulate phase only	03	3 Shifts of 8 hrs each
10.	Lead (Pb)	03	3 Shifts of 8 hrs each
11.	Arsenic (As)	03	3 Shifts of 8 hrs each
12.	Nickel (Ni)	03	3 Shifts of 8 hrs each
B	**Volatile Organic Compounds (VOCs)**		
	As mentioned in Table 3.1	03	3 Shifts of 24 hrs each
C	**Ground Water**		
	As mentioned in Table 3.1	03	01 sample at each round
D	**Surface Water**		
	As mentioned in Table 3.1	03	01 sample at each round

4. Methodology

The present report is based on the revised Comprehensive Environmental Pollution Index (CEPI) version 2016. The index captures the various dimensions of the environment including air, water and land. Comprehensive Environmental Pollution Index (CEPI) is a rational number, which is used to characterize the environmental quality at a given location. It is three-step process based on the algorithm of Source, pathway and Receptor.



Ambient air stations, Surface water locations and Ground water locations were decided by the respective regional officers. The sampling was done in three rounds with an interval of one or two days at each location. 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 CPCB/ EPA/ APHA/ IS/ ASTM standard methods for the samples.

AIR ENVIRONMENT

5. Air Environment

For studying the Air Environment of Aurangabad area, monitoring stations were identified considering the upwind and cross wind direction and all 12 parameters as per the notification of National Ambient Air Quality Standards (NAAQS) were carried out.

**Kindly note: Volatile Organic Compounds (VOCs) concentration is not detected in most of the Air samples collected; hence it is not shown in the graphs here.*

1. **MIDC Shendra:** In MIDC Shendra, four locations have been monitored to check the Ambient Air Quality (AAQ) in triplicate from 20thDec., 2023 to 24th Dec., 2023. All the 12 AAQ parameters were monitored as per National Ambient Air Quality Standards (NAAQS, 2009). Results of analysis show that the concentration of most the parameters at all studied locations is observed well within the limits. VOCs were monitored at 2 locations namely Radico NV Distillery and Wockhardt Biotech Ltd.

Table 5.1 MIDC Shendra - Details of Sampling Location of Ambient Air Quality Monitoring

S. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Skoda Auto	19.872345N	75.489701E	20.12.2023	22.12.2023	24.12.2023
2.	Outside of Radico NV Distillery	19.883362N	75.502107E	20.12.2023	22.12.2023	24.12.2023
3.	Outside of Glenmark Pharmaceuticals Ltd.	19.872756N	75.502835E	20.12.2023	22.12.2023	24.12.2023
4.	Outside of Wockhardt Biotech Ltd.	19.873311N	75.491763E	20.12.2023	22.12.2023	24.12.2023

Table 5.2 MIDC Shendra - Details of Sampling Location of VOCs Monitoring

S.No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Outside of Radico NV Distillery	19.883362N	75.502107E	20.12.2023	22.12.2023	24.12.2023
2.	Outside of Glenmark Pharmaceuticals Ltd.	19.872756N	75.502835E	20.12.2023	22.12.2023	24.12.2023

Fig: Geographical Locations of Ambient Air Quality Monitoring MIDC Shendra

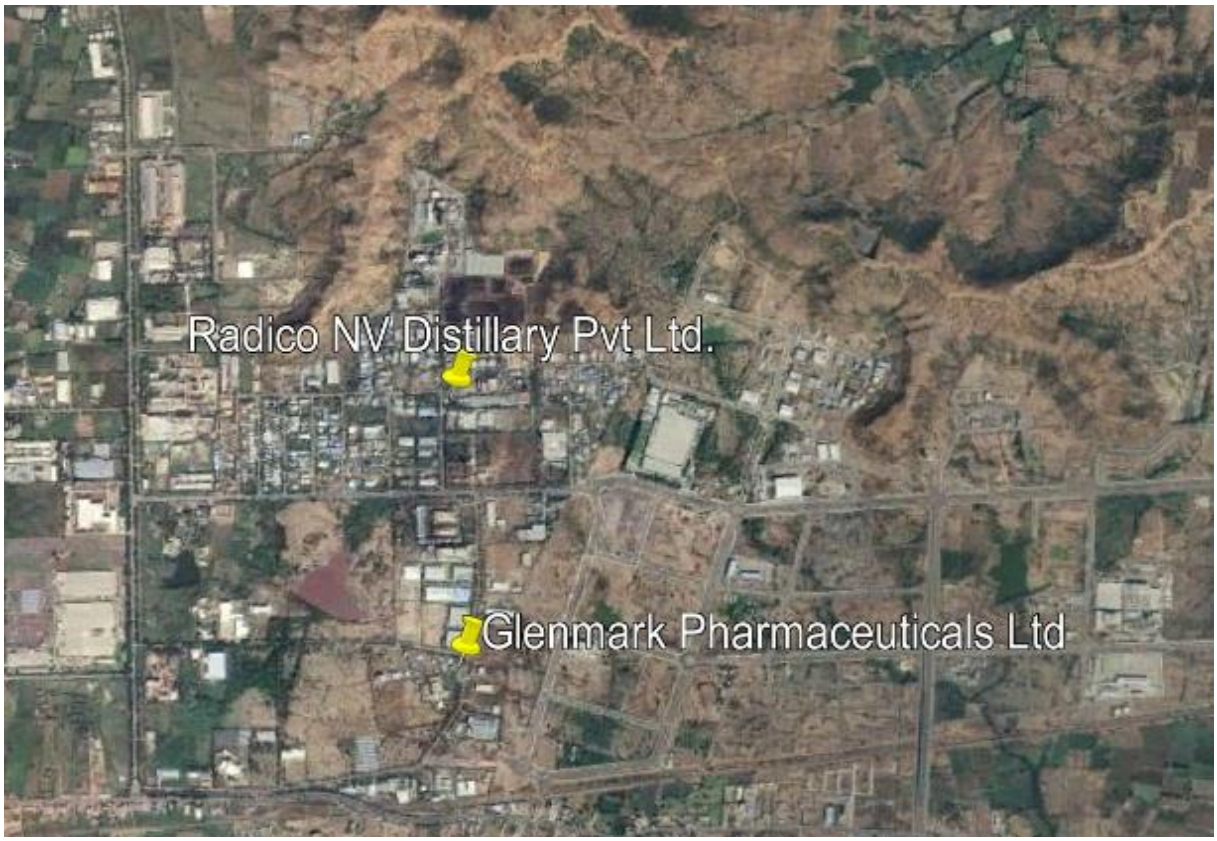


Fig: Geographical Locations of VOCs Monitoring MIDC Shendra

Table 5.3 MIDC Shendra - Ambient Air Quality Monitoring Results

Parameters	Unit	Results			
		Skoda Auto	Outside of Radico NV Distillery	Outside of Glenmark Pharmaceuticals Ltd.	Outside of Wockhardt Biotech Ltd.
Sulphur Dioxide (SO_2)	µg/m^3	24.70	23.11	15.00	18.57
Nitrogen Dioxide (NO_2)	µg/m^3	78.50	40.01	55.70	30.25
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	68	66	71	72
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	19	19	20	20
Ozone (O_3)	µg/m^3	BLQ	BLQ	BLQ	BLQ
Lead (Pb)	µg/m^3	BLQ	0.05	BLQ	BLQ
Carbon Monoxide (1 h)	mg/m^3	0.89	0.82	0.79	1.06
Carbon Monoxide (8 h)	mg/m^3	2.21	2.10	2.27	1.85
Ammonia (NH_3)	µg/m^3	66.47	78.73	84.63	72.67
Benzene (C_6H_6)	µg/m^3	1.79	1.31	2.26	BLQ
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	BLQ	BLQ	BLQ	BLQ
Arsenic (As)	ng/m^3	1.71	1.78	0.77	1.75
Nickel (Ni)	ng/m^3	3.96	4.88	BLQ	BLQ

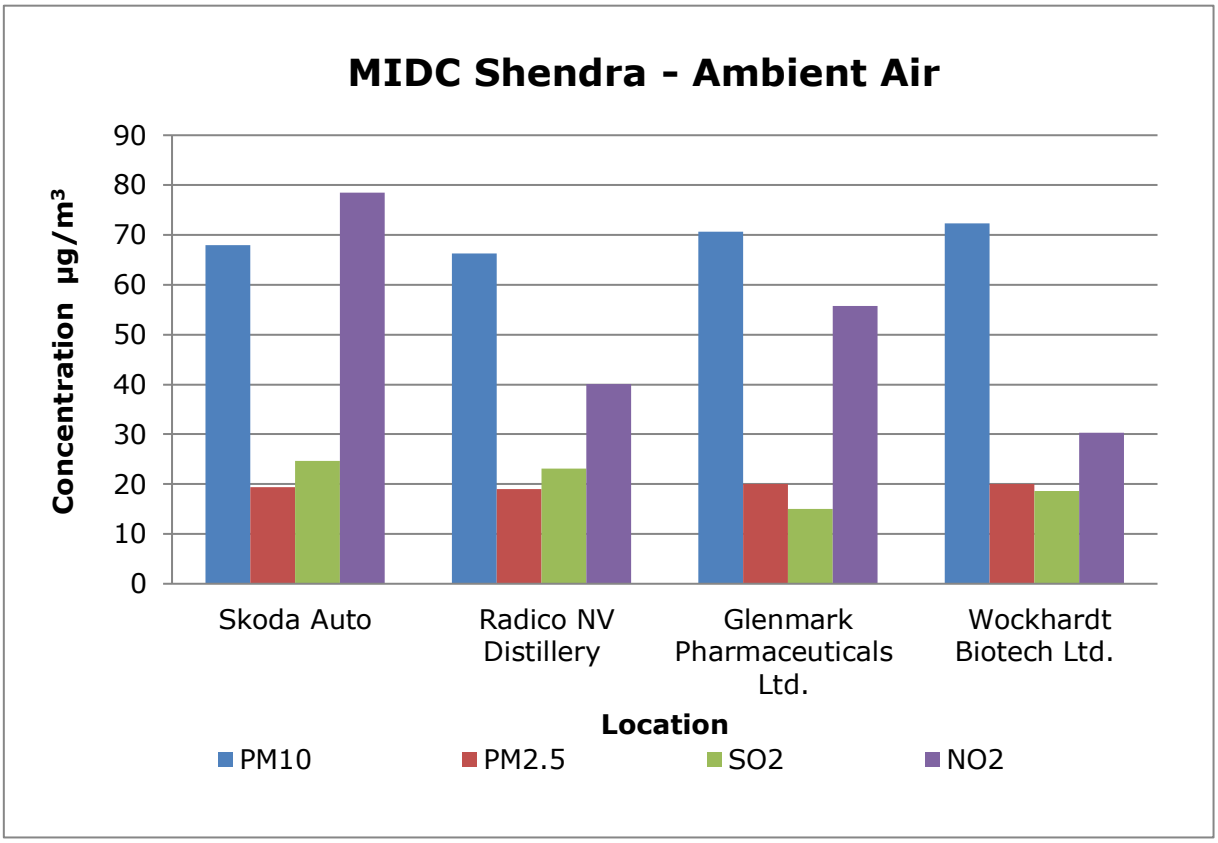
Table 5.4 MIDC Shendra - Volatile Organic Compounds (VOCs) in Ambient Air Results

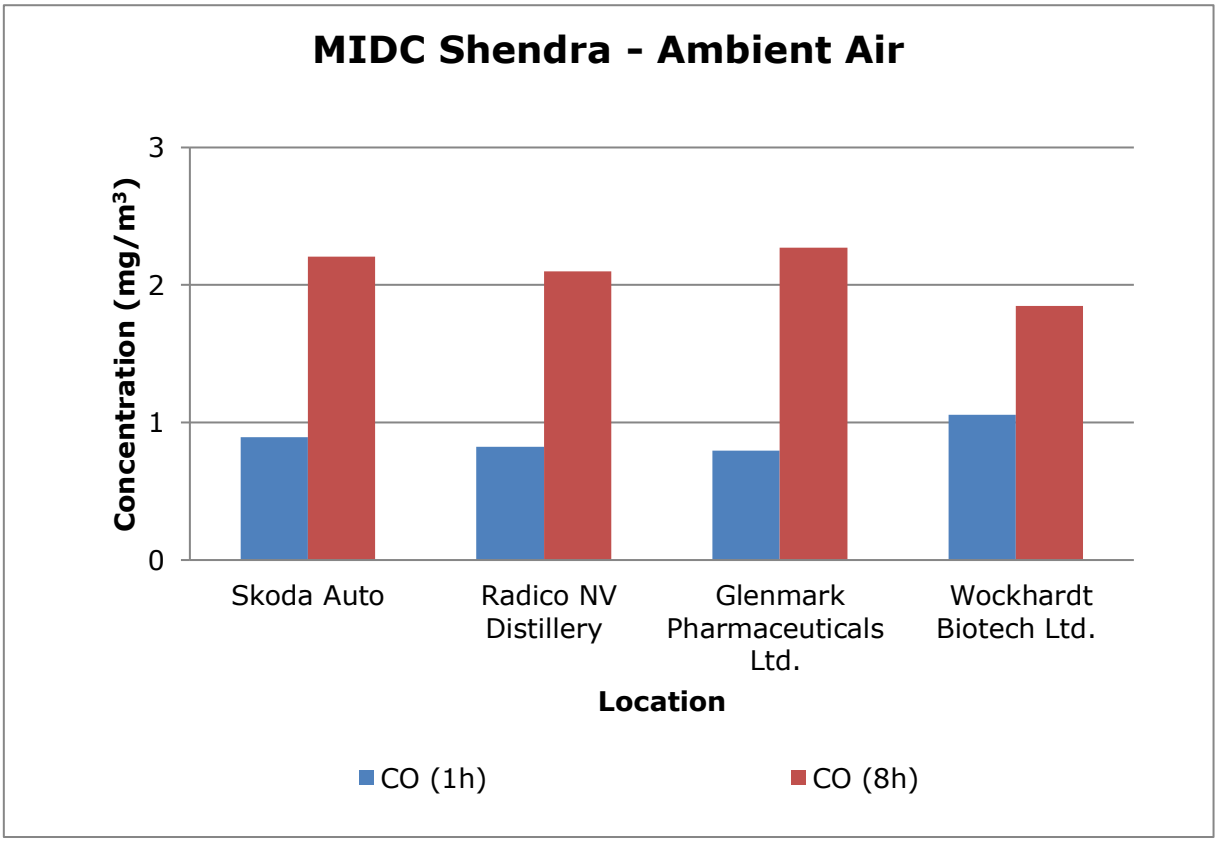
Parameters	Unit	Results	
		Outside of Radico NV Distillery	Outside of Glenmark Pharmaceuticals Ltd.
Dichloromethane	µg/m³	3.20	2.54
Chloroform	µg/m³	0.86	0.51
Carbon Tetrachloride	µg/m³	2.31	0.72
Trichloroethylene	µg/m³	BLQ	BLQ
Bromodichloromethane	µg/m³	BLQ	BLQ
1,3-Dichloropropane	µg/m³	BLQ	BLQ

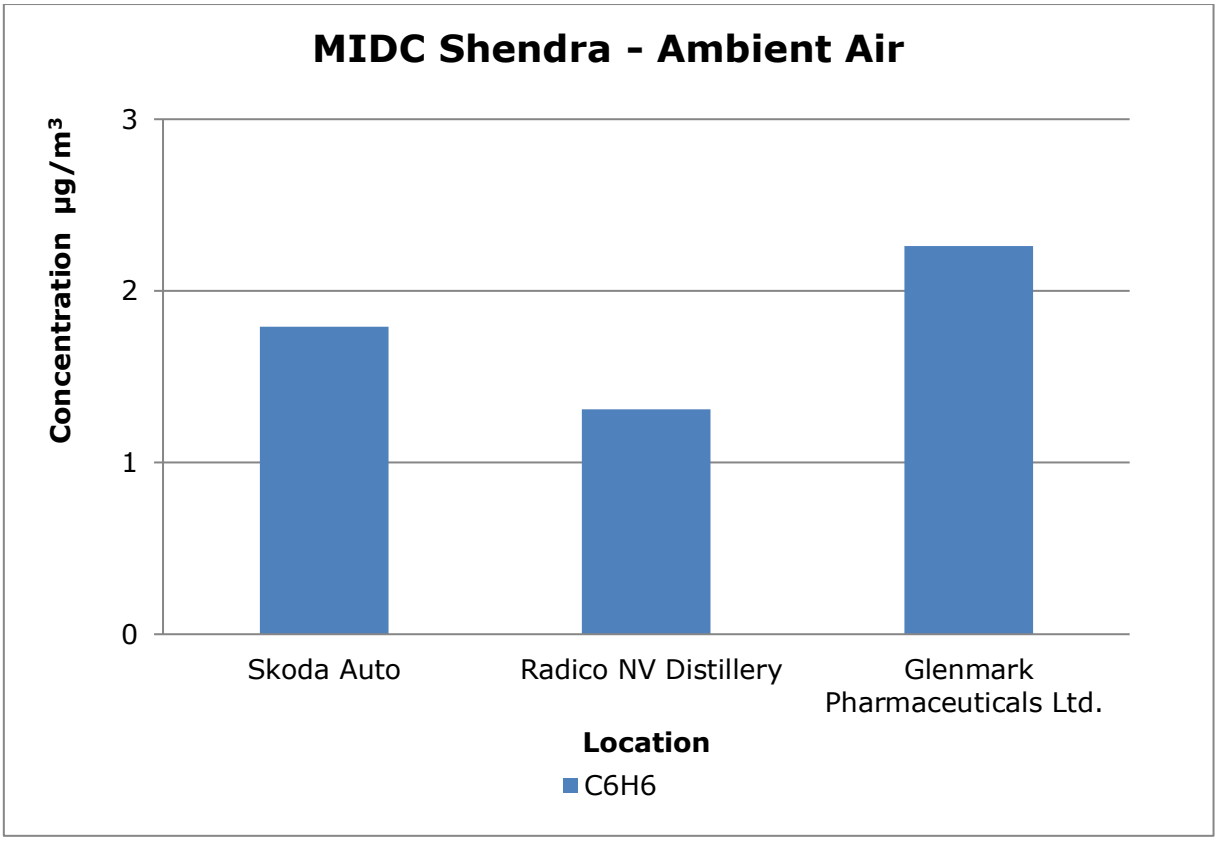
Parameters	Unit	Results	
		Outside of Radico NV Distillery	Outside of Glenmark Pharmaceuticals Ltd.
1,4-Dichlorobenzene	µg/m³	BLQ	BLQ
1,3-Dichlorobenzene	µg/m³	BLQ	BLQ
1,2-Dichlorobenzene	µg/m³	BLQ	BLQ
1,2-Dibromo-3-Chloropropane	µg/m³	BLQ	BLQ
Naphthalene	µg/m³	BLQ	BLQ
Bromobenzene	µg/m³	BLQ	BLQ
1,2,4-Trimethylbenzene	µg/m³	BLQ	BLQ
2-Chlorotoluene	µg/m³	BLQ	BLQ
Tert-Butylbenzene	µg/m³	BLQ	BLQ
SEC-Butylbenzene	µg/m³	BLQ	BLQ
P-Isopropyltoluene	µg/m³	BLQ	BLQ
M-Xylene	µg/m³	BLQ	BLQ
P-Xylene	µg/m³	BLQ	1.30
Styrene	µg/m³	BLQ	BLQ
Cumene	µg/m³	BLQ	BLQ
1,2,3-Trichloropropane	µg/m³	BLQ	BLQ
N-Propylbenzene	µg/m³	BLQ	BLQ
Dibromochloromethane	µg/m³	BLQ	BLQ
1,2-Dibromoethane	µg/m³	BLQ	BLQ
Chlorobenzene	µg/m³	BLQ	BLQ
1,1,1,2-Tetrachloroethane	µg/m³	BLQ	BLQ
Ethylbenzene	µg/m³	BLQ	BLQ
1,1-Dichloropropylene	µg/m³	BLQ	BLQ
1,2-Dichloroethane	µg/m³	0.60	2.40
1,2-Dichloropropane	µg/m³	BLQ	BLQ
Trans-1,3-Dichloropropene	µg/m³	BLQ	BLQ
CIS 1,3-Dichloropropene	µg/m³	BLQ	BLQ
1,1,2-Trichloroethane	µg/m³	BLQ	BLQ
Tetrachloroethylene	µg/m³	BLQ	BLQ
1,3,5-Trimethylbenzene	µg/m³	BLQ	BLQ
N-Butylbenzene	µg/m³	BLQ	BLQ
1,2,3-Trichlorobenzene	µg/m³	BLQ	BLQ

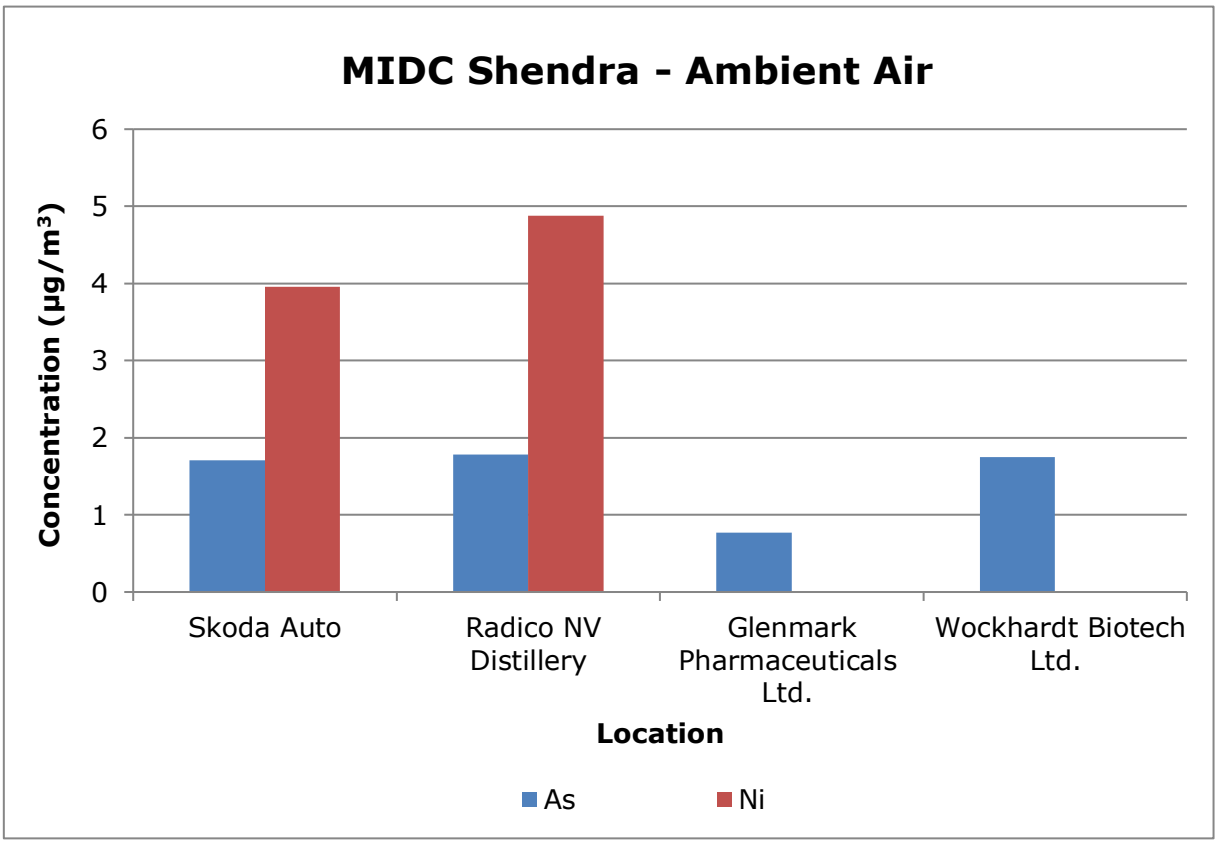
Parameters	Unit	Results	
		Outside of Radico NV Distillery	Outside of Glenmark Pharmaceuticals Ltd.
Hexachlorobutadiene	µg/m³	BLQ	BLQ
1,2,4-Trichlorobenzene	µg/m³	BLQ	BLQ
2,2-Dichloropropane	µg/m³	BLQ	BLQ
Dibromomethane	µg/m³	BLQ	BLQ
Toluene	µg/m³	2.43	1.04
O-Xylene	µg/m³	BLQ	BLQ
Bromoform	µg/m³	BLQ	BLQ
1,1,2,2-Tetrachloroethane	µg/m³	BLQ	BLQ
4-Chlorotoluene	µg/m³	BLQ	BLQ
1,1-Dichloroethylene	µg/m³	BLQ	BLQ
Trans-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
1,1-Dichloroethane	µg/m³	BLQ	BLQ
CIS-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
Bromochloromethane	µg/m³	0.78	BLQ
1,1,1-Trichloroethane	µg/m³	BLQ	BLQ

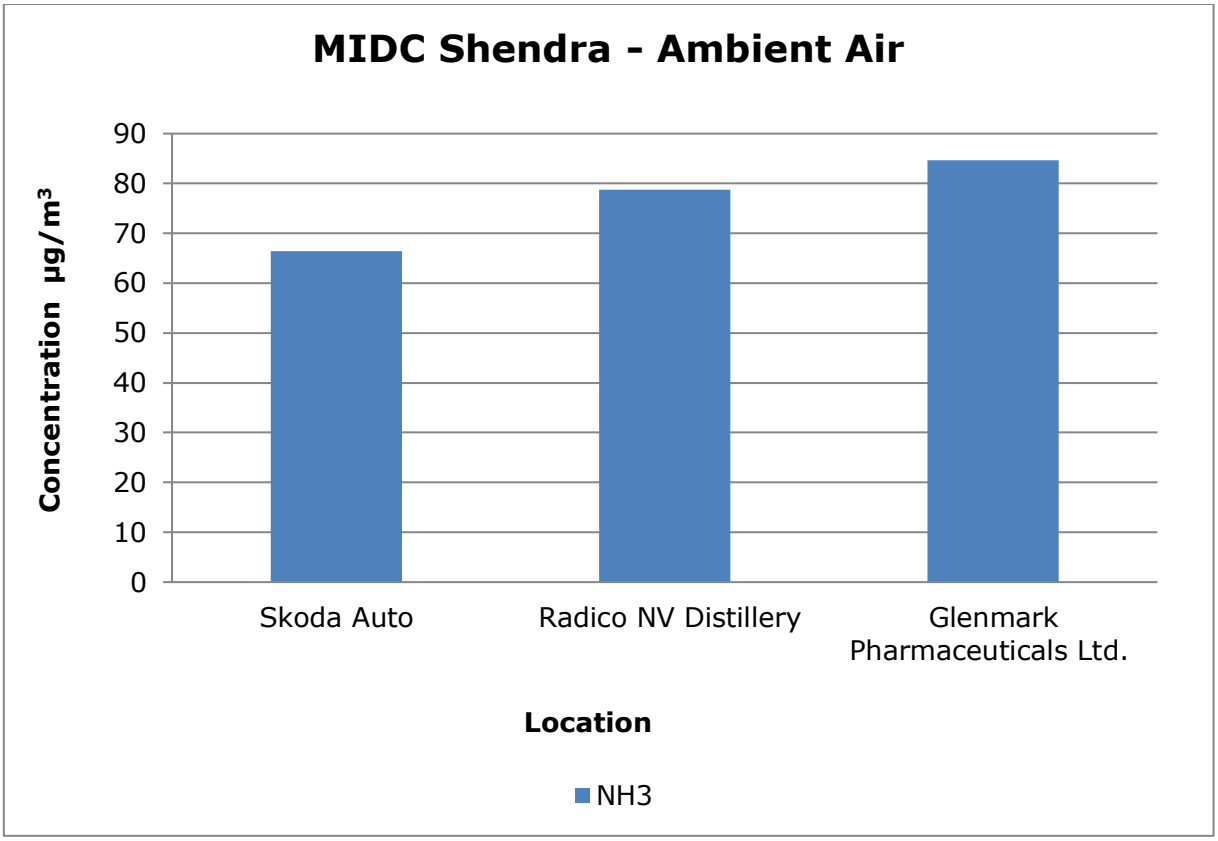
Graphs - Ambient Air Quality Monitoring - MIDC Shendra

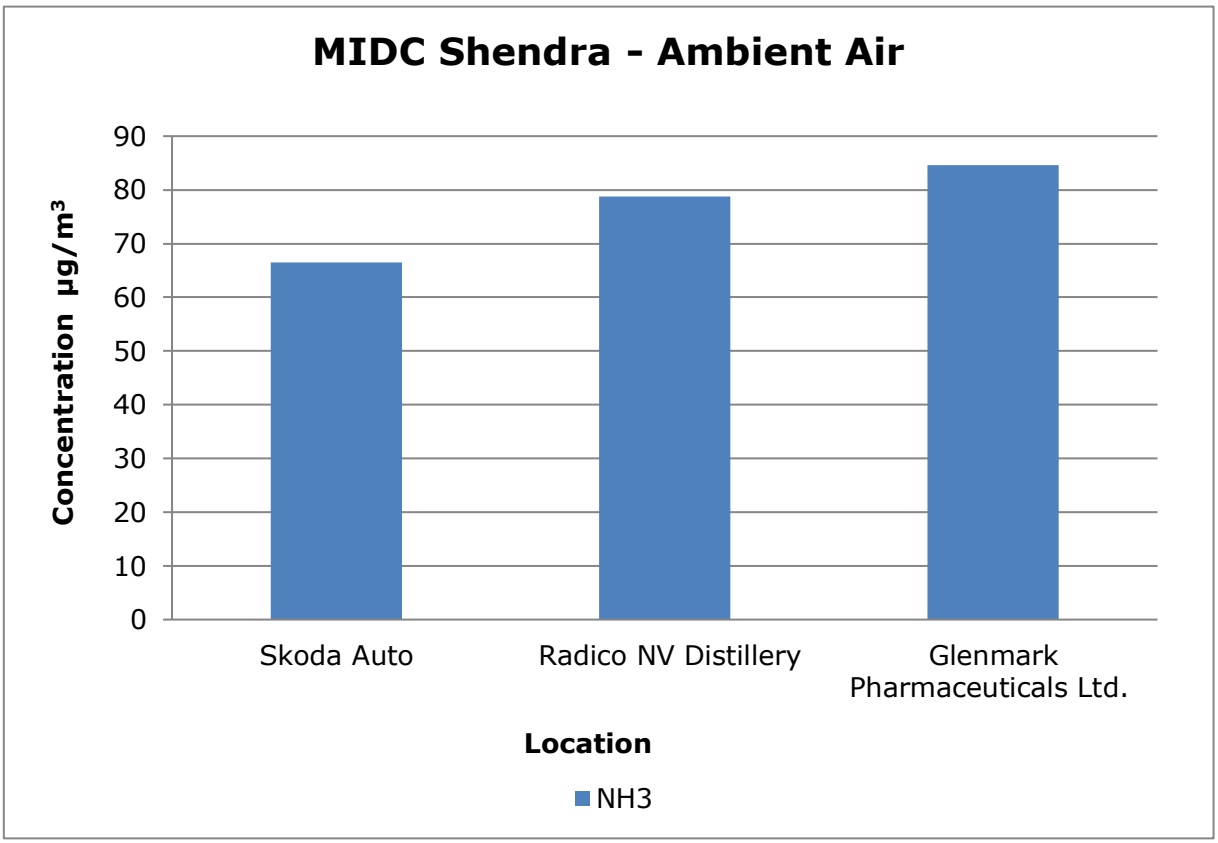





MIDC Shendra - Ambient Air
Concentration µg/m³
3
2
1
0
Skoda Auto
Radico NV Distillery
Glenmark Pharmaceuticals Ltd.
Location
C6H6


MIDC Shendra - Ambient Air
Concentration (µg/m³)
6
5
4
3
2
1
0
Skoda Auto
Radico NV Distillery
Glenmark Pharmaceuticals Ltd.
Wockhardt Biotech Ltd.
Location
As
Ni


MIDC Shendra - Ambient Air
Concentration µg/m³
90
80
70
60
50
40
30
20
10
0
Skoda Auto
Radico NV Distillery
Glenmark Pharmaceuticals Ltd.
Location
NH3


MIDC Shendra - Ambient Air
Concentration µg/m³
90
80
70
60
50
40
30
20
10
0
Skoda Auto
Radico NV Distillery
Glenmark Pharmaceuticals Ltd.
Location
NH3

2. MIDC Chikalthana: In MIDC Chikalthana, 4 locations were monitored to check the AAQ as per the NAAQS, 2009. Concentration of all the parameters (except Carbon monoxide) at all studied locations is observed well within the limits.

Table 5.5 MIDC Chikhalthana - Details of Sampling Location of Ambient Air Quality Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Wockhardt Biotech Ltd. (R&D)	19.879034N	75.375937E	21.12.2023	23.12.2023	25.12.2023
2.	Harman Finochem Ltd.	19.878172N	75.383236E	21.12.2023	23.12.2023	25.12.2023
3.	ABD Distillery	19.873087N	75.388674E	21.12.2023	23.12.2023	25.12.2023
4.	Jolly Board Ltd.	19.895694N	75.378577E	21.12.2023	23.12.2023	25.12.2023

Table 5.6 MIDC Chikhalthana - Details of Sampling Location of VOCs Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
5.	Concept Pharma	19.875251	75.376492	21.12.2023	23.12.2023	25.12.2023
6.	ABD Distillery	19.873087N	75.388674E	21.12.2023	23.12.2023	25.12.2023

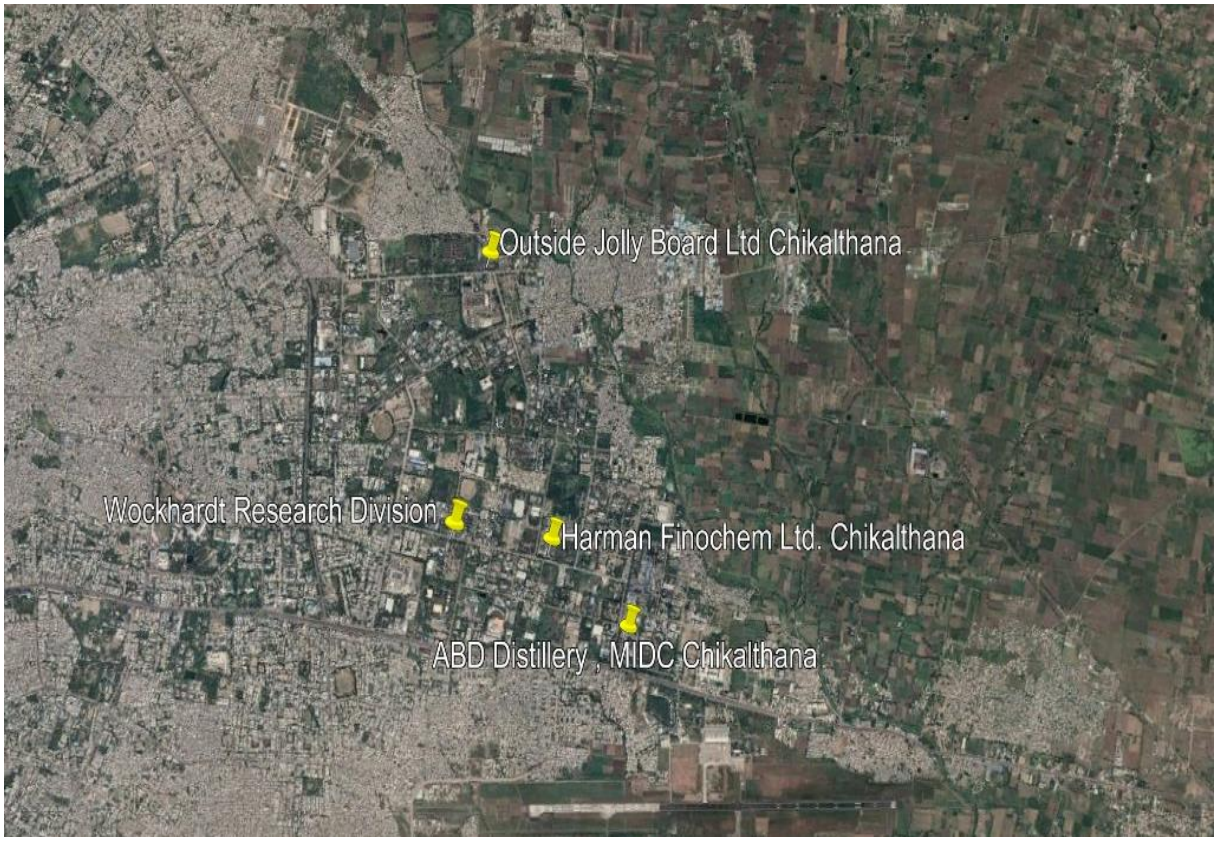


Fig: Geographical Locations of Ambient Air Quality Monitoring MIDC Chikhalthana

Fig: Geographical Locations of VOCs Monitoring MIDC Chikhalthana

Table 5.7 MIDC Chikhalthana - Ambient Air Quality Monitoring Results

Parameters	Unit	Results			
		Wockhardt Research Division	ABD Distillery	Jolly Board Ltd	Harman Finochem Ltd
Sulphur Dioxide (SO_2)	µg/m^3	37.75	26.93	28.05	27.39
Nitrogen Dioxide (NO_2)	µg/m^3	35.75	37.05	29.35	20.75
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	68	71	68	72
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	17	20	17	19
Ozone (O_3)	µg/m^3	BLQ	BLQ	BLQ	BLQ
Lead (Pb)	µg/m^3	0.05	BLQ	BLQ	BLQ
Carbon Monoxide (CO) (1h)	mg/m^3	0.73	1.04	0.88	0.77
Carbon Monoxide (CO) (8h)	mg/m^3	2.04	1.79	1.53	1.66
Ammonia (NH_3)	µg/m^3	60.23	74.55	67.50	57.83
Benzene (C_6H_6)	µg/m^3	1.76	2.22	1.22	1.22
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	BLQ	BLQ	BLQ	BLQ
Arsenic (As)	ng/m^3	5.49	BLQ	1.71	1.66
Nickel (Ni)	ng/m^3	BLQ	BLQ	4.50	BLQ

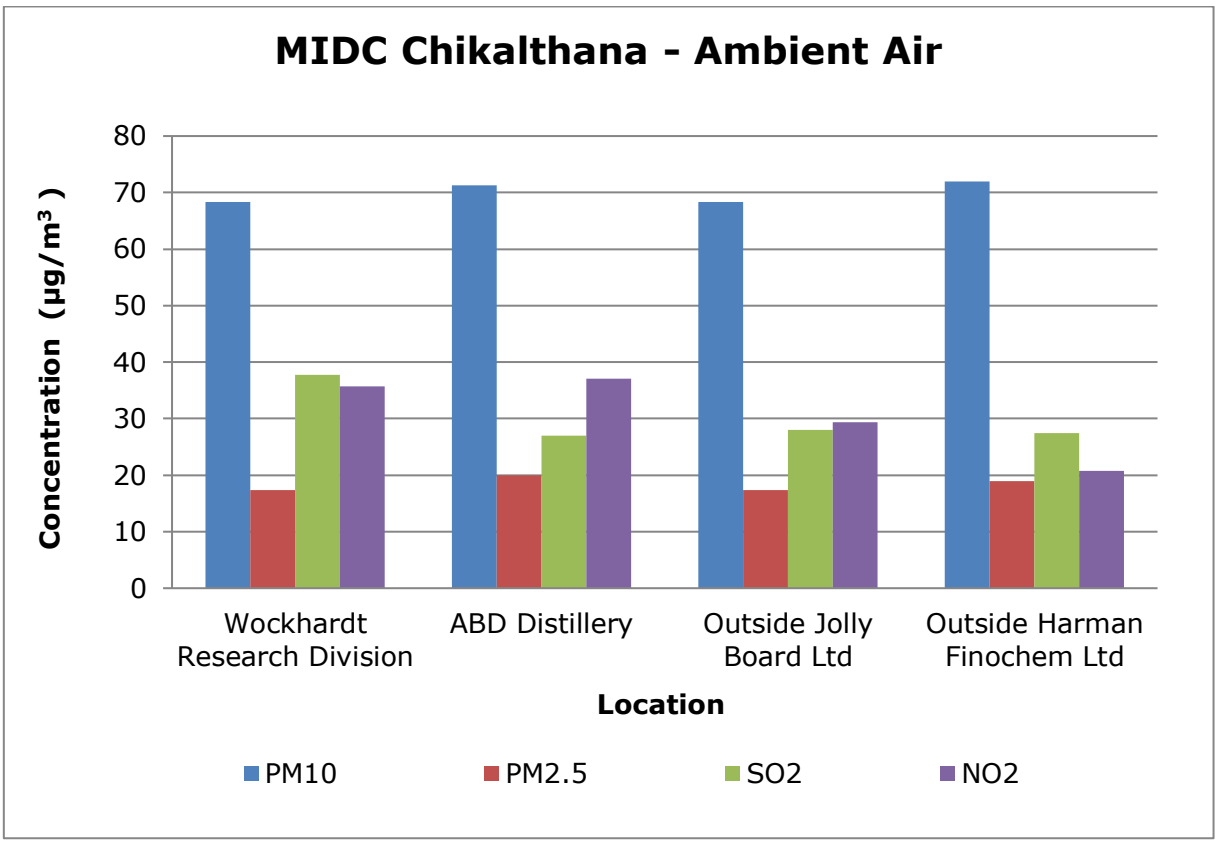
Table 5.8 MIDC Chikhalthana - Volatile Organic Compounds (VOCs) in Ambient Air Results

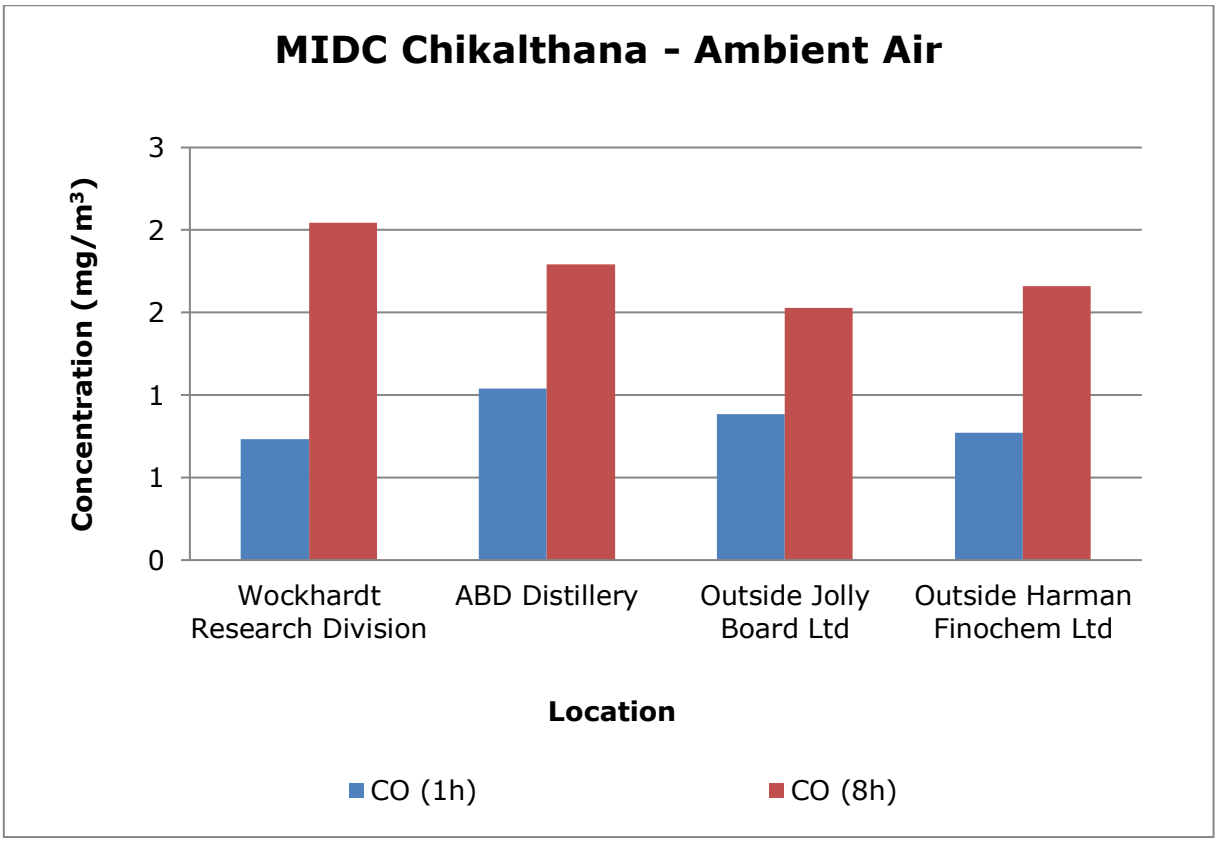
Parameters	Unit	Results	
		ABD Distillery	Concept Pharma
Dichloromethane	µg/m³	4.76	2.88
Chloroform	µg/m³	1.29	0.93
Carbon Tetrachloride	µg/m³	14.16	0.87
Trichloroethylene	µg/m³	BLQ	BLQ
Bromodichloromethane	µg/m³	BLQ	0.86
1,3-Dichloropropane	µg/m³	BLQ	BLQ
1,4-Dichlorobenzene	µg/m³	BLQ	BLQ
1,3-Dichlorobenzene	µg/m³	BLQ	BLQ

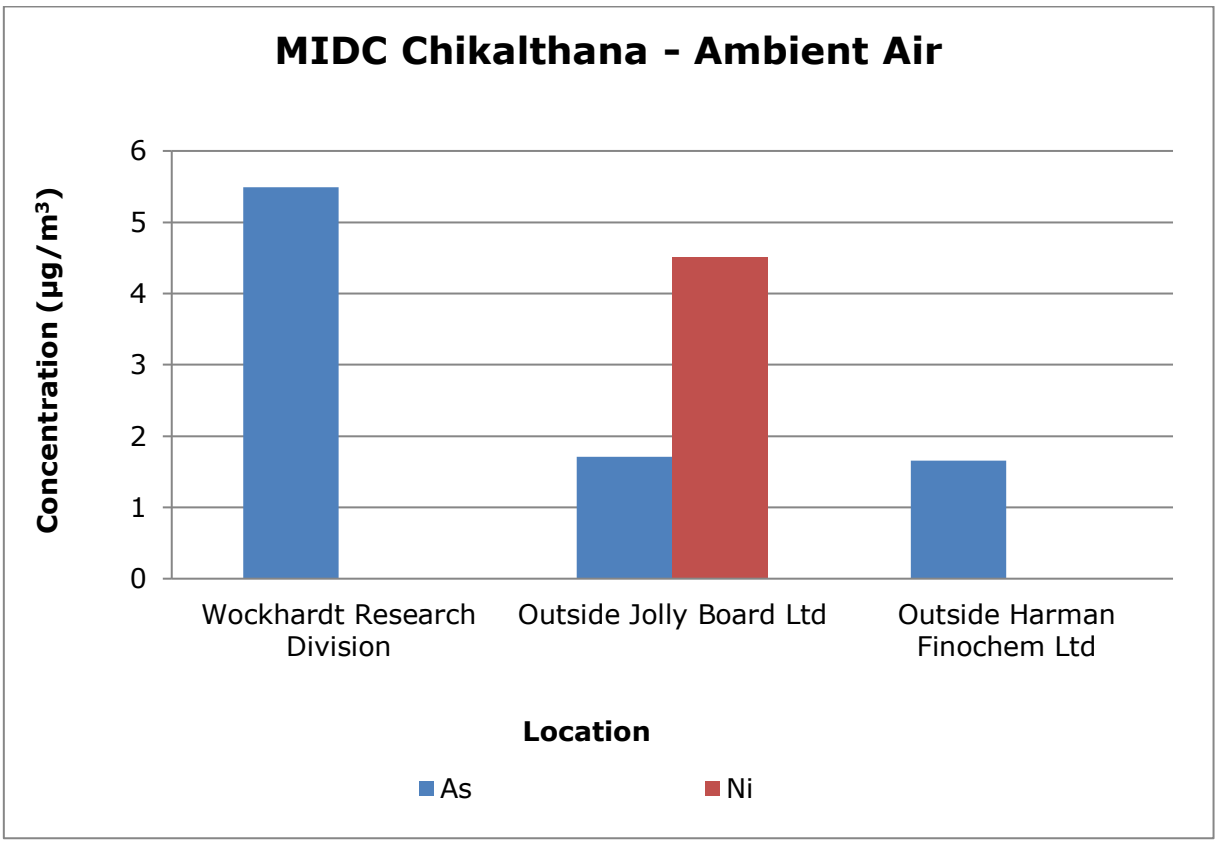
Parameters	Unit	Results	
		ABD Distillery	Concept Pharma
1,2-Dichlorobenzene	µg/m³	BLQ	BLQ
1,2-Dibromo-3-Chloropropane	µg/m³	BLQ	BLQ
Napthalene	µg/m³	BLQ	BLQ
Bromobenzene	µg/m³	BLQ	BLQ
1,2,4-Trimethylbenzene	µg/m³	BLQ	BLQ
2-Chlorotoluene	µg/m³	BLQ	BLQ
Tert-Butylbenzene	µg/m³	BLQ	BLQ
SEC-Butylbenzene	µg/m³	BLQ	BLQ
P-Isopropyltoluene	µg/m³	BLQ	BLQ
M-Xylene	µg/m³	BLQ	BLQ
P-Xylene	µg/m³	30.40	BLQ
Styrene	µg/m³	BLQ	BLQ
Cumene	µg/m³	BLQ	BLQ
1,2,3-Trichloropropane	µg/m³	BLQ	BLQ
N-Propylbenzene	µg/m³	BLQ	BLQ
Dibromochloromethane	µg/m³	BLQ	BLQ
1,2-Dibromoethane	µg/m³	BLQ	BLQ
Chlorobenzene	µg/m³	BLQ	BLQ
1,1,1,2-Tetrachloroethane	µg/m³	BLQ	BLQ
Ethylbenzene	µg/m³	BLQ	BLQ
1,1-Dichloropropylene	µg/m³	BLQ	BLQ
1,2-Dichloroethane	µg/m³	0.53	1.05
1,2-Dichloropropane	µg/m³	BLQ	BLQ
Trans-1,3-Dichloropropene	µg/m³	BLQ	BLQ
CIS 1,3-Dichloropropene	µg/m³	BLQ	BLQ
1,1,2-Trichloroethane	µg/m³	BLQ	BLQ
Tetrachloroethylene	µg/m³	BLQ	BLQ
1,3,5-Trimethylbenzene	µg/m³	BLQ	BLQ
N-Butylbenzene	µg/m³	BLQ	BLQ
1,2,3-Trichlorobenzene	µg/m³	BLQ	BLQ
Hexachlorobutadiene	µg/m³	BLQ	BLQ
1,2,4-Trichlorobenzene	µg/m³	BLQ	BLQ

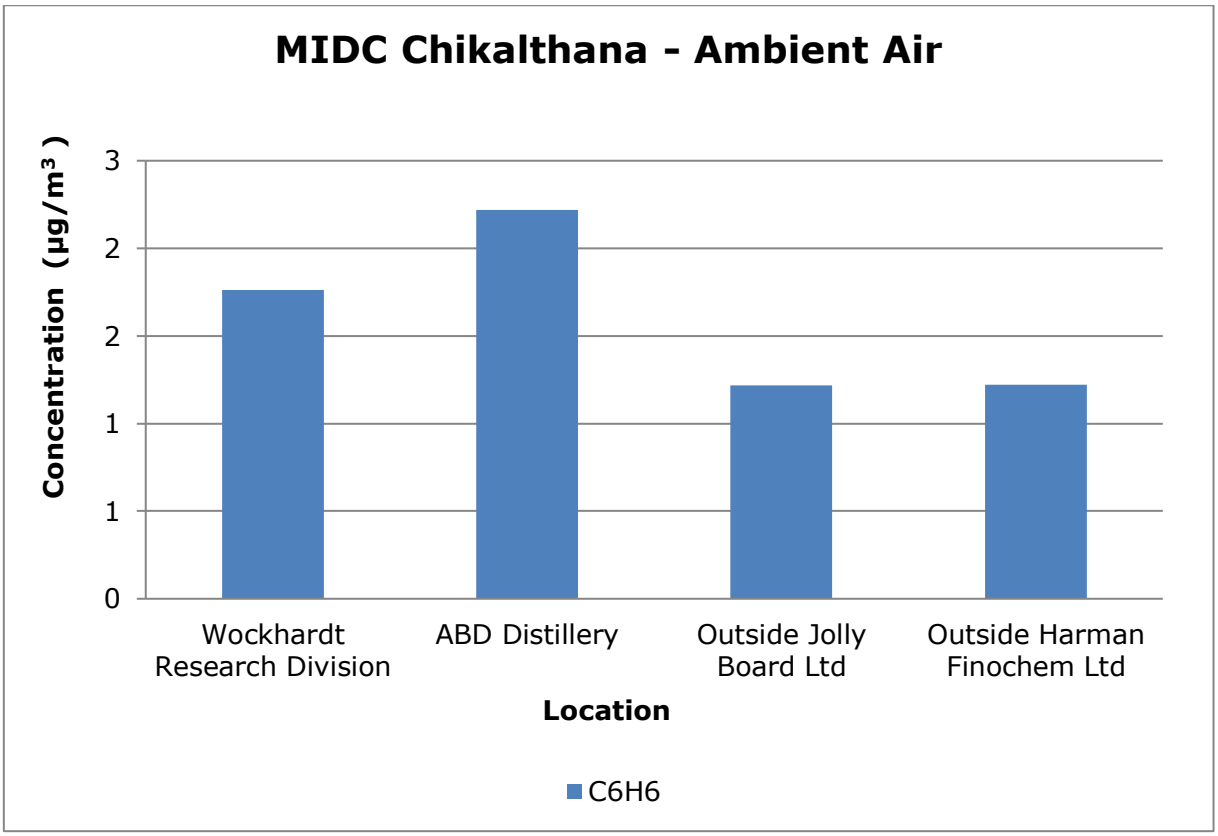
Parameters	Unit	Results	
		ABD Distillery	Concept Pharma
2,2-Dichloropropane	µg/m³	BLQ	BLQ
Dibromomethane	µg/m³	BLQ	BLQ
Toluene	µg/m³	2.28	0.81
O-Xylene	µg/m³	BLQ	BLQ
Bromoform	µg/m³	BLQ	BLQ
1,1,2,2-Tetrachloroethane	µg/m³	BLQ	BLQ
4-Chlorotoluene	µg/m³	BLQ	BLQ
1,1-Dichloroethylene	µg/m³	BLQ	BLQ
Trans-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
1,1-Dichloroethane	µg/m³	BLQ	BLQ
CIS-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
Bromochloromethane	µg/m³	0.79	0.56
1,1,1-Trichloroethane	µg/m³	BLQ	BLQ

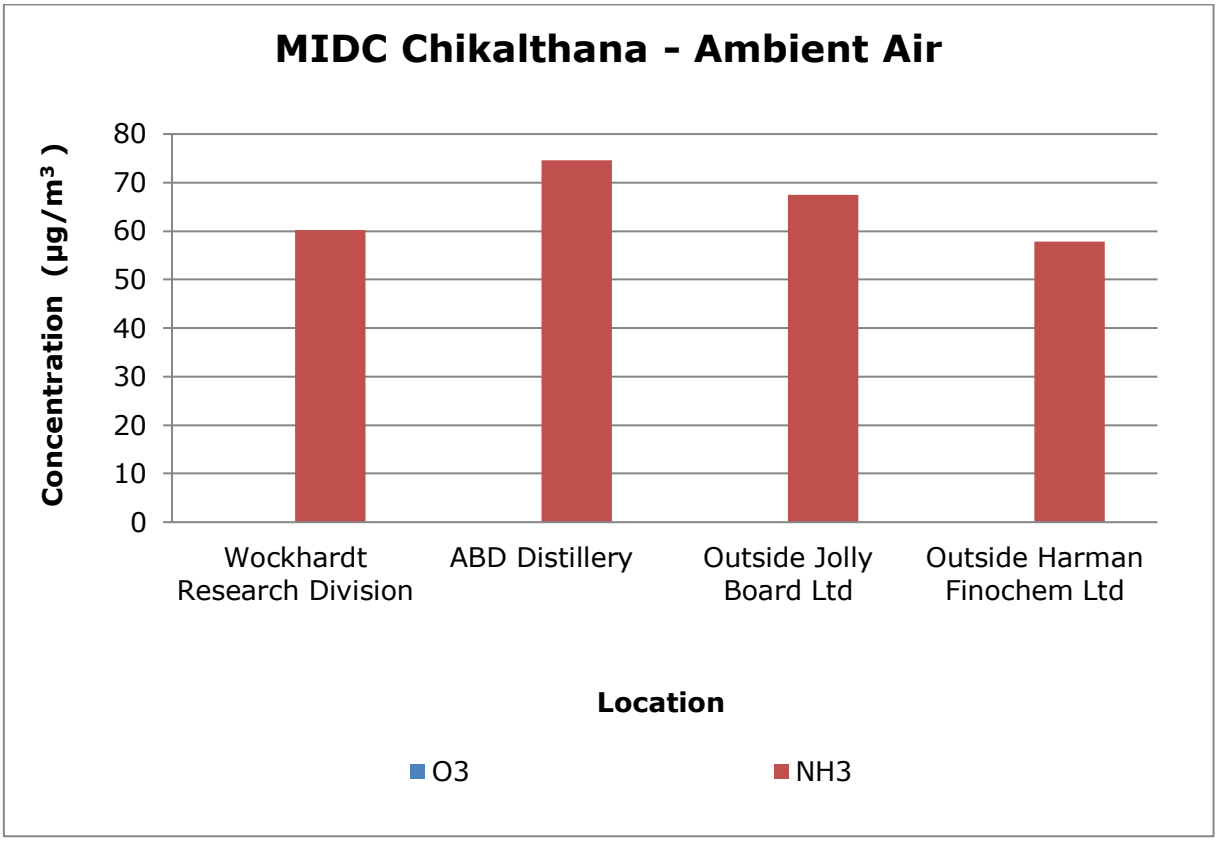
Graphs - Ambient Air Quality Monitoring - MIDC Chikalthana






MIDC Chikalthana - Ambient Air
Concentration (µg/m³)
6
5
4
3
2
1
0
Wockhardt Research Division
Outside Jolly Board Ltd
Outside Harman Finochem Ltd
Location
As
Ni


MIDC Chikalthana - Ambient Air
Concentration (µg/m³)
3
2
2
1
1
0
Wockhardt Research Division
ABD Distillery
Outside Jolly Board Ltd
Outside Harman Finochem Ltd
Location
C6H6


MIDC Chikalthana - Ambient Air
Concentration (µg/m³)
80
70
60
50
40
30
20
10
0
Wockhardt Research Division
ABD Distillery
Outside Jolly Board Ltd
Outside Harman Finochem Ltd
Location
O3
NH3

3. **<u>MIDC Waluj</u>:** In MIDC Waluj, at all 4 locations monitored, the concentration of all the ambient air parameters was found within the limits of NAAQS.

Table 5.9 MIDC Waluj - Details of Sampling Location of Ambient Air Quality Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Goodyear South Asia tyres	19.855897N	75.207807E	26.12.2023	28.12.2023	30.12.2023
2.	DIPL	19.85722N	75.227666E	26.12.2023	28.12.2023	30.12.2023
3.	Varroc Plant VIII, Jogeshwari	19.830828N	75.20329E	26.12.2023	28.12.2023	30.12.2023
4.	IPCA Laboratory Pvt Ltd.	19.862256N	75.218847E	26.12.2023	28.12.2023	30.12.2023

Table 5.10 MIDC Waluj - Details of Sampling Location of VOCs Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Outside of Endurance Tech.	19.852291N	75.206165E	26.12.2023	28.12.2023	30.12.2023
2.	DIPL	19.85722N	75.227666E	26.12.2023	28.12.2023	30.12.2023

Fig: Geographical Locations of Ambient Air Quality Monitoring MIDC Waluj

Fig: Geographical Locations of VOCs Monitoring MIDC Waluj

Table 5.11 MIDC Waluj - Ambient Air Quality Monitoring Results

Parameters	Unit	Results			
		Goodyear South Asia Tyres	DIPL	Varroc Plant VIII, Jogeshwari	Endurance Tech, K-120
Sulphur Dioxide (SO_2)	µg/m^3	4.77	BLQ	BLQ	BLQ
Nitrogen Dioxide (NO_2)	µg/m^3	11.90	27.00	20.10	7.78
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	60	60	57	56
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	15	16	16	15
Ozone (O_3)	µg/m^3	BLQ	BLQ	BLQ	BLQ
Lead (Pb)	µg/m^3	0.07	BLQ	0.04	BLQ
Carbon Monoxide (CO) (1 h)	mg/m^3	1.02	0.99	1.06	0.98
Carbon Monoxide (CO) (8 h)	mg/m^3	1.64	1.46	1.68	1.70
Ammonia (NH_3)	µg/m^3	21.10	27.20	BLQ	31.60
Benzene (C_6H_6)	µg/m^3	2.21	2.71	1.86	2.74

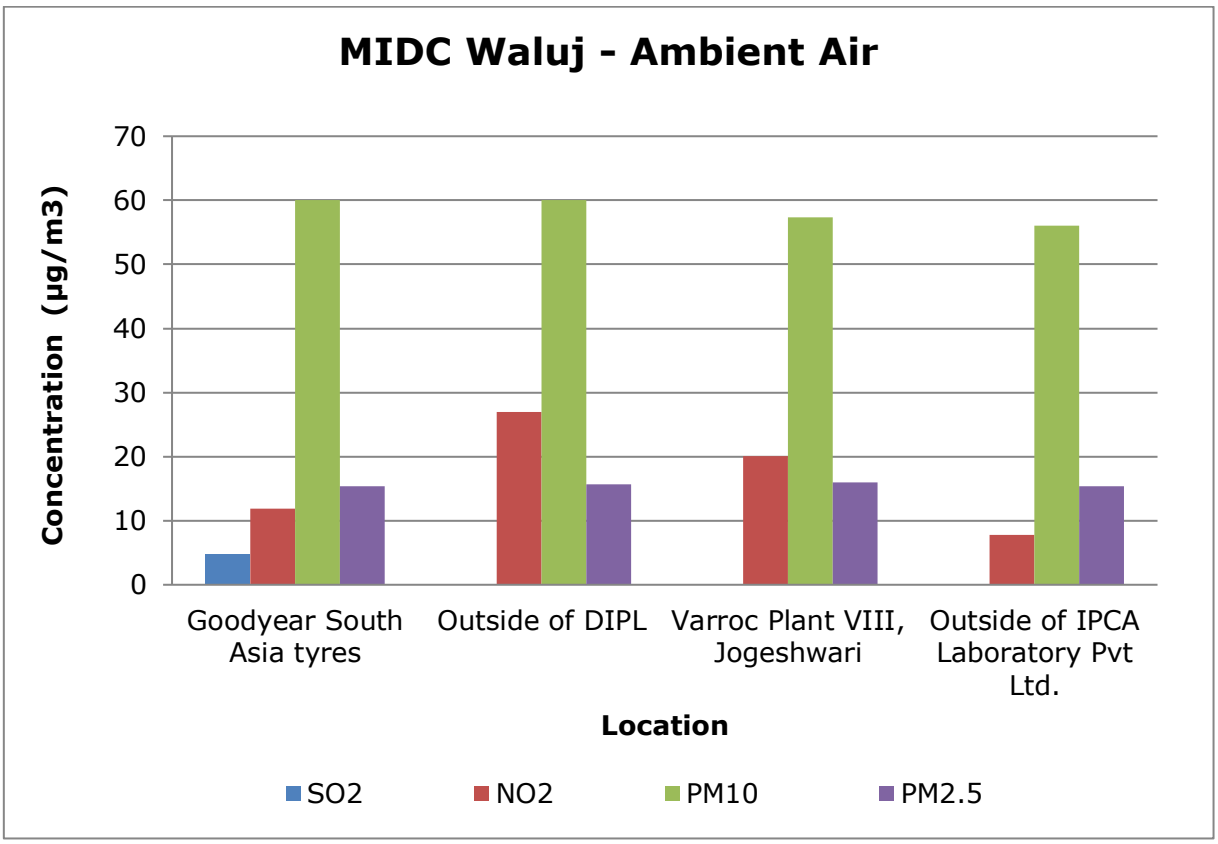
Parameters	Unit	Results			
		Goodyear South Asia Tyres	DIPL	Varroc Plant VIII, Jogeshwari	Endurance Tech, K-120
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	BLQ	BLQ	BLQ	BLQ
Arsenic (As)	ng/m^3	1.83	BLQ	1.63	3.82
Nickel (Ni)	ng/m^3	BLQ	4.17	BLQ	3.40

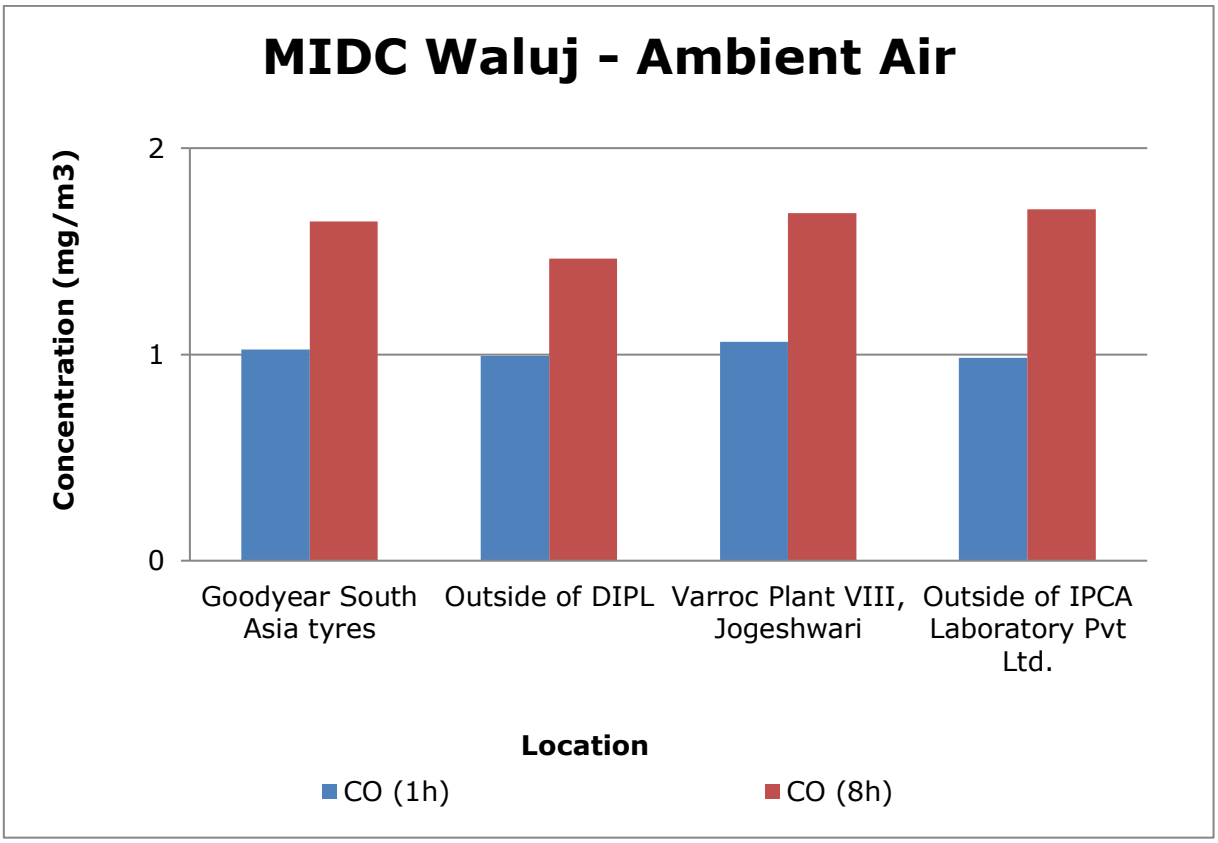
Table 5.12 MIDC Waluj - Volatile Organic Compounds (VOCs) in Ambient Air Results

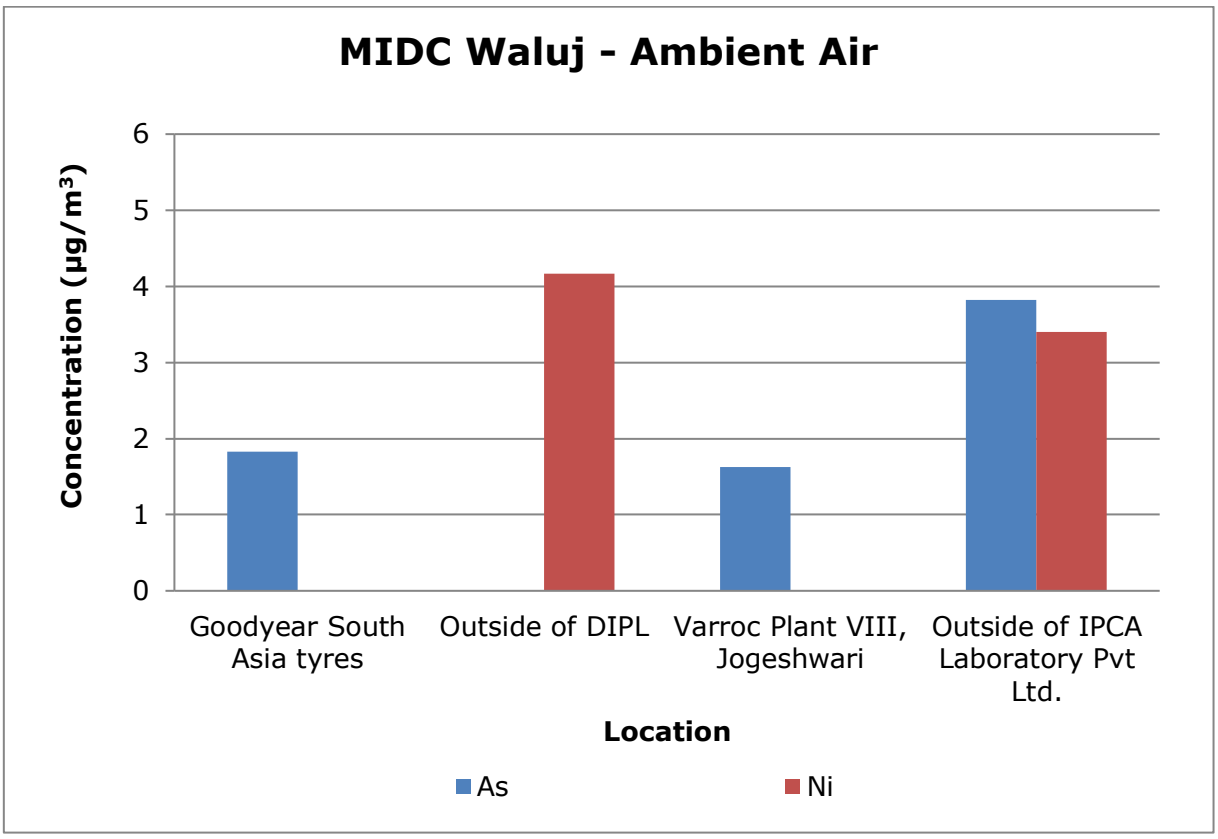
Parameters	Unit	Results	
		DIPL	Endurance Tech, K-120
Dichloromethane	µg/m³	4.59	5.15
Chloroform	µg/m³	0.98	1.05
Carbon Tetrachloride	µg/m³	BLQ	BLQ
Trichloroethylene	µg/m³	BLQ	BLQ
Bromodichloromethane	µg/m³	BLQ	BLQ
1,3-Dichloropropane	µg/m³	BLQ	BLQ
1,4-Dichlorobenzene	µg/m³	12.10	BLQ
1,3-Dichlorobenzene	µg/m³	BLQ	BLQ
1,2-Dichlorobenzene	µg/m³	BLQ	BLQ
1,2-Dibromo-3-Chloropropane	µg/m³	BLQ	BLQ
Napthalene	µg/m³	BLQ	BLQ
Bromobenzene	µg/m³	BLQ	BLQ
1,2,4-Trimethylbenzene	µg/m³	BLQ	BLQ
2-Chlorotoluene	µg/m³	BLQ	BLQ
Tert-Butylbenzene	µg/m³	BLQ	BLQ
SEC-Butylbenzene	µg/m³	BLQ	BLQ
P-Isopropyltoluene	µg/m³	BLQ	BLQ
M-Xylene	µg/m³	BLQ	BLQ
P-Xylene	µg/m³	BLQ	BLQ
Styrene	µg/m³	BLQ	BLQ
Cumene	µg/m³	BLQ	BLQ
1,2,3-Trichloropropane	µg/m³	BLQ	BLQ

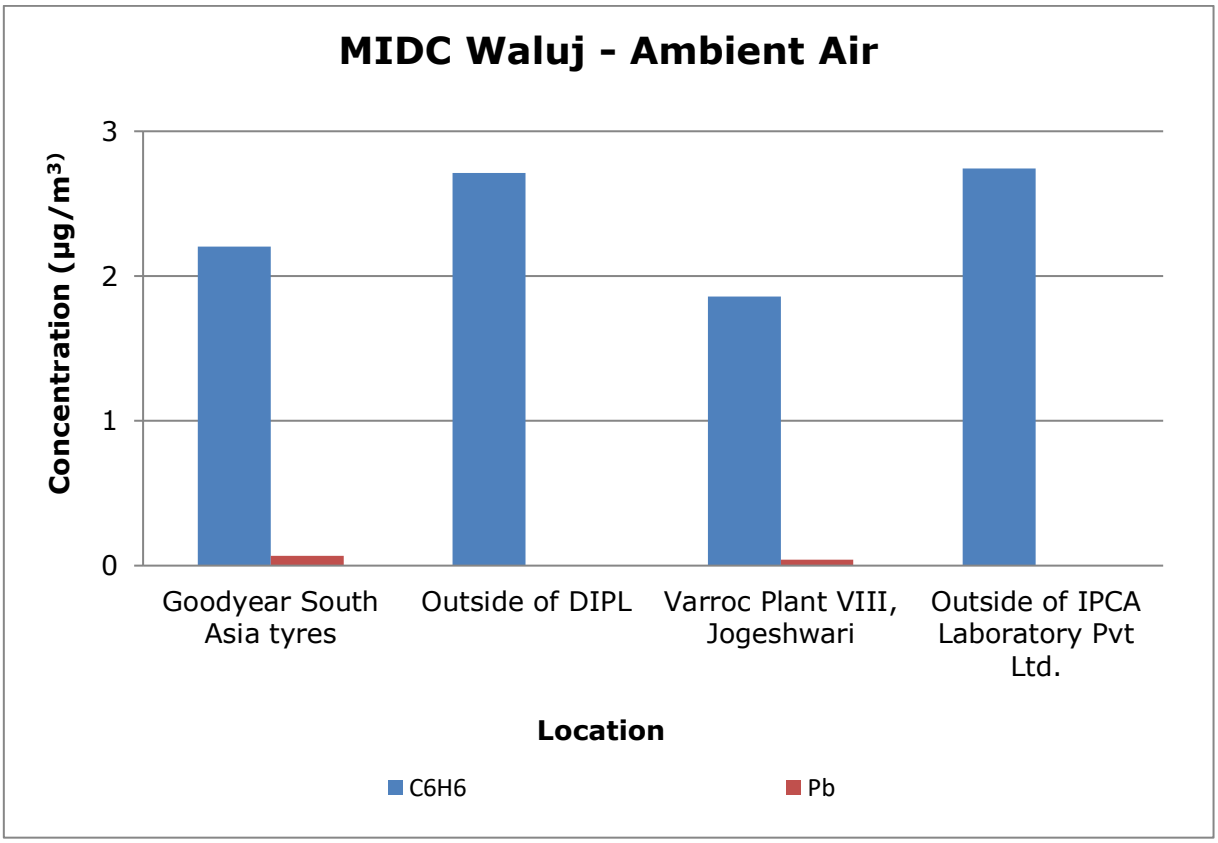
Parameters	Unit	Results	
		DIPL	Endurance Tech, K-120
N-Propylbenzene	µg/m³	6.28	BLQ
Dibromochloromethane	µg/m³	BLQ	BLQ
1,2-Dibromoethane	µg/m³	BLQ	BLQ
Chlorobenzene	µg/m³	2.93	3.70
1,1,1,2-Tetrachloroethane	µg/m³	BLQ	BLQ
Ethylbenzene	µg/m³	1.21	BLQ
1,1-Dichloropropylene	µg/m³	BLQ	BLQ
1,2-Dichloroethane	µg/m³	0.62	0.67
1,2-Dichloropropane	µg/m³	BLQ	BLQ
Trans-1,3-Dichloropropene	µg/m³	BLQ	BLQ
CIS 1,3-Dichloropropene	µg/m³	BLQ	BLQ
1,1,2-Trichloroethane	µg/m³	BLQ	BLQ
Tetrachloroethylene	µg/m³	BLQ	BLQ
1,3,5-Trimethylbenzene	µg/m³	BLQ	BLQ
N-Butylbenzene	µg/m³	BLQ	BLQ
1,2,3-Trichlorobenzene	µg/m³	BLQ	BLQ
Hexachlorobutadiene	µg/m³	BLQ	BLQ
1,2,4-Trichlorobenzene	µg/m³	BLQ	BLQ
2,2-Dichloropropane	µg/m³	BLQ	BLQ
Dibromomethane	µg/m³	BLQ	BLQ
Toluene	µg/m³	BLQ	0.72
O-Xylene	µg/m³	BLQ	BLQ
Bromoform	µg/m³	BLQ	BLQ
1,1,2,2-Tetrachloroethane	µg/m³	BLQ	BLQ
4-Chlorotoluene	µg/m³	BLQ	BLQ
1,1-Dichloroethylene	µg/m³	BLQ	BLQ
Trans-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
1,1-Dichloroethane	µg/m³	BLQ	BLQ
CIS-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
Bromochloromethane	µg/m³	0.58	1.00
1,1,1-Trichloroethane	µg/m³	BLQ	BLQ

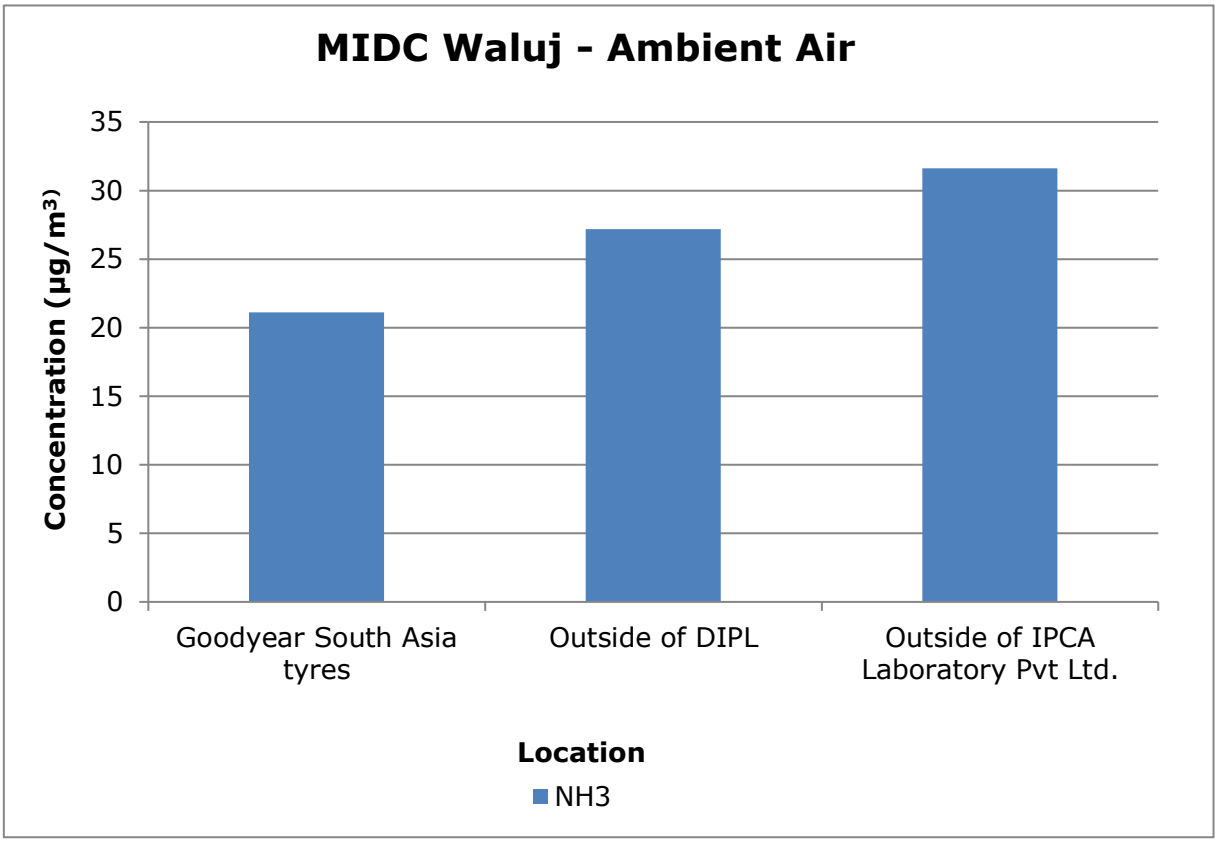
Graphs - Ambient Air Quality Monitoring - MIDC Waluj






MIDC Waluj - Ambient Air
Concentration (µg/m³)
6
5
4
3
2
1
0
Goodyear South Asia tyres
Outside of DIPL
Varroc Plant VIII, Jogeshwari
Outside of IPCA Laboratory Pvt Ltd.
Location
As
Ni


MIDC Waluj - Ambient Air
Concentration (µg/m³)
3
2
1
0
Goodyear South Asia tyres
Outside of DIPL
Varroc Plant VIII, Jogeshwari
Outside of IPCA Laboratory Pvt Ltd.
Location
C6H6
Pb


MIDC Waluj - Ambient Air
Concentration (µg/m³)
35
30
25
20
15
10
5
0
Goodyear South Asia tyres
Outside of DIPL
Outside of IPCA Laboratory Pvt Ltd.
Location
NH3

4. **MIDC Paithan:** In MIDC Paithan, at all the 4 locations monitored, the concentration of all the ambient air parameters was found within the permissible limits of NAAQS.

Table 5.13 MIDC Paithan - Details of Sampling Location of Ambient Air Quality Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Belrise Industries Ltd (old name Badve engineering)	19.783535N	75.27903E	27.12.2023	29.12.2023	31.12.2023
2.	CIE Alluminium Casting India Pvt Ltd old name Aurangabad Electrical	19.755292N	75.297828E	27.12.2023	29.12.2023	31.12.2023
3.	Allana Frigorifico, Chitegaon	19.77544N	75.290826E	27.12.2023	29.12.2023	31.12.2023
4.	Machhar Packaging	19.741876N	75.295112E	27.12.2023	29.12.2023	31.12.2023

Table 5.14 MIDC Paithan - Details of Sampling Location of VOCs Monitoring

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Belrise Industries Ltd (old name Badve engineering)	19.783535N	75.27903E	27.12.2023	29.12.2023	31.12.2023
2.	CIE Alluminium Casting India Pvt Ltd old name Aurangabad Electrical	19.755292N	75.297828E	27.12.2023	29.12.2023	31.12.2023

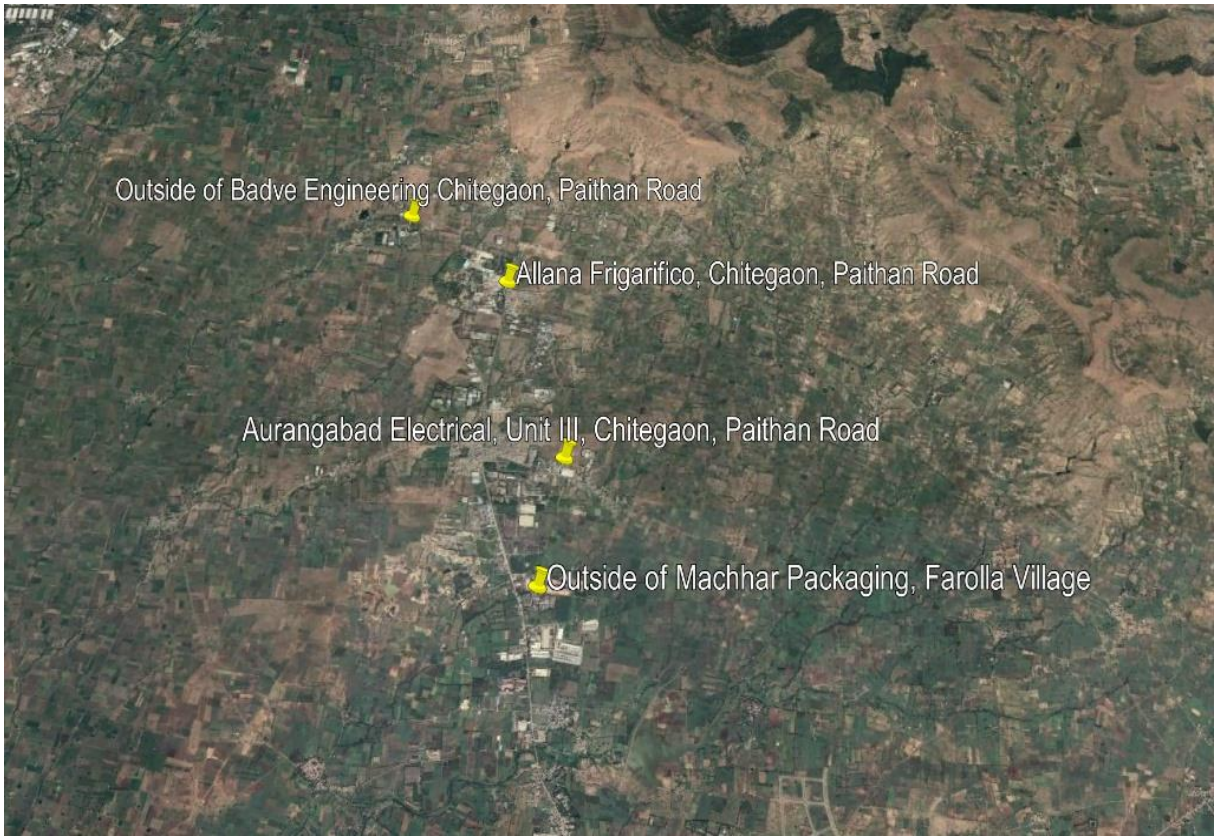


Fig: Geographical Locations of Ambient Air Quality Monitoring MIDC Paithan

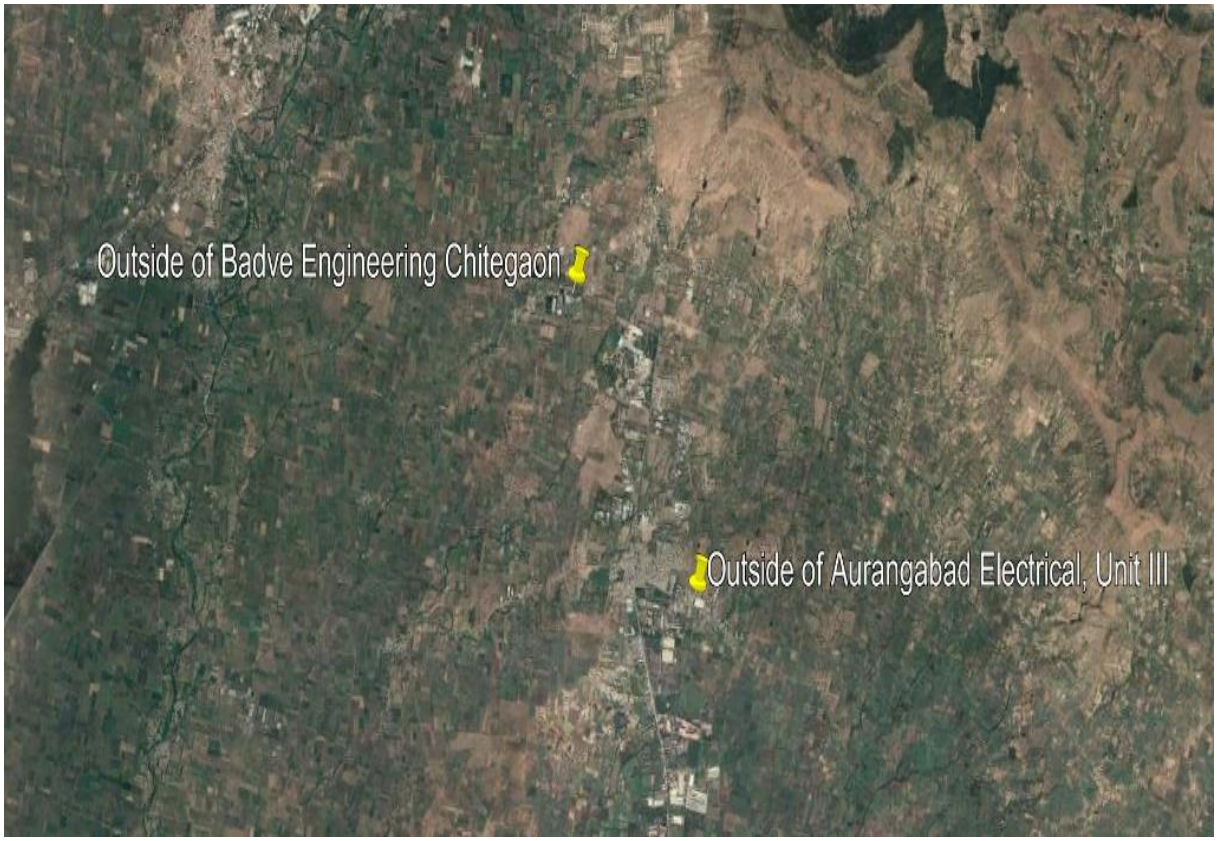


Fig: Geographical Locations of VOCs Monitoring MIDC Paithan

Table 5.15 MIDC Paithan- Ambient Air Quality Monitoring Results

Parameters	Unit	Results			
		Outside of Badve Engineering	Aurangabad Electrical, Unit III	Allana Frigarifico	Outside of Machhar Packaging
Sulphur Dioxide (SO_2)	µg/m^3	BLQ	BLQ	BLQ	BLQ
Nitrogen Dioxide (NO_2)	µg/m^3	60.30	15.30	38.90	26.70
Particulate Matter (size less than 10 µm) or PM_{10}	µg/m^3	64	67	66	73
Particulate Matter (size less than 2.5 µm) or $PM_{2.5}$	µg/m^3	16	18	17	20
Ozone (O_3)	µg/m^3	BLQ	BLQ	BLQ	BLQ
Lead (Pb)	µg/m^3	0.03	BLQ	BLQ	BLQ
Carbon Monoxide (CO) (1 h)	mg/m^3	1.05	1.09	1.02	1.12
Carbon Monoxide (CO) (8 h)	mg/m^3	1.95	1.73	1.87	1.73
Ammonia (NH_3)	µg/m^3	48.55	33.50	27.50	20.20
Benzene (C_6H_6)	µg/m^3	2.37	2.84	2.06	2.00
Benzo (a) Pyrene (BaP) – particulate phase only	ng/m^3	BLQ	BLQ	BLQ	BLQ
Arsenic (As)	ng/m^3	1.00	BLQ	BLQ	0.56
Nickel (Ni)	ng/m^3	BLQ	BLQ	5.51	3.74

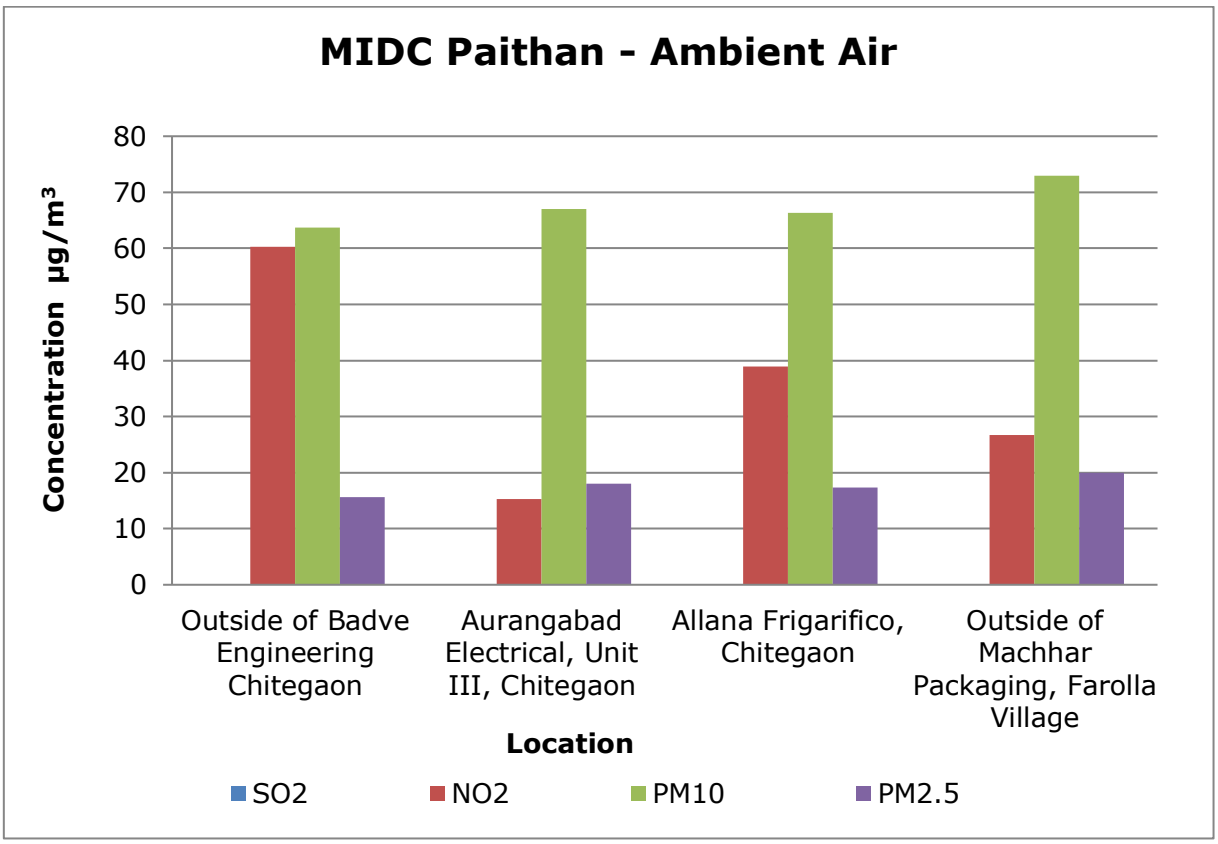
Table 5.16 MIDC Paithan- Volatile Organic Compounds (VOCs) in Ambient Air Results

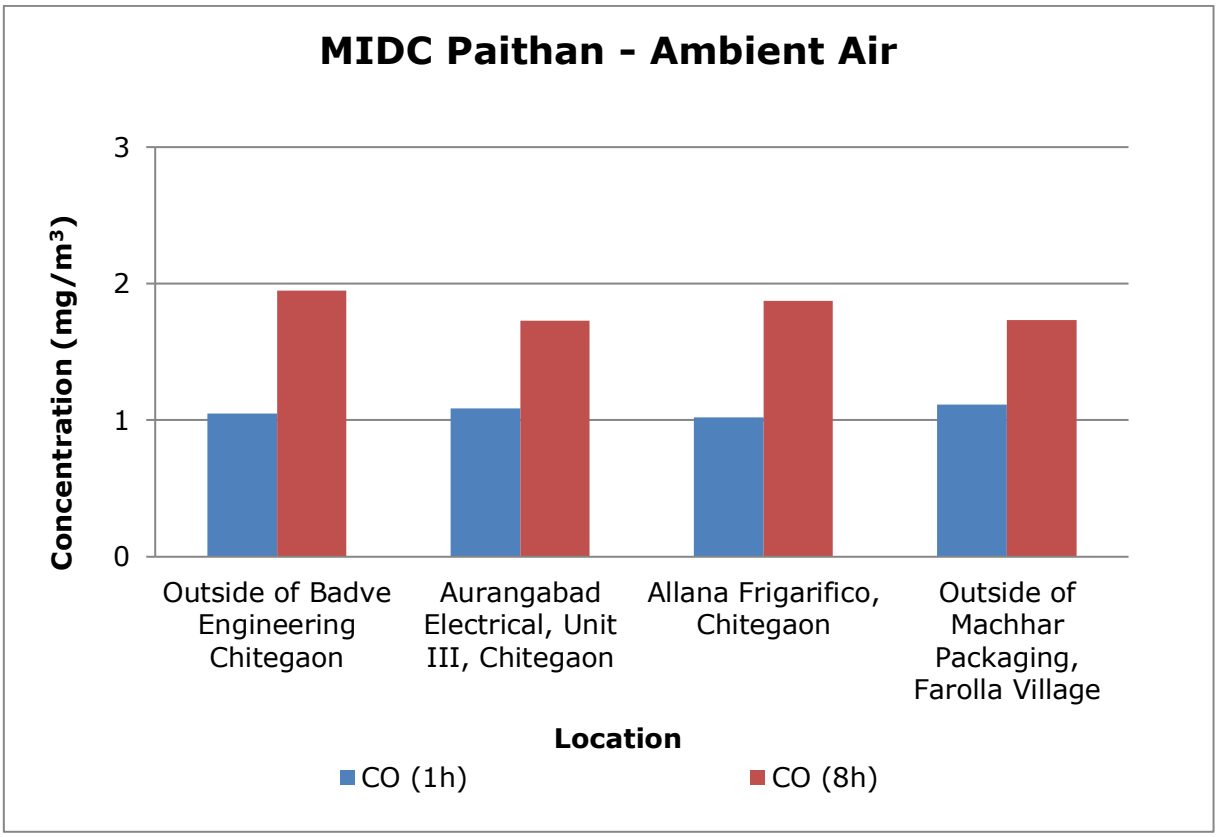
Parameters	Unit	Results	
		Badve Engineering	Aurangabad Electrical, Unit III
Dichloromethane	µg/m³	3.34	3.29
Chloroform	µg/m³	1.09	3.12
Carbon Tetrachloride	µg/m³	5.26	BLQ
Trichloroethylene	µg/m³	BLQ	BLQ
Bromodichloromethane	µg/m³	BLQ	15.10
1,3-Dichloropropane	µg/m³	BLQ	BLQ
1,4-Dichlorobenzene	µg/m³	BLQ	BLQ

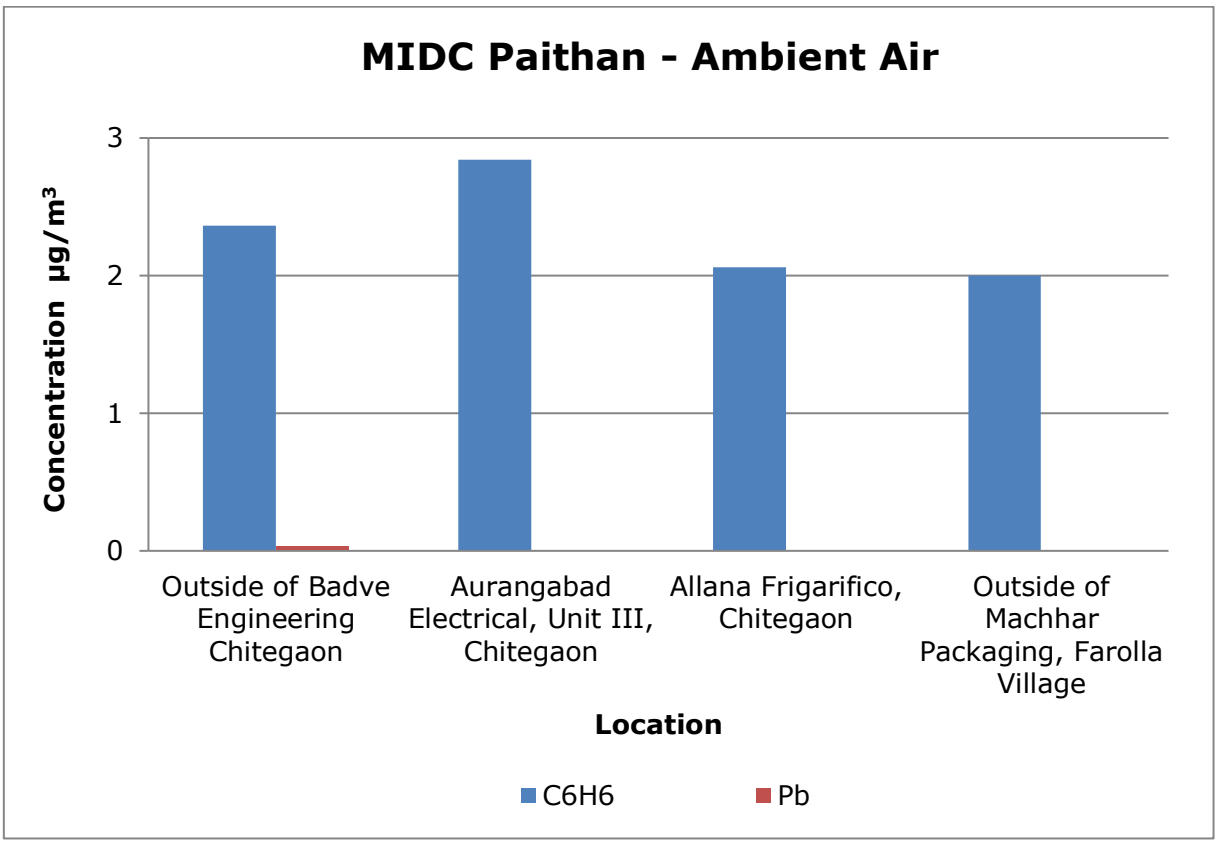
Parameters	Unit	Results	
		Badve Engineering	Aurangabad Electrical, Unit III
1,3-Dichlorobenzene	µg/m³	BLQ	BLQ
1,2-Dichlorobenzene	µg/m³	0.75	0.55
1,2-Dibromo-3-Chloropropane	µg/m³	BLQ	BLQ
Napthalene	µg/m³	BLQ	BLQ
Bromobenzene	µg/m³	BLQ	BLQ
1,2,4-Trimethylbenzene	µg/m³	BLQ	BLQ
2-Chlorotoluene	µg/m³	BLQ	BLQ
Tert-Butylbenzene	µg/m³	BLQ	BLQ
SEC-Butylbenzene	µg/m³	BLQ	BLQ
P-Isopropyltoluene	µg/m³	BLQ	BLQ
M-Xylene	µg/m³	BLQ	BLQ
P-Xylene	µg/m³	2.75	BLQ
Styrene	µg/m³	BLQ	BLQ
Cumene	µg/m³	BLQ	BLQ
1,2,3-Trichloropropane	µg/m³	BLQ	BLQ
N-Propylbenzene	µg/m³	BLQ	BLQ
Dibromochloromethane	µg/m³	BLQ	BLQ
1,2-Dibromoethane	µg/m³	BLQ	BLQ
Chlorobenzene	µg/m³	BLQ	BLQ
1,1,1,2-Tetrachloroethane	µg/m³	BLQ	BLQ
Ethylbenzene	µg/m³	BLQ	2.72
1,1-Dichloropropylene	µg/m³	4.72	BLQ
1,2-Dichloroethane	µg/m³	0.60	1.80
1,2-Dichloropropane	µg/m³	BLQ	BLQ
Trans-1,3-Dichloropropene	µg/m³	BLQ	BLQ
CIS 1,3-Dichloropropene	µg/m³	BLQ	BLQ
1,1,2-Trichloroethane	µg/m³	BLQ	BLQ
Tetrachloroethylene	µg/m³	BLQ	4.58
1,3,5-Trimethylbenzene	µg/m³	BLQ	BLQ
N-Butylbenzene	µg/m³	BLQ	BLQ
1,2,3-Trichlorobenzene	µg/m³	BLQ	BLQ
Hexachlorobutadiene	µg/m³	BLQ	BLQ

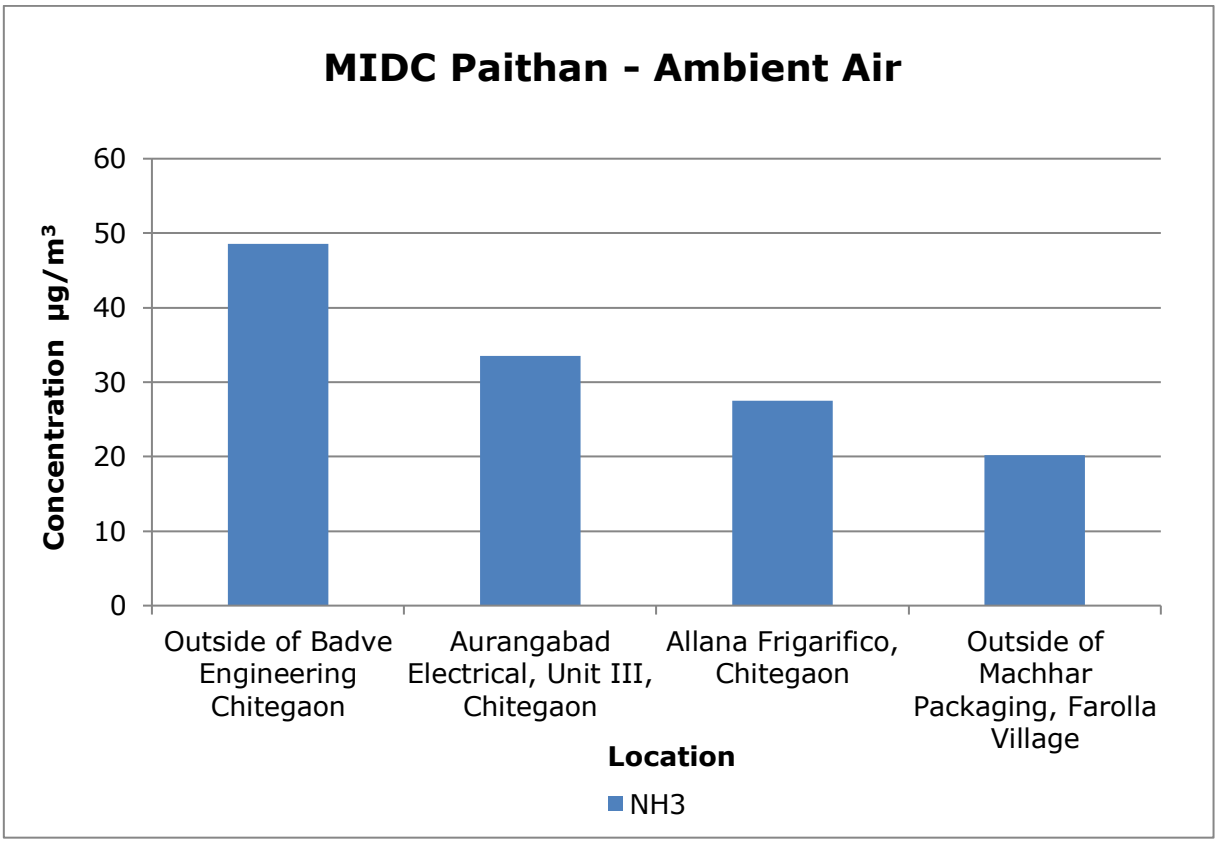
Parameters	Unit	Results	
		Badve Engineering	Aurangabad Electrical, Unit III
1,2,4-Trichlorobenzene	µg/m³	BLQ	BLQ
2,2-Dichloropropane	µg/m³	BLQ	BLQ
Dibromomethane	µg/m³	BLQ	BLQ
Toluene	µg/m³	5.06	1.12
O-Xylene	µg/m³	BLQ	BLQ
Bromoform	µg/m³	BLQ	BLQ
1,1,2,2-Tetrachloroethane	µg/m³	BLQ	BLQ
4-Chlorotoluene	µg/m³	BLQ	BLQ
1,1-Dichloroethylene	µg/m³	BLQ	BLQ
Trans-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
1,1-Dichloroethane	µg/m³	BLQ	BLQ
CIS-1,2-Dichloroethylene	µg/m³	BLQ	BLQ
Bromochloromethane	µg/m³	1.03	BLQ
1,1,1-Trichloroethane	µg/m³	BLQ	BLQ

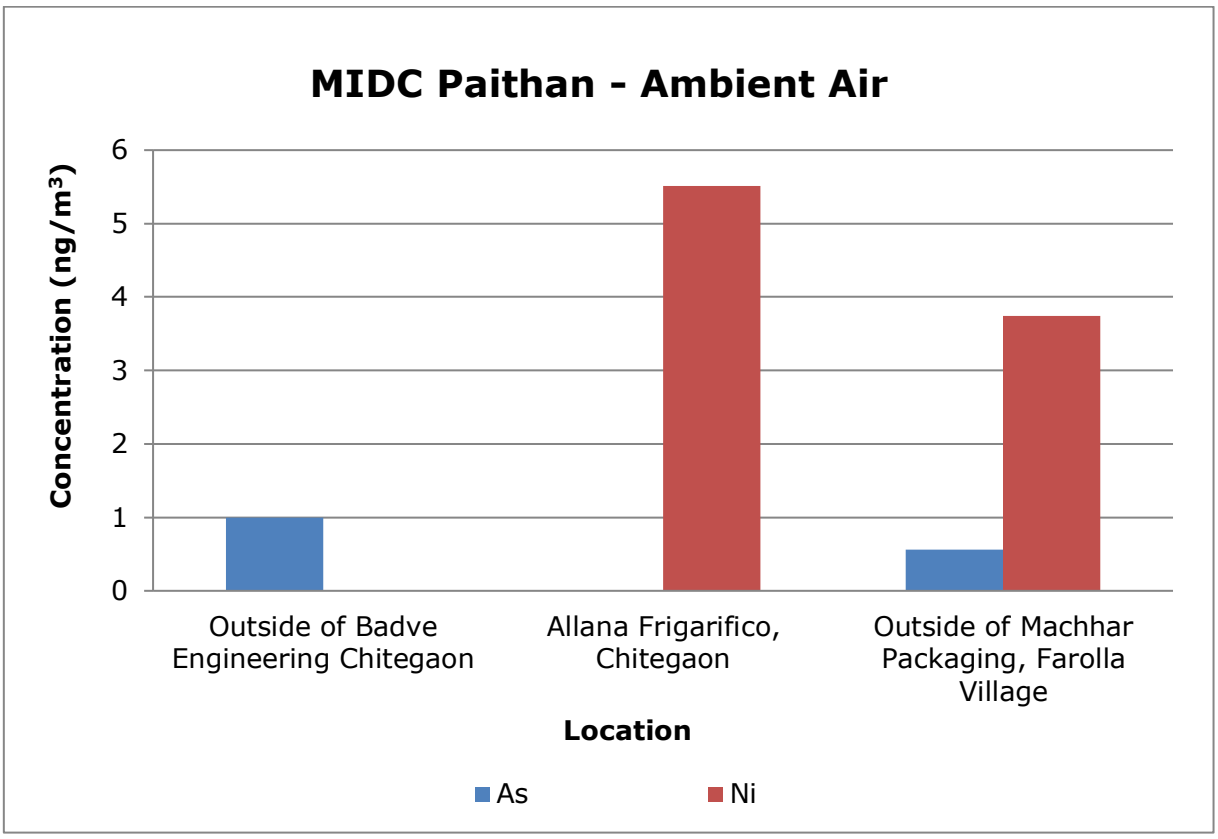
Graphs - Ambient Air Quality Monitoring of MIDC Paithan






MIDC Paithan - Ambient Air
Concentration µg/m³
3
2
1
0
Outside of Badve Engineering Chitegaon
Aurangabad Electrical, Unit III, Chitegaon
Allana Frigarifico, Chitegaon
Outside of Machhar Packaging, Farolla Village
Location
C6H6
Pb


MIDC Paithan - Ambient Air
Concentration µg/m³
60
50
40
30
20
10
0
Outside of Badve Engineering Chitegaon
Aurangabad Electrical, Unit III, Chitegaon
Allana Frigarifico, Chitegaon
Outside of Machhar Packaging, Farolla Village
Location
NH3


MIDC Paithan - Ambient Air
Concentration (ng/m³)
6
5
4
3
2
1
0
Outside of Badve Engineering Chitegaon
Allana Frigarifico, Chitegaon
Outside of Machhar Packaging, Farolla Village
Location
As
Ni

WATER ENVIRONMENT

6. Water Environment

For studying the water environment of Aurangabad area, six samples of surface water were collected from Nallah, Lake and River. A total of 24 samples were collected from all four MIDCs i.e. six samples from each MIDC.

1. **MIDC Shendra:** Six surface water samples were collected from the MIDC Shendra region.

- General parameters like pH, dissolved oxygen (DO), electrical conductivity and suspended solids are also observed well within the limits in all the samples.
- Parameters like Total Phosphate, Selenium and BOD are found to exceed the permissible limit in most of the water samples.
- In fish bioassay, 87-100% fish survival was observed in the water sample of MIDC Shendra.
- All metals like Arsenic, Nickel, Copper, Hexavalent Chromium (Cr^{6+}) etc. are also observed either below the limit of quantification (BLQ) or below their standard limits.
- Parameters like Total Residual Chlorine, Nitrogen, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also meet the criteria as prescribed by CPCB.
- Organo Chlorine Pesticides, Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) are also observed below the limit of quantification in all the studied samples.

Table 6.1 MIDC Shendra - Details of Sampling Location of Surface Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Pond Water, Front of AURIC City Office	19.87515N	75.507939E	21.12.2023	23.12.2023	25.12.2023
2.	Nalla Water Back side of Perkins India Pvt Ltd	19.8805082N	75.513443E	21.12.2023	23.12.2023	25.12.2023
3.	Nalla Water Near Jyoti Industry	19.879578N	75.494647E	21.12.2023	23.12.2023	25.12.2023
4.	Nalla Water Behind Inox Air Product	19.875448N	75.524596E	21.12.2023	23.12.2023	25.12.2023
5.	CETP Outlet AURIC City CETP outlet	19.8728N	75.522658E	21.12.2023	23.12.2023	25.12.2023
6.	Lake Water Adgaon Lake	19.867292N	75.527852E	21.12.2023	23.12.2023	25.12.2023

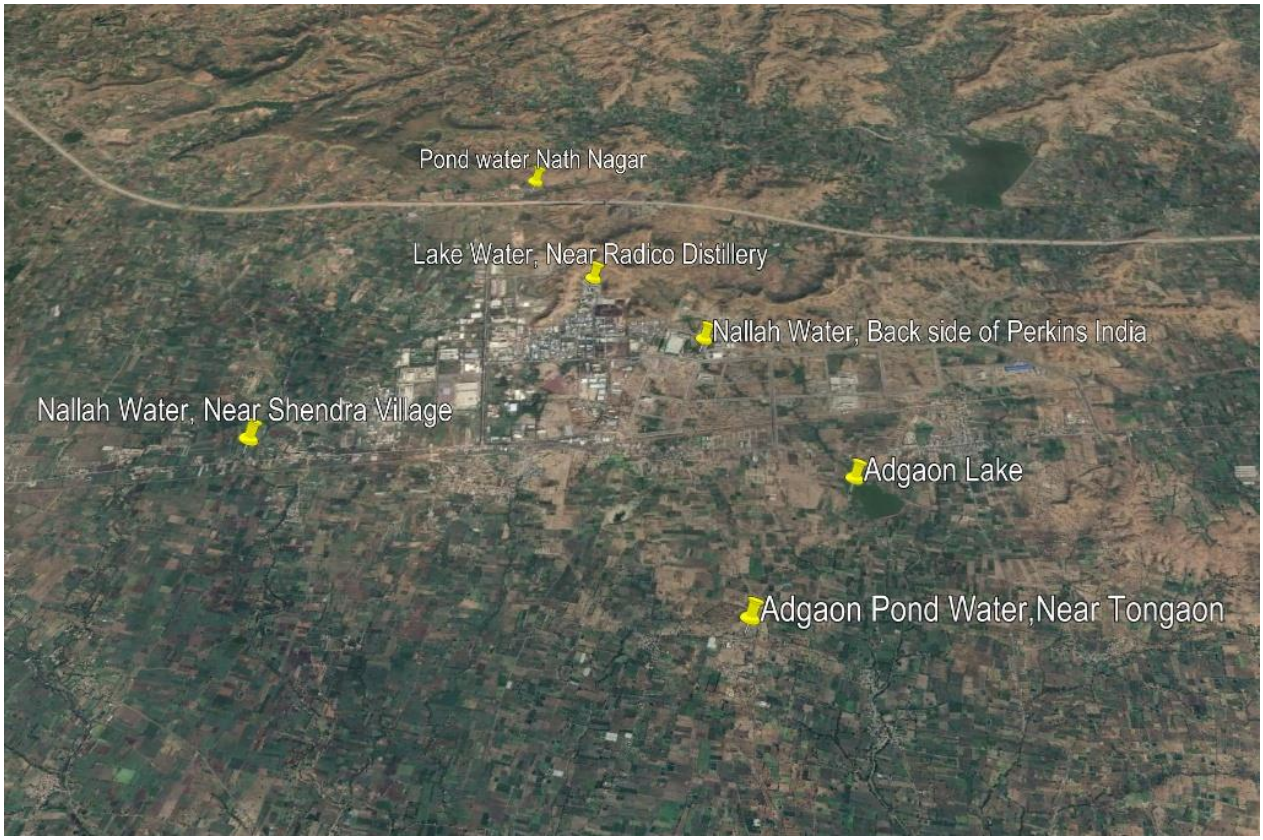


Fig: Geographical Locations of Surface Water Sampling MIDC Shendra

Table 6.2 MIDC Shendra - Results of Surface Water

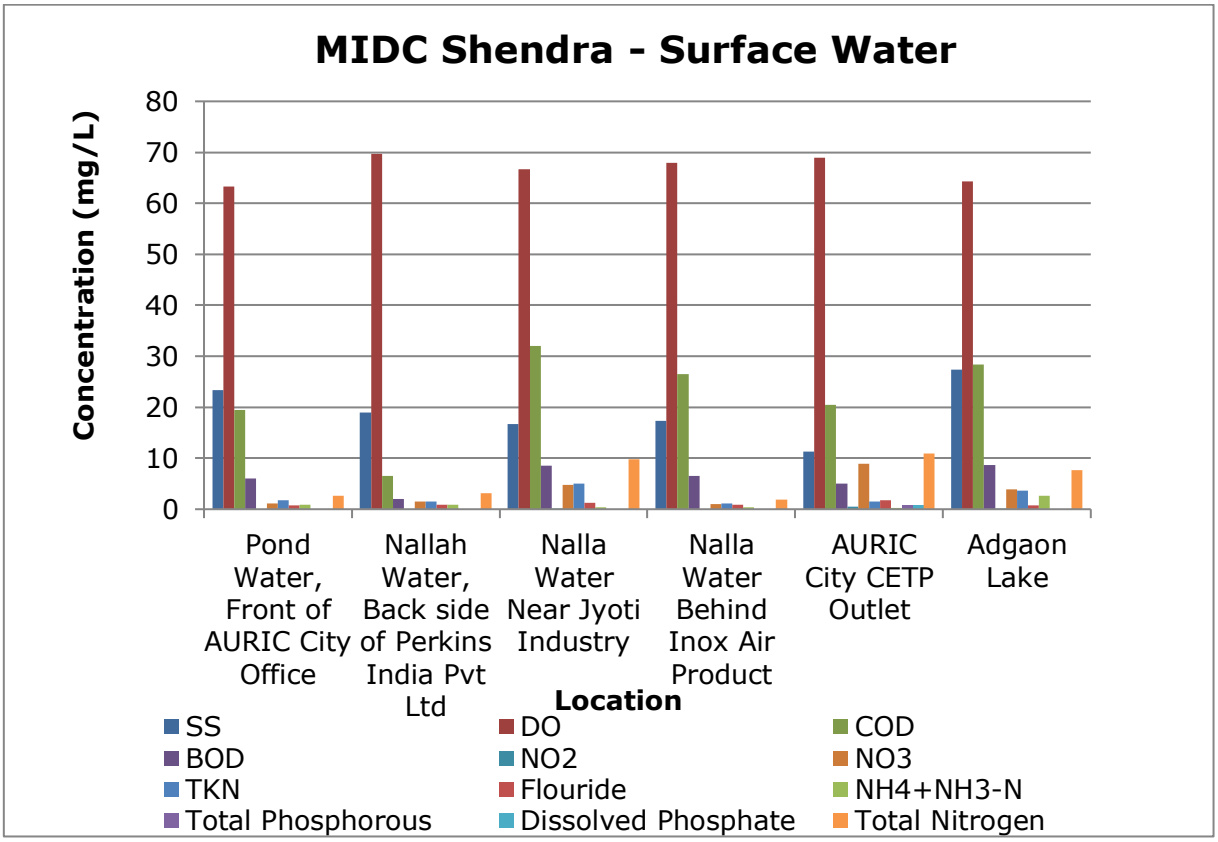
Parameters	Unit	Results					
		Pond Water, Front of AURIC City Office	**Nallah Water, Back side of Perkins India Pvt Ltd**	**Nalla Water Near Jyoti Industry**	**Nalla Water Behind Inox Air Product**	**AURIC City CETP Outlet**	**Adgaon Lake**
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Very clean neighbourhood and catchment	Reasonably clean neighbourhood
General Appearance	-	Floating Matter Evident	Floating Matter Evident	Floating Matter evident	Floating Matter evident	No Floating Matter	Floating Matter evident
Transparency	m	0.30	0.30	0.20	0.30	2.10	0.50
Temperature	°C	27	25	27	25	25	27
Colour	Hazen	2	1	2	1	1	2
Smell	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
pH	-	8.46	8.54	8.52	8.68	8.30	8.60
Oil & Grease	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Suspended Solids	mg/L	23	19	17	17	11	27

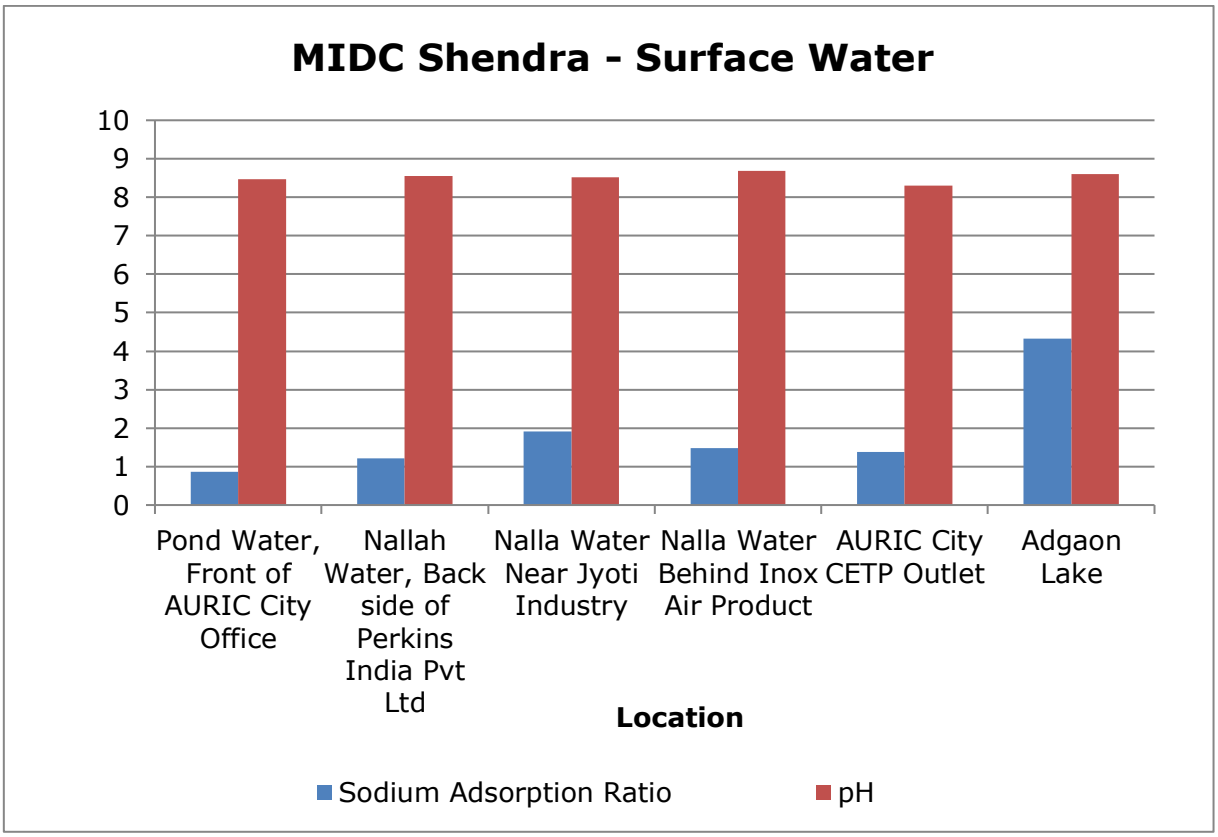
Parameters	Unit	Results					
		Pond Water, Front of AURIC City Office	Nallah Water, Back side of Perkins India Pvt Ltd	Nalla Water Near Jyoti Industry	Nalla Water Behind Inox Air Product	AURIC City CETP Outlet	Adgaon Lake
Total Dissolved Solids	mg/L	601	600	1082	630	1777	631
Dissolved Oxygen (% Saturation)	%	63	70	67	68	69	64
Chemical Oxygen Demand	mg/L	20	7	32	27	21	28
Biochemical Oxygen Demand (3 days,27°C)	mg/L	6	2	9	7	5	9
Electrical Conductivity (at 25 °C)	µmho/ cm	1073	1069	1930	1123	3170	1125
Nitrite Nitrogen (as NO_2)	mg/L	BLQ	BLQ	0.04	BLQ	0.55	0.09
Nitrate Nitrogen (as NO_3)	mg/L	1.13	1.52	4.82	1.03	8.93	3.89
(NO_2 + NO_3)-Nitrogen	mg/L	0.91	1.53	4.85	0.78	9.47	3.98
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	1.72
Total Residual Chlorine	mg/L	BLQ	BLQ	BLQ	BLQ	0.07	0.06
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	0.77	0.83	1.20	0.87	1.80	0.80
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	BLQ	BLQ	BLQ	BLQ	0.72	BLQ
Sodium Adsorption Ratio	-	0.86	1.21	1.91	1.48	1.37	4.32
Total Coliforms	MPN Index/ 100 ml	93	855	750	1600	59	467
Faecal Coliforms	MPN Index/ 100 ml	41	721	523	940	17	346

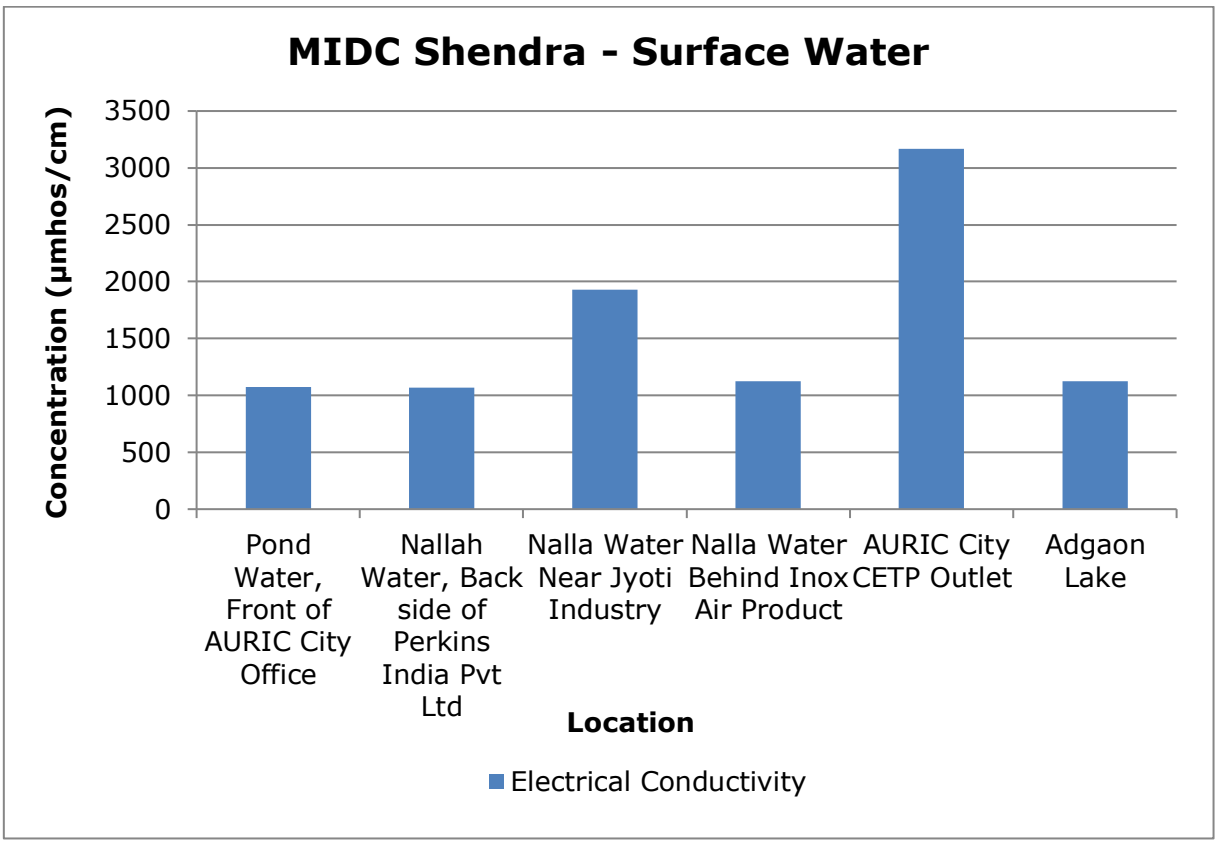
Parameters	Unit	Results					
		Pond Water, Front of AURIC City Office	Nallah Water, Back side of Perkins India Pvt Ltd	Nalla Water Near Jyoti Industry	Nalla Water Behind Inox Air Product	AURIC City CETP Outlet	Adgaon Lake
Total Phosphate (as P)	mg/L	BLQ	BLQ	BLQ	BLQ	0.76	BLQ
Total Kjeldahl Nitrogen (as N)	mg/L	1.76	1.57	4.99	1.12	1.45	3.62
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	0.84	0.82	0.32	0.32	0.29	2.61
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	BLQ	BLQ	0.09	0.06	0.05	BLQ
Nickel (as Ni)	mg/L	BLQ	BLQ	0.01	BLQ	0.03	BLQ
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Arsenic (as As)	mg/L	0.01	BLQ	0.01	0.01	0.01	0.01
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.04	0.28	0.34	0.03	0.12	0.03
Iron (as Fe)	mg/L	0.66	1.27	0.23	0.14	0.09	0.10

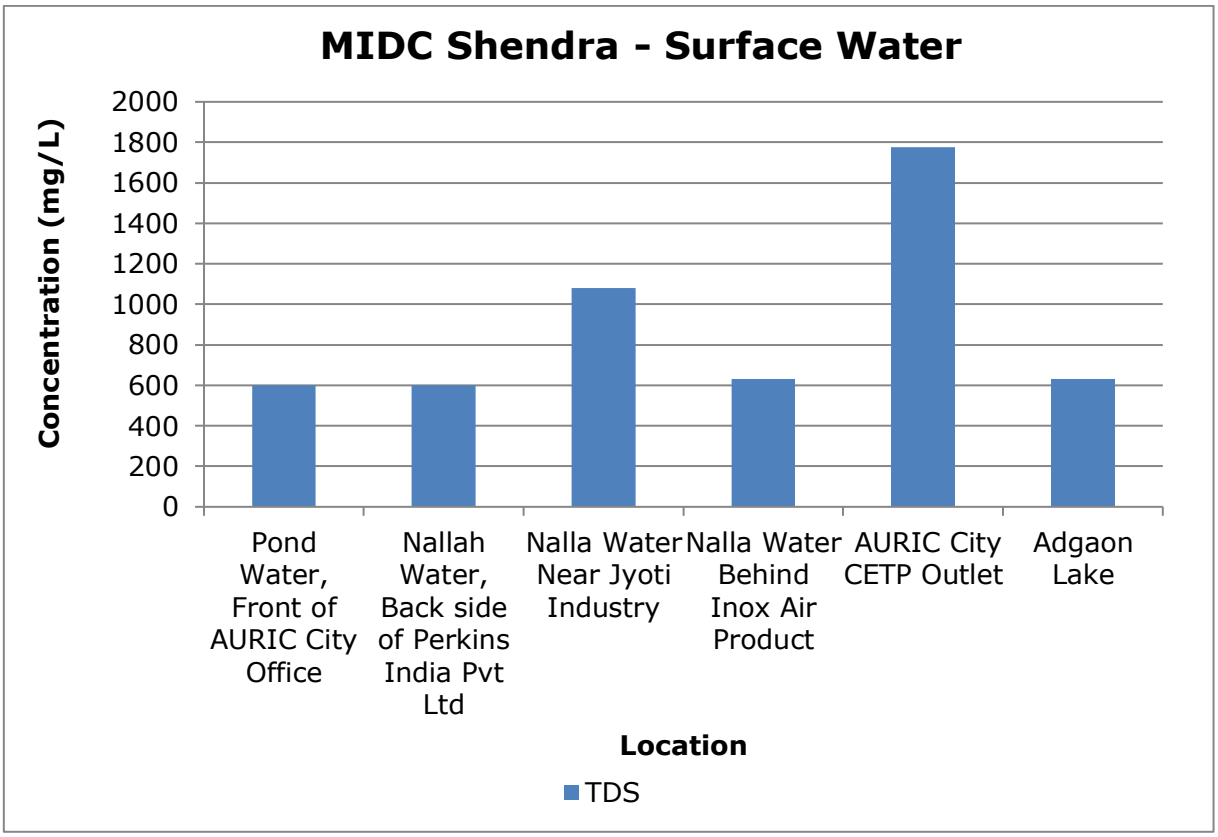
Parameters	Unit	Results					
		Pond Water, Front of AURIC City Office	Nallah Water, Back side of Perkins India Pvt Ltd	Nalla Water Near Jyoti Industry	Nalla Water Behind Inox Air Product	AURIC City CETP Outlet	Adgaon Lake
Vanadium (as V)	mg/L	0.02	0.11	0.01	BLQ	0.03	0.04
Selenium (as Se)	mg/L	0.01	0.02	0.01	0.01	0.02	0.01
Boron (as B)	mg/L	0.80	0.39	0.34	0.27	0.41	0.26
Total Nitrogen	mg/L	2.67	3.10	9.84	1.90	10.94	7.60
Bioassay Test on fish	% survival	87	87	97	97	100	97

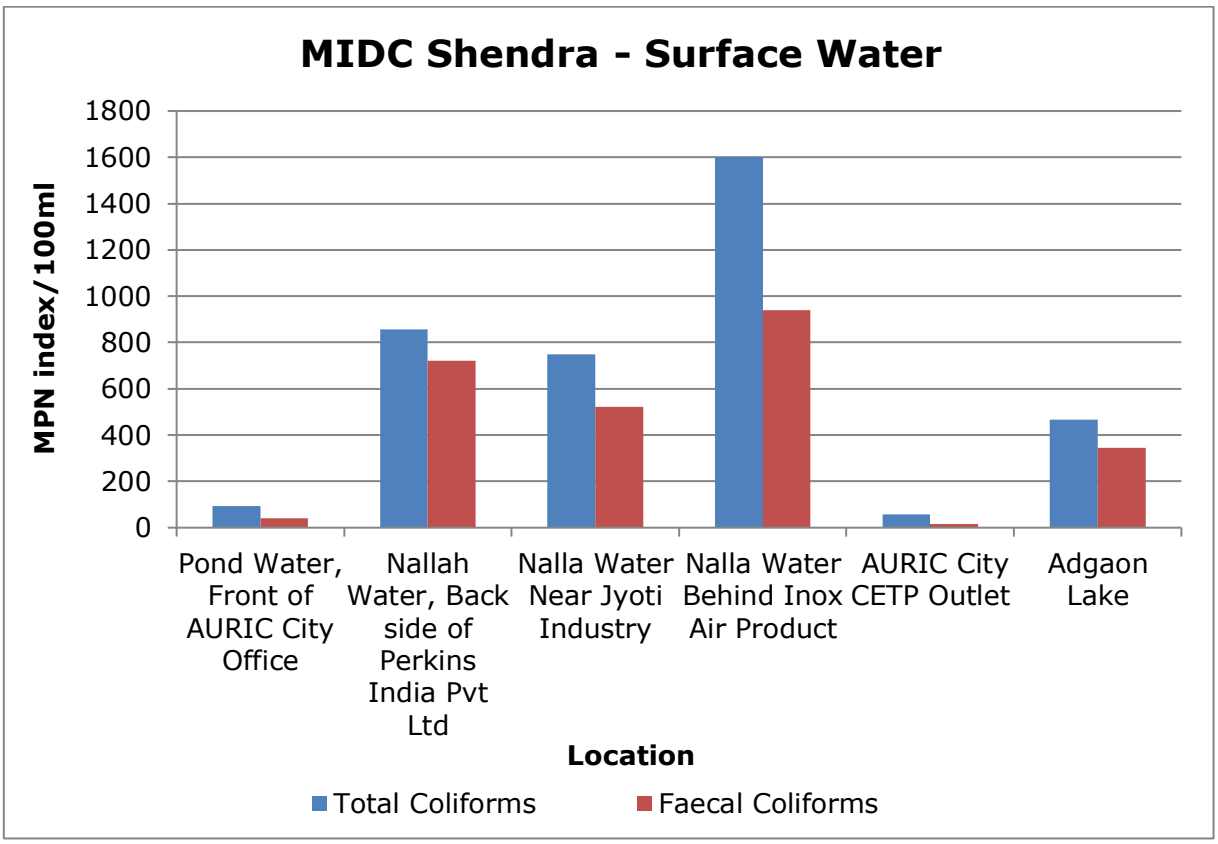
Graphs - Surface water of MIDC Shendra

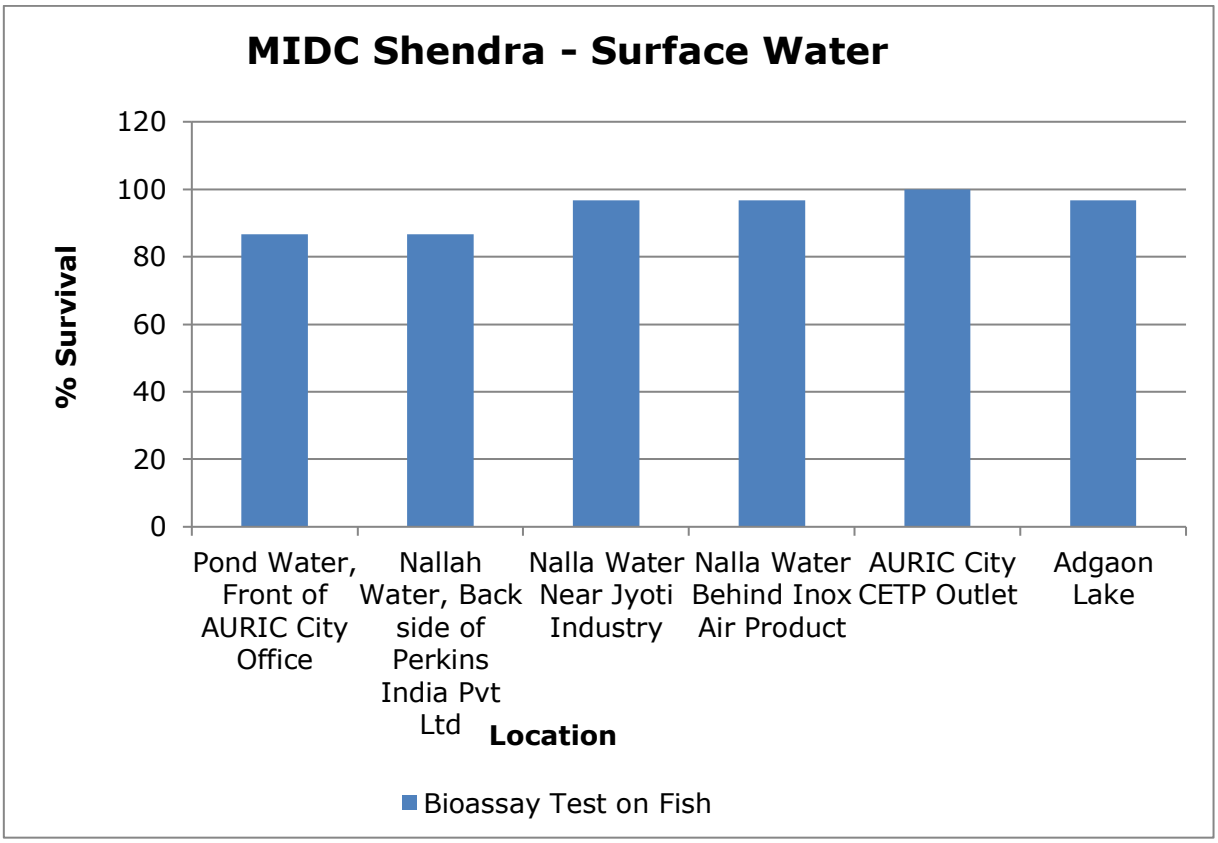





MIDC Shendra - Surface Water
Concentration (µmhos/cm)
3500
3000
2500
2000
1500
1000
500
0
Pond Water, Front of AURIC City Office
Nallah Water, Back side of Perkins India Pvt Ltd
Nalla Water Near Jyoti Industry
Nalla Water Behind Inox Air Product
AURIC City CETP Outlet
Adgaon Lake
Location
Electrical Conductivity


MIDC Shendra - Surface Water
Concentration (mg/L)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Pond Water, Front of AURIC City Office
Nallah Water, Back side of Perkins India Pvt Ltd
Nalla Water Near Jyoti Industry
Nalla Water Behind Inox Air Product
AURIC City CETP Outlet
Adgaon Lake
Location
TDS


MIDC Shendra - Surface Water
MPN index/100ml
1800
1600
1400
1200
1000
800
600
400
200
0
Pond Water, Front of AURIC City Office
Nallah Water, Back side of Perkins India Pvt Ltd
Nalla Water Near Jyoti Industry
Nalla Water Behind Inox Air Product
AURIC City CETP Outlet
Adgaon Lake
Location
Total Coliforms
Faecal Coliforms


MIDC Shendra - Surface Water
% Survival
120
100
80
60
40
20
0
Pond Water, Front of AURIC City Office
Nallah Water, Back side of Perkins India Pvt Ltd
Nalla Water Near Jyoti Industry
Nalla Water Behind Inox Air Product
AURIC City CETP Outlet
Adgaon Lake
Location
Bioassay Test on Fish

2. **MIDC Chikalthana:** From MIDC Chikalthana also, six surface water samples were collected.

- All six water samples collected were found acceptable in general appearance.
- Smell/odour of water samples collected from Sukhna Dam is found not agreeable/unpleasant odour.
- General parameters like pH, electrical conductivity, suspended solids and Total Dissolved Solids (TDS) were also observed well within the limits in all the samples.
- Parameters like Total Phosphate, Selenium and BOD are found to exceed the permissible limit in most of the water samples.
- In fish bioassay, 100% fish survival was observed in the water sample of Dam water of Sukhna dam and Sukana near shani mandir.
- Metals such as Arsenic, Nickel, Copper, Hexavalent Chromium (Cr^{6+}) etc. were also observed either below the limit of quantification or below their standard limits.
- Parameters like Total Residual Chlorine, Nitrogen, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also meet the criteria as prescribed by CPCB.
- Organo Chlorine Pesticides, Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) are also observed below the limit of quantification in all the studied samples.

Table 6.3 MIDC Chikhalthana - Details of Sampling Location of Surface Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Dam Water, Sukna Dam	19.807943N	75.51566E	21.12.2023	23.12.2023	25.12.2023
2.	STP Outlet, Zaltaphata	19.855765N	75.43684E	22.12.2023	24.12.2023	26.12.2023
3.	Nalla Water, Behind NHK	19.888545N	75.378792E	22.12.2023	24.12.2023	26.12.2023
4.	Sukana River Near Shani Mandir	19.880309N	75.382849E	22.12.2023	24.12.2023	26.12.2023
5.	Harsul lake	19.858852N	75.414729E	22.12.2023	24.12.2023	26.12.2023
6.	Salim Ali Sarovar	19.923124N	75.335116E	22.12.2023	24.12.2023	26.12.2023

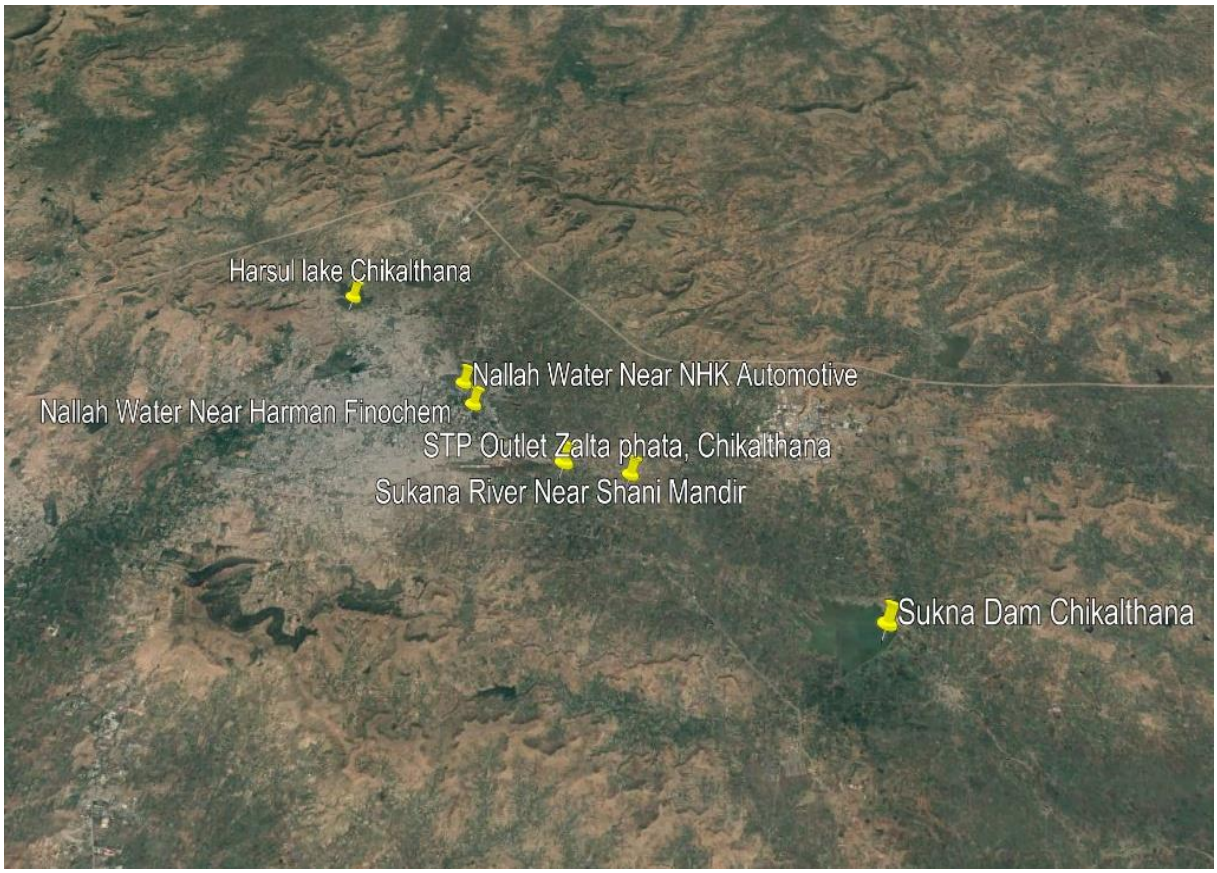


Fig: Geographical Locations of Surface Water Sampling MIDC Chikalthana

Table 6.4 MIDC Chikhalthana - Results of Surface Water

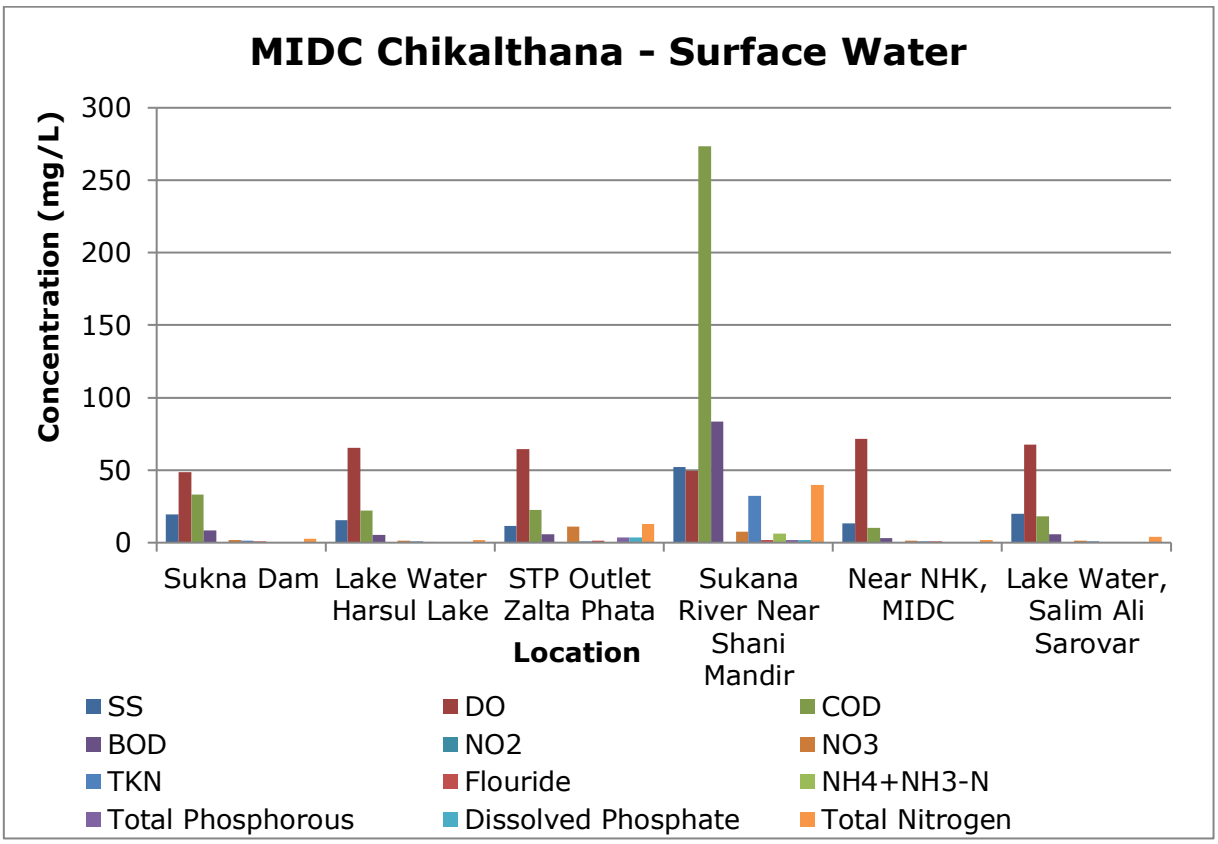
Parameters	Unit	Results					
		Sukna Dam	**Lake Water Harsul Lake**	**STP Outlet Zalta Phata**	**Sukana River Near Shani Mandir**	**Near NHK, MIDC**	**Lake Water, Salim Ali Sarovar**
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	Floating Matter evident	Floating Matter evident	No Floating Matter	Floating Matter evident	Floating Matter Evident	Floating Matter Evident
Transparency	m	0.80	0.50	0.40	0.30	0.30	0.40
Temperature	°C	26	26	26	27	27	27
Colour	Hazen	2	2	2	11	1	2
Smell	-	Agreeable	Agreeable	Agreeable	Not Agreeable	Agreeable	Agreeable
pH	-	8.13	8.69	8.11	7.94	8.11	8.38
Oil & Grease	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Suspended Solids	mg/L	19	15	12	52	13	20

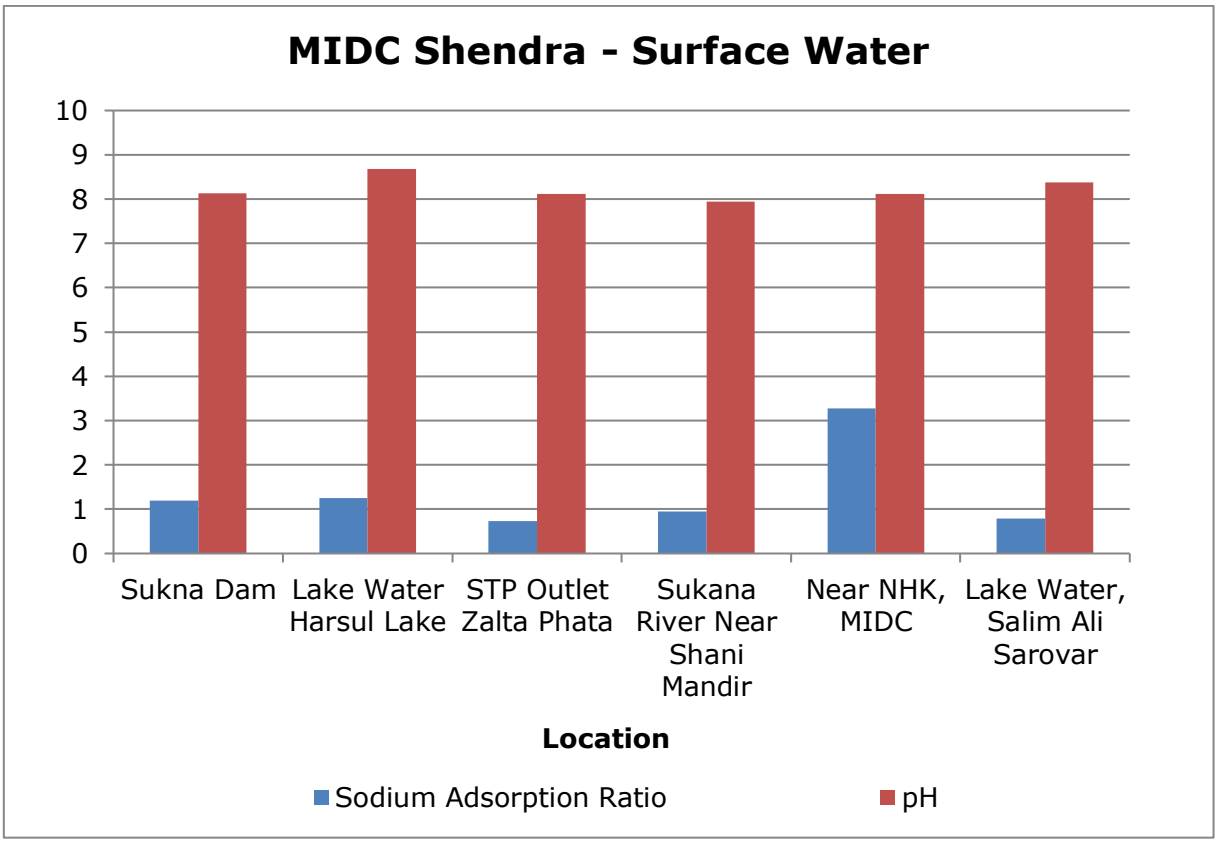
Parameters	Unit	Results					
		Sukna Dam	Lake Water Harsul Lake	STP Outlet Zalta Phata	Sukana River Near Shani Mandir	Near NHK, MIDC	Lake Water, Salim Ali Sarovar
Total Dissolved Solids	mg/L	529	340	1252	1715	717	402
Dissolved Oxygen (% Saturation)	%	49	65	64	49	72	68
Chemical Oxygen Demand	mg/L	33	22	23	273	10	18
Biochemical Oxygen Demand (3 days,27°C)	mg/L	8	6	6	84	3	6
Electrical Conductivity (at 25 °C)	µmho/ cm	943	605	2233	3657	1279	716
Nitrite Nitrogen (as NO_2)	mg/L	BLQ	0.03	0.56	0.06	0.04	0.07
Nitrate Nitrogen (as NO_3)	mg/L	1.62	1.54	11.07	7.65	1.21	1.26
(NO_2 + NO_3)-Nitrogen	mg/L	1.25	1.07	11.60	7.70	0.99	1.21
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ	0.79	BLQ	BLQ
Total Residual Chlorine	mg/L	BLQ	BLQ	0.06	0.08	BLQ	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	0.77	0.53	1.53	1.80	0.80	0.63
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	BLQ	BLQ	3.60	1.89	BLQ	BLQ
Sodium Adsorption Ratio	-	1.20	1.25	0.73	0.95	3.27	0.79
Total Coliforms	MPN Index/ 100 ml	218	1110	152	1147	77	185
Faecal Coliforms	MPN Index/ 100 ml	33	40	51	198	31	145
Total Phosphate (as P)	mg/L	BLQ	BLQ	3.80	1.95	BLQ	BLQ

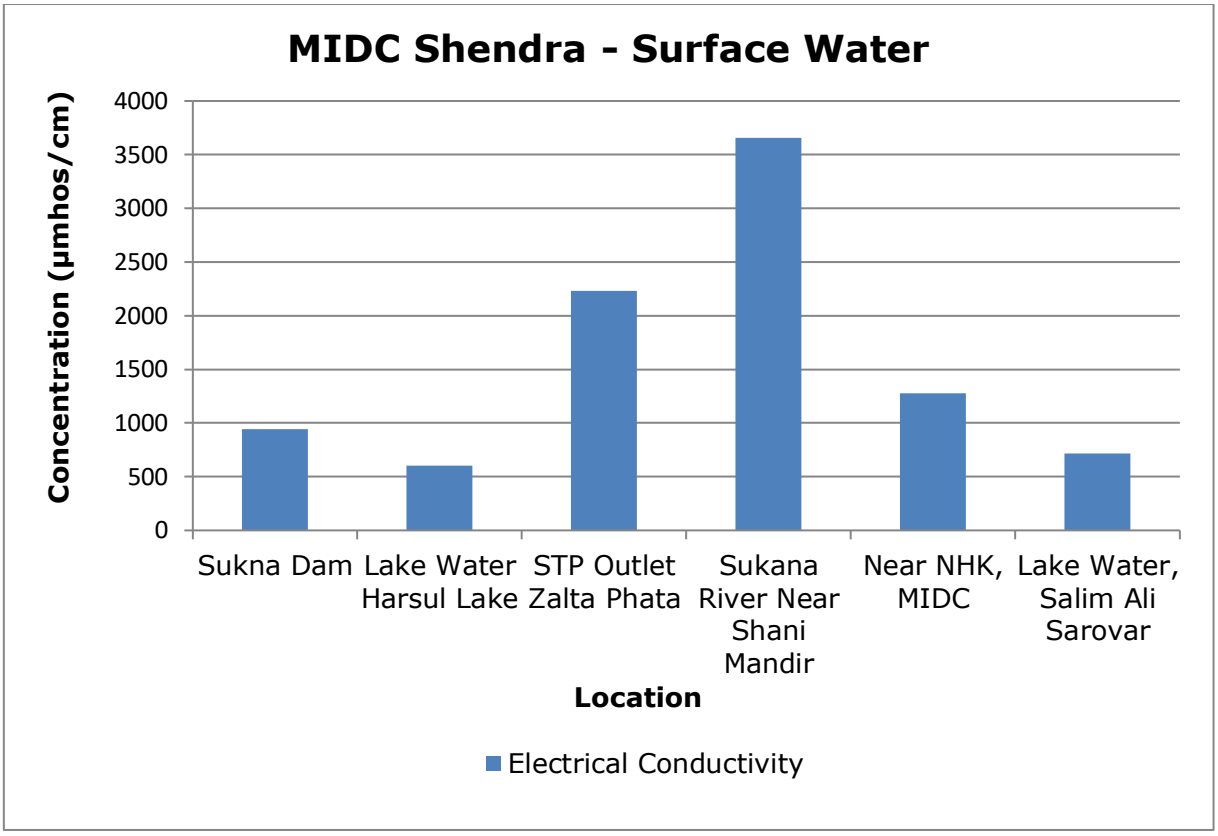
Parameters	Unit	Results					
		Sukna Dam	Lake Water Harsul Lake	STP Outlet Zalta Phata	Sukana River Near Shani Mandir	Near NHK, MIDC	Lake Water, Salim Ali Sarovar
Total Kjeldahl Nitrogen (as N)	mg/L	1.34	0.82	1.05	32.10	0.82	0.86
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	0.40	0.32	0.24	6.41	0.29	0.45
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	BLQ	BLQ	BLQ	0.10	BLQ	BLQ
Nickel (as Ni)	mg/L	BLQ	0.08	BLQ	0.03	BLQ	BLQ
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	BLQ	0.03	BLQ	BLQ	BLQ
Total Arsenic (as As)	mg/L	0.01	BLQ	BLQ	0.01	0.01	0.01
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.17	0.03	BLQ	0.74	0.28	0.05
Iron (as Fe)	mg/L	0.12	0.10	0.15	0.50	BLQ	0.22
Vanadium (as V)	mg/L	0.02	0.03	0.08	0.03	0.03	0.02
Selenium (as Se)	mg/L	0.01	0.01	0.02	0.03	0.02	0.01

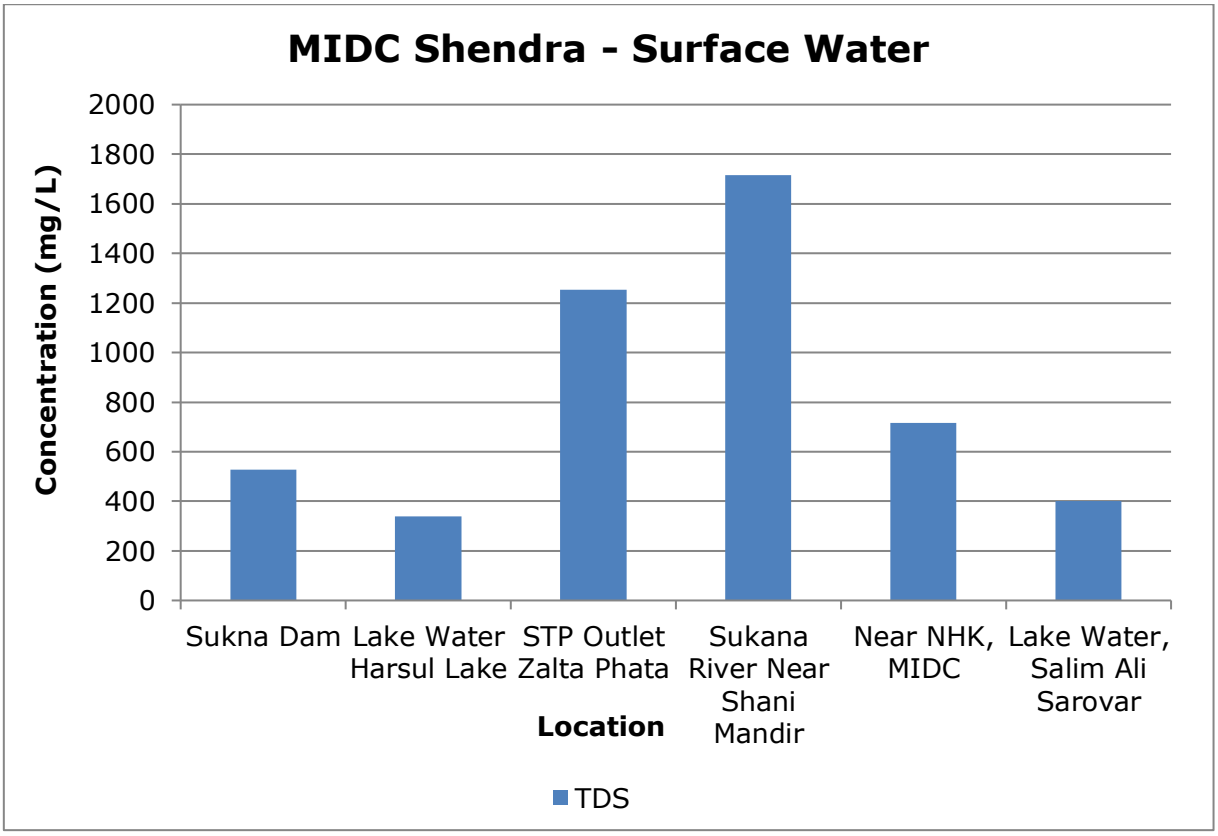
Parameters	Unit	Results					
		Sukna Dam	Lake Water Harsul Lake	STP Outlet Zalta Phata	Sukana River Near Shani Mandir	Near NHK, MIDC	Lake Water, Salim Ali Sarovar
Boron (as B)	mg/L	0.24	0.13	0.63	1.27	0.27	0.17
Total Nitrogen	mg/L	2.60	1.89	12.70	39.93	1.81	4.07
Bioassay Test on fish	% survival	100	97	100	93	97	97

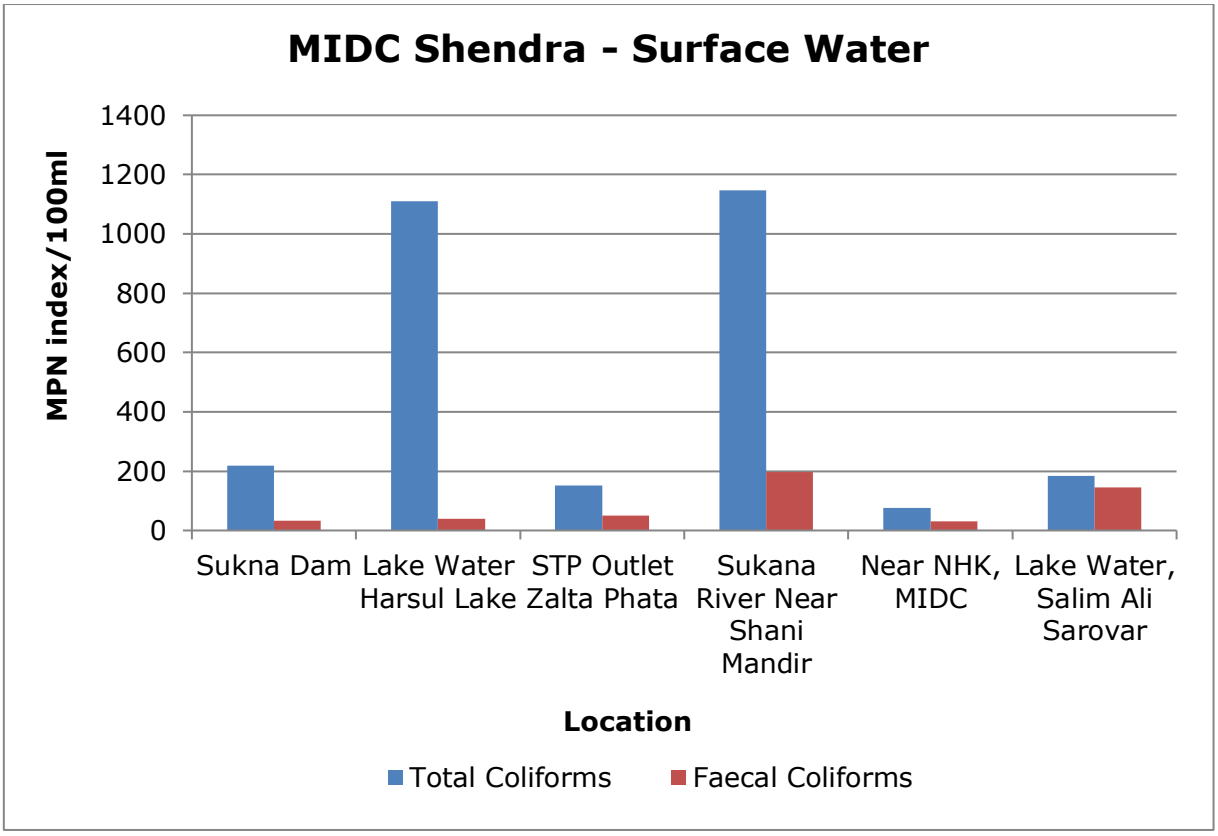
Graphs - Surface water of MIDC Chikalthana

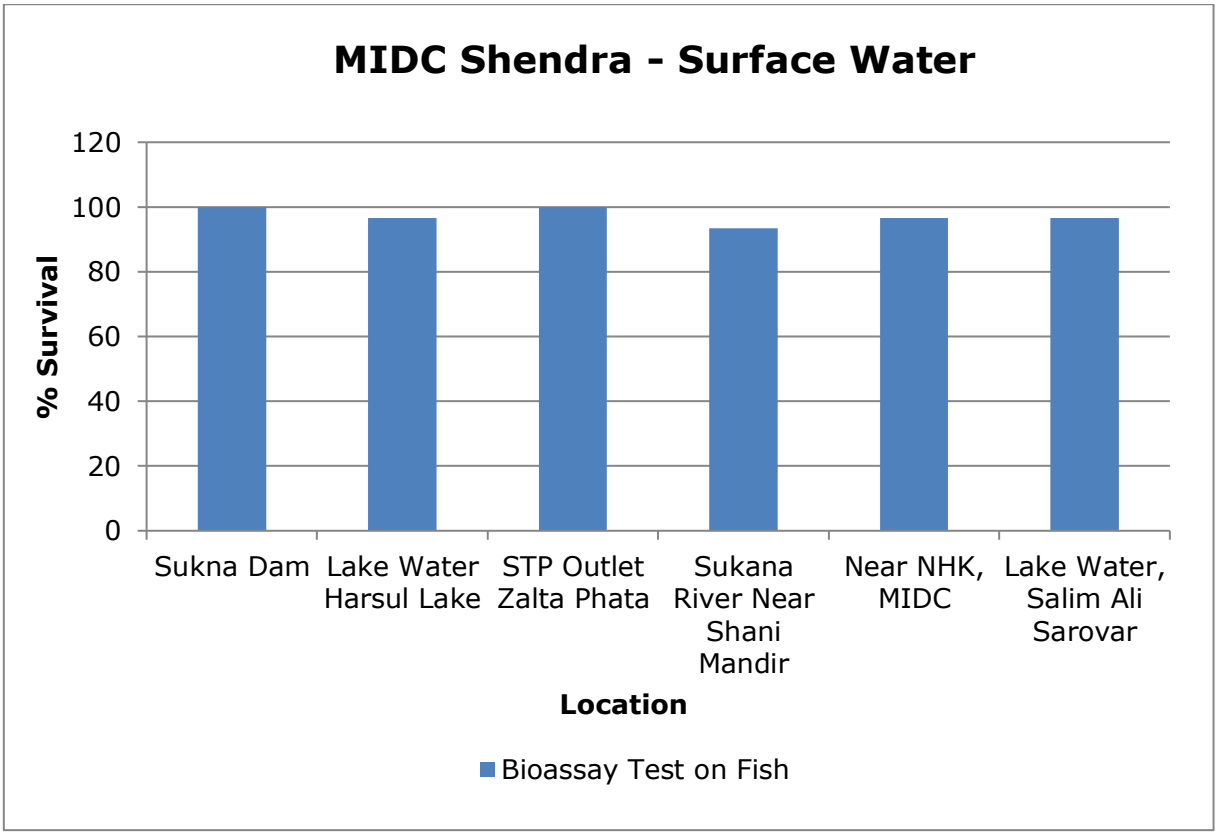





MIDC Shendra - Surface Water
Concentration (µmhos/cm)
4000
3500
3000
2500
2000
1500
1000
500
0
Sukna Dam
Lake Water Harsul Lake
STP Outlet Zalta Phata
Sukana River Near Shani Mandir
Near NHK, MIDC
Lake Water, Salim Ali Sarovar
Location
Electrical Conductivity


MIDC Shendra - Surface Water
Concentration (mg/L)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Sukna Dam
Lake Water Harsul Lake
STP Outlet Zalta Phata
Sukana River Near Shani Mandir
Near NHK, MIDC
Lake Water, Salim Ali Sarovar
Location
TDS


MIDC Shendra - Surface Water
MPN index/100ml
1400
1200
1000
800
600
400
200
0
Sukna Dam
Lake Water Harsul Lake
STP Outlet Zalta Phata
Sukana River Near Shani Mandir
Near NHK, MIDC
Lake Water, Salim Ali Sarovar
Location
Total Coliforms
Faecal Coliforms


MIDC Shendra - Surface Water
% Survival
120
100
80
60
40
20
0
Sukna Dam
Lake Water Harsul Lake
STP Outlet Zalta Phata
Sukana River Near Shani Mandir
Near NHK, MIDC
Lake Water, Salim Ali Sarovar
Location
Bioassay Test on Fish

3. **MIDC Waluj:** Six surface water samples were collected from MIDC Waluj.

- Water in Waluj MIDC was found relatively of poor quality as most of the parameters exceed the acceptable limits.
- All six water samples collected were seen with floating matter in general appearance. Parameters like colour and smell, both exceed the acceptable limits.
- Parameters like Total Phosphate, Selenium and BOD are found to exceed the permissible limit in most of the water samples.
- Whereas, the general parameters like pH, electrical conductivity and suspended solids were observed well within the limits in all the samples.
- In fish bioassay, minimum of 27% fish survival was observed in the water sample of lake water jogeshwari, whereas 100% in the Lake Water Ghanegoan.
- All metals like Arsenic, Nickel, Copper, Hexavalent Chromium (Cr^{6+}) etc. were also observed either below limit of quantification or below their standard limits.
- Parameters like Total Residual Chlorine, Nitrogen, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also met the criteria as prescribed by CPCB.
- Organo Chlorine Pesticides, Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were also observed below the limit of quantification in all the studied samples.

Table 6.5 MIDC Waluj - Details of Sampling Location of Surface Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Kham River Water	19.811217N	75.24969E	27.12.2023	29.12.2023	31.12.2023
2.	CETP Outlet Discharge Point	19.828454N	75.239718E	27.12.2023	29.12.2023	01.01.2024
3.	Pond Water SMS CETP Waluj Pvt Ltd	19.82869N	75.238967E	27.12.2023	29.12.2023	31.12.2023
4.	Lake Water Ghanegoan, behind Carlsberg	19.865948N	75.212711E	27.12.2023	29.12.2023	31.12.2023
5.	Lake Water Behind K Sector	19.852431N	75.217922E	27.12.2023	29.12.2023	31.12.2023
6.	Lake Water Jogeshwari	19.822524N	75.210661E	27.12.2023	29.12.2023	31.12.2023

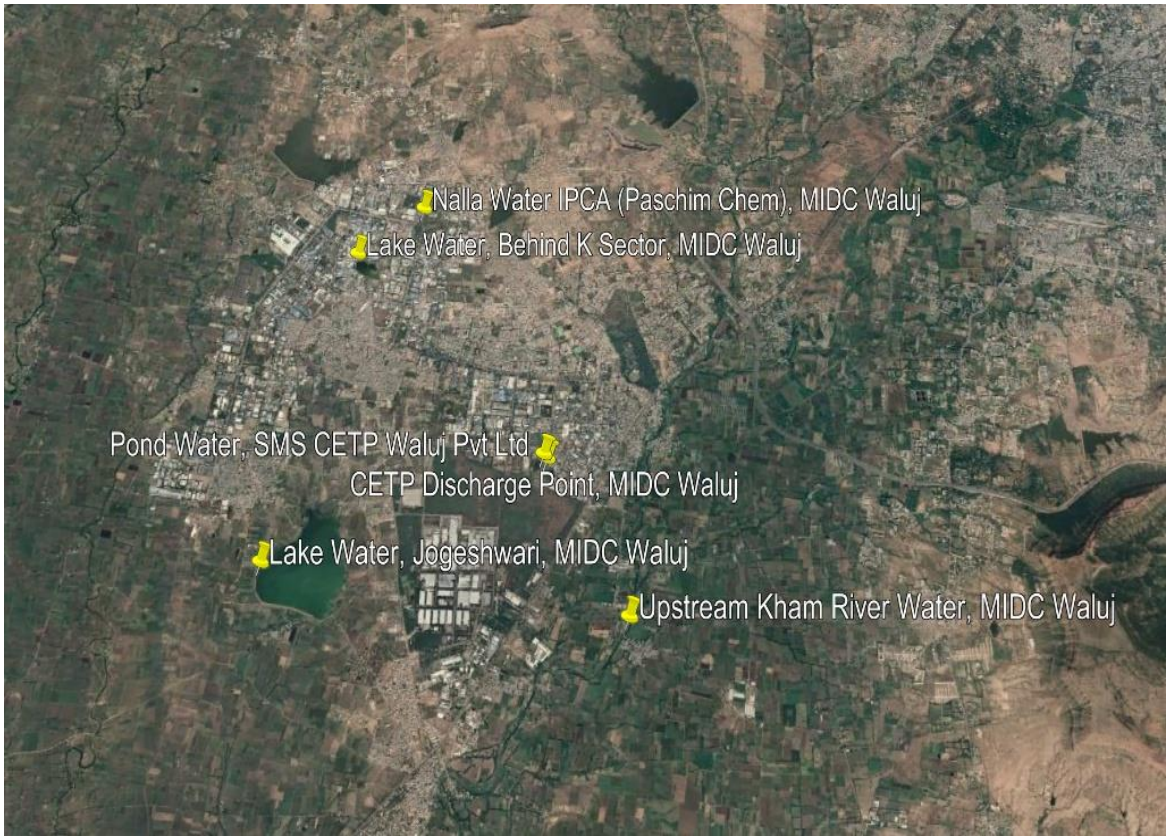


Fig: Geographical Locations of Surface Water Sampling MIDC Waluj

Table 6.6 MIDC Waluj - Results of Surface Water

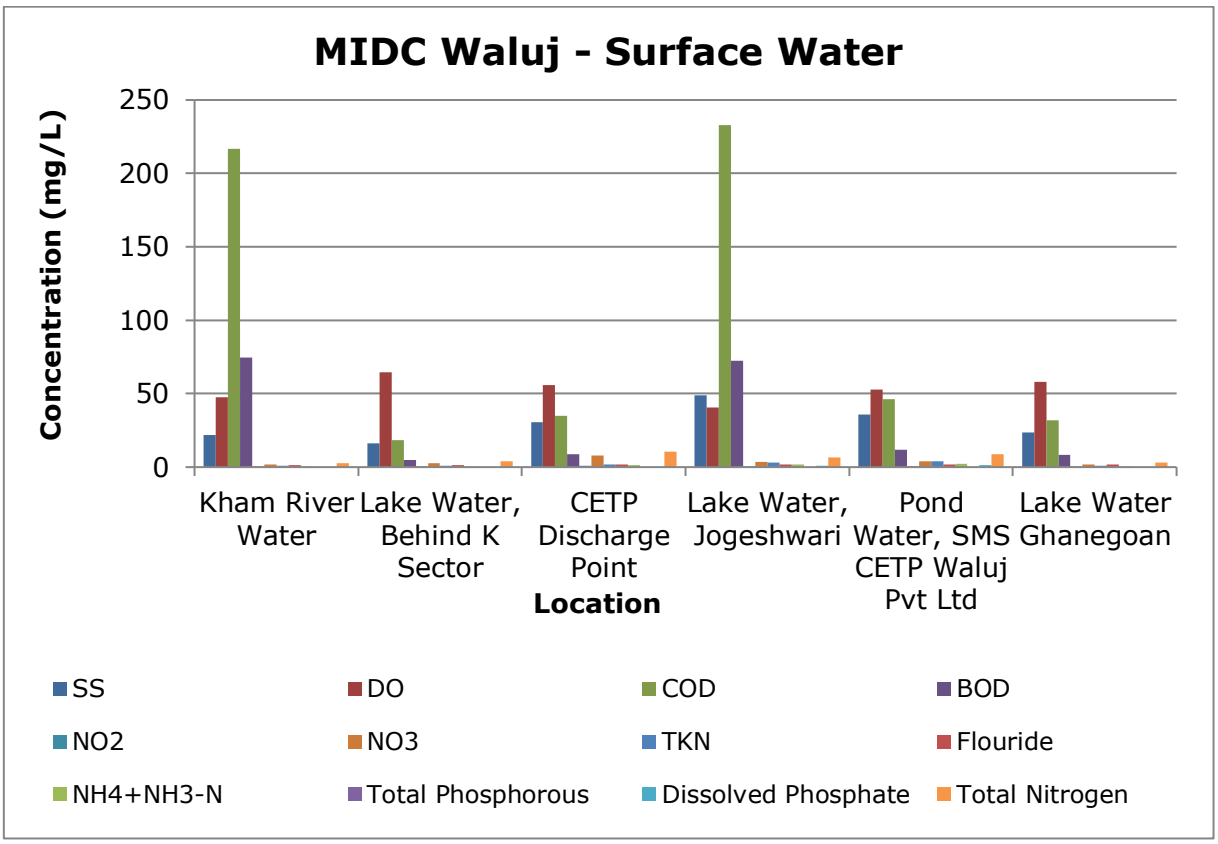
Parameters	Unit	Results					
		Upstream Kham River Water	**Lake Water, Behind K Sector**	**CETP Discharge Point**	**Lake Water, Jogeshwari**	**Pond Water, SMS CETP**	**Lake Water Ghanegoan**
Sanitary Survey	-	Generally clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	Floating Matter evident	Floating Matter evident	Floating Matter evident	Floating Matter evident	Floating Matter evident	Floating Matter evident
Transparency	m	0.20	0.20	0.40	0.30	0.20	0.30
Temperature	°C	27	27	26	27	27	28
Colour	Hazen	2	1	4	7	4	1
Smell	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
pH	-	7.91	7.83	7.77	7.49	7.95	7.75
Oil & Grease	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Suspended Solids	mg/L	22	16	31	49	36	24
Total Dissolved Solids	mg/L	1015	1035	1532	1211	1974	1524

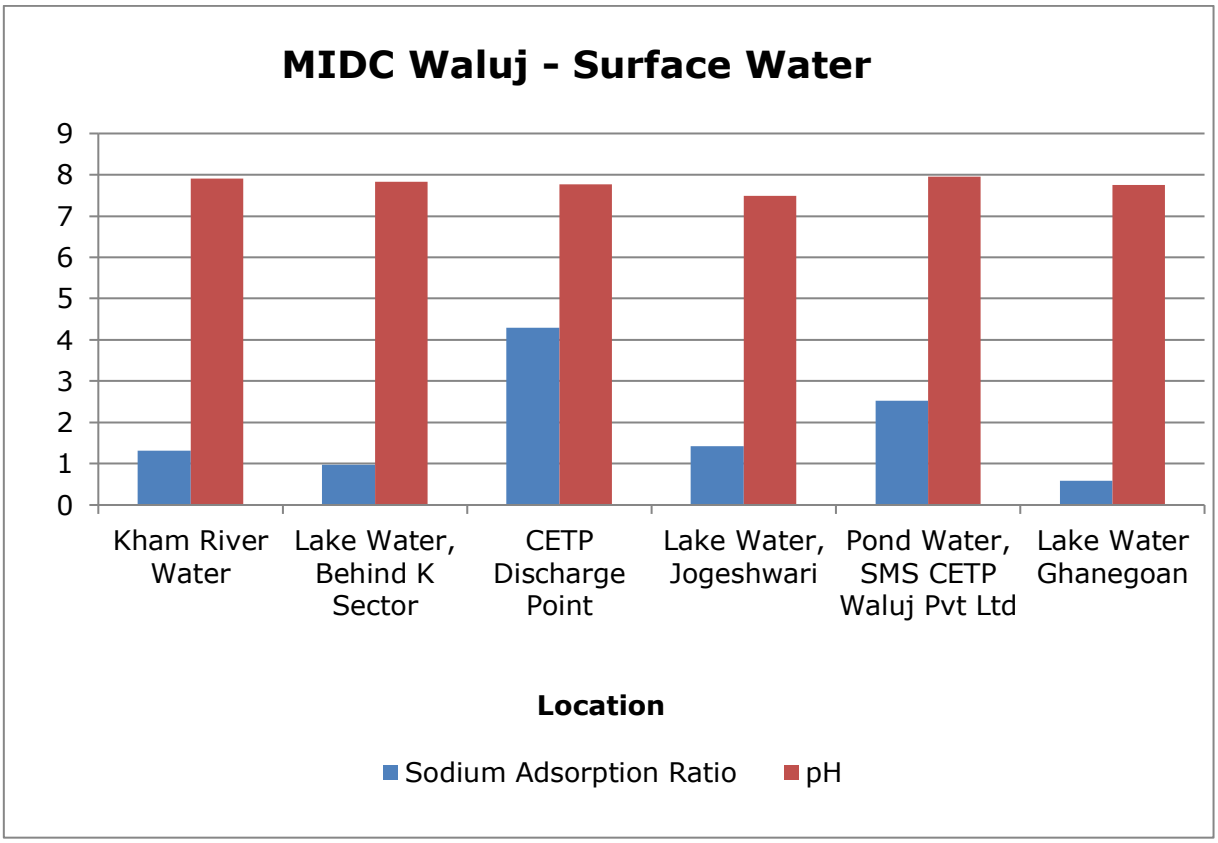
Parameters	Unit	Results					
		Upstream Kham River Water	Lake Water, Behind K Sector	CETP Discharge Point	Lake Water, Jogeshwari	Pond Water, SMS CETP	Lake Water Ghanegoan
Dissolved Oxygen (% Saturation)	%	48	65	56	41	53	58
Chemical Oxygen Demand	mg/L	217	18	35	233	46	32
Biochemical Oxygen Demand (3 days,27°C)	mg/L	75	5	9	72	12	8
Electrical Conductivity (at 25 °C)	µmho/ cm	1812	1846	2733	2160	3523	2717
Nitrite Nitrogen (as NO_2)	mg/L	0.13	0.18	0.97	0.05	0.63	0.15
Nitrate Nitrogen (as NO_3)	mg/L	1.63	2.77	7.97	3.45	4.10	1.73
(NO_2 + NO_3)-Nitrogen	mg/L	1.72	2.95	8.94	3.48	4.73	1.88
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ	BLQ	0.57	BLQ
Total Residual Chlorine	mg/L	BLQ	BLQ	0.06	0.08	0.07	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	1.37	1.47	1.80	1.80	1.87	1.67
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	BLQ	BLQ	BLQ	0.96	1.30	BLQ
Sodium Adsorption Ratio	-	1.32	0.98	4.29	1.43	2.52	0.59
Total Coliforms	MPN Index/ 100 ml	920	1600	180	820	575	693
Faecal Coliforms	MPN Index/ 100 ml	525	910	52	281	156	207
Total Phosphate (as P)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Kjeldahl Nitrogen (as N)	mg/L	0.97	1.01	1.76	2.91	4.07	1.04

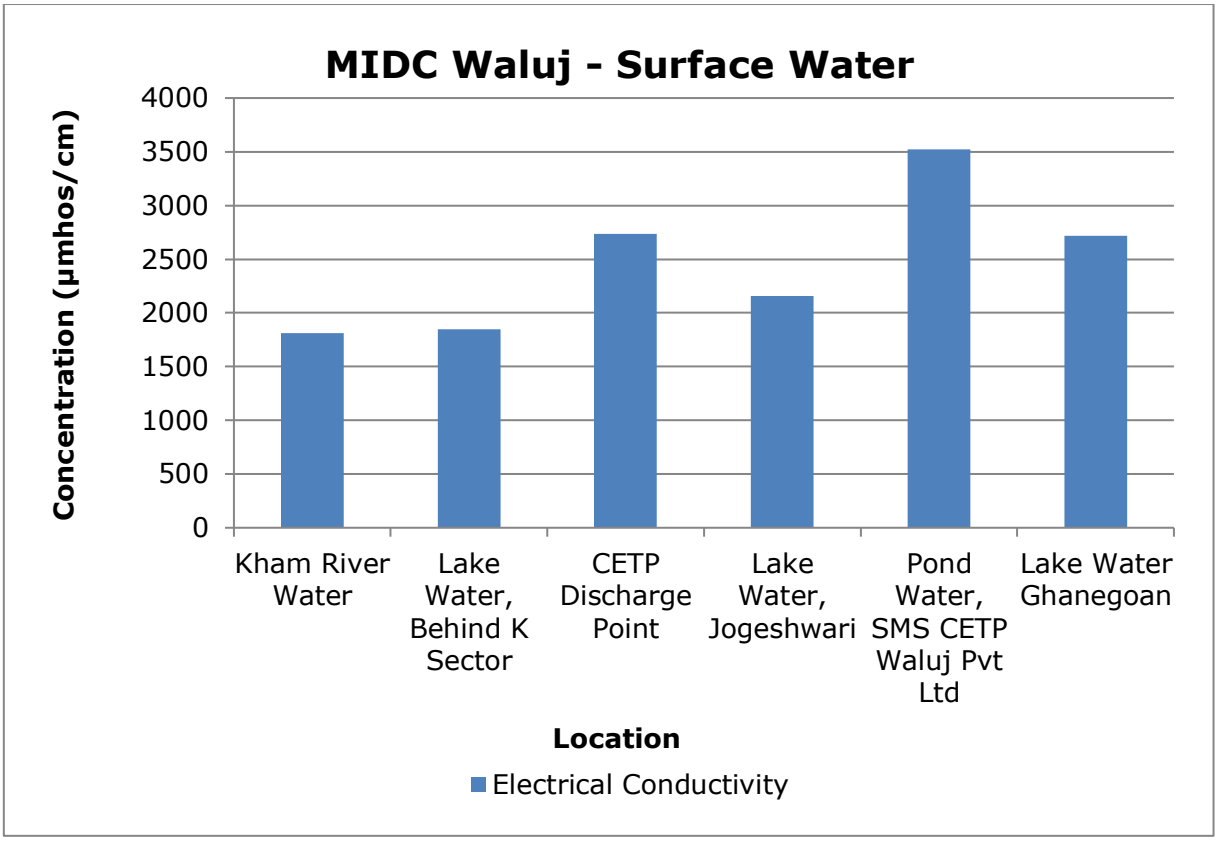
Parameters	Unit	Results					
		Upstream Kham River Water	Lake Water, Behind K Sector	CETP Discharge Point	Lake Water, Jogeshwari	Pond Water, SMS CETP	Lake Water Ghanegoan
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	0.27	0.31	1.21	1.69	2.43	0.44
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	0.08	BLQ	0.12	0.10	BLQ	0.06
Nickel (as Ni)	mg/L	0.02	0.01	0.11	0.01	0.05	0.02
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ	0.03	BLQ	BLQ
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	BLQ	0.02	BLQ	BLQ	BLQ
Total Arsenic (as As)	mg/L	0.01	0.01	0.01	0.01	BLQ	0.02
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.22	0.04	0.10	0.24	0.23	0.65
Iron (as Fe)	mg/L	0.22	0.06	0.25	0.83	0.15	0.34
Vanadium (as V)	mg/L	0.02	0.04	BLQ	0.07	BLQ	0.02
Selenium (as Se)	mg/L	0.02	0.02	0.01	0.02	0.02	0.02
Boron (as B)	mg/L	0.17	0.36	0.84	0.21	1.68	0.21

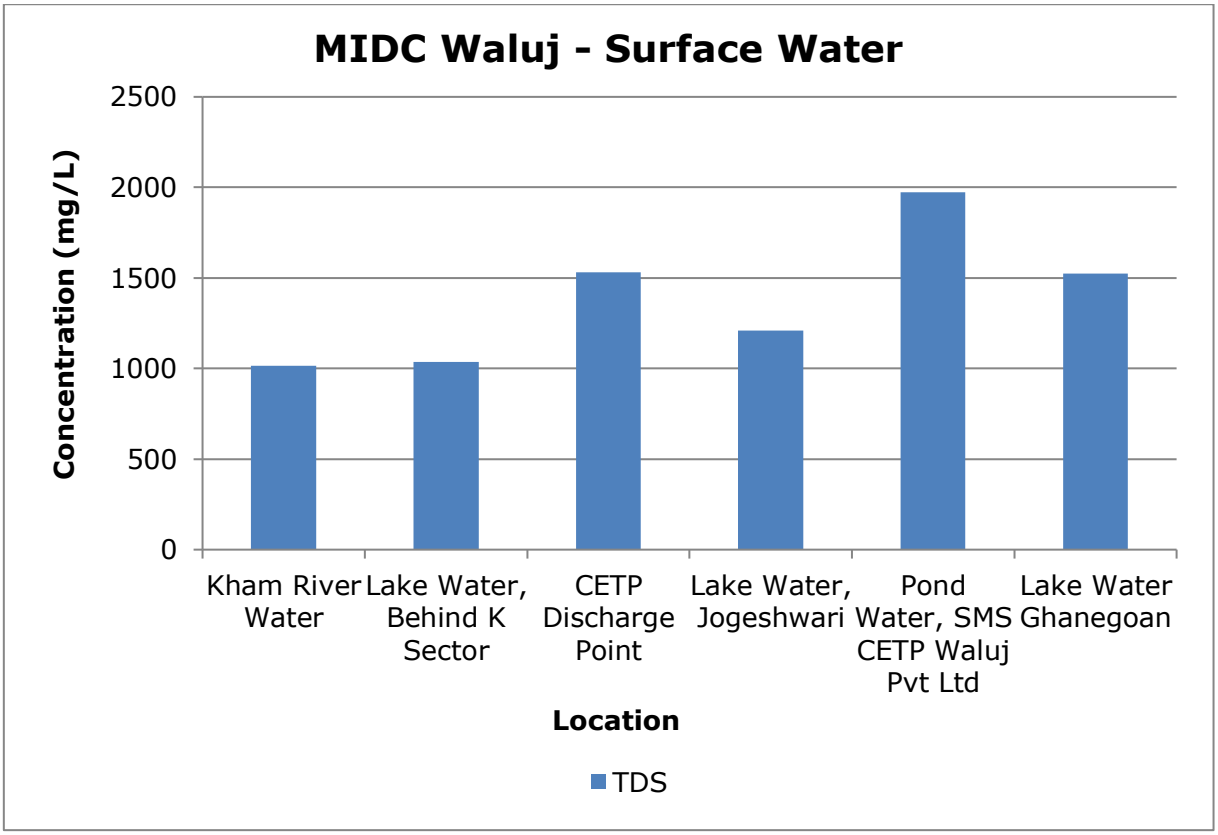
Parameters	Unit	Results					
		Upstream Kham River Water	Lake Water, Behind K Sector	CETP Discharge Point	Lake Water, Jogeshwari	Pond Water, SMS CETP	Lake Water Ghanegoan
Total Nitrogen	mg/L	2.69	3.96	10.71	6.40	8.80	2.93
Bioassay Test on fish	% survival	97	80	33	27	63	100

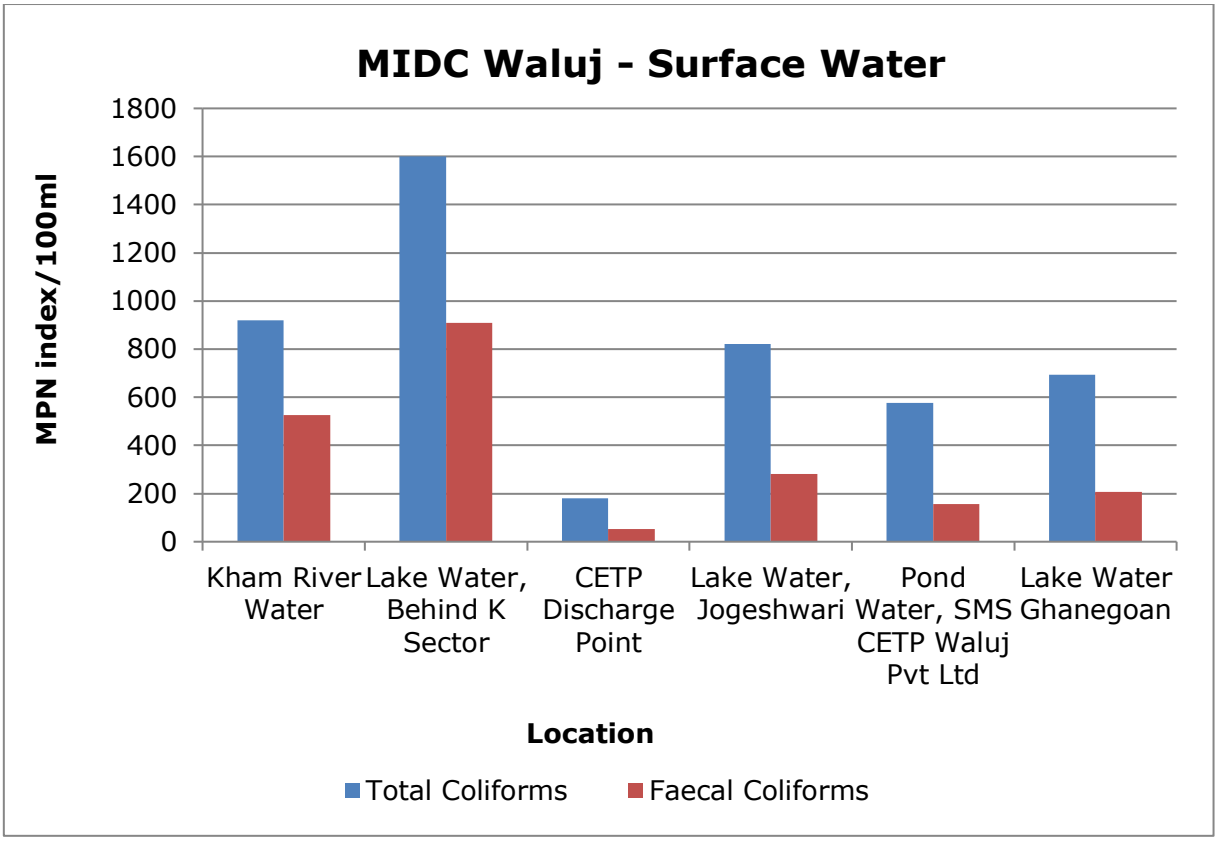
Graphs - Surface water of MIDC Waluj

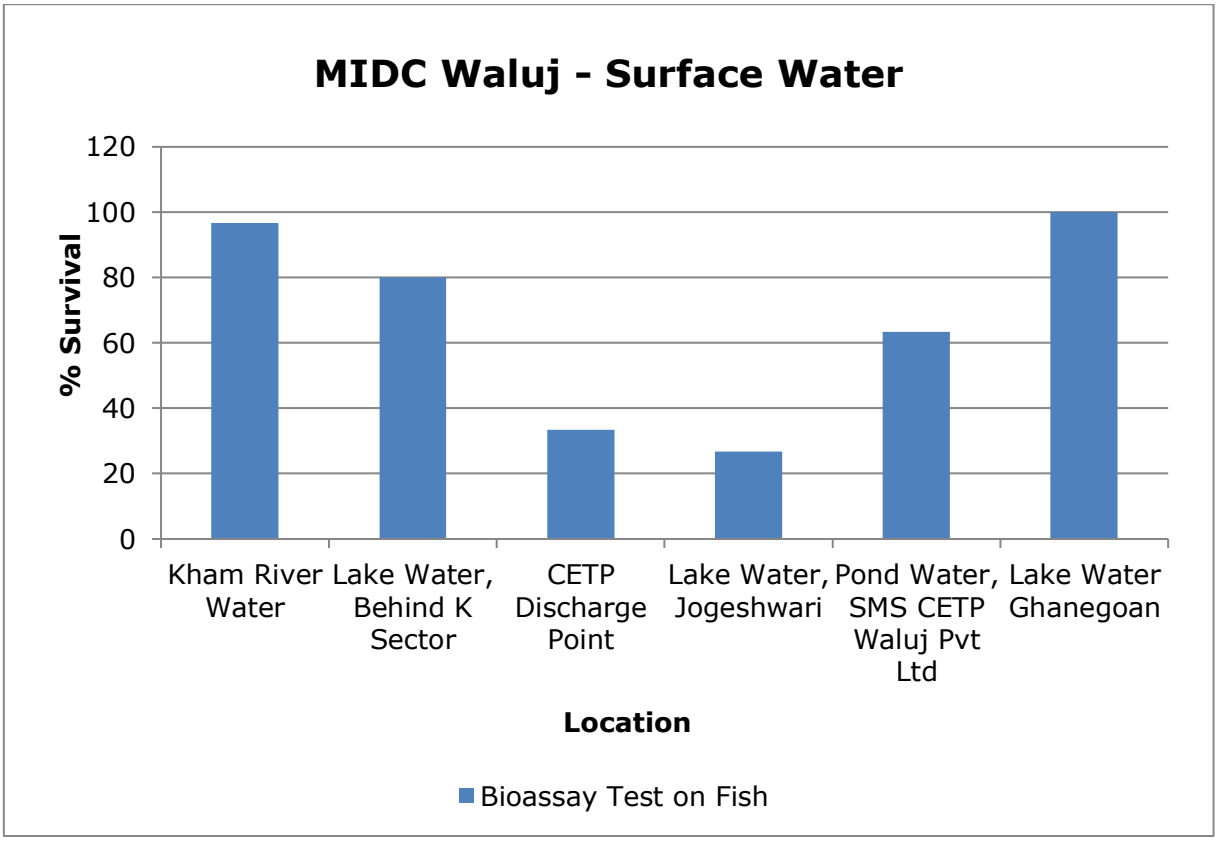





MIDC Waluj - Surface Water
Concentration (µmhos/cm)
4000
3500
3000
2500
2000
1500
1000
500
0
Kham River Water
Lake Water, Behind K Sector
CETP Discharge Point
Lake Water, Jogeshwari
Pond Water, SMS CETP Waluj Pvt Ltd
Lake Water Ghanegoan
Location
Electrical Conductivity


MIDC Waluj - Surface Water
Concentration (mg/L)
2500
2000
1500
1000
500
0
Kham River Water
Lake Water, Behind K Sector
CETP Discharge Point
Lake Water, Jogeshwari
Pond Water, SMS CETP Waluj Pvt Ltd
Lake Water Ghanegoan
Location
TDS


MIDC Waluj - Surface Water
MPN index/100ml
1800
1600
1400
1200
1000
800
600
400
200
0
Kham River Water
Lake Water, Behind K Sector
CETP Discharge Point
Lake Water, Jogeshwari
Pond Water, SMS CETP Waluj Pvt Ltd
Lake Water Ghanegoan
Location
Total Coliforms
Faecal Coliforms


MIDC Waluj - Surface Water
% Survival
120
100
80
60
40
20
0
Kham River Water
Lake Water, Behind K Sector
CETP Discharge Point
Lake Water, Jogeshwari
Pond Water, SMS CETP Waluj Pvt Ltd
Lake Water Ghanegoan
Location
Bioassay Test on Fish

4. **MIDC Paithan:** Six surface water samples were collected from MIDC Paithan.

- Out of six water samples, four samples were found acceptable in general appearance, colour, smell and transparency.
- General parameters like pH, electrical conductivity and suspended solids are also observed well within the limits in all the samples.
- Parameters like Total Phosphate, Selenium and BOD are found to exceed the permissible limit in most of the water samples.
- 100% fish survival was observed in two water samples during fish bioassay.
- All metals like Arsenic, Nickel, Copper, Hexavalent Chromium (Cr^{6+}) etc. were also observed either below the limit of quantification or below their standard limits.
- Parameters like Total Residual Chlorine, Nitrogen, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also met the criteria as prescribed by CPCB.
- Organo Chlorine Pesticides, Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were also observed below the limit of quantification in all the studied samples.

Table 6.7 MIDC Paithan - Details of Sampling Location of Surface Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Dam Water Back Side of WTP, Farolla Village	19.725465	75.307305	28.12.2023	30.12.2023	01.01.2024
2.	Nalla Water, Near Sharayu Seeds	19.78691	75.278625	28.12.2023	30.12.2023	01.01.2024
3.	Nalla Water Farolla Village	19.727627	75.295933	28.12.2023	30.12.2023	01.01.2024
4.	Pond water Backside Essem Systems Badve Engg	19.784947	75.273555	28.12.2023	30.12.2023	01.01.2024
5.	Nalla water, Near R. L. Steel, Chittegaon	19.742664	75.293525	28.12.2023	30.12.2023	01.01.2024
6.	Nalla Water, Near Itkheda	19.846289	75.299079	28.12.2023	30.12.2023	01.01.2024

Fig: Geographical Locations of Surface Water Sampling MIDC Paithan

Table 6.8 MIDC Paithan - Results of Surface Water

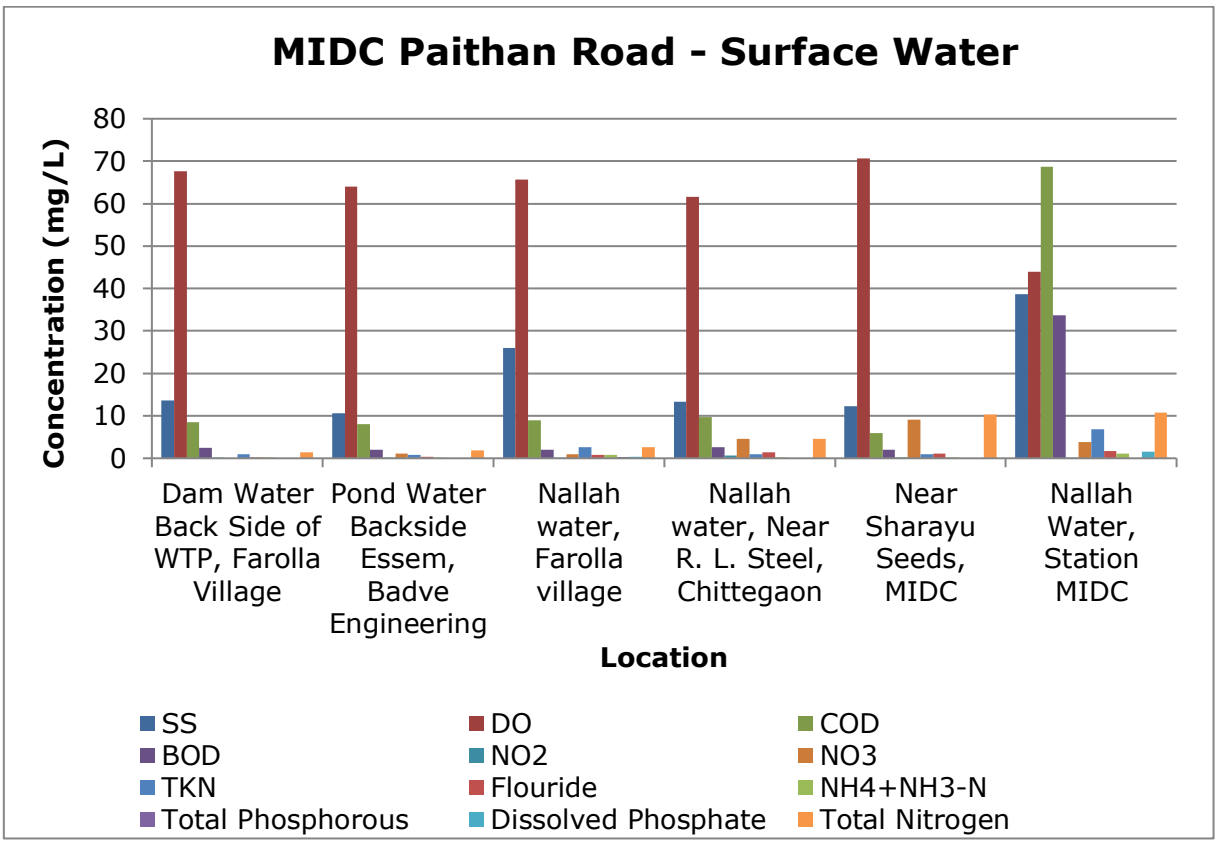
Parameters	Unit	Results					
		Dam Water Back Side of WTP	**Nallah water Infront of Badve Engg.**	**Nallah water, Farolla village**	**Nallah water, Near R. L. Steel**	**Near Sharayu Seeds, MIDC**	**Near Sharayu Seeds, MIDC**
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Generally clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	Floating Matter Evident	No Floating Matter	Floating Matter evident	Floating Matter evident	Floating Matter evident	Floating Matter evident
Transparency	m	0.50	0.30	0.20	0.20	0.10	0.10
Temperature	°C	28	28	27	26	26	27
Colour	Hazen	1	1	7	1	1	5
Smell	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Not Agreeable
pH	-	8.03	8.03	7.90	7.84	7.87	7.76
Oil & Grease	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Suspended Solids	mg/L	14	11	26	13	12	39

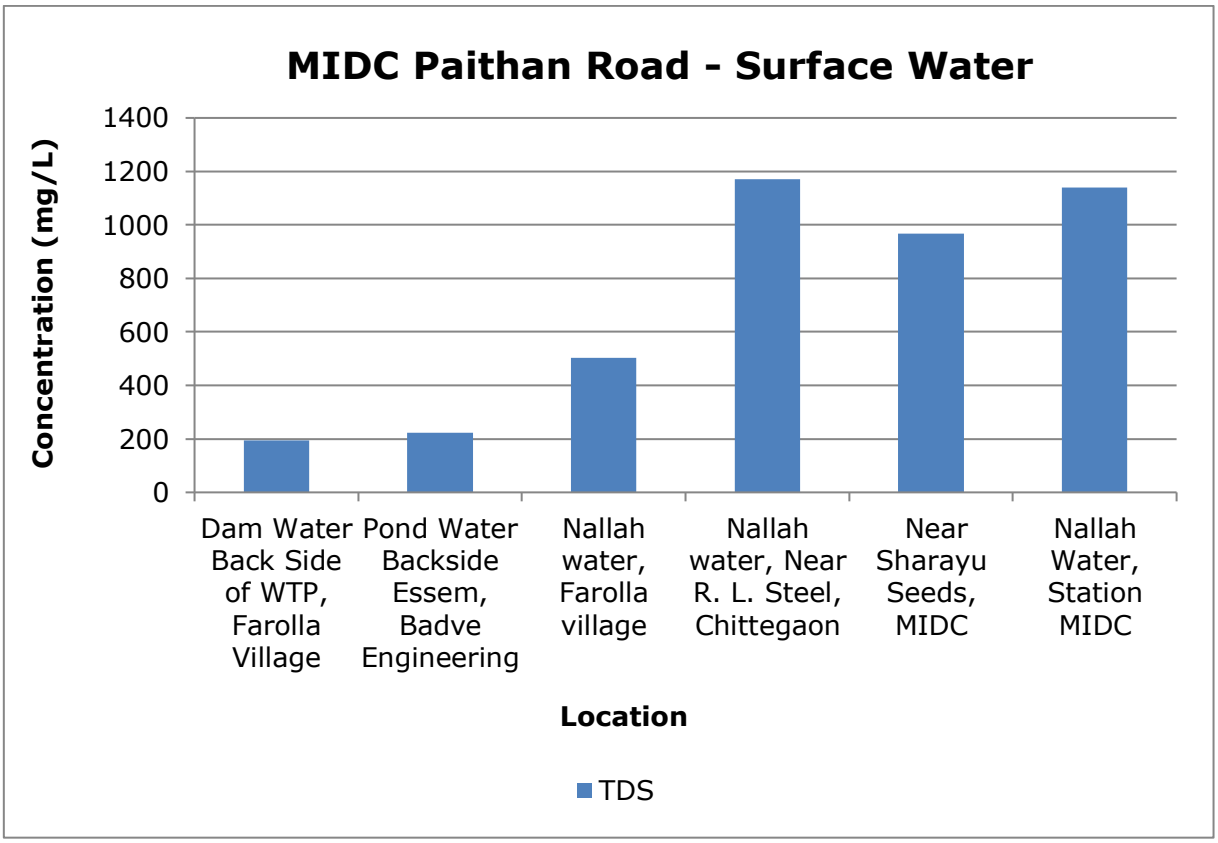
Parameters	Unit	Results					
		Dam Water Back Side of WTP	Nallah water Infront of Badve Engg.	Nallah water, Farolla village	Nallah water, Near R. L. Steel	Near Sharayu Seeds, MIDC	Near Sharayu Seeds, MIDC
Total Dissolved Solids	mg/L	194	224	502	1171	967	1139
Dissolved Oxygen (% Saturation)	%	68	64	66	62	71	44
Chemical Oxygen Demand	mg/L	9	8	9	10	6	69
Biochemical Oxygen Demand (3 days,27°C)	mg/L	3	2	2	3	2	34
Electrical Conductivity (at 25 °C)	µmho/cm	341	400	895	2089	1726	2033
Nitrite Nitrogen (as NO_2)	mg/L	0.02	0.09	0.04	0.71	0.16	0.12
Nitrate Nitrogen (as NO_3)	mg/L	BLQ	1.13	1.00	4.56	9.16	3.76
(NO_2 + NO_3)-Nitrogen	mg/L	0.53	0.77	0.78	3.64	9.33	3.21
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	0.07
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	0.24	0.33	0.80	1.43	1.03	1.77
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	BLQ	BLQ	0.32	BLQ	BLQ	1.52
Sodium Adsorption Ratio	-	1.71	0.80	1.17	3.27	4.06	1.59
Total Coliforms	MPN Index/ 100 ml	100	650	626	657	58	1093
Faecal Coliforms	MPN Index/ 100 ml	79	124	559	434	58	115
Total Phosphate (as P)	mg/L	BLQ	BLQ	0.34	BLQ	BLQ	BLQ

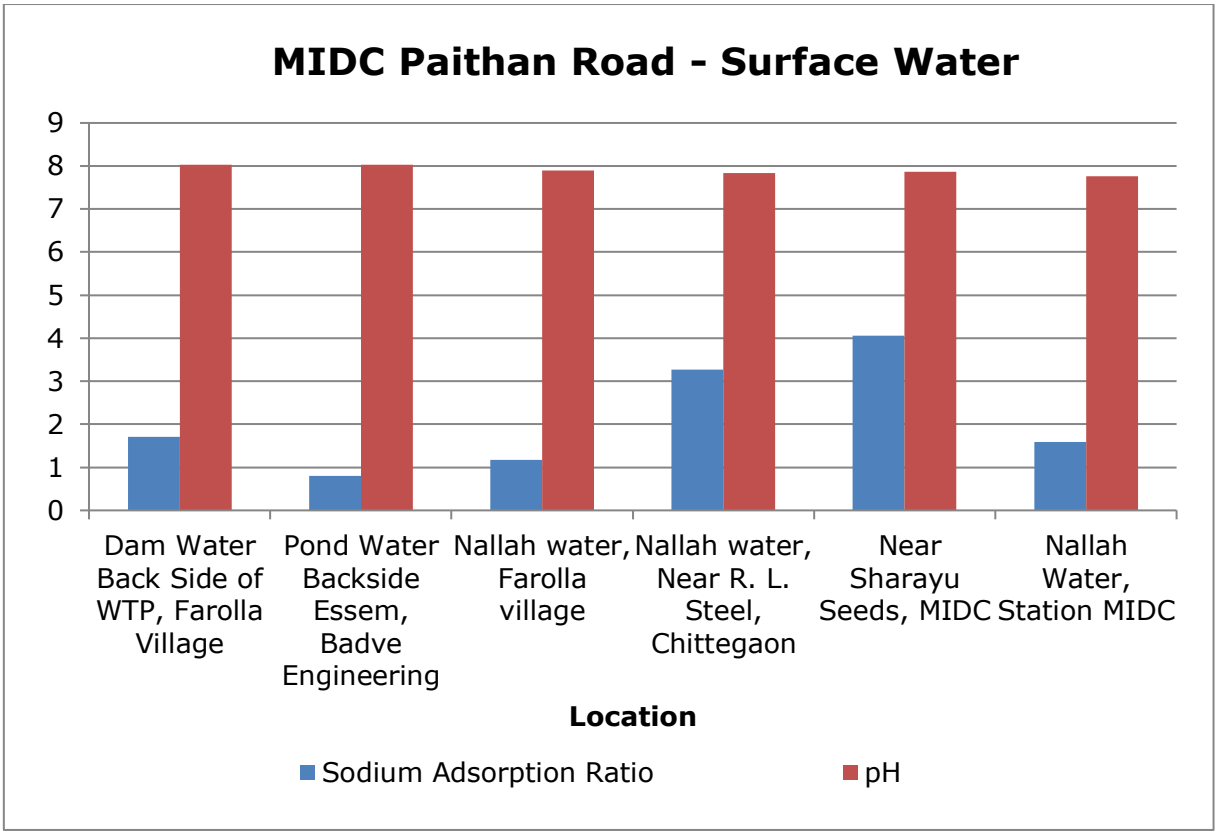
Parameters	Unit	Results					
		Dam Water Back Side of WTP	Nallah water Infront of Badve Engg.	Nallah water, Farolla village	Nallah water, Near R. L. Steel	Near Sharayu Seeds, MIDC	Near Sharayu Seeds, MIDC
Total Kjeldahl Nitrogen (as N)	mg/L	0.93	0.78	2.58	0.93	1.01	6.88
Total Ammonia (NH_4+NH_3)-Nitrogen	mg/L	0.22	0.15	0.85	0.21	0.26	1.03
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS Calculated as LAS, mol.wt.288.38)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (as PAH)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	BLQ	0.09	BLQ	BLQ	BLQ	BLQ
Nickel (as Ni)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	0.01
Copper (as Cu)	mg/L	0.03	BLQ	BLQ	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	0.02	BLQ	BLQ	BLQ	BLQ	BLQ
Total Arsenic (as As)	mg/L	BLQ	0.01	0.01	BLQ	0.01	BLQ
Lead (as Pb)	mg/L	0.02	BLQ	BLQ	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ	BLQ	0.01	BLQ
Manganese (as Mn)	mg/L	0.05	0.04	0.57	0.02	BLQ	1.02
Iron (as Fe)	mg/L	0.21	BLQ	0.07	0.07	0.08	0.92
Vanadium (as V)	mg/L	0.02	BLQ	0.02	0.07	0.06	0.03

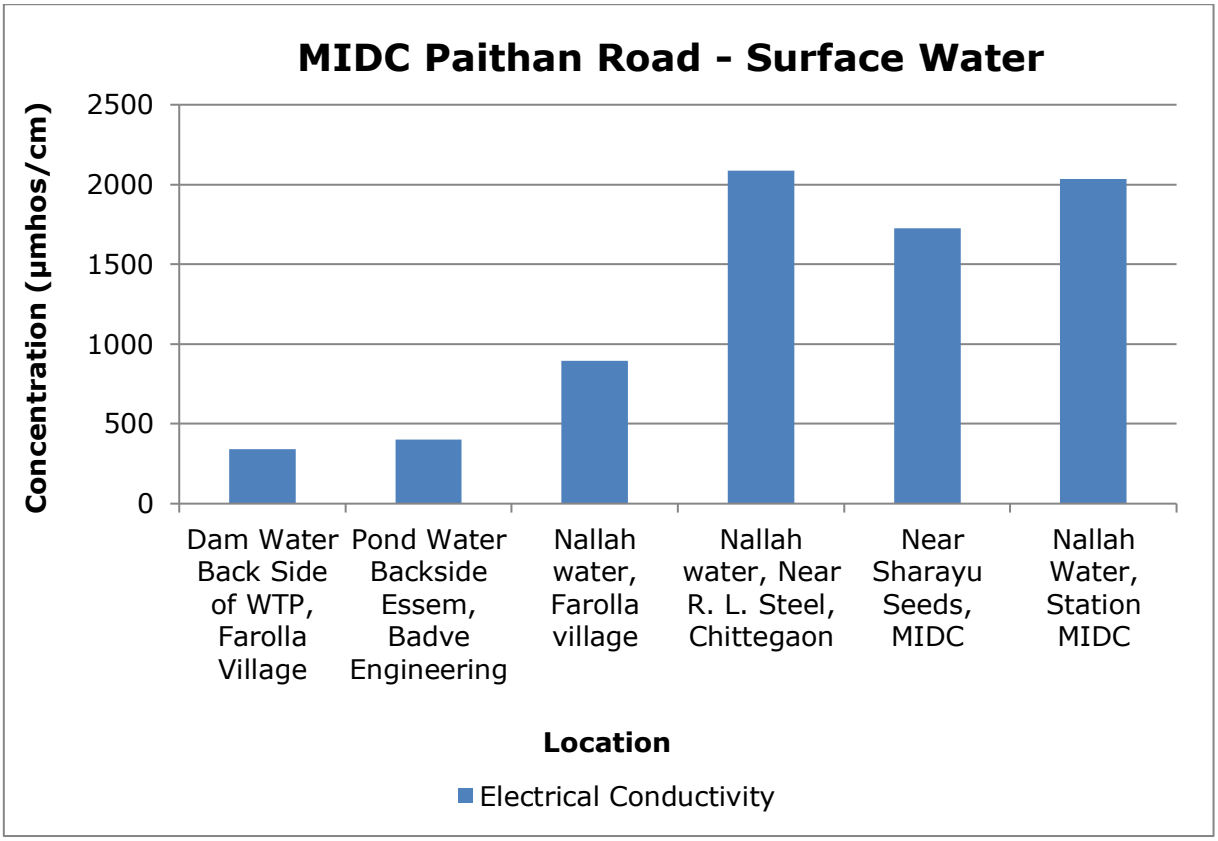
Parameters	Unit	Results					
		Dam Water Back Side of WTP	Nallah water Infront of Badve Engg.	Nallah water, Farolla village	Nallah water, Near R. L. Steel	Near Sharayu Seeds, MIDC	Near Sharayu Seeds, MIDC
Selenium (as Se)	mg/L	BLQ	BLQ	0.01	0.01	0.02	0.01
Boron (as B)	mg/L	BLQ	0.23	0.73	0.86	0.14	1.17
Total Nitrogen	mg/L	1.47	1.91	2.69	4.57	10.36	10.77
Bioassay Test on fish	% survival	100	90	93	97	100	57

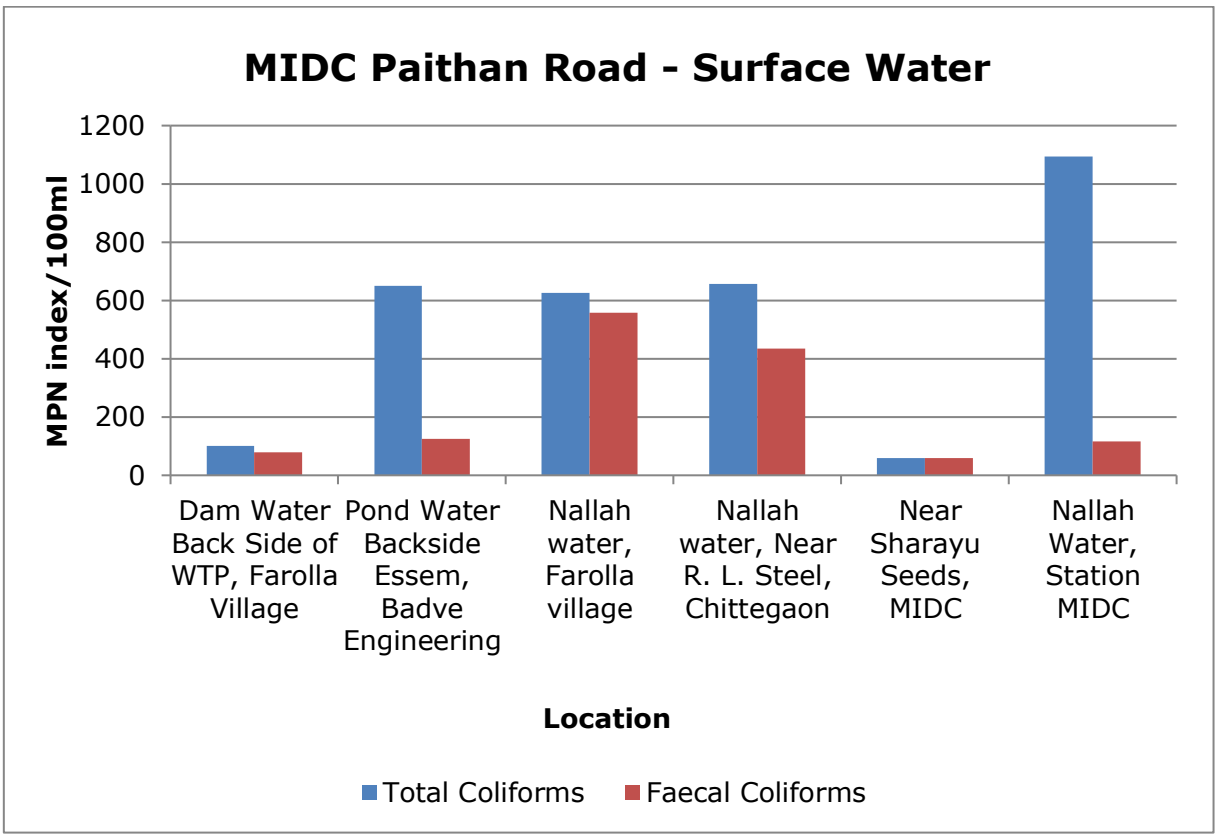
Graphs - Surface water of MIDC Paithan Road

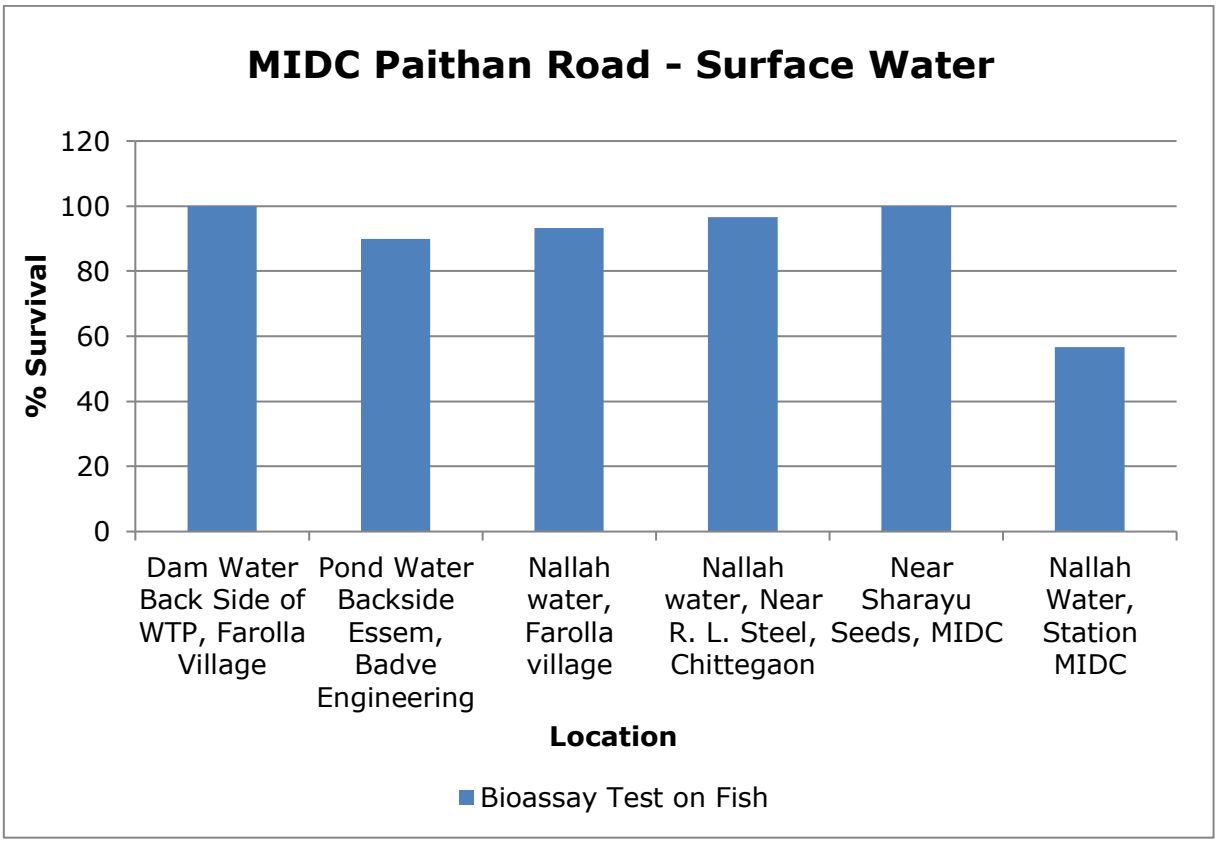





MIDC Paithan Road - Surface Water
9
8
7
6
5
4
3
2
1
0
Dam Water Back Side of WTP, Farolla Village
Pond Water Backside Essem, Badve Engineering
Nallah water, Farolla village
Nallah water, Near R. L. Steel, Chittegaon
Near Sharayu Seeds, MIDC
Nallah Water, Station MIDC
Location
Sodium Adsorption Ratio
pH


MIDC Paithan Road - Surface Water
Concentration (µmhos/cm)
2500
2000
1500
1000
500
0
Dam Water Back Side of WTP, Farolla Village
Pond Water Backside Essem, Badve Engineering
Nallah water, Farolla village
Nallah water, Near R. L. Steel, Chittegaon
Near Sharayu Seeds, MIDC
Nallah Water, Station MIDC
Location
Electrical Conductivity


MIDC Paithan Road - Surface Water
MPN index/100ml
1200
1000
800
600
400
200
0
Dam Water Back Side of WTP, Farolla Village
Pond Water Backside Essem, Badve Engineering
Nallah water, Farolla village
Nallah water, Near R. L. Steel, Chittegaon
Near Sharayu Seeds, MIDC
Nallah Water, Station MIDC
Location
Total Coliforms
Faecal Coliforms


MIDC Paithan Road - Surface Water
% Survival
120
100
80
60
40
20
0
Dam Water Back Side of WTP, Farolla Village
Pond Water Backside Essem, Badve Engineering
Nallah water, Farolla village
Nallah water, Near R. L. Steel, Chittegaon
Near Sharayu Seeds, MIDC
Nallah Water, Station MIDC
Location
Bioassay Test on Fish

6. Land Environment

For studying the land Environment of the Aurangabad area, ground water was collected from Bore well. Dug well, and Hand Pump. A total of 12 samples were collected from MIDC Shendra, MIDC Chikalthana, MIDC Paithan and MIDC Waluj.

1. **MIDC Shendra:** Three groundwater samples were collected from the MIDC Aurangabad region.

- All three water samples collected were found acceptable in general appearance, colour, smell and transparency.
- All the general parameters like pH, suspended solids, BOD, and COD are also well within the limits at all three samples collected.
- 100% fish survival was achieved in the water sample of hanuman Temple during the Fish Bioassay.
- All metals like Arsenic, Nickel, Copper, Hexavalent Chromium (Cr6+) etc. were observed either below the limit of quantification or below their standard limits.
- Parameters like Total Residual Chlorine, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also met the criteria as prescribed by CPCB.
- Elements like Iron, Selenium and Flouride are found to exceed the permissible limits.
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were determined below the limit of quantification in all 3 samples collected.
- Organo Chlorine Pesticides were also observed below the limit of quantification in all 3 samples collected.

Table 7.1 MIDC Shendra - Details of Sampling Location of Ground Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Shendra Village, Near Hanuman Temple	19.872643N	75.470643E	21.12.2023	23.12.2023	25.12.2023
2.	Open Well, Ramrao Kulkarni, Gat no 95, Kumbhephal	19.858383N	75.490362E	21.12.2023	23.12.2023	25.12.2023
3.	Open Well, Wockhardt Ltd.	19.874766N	75.48838E	21.12.2023	23.12.2023	25.12.2023

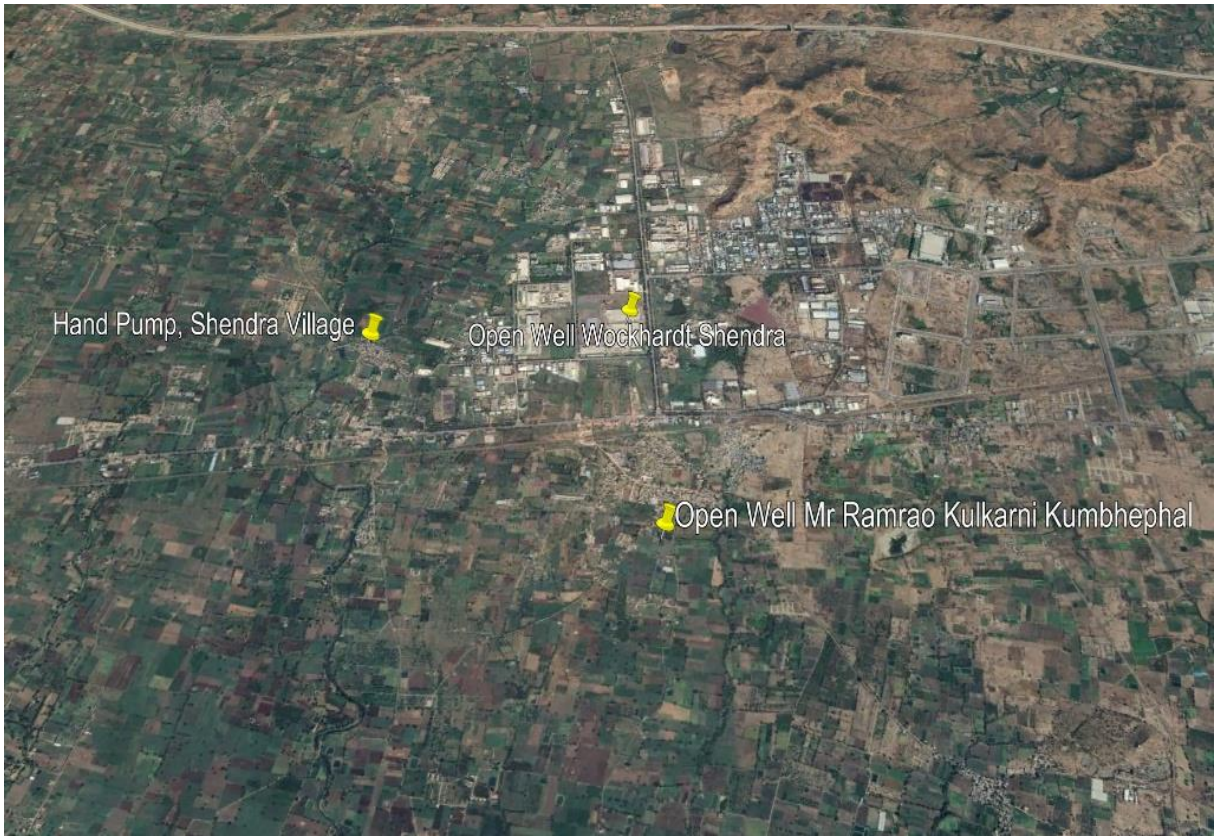


Fig: Geographical Locations of Ground Water Sampling MIDC Shendra

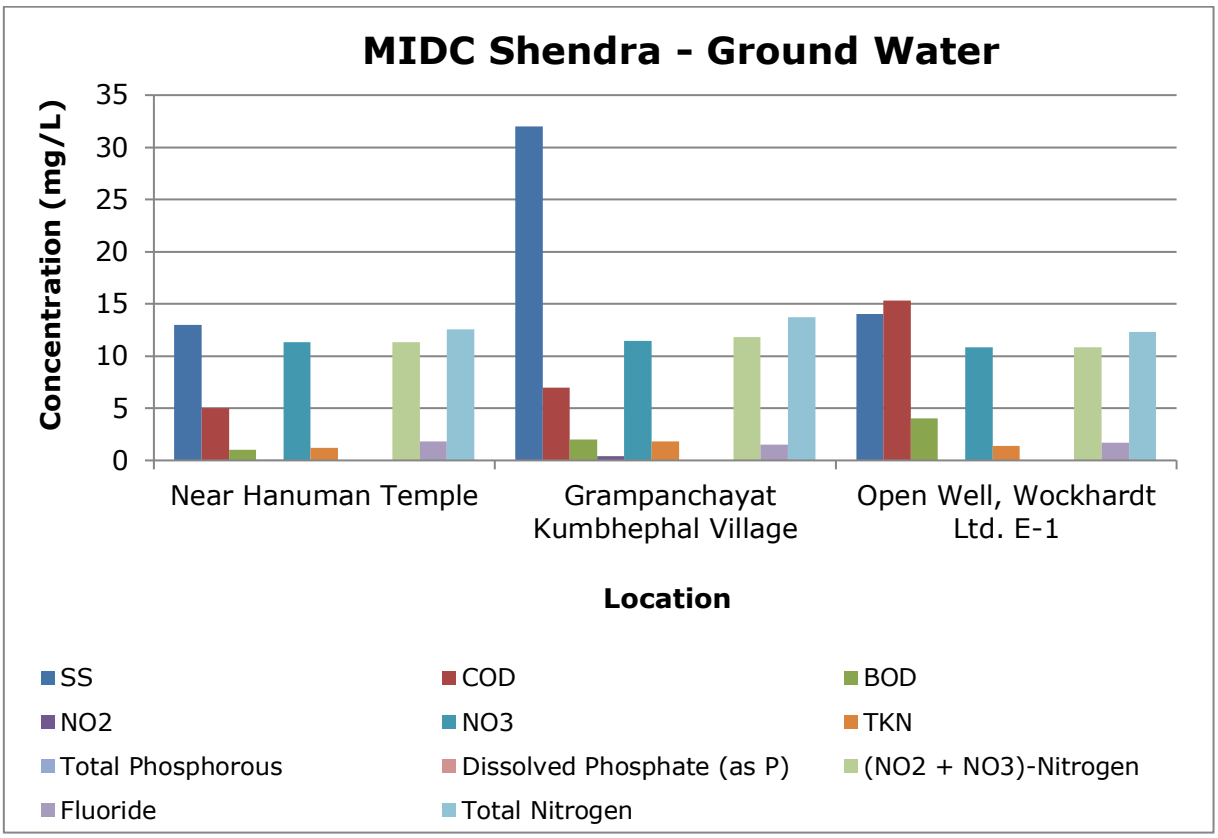
Table 7.2 MIDC Shendra - Results of Ground Water

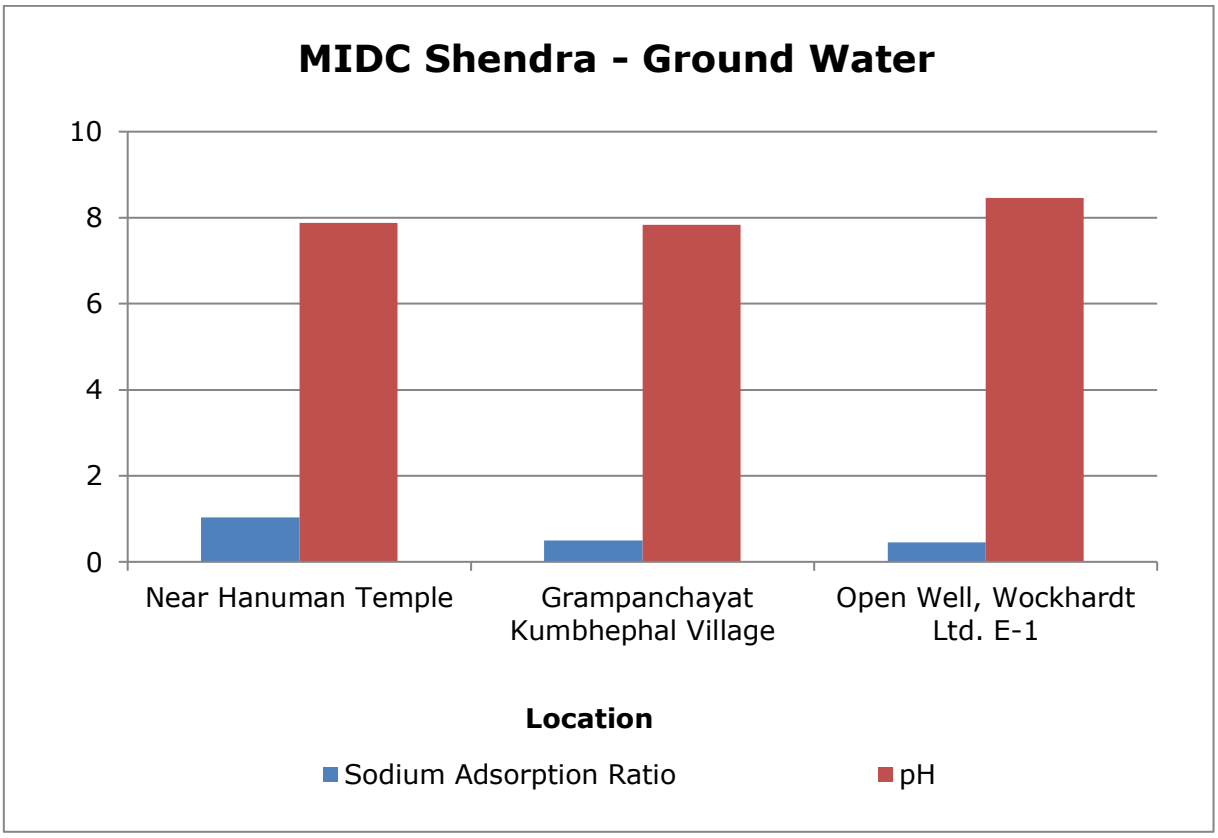
Parameters	Unit	Results		
		Shendra Village, Near Hanuman Temple	**Open Well, Ramrao Kulkarni, Gat no 95, Kumbhephal**	**Open Well, Wockhardt Ltd.**
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	No floating matter	No floating matter	No floating matter
Transparency	m	NA	NA	1.50
Temperature	Hazen	24	24	25
Colour	°C	1	2	1
Smell	-	Agreeable	Agreeable	Agreeable
pH	-	7.88	7.83	8.46
Oil & Grease	mg/L	BLQ	BLQ	BLQ
Total Suspended Solids	mg/L	13	32	14
Total Dissolved Solids	mg/L	1885.33	1654.67	1418.67
Chemical Oxygen Demand	mg/L	5	7	15
Biochemical Oxygen Demand (3 days,27°C)	mg/L	1	2	4
Electrical Conductivity (at 25°C)	µmho/cm	3363	2953	2530
Nitrite Nitrogen (as NO_2)	mg/L	0.02	0.38	0.07

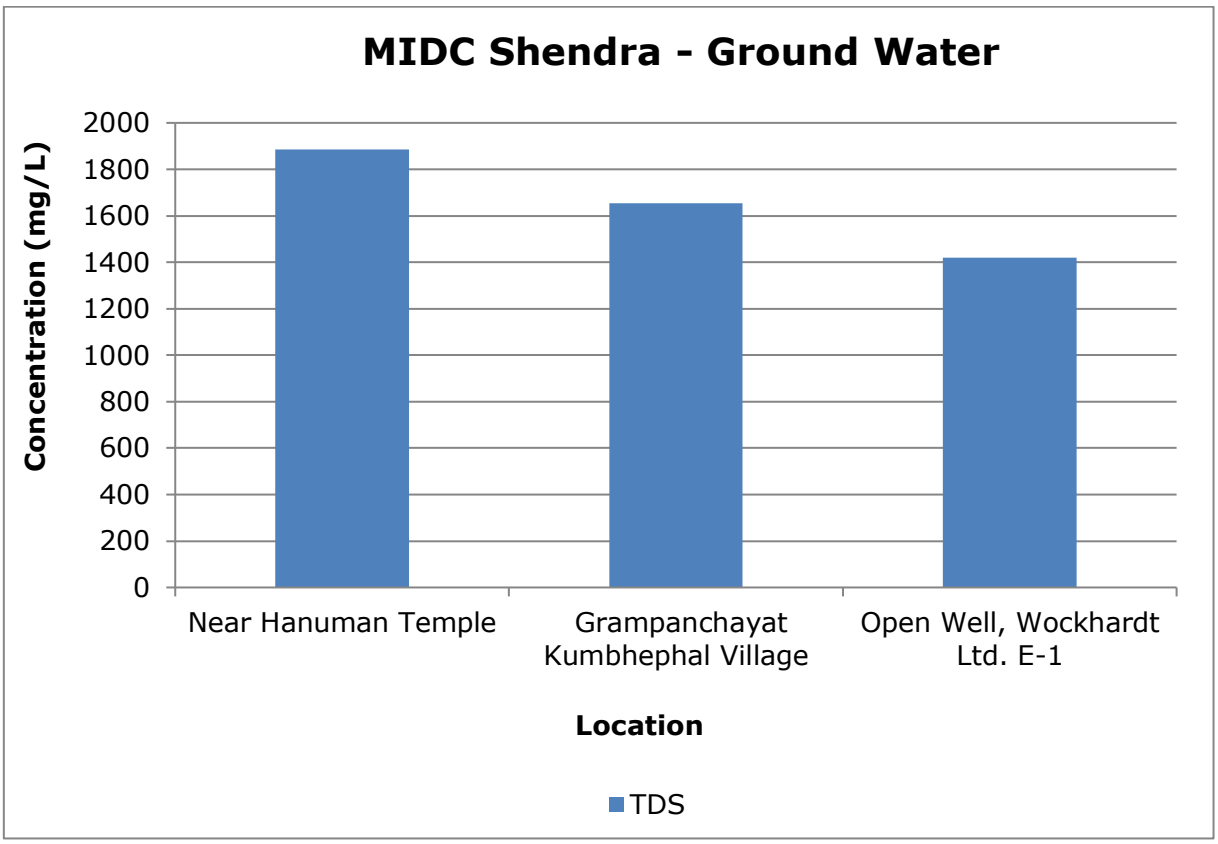
Parameters	Unit	Results		
		Shendra Village, Near Hanuman Temple	Open Well, Ramrao Kulkarni, Gat no 95, Kumbhephal	Open Well, Wockhardt Ltd.
Nitrate Nitrogen (as NO_3)	mg/L	11.33	11.47	10.87
(NO_2 + NO_3)-Nitrogen	mg/L	11.34	11.83	10.87
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	0.06	0.07	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	1.80	1.53	1.67
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	BLQ	BLQ	BLQ
Sodium Adsorption Ratio	-	1.04	0.49	0.45
Total Coliforms	MPN Index /100 mL	129	18	897
Faecal Coliforms	MPN Index /100 mL	25	13	20
Total Phosphate (as P)	mg/L	BLQ	BLQ	BLQ
Total Kjeldahl Nitrogen (as N)	mg/L	1.23	1.83	1.38
Total Ammonia (NH4+NH3)-Nitrogen)	mg/L	0.26	1.00	0.32
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS)	mg/L	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (PAH)	mg/L	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	0.13	0.42	BLQ
Nickel (as Ni)	mg/L	BLQ	0.01	0.01
Copper (as Cu)	mg/L	BLQ	0.02	BLQ
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	BLQ	BLQ
Total Arsenic (as As)	mg/L	BLQ	BLQ	BLQ
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	0.03	0.05	BLQ
Iron (as Fe)	mg/L	0.88	0.53	1.49

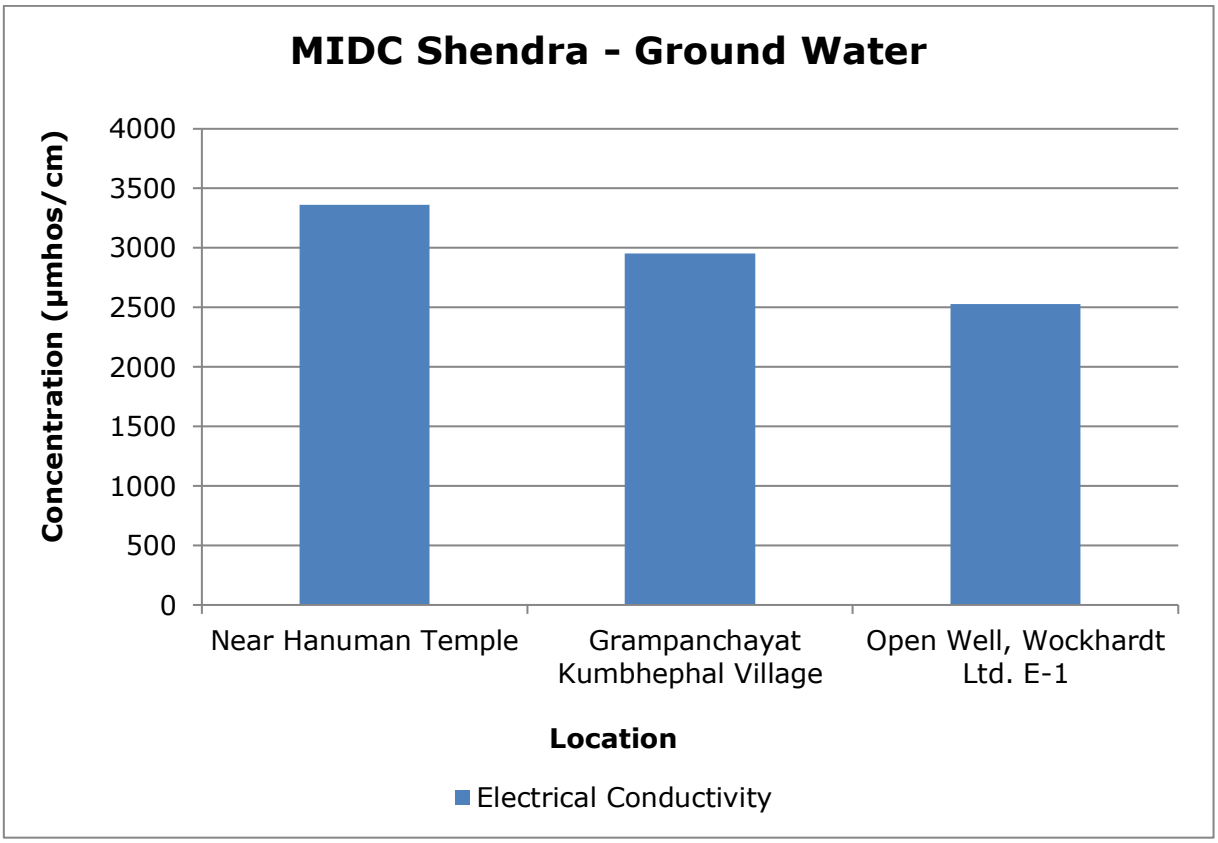
Parameters	Unit	Results		
		Shendra Village, Near Hanuman Temple	Open Well, Ramrao Kulkarni, Gat no 95, Kumbhephal	Open Well, Wockhardt Ltd.
Vanadium (as V)	mg/L	0.05	0.02	0.02
Selenium (as Se)	mg/L	0.02	0.02	0.02
Boron (as B)	mg/L	0.16	0.31	0.19
Total Nitrogen	mg/L	12.57	13.70	12.33
Bioassay Test on fish	% survival	100	93	93

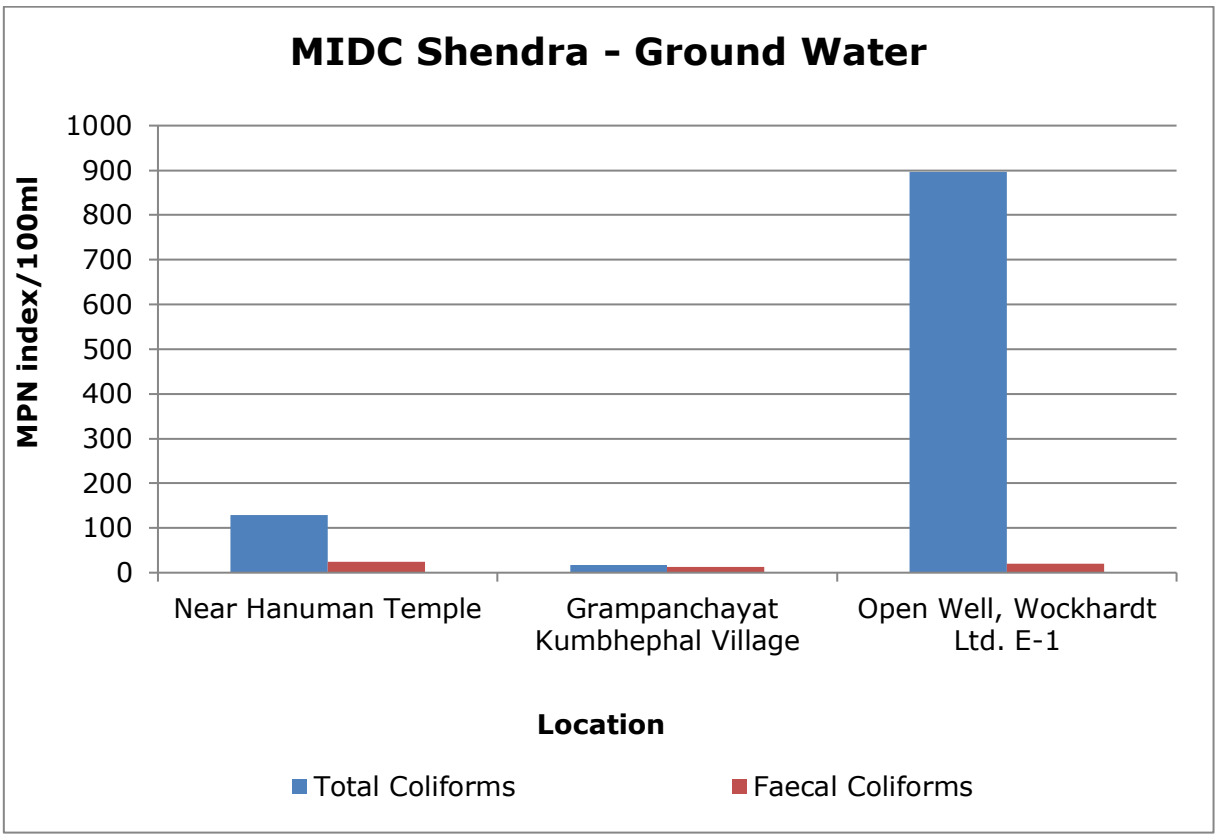
Graphs - Ground Water of MIDC Aurangabad

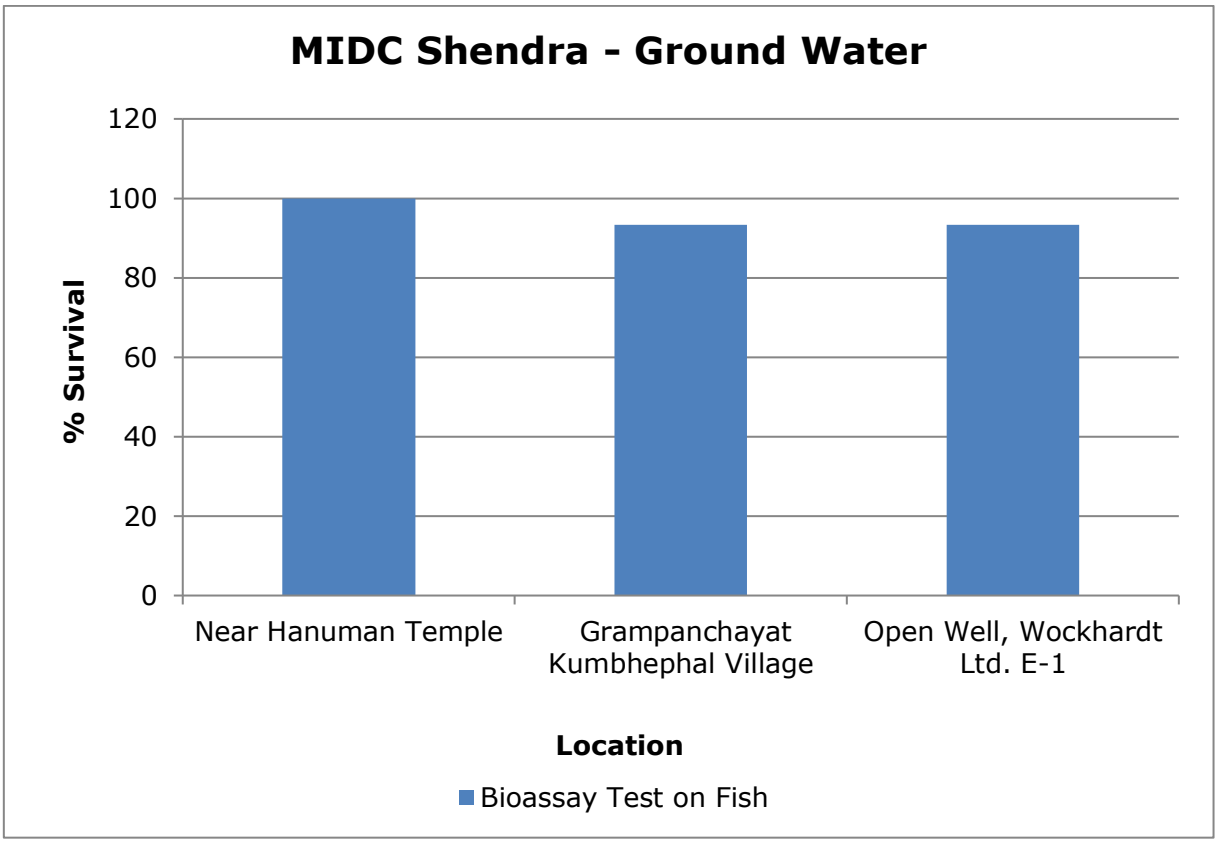





MIDC Shendra - Ground Water
Concentration (mg/L)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Near Hanuman Temple
Grampanchayat Kumbhephal Village
Open Well, Wockhardt Ltd. E-1
Location
TDS


MIDC Shendra - Ground Water
Concentration (µmhos/cm)
4000
3500
3000
2500
2000
1500
1000
500
0
Near Hanuman Temple
Grampanchayat Kumbhephal Village
Open Well, Wockhardt Ltd. E-1
Location
Electrical Conductivity


MIDC Shendra - Ground Water
MPN index/100ml
1000
900
800
700
600
500
400
300
200
100
0
Near Hanuman Temple
Grampanchayat Kumbhephal Village
Open Well, Wockhardt Ltd. E-1
Location
Total Coliforms
Faecal Coliforms


MIDC Shendra - Ground Water
% Survival
120
100
80
60
40
20
0
Near Hanuman Temple
Grampanchayat Kumbhephal Village
Open Well, Wockhardt Ltd. E-1
Location
Bioassay Test on Fish

2. **MIDC Chikalthana:** From MIDC Chikalthana also, three ground water samples were collected.

- All three water samples collected were found acceptable in general appearance, colour, smell and transparency.
- pH, suspended solids, BOD, and COD were also well within the limits at all three samples collected.
- 100% survival was achieved in water sample of Hand Pump, Manik nagar, Galli no. 2, Naregaon during the Fish Bioassay.
- All metals like Arsenic, Nickel, Copper, Hexavalent Chromium (Cr6+) etc. were also observed either below the limit of quantification (BLQ) or below their standard limits.
- Parameters like Total Residual Chlorine, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also met the criteria as prescribed by CPCB.
- Elements like Iron, Selenium and Flouride are found to exceed the permissible limits.
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were below the limit of quantification (BLQ) in all 3 samples collected.
- Organo Chlorine Pesticides were also below the limit of quantification in all 3 samples collected.

Table 7.3 MIDC Chikhalthana - Details of Sampling Location of Ground Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Hand Pump, Ambedkar Nagar	19.896011N	75.364386E	22.12.2023	24.12.2023	26.12.2023
2.	Hand Pump, Naregaon	19.894554N	75.383331E	22.12.2023	24.12.2023	26.12.2023
3.	Bore Well, RD Bhalerao, HADCO Corner	19.911462N	75.349547E	22.12.2023	24.12.2023	26.12.2023

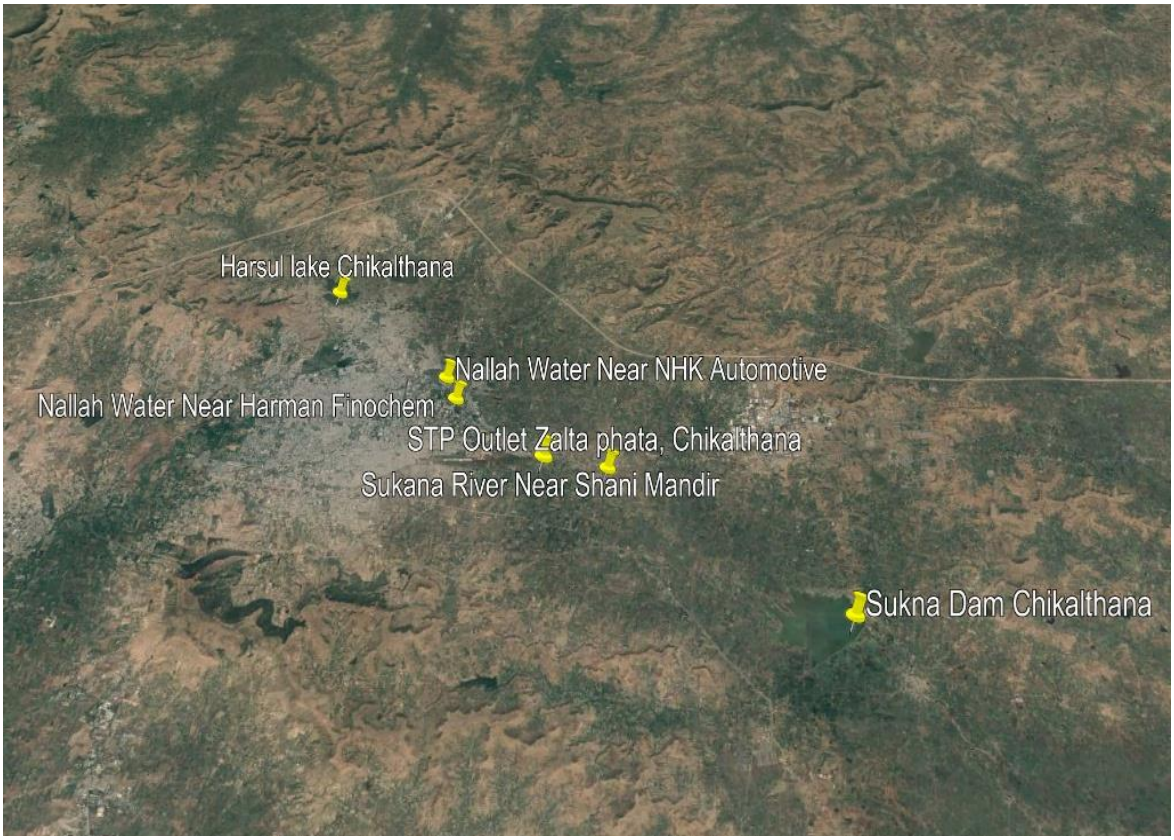


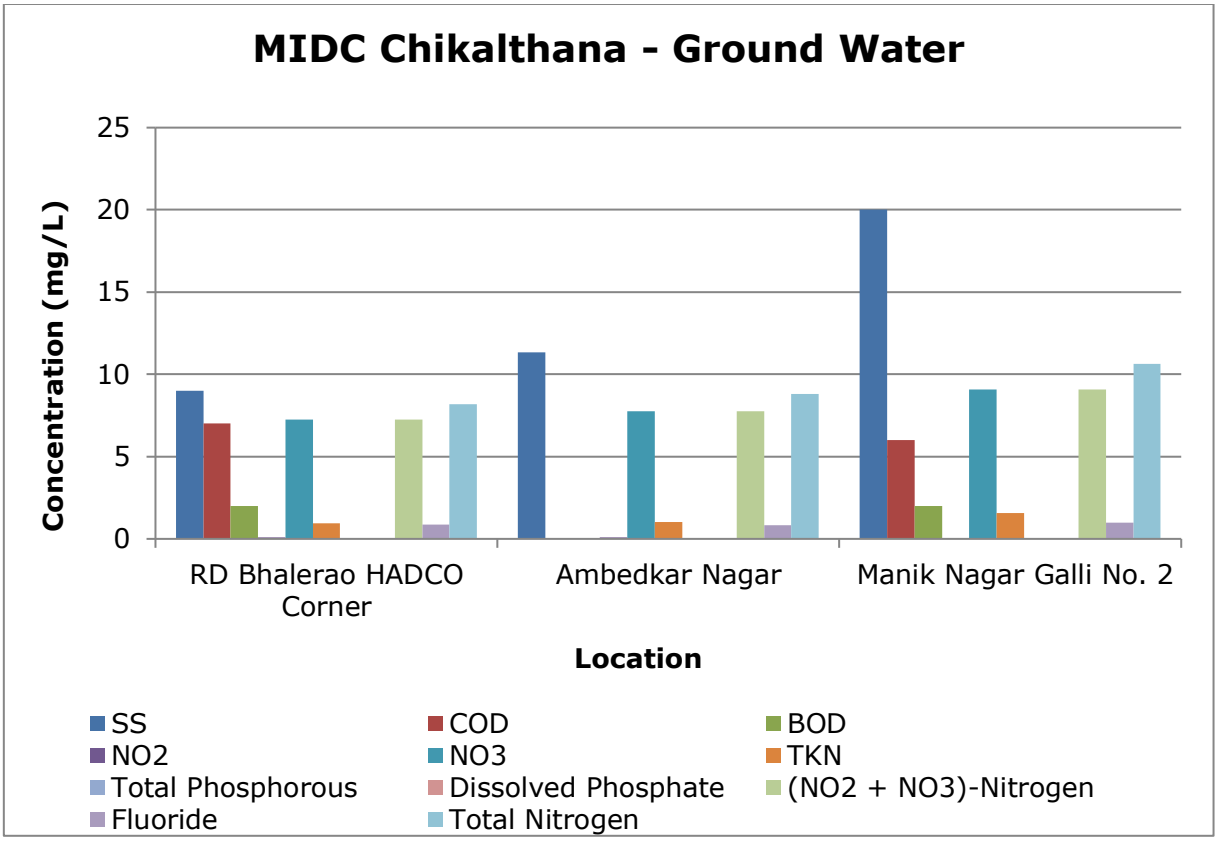
Fig: Geographical Locations of Ground Water Sampling MIDC Chikhalthana

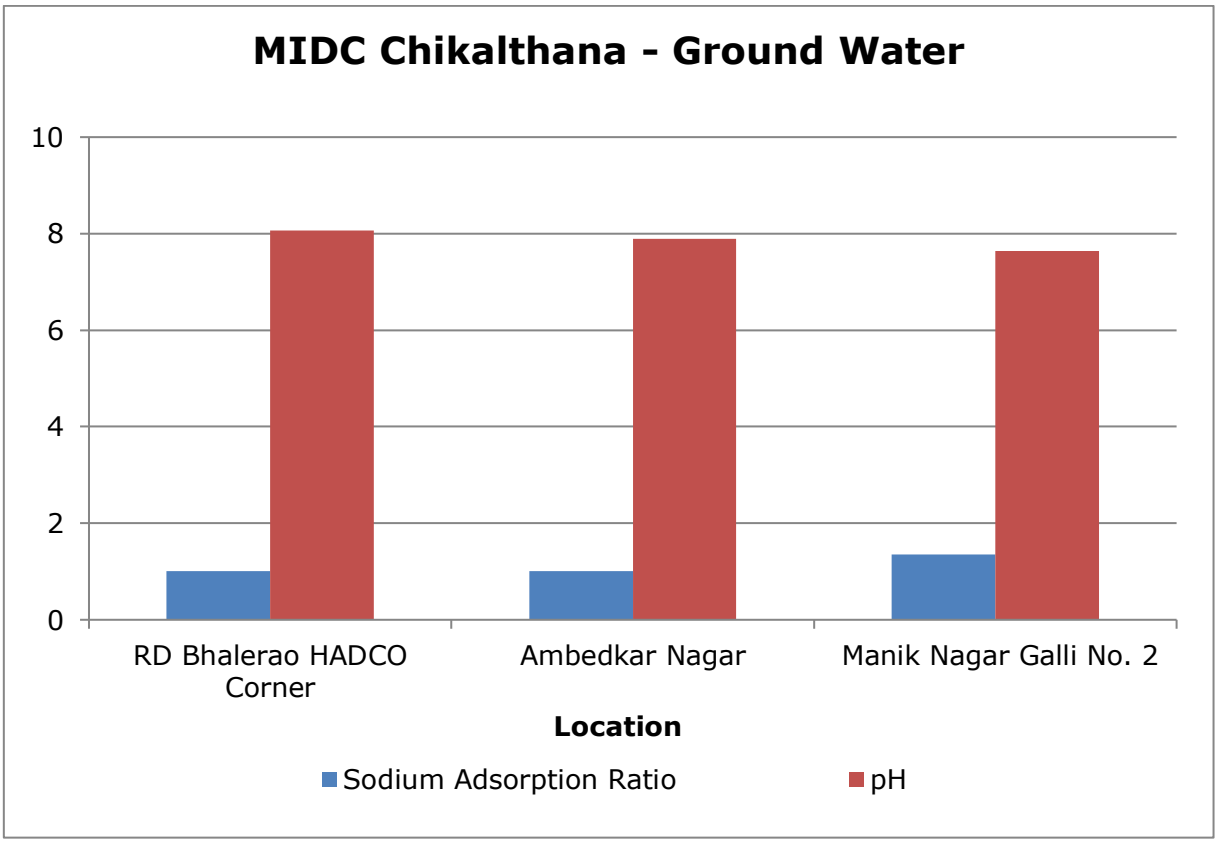
Table 7.4 MIDC Chikhalthana - Results of Ground Water

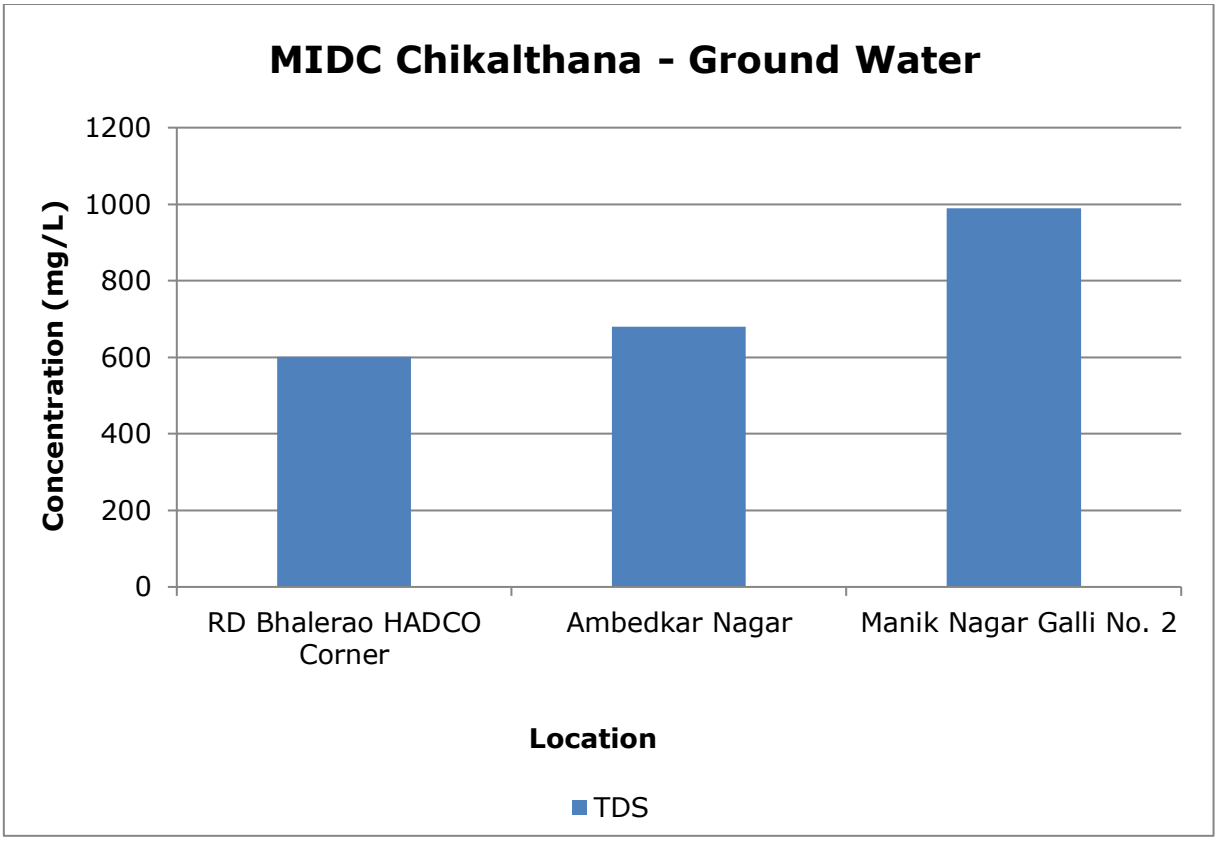
Parameters	Unit	Results		
		RD Bhalerao HADCO Corner	Ambedkar Nagar	Hand Pump, Manik nagar, Galli no. 2, Naregaon
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	floating matter Evident	floating matter Evident	floating matter Evident
Transparency	m	Not Applicable	Not Applicable	Not Applicable
Temperature	Hazen	26	25	25
Colour	oC	1	1	1
Smell	-	Agreeable	Agreeable	Agreeable
pH	-	8.06	7.89	7.64
Oil & Grease	mg/L	BLQ	BLQ	BLQ
Total Suspended Solids	mg/L	9	11	20
Total Dissolved Solids	mg/L	601	680	990
Chemical Oxygen Demand	mg/L	7	BLQ	6
Biochemical Oxygen Demand (3 days,27°C)	mg/L	2	BLQ	2
Electrical Conductivity (at 25°C)	µmho/cm	1072	1212	1767
Nitrite Nitrogen (as NO_2)	mg/L	0.08	0.08	0.06
Nitrate Nitrogen (as NO_3)	mg/L	7.23	7.76	9.07
(NO_2 + NO_3)-Nitrogen	mg/L	7.26	7.76	9.10

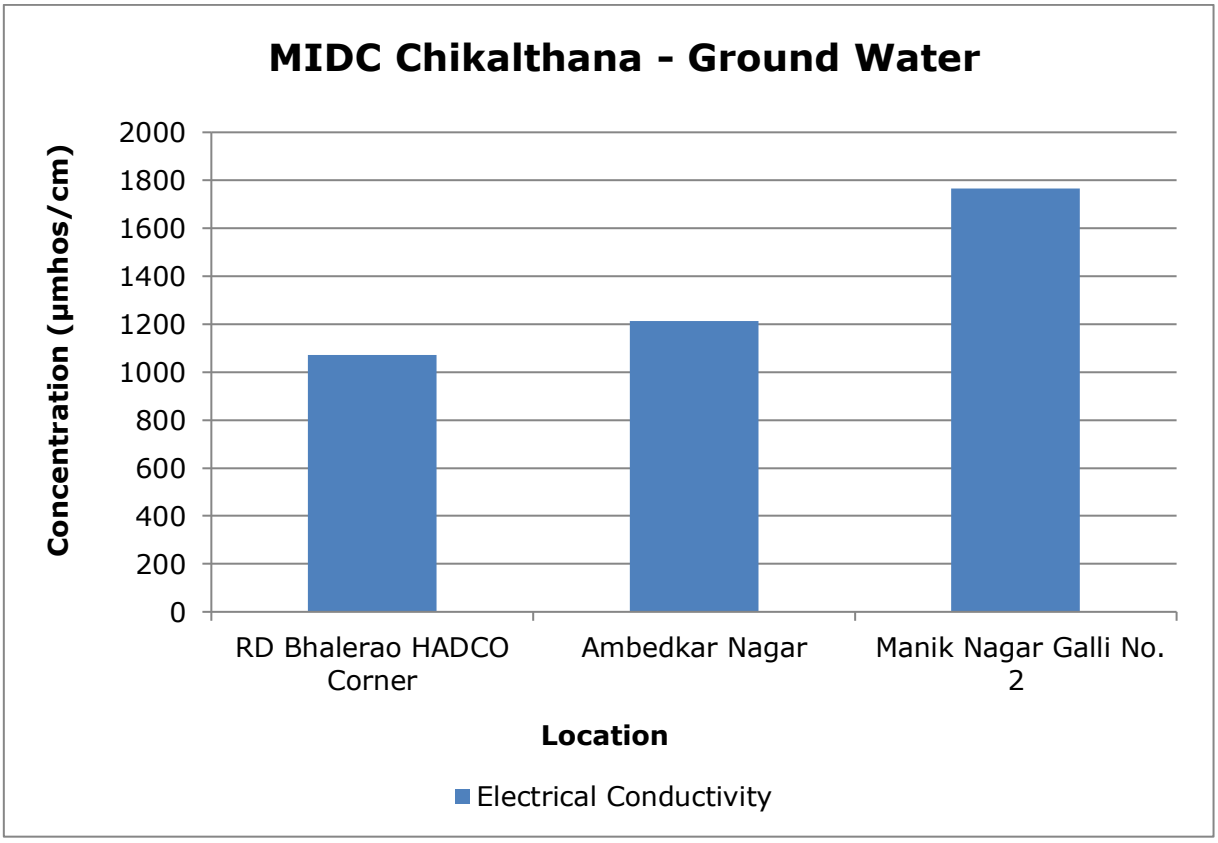
Parameters	Unit	Results		
		RD Bhalerao HADCO Corner	Ambedkar Nagar	Hand Pump, Manik nagar, Galli no. 2, Naregaon
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	BLQ	BLQ	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	0.87	0.83	0.97
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	BLQ	BLQ	BLQ
Sodium Adsorption Ratio	-	1.00	1.01	1.36
Total Coliforms	MPN Index /100 mL	18	23	18
Faecal Coliforms	MPN Index /100 mL	23	23	23
Total Phosphate (as P)	mg/L	BLQ	BLQ	BLQ
Total Kjeldahl Nitrogen (as N)	mg/L	0.93	1.01	1.57
Total Ammonia (NH4+NH3)-Nitrogen)	mg/L	0.26	0.27	0.36
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS)	mg/L	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (PAH)	mg/L	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	BLQ	BLQ	0.16
Nickel (as Ni)	mg/L	BLQ	BLQ	BLQ
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	BLQ	BLQ
Total Arsenic (as As)	mg/L	BLQ	0.01	BLQ
Lead (as Pb)	mg/L	BLQ	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	BLQ	BLQ	0.03
Iron (as Fe)	mg/L	0.47	0.63	0.73
Vanadium (as V)	mg/L	0.09	0.13	0.08
Selenium (as Se)	mg/L	0.02	0.01	0.01
Boron (as B)	mg/L	0.21	0.16	0.68
Total Nitrogen	mg/L	8.19	8.80	10.65
Bioassay Test on fish	% survival	97	97	100

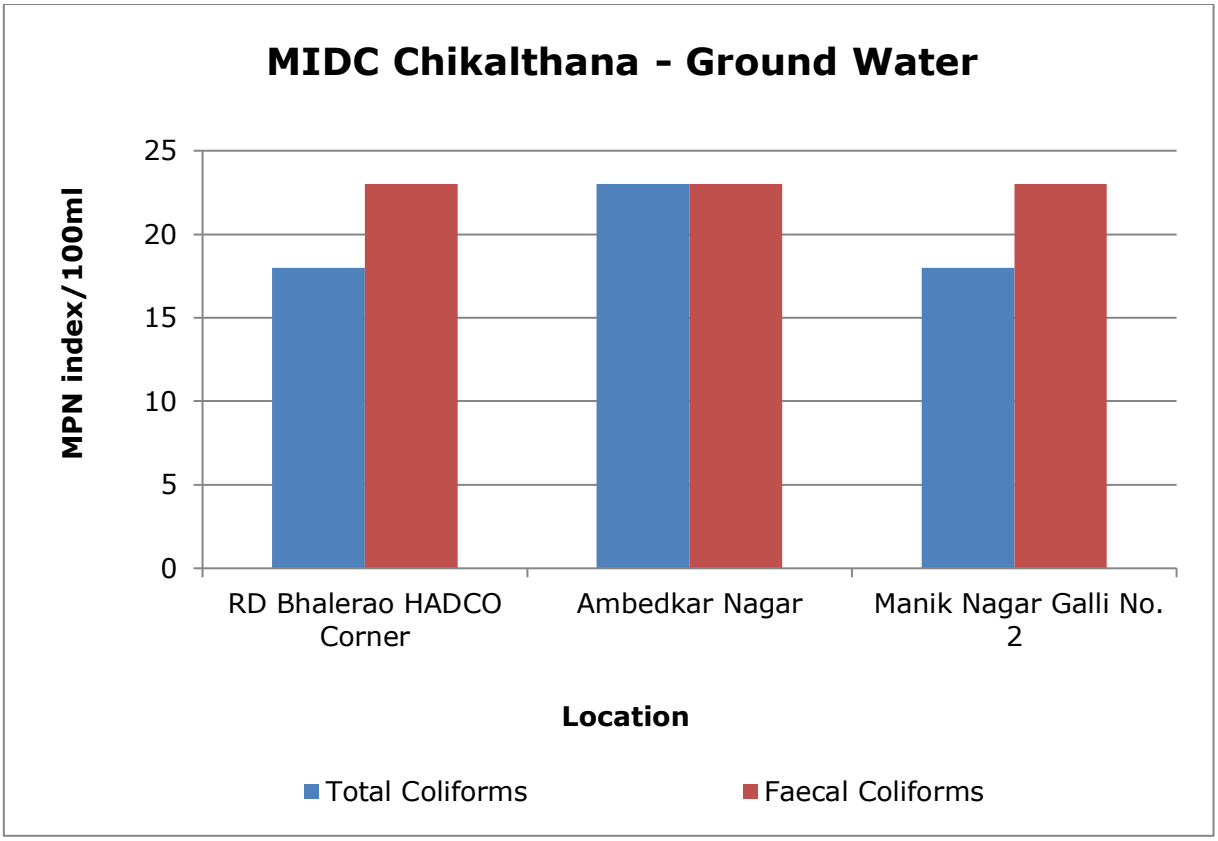
Graphs - Ground Water of MIDC Chikalthana

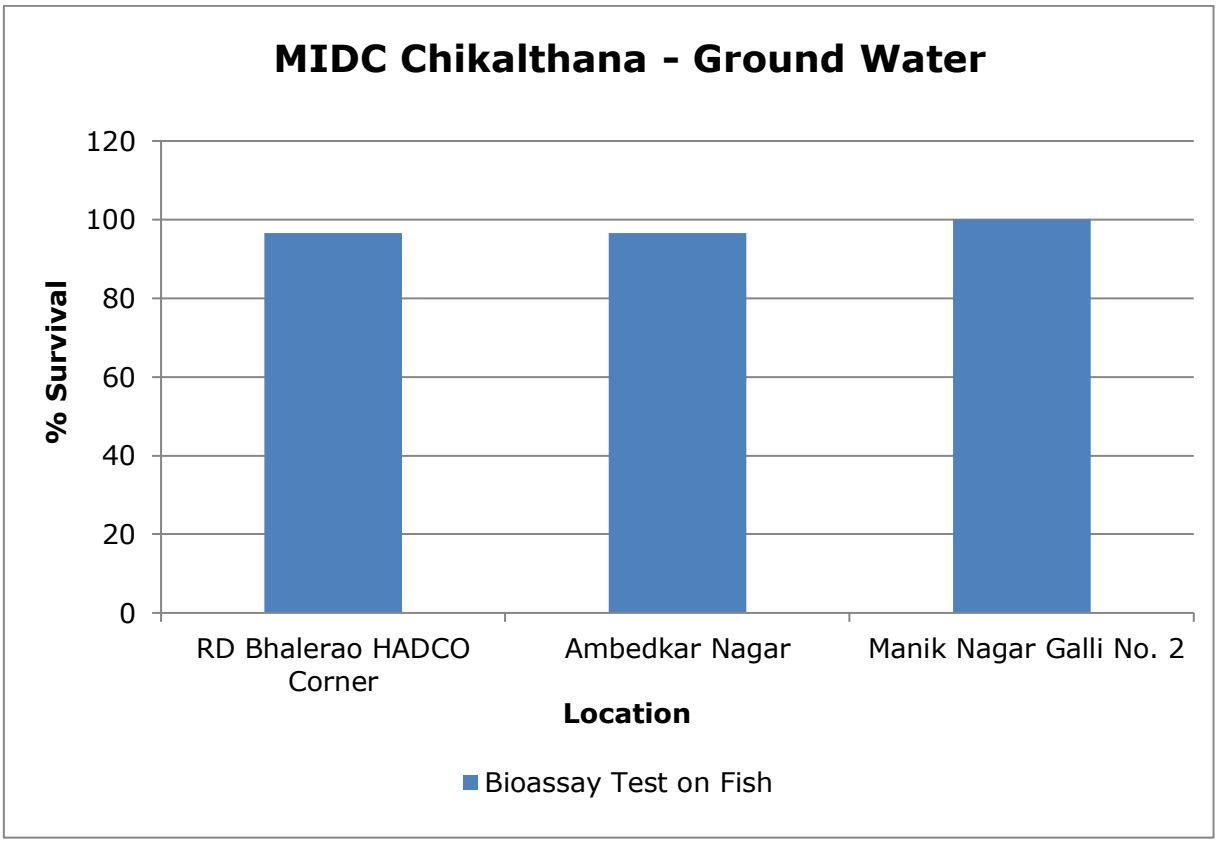





MIDC Chikalthana - Ground Water
1200
1000
800
600
400
200
0
Concentration (mg/L)
RD Bhalerao HADCO Corner
Ambedkar Nagar
Manik Nagar Galli No. 2
Location
TDS


MIDC Chikalthana - Ground Water
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Concentration (µmhos/cm)
RD Bhalerao HADCO Corner
Ambedkar Nagar
Manik Nagar Galli No. 2
Location
Electrical Conductivity


MIDC Chikalthana - Ground Water
MPN index/100ml
25
20
15
10
5
0
RD Bhalerao HADCO Corner
Ambedkar Nagar
Manik Nagar Galli No. 2
Location
Total Coliforms
Faecal Coliforms


MIDC Chikalthana - Ground Water
% Survival
120
100
80
60
40
20
0
RD Bhalerao HADCO Corner
Ambedkar Nagar
Manik Nagar Galli No. 2
Location
Bioassay Test on Fish

3. **MIDC Waluj:** Three ground water samples were collected from MIDC Waluj.

- All three water samples collected were observed as acceptable in general appearance, colour, smell and transparency.
- General parameters like pH, suspended solids, Electrical conductivity, BOD, and COD were also well within the limits at all three samples collected.
- 100% survival was achieved in Fish Bioassay except in the water sample of Hanuman Temple.
- All metals like Arsenic, Nickel, Copper, Hexavalent Chromium etc. were observed either below the limit of quantification (BLQ) or below their standard limits.
- Elements like Iron, Selenium and Flouride are found to exceed the permissible limits.
- Parameters like Total Residual Chlorine, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also met the criteria as prescribed by CPCB.
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were either below the limit of quantification (BLQ) or below their standard limits in all 3 samples collected.
- Organo Chlorine Pesticides were also below the limit of quantification in all 3 samples collected.

Table 7.5 MIDC Waluj - Details of Sampling Location of Ground Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Open Well Mr. Prabhakar Mahalkar, Near Behind Siemens	19.852737N	75.218755E	27.12.2023	29.12.2023	31.12.2023
2.	Bore Well Pravin Ghule, Ghulevasti	19.815424N	75.248908E	27.12.2023	29.12.2023	31.12.2023
3.	Bore Well Near Hanuman Temple, Jogeshwari	19.82633N	75.205309E	27.12.2023	29.12.2023	31.12.2023

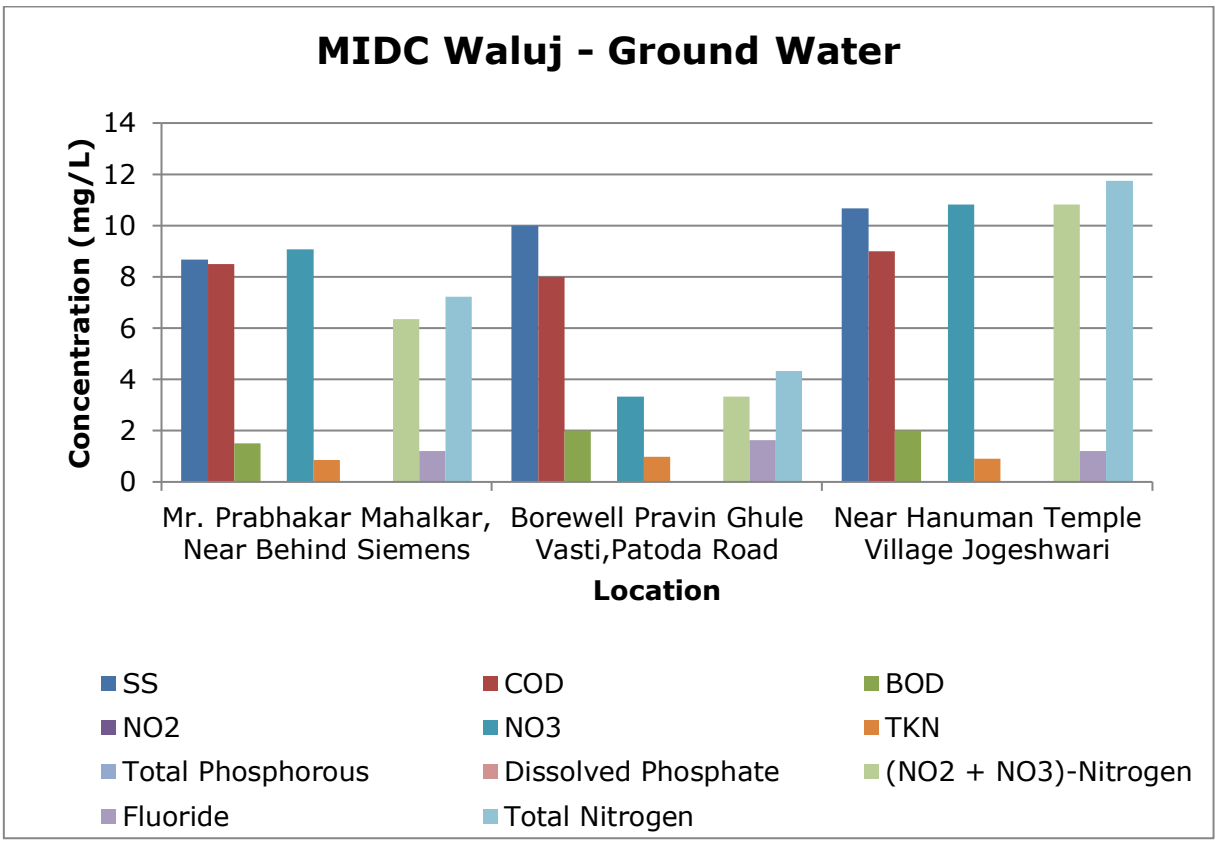
Fig: Geographical Locations of Ground Water Sampling MIDC Waluj

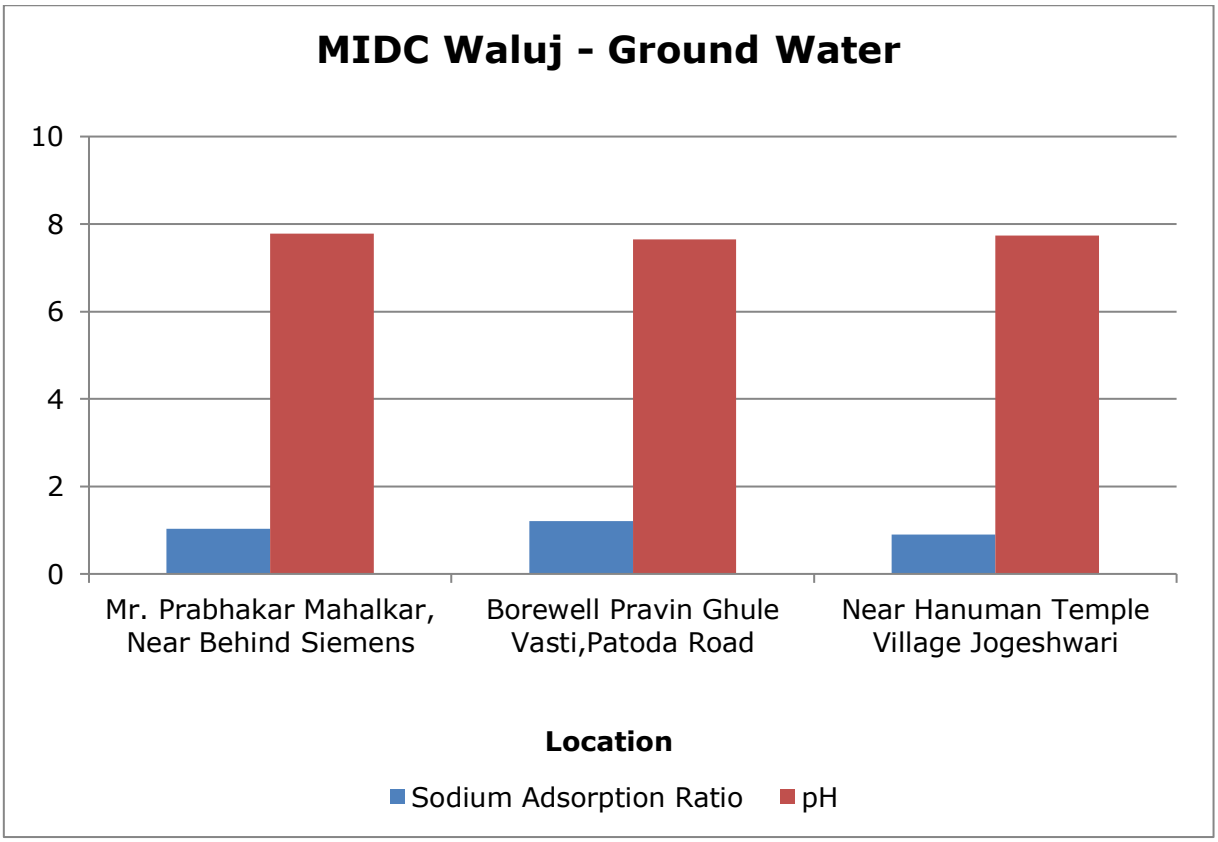
Table 7.6 MIDC Waluj - Results of Ground Water

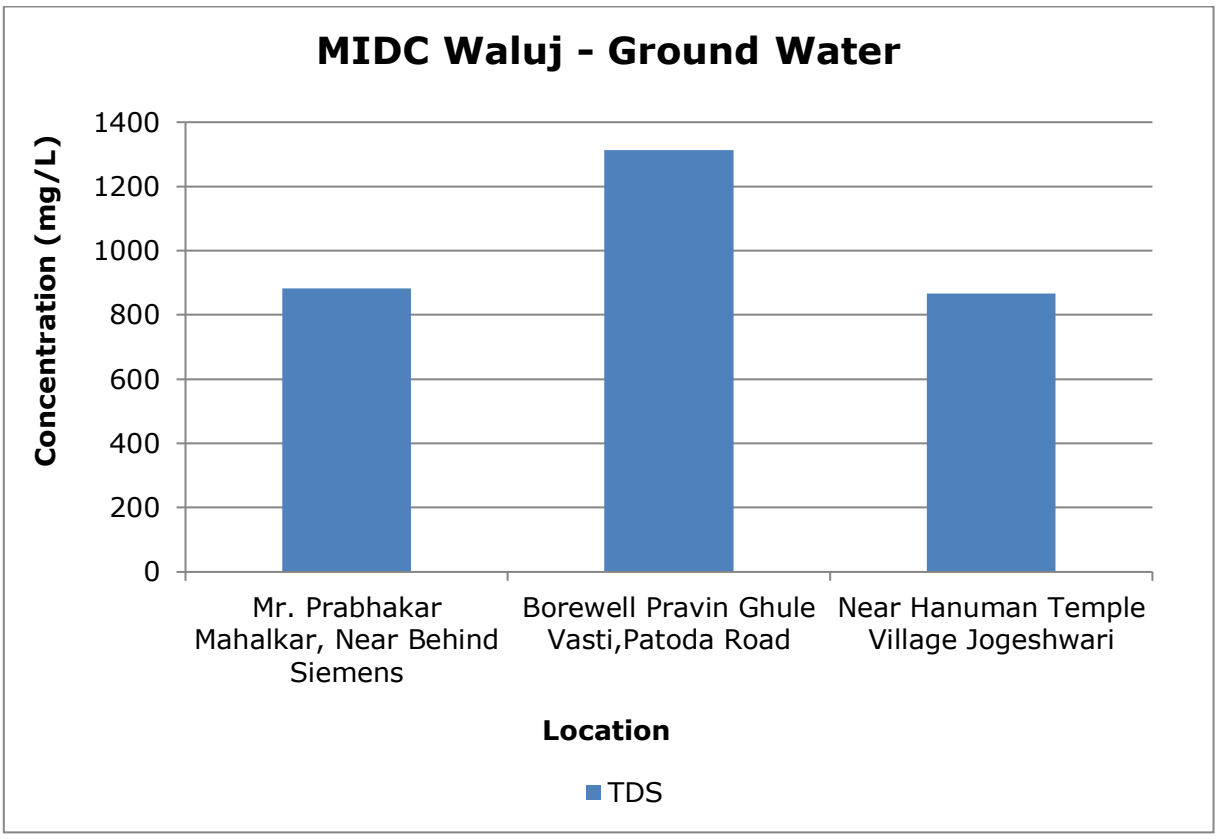
Parameters	Unit	Results		
		Bore Well, Near Sanskar School, CIDCO	**Borewell Pravin Ghule Vasti, Patoda Road**	**Near Hanuman Temple Village Jogeshwari**
Sanitary Survey	-	Reasonably clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	No floating matter	No floating matter	No floating matter
Transparency	m	0.80	Not Applicable	Not Applicable
Temperature	Hazen	26	25	25
Colour	$_{o}C$	1	1	1
Smell	-	Agreeable	Agreeable	Agreeable
pH	-	7.77	7.65	7.73
Oil & Grease	mg/L	BLQ	BLQ	BLQ
Total Suspended Solids	mg/L	9	10	11
Total Dissolved Solids	mg/L	882	1313	867
Chemical Oxygen Demand	mg/L	9	8	9
Biochemical Oxygen Demand (3 days,27°C)	mg/L	2	2	2
Electrical Conductivity (at 25°C)	µmho/cm	1574	2343	1547
Nitrite Nitrogen (as NO_2)	mg/L	0.02	BLQ	BLQ
Nitrate Nitrogen (as NO_3)	mg/L	9.08	3.34	10.81
(NO_2 + NO_3)-Nitrogen	mg/L	6.36	3.34	10.81

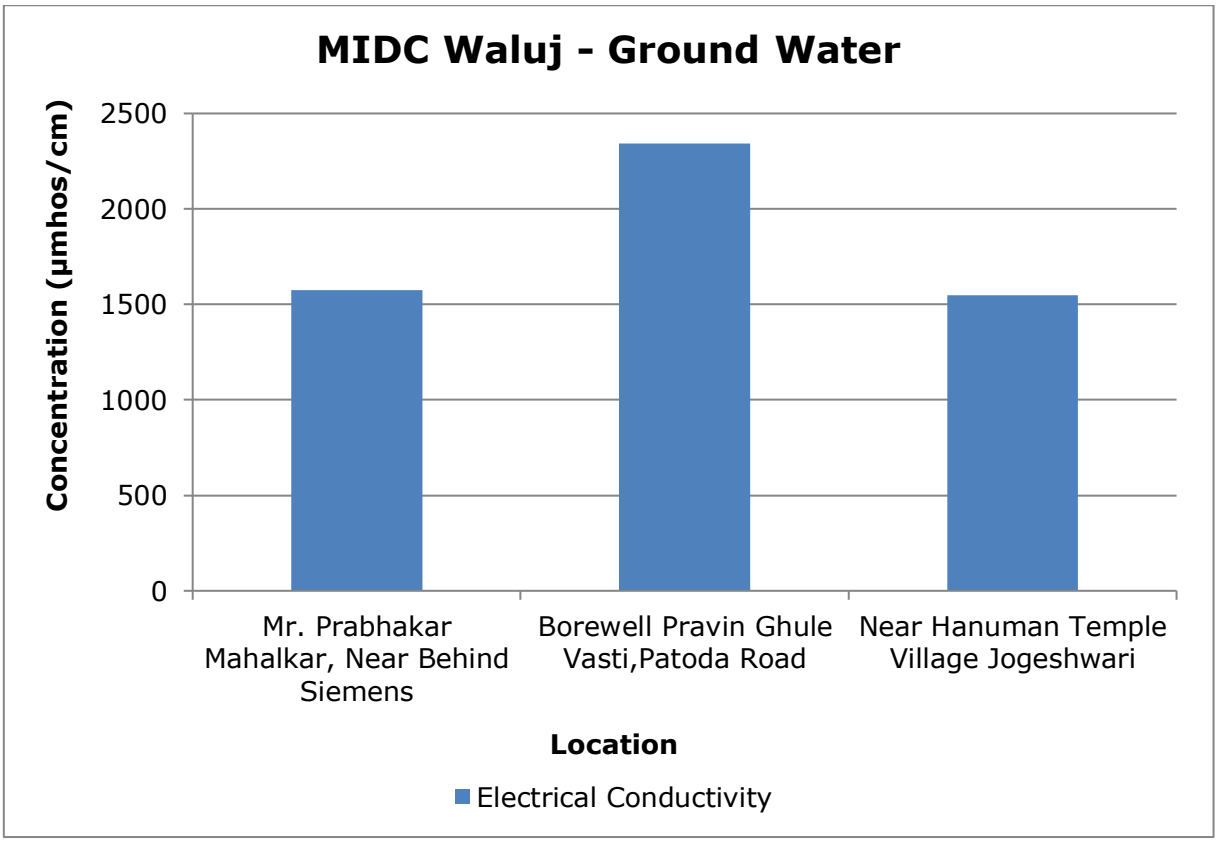
Parameters	Unit	Results		
		Bore Well, Near Sanskar School, CIDCO	Borewell Pravin Ghule Vasti, Patoda Road	Near Hanuman Temple Village Jogeshwari
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	BLQ	BLQ	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	1.20	1.63	1.20
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	BLQ	BLQ	BLQ
Sodium Adsorption Ratio	-	1.03	1.20	0.90
Total Coliforms	MPN Index /100 mL	1070	325	114
Faecal Coliforms	MPN Index /100 mL	910	35	111
Total Phosphate (as P)	mg/L	BLQ	BLQ	BLQ
Total Kjeldahl Nitrogen (as N)	mg/L	0.86	0.97	0.90
Total Ammonia (NH_4+NH_3)-Nitrogen)	mg/L	0.12	0.13	0.14
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS)	mg/L	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (PAH)	mg/L	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	BLQ	0.11	BLQ
Nickel (as Ni)	mg/L	BLQ	0.02	BLQ
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	0.03	0.03	0.06
Total Arsenic (as As)	mg/L	BLQ	BLQ	0.01
Lead (as Pb)	mg/L	BLQ	BLQ	0.04
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	BLQ	BLQ	0.15
Iron (as Fe)	mg/L	BLQ	0.14	0.65
Vanadium (as V)	mg/L	0.09	0.09	0.04
Selenium (as Se)	mg/L	0.02	0.02	0.02
Boron (as B)	mg/L	0.27	0.94	0.13
Total Nitrogen	mg/L	7.23	4.32	11.73
Bioassay Test on fish	% survival	100	100	87

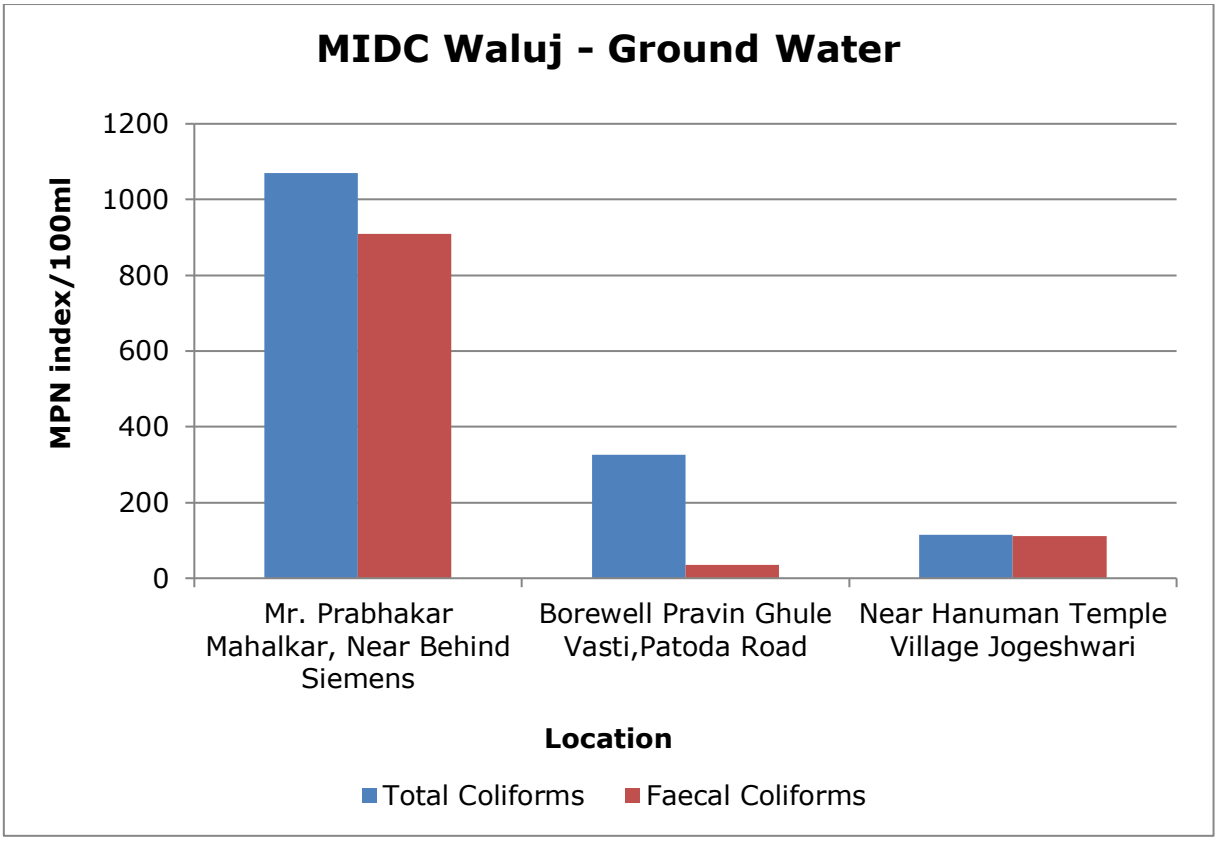
Graphs - Ground Water-MIDC Waluj

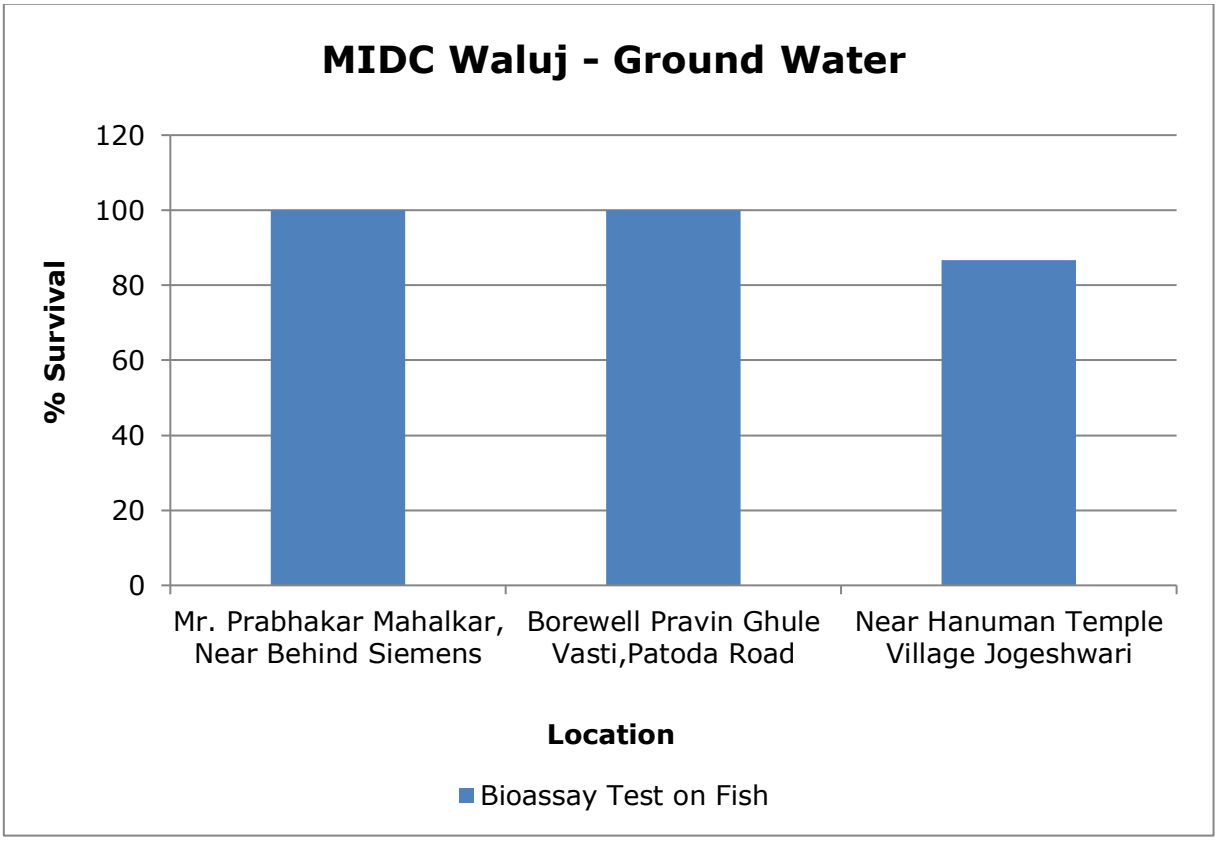





MIDC Waluj - Ground Water
Concentration (mg/L)
1400
1200
1000
800
600
400
200
0
Mr. Prabhakar Mahalkar, Near Behind Siemens
Borewell Pravin Ghule Vasti,Patoda Road
Near Hanuman Temple Village Jogeshwari
Location
TDS


MIDC Waluj - Ground Water
Concentration (µmhos/cm)
2500
2000
1500
1000
500
0
Mr. Prabhakar Mahalkar, Near Behind Siemens
Borewell Pravin Ghule Vasti,Patoda Road
Near Hanuman Temple Village Jogeshwari
Location
Electrical Conductivity


MIDC Waluj - Ground Water
MPN index/100ml
1200
1000
800
600
400
200
0
Mr. Prabhakar Mahalkar, Near Behind Siemens
Borewell Pravin Ghule Vasti,Patoda Road
Near Hanuman Temple Village Jogeshwari
Location
Total Coliforms
Faecal Coliforms


MIDC Waluj - Ground Water
% Survival
120
100
80
60
40
20
0
Mr. Prabhakar Mahalkar, Near Behind Siemens
Borewell Pravin Ghule Vasti,Patoda Road
Near Hanuman Temple Village Jogeshwari
Location
Bioassay Test on Fish

4. **MIDC Paithan:** Three ground water samples are collected from MIDC Paithan.

- All three water samples collected were acceptable in general appearance, colour, smell and transparency.
- General parameters like pH, suspended solids and Electrical conductivitywere also well within the limits at all three samples collected.
- 100% fish survival was achieved in two of the water samples collected for Fish Bioassay.
- All metals, like Arsenic, Nickel, Copper, Iron, Hexavalent Chromium etc. except Iron, are observed either below the limit of quantification (BLQ) or below their standard limits.
- Elements like Iron, Selenium and Flouride are found to exceed the permissible limits.
- Parameters like Total Residual Chlorine, Cyanide, Sulphide, Dissolved Phosphate, Total Ammonical Nitrogen and Phenolic compounds, also met the criteria as prescribed by CPCB.
- Polynuclear aromatic hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) were found below the limit of quantification (BLQ) in all 3 samples collected.
- Organo Chlorine Pesticides were also below the detectable limit in all 3 samples collected.

Table 7.7 MIDC Paithan - Details of Sampling Location of Ground Water

Sr. No.	Name of Monitoring Location	Latitude	Longitude	Date of Sampling		
				Round-1	Round-2	Round-3
1.	Open Well Matoshri Aashram	19.821123N	75.289182E	28.12.2023	30.12.2023	01.01.2024
2.	Hand Pump Near WTP, Farolla Village	19.725237N	75.296234E	28.12.2023	30.12.2023	01.01.2024
3.	Open Well, Allana Frigarifico	19.780822N	75.288762E	28.12.2023	30.12.2023	01.01.2024

Ground Water Quality locations of MIDC Paithan Road

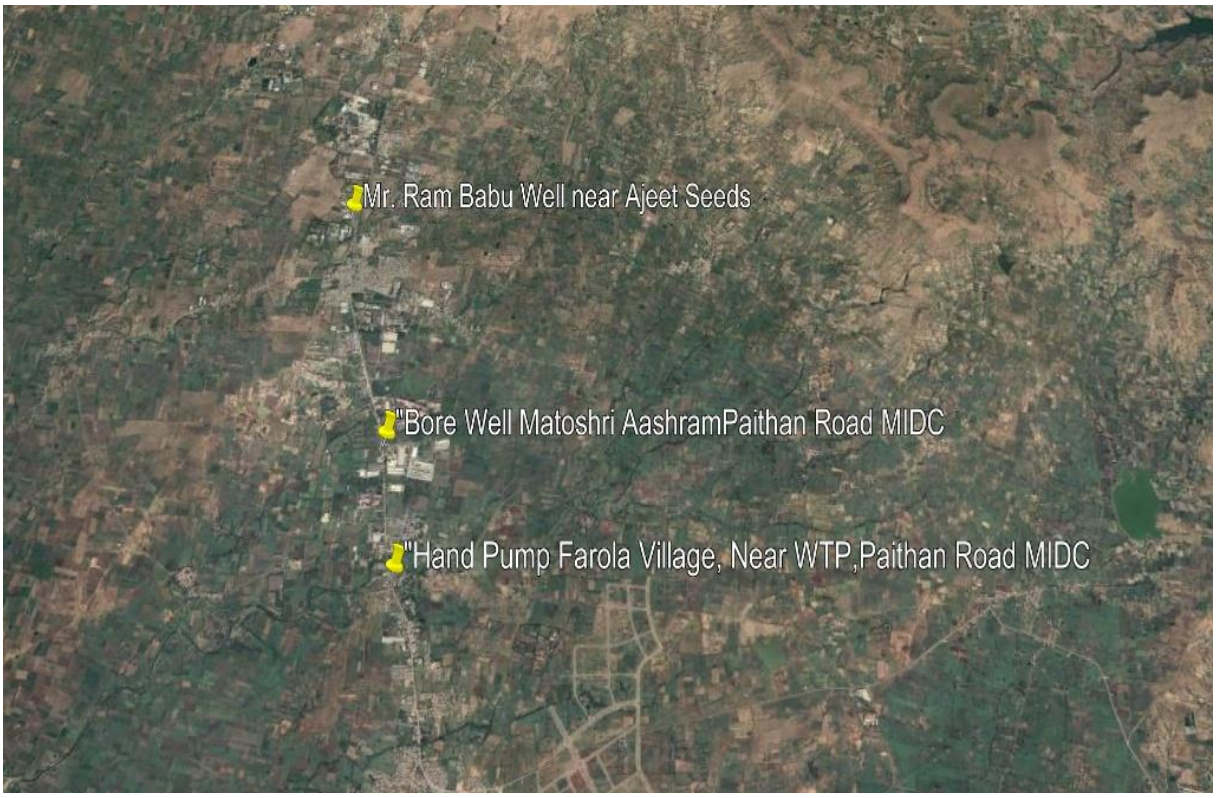


Fig: Geographical Locations of Ground Water Sampling MIDC Paithan

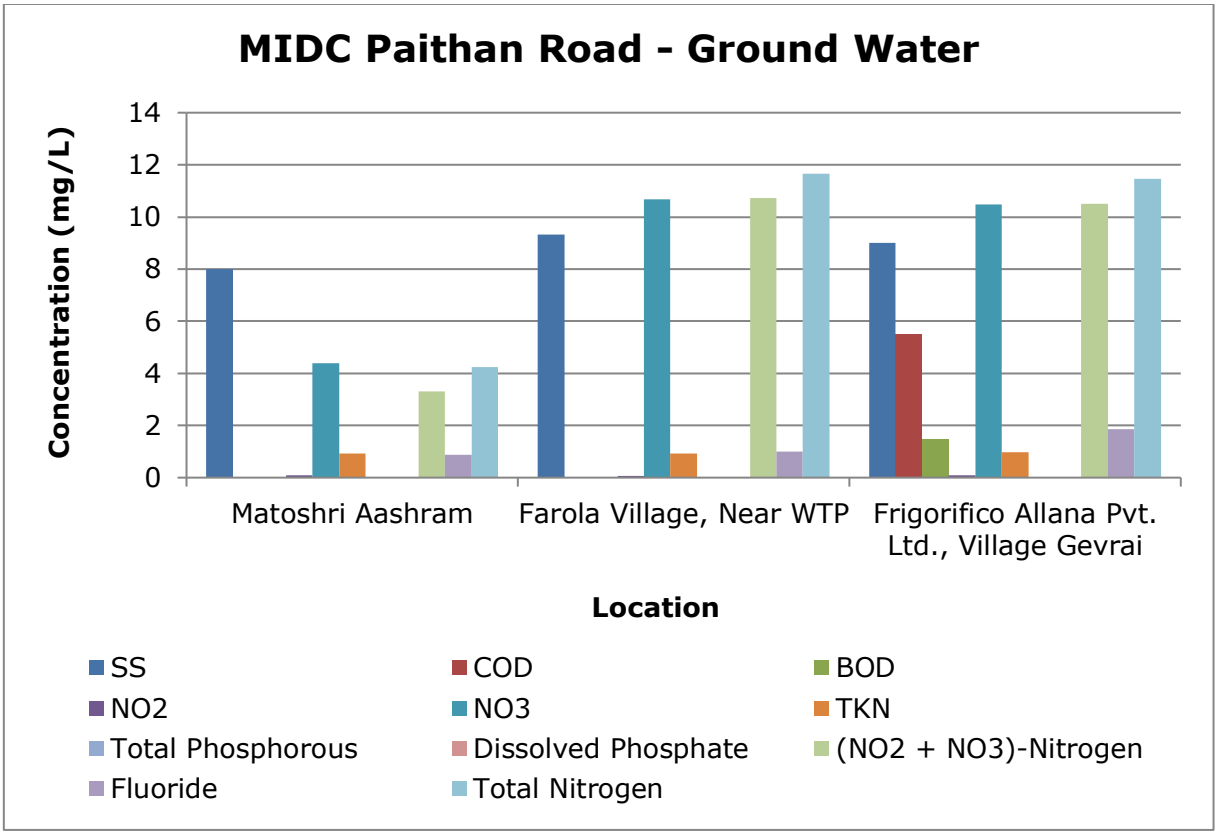
Table 7.8 MIDC Paithan - Results of Ground Water

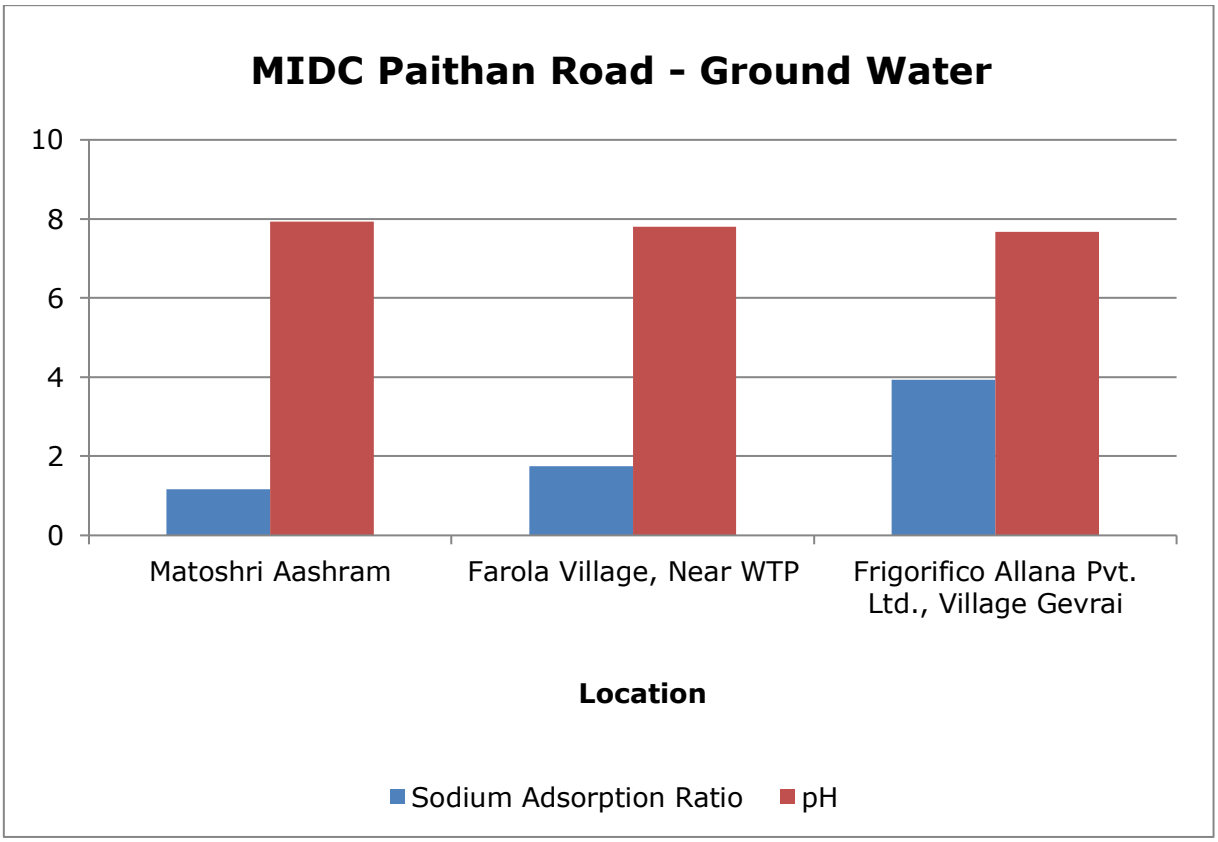
Parameters	Unit	Results		
		Matoshri Aashram	**Farola Village, Near WTP**	**Frigorifico Allana Pvt. Ltd., Village Gevrai**
Sanitary Survey	-	Generally clean neighbourhood	Reasonably clean neighbourhood	Reasonably clean neighbourhood
General Appearance	-	No floating matter	No floating matter	No floating matter
Transparency	m	0.87	NA	0.77
Temperature	Hazen	26	25	26
Colour	°C	1	1	1
Smell	-	Agreeable	Agreeable	Agreeable
pH	-	7.94	7.81	7.67
Oil & Grease	mg/L	BLQ	BLQ	BLQ
Total Suspended Solids	mg/L	8	9	9
Total Dissolved Solids	mg/L	608	709	1433
Chemical Oxygen Demand	mg/L	BLQ	BLQ	6
Biochemical Oxygen Demand (3 days,27°C)	mg/L	BLQ	BLQ	2
Electrical Conductivity (at 25°C)	µmho/cm	1081	1265	2553

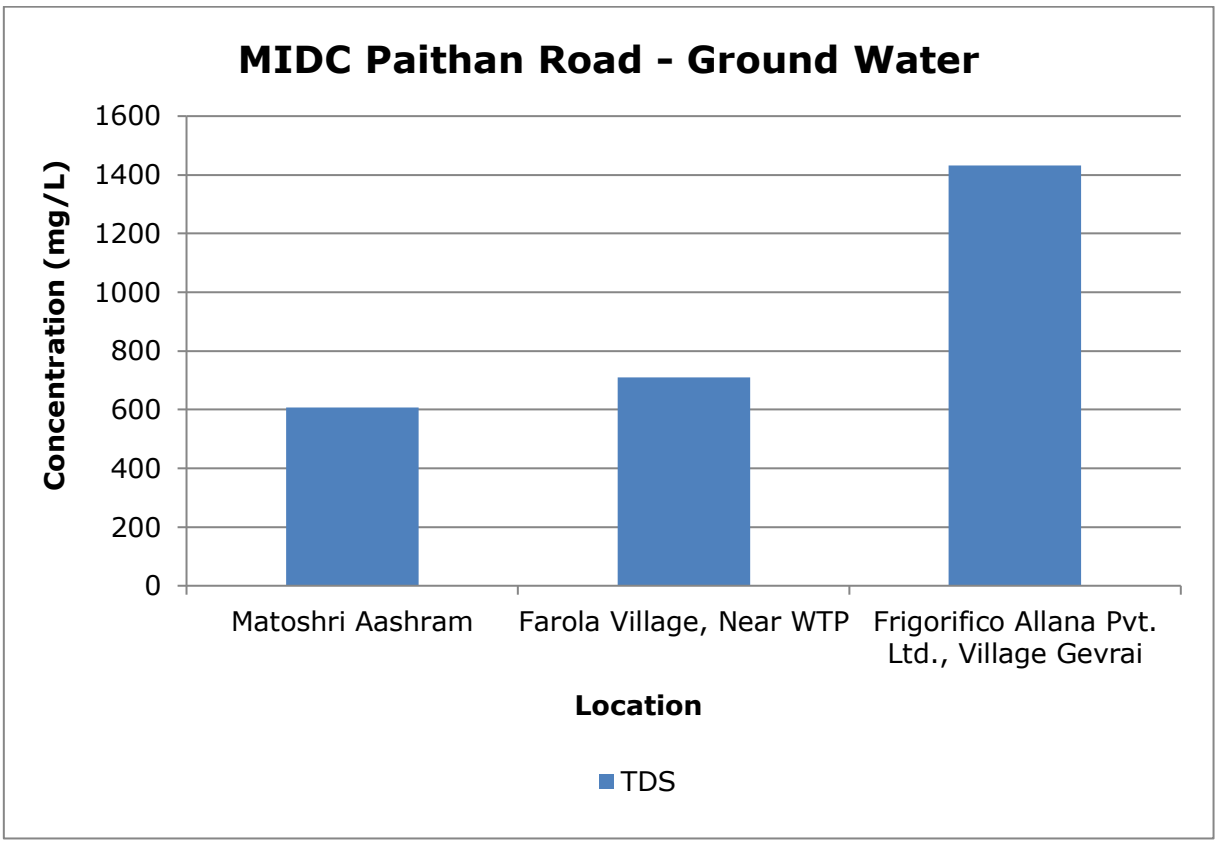
Parameters	Unit	Results		
		Matoshri Aashram	Farola Village, Near WTP	Frigorifico Allana Pvt. Ltd., Village Gevrai
Nitrite Nitrogen (as NO_2)	mg/L	0.09	0.07	0.10
Nitrate Nitrogen (as NO_3)	mg/L	4.40	10.68	10.48
(NO_2 + NO_3)-Nitrogen	mg/L	3.30	10.71	10.51
Free Ammonia (as NH_3-N)	mg/L	BLQ	BLQ	BLQ
Total Residual Chlorine	mg/L	BLQ	BLQ	BLQ
Cyanide (as CN)	mg/L	BLQ	BLQ	BLQ
Fluoride (as F)	mg/L	0.87	1.00	1.87
Sulphide (as H_2S)	mg/L	BLQ	BLQ	BLQ
Dissolved Phosphate (as P)	mg/L	BLQ	BLQ	BLQ
Sodium Adsorption Ratio	-	1.17	1.76	3.94
Total Coliforms	MPN Index /100 mL	920	1600	1600
Faecal Coliforms	MPN Index /100 mL	540	47	476
Total Phosphate (as P)	mg/L	BLQ	BLQ	BLQ
Total Kjeldahl Nitrogen (as N)	mg/L	0.93	0.94	0.97
Total Ammonia (NH_4+NH_3)-Nitrogen)	mg/L	0.14	0.15	0.15
Phenols (as C_6H_5OH)	mg/L	BLQ	BLQ	BLQ
Anionic Detergents (as MBAS)	mg/L	BLQ	BLQ	BLQ
Organo Chlorine Pesticides	µg/L	BLQ	BLQ	BLQ
Polynuclear aromatic hydrocarbons (PAH)	mg/L	BLQ	BLQ	BLQ
Polychlorinated Biphenyls (PCB)	mg/L	BLQ	BLQ	BLQ
Zinc (as Zn)	mg/L	BLQ	BLQ	BLQ
Nickel (as Ni)	mg/L	BLQ	BLQ	BLQ
Copper (as Cu)	mg/L	BLQ	BLQ	BLQ
Hexavalent Chromium (as Cr^{6+})	mg/L	BLQ	BLQ	BLQ
Total Chromium (as Cr)	mg/L	BLQ	BLQ	BLQ
Total Arsenic (as As)	mg/L	0.01	0.01	0.01
Lead (as Pb)	mg/L	0.01	BLQ	BLQ
Cadmium (as Cd)	mg/L	BLQ	BLQ	BLQ
Mercury (as Hg)	mg/L	BLQ	BLQ	BLQ
Manganese (as Mn)	mg/L	BLQ	0.21	BLQ
Iron (as Fe)	mg/L	0.22	0.11	BLQ
Vanadium (as V)	mg/L	0.07	0.02	0.07

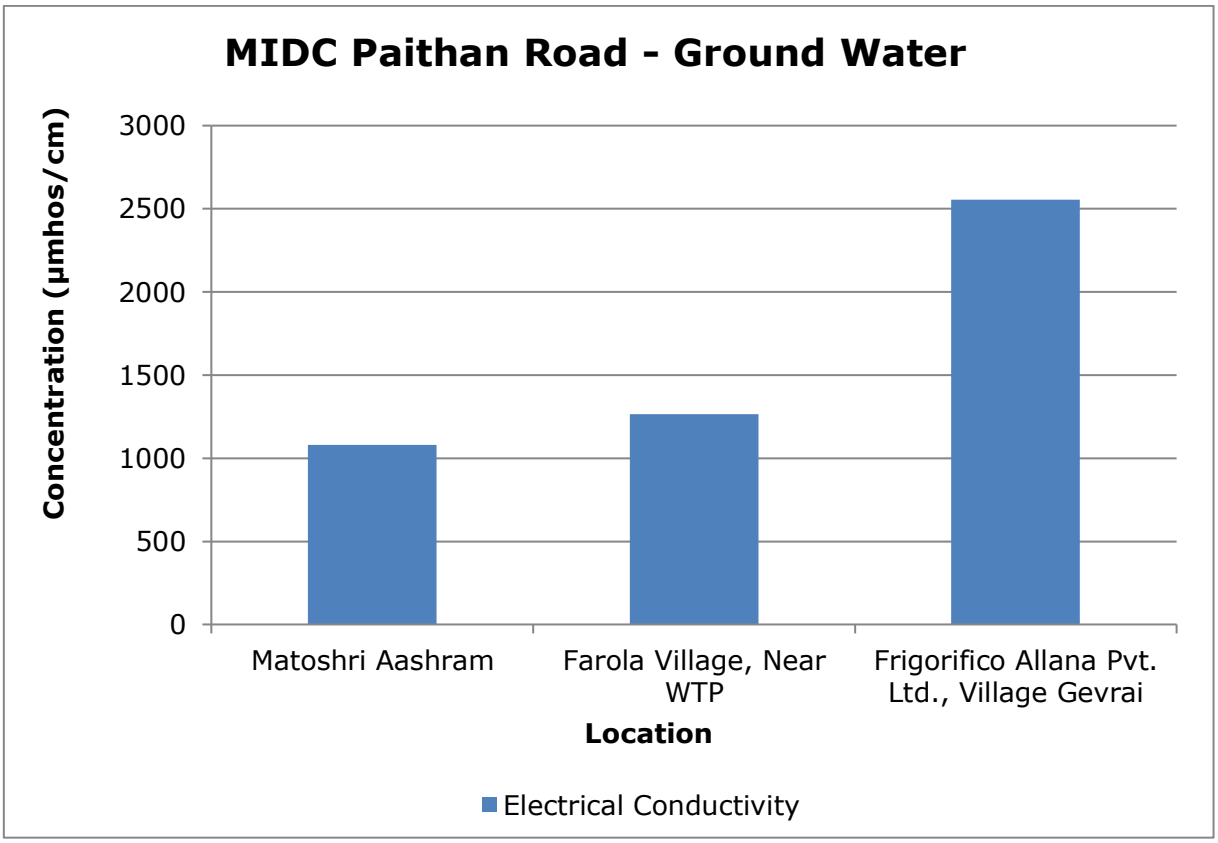
Parameters	Unit	Results		
		Matoshri Aashram	Farola Village, Near WTP	Frigorifico Allana Pvt. Ltd., Village Gevrai
Selenium (as Se)	mg/L	0.02	0.02	0.02
Boron (as B)	mg/L	0.67	0.38	0.40
Total Nitrogen	mg/L	4.23	11.65	11.47
Bioassay Test on fish	% survival	100	100	100

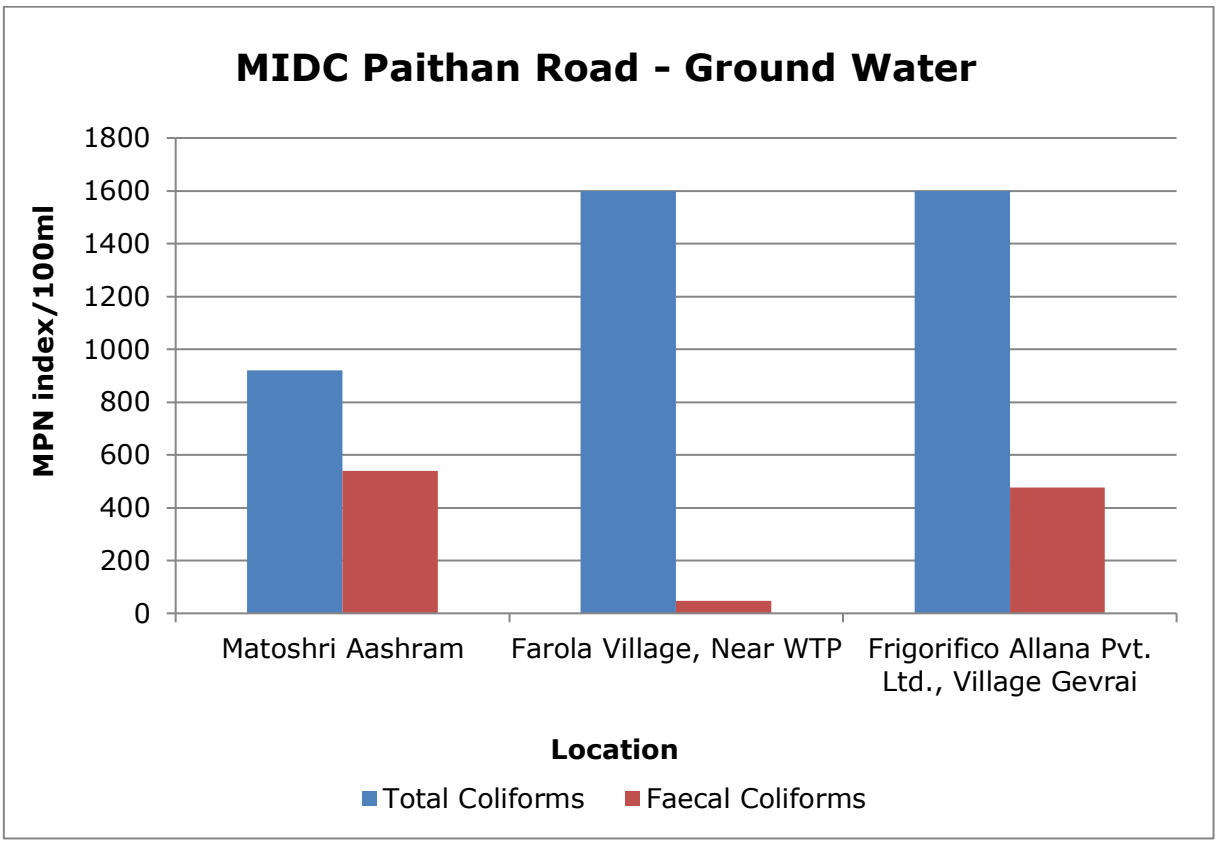
Graphs - Ground Water of MIDC Paithan

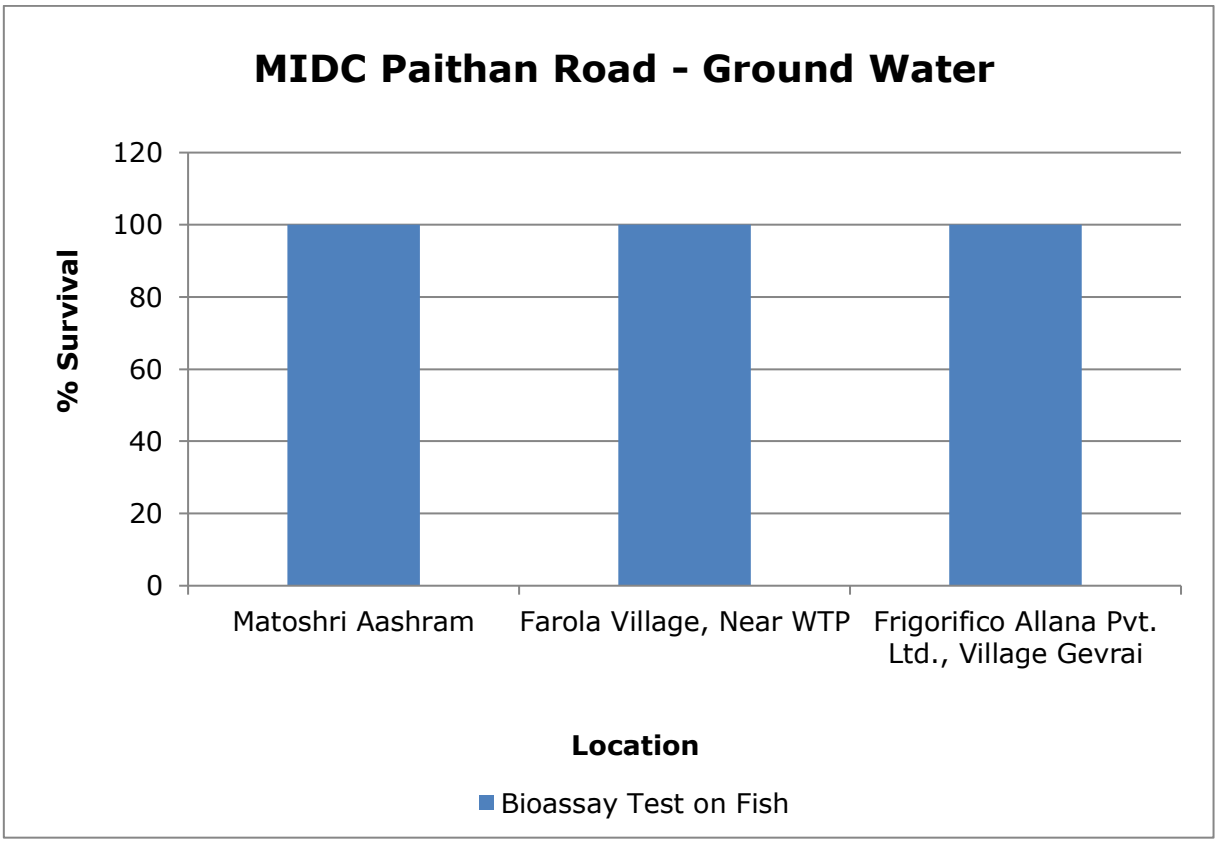





MIDC Paithan Road - Ground Water
Concentration (mg/L)
1600
1400
1200
1000
800
600
400
200
0
Matoshri Aashram
Farola Village, Near WTP
Frigorifico Allana Pvt. Ltd., Village Gevrai
Location
TDS


MIDC Paithan Road - Ground Water
Concentration (µmhos/cm)
3000
2500
2000
1500
1000
500
0
Matoshri Aashram
Farola Village, Near WTP
Frigorifico Allana Pvt. Ltd., Village Gevrai
Location
Electrical Conductivity


MIDC Paithan Road - Ground Water
MPN index/100ml
1800
1600
1400
1200
1000
800
600
400
200
0
Matoshri Aashram
Farola Village, Near WTP
Frigorifico Allana Pvt. Ltd., Village Gevrai
Location
Total Coliforms
Faecal Coliforms


MIDC Paithan Road - Ground Water
% Survival
120
100
80
60
40
20
0
Matoshri Aashram
Farola Village, Near WTP
Frigorifico Allana Pvt. Ltd., Village Gevrai
Location
Bioassay Test on Fish

8. Health Related Data

C: Receptor

Component C (Impact on Human Health)	
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.

Annexure – I Health Related Data enclosed.

9. 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. The CEPI score have been calculated based on CPCB Letter No. B-29012/ESS (CPA)/2015-16 dated 26th April 2016. The scoring system involves an algorithm that considers the basic selection criteria. It is proposed to develop the 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. The present study is the compilation of post monsoon season.

Table 8.1 CEPI score of the Post monsoon season (March 2024) is given below:

	A1	A2	A	B	C	D	CEPI
Air Index	3.5	2.5	8.75	11.25	0	5	**25.0**
Water Index	3	2.5	7.50	30.75	0	5	**43.3**
Land Index	2.5	2.5	6.25	41.75	0	5	**53.0**
						Aggregated CEPI	**58.1**

Table 8.2 Comparison of CEPI Scores

	Air Index	Water Index	Land Index	CEPI
CEPI Score March 2024	25.00	43.30	53.00	**58.10**
CEPI Score June 2023	24.00	54.50	46.40	**59.60**
CEPI Score March 2023	21.88	55.88	36.00	**59.36**
CEPI Score June 2021	15.5	54.38	53.00	**58.12**
CEPI Score March 2021	23.00	53.90	53.80	**59.60**
CEPI score March 2020	53.80	34.50	38.50	**59.90**
CEPI score June 2019	25.00	58.50	17.50	**60.31**
CEPI score March 2019	22.75	23.25	62.00	**64.01**
CEPI score June 2018	36.25	55.25	56.25	**65.01**
CEPI score March 2018	56.00	34.00	50.00	**64.38**
CPCB CEPI score March 2018	45.00	65.38	28.75	**69.85**

CEPI Score Calculation:

Aurangabad, Maharashtra - CEPI - March 2024

Ambient Air Analysis report

Pollutant	Group	A1	A2	A (A1 X A2)
CO	B	2	Moderate	
As	B	1		
PM10	B	0.5		
		3.5	**2.5**	**8.75**

Pollutant	Avg (1)	Std (2)	EF (3) [(3)=(1)/(2)]	No. of samples Exceeding (4)	Total no. of samples (5)	SNLF Value (6) [(6)=(4)/(5)x(3)]	SNLF score (B)	
CO	1.83	2	0.91	4	16	0.23	M	11.25
As	1.98	6	0.33	0	16	0.00	L	0
PM10	66	100	0.66	0	16	0.00	L	0
B score = (B1+B2+B3)							**B**	**11.25**

C	**0**	**<5 %**
D	**5**	**A-IA-A**

Air CEPI	**(A+B+C+D)**	**25.0**

Water Quality Analysis report

Pollutant	Group	A1	A2	A (A1 X A2)
Se	B	2	Moderate	
TP	B	0.5		
BOD	B	0.5		
		3	**2.5**	**7.5**

Pollutant	Avg (1)	Std (2)	EF (3) [(3)=(1)/(2)]	No. of samples Exceeding (4)	Total no. of samples (5)	SNLF Value (6) [(6)=(4)/(5)x(3)]	SNLF score (B)	
Se	0.01	0.01	1.40	11	24	0.64	H	17.25
TP	1.71	0.3	5.70	4	24	0.95	H	7.5
BOD	15.60	8	1.95	8	24	0.65	H	6
B score = (B1+B2+B3)							**B**	**30.75**

C	**0**	**<5 %**
D	**5**	**A-IA-A**

Water CEPI	**(A+B+C+D)**	**43.3**

Ground Water Quality Analysis report

Pollutant	Group	A1	A2	A (A1 X A2)
Se	B	2	Moderate	
Fe	A	0.25		
Fluoride	A	0.25		
		2.5	**2.5**	**6.25**

Pollutant	Avg (1)	Std (2)	EF (3) [(3)=(1)/(2)]	No. of samples Exceeding (4)	Total no. of samples (5)	SNLF Value (6) [(6)=(4)/(5)x (3)]	SNLF score (B)	
Se	0.02	0.01	1.70	10	12	1.42	C	30
Fe	0.49	0.3	1.62	7	12	0.95	M	7.25
Fluoride	1.29	1.5	0.86	5	12	0.36	L	4.5
B score = (B1+B2+B3)							**B**	**41.75**

C	**0**	**<5 %**
D	**5**	**A-IA-A**

Land CEPI	**(A+B+C+D)**	**53.0**

Land CEPI Score (im)	**53.0**
Water CEPI Score (i2)	**43.3**
Air Score (i3)	**25.0**
Aggregated CEPI Score =	**im + {(100-im)*i2/100)*i3/100)}** where, im = maximum sub index; and i2 and i3 are sub indices for other media
CEPI Score	**58.1**

10. Conclusion

Ambient Air Quality

- In the present study, 16 AAQ stations of 4 MIDCs namely: MIDC Shendra, MIDC Chikalthana, MIDC Waluj and MIDC Paithan, were identified in the CEPI impact area to cover both upwind and cross wind directions and AAQ survey was conducted.
- All air quality parameters are observed well within the limits as per NAAQS.
- In the CEPI score calculated for Air environment by CPCB in March 2018, the concentration of PM_{10} and $PM_{2.5}$ has exceeded at 50% of the studied locations, which contributed to air index (45.00). However, in the present report, concentration of both PM10 and PM2.5 are found below permissible levels resulted in less exceedance factor, hence lower air index (25.0).
- The air index for the present study is 25.0

Surface Water Quality

- To understand the quality of treated effluent, samples were collected from 24 locations of different MIDCs.
- Concentration of Total phosphates was found to exceed the acceptable limits at few places of the studied region.
- All the industries in Aurangabad region are either reusing the treated trade effluent as sewage in their process or gardening.
- In the CEPI score calculated for Water Environment by CPCB in March 2018, concentration values of TKN and TP were higher and exceeded at 50% of studied locations as observed in the present study also.
- The water index for the present study is computed as 43.3

Ground Water Quality

- Total 12 ground water samples were collected from different Dug well, well and Bore well in different regions of four MIDCs.
- All the parameters of groundwater analysis were found within the permissible limits, except Selenium and Fluoride, which are found to exceed their permissible limits in most of the water samples.
- In the CEPI score calculated for Land Environment by CPCB in March 2018 also, all the critical parameters were observed within the permissible limits.
- The land index for the present study is computed as 53.0

CEPI Score

- The CEPI Score post monsoon season is 58.1.
- During the calculation of CEPI score, Land Index is calculated highest with 53.0, followed by the water Index 43.3 and Air index as 25.0. The parameters of surface water and ground water in Aurangabad region are observed well within the limits. Hence, aggregated CEPI score is calculated as 58.1, which is approximately 16% lower than the CPCB CEPI score March 2018 which was 69.85.
- In CEPI score of CPCB 2018, Air index and water index were higher as compared to the present (March, 2024) indices. However, land index of present CEPI (53.0) is little higher than the land CEPI (28.75) calculated by CPCB in 2018
- In comparison with the CEPI Score of March 2023, there is a decrease in the water Index, but little rise is observed in land and air indices.
- As per the CPCB CEPI calculation revised in 2016, Health statistics represented by Receptor C in CEPI Calculation, also plays an important role.
- By analysing the health data collected from hospitals, less than 5% increase in air and water borne disease cases is observed in the consecutive years of 2021-2022 and 2022-2023. Hence score for receptor C is considered as zero for all air, water & land Environments. However, in the CEPI score calculated by CPCB (2018), the receptor C (the health data) score was 5 for water and land environment.
- Collective efforts of regional office of MPCB, NMMC, administration and environmental organizations are resulting in significant reduction in pollution level over the years.
- Efforts taken to reduce the pollution level is represents factor D in CEPI Calculation, which also affects the overall CEPI score.
- The present study is the compilation of post monsoon season, which results in dilution of environmental samples resulting in lower pollution load, hence also affects the total score.
- In conclusion, approximately 16% decrease in CEPI score is observed from 69.85 in 2018 to 58.1 in the present study.

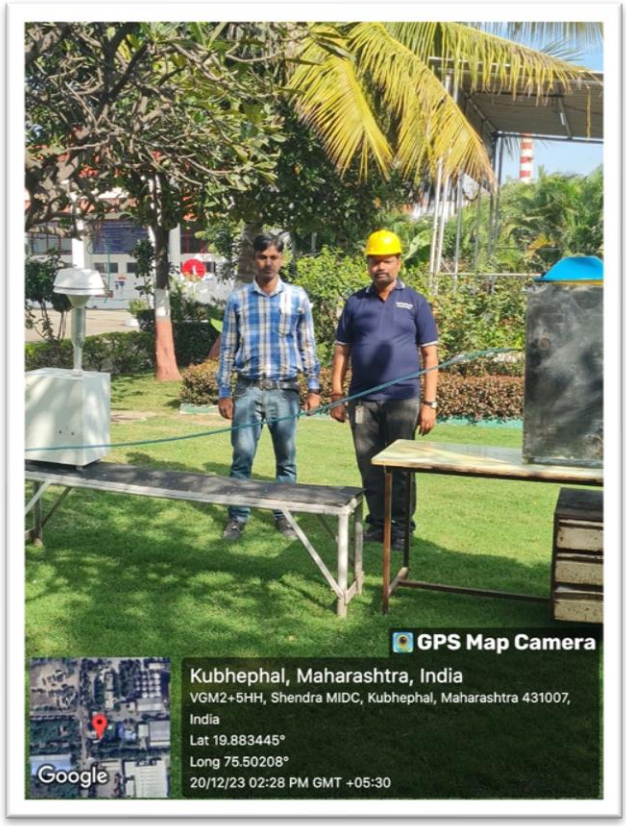
11. Efforts taken by MPCB to control and reduce Environmental Pollution Index

- Encouraging industries to transition to cleaner fuels from existing coal fuel sources.
- Mandating water-polluting industries to replace underground Effluent Treatment Plant (ETP) tanks with overhead ones.
- Establishment of waste collection and segregation centres, including the commissioning of a 150MT/day capacity MSW Processing Plant at Chikalthana and Padegaon, as well as a Biogas Plant at Kanchanwadi.
- Construction of a Common Effluent Treatment Plant (CETP) to manage industrial wastewater.
- Installation of sixteen Continuous Emission Monitoring Systems (CEMS) for air and water in large and medium-scale industries.
- Implementation of sewage treatment plants, such as those at Kanchanwadi, Zalta, Padegaon, and Dr. Salim Ali Lake, to handle domestic sewage generated in Aurangabad city.
- Deployment of three Continuous Ambient Air Quality Monitoring Stations (CAAQMS) and nine monitoring stations under the National Water Quality Monitoring Programme (NWMP) to monitor air and water quality.
- Initiatives to achieve zero liquid discharge (ZLD) by recycling 100% treated effluent in industrial areas, with 23 industries implementing ZLD systems.
- Measures to reduce dust emissions, including road widening, provision of road sweeping machines, road improvement under the Smart City initiative, and enforcement of efficient operation of air pollution control systems in industries.
- Promoting tree plantation, with efforts by MPCB to increase tree coverage in industrial premises up to 40%.
- Ongoing work on a 150 MT/day capacity MSW Processing Plant at Harsool.
- Conducting public awareness campaigns and continuous vigilance and monitoring of industries by MPCB.
- Approval of a Rs. 243.89 Cr DPR for an underground sewage network in the Satara Deolai Area by the State Government.

	
Continuous Ambient Air Quality Monitoring Station (CAAQMS)	**Ambient Air Quality Monitoring (AAQM) Van**

12. Photographs

Ambient Air Sampling at Glenmark Pharma



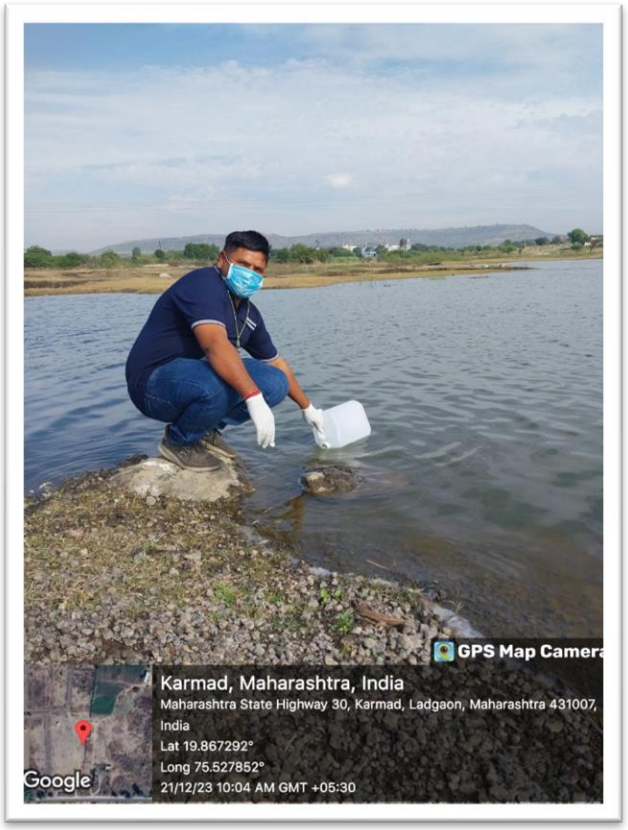
Ambient Air Sampling at Radico NV Distillary

Ambient Air Sampling at Skoda Auto

Ambient Air Sampling at Wockhardt Biotech

Surface Water Sampling at Sukna Dam

Surface Water Sampling at Zaltaphata



Surface Water Sampling at Adgaon Lake

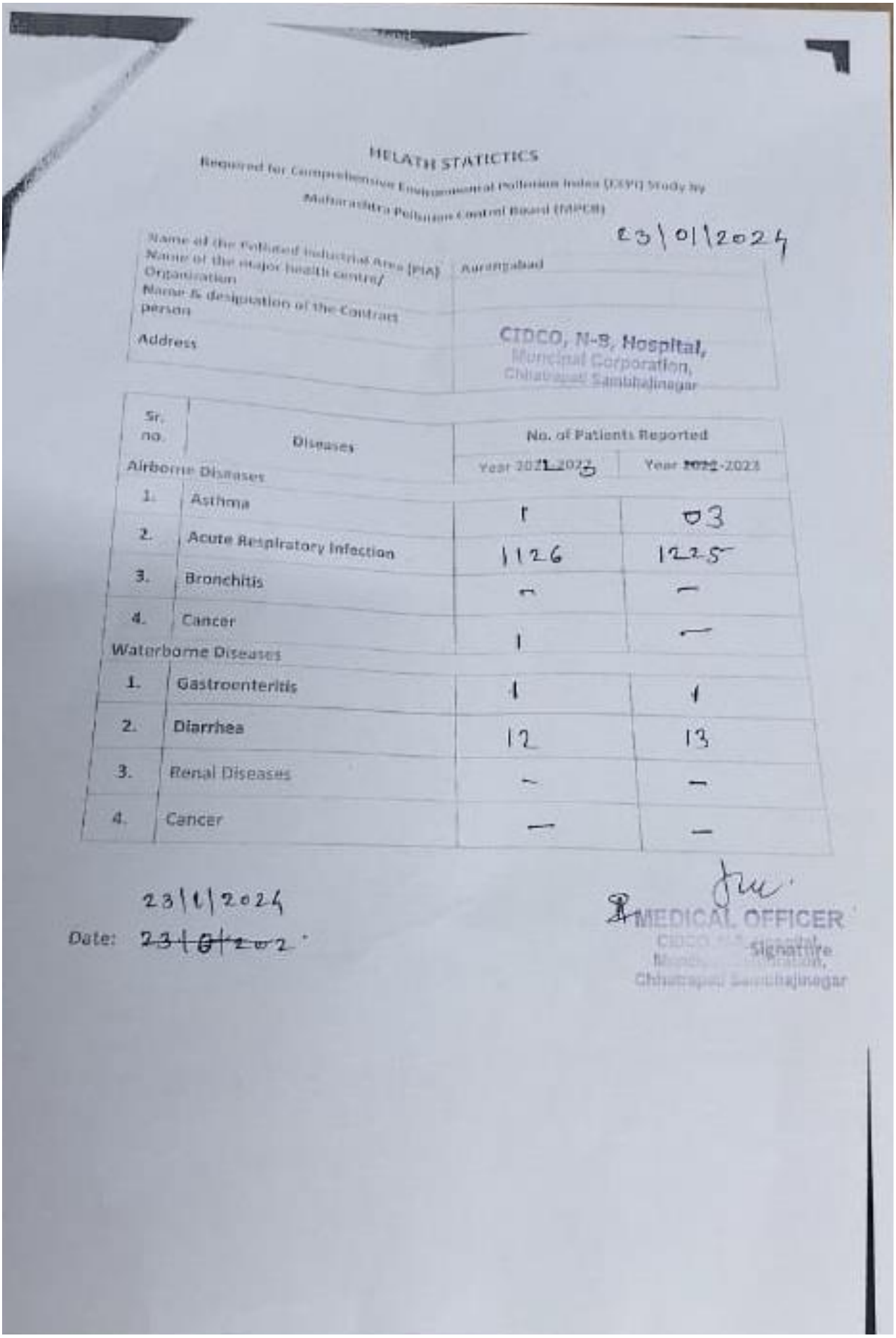
Surface Water Sampling at AURIC City

Groundwater Sampling at Ambedkar Nagar

Groundwater Sampling at RD Bhalerao, HADCO

Groundwater Sampling at Hanuman Temple Shendra Vill

Groundwater Sampling at Wockhardt



HELATH STATICTICS

Required for Comprehensive Environmental Pollution Index (CEPI) Study by Maharashtra Pollution Control Board (MPCB)

23/01/2024

Name of the Polluted Industrial Area (PIA)	Aurangabad
Name of the major health centre/ Organization	
Name & designation of the Contact person	
Address	CIDCO, N-8, Hospital, Municipal Corporation, Chhatrapati Sambhajinagar

Sr. no.	Diseases	No. of Patients Reported	
		Year 2021-2023	Year 2022-2023
Airborne Diseases			
1.	Asthma	1	03
2.	Acute Respiratory Infection	1126	1225
3.	Bronchitis	–	–
4.	Cancer	1	–
Waterborne Diseases			
1.	Gastroenteritis	1	1
2.	Diarrhea	12	13
3.	Renal Diseases	–	–
4.	Cancer	–	–

23/1/2024

Date: ~~23/0/202~~

MEDICAL OFFICER
CIDCO Hospital
Municipal Corporation,
Chhatrapati Sambhajinagar
Signature

HEALTH STATISTICS

Required for Comprehensive Environmental Pollution Index (CEPI) Post-monsoon Season (December 2023- February 2024) Study by Maharashtra Pollution Control Board (MPCB), MAHARASHTRA

Name of the Polluted Industrial Area (PIA)	AURANGABAD
Name of the major health center/ organization	Medicover Hospital, Chistiya Chowk Aurangabad
Name and designation of the Contact person	Yogesh. R. Patil
Address	N-6. Aurangabad

S No.	Diseases	No. of Patients Reported	
		Year 2021-2022	Year 2022-2023
AIRBORNE DISEASES			
1.	Asthma	200	240
2.	Acute Respiratory Infection	150	230
3.	Bronchitis	95	125
4.	Cancer	230	300
WATERBORNE DISEASES			
1.	Gastroenteritis	180	188
2.	Diarrhea	200	240
3.	Renal diseases	210	280
4.	Cancer	250	280

Date: 20/1/24

Signature

HEALTH STATISTICS

Required for Comprehensive Environmental Pollution Index (CEPI) Post-monsoon Season (December 2023- February 2024) Study by Maharashtra Pollution Control Board (MPCB), MAHARASHTRA

Name of the Polluted Industrial Area (PIA)	**AURANGABAD**
Name of the major health center/ organization	**United CIGMA Hospital, Aurangabad**
Name and designation of the Contact person	Mr. Onkar Tarhalkar. (Manager)
Address	

S No.	Diseases	No. of Patients Reported	
		Year 2021-2022	Year 2022-2023
AIRBORNE DISEASES			
1.	Asthma	1800	1450
2.	Acute Respiratory Infection	1000	880
3.	Bronchitis	1200	980
4.	Cancer	40	34
WATERBORNE DISEASES			
1.	Gastroenteritis	450	360
2.	Diarrhea	350	290
3.	Renal diseases	1200	870
4.	Cancer	1800	1380

Date:

Signature