

**REPORT ON
ENVIRONMENTAL QUALITY MONITORING
FOR ASSESSMENT OF
COMPREHENSIVE ENVIRONMENTAL
POLLUTION INDEX (CEPI)
FOR
CRITICALLY POLLUTED AREA-VATVA
IN GUJARAT**

REPORT PREPARED BY



**CENTRAL POLLUTION CONTROL BOARD
(Ministry of Environment, Forests and Climate Change)
Zonal Office (West), Vadodara
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1.0 BACKGROUND:

A total of 88 industrial clusters/areas were studied to calculate Comprehensive Environmental Pollution Index (CEPI) by the Central Pollution Control Board (CPCB) in consultation with the Ministry of Environment & Forests (MoEF). The CEPI is calculated by CPCB with the help of Indian Institute of Technology (IIT), Delhi using information/data provided by State Pollution Control Boards/ Pollution Control Committees, Zonal Offices of CPCB published information etc. The main objective of the study was to identify polluted industrial clusters/areas in order to take concreate action and to monitor them at national level to improve the current status of environmental components.

Based on CEPI, it is suggested that areas having aggregated CEPI scores of 70 and above should be considered as Critically Polluted Areas (CPAs), whereas the areas having CEPI between 60-70 should be considered as Severally Polluted Areas (SPAs). It was suggested to keep SPAs under surveillance and pollution control measures should be efficiently implemented whereas the CPAs need formulation of appropriate remedial action plan.

The Ministry of Environment & Forests, New Delhi vide office memorandum dated 13.01.2010 had imposed a temporary moratorium on consideration of development projects for Environmental Clearance (EC) for the period of 08 months up to August, 2010 in 43 Critically Polluted Areas (CPAs)/industrial clusters all over India including **06 in Gujarat: Ankleshwar, Vapi, Ahmedabad, Vatva, Bhavnagar & Junagadh**, identified by Central Pollution Control Board (CPCB). Further, it was asked to CPCB along with the respective State Pollution Control Boards/Pollution Control Committees to finalize the time bound action plan for improving the environmental quality in these identified industrial clusters/areas.

Subsequently, time bound action plans were prepared by the respective SPCBs/PCCs for improving the environmental quality in these industrial clusters/areas. The action plans so prepared were finalized by CPCB and appraised to MoEF. Further, the period of moratorium was extended beyond 31.8.2010 from time to time by MoEF.

Thereafter, the status of action plans were reviewed by a Technical Committee constituted at CPCB Delhi. In accordance with the information received from CPCB that the respective SPCBs/PCCs and the local stakeholders initiated some work on implementation of the submitted action plans in respect of the industrial areas the MoEF lifted the moratorium on consideration of projects for environmental clearance in some areas.

Moratorium lifted for the CPAs-Vapi, Bhavnagar in February, 2011, Junagadh in March, 2011 and Ahmedabad in Sept 2013. Further, moratorium re-imposed for CPA-Vapi in vide OM dated 17.09.2013 and subsequently, this OM kept in abeyance until further orders with some stipulations vide OM dated 10.06.2014.

Presently, moratorium exists at two CPAs-Ankleshwar, Vatva and moratorium kept in abeyance with stipulations at Vapi.

The CEPI scores are given at following table:

CEPI SCORE –GUJARAT

Year	Ankleshwar	Vapi	Ahmedabad	Vatva	Bhavnagar	Junagarh
2009	88.50	88.09	75.28	74.77	70.99	70.82
2011	85.75	90.75	78.09	87.46	69.73	67.85
2013	80.93	85.31	69.54	83.44	62.79	52.75

CPCB issued (dated 26.04.2016) direction u/s 18 (1) (b) of the Water (P & CP) Act & the Air (P & CP) Act to undertake environmental quality monitoring and for installations of CAAQMS and real time WQMS in critically polluted areas. Accordingly, GPCB got carried out monitoring in all three CPAs (Ankleshwar, Vatva and Vapi) as pre-monsoon sampling in June 2016 and submitted reports to CPCB, Delhi.

CPCB, West Zone Office, Vadodara received a letter from the Member Secretary, CPCB vide no. MSCB/05/2016, dated 17.09.2016. This was in response to communication received from Joint Secretary, MoEF & CC, New Delhi for undertaking Environment Quality monitoring in the three critically polluted areas (CPAs)-Ankleshwar, Vatva and Vapi in Gujarat.

Accordingly, monitoring carried out in these areas. The report of monitoring in CPA- Vatva is given in following sections.

2.0 MONITORING-CPA-Vatva:

2.1 Monitoring Period & Team:

Monitoring for assessment of CEPI carried out at critically polluted area- Vatva as detailed below:

Area	Date(s)	Team(s)
Vatva	14.10.2016- 19.10.2016	Shri Pratik Bharne-Sc D, Dr. Arvind Kr Jha -Sc D, Shri Kishan kumar, Jr Technician, Shri Satendra kumar-JRF

2.2 Parameters:

Sampling and analysis for most of the water parameters are carried out by CPCB, West Zone office. EPA approved and NABL accredited laboratory M/s Pollucon Laboratories Pvt Ltd, Surat was engaged for ambient air quality monitoring and sampling & analysis of some specific water parameters.

The air and water parameter as directed by CPCB HO for which the sampling is carried out in three rounds is given in table:

	Parameter(s)
Ambient Air Quality	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , CO, Lead(Pb), Nickel (Ni), Arsenic (As), Ozone (O ₃), Ammonia (NH ₃), Benzene (C ₆ H ₆), Benzo-a-Pyrene) (12 parameters)
Water Quality (Ground & Surface)	Simple Parameter- General Appearance (Turbidity), Color, Regular parameters- pH, O & G, TSS, DO, COD, BOD, Electrical Conductivity, TDS, Nitrite-Nitrogen, Nitrate-Nitrogen, Total Nitrogen (NO₂+NO₃), Free Ammonia, Total Residual Chlorine, Cyanide, Fluoride, Chloride, Sulphate, Sulphide, Total hardness, dissolved phosphate, SAR,TC, FC (MPN/100 ml) Special Parameters: Total Phosphorous, TKN, Total Ammonia (NH₄+NH₃) Nitrogen, Phenols, Surface Active Reagent, Anionic Detergents, Organo-chlorine pesticide, PAH, PCB, Zinc, Nickel, Copper, Hexavalent chromium, chromium total, , Lead, Cadmium, Manganese, Iron, Boron ,Vanadium, Selenium, Arsenic total, Mercury Bio-Assay test (not for ground water)

2.3 Monitoring Locations and period:

The details of number of monitoring locations are given in following table:

Critically Polluted Area	No of location(s)		
	AAQM	Surface water	Ground water
Vatva (Vatva& Narol)	4	5	4

Three rounds of sampling at each location carried out for ambient air, surface water and ground water. Monitoring locations along with longitude & latitude and period is given in following tables:

AAQ Monitoring

(First Round: 14.10.2016-15.10.2016, Second Round: 16.10.2016 to 17.10.2016, Third Round: 18.10.2016 to 19.10.2016)

Sr. No.	Location code	Name of Location(s)	Longitude	Latitude
1	VTAQ-1	Hemline Textile Exports Pvt. Ltd. Shahwadi, Narol	E 72°34'13.4"	N 22°57'48.2"
2	VTAQ-2	Mamta Intermediates, Narol-vatva Road, Narol	E 72°36'08.7"	N 22°57'51.4"
3	VTAQ-3	Patel chem Specialties Pvt Ltd, Phase-II, Vatva	E 72°38'16.8"	N 22°57'03.5"
4	VTAQ-4	Centre of excellence, Vatva Industries Association, GIDC, Vatva	E 72°38'36.1"	N 22°58'09.9"

SURFACE WATER SAMPLING LOCATIONS

(First Round: 14/15.10.2016, Second Round: 17.10.2016 Third Round: 19.10.2016)

Sr. No.	Location Code	Name of Location(s)	Longitude	Latitude
01	VTSW-1	River Sabarmati at Miroli pumping station	E 72°30'09.7"	N 22°52'33.8"
02	VTSW-2	Mega pipe line outlet, near Sabarmati River	E 72°32'35.8"	N 22°58'50.8"
03	VTSW-3	Outlet of CETP (M/s Green Env. Service co-operative society ltd), GIDC, Vatva	E 72°38'21.2"	N 22°57'15.8"
04	VTSW-4	Kharicut canal, near vinzol bridge, Vatva	E 72°38'24.33	N 22°57'08.3"
05	VTSW-5	Vinzol lake	E 72°38'34.63"	N 22°57'12.13"

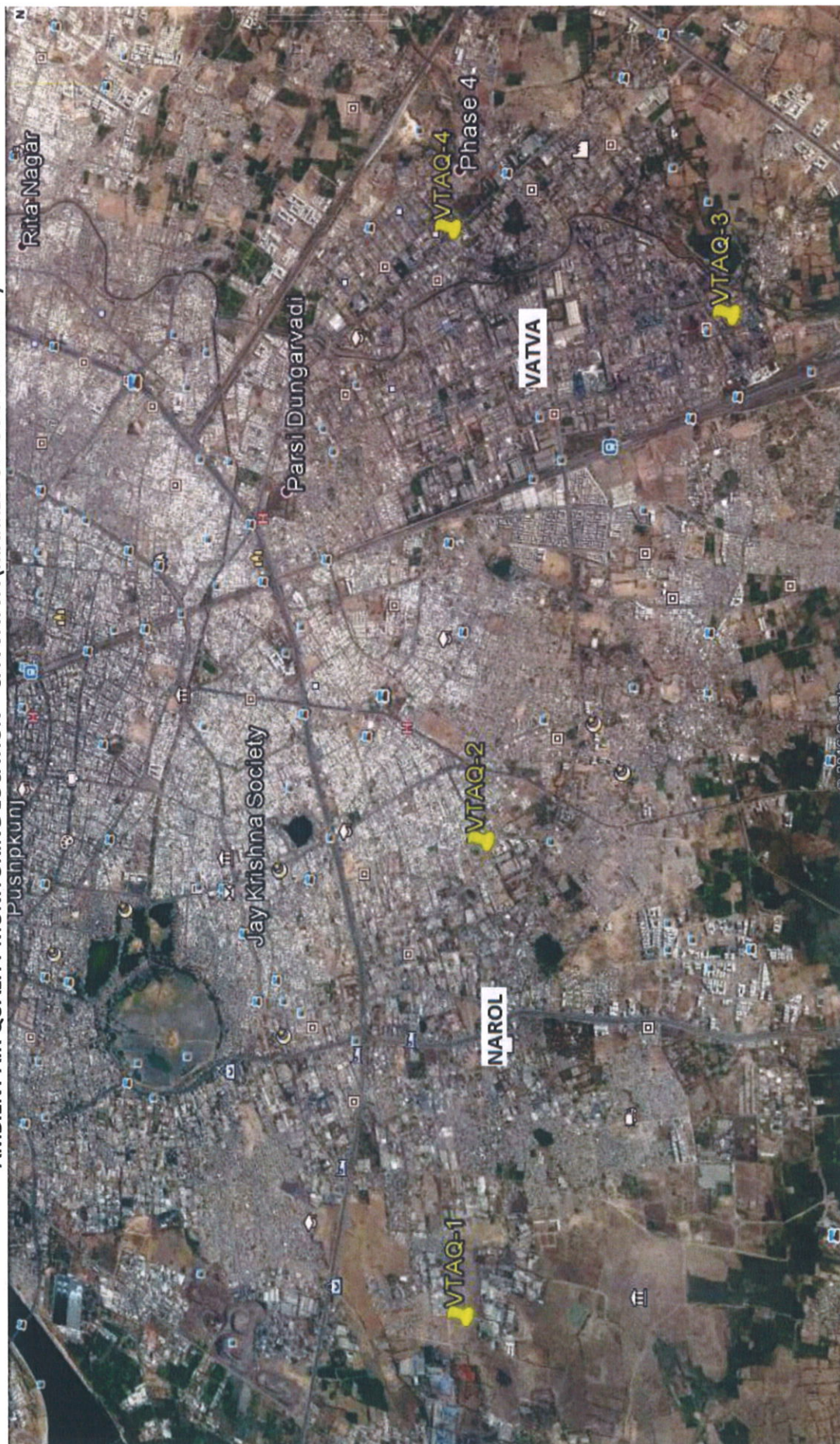
GROUND WATER SAMPLING LOCATIONS

(First Round: 14/15.10.2016, Second Round: 17.10.2016, Third Round: 19.10.2016)

Sr. No.	Location Code	Name of Location(s)	Longitude	Latitude
01	VTGW-1	Bore well, Centre of Excellence, vatva industrial association GIDC Vatva	E 72°38'37.9"	N 22°58'11.8"
02	VTGW-2	Bore well, premises of M/s Hemline Textile Pvt Ltd., Shahwadi, Narol (Narol Ind. area)	E 72°34'10.0"	N 22°57'46.0"
03	VTGW-3	Bore Well, Premises of M/s. Swan Energy Ltd., Narol -Vatva road, Narol	E 72°36'04.4"	N 22°57'51.9"
04	VTGW-4	Premises of CETP (Green Env. Service co-operative society ltd.), GIDC, Vatva	E 72°38'20.5"	N 22°57'21.3"

CETP Vatva Inlet sampling date -15.10.2016 & 19.10.2016

AMBIENT AIR QUALITY MONITORING LOCATION – CPA VATVA (MARKED ON GOOGLE IMAGE)



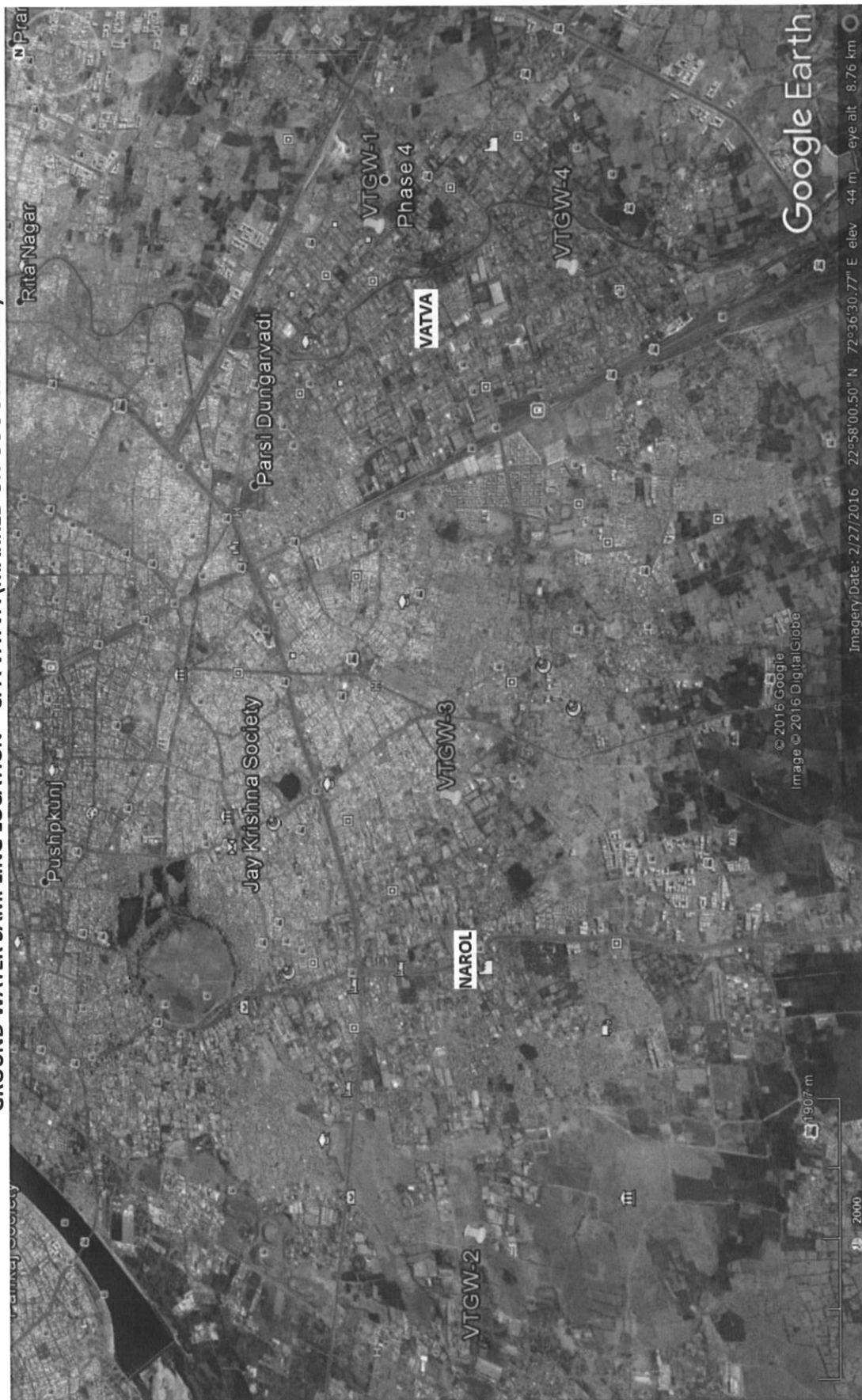
Location code	Name of Location(s)	Location code	Name of Location(s)
VTAQ-1	Hemline Textile Exports Pvt. Ltd. Shahwadi, Narol	VTAQ-3	Patel chem Specialties Pvt Ltd, Phase-II, Vatva
VTAQ-2	Mamta Intermediates, Narol-vatva Road, Narol	VTAQ-4	Centre of excellence, Vatva Ind Association, GIDC, Vatva

SURFACE WATER SAMPLING LOCATION – CPA VATVA (MARKED ON GOOGLE IMAGE)



Location Code	Name of Location(s)	Location Code	Name of Location(s)
VTSW-1	River Sabarmati at Miroli pumping station	VTSW-4	Khari cut canal, near vinzol bridge, Vatva
VTSW-2	Mega pipe line outlet, near Sabarmati River	VTSW-5	Vinzol lake
VTSW-3	Outlet of CETP, GIDC, Vatva		

GROUND WATER SAMPLING LOCATION – CPA VATVA (MARKED ON GOOGLE IMAGE)



Location Code	Name of Location(s)	Location Code	Name of Location(s)
VTGW-1	Bore well, Centre of Excellence, vatva ind association GIDC Vatva	VTGW-3	Bore Well, Premises of M/s. Swan Energy Ltd., Narol
VTGW-2	Bore well, premises of M/s Hemlime Textile Pvt Ltd., Narol	VTGW-4	Premises of CETP, GIDC, Vatva

3.0 RESULTS:

The results of ambient air quality monitoring are given in **Annexure-I** and surface water and groundwater quality monitoring are given in **Annexure-II** and **III** respectively. The results of CETP Inlet quality is given in **Annexure-IV**. The Minimum Deduction Limits for the analysis of Water/ Wastewater and ambient air are given in **Annexure-IV A**.

4.0 OTHER INFORMATION:

The information related to total area falling under the critically polluted area, details of R-17 & R-54 red category industries, wind rose diagram, adequate/inadequate status of large, medium/small scale industries in the area, and health data received from GPCB are given in **Annexure-V**.

RESULTS OF AMBIENT AIR QUALITY MONITORING-CPA-VATVA

TEST PARAMETER	UNIT	Hemiline Textile, Narol (VTAQ-1)			Mamta Intermediate, Narol (VTAQ-2)			Patel Chem., Vatva (VTAQ-3)			Vatva Industrial Association, Vatva (VTAQ-4)		
		14- 15.10.2016	16- 17.10.2016	18- 19.10.2016	14- 15.10.2016	16- 17.10.2016	18- 19.10.2016	14- 15.10.2016	16- 17.10.2016	18- 19.10.2016	14- 15.10.2016	16- 17.10.2016	18- 19.10.2016
Particulate Matter (PM ₁₀)	µg/m ³	109.40	95.60	83.60	98.70	123.60	88.90	141.80	116.40	130.40	165.40	143.80	129.40
Particulate Matter (PM _{2.5})	µg/m ³	48.1	40.2	35.8	43.2	48.4	39.4	67.2	52.8	58.4	71.4	54.2	66.2
Lead as Pb	µg/m ³	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzo (a) Pyrene (BaP)- particulate phase only	ng/m ³	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.10
Arsenic as As	ng/m ³	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.17
Nickel as Ni	ng/m ³	13.97	14.30	14.13	12.60	13.60	13.44	16.47	13.47	14.46	12.27	17.20	14.64
Carbon Monoxide as CO (TW Avg. - 8 Hrs)	mg/m ³	0.96	1.08	0.85	0.91	0.72	1.60	1.78	1.81	1.58	1.53	1.48	1.73
Benzene as C ₆ H ₆	µg/m ³	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.50
Ammonia (NH ₃)	µg/m ³	33.6	41.6	48.2	56.5	43.7	61.1	67.1	52.2	74.2	59.80	45.00	26.80
Sulphur Dioxide (SO ₂)	µg/m ³	19.8	15.6	26.6	29.6	21.4	24.6	32.4	25.6	18.7	27.00	23.90	33.70
Oxides of Nitrogen (NO ₂)	µg/m ³	26.40	21.8	30.40	34.20	29.8	24.90	40.10	33.9	42.80	36.40	31.9	49.60
Ozone (O ₃) (TW Avg. - 1 Hr)	µg/m ³	18.40	15.80	21.10	14.26	19.60	24.80	26.30	22.90	23.20	17.40	20.60	28.80

RESULTS OF SURFACE WATER QUALITY MONITORING-CPA-VATVA

Location-VTSW-1: River Sabarmati, Miroli Pumping Station

Sr. No.	Test Parameters	Unit of Measurement	Results		
			14.10.2016	17.10.2016	19.10.2016
1	pH	-	6.85	7.31	7.58
2	Cond	$\mu\text{S}/\text{cm}$	1998	2396	2610
3	Turb	N.T.U.	24.7	4.7	8.1
4	Colour	Hazen	120	150	80
5	TSS	mg/L	44	37	57
6	TDS	mg/L	1024	1035	1244
7	D.O.	mg/L	3.3	BDL	BDL
8	COD	mg/L	147	155	176
9	BOD	mg/L	58.3	21	58
10	NH ₃ -N	mg/L	13.3	16.2	19.3
11	T. Ammonia	mg/L	26.706	32.53	38.754
12	Free NH ₃	mg/L	0.151	0.562	1.03
13	TKN	mg/L	18.2	22.6	26.2
14	NO ₂ -N	mg/L	0.103	0.135	0.091
15	NO ₃ -N	mg/L	1.84	2.66	3.18
16	T. Nitrogen	mg/L	20.143	25.395	29.471
17	O-PO ₄ -P	mg/L	0.79	0.59	0.48
18	T. Phosphorus	mg/L	1.45	1.29	1.40
19	T. Hardness	mg/L	231	232	244
20	Cl ⁻	mg/L	420	409	535
21	SO ₄ ⁻²	mg/L	156	196	235
22	SAR	-	5.72	5.83	5.66
23	B	mg/L	0.518	0.508	0.537
24	Cr ⁺⁶	mg/L	BDL	0.033	BDL
25	F ⁻	mg/L	0.54	0.51	0.599
26	S ⁻²	mg/L	1.02	1.81	5.58
27	CN ⁻	mg/L	0.0042	0.021	BDL
28	Phenols	mg/L	0.080	0.21	0.096
29	Residual CL ₂	mg/L	BDL	BDL	BDL
30	O&G	mg/L	3.6	7.96	1.54
31	Chromium (Cr)	mg/L	BDL	0.023	0.037
32	Manganese (Mn)	mg/L	0.171	0.160	0.199
33	Iron (Fe)	mg/L	BDL	BDL	BDL
34	Nickel (Ni)	mg/L	BDL	BDL	BDL
35	Copper (Cu)	mg/L	0.062	0.100	0.140
36	Zinc (Zn)	mg/L	0.320	0.447	0.577
37	Cadmium (Cd)	mg/L	BDL	BDL	BDL
38	Lead (Pb)	mg/L	0.049	0.042	BDL
39	Vanadium as V	mg/L	0.051	0.108	0.129
40	Selenium as Se	mg/L	< 0.01	< 0.01	< 0.01
41	Mercury as Hg	mg/L	< 0.001	< 0.001	< 0.001
42	Total Arsenic as As	mg/L	< 0.01	< 0.01	< 0.01

43	Surfactants as MBAS	mg/L	3.66	2.1	3.2
44	Organo Chlorine Pesticide	mg/L	< 0.0001	< 0.0001	< 0.0001
45	PAH	mg/L	< 0.001	< 0.001	< 0.001
46	PCB	mg/L	< 0.0001	< 0.0001	< 0.0001
47	Total Coliform	MPN/100 ml	1600	>1600	920
48	Fecal Coliform	MPN/100 ml	920	920	21
49	Bio-assay Test	%	60% survival of fish after 96 hours in 100 % effluent	80% survival of fish after 96 hours in 100 % effluent	80% survival of fish after 96 hours in 100 % effluent

Location-VTSW-2: Mega Pipeline outlet, near Sabarmati River

Sr. No	Test Parameters	Unit of Measurement	Results		
			15.10.2016	17.10.2016	19.10.2016
1	pH	-	7.06	7.37	7.50
2	Cond	µS/cm	9036	19415	14864
3	Turbidity	N.T.U.	3.4	2.9	1.7
4	Colour	Hazen	7500	10000	10000
5	TSS	mg/L	313	214	199
6	TDS	mg/L	7349	9550	7696
7	D.O.	mg/L	BDL	BDL	BDL
8	COD	mg/L	613	668	414
9	BOD	mg/L	162	209	165
10	NH ₃ -N	mg/L	47.5	51.3	45.6
11	T. Ammonia	mg/L	95.380	103.01	91.565
12	Free NH ₃	mg/L	1.141	2.65	2.77
13	TKN	mg/L	80.99	92.8	70.2
14	NO ₂ -N	mg/L	BDL	BDL	BDL
15	NO ₃ -N	mg/L	4.75	2.06	0.28
16	T. Nitrogen	mg/L	85.74	94.86	70.48
17	O-PO ₄ -P	mg/L	1.17	0.25	0.34
18	T. Phosphorus	mg/L	3.69	0.94	1.62
19	T. Hardness	mg/L	1500	1480	1500
20	Cl ⁻	mg/L	4714	5130	4646
21	SO ₄ ⁻²	mg/L	2429	2756	2352
22	SAR	-	25.29	25.68	25.3
23	B	mg/L	1.11	1.190	1.495
24	Cr ⁺⁶	mg/L	0.0019	0.407	BDL
25	F ⁻	mg/L	1.41	2.64	3.76
26	S ⁻²	mg/L	BDL	1.30	2.93
27	CN ⁻	mg/L	BDL	0.021	0.070
28	Phenols	mg/L	0.57	4.0	0.411
29	Res.CL ₂	mg/L	BDL	BDL	BDL
30	O&G	mg/L	7.95	8.14	6.85
31	Chromium (Cr)	mg/L	BDL	BDL	BDL
32	Manganese (Mn)	mg/L	BDL	BDL	BDL

33	Iron (Fe)	mg/L	BDL	BDL	BDL
34	Nickel (Ni)	mg/L	BDL	BDL	BDL
35	Copper (Cu)	mg/L	BDL	BDL	BDL
36	Zinc (Zn)	mg/L	BDL	BDL	BDL
37	Cadmium (Cd)	mg/L	BDL	BDL	BDL
38	Lead (Pb)	mg/L	BDL	BDL	BDL
39	Vanadium as V	mg/L	0.127	0.165	0.315
40	Selenium as Se	mg/L	< 0.01	< 0.01	< 0.01
41	Mercury as Hg	mg/L	0.0018	0.0012	< 0.001
42	Total Arsenic as As	mg/L	< 0.01	< 0.01	< 0.01
43	Surfactants as MBAS	mg/L	3.2	1.83	2.9
44	Organo Chlorine Pesticide	mg/L	0.006	< 0.0001	< 0.0001
45	PAH	mg/L	< 0.001	0.0038	< 0.001
46	PCB	mg/L	< 0.0001	< 0.0001	< 0.0001
47	Total Coliform	MPN/100 ml	>1600	>1600	>1600
48	Fecal Coliform	MPN/100 ml	430	350	150
49	Bio-assay Test	%	No survival of fish after 96 hours in 100 % effluent	60 % survival of fish after 96 hours in 100 % effluent	100 % survival of fish after 96 hours in 100 % effluent

Location-VTSW-3: Outlet of CETP Vatva, GIDC, Vatva

Sr. No.	Test Parameters	Unit of Measurement	Results		
			15.10.2016	17.10.2016	19.10.2016
1	pH	-	7.08	6.89	7.45
2	Cond	µS/cm	8966	15337	16267
3	Turbidity	N.T.U.	1.5	2.6	1.9
4	Colour	Hazen	10000	10000	15000
5	TSS	mg/L	202	210	193
6	TDS	mg/L	8123	8500	8691
7	D.O.	mg/L	--	BDL	3.98
8	COD	mg/L	506	470	408
9	BOD	mg/L	99	138	136
10	NH ₃ -N	mg/L	47.8	46.8	46.8
11	T. Ammonia	mg/L	95.982	93.97	93.974
12	Free NH ₃	mg/L	1.20	1.78	2.38
13	TKN	mg/L	77.54	80.1	81.4
14	NO ₂ -N	mg/L	BDL	BDL	BDL
15	NO ₃ -N	mg/L	0.816	1.38	1.04
16	T. Nitrogen	mg/L	78.356	81.48	82.44
17	O-PO ₄ -P	mg/L	0.10	0.60	0.49
18	T. Phosphorus	mg/L	3.28	1.77	1.87
19	T. Hardness	mg/L	1600	1620	1624
20	Cl ⁻	mg/L	4735	4881	5128
21	SO ₄ ⁻²	mg/L	2390	2352	2467
22	SAR	-	27.26	27.31	27.0

23	B	mg/L	0.972	0.763	1.147
24	Cr ⁺⁶	mg/L	0.0019	0.470	BDL
25	F ⁻	mg/L	2.6	2.08	3.26
26	S ⁻²	mg/L	BDL	2.33	0.77
27	CN ⁻	mg/L	0.028	0.084	0.098
28	Phenols	mg/L	0.31	0.51	0.25
29	Res.CL ₂	mg/L	BDL	BDL	BDL
30	O&G	mg/L	0.2	5.79	2.73
31	Chromium (Cr)	mg/L	0.176	0.256	BDL
32	Manganese (Mn)	mg/L	0.741	0.691	BDL
33	Iron (Fe)	mg/L	BDL	BDL	BDL
34	Nickel (Ni)	mg/L	0.061	0.06	BDL
35	Copper (Cu)	mg/L	1.257	1.227	0.053
36	Zinc (Zn)	mg/L	0.526	0.351	BDL
37	Cadmium (Cd)	mg/L	BDL	BDL	BDL
38	Lead (Pb)	mg/L	BDL	BDL	BDL
39	Vanadium as V	mg/L	0.117	0.183	0.176
40	Selenium as Se	mg/L	< 0.01	< 0.01	< 0.01
41	Mercury as Hg	mg/L	0.0014	< 0.001	< 0.001
42	Total Arsenic as As	mg/L	< 0.01	< 0.01	< 0.01
43	Surfactants as MBAS	mg/L	2.14	1.6	1.1
44	Organo Chlorine Pesticide	mg/L	< 0.0001	< 0.0001	< 0.0001
45	PAH	mg/L	< 0.001	< 0.001	< 0.001
46	PCB	mg/L	< 0.0001	< 0.0001	< 0.0001
47	Total Coliform	MPN/100 ml	>1600	920	>1600
48	Fecal Coliform	MPN/100 ml	350	170	70
49	Bio-assay Test	%	No survival of fish after 96 hours in 100 % effluent	80 % survival of fish after 96 hours in 100 % effluent	100 % survival of fish after 96 hours in 100 % effluent

Location-VTSW-4: Kharicut Canal, near Vinzole bridge, Vatva

Sr. No	Test Parameters	Unit of Measurement	Results		
			15.10.2016	17.10.2016	19.10.2016
1	pH	-	7.58	7.77	7.87
2	Cond	µS/cm	1903	2876	3138
3	Turbidity	N.T.U.	25.2	29.5	12.1
4	Colour	Hazen	375	3750	1500
5	TSS	mg/L	71	74	64
6	TDS	mg/L	1676	1534	1574
7	D.O.	mg/L	BDL	BDL	BDL
8	COD	mg/L	207	212	124
9	BOD	mg/L	73	92	58
10	NH ₃ -N	mg/L	18.5	20.5	22.6
11	T.Amm.	mg/L	37.148	41.16	45.381
12	Free NH ₃	mg/L	1.103	2.14	2.24

13	TKN	mg/L	27.0	28.3	28.9
14	NO ₂ -N	mg/L	BDL	BDL	BDL
15	NO ₃ -N	mg/L	0.64	0.46	0.104
16	T.Nitrogen	mg/L	27.64	28.76	29.004
17	O-PO ₄ -P	mg/L	1.86	1.74	1.52
18	T.Phos.	mg/L	3.27	3.22	3.41
19	T.Hardness	mg/L	380	375	385
20	Cl ⁻	mg/L	614	520	513
21	SO ₄ ⁻²	mg/L	286	359	337
22	SAR	-	8.95	9.17	9.09
23	B	mg/L	1.184	0.627	1.041
24	Cr ⁺⁶	mg/L	BDL	BDL	BDL
25	F ⁻	mg/L	0.96	0.81	0.33
26	S ⁻²	mg/L	1.18	1.17	0.55
27	CN ⁻	mg/L	BDL	0.056	0.077
28	Phenols	mg/L	0.11	0.32	0.22
29	Res.CL ₂	mg/L	BDL	BDL	BDL
30	O&G	mg/L	0.45	8.15	3.46
31	Chromium (Cr)	mg/L	BDL	BDL	BDL
32	Manganese (Mn)	mg/L	BDL	BDL	BDL
33	Iron (Fe)	mg/L	BDL	BDL	BDL
34	Nickel (Ni)	mg/L	BDL	BDL	BDL
35	Copper (Cu)	mg/L	0.073	0.098	0.075
36	Zinc (Zn)	mg/L	BDL	BDL	BDL
37	Cadmium (Cd)	mg/L	BDL	BDL	BDL
38	Lead (Pb)	mg/L	BDL	BDL	BDL
39	Vanadium as V	mg/L	0.057	0.1	0.19
40	Selenium as Se	mg/L	< 0.01	< 0.01	< 0.01
41	Mercury as Hg	mg/L	< 0.001	< 0.001	< 0.001
42	Total Arsenic as As	mg/L	< 0.01	< 0.01	< 0.01
43	Surfactants as MBAS	mg/L	2.64	1.5	2.4
44	Organo Chlorine Pesticide	mg/L	< 0.0001	< 0.0001	< 0.0001
45	PAH	mg/L	< 0.001	< 0.001	< 0.001
46	PCB	mg/L	< 0.0001	< 0.0001	< 0.0001
47	Total Coliform	MPN/100 ml	920	>1600	>1600
48	Fecal Coliform	MPN/100 ml	350	70	43
49	Bio-assay Test	%	No survival of fish after 96 hours in 100 % effluent	60 % survival of fish after 96 hours in 100 % effluent	100 % survival of fish after 96 hours in 100 % effluent

Location-VTSW-5: Vinzole lake, Vinzole

Sr. No	Test Parameters	Unit of Measurement	Results		
			15.10.2016	17.10.2016	19.10.2016
1	pH	-	8.58	8.29	8.71
2	Cond	μS/cm	570	553	531
3	Turbidity	N.T.U.	11.9	13.9	12.1

4	Colour	Hazen	40	25	75
5	TSS	mg/L	26	31	28
6	TDS	mg/L	460	478	497
7	D.O.	mg/L	15.3	13.7	14.5
8	COD	mg/L	35	19	25
9	BOD	mg/L	6.4	6.7	6.8
10	NH ₃ -N	mg/L	0.137	0.101	0.53
11	T. Ammonia	mg/L	0.275	0.203	1.064
12	Free NH ₃	mg/L	0.066	0.028	0.326
13	TKN	mg/L	0.272	0.41	1.1
14	NO ₂ -N	mg/L	BDL	BDL	BDL
15	NO ₃ -N	mg/L	0.07	0.15	0.286
16	T. Nitrogen	mg/L	0.342	0.56	1.386
17	O-PO ₄ -P	mg/L	BDL	0.03	0.02
18	T. Phosphorus.	mg/L	0.07	0.11	0.14
19	T. Hardness	mg/L	148	144	156
20	Cl ⁻	mg/L	143	139	144
21	SO ₄ ⁻²	mg/L	154	147	150
22	SAR	-	3.94	3.85	3.62
23	B	mg/L	0.455	0.455	0.832
24	Cr ⁺⁶	mg/L	BDL	0.014	BDL
25	F ⁻	mg/L	0.40	0.41	0.39
26	S ⁻²	mg/L	BDL	0.09	0.21
27	CN ⁻	mg/L	0.063	0.049	0.056
28	Phenols	mg/L	BDL	BDL	BDL
29	Res.CL ₂	mg/L	BDL	BDL	BDL
30	O&G	mg/L	0.83	3.06	2.39
31	Chromium (Cr)	mg/L	BDL	BDL	BDL
32	Manganese (Mn)	mg/L	BDL	0.102	BDL
33	Iron (Fe)	mg/L	BDL	BDL	BDL
34	Nickel (Ni)	mg/L	BDL	BDL	BDL
35	Copper (Cu)	mg/L	BDL	0.036	0.022
36	Zinc (Zn)	mg/L	BDL	0.169	BDL
37	Cadmium (Cd)	mg/L	BDL	BDL	BDL
38	Lead (Pb)	mg/L	BDL	BDL	BDL
39	Vanadium as V	mg/L	0.122	0.149	0.112
40	Selenium as Se	mg/L	< 0.01	< 0.01	< 0.01
41	Mercury as Hg	mg/L	< 0.001	< 0.001	< 0.001
42	Total Arsenic as As	mg/L	< 0.01	< 0.01	< 0.01
43	Surfactants as MBAS	mg/L	0.327	0.28	0.52
44	Organo Chlorine Pesticide	mg/L	< 0.0001	< 0.0001	< 0.0001
45	PAH	mg/L	< 0.001	< 0.001	< 0.001
46	PCB	mg/L	< 0.0001	< 0.0001	< 0.0001
47	Total Coliform	MPN/100 ml	920	1600	920
48	Fecal Coliform	MPN/100 ml	120	63	240
49	Bio-assay Test	%	100 % survival of fish after 96 hours in 100 % effluent	100 % survival of fish after 96 hours in 100 % effluent	100 % survival of fish after 96 hours in 100 % effluent

RESULTS OF GROUND WATER QUALITY MONITORING-CPA-VATVA

Location- VTGW-1: Bore well, Centre of excellence, VIA, Vatva

Sr. No.	Test Parameters	Unit of Measurement	Results		
			14.10.2016	17.10.2016	19.10.2016
1	pH	-	7.02	7.09	7.25
2	Cond	$\mu\text{S}/\text{cm}$	2137	1524	2507
3	Turbidity	N.T.U.	0.7	0.8	1.4
4	Colour	Hazen	BDL	10	BDL
5	TSS	mg/L	1.4	5.0	5.0
6	TDS	mg/L	1140	1314	1125
7	COD	mg/L	1.96	1.90	2.40
8	BOD	mg/L	BDL	BDL	BDL
9	NH ₃ -N	mg/L	BDL	BDL	BDL
10	T. Ammonia	mg/L	BDL	BDL	BDL
11	Free NH ₃	mg/L	BDL	BDL	BDL
12	TKN	mg/L	0.136	BDL	BDL
13	NO ₂ -N	mg/L	BDL	BDL	BDL
14	NO ₃ -N	mg/L	27.68	26.87	29.2
15	T. Nitrogen	mg/L	27.816	26.87	29.2
16	O-PO ₄ -P	mg/L	0.06	0.05	0.05
17	T. Phosphorus	mg/L	0.10	0.15	0.16
18	T. Hardness	mg/L	243	246	250
19	Cl ⁻	mg/L	457	488	406
20	SO ₄ ⁻²	mg/L	195	172	180
21	SAR		10.05	10.07	10.1
22	B	mg/L	1.058	0.756	0.816
23	Cr ⁺⁶	mg/L	BDL	BDL	BDL
24	F ⁻	mg/L	0.43	0.37	0.38
25	S ⁻²	mg/L	0.26	BDL	BDL
26	CN ⁻	mg/L	0.049	BDL	BDL
27	Phenols	mg/L	0.023	0.12	BDL
28	Res.CL ₂	mg/L	BDL	BDL	BDL
29	Chromium (Cr)	mg/L	BDL	BDL	BDL
30	Manganese (Mn)	mg/L	0.049	0.045	BDL
31	Iron (Fe)	mg/L	BDL	BDL	BDL
32	Nickel (Ni)	mg/L	BDL	BDL	BDL
33	Copper (Cu)	mg/L	BDL	BDL	BDL
34	Zinc (Zn)	mg/L	0.914	0.195	0.444
35	Cadmium (Cd)	mg/L	BDL	BDL	BDL
36	Lead (Pb)	mg/L	0.083	0.273	BDL
37	Vanadium as V	mg/L	< 0.01	< 0.01	< 0.01
38	Selenium as Se	mg/L	< 0.01	< 0.01	< 0.01

39	Mercury as Hg	mg/L	< 0.001	< 0.001	< 0.001
40	Total Arsenic as As	mg/L	< 0.01	< 0.01	< 0.01
41	Surfactants as MBAS	mg/L	0.09	0.08	0.11
42	Organo Chlorine Pesticide	mg/L	< 0.0001	< 0.0001	< 0.0001
43	PAH	mg/L	< 0.001	< 0.001	< 0.001
44	PCB	mg/L	< 0.0001	< 0.0001	< 0.0001
45	Total Coliform	MPN/100 ml	4.5	240	84
46	Fecal Coliform	MPN/100 ml	< 1.8	120	33

Location- VTGW-2: Bore well, Hemline Textile Exports Pvt Ltd., Shahwadi, Narol

Sr. No.	Test Parameters	Unit of Measurement	Results		
			14.10.2016	17.10.2016	19.10.2016
1	pH	-	8.29	7.44	7.68
2	Cond	µS/cm	1893	1361	2751
3	Turbidity	N.T.U.	0.1	1.0	0.3
4	Colour	Hazen	BDL	BDL	BDL
5	TSS	mg/L	9.4	6.0	88
6	TDS	mg/L	1301	1208	1246
7	COD	mg/L	4.68	4.74	6.0
8	BOD	mg/L	BDL	BDL	0.7
9	NH ₃ -N	mg/L	BDL	BDL	BDL
10	T. Ammonia	mg/L	BDL	BDL	BDL
11	Free NH ₃	mg/L	BDL	BDL	BDL
12	TKN	mg/L	0.136	0.27	BDL
13	NO ₂ -N	mg/L	BDL	BDL	BDL
14	NO ₃ -N	mg/L	5.90	5.67	6.66
15	T. Nitrogen	mg/L	6.036	5.94	6.66
16	O-PO ₄ -P	mg/L	0.05	0.06	0.05
17	T. Phosphorus	mg/L	0.18	0.16	0.17
18	T. Hardness	mg/L	286	290	288
19	Cl ⁻	mg/L	697	602	582
20	SO ₄ ⁻²	mg/L	248	239	246
21	SAR		8.54	8.41	8.46
22	B	mg/L	0.750	0.683	0.620
23	Cr ⁺⁶	mg/L	BDL	BDL	BDL
24	F ⁻	mg/L	0.35	0.36	0.41
25	S ⁻²	mg/L	0.16	BDL	BDL
26	CN ⁻	mg/L	0.035	BDL	BDL
27	Phenols	mg/L	BDL	0.10	BDL
28	Res.Cl ₂	mg/L	BDL	BDL	BDL
29	Chromium (Cr)	mg/L	BDL	BDL	BDL
30	Manganese (Mn)	mg/L	0.044	0.027	BDL

31	Iron (Fe)	mg/L	BDL	BDL	BDL
32	Nickel (Ni)	mg/L	BDL	BDL	BDL
33	Copper (Cu)	mg/L	BDL	BDL	BDL
34	Zinc (Zn)	mg/L	0.251	0.119	BDL
35	Cadmium (Cd)	mg/L	BDL	BDL	BDL
36	Lead (Pb)	mg/L	0.046	0.061	BDL
37	Vanadium as V	mg/L	< 0.01	< 0.01	< 0.01
38	Selenium as Se	mg/L	< 0.01	< 0.01	< 0.01
39	Mercury as Hg	mg/L	< 0.001	< 0.001	< 0.001
40	Total Arsenic as As	mg/L	< 0.01	< 0.01	< 0.01
41	Surfactants as MBAS	mg/L	< 0.05	< 0.05	< 0.05
42	Organo Chlorine Pesticide	mg/L	< 0.0001	< 0.0001	< 0.0001
43	PAH	mg/L	< 0.001	< 0.001	< 0.001
44	PCB	mg/L	< 0.0001	< 0.0001	< 0.0001
45	Total Coliform	MPN/100 ml	40	< 1.8	1600
46	Fecal Coliform	MPN/100 ml	27	< 1.8	540

Location- VTGW-3: Bore well, Swan Energy Ltd., Narol

Sr. No.	Test Parameters	Unit of Measurement	Results		
			14.10.2016	17.10.2016	19.10.2016
1	pH	-	6.75	7.07	7.37
2	Cond	µS/cm	1859	1197	2403
3	Turbidity	N.T.U.	0.2	0.3	0.2
4	Colour	Hazen	BDL	BDL	BDL
5	TSS	mg/L	4.0	3.0	7.0
6	TDS	mg/L	1092	1036	1008
7	COD	mg/L	3.12	2.0	3.6
8	BOD	mg/L	BDL	BDL	BDL
9	NH ₃ -N	mg/L	0.16	BDL	BDL
10	T. Ammonia	mg/L	0.321	BDL	BDL
11	Free NH ₃	mg/L	0.0014	BDL	BDL
12	TKN	mg/L	0.273	BDL	BDL
13	NO ₂ -N	mg/L	BDL	BDL	BDL
14	NO ₃ -N	mg/L	15.43	15.1	14.43
15	T. Nitrogen	mg/L	15.703	15.1	14.43
16	O-PO ₄ -P	mg/L	0.05	0.04	0.05
17	T. Phosphorus	mg/L	0.16	0.14	0.15
18	T. Hardness	mg/L	247	254	248
19	Cl ⁻	mg/L	406	415	404
20	SO ₄ ⁻²	mg/L	200	202	200
21	SAR		9.19	9.09	9.26
22	B	mg/L	0.614	0.647	0.746

23	Cr ⁺⁶	mg/L	BDL	0.0096	0.0081
24	F ⁻	mg/L	0.48	0.46	0.44
25	S ⁻²	mg/L	0.17	BDL	BDL
26	CN ⁻	mg/L	BDL	BDL	0.042
27	Phenols	mg/L	0.056	0.14	BDL
28	Res.CL ₂	mg/L	BDL	BDL	BDL
29	Chromium (Cr)	mg/L	BDL	BDL	BDL
30	Manganese (Mn)	mg/L	0.024	BDL	BDL
31	Iron (Fe)	mg/L	BDL	BDL	BDL
32	Nickel (Ni)	mg/L	BDL	BDL	BDL
33	Copper (Cu)	mg/L	BDL	BDL	BDL
34	Zinc (Zn)	mg/L	0.673	0.764	BDL
35	Cadmium (Cd)	mg/L	BDL	BDL	BDL
36	Lead (Pb)	mg/L	0.028	0.058	BDL
37	Vanadium as V	mg/L	< 0.01	< 0.01	< 0.01
38	Selenium as Se	mg/L	< 0.01	< 0.01	< 0.01
39	Mercury as Hg	mg/L	< 0.001	< 0.001	< 0.001
40	Total Arsenic as As	mg/L	< 0.01	< 0.01	< 0.01
41	Surfactants as MBAS	mg/L	< 0.05	< 0.05	< 0.05
42	Organo Chlorine Pesticide	mg/L	< 0.0001	< 0.0001	< 0.0001
43	PAH	mg/L	< 0.001	< 0.001	< 0.001
44	PCB	mg/L	< 0.0001	< 0.0001	< 0.0001
45	Total Coliform	MPN/100 ml	> 1600	1600	110
46	Fecal Coliform	MPN/100 ml	540	240	70

Location-VTGW-4: Bore well, Premises of CETP Vatva (GESCSL), GIDC, Vatva

Sr. No.	Test Parameters	Unit of Measurement	Results		
			15.10.2016	17.10.2016	19.10.2016
1	pH	-	7.30	7.17	7.47
2	Cond	µS/cm	1584	1666	3255
3	Turbidity	N.T.U.	0.2	0.6	0.6
4	Colour	Hazen	BDL	20	20
5	TSS	mg/L	15	5.0	6.0
6	TDS	mg/L	1280	1412	1467
7	COD	mg/L	12.50	11.0	12.0
8	BOD	mg/L	BDL	BDL	0.8
9	NH ₃ -N	mg/L	0.222	BDL	0.24
10	T. Ammonia	mg/L	0.446	BDL	0.482
11	Free NH ₃	mg/L	0.007	BDL	0.011
12	TKN	mg/L	0.272	BDL	0.27
13	NO ₂ -N	mg/L	BDL	BDL	BDL
14	NO ₃ -N	mg/L	31.26	31.0	31.31
15	T. Nitrogen	mg/L	31.532	31	31.58
16	O-PO ₄ -P	mg/L	BDL	0.02	0.03

17	T. Phosphorus	mg/L	0.17	0.12	0.12
18	T. Hardness	mg/L	244	246	246
19	Cl ⁻	mg/L	629	613	623
20	SO ₄ ⁻²	mg/L	161	179	174
21	SAR		12.43	12.49	12.4
22	B	mg/L	1.346	1.359	1.360
23	Cr ⁺⁶	mg/L	0.0081	0.0034	0.0065
24	F ⁻	mg/L	0.94	0.92	0.85
25	S ⁻²	mg/L	0.17	1.32	BDL
26	CN ⁻	mg/L	BDL	0.014	BDL
27	Phenols	mg/L	0.024	0.14	BDL
28	Res.CL ₂	mg/L	BDL	BDL	BDL
29	Chromium (Cr)	mg/L	BDL	BDL	BDL
30	Manganese (Mn)	mg/L	BDL	BDL	BDL
31	Iron (Fe)	mg/L	BDL	BDL	BDL
32	Nickel (Ni)	mg/L	BDL	BDL	BDL
33	Copper (Cu)	mg/L	BDL	BDL	BDL
34	Zinc (Zn)	mg/L	0.912	0.910	BDL
35	Cadmium (Cd)	mg/L	BDL	BDL	BDL
36	Lead (Pb)	mg/L	BDL	0.084	BDL
37	Vanadium as V	mg/L	< 0.01	< 0.01	< 0.01
38	Selenium as Se	mg/L	< 0.01	< 0.01	< 0.01
39	Mercury as Hg	mg/L	< 0.001	< 0.001	< 0.001
40	Total Arsenic as As	mg/L	< 0.01	< 0.01	< 0.01
41	Surfactants as MBAS	mg/L	0.07	0.11	0.07
42	Organo Chlorine Pesticide	mg/L	< 0.0001	< 0.0001	< 0.0001
43	PAH	mg/L	< 0.001	< 0.001	< 0.001
44	PCB	mg/L	< 0.0001	< 0.0001	< 0.0001
45	Total Coliform	MPN/100 ml	26	70	350
46	Fecal Coliform	MPN/100 ml	13	25	120

Annexure-IV

ANALYSIS RESULTS OF CETP, VATVA- INLET QUALITY

Location- Inlet to CETP, Vatva, GIDC, Vatva

Sr. No.	Test Parameters	Unit of Measurement	Results	
			15.10.2016	19.10.2016
1	pH		7.33	7.49
2	Cond	$\mu\text{S}/\text{cm}$	12266	27754
3	TSS	mg/l	361	381
4	TDS	mg/l	11693	15838
5	COD	mg/l	1836	989
6	BOD	mg/l	606	614
7	NH ₃ -N	mg/l	46.2	47.4
8	TKN	mg/l	111.0	118
9	Phenols	mg/l	5.08	5.0

300
122
400

WATER & WASTEWATER ANALYSIS BDL VALUES (Minimum Detection Limit)

Sr. No.	Test Parameters	Unit of Measurement	BDL
1	pH	-	0.2
2	Cond	$\mu\text{S}/\text{cm}$	0.5
3	Turbidity	N.T.U.	0.5
4	Colour	Hazen	5.0
5	TSS	mg/L	10
6	TDS	mg/L	10
7	D.O.	mg/L	0.5
8	COD	mg/L	2.0
9	BOD	mg/L	0.5
10	NH ₃ -N	mg/L	0.04
11	T. Ammonia	mg/L	0.04
12	Free NH ₃	mg/L	--
13	TKN	mg/L	0.5
14	NO ₂ -N	mg/L	0.01
15	NO ₃ -N	mg/L	0.01
16	T. Nitrogen	mg/L	--
17	O-PO ₄ -P	mg/L	0.005
18	T. Phos.	mg/L	0.005
19	T. Hardness	mg/L	1.0
20	Cl ⁻	mg/L	1.0
21	SO ₄ ⁻²	mg/L	1.0
22	SAR	-	--
23	B	mg/L	0.05
24	Cr ⁺⁶	mg/L	0.005
25	F ⁻	mg/L	0.02
26	S ⁻²	mg/L	0.10
27	CN ⁻	mg/L	0.05
28	Phenols	mg/L	0.001
29	Res.CL ₂	mg/L	0.04
30	O&G	mg/L	10
31	Chromium (Cr)	mg/L	0.02 (20 ppb)
32	Manganese (Mn)	mg/L	0.02 (20 ppb)
33	Iron (Fe)	mg/L	0.02 (20 ppb)
34	Nickel (Ni)	mg/L	0.02 (20 ppb)
35	Copper (Cu)	mg/L	0.02 (20 ppb)
36	Zinc (Zn)	mg/L	0.02 (20 ppb)
37	Cadmium (Cd)	mg/L	0.02 (20 ppb)
38	Lead (Pb)	mg/L	0.02 (20 ppb)
39	Vanadium as V	mg/L	<0.01
40	Selenium as Se	mg/L	<0.01
41	Mercury as Hg	mg/L	<0.001
42	Total Arsenic as As	mg/L	<0.01
43	Surfactants as MBAS	mg/L	<0.05
44	Organo Chlorine Pesticide	mg/L	<0.0001
45	PAH	mg/L	<0.001
46	PCB	mg/L	<0.0001
47	Total Coliform	MPN/100 ml	<1.8
48	Fecal Coliform	MPN/100 ml	<1.8

AMBIENT AIR QUALITY MONITORING–BDL VALUES
MINIMUM DETECTION LIMIT

SR. NO.	PARAMETER	UNIT	MINIMUM DETECTION LIMIT
1	Particulate Matter (PM ₁₀)	µg/m ³	10
2	Particulate Matter (PM _{2.5})	µg/m ³	10
3	Lead as Pb	µg/m ³	0.5
4	Benzo (a) Pyrene (BaP)- particulate phase only	ng/m ³	0.5
5	Arsenic as As	ng/m ³	2.0
6	Nickel as Ni	ng/m ³	10
7	Carbon Monoxide as CO	mg/m ³	0.1
8	Benzene as C ₆ H ₆	µg/m ³	2.0
9	Ammonia (NH ₃)	µg/m ³	10
10	Sulphur Dioxide (SO ₂)	µg/m ³	10
11	Oxides of Nitrogen (NO ₂)	µg/m ³	10
12	Ozone (O ₃)	µg/m ³	10

Updated Environmental data in respect of 'Vatva' Critically Polluted Area**(1&2) Digitized map / Toposheet through BISAG & details of Potential Impact Zones**

✓ Please refer Annexure - C

(3) Details of total area falling under the critically polluted industrial cluster

1. Total area of CPA, Vatva : 615 ha
2. Total area of CPA, Narol : 2314 ha

(4) Details of R17 & R54 red categories of industries operating in Vatva.

Numbers of R17 & R54 Industries in CPA, Vatva (Source:- GPCB Xgn)

17 categories of highly polluting unit	54 Red categories of industries
Number of units 21	Number of unit 13

(5) Wind Rose Diagram✓ Please refer Annexure-**A****(6) Updated Compliance status of large scale, medium/small scale industries in the area**

Scale of the Industry	Air	Surface Water	Land (Ground Water)
Large	Adequate	Adequate	Adequate
Small / Medium	Inadequate	Adequate	Adequate
Common Facilities	Adequate	Inadequate	Adequate

(7) To facilitate the evaluation of health component of CEPI, the previous 5 years records of 3-5 major hospitals of the area, following is also desired.

- For Air environment, total no. of cases related to Asthma, Bronchitis, Cancer, Acute respiratory infections etc.
- For surface water/ground water Environment, case related to gastroenteritis, Diarrhea, renal(kidney)malfuction, Cancer etc

✓ Please refer Annexure - **B**

ANNEXURE - A

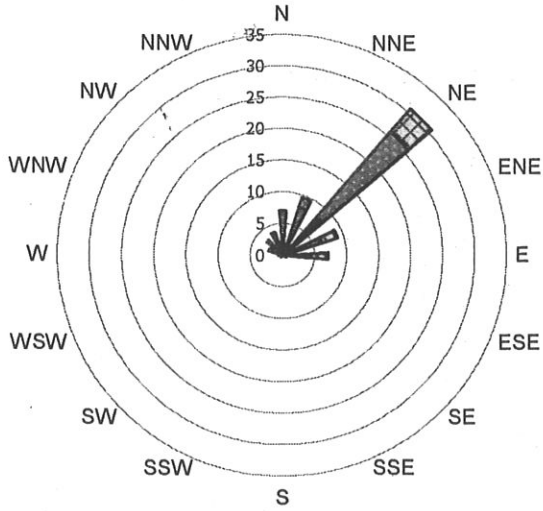
FOR : AHMEDABAD

WINDROSE

PERIOD :- 2005-2014

08:30 Hrs.(IST)

JANUARY

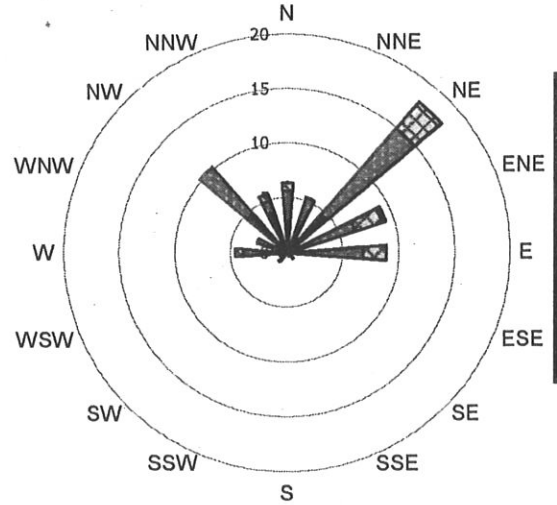


DATA
310

CALM
25%

N/A
DATA
0

FEBRUARY

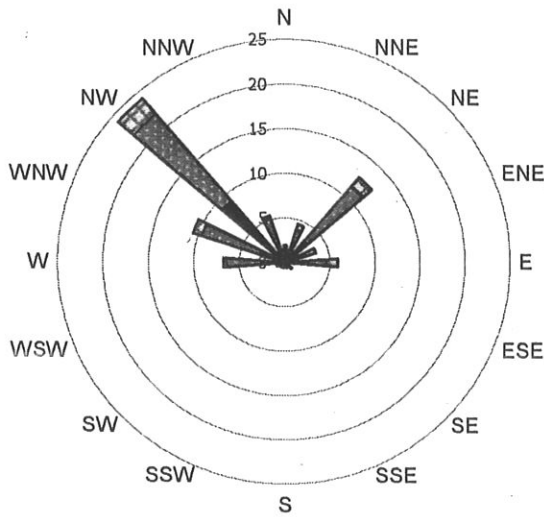


DATA
282

CALM
26%

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DATA
0

MARCH

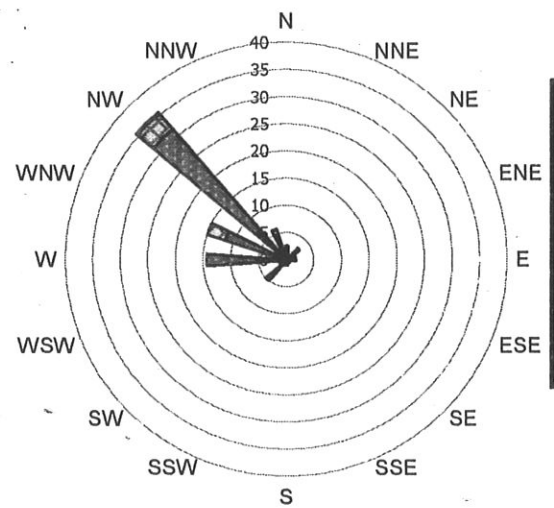


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310

CALM
20%

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DATA
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APRIL

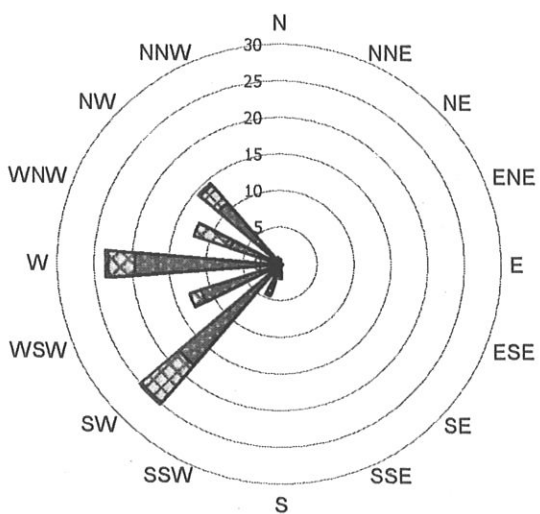


DATA
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CALM
09%

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DATA
0

MAY

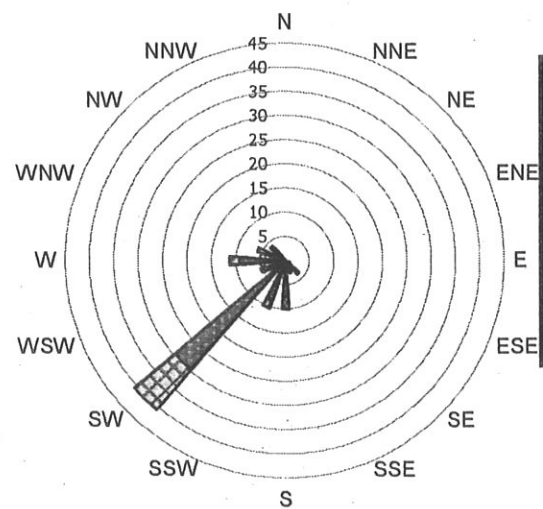


DATA
310

CALM
03%

N/A
DATA
0

JUNE



DATA
300

CALM
05%

N/A
DATA
0

■ > 19 kmph

▨ 11-19 kmph

■ 06-10 kmph

■ 01-05 kmph

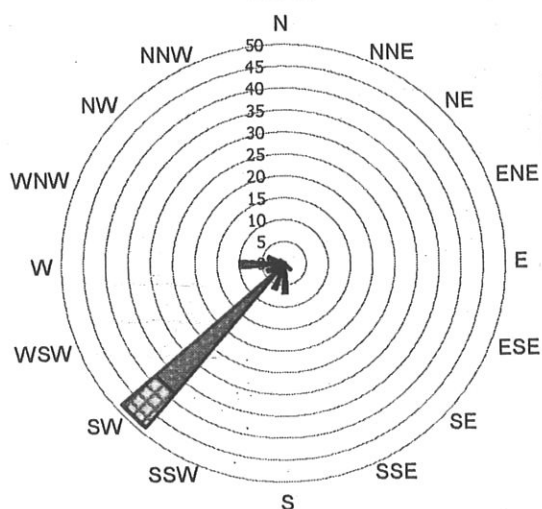
FOR AHMEDABAD

WINDROSE

PERIOD :- 2005--2014

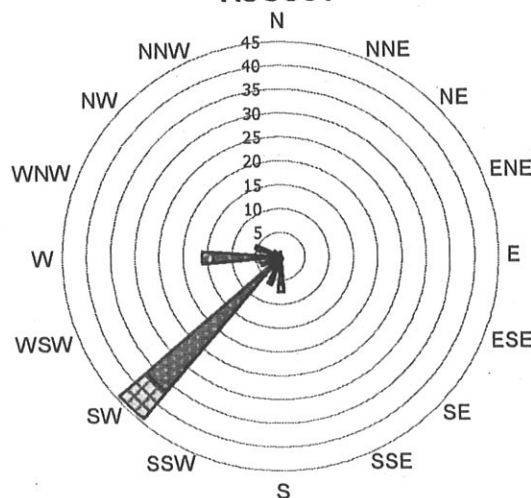
08:30 Hrs.(IST)

JULY



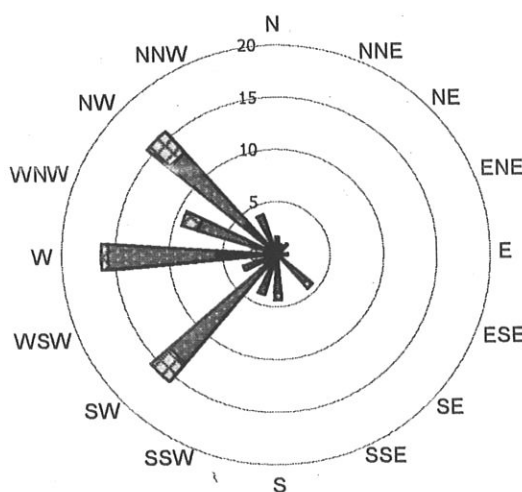
DATA
310
CALM
15%
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DATA
0

AUGUST



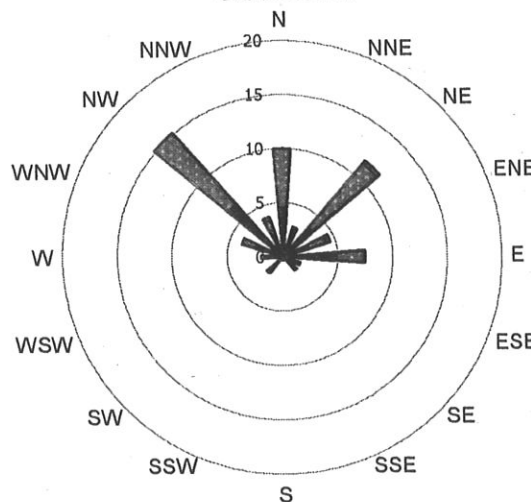
DATA
310
CALM
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N/A
DATA
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SEPTEMBER



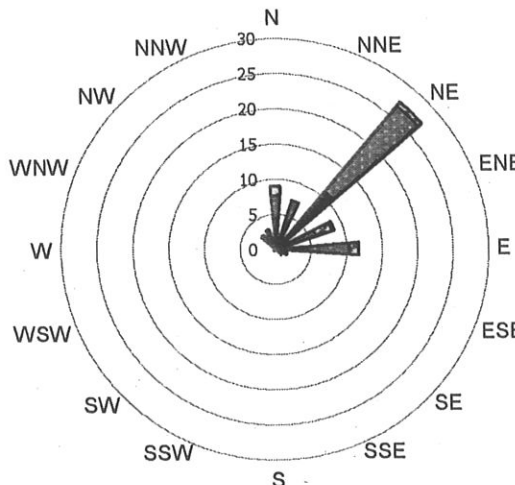
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CALM
18%
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DATA
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OCTOBER



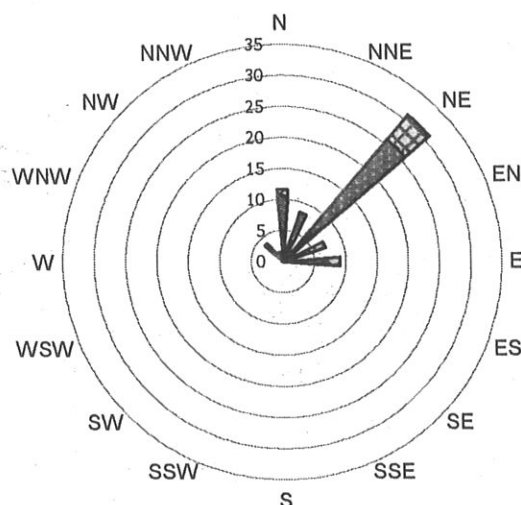
DATA
310
CALM
33%
N/A
DATA
0

NOVEMBER



DATA
300
CALM
27%
N/A
DATA
0

DECEMBER



DATA
310
CALM
27%
N/A
DATA
0

■ > 19 kmph

■ 11--19 kmph

■ 06--10 kmph

■ 01--05 kmph

FOR : AHMEDABAD PERIOD :- 2005--2014

08:30 Hrs.(IST)

JANUARY					
	1--5	6--10	11--19	>19	Tot
NNE	3.5	4.5	1.6	0.0	9.7
NE	8.1	17.7	4.8	0.0	30.6
ENE	1.3	5.2	2.3	0.3	9.0
E	1.6	2.9	2.6	0.0	7.1
ESE	0.3	0.0	0.3	0.0	0.6
SE	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.3	0.0	0.0	0.3
WSW	0.0	0.0	0.0	0.0	0.0
W	0.3	0.3	0.0	0.0	0.6
WNW	1.3	1.0	0.0	0.0	2.3
NW	1.6	1.6	0.0	0.0	3.2
NNW	1.9	1.9	0.0	0.0	3.9
N	2.9	4.2	0.0	0.0	7.1
VRB	0.3	0.0	0.0	0.0	0.3
Tot	23.2	39.7	11.6	0.3	74.8
CM	25.2				100.0

FEBRUARY					
	1--5	6--10	11--19	>19	Tot
NNE	2.5	2.8	0.0	0.0	5.3
NE	4.6	10.3	3.2	0.0	18.1
ENE	1.8	4.6	2.5	0.4	9.2
E	2.5	4.3	2.1	0.0	8.9
ESE	0.0	0.0	0.0	0.0	0.0
SE	0.4	0.4	0.0	0.0	0.7
SSE	0.0	0.4	0.0	0.0	0.4
S	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0
SW	0.4	0.7	0.0	0.0	1.1
WSW	0.4	0.4	0.0	0.0	0.7
W	2.5	1.4	0.7	0.0	4.6
WNW	1.1	1.8	0.0	0.0	2.8
NW	4.6	5.7	0.0	0.0	10.3
NNW	3.9	1.1	0.7	0.0	5.7
N	2.8	2.8	0.7	0.0	6.4
VRB	0.0	0.0	0.0	0.0	0.0
Tot	27.3	36.5	9.9	0.4	74.1
CM	25.9				100.0

MARCH					
	1--5	6--10	11--19	>19	Tot
NNE	1.6	2.3	0.6	0.0	4.5
NE	3.2	8.1	1.3	0.0	12.6
ENE	0.3	1.6	1.6	0.0	3.5
E	1.9	2.6	1.3	0.0	5.8
ESE	0.0	0.3	0.0	0.0	0.3
SE	0.6	0.3	0.0	0.0	1.0
SSE	0.6	0.0	0.0	0.0	0.6
S	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.3	0.3	0.0	0.6
SW	0.3	0.0	0.3	0.0	0.6
WSW	0.3	0.3	0.3	0.0	1.0
W	2.6	3.9	0.3	0.0	6.8
WNW	2.9	6.8	1.0	0.0	10.6
NW	9.0	12.9	2.3	0.0	24.2
NNW	1.9	3.2	0.3	0.0	5.5
N	0.6	1.3	0.0	0.0	1.9
VRB	0.0	0.0	0.0	0.0	0.0
Tot	26.1	43.9	9.7	0.0	79.7
CM	20.3				100.0

JULY					
	1--5	6--10	11--19	>19	Tot
NNE	0.0	0.0	0.0	0.0	0.0
NE	0.3	0.0	0.0	0.0	0.3
ENE	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0
ESE	0.3	0.0	0.0	0.0	0.3
SE	0.0	1.6	0.3	0.0	1.9
SSE	0.3	0.6	0.0	0.0	1.0
S	1.3	4.5	1.0	0.0	6.8
SSW	0.3	4.5	1.3	0.0	6.1
SW	4.8	33.5	10.0	0.3	48.7
WSW	0.6	3.2	0.3	0.0	4.2
W	2.3	7.1	0.6	0.0	10.0
WNW	0.3	2.6	1.0	0.0	3.9
NW	0.6	0.3	0.3	0.0	1.3
NNW	0.0	0.0	0.0	0.0	0.0
N	0.3	0.0	0.0	0.0	0.3
VRB	0.0	0.0	0.0	0.0	0.0
Tot	11.6	58.1	14.8	0.3	84.8
CM	15.2				100.0

AUGUST					
	1--5	6--10	11--19	>19	Tot
NNE	0.3	0.0	0.0	0.0	0.3
NE	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0
E	0.3	0.0	0.0	0.0	0.3
ESE	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.6	0.0	0.0	0.6
SSE	0.0	0.6	0.0	0.0	0.6
S	0.6	5.2	1.6	0.0	7.4
SSW	0.6	4.2	1.0	0.3	6.1
SW	3.5	33.2	7.4	0.0	44.2
WSW	1.3	2.6	0.3	0.0	4.2
W	5.8	8.1	2.3	0.0	16.1
WNW	0.6	4.5	0.3	0.0	5.5
NW	0.6	0.6	0.3	0.0	1.6
NNW	0.0	0.0	0.0	0.0	0.0
N	0.6	0.3	0.0	0.0	1.0
VRB	0.0	0.0	0.0	0.0	0.0
Tot	14.5	60.0	13.2	0.3	88.1
CM	11.9				100.0

SEPTEMBER					
	1--5	6--10	11--19	>19	Tot
NNE	0.7	0.0	0.0	0.3	1.0
NE	0.3	0.7	0.3	0.0	1.3
ENE	0.0	0.0	0.3	0.0	0.3
E	0.0	1.0	0.0	0.0	1.0
ESE	0.0	0.0	0.0	0.0	0.0
SE	1.0	2.7	0.7	0.0	4.3
SSE	0.0	0.0	0.0	0.0	0.0
S	1.0	2.7	0.7	0.0	4.3
SSW	0.3	2.7	1.0	0.0	4.0
SW	2.0	11.3	2.3	0.0	15.7
WSW	1.7	1.7	0.0	0.0	3.3
W	5.7	10.0	0.7	0.0	16.3
WNW	2.7	5.0	1.7	0.0	9.3
NW	4.0	9.0	2.7	0.0	15.7
NNW	1.0	3.0	0.0	0.0	4.0
N	0.3	1.3	0.0	0.0	1.7
VRB	0.0	0.0	0.0	0.0	0.0
Tot	20.7	51.0	10.3	0.3	82.3
CM	17.7				100.0

FOR : AHMEDABAD PERIOD :- 2005--2014

08:30 Hrs.(IST)

APRIL					
	1--5	6--10	11--19	>19	Tot
NNE	1.0	0.0	0.0	0.0	1.0
NE	1.7	1.3	0.0	0.0	3.0
ENE	0.3	0.7	0.3	0.3	1.7
E	1.0	0.3	0.3	0.0	1.7
ESE	0.0	0.3	0.0	0.0	0.3
SE	0.3	0.3	0.0	0.0	0.7
SSE	0.0	0.3	0.0	0.0	0.3
S	0.0	0.7	0.3	0.0	1.0
SSW	0.3	0.7	0.0	0.0	1.0
SW	1.0	3.7	0.3	0.0	5.0
WSW	1.0	0.3	0.0	0.0	1.3
W	3.0	11.3	0.0	0.0	14.3
WNW	2.7	9.0	3.3	0.0	15.0
NW	7.3	24.3	3.7	0.3	35.7
NNW	1.0	3.3	1.7	0.0	6.0
N	1.3	1.0	0.3	0.0	2.7
VRB	0.3	0.0	0.0	0.0	0.3
Tot	22.3	57.7	10.3	0.7	91.0
CM	9.0				100.0

MAY					
	1--5	6--10	11--19	>19	Tot
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.3	0.0	0.0	0.0	0.3
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.3	0.0	0.0	0.3
	0.0	1.0	0.6	0.3	1.9
	0.0	3.5	0.6	0.3	4.5
	1.0	17.1	6.8	0.3	25.2
	1.9	9.4	1.6	0.0	12.9
	1.3	18.4	3.5	0.3	23.5
	1.0	6.1	5.2	0.0	12.3
	1.6	9.4	3.2	0.3	14.5
	0.0	0.3	0.6	0.0	1.0
	0.0	0.6	0.0	0.0	0.6
	0.0	0.0	0.0	0.0	0.0
	7.1	66.1	22.3	1.6	97.1
	2.9				100.0

JUNE					
	1--5	6--10	11--19	>19	Tot
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.3	0.7	0.0	0.0	1.0
	0.0	2.7	0.7	0.3	3.7
	1.0	1.7	0.0	0.0	2.7
	1.0	6.3	2.7	0.0	10.0
	0.0	8.3	2.0	0.0	10.3
	1.3	28.3	11.0	0.0	40.7
	0.0	4.3	1.0	0.0	5.3
	0.7	8.7	2.0	0.0	11.3
	0.7	3.7	1.7	0.0	6.0
	1.3	2.0	0.3	0.3	4.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	6.3	66.7	21.3	0.7	95.0
	5.0				100.0

OCTOBER					
	1--5	6--10	11--19	>19	Tot
NNE	1.6	1.0	0.3	0.0	2.9
NE	3.5	7.7	0.3	0.0	11.6
ENE	1.3	2.9	0.3	0.0	4.5
E	4.8	2.6	0.0	0.0	7.4
ESE	1.3	0.0	0.3	0.0	1.6
SE	1.0	0.6	0.0	0.0	1.6
SSE	0.0	0.0	0.0	0.0	0.0
S	0.0	0.3	0.0	0.0	0.3
SSW	0.0	0.0	0.0	0.0	0.0
SW	0.6	1.3	0.0	0.0	1.9
WSW	0.0	0.3	0.0	0.0	0.3
W	1.0	1.0	0.0	0.0	1.9
WNW	2.6	1.3	0.0	0.0	3.9
NW	6.5	8.7	0.0	0.0	15.2
NNW	1.3	2.3	0.3	0.0	3.9
N	4.5	5.5	0.0	0.0	10.0
VRB	0.0	0.0	0.0	0.0	0.0
Tot	30.0	35.5	1.6	0.0	67.1
CM	32.9				100.0

NOVEMBER					
	1--5	6--10	11--19	>19	Tot
	4.0	3.3	0.0	0.0	7.3
	10.7	16.0	0.7	0.0	27.3
	3.0	3.0	2.3	0.3	8.7
	4.3	6.0	1.3	0.0	11.7
	0.7	1.0	0.0	0.0	1.7
	0.3	0.7	0.0	0.0	1.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.3	0.0	0.0	0.0	0.3
	0.3	0.0	0.0	0.0	0.3
	0.0	0.0	0.0	0.0	0.0
	0.3	0.0	0.0	0.0	0.3
	1.3	1.3	0.0	0.0	2.7
	1.0	2.0	0.0	0.0	3.0
	4.3	3.3	1.3	0.0	9.0
	0.0	0.0	0.0	0.0	0.0
	30.7	36.7	5.7	0.3	73.3
	26.7				100.0

DECEMBER					
	1--5	6--10	11--19	>19	Tot
	3.5	4.8	0.0	0.0	8.4
	6.5	19.4	5.2	0.0	31.0
	1.0	3.5	2.6	0.0	7.1
	1.3	5.2	2.6	0.0	9.0
	0.0	0.0	0.3	0.0	0.3
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0
	0.3	0.0	0.0	0.0	0.3
	1.6	1.9	0.3	0.0	3.9
	0.6	1.0	0.0	0.0	1.6
	4.8	5.8	1.0	0.0	11.6
	0.0	0.0	0.0	0.0	0.0
	19.7	41.6	11.9	0.0	73.2
	26.8				100.0

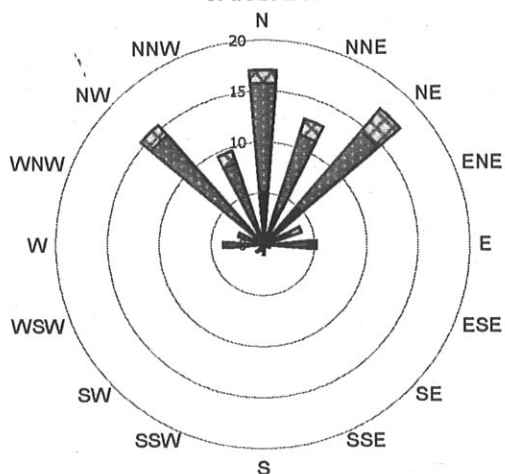
FOR : AHMEDABAD

WINDROSE

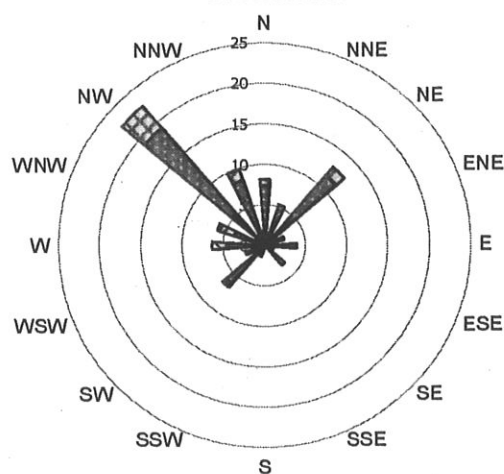
PERIOD :- 2005-2014

17:30 Hrs.(IST)

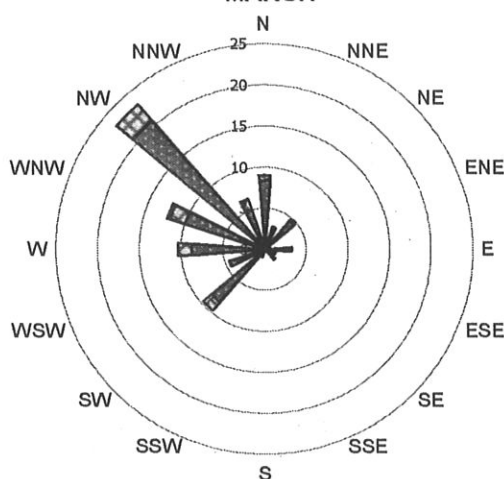
JANUARY

DATA
310CALM
08%N/A
DATA
0

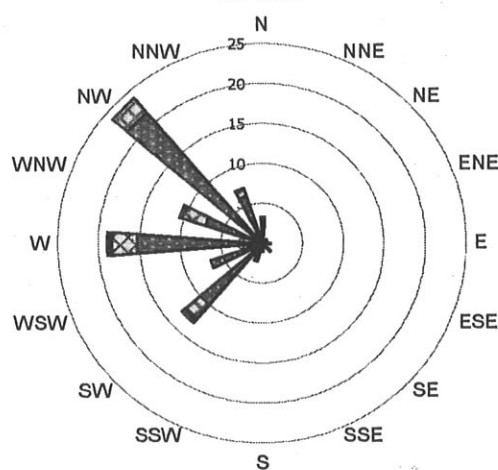
FEBRUARY

DATA
282CALM
07%N/A
DATA
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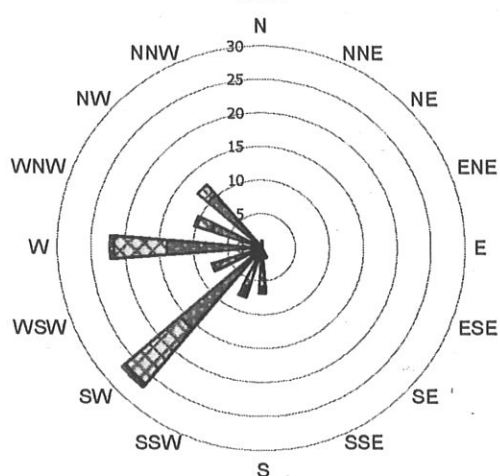
MARCH

DATA
310CALM
08%N/A
DATA
0

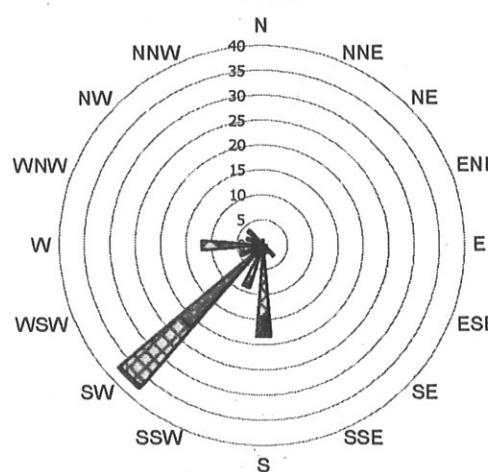
APRIL

DATA
300CALM
08%N/A
DATA
0

MAY

DATA
310CALM
03%N/A
DATA
0

JUNE

DATA
300CALM
04%N/A
DATA
0

■ > 19 kmph

▨ 11-19 kmph

▤ 06-10 kmph

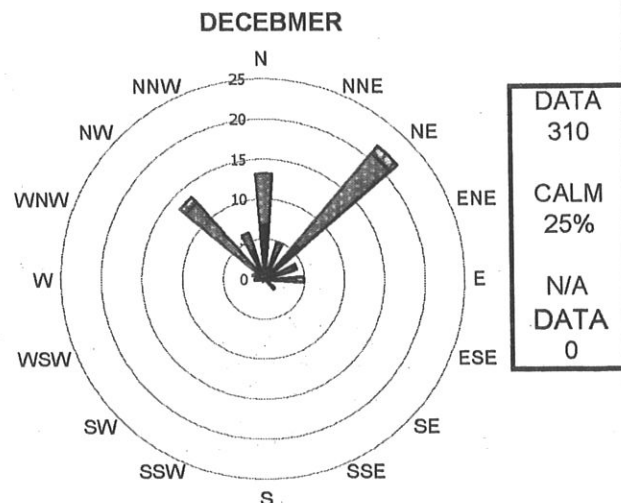
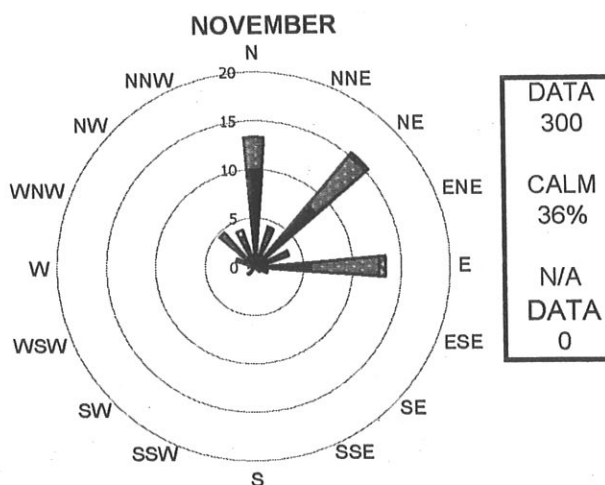
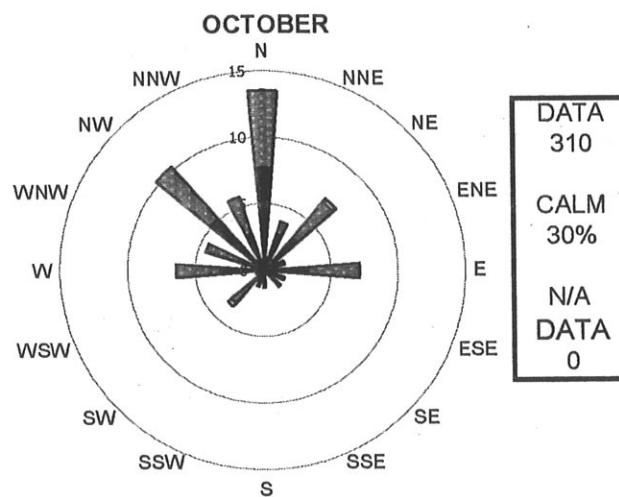
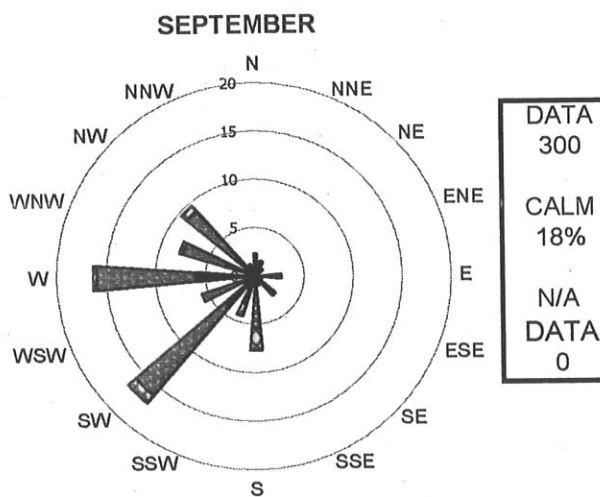
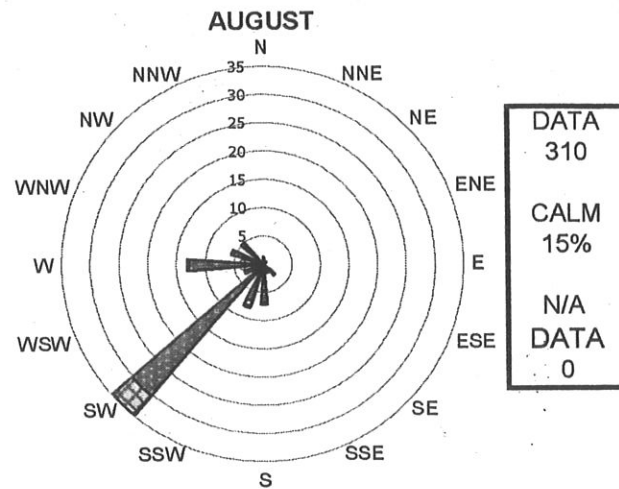
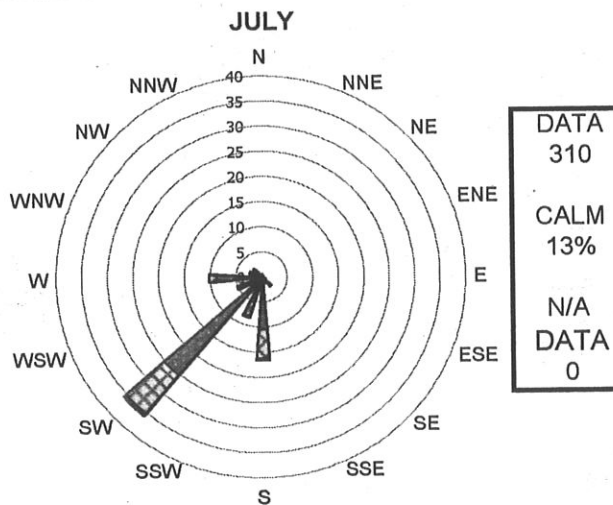
■ 01-05 kmph

FOR AHMEDABAD

WINDROSE

PERIOD :- 2005-2014

17:30 Hrs.(IST)



■ > 19 kmph

■ 11-19 kmph

■ 06-10 kmph

■ 01-05 kmph

FOR : AHMEDABAD PERIOD :- 2005--2014						17:30 Hrs.(IST)					
JANUARY						FEBRUARY					
	1-5	6-10	11-19	>19	Tot		1-5	6-10	11-19	>19	Tot
NNE	3.2	8.1	1.6	0.0	12.9		1.8	3.5	0.0	0.0	5.3
NE	4.8	9.7	2.9	0.0	17.4		4.3	7.1	1.4	0.0	12.8
ENE	0.3	1.9	1.6	0.0	3.9		0.4	1.8	0.4	0.0	2.5
E	1.0	3.5	0.3	0.3	5.2		0.7	3.2	0.0	0.0	3.9
ESE	0.0	0.6	0.0	0.0	0.6		0.4	0.7	0.0	0.0	1.1
SE	0.0	0.3	0.0	0.0	0.3		0.4	2.8	0.0	0.0	3.2
SSE	0.0	0.0	0.0	0.0	0.0		0.0	0.4	0.0	0.0	0.4
S	0.3	0.6	0.0	0.0	1.0		0.0	0.4	0.0	0.0	0.4
SSW	0.0	0.6	0.0	0.0	0.6		0.0	1.1	0.4	0.0	1.4
SW	0.3	0.3	0.3	0.0	1.0		1.4	4.6	0.4	0.4	6.7
WSW	0.3	0.0	0.0	0.0	0.3		0.4	1.8	0.4	0.0	2.5
W	1.3	2.3	0.3	0.0	3.9		1.1	3.5	1.8	0.0	6.4
WNW	0.3	2.3	0.0	0.0	2.6		0.7	3.2	1.8	0.4	6.0
NW	3.2	11.0	1.3	0.0	15.5		5.3	13.8	3.5	0.0	22.7
NNW	2.3	6.1	1.3	0.0	9.7		2.5	6.0	1.4	0.0	9.9
N	5.2	10.6	1.3	0.0	17.1		2.5	5.0	0.7	0.0	8.2
VRB	0.3	0.0	0.0	0.0	0.3		0.0	0.0	0.0	0.0	0.0
Tot	22.9	58.1	11.0	0.3	92.3		21.6	58.9	12.1	0.7	93.3
CM	7.7				100.0		6.7				100.0

MARCH					
	1-5	6-10	11-19	>19	Tot
NNE	1.3	1.3	0.3	0.0	2.9
NE	1.0	3.5	0.3	0.0	4.8
ENE	0.0	0.3	0.3	0.0	0.6
E	0.3	2.9	0.0	0.0	3.2
ESE	0.0	1.3	0.0	0.0	1.3
SE	1.0	0.6	0.0	0.0	1.6
SSE	0.0	0.0	0.0	0.0	0.0
S	0.0	0.3	0.0	0.0	0.3
SSW	0.3	0.0	0.3	0.3	1.0
SW	2.3	6.1	1.3	0.0	9.7
WSW	0.3	2.9	1.3	0.0	4.5
W	1.6	7.1	1.6	0.0	10.3
WNW	2.3	7.7	1.9	0.3	12.3
NW	1.9	18.7	2.6	0.0	23.2
NNW	0.6	4.5	1.3	0.0	6.5
N	2.3	6.1	0.6	0.0	9.0
VRB	0.3	0.0	0.0	0.0	0.3
Tot	15.5	63.5	11.9	0.6	91.6
CM	8.4				100.0

JULY					
	1-5	6-10	11-19	>19	Tot
NNE	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.3	0.0	0.0	0.3
ENE	0.0	0.0	0.0	0.0	0.0
E	0.3	0.0	0.0	0.0	0.3
ESE	0.6	0.0	0.0	0.0	0.6
SE	0.6	1.0	0.6	0.0	2.3
SSE	0.3	0.6	0.3	0.0	1.3
S	2.3	8.1	5.8	0.3	16.5
SSW	0.3	4.8	2.9	0.3	8.4
SW	2.9	22.3	10.0	0.6	35.8
WSW	0.0	3.5	1.6	0.0	5.2
W	1.6	7.1	1.6	0.0	10.3
WNW	0.0	1.9	0.6	0.0	2.6
NW	0.3	1.6	0.3	0.0	2.3
NNW	0.0	0.3	0.0	0.0	0.3
N	0.0	0.6	0.0	0.0	0.6
VRB	0.0	0.0	0.0	0.0	0.0
Tot	9.4	52.3	23.9	1.3	86.8
CM	13.2				100.0

AUGUST					
	1-5	6-10	11-19	>19	Tot
NNE	0.0	0.3	0.0	0.0	0.3
NE	0.0	0.6	0.0	0.0	0.6
ENE	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0
SE	1.0	1.3	0.3	0.0	2.6
SSE	0.0	1.0	0.6	0.0	1.6
S	1.6	3.2	1.9	0.3	7.1
SSW	1.0	5.8	1.0	0.3	8.1
SW	3.5	26.8	4.5	0.0	34.8
WSW	0.0	2.9	0.6	0.0	3.5
W	1.9	11.0	0.3	0.0	13.2
WNW	0.6	4.8	0.3	0.0	5.8
NW	1.0	3.5	0.6	0.0	5.2
NNW	0.3	0.3	0.0	0.0	0.6
N	0.0	0.6	0.6	0.0	1.3
VRB	0.0	0.0	0.0	0.0	0.0
Tot	11.0	62.3	11.0	0.6	84.8
CM	15.2				100.0

SEPTEMBER					
	1-5	6-10	11-19	>19	Tot
NNE	0.7	1.0	0.0	0.0	1.7
NE	0.0	1.0	0.0	0.0	1.0
ENE	0.0	0.0	0.0	0.0	0.0
E	1.3	1.3	0.0	0.0	2.7
ESE	0.3	0.3	0.0	0.0	0.7
SE	0.3	2.0	0.0	0.3	2.7
SSE	0.0	0.3	0.3	0.3	1.0
S	0.7	4.7	2.3	0.0	7.7
SSW	0.3	2.7	1.3	0.0	4.3
SW	4.0	12.0	1.0	0.0	17.0
WSW	1.3	4.3	0.0	0.0	5.7
W	6.0	10.0	0.3	0.0	16.3
WNW	3.0	4.7	0.3	0.0	8.0
NW	2.3	6.7	0.7	0.0	9.7
NNW	0.7	0.7	0.0	0.0	1.3
N	1.0	1.0	0.3	0.0	2.3
VRB	0.0	0.0	0.0	0.0	0.0
Tot	22.0	52.7	6.7	0.7	82.0
CM	18.0				100.0

FOR : AHMEDABAD PERIOD :- 2005--2014

17:30 Hrs.(IST)

APRIL					
	1-5	6-10	11-19	>19	Tot
NNE	0.0	0.0	0.3	0.0	0.3
NE	0.0	0.7	0.0	0.0	0.7
ENE	0.0	0.7	0.0	0.0	0.7
E	0.0	0.3	0.7	0.0	1.0
ESE	0.0	0.0	0.0	0.0	0.0
SE	0.7	0.7	0.0	0.0	1.3
SSE	0.3	0.0	0.0	0.0	0.3
S	0.0	0.7	0.3	0.0	1.0
SSW	0.3	1.7	0.3	0.0	2.3
SW	1.7	8.3	2.3	0.7	13.0
WSW	0.7	4.3	1.7	0.0	6.7
W	2.7	12.7	3.0	0.7	19.0
WNW	1.0	6.3	3.0	0.3	10.7
NW	4.3	17.3	2.3	0.0	24.0
NNW	2.0	4.3	1.0	0.0	7.3
N	1.7	1.3	0.0	0.3	3.3
VRB	0.3	0.0	0.0	0.0	0.3
Tot	15.7	59.3	15.0	2.0	92.0
CM	8.0				100.0

MAY					
	1-5	6-10	11-19	>19	Tot
NNE	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.6	0.3	0.6	1.6
S	0.0	2.6	3.2	1.0	6.8
SSW	0.6	2.6	2.9	1.6	7.7
SW	1.0	14.8	10.6	0.6	27.1
WSW	0.3	3.9	3.2	0.3	7.7
W	1.0	12.9	7.7	0.6	22.3
WNW	1.0	6.8	2.3	0.3	10.3
NW	0.3	10.0	1.9	0.0	12.3
NNW	0.0	0.6	0.0	0.0	0.6
N	0.6	0.0	0.3	0.0	1.0
VRB	0.0	0.0	0.0	0.0	0.0
Tot	4.8	54.8	32.6	5.2	97.4
CM	2.6				100.0

JUNE					
	1-5	6-10	11-19	>19	Tot
NNE	0.0	0.0	0.0	0.3	0.3
NE	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0
E	0.3	0.0	0.0	0.3	0.7
ESE	0.0	0.0	0.0	0.0	0.0
SE	0.3	1.3	1.3	0.0	3.0
SSE	0.0	0.0	1.3	0.3	1.7
S	0.3	4.3	9.7	4.0	18.3
SSW	0.3	3.3	5.0	0.3	9.0
SW	2.3	19.3	15.3	0.7	37.7
WSW	0.3	2.0	2.0	0.3	4.7
W	1.3	7.3	3.3	0.0	12.0
WNW	0.3	1.7	1.3	0.0	3.3
NW	1.0	2.7	0.3	0.0	4.0
NNW	0.3	0.3	0.0	0.0	0.7
N	0.3	0.7	0.0	0.0	1.0
VRB	0.0	0.0	0.0	0.0	0.0
Tot	7.3	43.0	39.7	6.3	96.3
CM	3.7				100.0

OCTOBER					
	1-5	6-10	11-19	>19	Tot
NNE	2.9	1.0	0.0	0.0	3.9
NE	3.2	3.5	0.3	0.0	7.1
ENE	0.6	0.6	0.3	0.0	1.6
E	3.2	3.9	0.0	0.0	7.1
ESE	0.6	1.0	0.0	0.0	1.6
SE	0.0	1.6	0.0	0.0	1.6
SSE	0.0	0.0	0.0	0.0	0.0
S	0.3	0.6	0.3	0.0	1.3
SSW	0.6	0.6	0.0	0.0	1.3
SW	1.6	1.6	0.3	0.0	3.5
WSW	0.6	0.0	0.0	0.0	0.6
W	3.2	3.2	0.0	0.0	6.5
WNW	1.9	2.6	0.0	0.0	4.5
NW	5.2	5.2	0.0	0.0	10.3
NNW	2.9	2.9	0.0	0.0	5.8
N	7.7	5.8	0.0	0.0	13.5
VRB	0.0	0.0	0.0	0.0	0.0
Tot	34.8	34.2	1.3	0.0	70.3
CM	29.7				100.0

NOVEMBER					
	1-5	6-10	11-19	>19	Tot
NNE	2.3	1.7	0.3	0.0	4.3
NE	8.3	6.7	0.3	0.0	15.3
ENE	1.3	2.3	0.0	0.0	3.7
E	5.7	7.0	0.7	0.0	13.3
ESE	1.0	0.3	0.0	0.0	1.3
SE	0.0	0.3	0.3	0.0	0.7
SSE	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0
SW	0.7	0.3	0.0	0.0	1.0
WSW	0.0	0.0	0.0	0.0	0.0
W	0.7	0.0	0.0	0.0	0.7
WNW	1.0	1.0	0.0	0.0	2.0
NW	2.0	2.7	0.0	0.0	4.7
NNW	2.3	1.0	0.7	0.0	4.0
N	10.0	3.3	0.0	0.0	13.3
VRB	0.0	0.0	0.0	0.0	0.0
Tot	35.3	26.7	2.3	0.0	64.3
CM	35.7				100.0

DECEMBER					
	1-5	6-10	11-19	>19	Tot
NNE	2.3	2.6	0.0	0.0	4.8
NE	5.8	14.8	1.3	0.0	21.9
ENE	0.6	3.2	0.3	0.0	4.2
E	1.9	1.9	1.0	0.0	4.8
ESE	0.0	0.6	0.0	0.0	0.6
SE	1.3	0.3	0.0	0.0	1.6
SSE	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.3	0.0	0.3
WSW	0.3	0.0	0.0	0.0	0.3
W	1.0	0.3	0.0	0.0	1.3
WNW	1.0	0.3	0.3	0.0	1.6
NW	3.2	9.4	1.0	0.0	13.5
NNW	3.9	2.3	0.0	0.0	6.1
N	6.8	6.5	0.0	0.0	13.2
VRB	0.0	0.0	0.0	0.0	0.0
Tot	28.1	42.3	4.2	0.0	74.5
CM	25.5				100.0

Health related data-Vatva**01) D-45, ESIS, Vatva village****Case History of Air Environment Related Diseases:**

Diseases	No. of cases in the year 2011 (Jan-Dec)	No. of cases in the year 2012	No. of cases in the year 2013	No. of cases in the year 2014	No. of cases in the year 2015
Asthma	0	0	0	25	24
Bronchitis	414	372	381	250	358
Cancer	0	1	1	25	20
Acute respiratory infections	1654	1707	1730	3121	4598
Total	2068	2079	2112	3421	5001

Case History of Surface & Ground water pollution related diseases:

Diseases	No. of cases in the year 2011 (jan-Dec)	No. of cases in the year 2012	No. of cases in the year 2013	No. of cases in the year 2014	No. of cases in the year 2015
Cancer	0	1	1	25	24
Gastroenteritis	211	226	164	267	234
Renal (Kidney malfunction)	0	1	1	13	4
Total	211	228	166	305	262

02. D-47, ESIS, G.I.D.C, Vatva**Case History of Air Environment Related Diseases:**

Diseases	No. of cases in the year 2011 (jan-Dec)	No. of cases in the year 2012	No. of cases in the year 2013	No. of cases in the year 2014	No. of cases in the year 2015
Asthma	17	15	18	20	24
Bronchitis	12	9	30	30	7
Cancer	2	1	4	2	3
Acute respiratory infections	360	362	355	376	342
Total	391	387	407	428	376

Case History of Surface & Ground water pollution related diseases:

Diseases	No. of cases in the year 2011 (jan-Dec)	No. of cases in the year 2012	No. of cases in the year 2013	No. of cases in the year 2014	No. of cases in the year 2015
Cancer	2	1	4	2	3
Gastroenteritis	148	152	142	153	117
Renal (Kidney malfunction)	52	55	56	54	51
Total	202	208	202	209	171

03. Vatva Industrial Association Charitable Trust, GIDC, vatva
Case History of Air Environment Related Diseases:

Diseases	No. of cases in the year 2011 (jan-Dec)	No. of cases in the year 2012	No. of cases in the year 2013	No. of cases in the year 2014	No. of cases in the year 2015
Asthma	No Records				
Bronchitis					
Cancer					
Acute respiratory infections					
Total					

Case History of Surface & Ground water pollution related diseases:

Diseases	No. of cases in the year 2011 (jan-Dec)	No. of cases in the year 2012	No. of cases in the year 2013	No. of cases in the year 2014	No. of cases in the year 2015
Cancer	No Records				
Gastroenteritis	860	670	1333	1083	1100
Renal (Kidney malfunction)	No Records				
Total	860	670	1333	1083	1100

