Gujarat Industries Power Company Limited

(Vastan Lime Stone Mine)

Village: Vastan
Ta. Mangrol, Di. Surat.

SIX MONTHLY

ENVIRONMENTAL MONITORING & ANALYSIS REPORT

For The Period of January - 2017 to June - 2017

ENPRO
Environment, Energy, Water
Project Consultant

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PREFACE

Consciousness at national level in the industrial sector is increasing day by with the focus on environment and sustainable development. A good environ management policy requires a consent effort to analyses and monitors various operations and processes, to generate and transmit this information to the inspecting authority.

As per the Air & Water Consent Orders issued by Gujarat Pollution Control Board (GPCB) Gandhinagar& also as per the Environment Clearance certificate issued by Ministry of Environment & Forest (MoEF), Govt. of India, New Delhi. It is mandatory to get the samples of Air / Gaseous Emission & Effluent, collected and analyzed from an approved laboratory Bi-Monthly & its analysis report should be submitted to GPCB & Six monthly analysis submitted to MoEF.

Gujarat Industries Power Company Limited (GIPCL) – Vastan Lime Stone Mine situated at Village- Vastan, Tal. Mangrol, Dist. Surat. This Company engaged in the generation of Electricity. The Industry had awarded contract for monthly monitoring and analysis to M/s. ENPRO ENVIRO TECH AND ENGINEERS PVT. LTD., Surat.

M/s. ENPRO ENVIRO TECH AND ENGINEERS PVT. LTD., is a Leading Environmental Consultancy firm situated at Adajan Road, Surat. And is approved as Schedule –II environmental auditor by Gujarat Pollution Control Board.M/s. ENPRO ENVIRO TECH AND ENGINEERS PVT. LTD. have its own full fledge laboratory to measure the pollution parameters belongs to Air, Water, Hazardous etc.

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METHODOLOGY FOR ENVIRONMENTAL MONITORING

M/s Gujarat Industries Power Company Limited has awarded the work of Environmental monitoring of its Vastan Lime Stone Mine to ENPRO Enviro Tech and Engineers Pvt. Ltd. EN-PRO visits the Vastan Lime Stone Mine Bi-monthly to carry out environmental monitoring.

ENPRO follows the following methodology for carrying out monitoring of various components.

Water & Waste Quality Monitoring:

Ground and surface water samples are at their source using grab sampling. Surface and ground water samples are collected from core and buffer zones located near the mining area. Preserved samples are brought to Surat based EN-PRO's laboratory for analysis. For sampling & analysis methods various IS codes and APHA analysis methods are followed. The samples are analyzed for Physico-chemical & bacteriological properties mainly.

Ambient Air Quality Monitoring:

The wind direction and wind speed is monitored first and based on that sampling stations for ambient air quality monitoring are installed. The locations are so chosen such that at least one station falls in opposite wind direction from all stationary sources (Mining Area). The other stations are installed in two arrays. First array comprising minimum two stations located at apprx. 120^0 and at a distance of apprx.2 Kms. from nearby stationery source falling in the wind directions. The second array comprising minimum two stations located in wind direction and at a distance of more than 2 Kms. from nearby stationery source falling in the wind directions. Also at two stations are installed in the nearby population area falling in the wind direction. The samples are collected using high volume air samplers for monitoring for 24 hours, preserved and brought to Surat based EN-PRO's laboratory for analysis. For sampling & analysis methods IS-5182& CPCB Manual is followed. Main pollutants analyzed are Particulate matter ($PM_{2.5}$), Respirable particulate matter (PM_{10}), Sulfur dioxide, Oxides of Nitrogen & Carbon Monoxide.

Weather Monitoring:

Monitoring station for weather is selected based on wind direction. The station is so selected that it remains unobstructed from incoming wind. The micrometeorological data is collected on ambient temperature, humidity, wind speed and direction on hourly basis for 24 hours. For this monitoring IS – 8829 is followed. The equipments used are wind wane, anemometer and thermo hygrometer.

Noise Level Monitoring:

The main sources of noise are lignite handling and transportation equipments and systems in the mines. The noise level is monitored in the immediate vicinity of the source. Then the noise level is monitored at the locations falling in the villages in core and buffer zone of mines. Two sets of data are collected for daytime and night time monitoring. The noise level is monitored using digital sound level meter.

Dust Fall Monitoring:

The dust fall resulting from mining and handling activities of lignite is monitored at several locations in the core and buffer zones. Large solid and liquid particles (typically greater than 10 µm in aerodynamic diameter) are collected via gravitational settling in an open mouth container for a period of a month. The container is washed with a known volume of distilled water, which is filtered and then evaporated. The mass of insoluble particles aredetermined by the weight gain of the filter after filtration. The mass of soluble particles aredetermined by the weight gain of a crucible after evaporation. Total mass gain is measured gravimetrically. The dust fall is measured using jars as per standard practice as per IS - 518

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Scope of work for (4 × 125 MW Surat Lignite Power Plant) (Vastan Lime Stone Mines)

1. Ambient Air Monitoring

Sr. No.	No. of Stations and Location	Duration	Frequency of Sampling	Parameter	Method of Analysis
1	07 Nos. within the radius of 10 Km from the Core Zone.	24 hours	Bi-Monthly	PM_{10}	IS 5182 part 23 2006
				$PM_{2.5}$	CPCB guideline
				SO_2	IS 5182 part II 2001
				NO_X	IS 5182 part VI 2006

2. Weather Monitoring Data

Sr. No.	No. of Stations and Location	Duration	Frequency	Parameter	Method of Analysis
1	1 No at Site office of the Mine	24 hours	Bi-Monthly	Dry & Wet Bulb Temp, Relative Humidity, Wind Speed & Direction, Max & Min Tempe.	Using automatic temp recorder wind vane & Anemometer, Max & Min Thermometer &IS 8829.

3. Noise Monitoring Data

Sr. No.	No. of Stations and Location	Duration	Frequency	Parameter	Method of Analysis
1	5 Nos. at various location in the plant premises	2 min./Location	Bi-Monthly	Day & Night Noise level	Using Sound level Meter

4. Water & Waste Water Quality Monitoring

Sr. No.	No. of Stations and Location	Duration	Frequency	Parameter	Method of Analysis
1	4 Nos. of Bore well Water sample located both in core & Buffer Zones	1	Bi-Monthly	Physico-Chemical, Heavy Metals, Biological & Microbiological parameters.	Analysis report carried out as per APHA 22st edition 2012 standard method for the examination of water and waste water.

5. Dust Fall Measurement

Sr. No.	No. of Stations and Location	Duration	Frequency	Parameter	Method of Analysis
1	5 Nos. within the radius of 10 km from the Core Zone.	1 Month	Bi-Monthly	Dust fall	Methods of air sampling and analysis, IS – 5182.

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Work Order No: SLPP/VASTAN MINES/Envt. Monitoring/2016-17/3596 Date: 11 / 07 / 2016

Monthly Variation in January-2017 to June-2017
(Vastan Lime Stone Mine)

Report Period: January-2017 to June-2017
Sample: Bore well water hand pump in Surali Village

Sr. No.	TEST PARAMETER	UNIT	SAMPLING DATE & TIME		
			Bi Monthly: Jan-17 to Feb-17	Bi Monthly: March-17 to April-17	Bi Monthly: May-17 to June-17
			10 / 02 / 17 02:50 pm	13 / 04 / 17 11:30 am	08 / 06 / 17 12:20 pm
			RESULTS		
General Parameters					
1.	pH (at 26^0 C)	-	7.23	7.42	7.11
2.	Color	Pt. Co.	Colorless	Colorless	Colorless
3.	Temperature	^{0}C	28	35	31
4.	Total Suspended Solids (TSS)	mg/L	36	42	56
5.	Total Dissolved Solids (TDS)	mg/L	914	960	808
6.	Total Volatile Solids (TVS)	mg/L	BDL	BDL	BDL
7.	Oil & Grease	mg/L	0.71	0.89	1.2
8.	COD	mg/L	-	-	-
9.	BOD (3 days at 27^{0}C)	mg/L	-	-	-
Chemical Parameters					
10.	Chlorides (as Cl^-)	mg/L	179	214	182
11.	Sulphate (as SO_4^{-2})	mg/L	116	105	124
12.	Phosphate (as PO_4)	mg/L	1.1	0.9	0.7
13.	Phenolic Compound	mg/L	BDL	BDL	BDL
14.	Fluorides (as F^-)	mg/L	0.8	1.1	0.9
15.	Free available Chlorine	mg/L	Nil	Nil	Nil
16.	Total Residual Chlorine	mg/L	Nil	Nil	Nil
17.	Total Hardness	mg/L	260	280	208
18.	Total Alkalinity	mg/L	230	260	230

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Sr. No.	TEST PARAMETER	UNIT	SAMPLING DATE & TIME		
			Bi Monthly: Jan-17 to Feb-17	Bi Monthly: March-17 to April-17	Bi Monthly: May-17 to June-17
			10 / 02 / 17 02:50 pm	13 / 04 / 17 11:30 am	08 / 06 / 17 12:20 pm
			RESULTS		
Heavy Metals					
19.	Iron (as Fe)	mg/L	0.59	0.70	0.44
20.	Copper (as Cu)	mg/L	BDL	BDL	BDL
21.	Total Chromium (as Cr^{-})	mg/L	BDL	BDL	BDL
22.	Hexavalent Chromium (asCr^{+6})	mg/L	BDL	BDL	BDL
23.	Zinc (as Zn)	mg/L	BDL	BDL	BDL
24.	Lead (as Pb)	mg/L	BDL	BDL	BDL
25.	Calcium (as Ca)	mg/L	57	46	39
26.	Magnesium (as Mg)	mg/L	24	30	18
27.	Sodium	%	BDL	BDL	BDL
Bio-Assay					
28	Bioassay Test	%	100	100	100
Bacteriological Analysis					
29.	Coliform Organism (MPN)	Per 100ml.	Nil	Nil	Nil

Note: BDL: - Below Detectable Limit.

ANALYSED BY

C.R. Oza
CHECKED BY

Work Order No: SLPP/VASTAN MINES/Envt. Monitoring/2016-17/3596 Date: 11 / 07 / 2016

Monthly Variation in January-2017 to June-2017
(Vastan Lime Stone Mine)

Report Period: January-2017 to June-2017
Sample: Bore well water hand pump in Dungri Village

Sr. No.	TEST PARAMETER	UNIT	SAMPLING DATE & TIME		
			Bi Monthly: Jan-17 to Feb-17	Bi Monthly: March-17 to April-17	Bi Monthly: May-17 to June-17
			10 / 02 / 17 01:45 pm	13 / 04 / 17 03:20 pm	08 / 06 / 17 12:25 pm
			RESULTS		
General Parameters					
1.	pH (at 26^0 C)	-	7.33	7.40	6.90
2.	Color	Pt. Co.	Colorless	Colorless	Colorless
3.	Temperature	^{0}C	29	34	31
4.	Total Suspended Solids (TSS)	mg/L	42	58	22
5.	Total Dissolved Solids (TDS)	mg/L	1108	1244	1310
6.	Total Volatile Solids (TVS)	mg/L	BDL	BDL	BDL
7.	Oil & Grease	mg/L	BDL	BDL	BDL
8.	COD	mg/L	-	-	-
9.	BOD (3 days at 27^0C)	mg/L	-	-	-
Chemical Parameters					
10.	Chlorides (as Cl^-)	mg/L	354	504	496
11.	Sulphate (as SO_4^{-2})	mg/L	179	160	191
12.	Phosphate (as PO_4)	mg/L	0.8	1.0	1.5
13.	Phenolic Compound	mg/L	BDL	BDL	BDL
14.	Fluorides (as F^-)	mg/L	1.2	0.7	1.0
15.	Free available Chlorine	mg/L	Nil	Nil	Nil
16.	Total Residual Chlorine	mg/L	Nil	Nil	Nil
17.	Total Hardness	mg/L	310	330	360
18.	Total Alkalinity	mg/L	180	205	190

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Sr. No.	TEST PARAMETER	UNIT	SAMPLING DATE & TIME		
			Bi Monthly: Jan-17 to Feb-17	Bi Monthly: March-17 to April-17	Bi Monthly: May-17 to June-17
			10 / 02 / 17 01:45 pm	13 / 04 / 17 03:20 pm	08 / 06 / 17 12:25 pm
			RESULTS		
	Heavy Metals				
19.	Iron (as Fe)	mg/L	0.37	0.59	0.38
20.	Copper (as Cu)	mg/L	BDL	BDL	BDL
21.	Total Chromium (as Cr^{-})	mg/L	0.45	0.33	0.40
22.	Hexavalent Chromium (asCr^{+6})	mg/L	BDL	BDL	0.05
23.	Zinc (as Zn)	mg/L	BDL	BDL	BDL
24.	Lead (as Pb)	mg/L	BDL	BDL	BDL
25.	Calcium (as Ca)	mg/L	113	109	140
26.	Magnesium (as Mg)	mg/L	36	43	76
27.	Sodium	%	BDL	BDL	BDL
	Bio-Assay				
28	Bioassay Test	%	100	100	100
	Bacteriological Analysis				
29.	Coliform Organism (MPN)	Per 100ml.	Nil	Nil	Nil

Note: BDL: - Below Detectable Limit.

ANALYSED BY

C. R. Oza
CHECKED BY

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Work Order No: SLPP/VASTAN MINES/Envt. Monitoring/2016-17/3596 Date: 11 / 07 / 2016

Monthly Variation in January-2017 to June-2017

(Vastan Lime Stone Mine)

Report Period: January-2017 to June-2017
Sample: Bore well water Nr Tadkeshwar Village

Sr. No.	TEST PARAMETER	UNIT	SAMPLING DATE & TIME		
			Bi Monthly: Jan-17 to Feb-17	Bi Monthly: March-17 to April-17	Bi Monthly: May-17 to June-17
			10 / 02 / 17 12:35 pm	13 / 04 / 17 01:20 pm	08 / 06 / 17 01:45 pm
			RESULTS		
General Parameters					
1.	pH (at 26^0 C)	-	7.18	7.32	6.87
2.	Color	Pt. Co.	Colorless	Colorless	Colorless
3.	Temperature	^{0}C	29	32	27
4.	Total Suspended Solids (TSS)	mg/L	52	38	40
5.	Total Dissolved Solids (TDS)	mg/L	394	496	522
6.	Total Volatile Solids (TVS)	mg/L	BDL	BDL	BDL
7.	Oil & Grease	mg/L	BDL	BDL	BDL
8.	COD	mg/L	-	-	-
9.	BOD (3 days at 27^0C)	mg/L	-	-	-
Chemical Parameters					
10.	Chlorides (as Cl^-)	mg/L	96	120	102
11.	Sulphate (as SO_4^{-2})	mg/L	87	105	73
12.	Phosphate (as PO_4)	mg/L	0.4	0.7	1.0
13.	Phenolic Compound	mg/L	BDL	BDL	BDL
14.	Fluorides (as F^-)	mg/L	BDL	BDL	BDL
15.	Free available Chlorine	mg/L	Nil	Nil	Nil
16.	Total Residual Chlorine	mg/L	Nil	Nil	Nil
17.	Total Hardness	mg/L	140	200	210
18.	Total Alkalinity	mg/L	170	190	140

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Sr. No.	TEST PARAMETER	UNIT	SAMPLING DATE & TIME		
			Bi Monthly: Jan-17 to Feb-17	Bi Monthly: March-17 to April-17	Bi Monthly: May-17 to June-17
			10 / 02 / 17 12:35 pm	13 / 04 / 17 01:20 pm	08 / 06 / 17 01:45 pm
			RESULTS		
	Heavy Metals				
19.	Iron (as Fe)	mg/L	0.34	0.28	0.24
20.	Copper (as Cu)	mg/L	BDL	BDL	BDL
21.	Total Chromium (as Cr^{-})	mg/L	BDL	BDL	BDL
22.	Hexavalent Chromium (asCr^{+6})	mg/L	BDL	BDL	BDL
23.	Zinc (as Zn)	mg/L	BDL	BDL	BDL
24.	Lead (as Pb)	mg/L	BDL	BDL	BDL
25.	Calcium (as Ca)	mg/L	29	36	42
26.	Magnesium (as Mg)	mg/L	17	21	24
27.	Sodium	%	BDL	BDL	BDL
	Bio-Assay				
28	Bioassay Test	%	100	100	100
	Bacteriological Analysis				
29.	Coliform Organism (MPN)	Per 100ml.	Nil	Nil	Nil

Note: BDL: - Below Detectable Limit.

ANALYSED BY

C.R. Oza
CHECKED BY

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Work Order No: SLPP/VASTAN MINES/Envt. Monitoring/2016-17/3596 Date: 11 / 07 / 2016

Monthly Variation in January-2017 to June-2017
(Vastan Lime Stone Mine)

Report Period: January-2017 to June-2017
Sample: Bore well water Ansodla Village

Sr. No.	TEST PARAMETER	UNIT	SAMPLING DATE & TIME		
			Bi Monthly: Jan-17 to Feb-17	Bi Monthly: March-17 to April-17	Bi Monthly: May-17 to June-17
			10 / 02 / 17 12:00 pm	13 / 04 / 17 11:00 am	08 / 06 / 17 01:05 pm
			RESULTS		
	General Parameters				
1.	pH (at 26^0 C)	-	7.58	7.23	7.35
2.	Color	Pt. Co.	Colorless	Colorless	Colorless
3.	Temperature	^{0}C	30	34	31
4.	Total Suspended Solids (TSS)	mg/L	68	86	42
5.	Total Dissolved Solids (TDS)	mg/L	852	924	796
6.	Total Volatile Solids (TVS)	mg/L	BDL	BDL	BDL
7.	Oil & Grease	mg/L	BDL	BDL	BDL
8.	COD	mg/L	-	-	-
9.	BOD (3 days at 27^0C)	mg/L	-	-	-
	Chemical Parameters				
10.	Chlorides (as Cl^-)	mg/L	213	251	195
11.	Sulphate (as SO_4^{-2})	mg/L	139	152	117
12.	Phosphate (as PO_4)	mg/L	0.7	0.85	1.0
13.	Phenolic Compound	mg/L	BDL	BDL	BDL
14.	Fluorides (as F^-)	mg/L	1.0	1.2	0.7
15.	Free available Chlorine	mg/L	Nil	Nil	Nil
16.	Total Residual Chlorine	mg/L	Nil	Nil	Nil
17.	Total Hardness	mg/L	210	235	180
18.	Total Alkalinity	mg/L	280	250	260

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Sr. No.	TEST PARAMETER	UNIT	SAMPLING DATE & TIME		
			Bi Monthly: Jan-17 to Feb-17	Bi Monthly: March-17 to April-17	Bi Monthly: May-17 to June-17
			10 / 02 / 17 12:00 pm	13 / 04 / 17 11:00 am	08 / 06 / 17 01:05 pm
			RESULTS		
	Heavy Metals				
19.	Iron (as Fe)	mg/L	0.14	0.36	0.28
20.	Copper (as Cu)	mg/L	BDL	BDL	BDL
21.	Total Chromium (as Cr^{+})	mg/L	0.19	1.6	1.1
22.	Hexavalent Chromium (asCr^{+6})	mg/L	0.02	0.07	0.05
23.	Zinc (as Zn)	mg/L	BDL	BDL	BDL
24.	Lead (as Pb)	mg/L	BDL	BDL	BDL
25.	Calcium (as Ca)	mg/L	81	92	74
26.	Magnesium (as Mg)	mg/L	66	45	36
27.	Sodium	%	BDL	BDL	BDL
	Bio-Assay				
28	Bioassay Test	%	100	100	100
	Bacteriological Analysis				
29.	Coliform Organism (MPN)	Per 100ml.	Nil	Nil	Nil

Note: BDL: - Below Detectable Limit.

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COMPARATIVE ANALYSIS

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Comparative Results For the Period of:January-2017 to June-2017

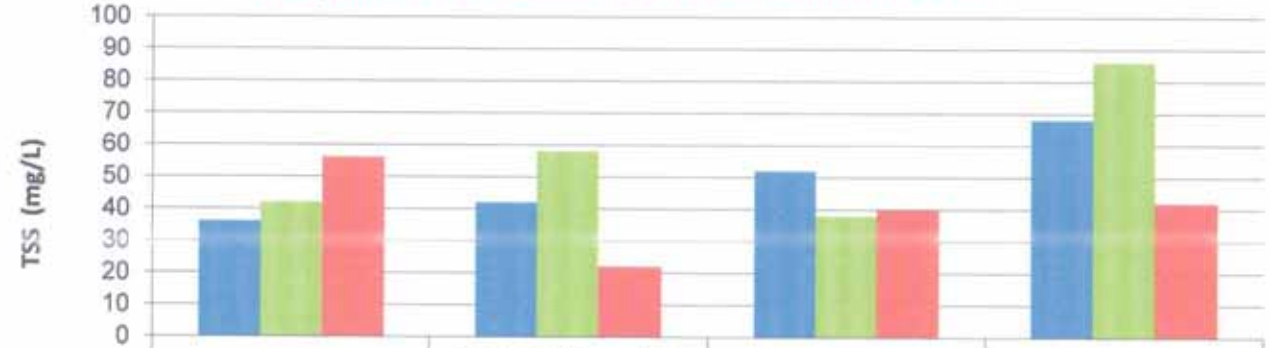
Parameter : TSS (mg/L)

Period : January-2017 to June-2017

COMPARATIVE RESULTS OF TSS FOR VARIOUS LOCATIONS

Description	Bore well water hand pump in Surali Village	Bore well water hand pump in Dungri Village	Bore well water Nr Tadkeshwar Village	Bore well water Ansodla Village
Bi Monthly: Jan-17 to Feb-17	36	42	52	68
Bi Monthly: March-17 to April-17	42	58	38	86
Bi Monthly: May-17 to June-17	56	22	40	42

Graphical Presentation of TSS for various locations



	Bore well water hand pump in Surali Village	Bore well water hand pump in Dungri Village	Bore well water Nr Tadkeshwar Village	Bore well water Ansodla Village
Bi Monthly: Jan-17 to Feb-17	36	42	52	68
Bi Monthly: March-17 to April-17	42	58	38	86
Bi Monthly: May-17 to June-17	56	22	40	42

Comparative Results For the Period of: January-2017 to June-2017

Parameter : TDS (mg/L)

Period : January-2017 to June-2017

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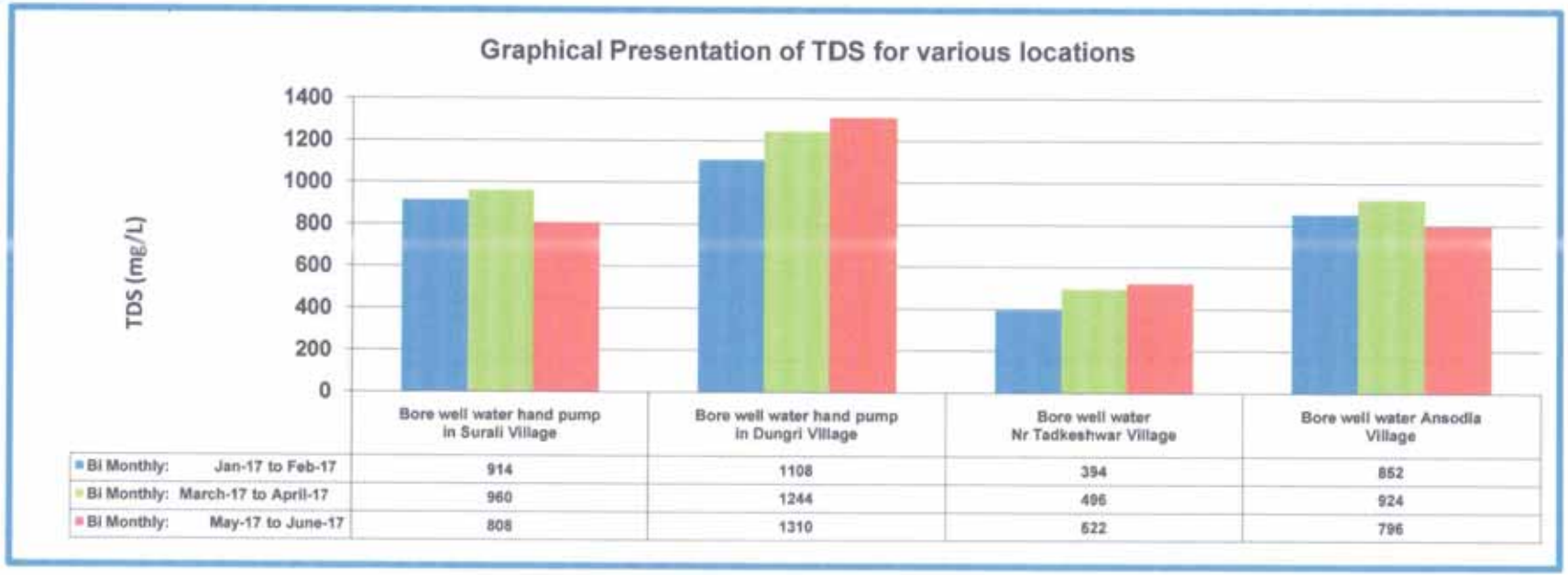
COMPARATIVE RESULTS OF TDS FOR VARIOUS LOCATIONS				
Description	Bore well water hand pump in Surali Village	Bore well water hand pump in Dungri Village	Bore well water Nr Tadkeshwar Village	Bore well water Ansodla Village
Bi Monthly: Jan-17 to Feb-17	914	1108	394	852
Bi Monthly: March-17 to April-17	960	1244	496	924
Bi Monthly: May-17 to June-17	808	1310	522	796



AMBIENT AIR

COMPARATIVE ANALYSIS

REPORTS

Comparative Results For the Period of: January-2017 to June-2017

Parameter : PM_{10} (Particulate Matter) (µg/m3)

Period : January-2017 to June-2017

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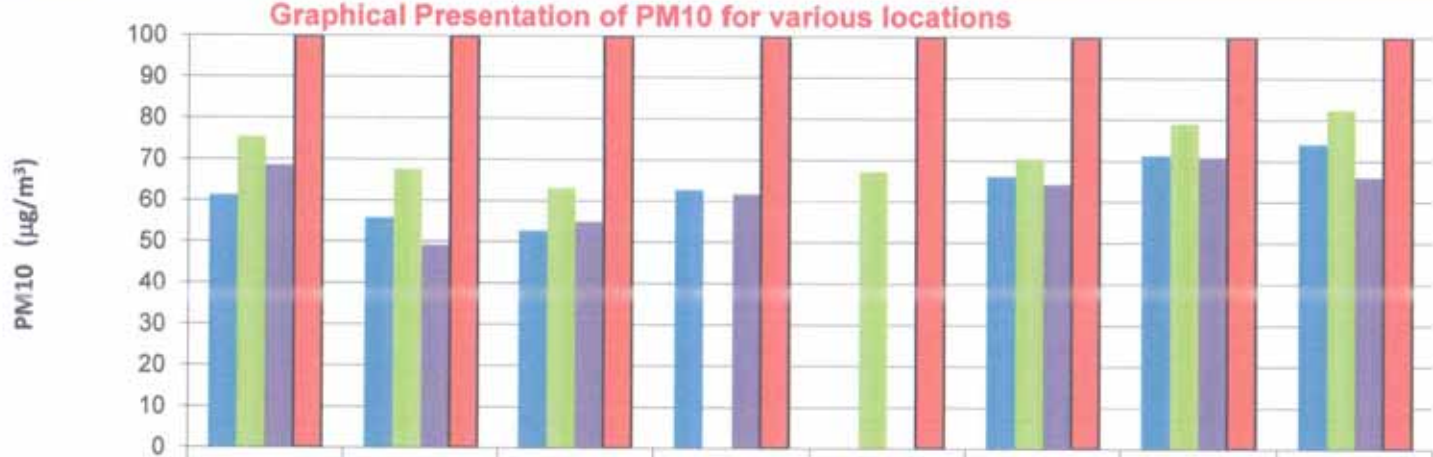
COMPARATIVE RESULTS OF PM_{10} FOR VARIOUS LOCATIONS

Description	Surali Village	Tadkeshwar Village	Nani Naroli Village Near PHC	Dungari Village	Umelav Village	Ansodla Village	Lime stone Mines Transporting Road	Material (Lime stone) Handling Area
Bi Monthly: Jan-17 to Feb-17	61.3	55.8	52.7	62.7	0	66.2	71.3	74.1
Bi Monthly: March-17 to April-17	75.4	67.6	63.1	0	67.3	70.5	79.1	82.4
Bi Monthly: May-17 to June-17	68.5	49.2	55.0	61.7	0	64.3	70.9	66.1
GPCB Limit	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Graphical Presentation of PM10 for various locations



	Surali Village	Tadkeshwar Village	Nani Naroli Village Near PHC	Dungari Village	Umelav Village	Ansodla Village	Lime stone Mines Transporting Road	Material (Lime stone) Handling Area
Bi Monthly: Jan-17 to Feb-17	61.3	55.8	52.7	62.7	0	66.2	71.3	74.1
Bi Monthly: March-17 to April-17	75.4	67.6	63.1	0	67.3	70.5	79.1	82.4
Bi Monthly: May-17 to June-17	68.5	49.2	55.0	61.7	0	64.3	70.9	66.1
GPCB Limit	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

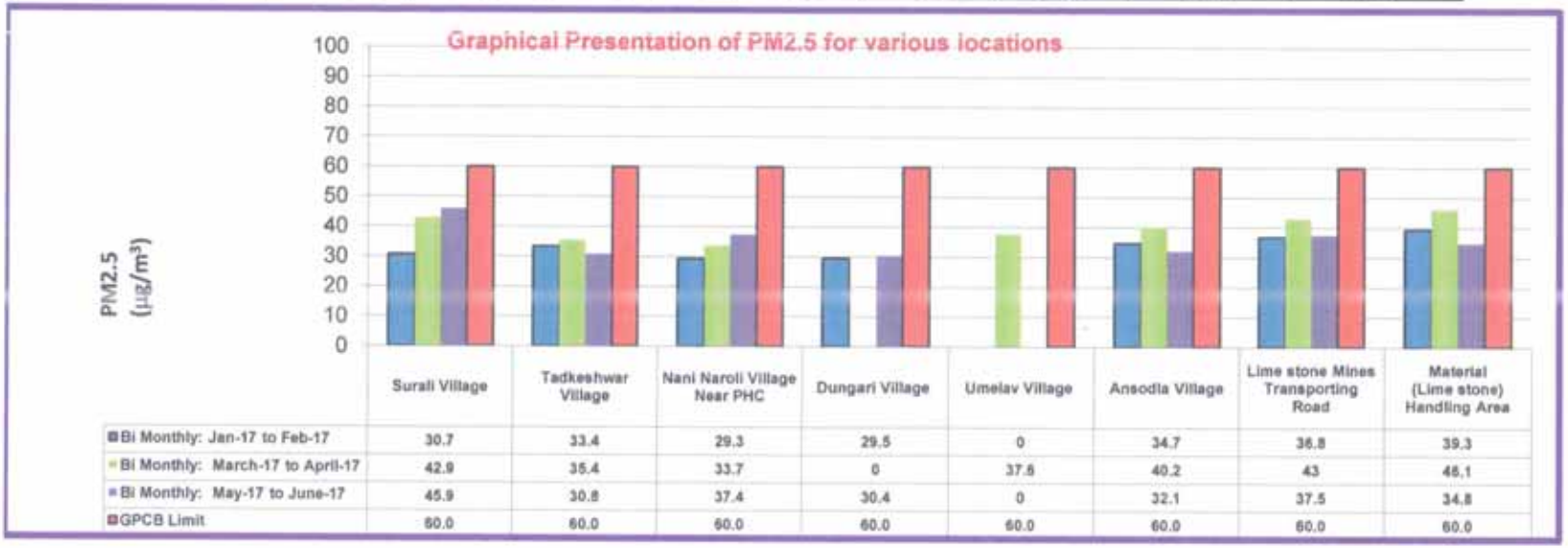
Comparative Results For the Period of: January-2017 to June-2017

Parameter : PM2.5 (Particulate Matter) (µg/m3)

Period : January-2017 to June-2017

COMPARATIVE RESULTS OF $PM_{2.5}$ FOR VARIOUS LOCATIONS

Description	Surali Village	Tadkeshwar Village	Nani Naroli Village Near PHC	Dungari Village	Umelav Village	Ansodla Village	Lime stone Mines Transporting Road	Material (Lime stone) Handling Area
Bi Monthly: Jan-17 to Feb-17	30.7	33.4	29.3	29.5	0	34.7	36.8	39.3
Bi Monthly: March-17 to April-17	42.9	35.4	33.7	0	37.6	40.2	43	46.1
Bi Monthly: May-17 to June-17	45.9	30.8	37.4	30.4	0	32.1	37.5	34.8
GPCB Limit	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0



Comparative Results For the Period of:January-2017 to June-2017

Parameter : Sulfur Dioxide (SO_2) (µg/m3)

Period : January-2017 to June-2017

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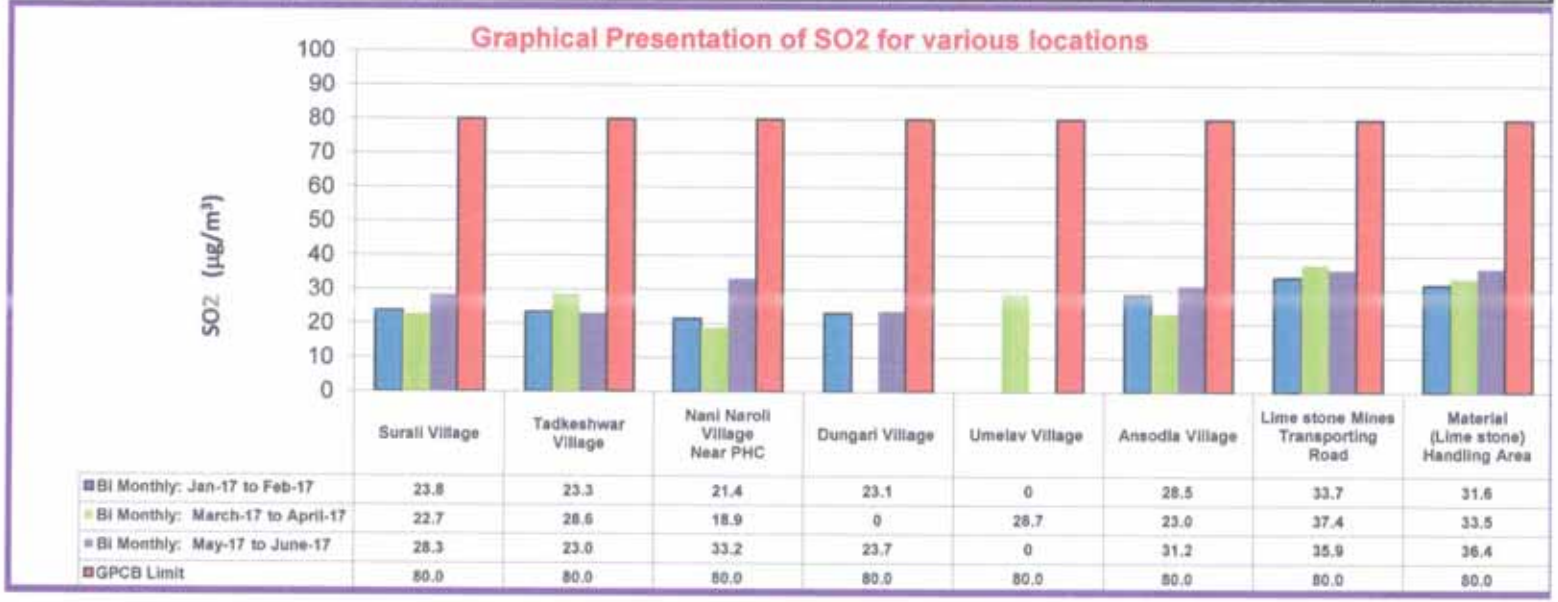
COMPARATIVE RESULTS OF SO_2 FOR VARIOUS LOCATIONS

Description	Surali Village	Tadkeshwar Village	Nani Naroli Village Near PHC	Dungari Village	Umelav Village	Ansodia Village	Lime stone Mines Transporting Road	Material (Lime stone) Handling Area
Bi Monthly: Jan-17 to Feb-17	23.8	23.3	21.4	23.1	0	28.5	33.7	31.6
Bi Monthly: March-17 to April-17	22.7	28.6	18.9	0	28.7	23.0	37.4	33.5
Bi Monthly: May-17 to June-17	28.3	23.0	33.2	23.7	0	31.2	35.9	36.4
GPCB Limit	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0



Comparative Results For the Period of: January-2017 to June-2017

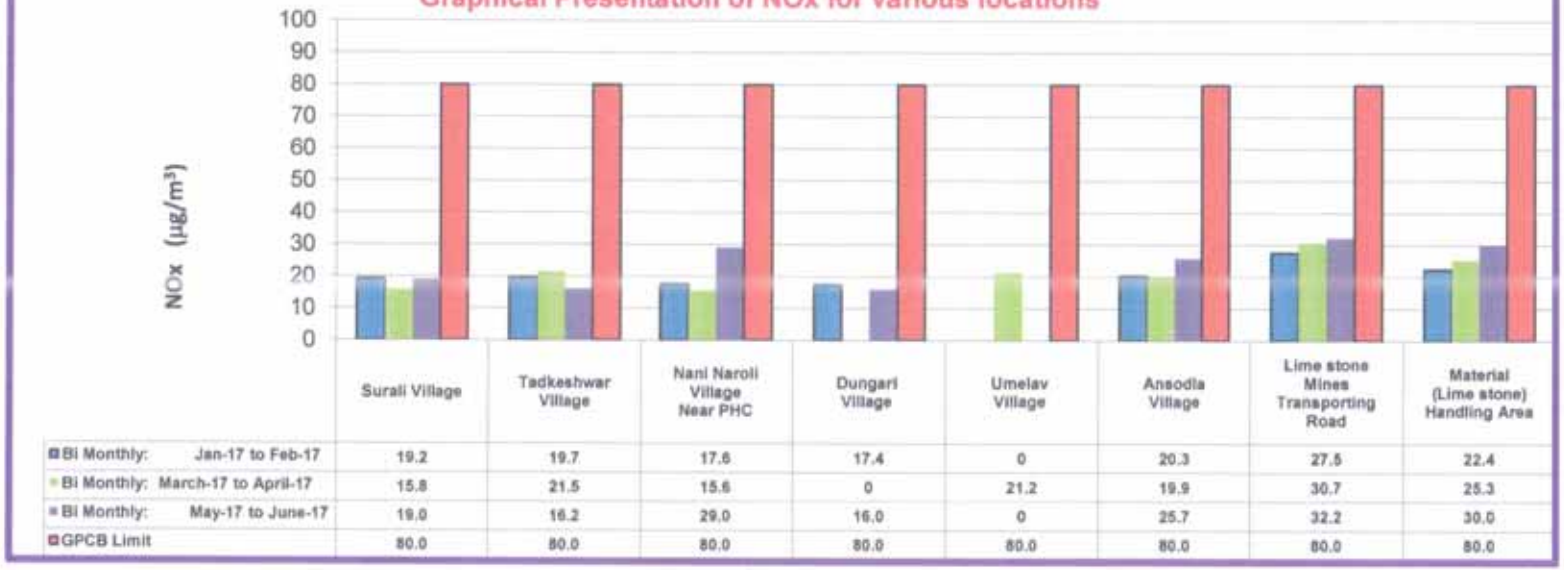
Parameter : Oxide of Nitrogen (NOx) (µg/m3)

Period : January-2017 to June-2017

COMPARATIVE RESULTS OF NOx FOR VARIOUS LOCATIONS

Description	Surali Village	Tadkeshwar Village	Nani Naroli Village Near PHC	Dungari Village	Umelav Village	Ansodla Village	Lime stone Mines Transporting Road	Material (Lime stone) Handling Area
Bi Monthly: Jan-17 to Feb-17	19.2	19.7	17.6	17.4	0	20.3	27.5	22.4
Bi Monthly: March-17 to April-17	15.8	21.5	15.6	0	21.2	19.9	30.7	25.3
Bi Monthly: May-17 to June-17	19.0	16.2	29.0	16.0	0	25.7	32.2	30.0
GPCB Limit	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0

Graphical Presentation of NOx for various locations



Comparative Results For the Period of:January-2017 to June-2017

Parameter : Carbon Monoxide (CO)(µg/m3)
Period : January-2017 to June-2017

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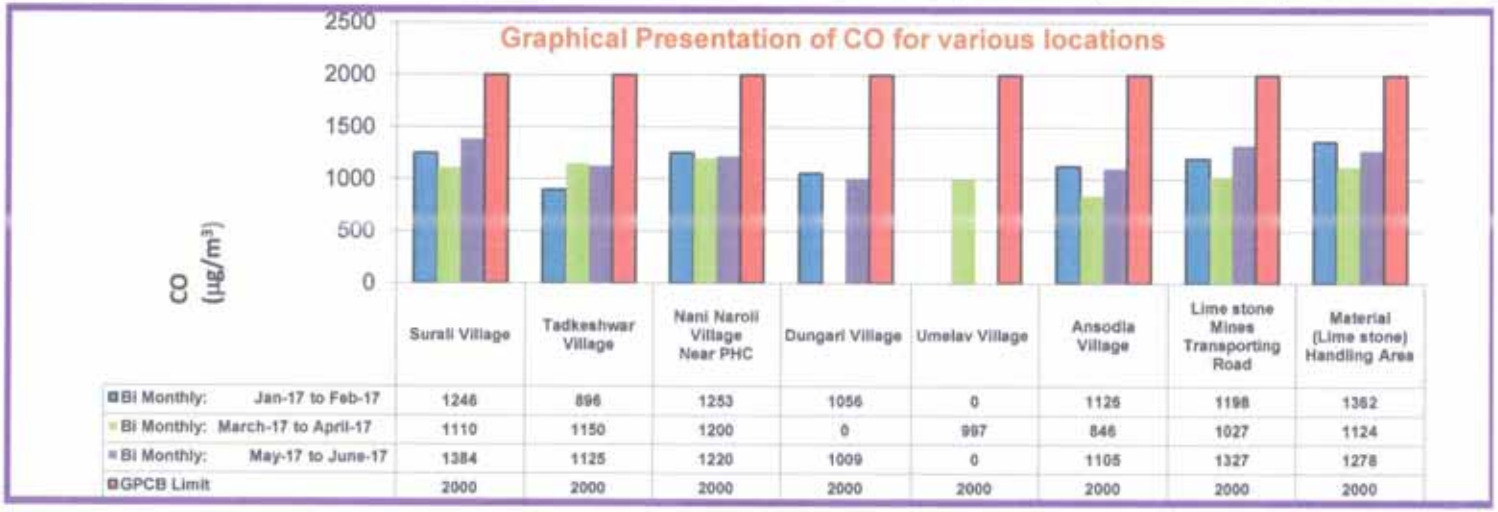
COMPARATIVE RESULTS OF CARBON MONOXIDE FOR VARIOUS LOCATIONS

Description	Surali Village	Tadkeshwar Village	Nani Naroli Village Near PHC	Dungari Village	Umelav Village	Ansodla Village	Lime stone Mines Transporting Road	Material (Lime stone) Handling Area
Bi Monthly: Jan-17 to Feb-17	1246	896	1253	1056	0	1126	1198	1362
Bi Monthly: March-17 to April-17	1110	1150	1200	0	997	846	1027	1124
Bi Monthly: May-17 to June-17	1384	1125	1220	1009	0	1105	1327	1278
GPCB Limit	2000	2000	2000	2000	2000	2000	2000	2000



DUST FALL MONITORING

COMPARATIVE ANALYSIS

REPORTS

Comparative Results For the Period of: January-2017 to June-2017

Parameter : Dust Fall (T/Km2/month)

Period : January-2017 to June-2017

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COMPARATIVE RESULTS OF DUST FALL FOR VARIOUS LOCATIONS

Description	Surali Village	Tadkeshwar Village	Nani Naroli Village Near PHC	Lime stone Mine Area	Lime stone Handling Area
Bi Monthly: Jan-17 to Feb-17	3.7	3.2	3.0	5.5	6.1
Bi Monthly: March-17 to April-17	5.4	4.7	4.5	6.2	6.8
Bi Monthly: May-17 to June-17	4.5	3.8	3.6	5.4	6.0
GPCB Limit	10.0	10.0	10.0	10.0	10.0

Graphical Presentation of Dust Fall for various locations

NOISE LEVEL

COMPARATIVE ANALYSIS

REPORTS

Comparative Results For the Period of: January-2017 to June-2017

Parameter : Noise Level (For Day Time) dB(A)Leq.

Period : January-2017 to June-2017

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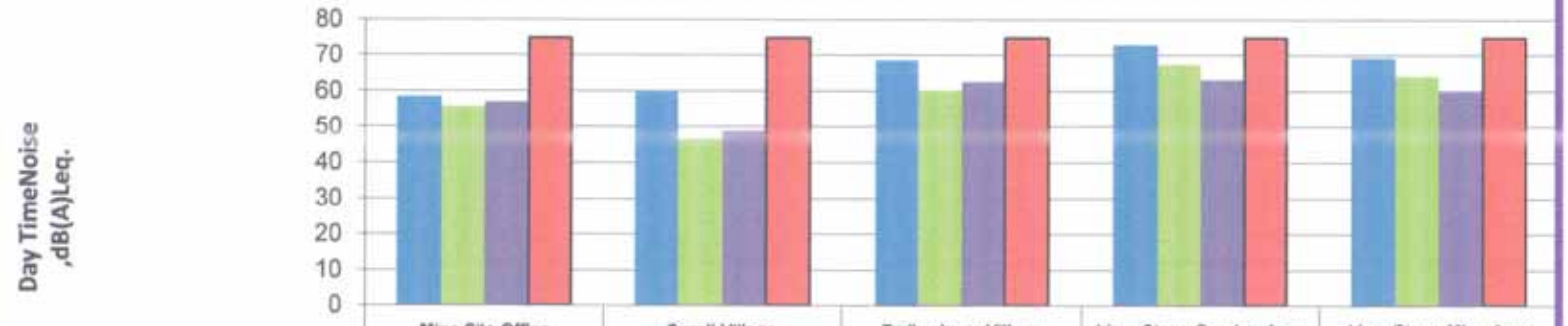
COMPARATIVE RESULTS OF NOISE LEVEL FOR VARIOUS LOCATIONS (DAY TIME)

Description	Mine Site Office	Surali Village	Tadkeshwar Village	Lime Stone Crusher Area	Lime Stone Mine Area
Bi Monthly: Jan-17 to Feb-17	58.4	59.8	68.5	72.8	69.2
Bi Monthly: March-17 to April-17	55.7	46.5	60.3	67.4	64.2
Bi Monthly: May-17 to June-17	57.0	48.8	62.6	63.2	59.8
Limits as per GPCB – CC & A	75	75	75	75	75

Graphical Presentation of Day Time Noise Level for various locations



	Mine Site Office	Surali Village	Tadkeshwar Village	Lime Stone Crusher Area	Lime Stone Mine Area
Bi Monthly: Jan-17 to Feb-17	58.4	59.8	68.5	72.8	69.2
Bi Monthly: March-17 to April-17	55.7	46.5	60.3	67.4	64.2
Bi Monthly: May-17 to June-17	57.0	48.8	62.6	63.2	59.8
Limits as per GPCB – CC & A	75	75	75	75	75

Comparative Results For the Period of:January-2017 to June-2017

Parameter : Noise Level (For Night Time)dB(A)Leq.

Period : January-2017 to June-2017

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COMPARATIVE RESULTS OF NOISE LEVEL FOR VARIOUS LOCATIONS (NIGHT TIME)

Description	Mine Site Office	Surali Village	Tadkeshwar Village	Lime Stone Crusher Area	Lime Stone Mine Area
Bi Monthly: Jan 17 to Feb-17	52.8	54.2	62.9	67.1	64.5
Bi Monthly: March-17 to April-17	51.5	41.3	56.1	62.7	58.5
Bi Monthly: May-17 to June-17	53.2	44.0	57.8	57.6	54.0
Limits as per GPCB – CC & A	70	70	70	70	70

Graphical Presentation of Night Time Noise Level for various locations

WEATHER MONITORING DATA

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Energy Water
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Work Order No: SLPP/VASTAN MINES/Envt. Monitoring/2016-17/3596
Date: 11 / 07 / 2016

Variation in Temperature for the period of January-2017 to June-2017

Sr. No.	Time in Hrs.	Monitoring Date		
		Bi Monthly: Jan-17 to Feb-17	Bi Monthly: March-17 to April-17	Bi Monthly: May-17 to June-17
		10 / 02 / 17 to 11 / 02 / 17	13 / 04 / 17 to 14 / 04 / 17	08 / 06 / 17 to 09 / 06 / 17
1.	10:00	24.0	32.0	28.0
2.	11:00	25.0	35.0	29.0
3.	12:00	26.0	39.0	30.5
4.	13:00	27.0	41.0	32.5
5.	14:00	28.0	42.5	33.0
6.	15:00	28.0	42.5	34.0
7.	16:00	27.0	41.0	33.5
8.	17:00	26.5	38.0	33.0
9.	18:00	26.0	36.0	31.0
10.	19:00	25.0	34.5	29.0
11.	20:00	25.0	33.5	28.5
12.	21:00	24.0	32.5	28.0
13.	22:00	23.5	32.5	27.0
14.	23:00	23.0	31.5	26.0
15.	24:00	22.0	31.0	25.5
16.	1:00	21.0	30.0	24.5
17.	2:00	20.0	29.0	24.0
18.	3:00	19.0	28.0	23.5
19.	4:00	18.0	26.0	24.0
20.	5:00	18.5	25.5	24.0
21.	6:00	19.0	25.0	25.5
22.	7:00	20.0	26.0	26.0
23.	8:00	21.0	27.0	26.0
24.	9:00	23.0	29.0	27.0
24 hrs. Max.		**28.0**	**42.5**	**34**
24 hrs. Min.		**18.0**	**25.0**	**23.5**
24 hrs. Avg.		**23.3**	**32.8**	**28.0**

ANALYSED BY

C.A.Dixit
CHECKED BY

ENPRO
Environment
Energy , Water
Project Consultant

Work Order No: SLPP/VASTAN MINES/Envt. Monitoring/2016-17/3596
Date: 11 / 07 / 2016

Variation in Relative Humidity for the period of January-2017 to June-2017

Sr. No.	Time in Hrs.	Monitoring Date		
		Bi Monthly: Jan-17 to Feb-17	Bi Monthly: March-17 to April-17	Bi Monthly: May-17 to June-17
		10 / 02 / 17 to 11 / 02 / 17	13 / 04 / 17 to 14 / 04 / 17	08 / 06 / 17 to 09 / 06 / 17
1.	10:00	51	34	50
2.	11:00	46	33	49
3.	12:00	43	32	47
4.	13:00	42	30	47
5.	14:00	40	30	46
6.	15:00	40	32	48
7.	16:00	42	33	50
8.	17:00	42	35	53
9.	18:00	44	36	55
10.	19:00	46	36	57
11.	20:00	48	36	59
12.	21:00	52	37	60
13.	22:00	52	38	62
14.	23:00	53	38	65
15.	24:00	53	38	67
16.	01:00	54	39	68
17.	02:00	54	39	69
18.	03:00	55	40	66
19.	04:00	55	41	64
20.	05:00	54	42	63
21.	06:00	52	42	60
22.	07:00	51	40	59
23.	08:00	51	37	56
24.	09:00	50	35	53
	24 hrs. Max.	**55**	**42**	**69**
	24 hrs. Min.	**40**	**30**	**46**
	24 hrs. Avg.	**48.8**	**36.4**	**57.2**

ANALYSED BY

C. R. Oza
CHECKED BY

Comparative Results For the Period of: January-2017 to June-2017

Period : January-2017 to June-2017

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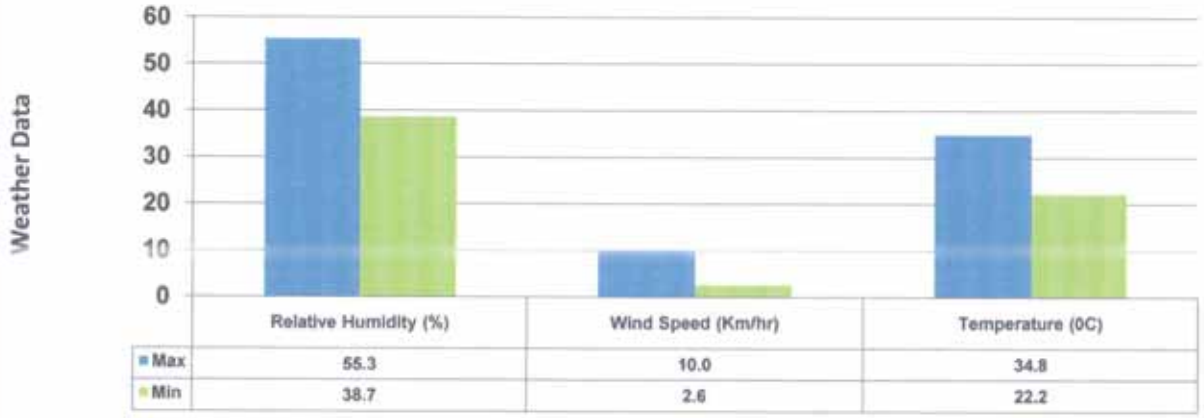
WEATHER MONITORING AT VASTAN LIME STONE MINE

Description	Relative Humidity (%)	Wind Speed (Km/hr)	Temperature (^{0}C)
Max	55.3	10.0	34.8
Min	38.7	2.6	22.2

Graphical Presentation of Weather Data for various locations

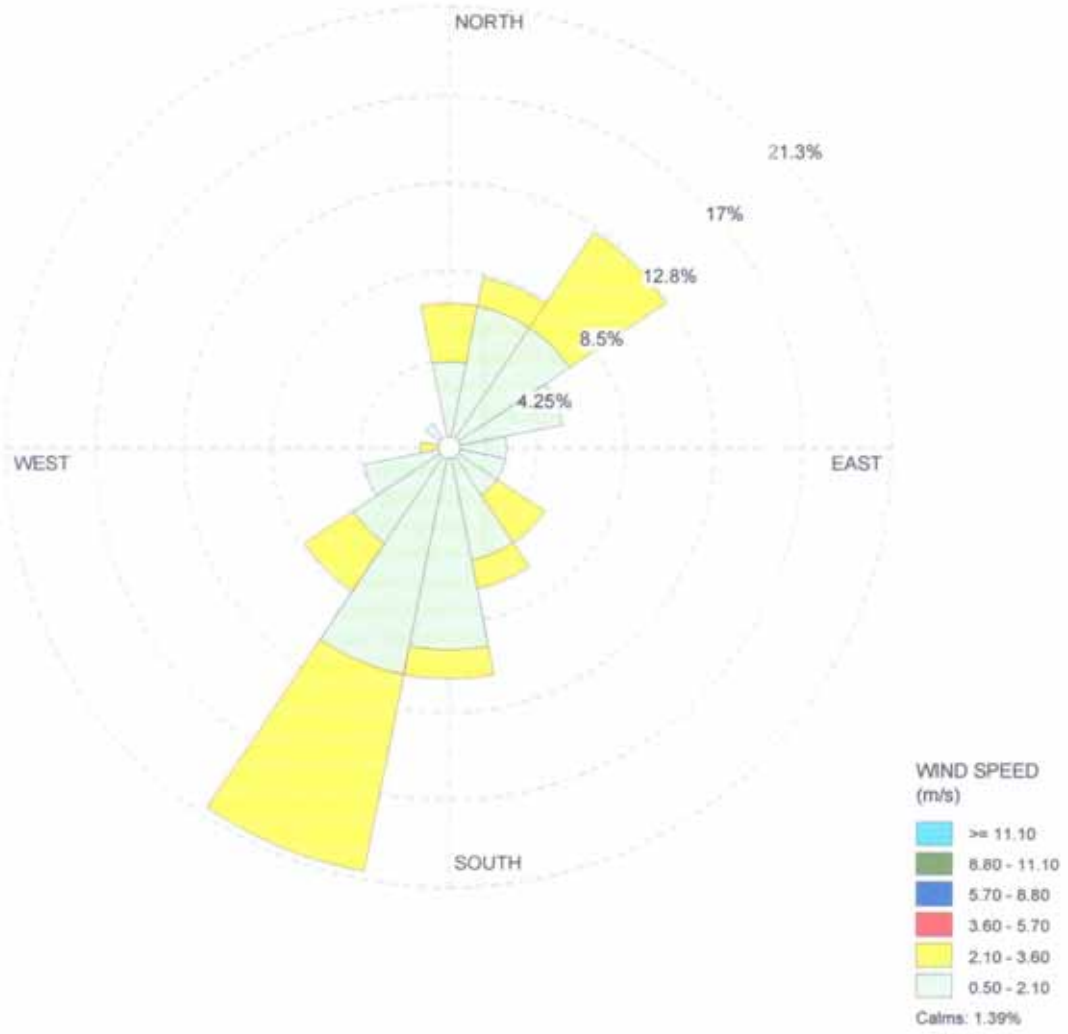


WIND ROSE PLOT:

Station # 03

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	Start Date: 10/02/2017 - 00:00 **End Date: 09/06/2017 - 09:00**		
		MODELER: **ENPRO ENVIRO TECH AND ENGINEERS PVT. LTD.**	
	CALM WINDS: **1.39%**	TOTAL COUNT: **72 hrs.**	
	AVG. WIND SPEED: **1.70 m/s**	DATE: **10/07/2017**	PROJECT NO.: