

**Six Monthly  
Environmental Monitoring Report  
Of  
M/s. Gujarat Industries Power Company Limited  
(Mangrol-Valia Lignite Mine)  
Village: Nani Naroli, Ta: Mangrol,  
Di: Surat 394110  
For the Month of July-2017 to December-2017**



**Prepared By:**

**M/s. Greenleaf Envirotech Pvt. Ltd.**

304, Kankavati Complex, Singanpore Cauzway Road,

Katargam, Surat.

### Introduction:

M/s. Gujarat industries power company limited (GIPCL) had already set up lignite fired pit head 250 MW (2 X 125 MW) thermal power plant in phase 1<sup>st</sup> and company has expanded the capacity has expanded the capacity from 250 MW to 500 MW i.e. 250 MW was developed in second phase at NaniNaroli, Taluka Mangrol. GIPCL has developed its own captive lignite mines at Mangrol in surat District & valia of Bharuch district to meet the fuel supplies for above power capacity.

Total total mining lease area of Mangrol- valia Lignite Mine is 2080 Ha, the total estimated extractable reserves of 2080 Ha is 199.87 Million. The average stripping ratio in the area is about 2:8:36 for Lignite in Tonnes to cubic meter of waste. These reserves are sufficient to feed 250 MW power plant at an annual rate of 1.8 Million tones of Lignite requirement. Hence GIPCL is developing Mangrol- valia Lignite Mine for an annual Lignite production of 4.2 Million tones annum (MTPA).

As per the status related to Environment & Ecology , it is necessary to study the adverse environmental impacts likely to be caused in and around the Mining site before, during & after the execution of the project and provide necessary mitigative and control measures, so the project authority is required to prepare a detailed Environmental impact assessment (EIA). Report and environment plan (EMP) and obtain necessary clearance from the state pollution control board (GPCB) and Ministry of Environment & Forest.



## PREFACE

Consciousness at national level in the industrial sector is increasing day by day with the focus on environment and sustainable development. A good environment management policy requires a consent effort to analyse and monitor 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. Bimonthly & its analysis report should be submitted to GPCB & six monthly analysis submitted to MoEF.

Gujarat industries power company limited (GIPCL), Mangrol- Valia Lignite Mines has Mangrol pit situated at Tal. Mangrol, Dist. Surat & Valia pit situated at Ta. Valia, Dist. Bharuch. This company engaged in the generation of electricity. The industry had awarded contract for monthly monitoring and analysis to M/s. GREENLEAF ENVIROTECH PVT. LTD., surat.

M/s. GREENLEAF ENVIROTECH PVT.LTD. is a leading environmental consultancy firm situated at Siganpor- Cauzway road, Katargam, Surat. And is approved as Schedule -II environmental auditor by Gujarat Pollution control board. M/s. GREENLEAF ENVIROTECH PVT.LTD. has its own full fledged laboratory to measure the pollution parameters belongs to Air, water, Hazardous etc.



### **Methodology for Environment Monitoring:**

M/s. Gujarat industries Power Company Limited has awarded the work of monthly environmental monitoring of its Mangrol-Valia Lignite Mine to Greenleaf Envirotech Pvt. Ltd. Greenleaf team visits the Mangrol – Valia Lignite Mines bimonthly to carry out environmental monitoring.

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

### **Water & waste quality monitoring:**

Ground and surface water samples are collected at their source point using grab sampling. Surface and ground water sample are collected from core and buffer zones located near the mining area. Preserved samples are brought to Greenleaf laboratory for analysis. For sampling & analysis methods various IS & APHA methods are followed. The samples are analyzed for physico-chemical and 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 location are 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 approx. 120° and at a distance of approx. 2 Kms. from nearby stationary source falling in the wind directions. The second array comprising minimum 2 stations located in wind directions. Also at two stations are installed in the nearby population area falling in the wind direction. The samples are collected using Respirable dust sampler and fine particulate sampler for 24 hours, preserved and brought to Greenleaf's laboratory for analysis. For sampling & analysis methods IS 5182 & CPCB manual is followed. The main pollutants analyzed are PM<sub>10</sub>, PM<sub>2.5</sub>, 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 upcoming 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 equipment 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 zones of mines. Two sets of data are collected for day time 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 and liquid particles (typically greater than 10  $\mu\text{m}$  in aerodynamic diameter) are collected via gravitational settling in an open mouth container for a period of the month. The container is washed with a known volume of distilled water, which is filtered and then evaporated. The mass of insoluble particles are determined by the weight gain of a crucible after evaporation. Total mass gain is measured gravimetrically. The dust fall is measured using jars as per the standard practice as per IS-5182.



### Scope of work

#### 1) Water & Waste water quality monitoring:

Sr.No.	Location	No.	Frequency	Parameter
1	06 Nos. Bore well water sample located both in Valia Pit	06	Bimonthly	Physico-Chemical, Heavy Metals, Biological & Microbiological parameter
2	06 Nos. Bore well water sample located both in Mangrol Pit	06	Bimonthly	Physico-Chemical, Heavy Metals, Biological & Microbiological parameter

#### 2) Ambient Air Monitoring:

Sr.No.	Location	No.	Frequency	Duration	Parameter
1	8 Nos. within the radius of 10 km from the core zone	8	Bimonthly	24 hrs.	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub>

#### 3) Dust Fall Measurement:

Sr.No.	Location	No.	Frequency	Duration	Parameter
1	8 No. of location within the radius of Core & Buffer Zone of Valia Pit	8	Bimonthly	1 month	Dust fall

#### 4) Weather Monitoring :

Sr.No.	Location	Frequency	Duration	Parameter
1	1 No. at Mining area of Mangrol Valia Lignite Mine	Bimonthly	24 hrs.	Dry & wet Bulb temperature, Relative humidity, Wind speed, & Direction, Temp., Atmospheric pressure, rainfall

#### 5) Noise Monitoring:

Sr.No.	Location	Frequency	Duration	Parameter
1	8 No. at various location in plant premises	Bimonthly	2 Min/ Location	Day & Night Noise Level



Work order No: SLPP/Mines/Envt.Monitoring 2017-18/11Dated 15. 07. 2017

**Monthly Variation in July-2017-December-2017**

**(Mangrol-Valia Lignite Mine)**

**Report period: July-2017-December-2017**

**Sample: Kosmadi Village (Valia Block)**

Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			July-2017 to August-2017	September-2017 to October-2017	November-2017 to December-2017	
			29/08/2017	11/10/2017	21/12/2017	
<b>RESULTS</b>						
1	pH @ 25°C	pH unit	7.58	6.97	7.65	5.5-9.0
2	Colour	Pt Co scale	<5.0	<5.0	5.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	12.9	11.0	5.1	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	2014.5	2030.0	2041.0	2100
5	Total volatile solids	mg/L	BDL	BDL	BDL	-
6	BOD (5 days at 20°C)	mg/L	-	-	-	30
7	COD	mg/L	-	-	-	250
8	Oil & Grease	mg/L	3.6	2.7	2.9	10
9	Chloride	mg/L	812.3	985.5	886.9	1000
10	Sulphate	mg/L	254.7	231.8	143.4	300
11	Phosphate	mg/L	0.71	0.4	BDL	-
12	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
13	Flouride	mg/L	1.3	0.91	1.0	2.0
14	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
15	Free available chlorine	mg/L	Nil	Nil	Nil	-
16	Iron	mg/L	0.45	BDL	0.6	3.0
17	Copper	mg/L	BDL	BDL	BDL	3.0
18	Total Chromium	mg/L	BDL	BDL	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
20	Zinc	mg/L	BDL	BDL	BDL	5.0
21	Lead	mg/L	BDL	BDL	BDL	0.1
22	Calcium	mg/L	115.0	142.8	119.0	-
23	Magnesium	mg/L	89.0	134.7	98.7	-
24	Percent sodium	%	76.8	69.2	60.68	-
25	Coliform organism (MPN)	CFU/100 ml	Absent	Absent	Absent	-
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	91	94	93	90 % survival of fish after 96 Hrs. in100 % effluent

  
Chemist

  
Authorized Signatory  
Keta Jariwala



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Monthly Variation in July-2017-December-2017

(Mangrol-Valia Lignite Mine)

Report period: July2017-December-2017

Sample: Mine water Mangrol (Mangrol Block)



Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			July-2017 to August-2017	September-2017 to October-2017	November-2017 to December-2017	
			29/08/2017	11/10/2017	22/12/2017	
<b>RESULTS</b>						
1	pH @ 25°C	pH unit	7.16	6.12	6.06	5.5-9.0
2	Colour	Pt Co scale	10	<5.0	5.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	19.2	56.6	33.6	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	2080.0	920.0	2080.0	2100
5	Total volatile solids	mg/L	BDL	BDL	BDL	-
6	BOD (5 days at 20°C)	mg/L	-	-	-	30
7	COD	mg/L	-	-	-	250
8	Oil & Grease	mg/L	8.6	6.1	6.4	10
9	Chloride	mg/L	991.8	933.9	935.9	1000
10	Sulphate	mg/L	289.3	273.1	278.64	300
11	Phosphate	mg/L	3.7	0.08	1.64	-
12	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
13	Flouride	mg/L	1.7	1.1	0.66	2.0
14	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
15	Free available chlorine	mg/L	Nil	Nil	Nil	-
16	Iron	mg/L	2.4	2.9	2.30	3.0
17	Copper	mg/L	BDL	BDL	BDL	3.0
18	Total Chromium	mg/L	BDL	BDL	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
20	Zinc	mg/L	BDL	BDL	BDL	5.0
21	Lead	mg/L	BDL	BDL	BDL	0.1
22	Calcium	mg/L	563.4	738.0	694.8	-
23	Magnesium	mg/L	259.8	242.9	255.0	-
24	Percent sodium	%	30.7	30.8	30.7	-
25	Coliform organism (MPN)	CFU/100 ml	Absent	Absent	Absent	-
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	95	97	94	90 % survival of fish after 96 Hrs. in100 % effluent

*MYB*

Chemist

*Keta*  
Authorized Signatory  
Keta Jariwala



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**Monthly Variation in July-2017-December-2017**


**(Mangrol-Valia Lignite Mine)**

**Report period: July2017-December-2017**

**Sample: Bore water Charetha Village (Mangrol Block)**



Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			July-2017 to August-2017	September-2017 to October-2017	November-2017 to December-2017	
			29/08/2017	11/10/2017	22/12/2017	
<b>RESULTS</b>						
1	pH @ 25°C	pH unit	7.50	7.77	7.89	5.5-9.0
2	Colour	Pt Co scale	<5.0	<5.0	10.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	6.5	18.6	5.5	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	1995.8	1840.0	1340.0	2100
5	Total volatile solids	mg/L	BDL	BDL	BDL	-
6	BOD (5 days at 20°C)	mg/L	-	-	-	30
7	COD	mg/L	-	-	-	250
8	Oil & Grease	mg/L	7.0	7.4	9.1	10
9	Chloride	mg/L	28.5	910.7	310.43	1000
10	Sulphate	mg/L	216.3	182.3	26.95	300
11	Phosphate	mg/L	0.2	0.3	BDL	-
12	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
13	Flouride	mg/L	1.6	0.6	0.55	2.0
14	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
15	Free available chlorine	mg/L	Nil	Nil	Nil	-
16	Iron	mg/L	BDL	BDL	0.14	3.0
17	Copper	mg/L	BDL	BDL	BDL	3.0
18	Total Chromium	mg/L	BDL	BDL	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
20	Zinc	mg/L	BDL	BDL	BDL	5.0
21	Lead	mg/L	BDL	BDL	BDL	0.1
22	Calcium	mg/L	289.6	230.1	15.87	-
23	Magnesium	mg/L	221.3	55.3	36.1	-
24	Percent sodium	%	55.9	64.7	85.2	-
25	Coliform organism (MPN)	CFU/100 ml	Absent	Absent	Absent	-
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	98	96	93	90 % survival of fish after 96 Hrs. in100 % effluent

  
Chemist

  
Authorized Signatory  
Keta Jariwala



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**Monthly Variation in July-2017-December-2017**

**(Mangrol-Valia Lignite Mine)**

**Report period: July2017-December-2017**

**Sample: Shah Nallah(Up stream) (Mangrol Block)**



Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			July-2017 to August-2017	September-2017 to October-2017	November-2017 to December-2017	
			29/08/2017	11/10/2017	22/12/2017	
<b>RESULTS</b>						
1	pH @ 25°C	pH unit	7.82	6.74	7.65	5.5-9.0
2	Colour	Pt Co scale	<5.0	<5.0	5.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	2.9	2.6	4.7	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	745.0	719.0	1300.0	2100
5	Total volatile solids	mg/L	BDL	BDL	BDL	--
6	BOD (5 days at 20°C)	mg/L	-	-	-	30
7	COD	mg/L	-	-	-	250
8	Oil & Grease	mg/L	7.4	5.8	7.0	10
9	Chloride	mg/L	17.3	190.8	344.92	1000
10	Sulphate	mg/L	262.2	63.6	29.81	300
11	Phosphate	mg/L	1.3	BDL	BDL	--
12	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
13	Flouride	mg/L	1.3	0.86	0.1	2.0
14	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
15	Free available chlorine	mg/L	Nil	Nil	Nil	--
16	Iron	mg/L	0.16	BDL	0.13	3.0
17	Copper	mg/L	BDL	BDL	BDL	3.0
18	Total Chromium	mg/L	BDL	BDL	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
20	Zinc	mg/L	BDL	BDL	BDL	5.0
21	Lead	mg/L	BDL	BDL	BDL	0.1
22	Calcium	mg/L	50.8	59.5	47.61	--
23	Magnesium	mg/L	42.3	67.4	72.17	--
24	Percent sodium	%	56.0	51.8	72.21	--
25	Coliform organism (MPN)	CFU/100 ml	Absent	Absent	Absent	--
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	92	96	95	90 % survival of fish after 96 Hrs. in100 % effluent

*MYB*  
Chemist

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**(Mangrol-Valia Lignite Mine)**

**Report period: July2017-December-2017**

**Sample: Mosali Village (Mangrol Block)**



Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			July-2017 to August-2017	September-2017 to October-2017	November-2017 to December-2017	
			29/08/2017	11/10/2017	22/12/2017	
<b>RESULTS</b>						
1	pH @ 25°C	pH unit	7.29	7.21	7.92	5.5-9.0
2	Colour	Pt Co scale	<5.0	<5.0	5.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	32.6	7.8	8.0	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	1189.1	1840.0	2050.0	2100
5	Total volatile solids	mg/L	BDL	BDL	BDL	-
6	BOD (5 days at 20°C)	mg/L	-	-	-	30
7	COD	mg/L	-	-	-	250
8	Oil & Grease	mg/L	4.5	3.8	8.2	10
9	Chloride	mg/L	369.5	959.4	955.94	1000
10	Sulphate	mg/L	221.6	195.3	57.37	300
11	Phosphate	mg/L	1.9	BDL	BDL	-
12	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
13	Flouride	mg/L	1.5	0.5	0.17	2.0
14	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
15	Free available chlorine	mg/L	Nil	Nil	Nil	-
16	Iron	mg/L	0.79	0.48	0.03	3.0
17	Copper	mg/L	BDL	BDL	BDL	3.0
18	Total Chromium	mg/L	BDL	BDL	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
20	Zinc	mg/L	BDL	BDL	BDL	5.0
21	Lead	mg/L	BDL	BDL	BDL	0.1
22	Calcium	mg/L	89.5	238.1	210.3	-
23	Magnesium	mg/L	19.9	31.3	43.3	-
24	Percent sodium	%	19.9	69.1	65.24	-
25	Coliform organism (MPN)	CFU/100 ml	Absent	Absent	Absent	-
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	96	98	94	90 % survival of fish after 96 Hrs. in100 % effluent

*MJB*  
Chemist

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(Mangrol-Valia Lignite Mine)

Report period: July 2017-December-2017

Sample: Pond water Shah Nala (Mangrol Block)

Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E), Dt. 25/09/2000 Inland surface water
			July-2017 to August-2017	September-2017 to October-2017	November-2017 to December-2017	
			29/08/2017	11/10/2017	22/12/2017	
RESULTS						
1	pH @ 25°C	pH unit	6.94	6.89	7.21	5.5-9.0
2	Colour	Pt Co scale	<5.0	<5.0	5.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	15.9	21.4	17.6	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	735.0	338.0	541.0	2100
5	Total volatile solids	mg/L	BDL	BDL	BDL	-
6	BOD (5 days at 20°C)	mg/L	-	-	-	30
7	COD	mg/L	-	-	-	250
8	Oil & Grease	mg/L	6.4	2.9	5.4	10
9	Chloride	mg/L	47.5	73.4	93.62	1000
10	Sulphate	mg/L	18.9	11.7	23.08	300
11	Phosphate	mg/L	4.4	6.4	4.14	-
12	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
13	Flouride	mg/L	0.6	0.16	BDL	2.0
14	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
15	Free available chlorine	mg/L	Nil	Nil	Nil	-
16	Iron	mg/L	0.9	0.18	0.29	3.0
17	Copper	mg/L	BDL	BDL	BDL	3.0
18	Total Chromium	mg/L	BDL	BDL	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
20	Zinc	mg/L	BDL	BDL	BDL	5.0
21	Lead	mg/L	BDL	BDL	BDL	0.1
22	Calcium	mg/L	34.9	27.8	31.74	-
23	Magnesium	mg/L	9.6	33.7	72.17	-
24	Percent sodium	%	34.0	16.8	27.91	-
25	Coliform organism (MPN)	CFU/100 ml	Absent	Absent	Absent	-
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	92	95	92	90 % survival of fish after 96 Hrs. in 100 % effluent

*MYB*  
Chemist

*Keta*  
Authorized Signatory  
Keta Jariwala



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Work order No: SLPP/Mines/Envt.Monitoring 2017-18/11 Dated 15.07.2017

**Monthly Variation in July-2017-December-2017**

**(Mangrol-Valia Lignite Mine)**

**Report period: July 2017-December-2017**

**Sample: Charetha Shah Nala (Down stream) (Mangrol Block)**

Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E), Dt. 25/09/2000 Inland surface water
			July-2017 to August-2017	September-2017 to October-2017	November-2017 to December-2017	
			29/08/2017	11/10/2017	22/12/2017	
<b>RESULTS</b>						
1	pH @ 25°C	pH unit	7.80	7.13	7.69	5.5-9.0
2	Colour	Pt Co scale	5.0	5.0	10.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	37.0	6.8	1.6	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	258.0	596.0	585.0	2100
5	Total volatile solids	mg/L	BDL	BDL	BDL	-
6	BOD (5 days at 20°C)	mg/L	-	-	-	30
7	COD	mg/L	-	-	-	250
8	Oil & Grease	mg/L	5.1	6.4	7.35	10
9	Chloride	mg/L	28.5	112.5	340.0	1000
10	Sulphate	mg/L	33.3	48.3	25.12	300
11	Phosphate	mg/L	5.8	2.5	0.18	-
12	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
13	Flouride	mg/L	0.6	0.59	0.89	2.0
14	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
15	Free available chlorine	mg/L	Nil	Nil	Nil	-
16	Iron	mg/L	2.9	BDL	0.21	3.0
17	Copper	mg/L	BDL	BDL	BDL	3.0
18	Total Chromium	mg/L	BDL	BDL	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
20	Zinc	mg/L	BDL	BDL	BDL	5.0
21	Lead	mg/L	BDL	BDL	BDL	0.1
22	Calcium	mg/L	39.7	55.6	63.48	-
23	Magnesium	mg/L	21.2	168.3	74.5	-
24	Percent sodium	%	2.28	19.2	19.6	-
25	Coliform organism (MPN)	CFU/100 ml	Absent	Absent	Absent	-
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	95	97	95	90 % survival of fish after 96 Hrs. in 100 % effluent

*MYB*  
Chemist

*Keta*  
Authorized Signatory  
Keta Jariwala



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Work order No: SLPP/Mines/Envnt.Monitoring 2017-18/11Dated 15.07.2017

**Monthly Variation in July-2017-December-2017**

**(Mangrol-Valia Lignite Mine)**

**Report period: July-2017-December-2017**

**Sample: Anoi Village (Valia Block)**

Sr. No.	Test Parameters	Unit	Sampling Date		Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			July-2017 to August-2017	September-2017 to October-2017	
			29/08/2017	11/10/2017	
RESULTS					
1	pH @ 25°C	pH unit	7.31	6.79	5.5-9.0
2	Colour	Pt Co scale	<5.0	<5.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	41.0	12.2	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	698.0	1160.0	2100
5	Total volatile solids	mg/L	BDL	BDL	-
6	BOD (5 days at 20°C)	mg/L	-	-	30
7	COD	mg/L	-	-	250
8	Oil & Grease	mg/L	1.2	5.1	10
9	Chloride	mg/L	189.0	195.7	1000
10	Sulphate	mg/L	90.2	114.5	300
11	Phosphate	mg/L	1.1	BDL	-
12	Phenolic Compound	mg/L	BDL	BDL	1.0
13	Flouride	mg/L	0.5	0.76	2.0
14	Total residual chlorine	mg/L	Nil	Nil	1.0
15	Free available chlorine	mg/L	Nil	Nil	-
16	Iron	mg/L	0.63	2.9	3.0
17	Copper	mg/L	BDL	BDL	3.0
18	Total Chromium	mg/L	BDL	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	BDL	0.1
20	Zinc	mg/L	BDL	BDL	5.0
21	Lead	mg/L	BDL	BDL	0.1
22	Calcium	mg/L	120	55.6	-
23	Magnesium	mg/L	39	79.4	-
24	Percent sodium	%	25.9	60.79	-
25	Coliform organism (MPN)	CFU/100 ml	Absent	Absent	-
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	98	97	90 % survival of fish after 96 Hrs. in 100 % effluent

  
Chemist

  
Authorized Signatory  
Keta Jariwala



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Monthly Variation in July-2017-December-2017


(Mangrol-Valia Lignite Mine)

Report period: July-2017-December-2017

Sample: Minewater Sump(Valia Block)



Sr. No.	Test Parameters	Unit	Sampling Date			Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			July-2017 to August-2017	September-2017 to October-2017	November-2017 to December-2017	
			29/08/2017	11/10/2017	21/12/2017	
<b>RESULTS</b>						
1	pH @ 25°C	pH unit	7.02	7.23	7.18	5.5-9.0
2	Colour	Pt Co scale	<5.0	<5.0	10.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	31.5	13.2	22.6	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	1710.0	2050.0	1860.0	2100
5	Total volatile solids	mg/L	BDL	BDL	BDL	--
6	BOD (5 days at 20°C)	mg/L	-	-	-	30
7	COD	mg/L	-	-	-	250
8	Oil & Grease	mg/L	7.0	1.7	8.9	10
9	Chloride	mg/L	318.3	464.7	739.13	1000
10	Sulphate	mg/L	290.5	257.1	274.1	300
11	Phosphate	mg/L	3.7	2.38	2.1	--
12	Phenolic Compound	mg/L	BDL	BDL	BDL	1.0
13	Flouride	mg/L	0.3	0.89	1.17	2.0
14	Total residual chlorine	mg/L	Nil	Nil	Nil	1.0
15	Free available chlorine	mg/L	Nil	Nil	Nil	--
16	Iron	mg/L	2.5	0.43	0.74	3.0
17	Copper	mg/L	BDL	BDL	BDL	3.0
18	Total Chromium	mg/L	BDL	BDL	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	BDL	BDL	0.1
20	Zinc	mg/L	BDL	BDL	BDL	5.0
21	Lead	mg/L	BDL	BDL	BDL	0.1
22	Calcium	mg/L	174.6	242.0	257.91	--
23	Magnesium	mg/L	84.2	141.9	141.93	--
24	Percent sodium	%	31.8	43.17	45.44	--
25	Coliform organism (MPN)	CFU/100 ml	Absent	Absent	Absent	--
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	96	95	93	90 % survival of fish after 96 Hrs. in100 % effluent

  
Chemist

  
Authorized Signatory  
Keta Jariwala



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**Monthly Variation in July-2017-December-2017**

**(Mangrol-Valia Lignite Mine)**

**Report period: July2017-December-2017**

**Sample: Harsani village (Valia Block)**

Sr. No.	Test Parameters	Unit	Sampling Date		Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			September-2017 to October-2017	November-2017 to December-2017	
			11/10/2017	21/12/2017	
RESULTS					
1	pH @ 25°C	pH unit	7.13	7.80	5.5-9.0
2	Colour	Pt Co scale	<5.0	5.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	17.4	3.3	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	1980.0	1020.0	2100
5	Total volatile solids	mg/L	BDL	BDL	-
6	BOD (5 days at 20°C)	mg/L	-	-	30
7	COD	mg/L	-	-	250
8	Oil & Grease	mg/L	3.4	3.05	10
9	Chloride	mg/L	831.7	246.37	1000
10	Sulphate	mg/L	200.3	34.16	300
11	Phosphate	mg/L	BDL	BDL	-
12	Phenolic Compound	mg/L	BDL	BDL	1.0
13	Flouride	mg/L	0.55	0.36	2.0
14	Total residual chlorine	mg/L	Nil	Nil	1.0
15	Free available chlorine	mg/L	Nil	Nil	-
16	Iron	mg/L	2.8	0.1	3.0
17	Copper	mg/L	BDL	BDL	3.0
18	Total Chromium	mg/L	BDL	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	BDL	0.1
20	Zinc	mg/L	BDL	BDL	5.0
21	Lead	mg/L	BDL	BDL	0.1
22	Calcium	mg/L	210.3	55.55	-
23	Magnesium	mg/L	161.2	50.51	-
24	Percent sodium	%	36.5	46.71	-
25	Coliform organism (MPN)	CFU/100 ml	Absent	Absent	-
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	96	94	90 % survival of fish after 96 Hrs. in100 % effluent

*MPB*  
Chemist

*Keta*  
Authorized Signatory  
Keta Jariwala



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**Monthly Variation in July-2017-December-2017**

**(Mangrol-Valia Lignite Mine)**

**Report period: July 2017-December-2017**

**Sample: Bhaga village (Valia Block)**

Sr. No.	Test Parameters	Unit	Sampling Date		Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E), Dt. 25/09/2000 Inland surface water
			September-2017 to October-2017	November-2017 to December-2017	
			11/10/2017	21/12/2017	
<b>RESULTS</b>					
1	pH @ 25°C	pH unit	6.93	7.44	5.5-9.0
2	Colour	Pt Co scale	<5.0	5.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	43.2	17.0	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	2043.0	2089.0	2100
5	Total volatile solids	mg/L	BDL	BDL	-
6	BOD (5 days at 20°C)	mg/L	-	-	30
7	COD	mg/L	-	-	250
8	Oil & Grease	mg/L	2.0	8.5	10
9	Chloride	mg/L	932.4	925.2	1000
10	Sulphate	mg/L	292.6	273.9	300
11	Phosphate	mg/L	2.8	BDL	-
12	Phenolic Compound	mg/L	BDL	BDL	1.0
13	Flouride	mg/L	0.84	0.69	2.0
14	Total residual chlorine	mg/L	Nil	Nil	1.0
15	Free available chlorine	mg/L	Nil	Nil	-
16	Iron	mg/L	1.74	2.0	3.0
17	Copper	mg/L	BDL	BDL	3.0
18	Total Chromium	mg/L	BDL	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	BDL	0.1
20	Zinc	mg/L	BDL	BDL	5.0
21	Lead	mg/L	BDL	BDL	0.1
22	Calcium	mg/L	357.1	333.3	-
23	Magnesium	mg/L	211.7	245.4	-
24	Percent sodium	%	62.1	58.9	-
25	Coliform organism (MPN)	CFU/100 ml	Absent	Absent	-
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	96	94	90 % survival of fish after 96 Hrs. in 100 % effluent

  
Chemist

  
Authorized Signatory  
Keta Jariwala



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**Monthly Variation in July-2017-December-2017**

**(Mangrol-Valia Lignite Mine)**

**Report period: July 2017-December-2017**

**Sample: Dansoli village (Valia Block)**

Sr. No.	Test Parameters	Unit	Sampling Date		Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E), Dt. 25/09/2000 Inland surface water
			September-2017 to October-2017	November-2017 to December-2017	
			11/10/2017	21/12/2017	
<b>RESULTS</b>					
1	pH @ 25°C	pH unit	6.86	7.24	5.5-9.0
2	Colour	Pt Co scale	<5.0	10.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	13.4	7.3	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	1500.0	1890.0	2100
5	Total volatile solids	mg/L	BDL	BDL	--
6	BOD (5 days at 20°C)	mg/L	-	-	30
7	COD	mg/L	-	-	250
8	Oil & Grease	mg/L	1.3	7.8	10
9	Chloride	mg/L	342.4	753.9	1000
10	Sulphate	mg/L	143.4	115.5	300
11	Phosphate	mg/L	0.6	BDL	--
12	Phenolic Compound	mg/L	BDL	BDL	1.0
13	Flouride	mg/L	0.6	0.65	2.0
14	Total residual chlorine	mg/L	Nil	Nil	1.0
15	Free available chlorine	mg/L	Nil	Nil	--
16	Iron	mg/L	2.5	1.85	3.0
17	Copper	mg/L	BDL	BDL	3.0
18	Total Chromium	mg/L	BDL	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	BDL	0.1
20	Zinc	mg/L	BDL	BDL	5.0
21	Lead	mg/L	BDL	BDL	0.1
22	Calcium	mg/L	23.8	119.0	--
23	Magnesium	mg/L	26.4	98.6	--
24	Percent sodium	%	87.3	45.3	--
25	Coliform organism (MPN)	CFU/100 ml	Absent	Absent	--
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	94	95	90 % survival of fish after 96 Hrs. in 100 % effluent

  
**Chemist**

  
**Authorized Signatory**  
**Keta Jariwala**



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**Monthly Variation in July-2017-December-2017**

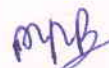
**(Mangrol-Valia Lignite Mine)**

**Report period: July2017-December-2017**

**Sample: Morambli Borewell (Valia Block)**



Sr. No.	Test Parameters	Unit	Sampling Date		Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			July-2017 to August-2017	November-2017 to December-2017	
			29/08/2017	21/12/2017	
<b>RESULTS</b>					
1	pH @ 25°C	pH unit	7.56	7.55	5.5-9.0
2	Colour	Pt Co scale	<5.0	5.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	2.0	7.0	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	1280.0	1350.0	2100
5	Total volatile solids	mg/L	BDL	BDL	--
6	BOD (5 days at 20°C)	mg/L	-	-	30
7	COD	mg/L	-	-	250
8	Oil & Grease	mg/L	14.1	8.89	10
9	Chloride	mg/L	229.3	290.7	1000
10	Sulphate	mg/L	55.5	21.8	300
11	Phosphate	mg/L	0.5	BDL	--
12	Phenolic Compound	mg/L	BDL	BDL	1.0
13	Flouride	mg/L	1.4	0.95	2.0
14	Total residual chlorine	mg/L	Nil	Nil	1.0
15	Free available chlorine	mg/L	Nil	Nil	--
16	Iron	mg/L	0.4	0.85	3.0
17	Copper	mg/L	BDL	BDL	3.0
18	Total Chromium	mg/L	BDL	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	BDL	0.1
20	Zinc	mg/L	BDL	BDL	5.0
21	Lead	mg/L	BDL	BDL	0.1
22	Calcium	mg/L	43.7	36.67	--
23	Magnesium	mg/L	38.5	38.49	--
24	Percent sodium	%	75.2	56.24	--
25	Coliform organism (MPN)	CFU/100 ml	Absent	Absent	--
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	98	92	90 % survival of fish after 96 Hrs. in100 % effluent

  
Chemist

  
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Keta Jariwala



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Work order No: SLPP/Mines/Envt.Monitoring 2017-18/11Dated 15.07.2017

**Monthly Variation in July-2017-December-2017**

**(Mangrol-Valia Lignite Mine)**

**Report period: July-2017-December-2017**

**Sample: Navabhaga village (Valia Block)**



Sr. No.	Test Parameters	Unit	Sampling Date	Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			July-2017 to August-2017	
			29/08/2017	
1	pH @ 25°C	pH unit	7.84	5.5-9.0
2	Colour	Pt Co scale	<5.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	8.7	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	1090.0	2100
5	Total volatile solids	mg/L	BDL	-
6	BOD (5 days at 20°C)	mg/L	-	30
7	COD	mg/L	-	250
8	Oil & Grease	mg/L	12.2	10
9	Chloride	mg/L	570.0	1000
10	Sulphate	mg/L	40.2	300
11	Phosphate	mg/L	0.5	-
12	Phenolic Compound	mg/L	BDL	1.0
13	Flouride	mg/L	1.6	2.0
14	Total residual chlorine	mg/L	Nil	1.0
15	Free available chlorine	mg/L	Nil	-
16	Iron	mg/L	1.9	3.0
17	Copper	mg/L	BDL	3.0
18	Total Chromium	mg/L	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	0.1
20	Zinc	mg/L	BDL	5.0
21	Lead	mg/L	BDL	0.1
22	Calcium	mg/L	67.5	-
23	Magnesium	mg/L	69.8	-
24	Percent sodium	%	73.0	-
25	Coliform organism (MPN)	CFU/100 ml	Absent	-
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	94	90 % survival of fish after 96 Hrs. in 100 % effluent

  
Chemist

  
Authorized Signatory  
Keta Jariwala



Note:

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Work order No: SLPP/Mines/Envt.Monitoring 2017-18/11Dated 15.07.2017

**Monthly Variation in July-2017-December-2017**


**(Mangrol-Valia Lignite Mine)**

**Report period: July-2017-December-2017**

**Sample: Rajgadh village (Valia Block)**



Sr. No.	Test Parameters	Unit	Sampling date	Limits: Ministry of Environment & forests (MoEF), vide notification No. GSR 742 (E),Dt.25/09/2000 Inland surface water
			July-2017 to August-2017	
			29/08/2017	
1	pH @ 25°C	pH unit	7.69	5.5-9.0
2	Colour	Pt Co scale	<5.0	-
3	Total Suspended Solids (TSS @ 105°C)	mg/L	7.2	100
4	Total Dissolved Solids (TDS @ 105°C)	mg/L	1520.0	2100
5	Total volatile solids	mg/L	BDL	--
6	BOD (5 days at 20°C)	mg/L	-	30
7	COD	mg/L	-	250
8	Oil & Grease	mg/L	8.0	10
9	Chloride	mg/L	741.1	1000
10	Sulphate	mg/L	130.9	300
11	Phosphate	mg/L	1.3	--
12	Phenolic Compound	mg/L	BDL	1.0
13	Flouride	mg/L	1.5	2.0
14	Total residual chlorine	mg/L	Nil	1.0
15	Free available chlorine	mg/L	Nil	--
16	Iron	mg/L	2.6	3.0
17	Copper	mg/L	BDL	3.0
18	Total Chromium	mg/L	BDL	2.0
19	Hexavalent Chromium	mg/L	BDL	0.1
20	Zinc	mg/L	BDL	5.0
21	Lead	mg/L	BDL	0.1
22	Calcium	mg/L	51.6	--
23	Magnesium	mg/L	36.1	--
24	Percent sodium	%	76.5	--
25	Coliform organism (MPN)	CFU/100 ml	Absent	--
26	Bioassay test	% survival of fish after 96 hrs in 100% effluent	91	90 % survival of fish after 96 Hrs. in 100 % effluent

  
Chemist

  
Authorized Signatory  
Keta Jariwala



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**BOREWATER'S**  
**COMPARATIVE**  
**ANALYSIS REPORTS**



Work order No: SLPP/Mines/Envt.Monitoring 2017-18/11 Dated 15.07.2017

Comparative Results for the period of July-2017-December-2017

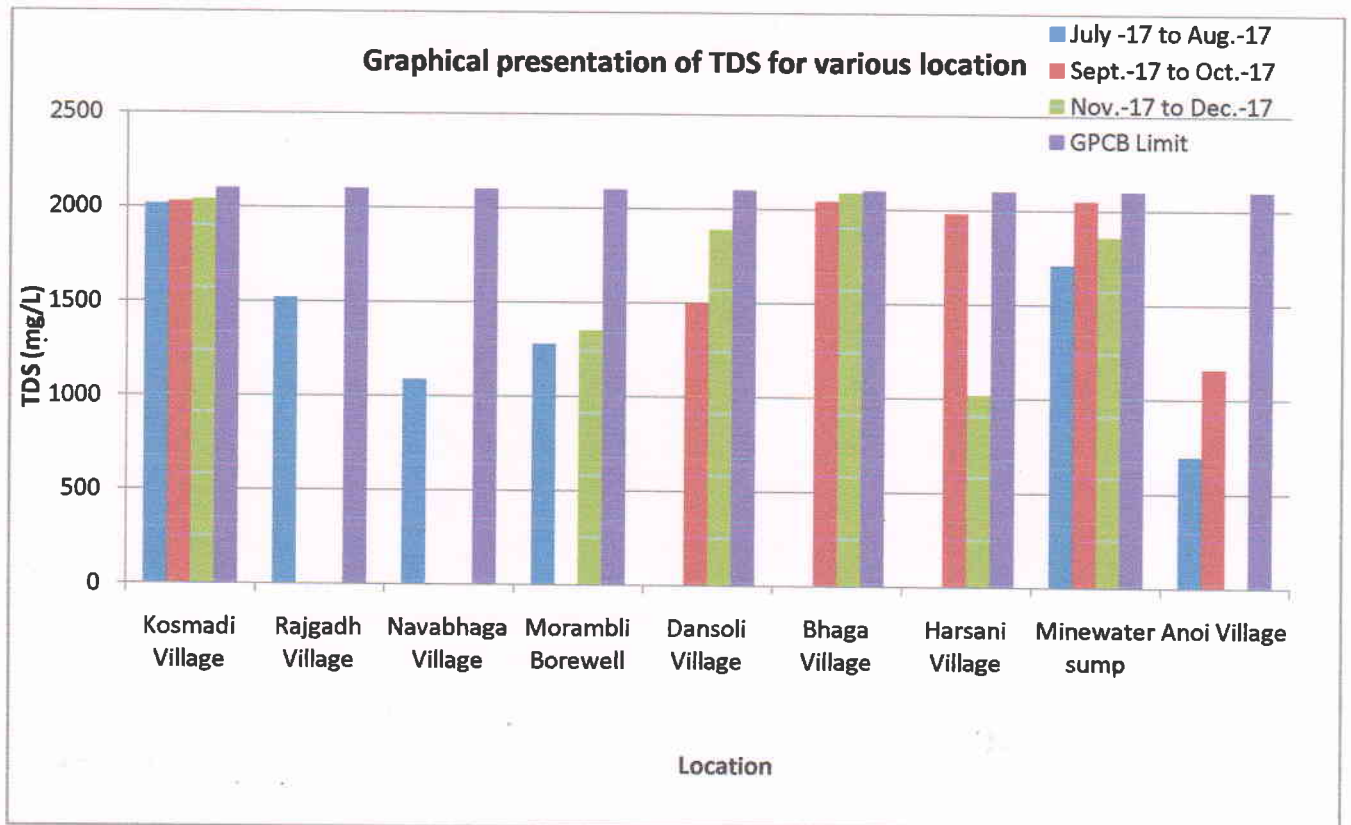
(Mangrol-Valia Lignite Mine)

Report period: July-2017-December-2017

Parameter: TSS (mg/L)

**Comparative Results of TDS for Various Locations (Valia Block)**

Description	Kosmadi Village	Rajgadh Village	Navabhaga Village	Morambli Borewell	Dansoli Village	Bhaga Village	Harsani Village	Minewater sump	Anoi Village
July -17 to Aug.-17	2014.5	1520.0	1090.0	1280.0	--	--	--	1710.0	698.0
Sept.-17 to Oct.-17	2030.0	--	--	--	1500.0	2043.0	1980.0	2050.0	1160.0
Nov.-17 to Dec.-17	2041.0	--	--	1350.0	1890.0	2089.0	1020.0	1860.0	--
GPCB Limit	2100								



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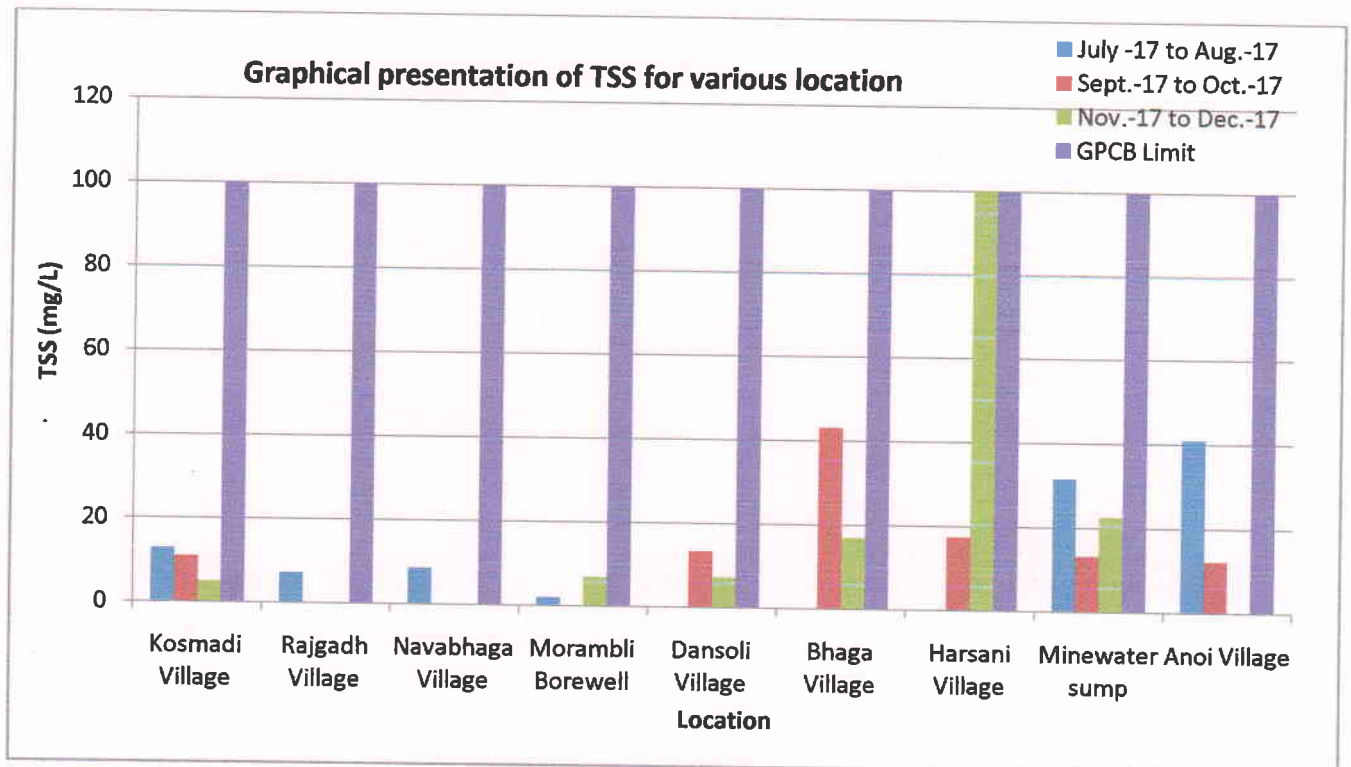
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Work order No: SLPP/Mines/Envnt.Monitoring 2017-18/11Dated 15.07.2017  
**Comparative Results for the period of July-2017-December-2017**  
**(Mangrol-Valia Lignite Mine)**  
**Report period: July-2017-December-2017**  
**Parameter: TSS (mg/L)**



**Comparative Results of TSS for Various Locations (Valia Block)**

Description	Kosmadi Village	Rajgadh Village	Navabhaga Village	Morambli Borewell	Dansoli Village	Bhaga Village	Harsani Village	Minewater sump	Anoi Village
July -17 to Aug.-17	12.9	7.2	8.7	2.0	--	--	--	31.5	41.0
Sept.-17 to Oct.-17	11.0	--	--	--	13.4	43.2	17.4	13.2	12.2
Nov.-17 to Dec.-17	5.1	--	--	7.0	7.3	17.0	3.3	22.6	--
GPCB Limit	100								



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Work order No: SLPP/Mines/Envt.Monitoring 2017-18/11 Dated 15.07.2017

Comparative Results for the period of July-2017-December-2017

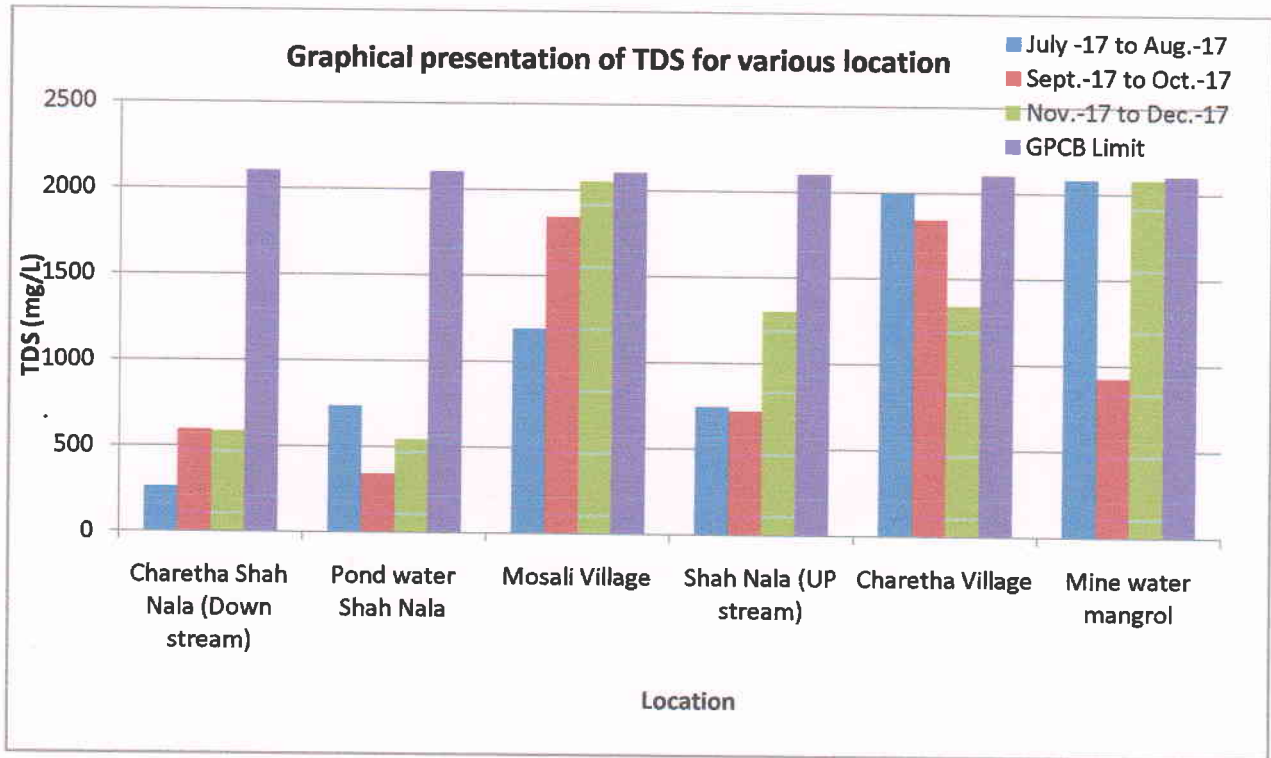
(Mangrol-Valia Lignite Mine)

Report period: July-2017-December-2017

Parameter: TDS (mg/L)

**Comparative Results of TDS for Various Locations (Mangrol Block)**

Description	Charetha Shah Nala (Down stream)	Pond water Shah Nala	Mosali Village	Shah Nala (UP stream)	Charetha Village	Mine water mangrol
July -17 to Aug.-17	258.0	735.0	1189.1	745.0	1995.8	2080.0
Sept.-17 to Oct.-17	596.0	338.0	1840.0	719.0	1840.0	920.0
Nov.-17 to Dec.-17	585.0	541.0	2050.0	1300.0	1340.0	2080.0
GPCB Limit	2100					



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**Comparative Results for the period of July-2017-December-2017**

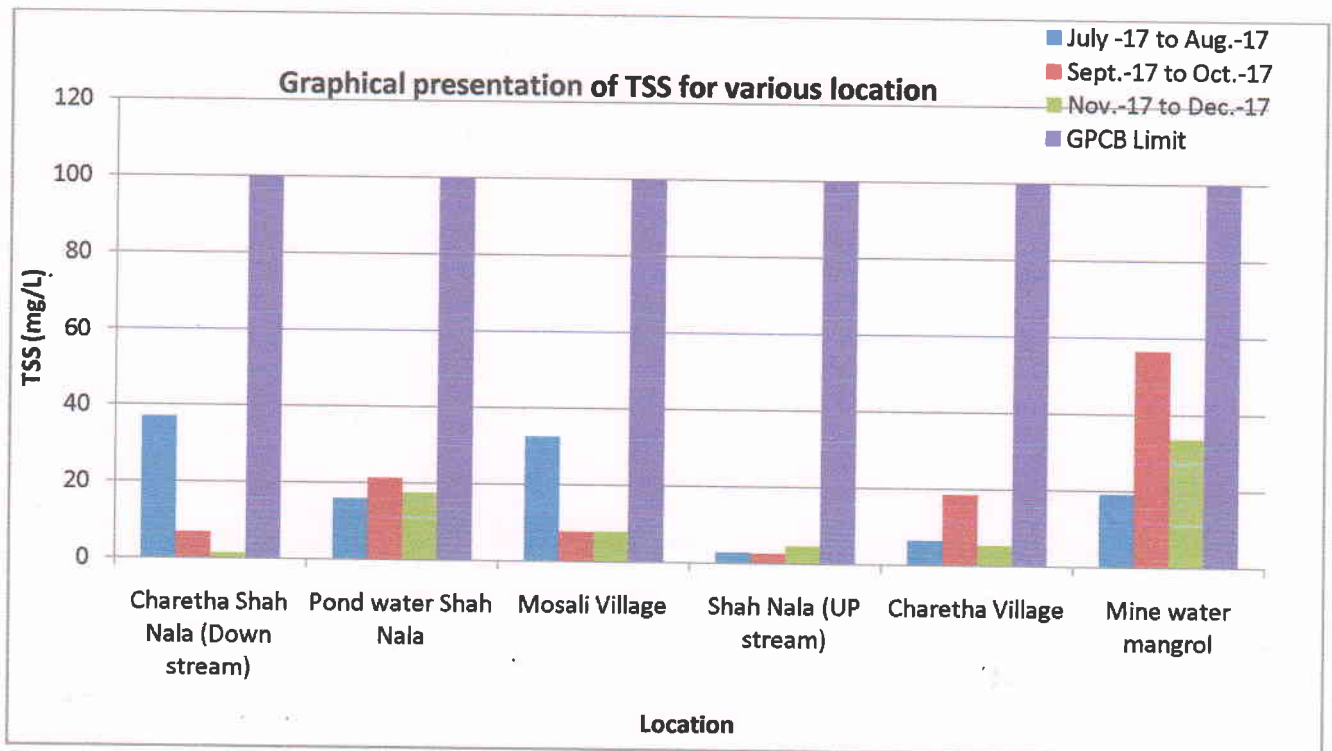
**(Mangrol-Valia Lignite Mine)**

**Report period: July-2017-December-2017**

**Parameter: TDS (mg/L)**

**Comparative Results of TSS for Various Locations (Mangrol Block)**

Description	Charetha Shah Nala (Down stream)	Pond water Shah Nala	Mosali Village	Shah Nala (UP stream)	Charetha Village	Mine water mangrol
July -17 to Aug.-17	37.0	15.9	32.6	2.9	6.5	19.2
Sept.-17 to Oct.-17	6.8	21.4	7.8	2.6	18.6	56.6
Nov.-17 to Dec.-17	1.6	17.6	8.0	4.7	5.5	33.6
GPCB Limit	100					



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**AMBIENT AIR**  
**COMPARATIVE**  
**ANALYSIS REPORTS**



Work order No: SLPP/Mines/Envt.Monitoring 2017-18/11 Dated 15.07.2017

**Comparative Results for the period of July-2017-December-2017**

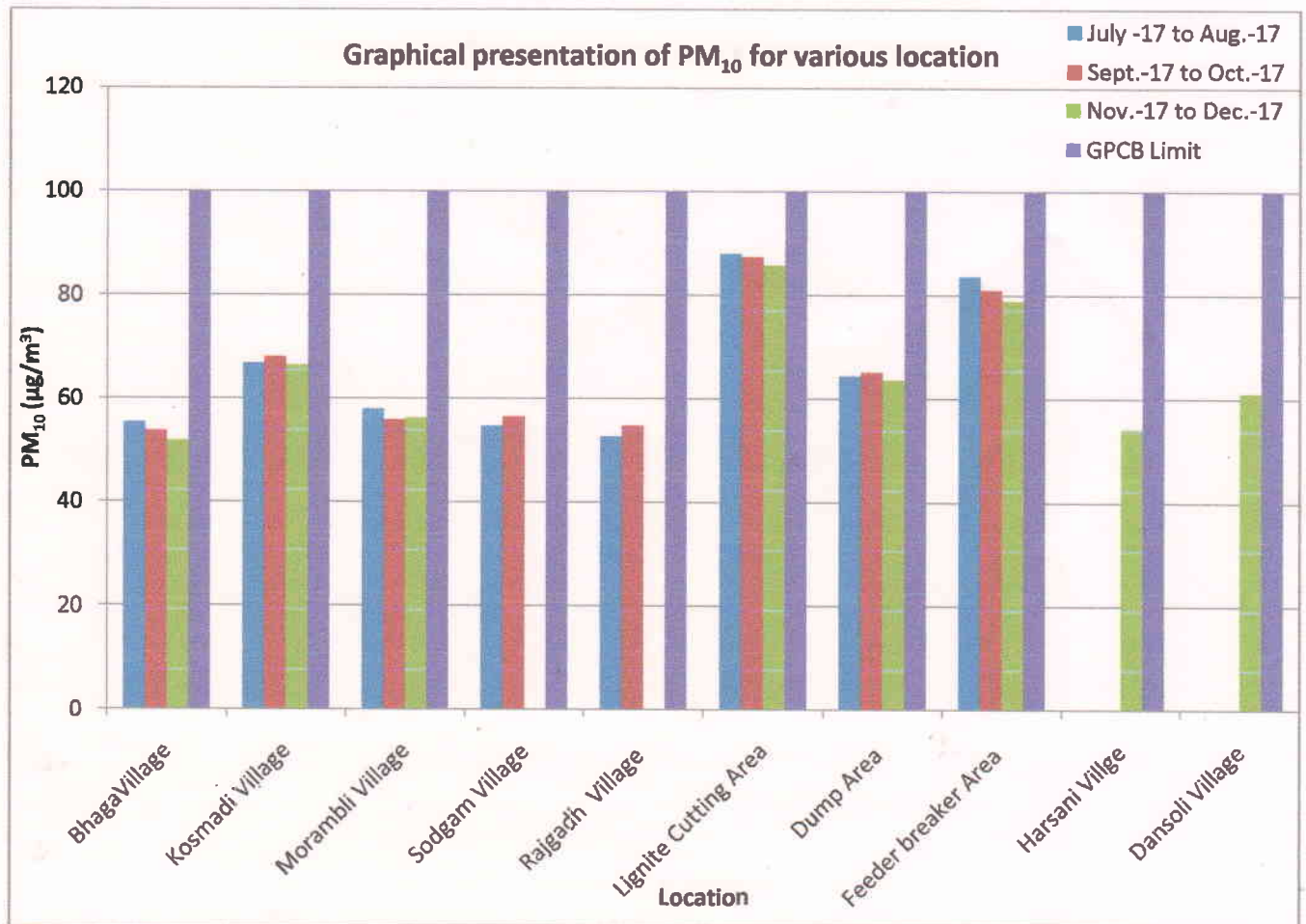
**(Mangrol-Valia Lignite Mine)**

Report period: July-2017-December-2017

Parameter: PM<sub>10</sub> (Particulate Matter) ( $\mu\text{g}/\text{m}^3$ )

**Comparative Results of PM<sub>10</sub> for Various Locations**

Description	Bhaga Village (Valia Block)	Kosmadi Village (Valia Block)	Morambli Village (Valia Block)	Sodgam Village (Valia Block)	Rajgadh Village (Valia Block)	Lignite Cutting Area (Valia Block)	Dump Area (Valia Block)	Feeder breaker Area (Valia Block)	Harsani Village (Valia Block)	Dansoli Village (Valia Block)
July -17 to Aug.-17	55.4	66.9	58.0	54.7	52.7	88.0	64.5	83.6	-	-
Sept.-17 to Oct.-17	53.7	68.1	55.9	56.5	54.8	87.4	65.2	81.0	-	-
Nov.-17 to Dec.-17	51.8	66.5	56.3	-	-	85.8	63.7	78.9	54.3	61.2
GPCB Limit	100									



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Comparative Results for the period of July-2017-December-2017

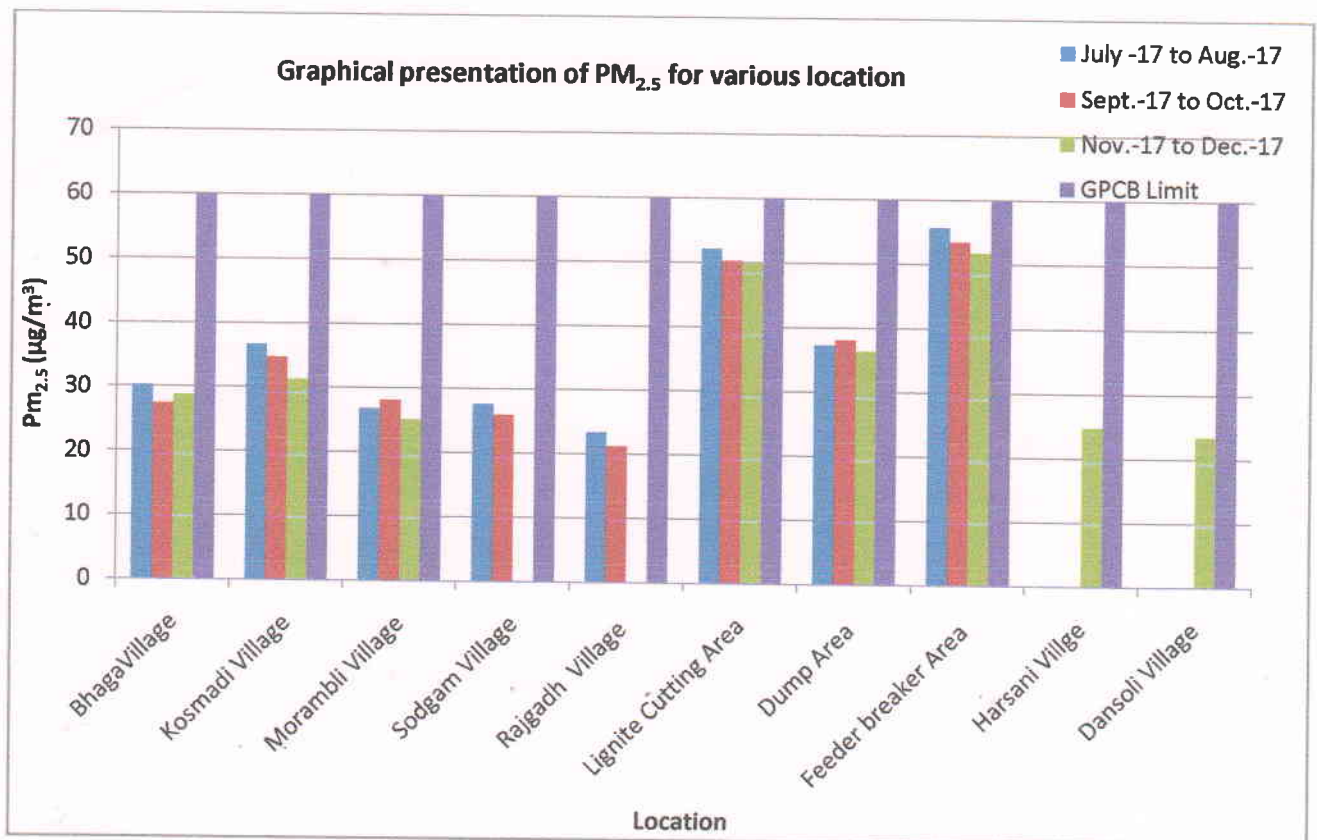
(Mangrol-Valia Lignite Mine)

Report period: July-2017-December-2017

Parameter: PM<sub>2.5</sub> (Particulate Matter) (µg/m<sup>3</sup>)

**Comparative Results of PM<sub>2.5</sub> for Various Locations**

Description	Bhaga Village (Valia Block)	Kosmadi Village (Valia Block)	Morambl Village (Valia Block)	Sodgam Village (Valia Block)	Rajgadh Village (Valia Block)	Lignite Cutting Area (Valia Block)	Dump Area (Valia Block)	Feeder breaker Area (Valia Block)	Harsani Villge (Valia Block)	Dansoli Village (Valia Block)
July -17 to Aug.-17	30.2	36.7	26.8	27.6	23.4	52.1	37.3	55.7	-	-
Sept.-17 to Oct.-17	27.4	34.7	28.1	26.0	21.2	50.3	38.1	53.4	-	-
Nov.-17 to Dec.-17	28.7	31.2	25.1	-	-	49.9	36.4	51.8	24.8	23.5
GPCB Limit	60									



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**Comparative Results for the period of July-2017-December-2017**

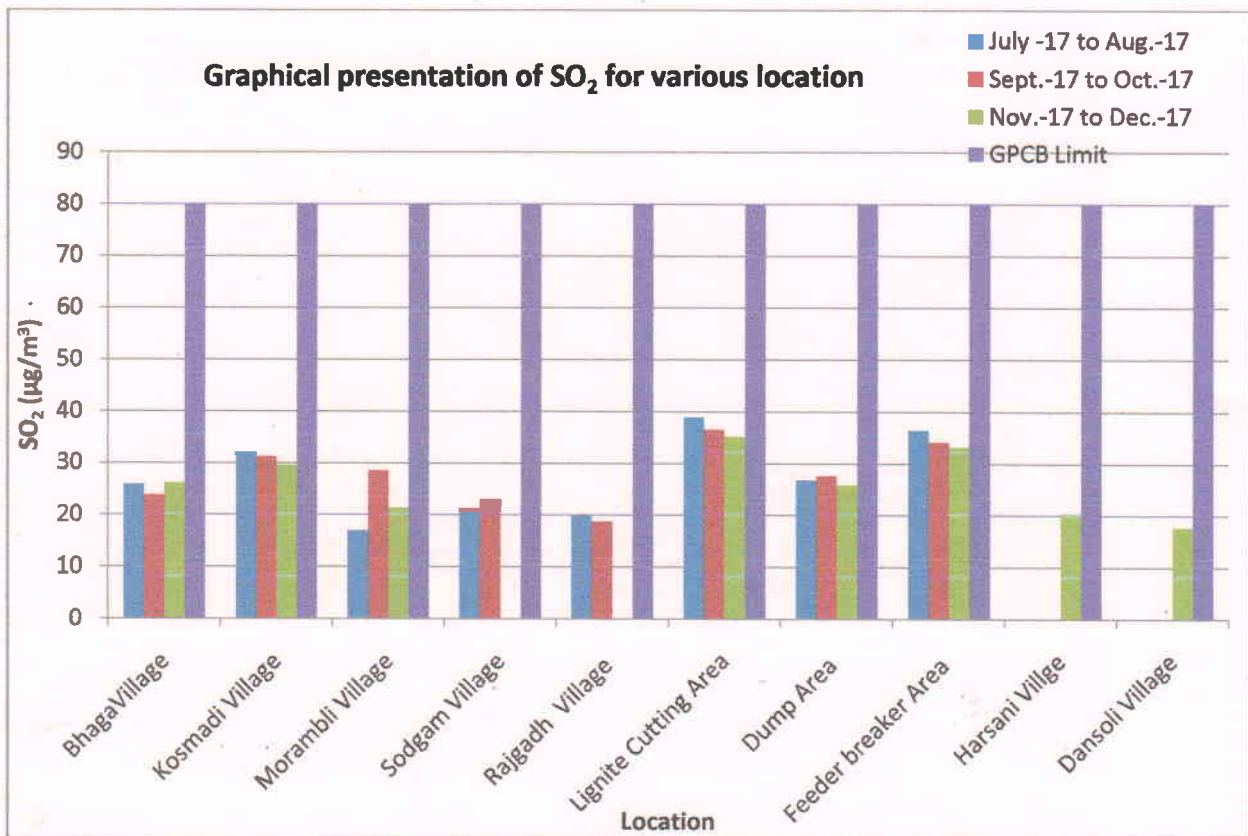
**(Mangrol-Valia Lignite Mine)**

Report period: July-2017-December-2017

Parameter: SO<sub>2</sub> (Sulphur Dioxide) (µg/m<sup>3</sup>)

**Comparative Results of SO<sub>2</sub> for Various Locations**

Description	Bhaga Village (Valia Block)	Kosmadi Village (Valia Block)	Morambli Village (Valia Block)	Sodgam Village (Valia Block)	Rajgadh Village (Valia Block)	Lignite Cutting Area (Valia Block)	Dump Area (Valia Block)	Feeder breaker Area (Valia Block)	Harsani Village (Valia Block)	Dansoli Village (Valia Block)
July -17 to Aug.-17	25.8	32.0	16.9	21.4	19.8	38.9	26.8	36.4	-	-
Sept.-17 to Oct.-17	23.8	31.2	28.5	22.9	18.7	36.5	27.6	34.1	-	-
Nov.-17 to Dec.-17	26.1	29.6	21.4	-	-	35.1	25.8	33.2	20.5	17.7
GPCB Limit	80									



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**Comparative Results for the period of July-2017-December-2017**

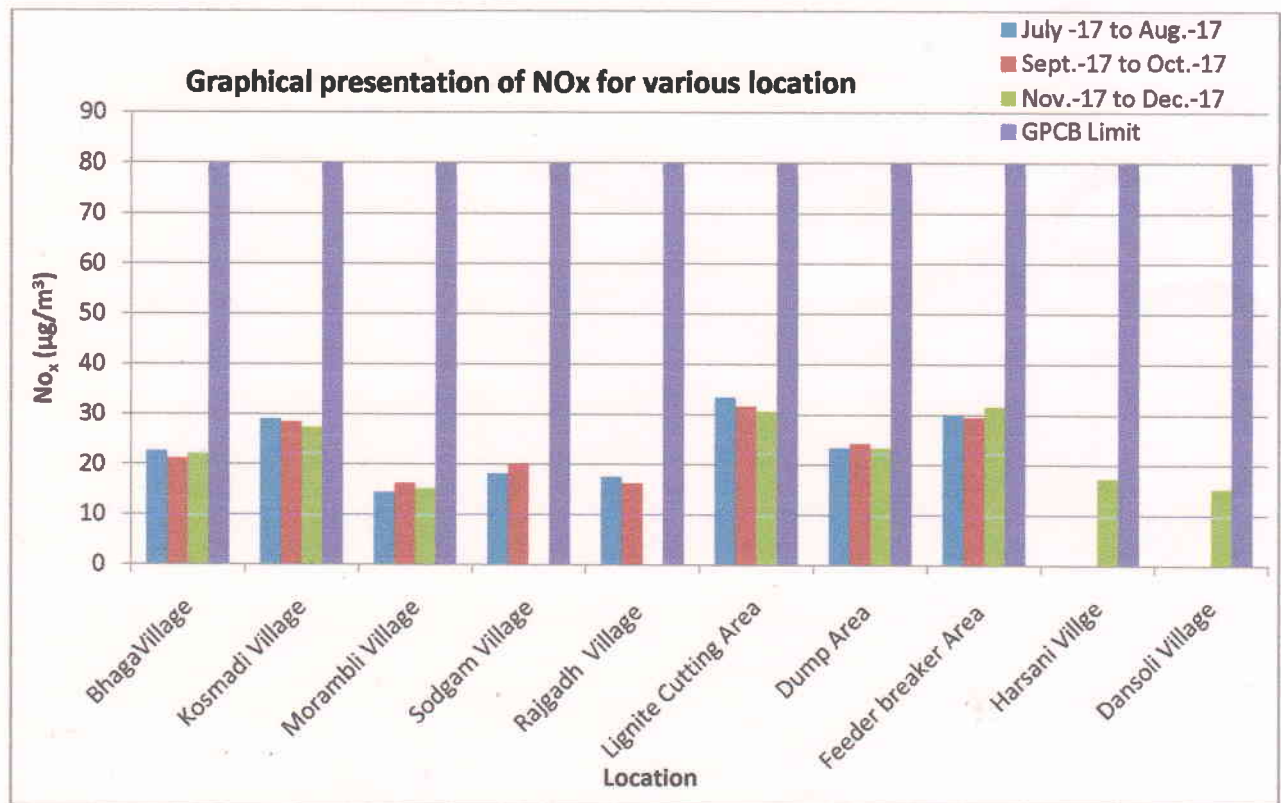
**(Mangrol-Valia Lignite Mine)**

Report period: July-2017-December-2017

Parameter: NO<sub>x</sub> (Oxide of Nitrogen) (µg/m<sup>3</sup>)

**Comparative Results of NO<sub>x</sub> for Various Locations**

Description	Bhaga Village (Valia Block)	Kosmadi Village (Valia Block)	Morambli Village (Valia Block)	Sodgam Village (Valia Block)	Rajgadth Village (Valia Block)	Lignite Cutting Area (Valia Block)	Dump Area (Valia Block)	Feeder breaker Area (Valia Block)	Harsani Villge (Valia Block)	Dansoli Village (Valia Block)
July -17 to Aug.-17	22.7	29.1	14.5	18.2	17.6	33.5	23.5	30.1	-	-
Sept.-17 to Oct.-17	21.2	28.5	16.3	20.2	16.3	31.7	24.3	29.5	-	-
Nov.-17 to Dec.-17	22.3	27.4	15.2	-	-	30.7	23.5	31.7	17.4	15.4
GPCB Limit	80									



CIN : U74140GJ2010PTC059798

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Comparative Results for the period of July-2017-December-2017

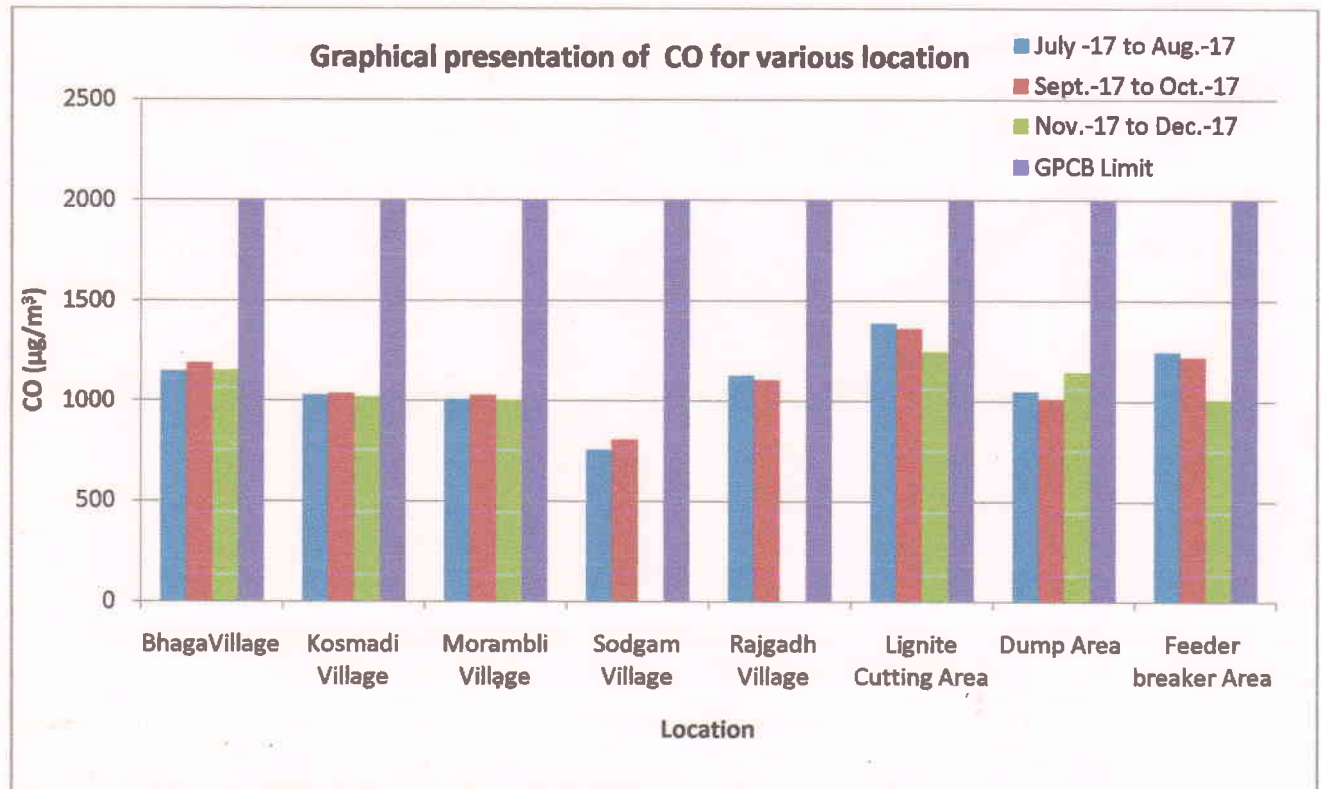
(Mangrol-Valia Lignite Mine)

Report period: July-2017-December-2017

Parameter: CO (Carbon Monoxide) ( $\mu\text{g}/\text{m}^3$ )

**Comparative Results of CO for Various Locations**

Description	Bhaga Village (Valia Block)	Kosmadi Village (Valia Block)	Morambli Village (Valia Block)	Sodgam Village (Valia Block)	Rajgadhi Village (Valia Block)	Lignite Cutting Area (Valia Block)	Dump Area (Valia Block)	Feeder breaker Area (Valia Block)	Harsani Village (Valia Block)	Dansoli Village (Valia Block)
July -17 to Aug.-17	1147	1028	1008	756	1126	1389	1049	1245	-	-
Sept.-17 to Oct.-17	1189	1036	1028	806	1107	1361	1011	1218	-	-
Nov.-17 to Dec.-17	1152	1019	1005	-	-	1247	1145	1010	741	1089
GPCB Limit	2000									



CIN : U74140GJ2010PTC059798

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**DUSTFALL**  
**MONITORING**  
**COMPARATIVE**  
**ANALYSIS REPORTS**



Work order No: SLPP/Mines/Envt.Monitoring 2017-18/11Dated 15.07.2017

**Comparative Results for the period of July-2017-December-2017**

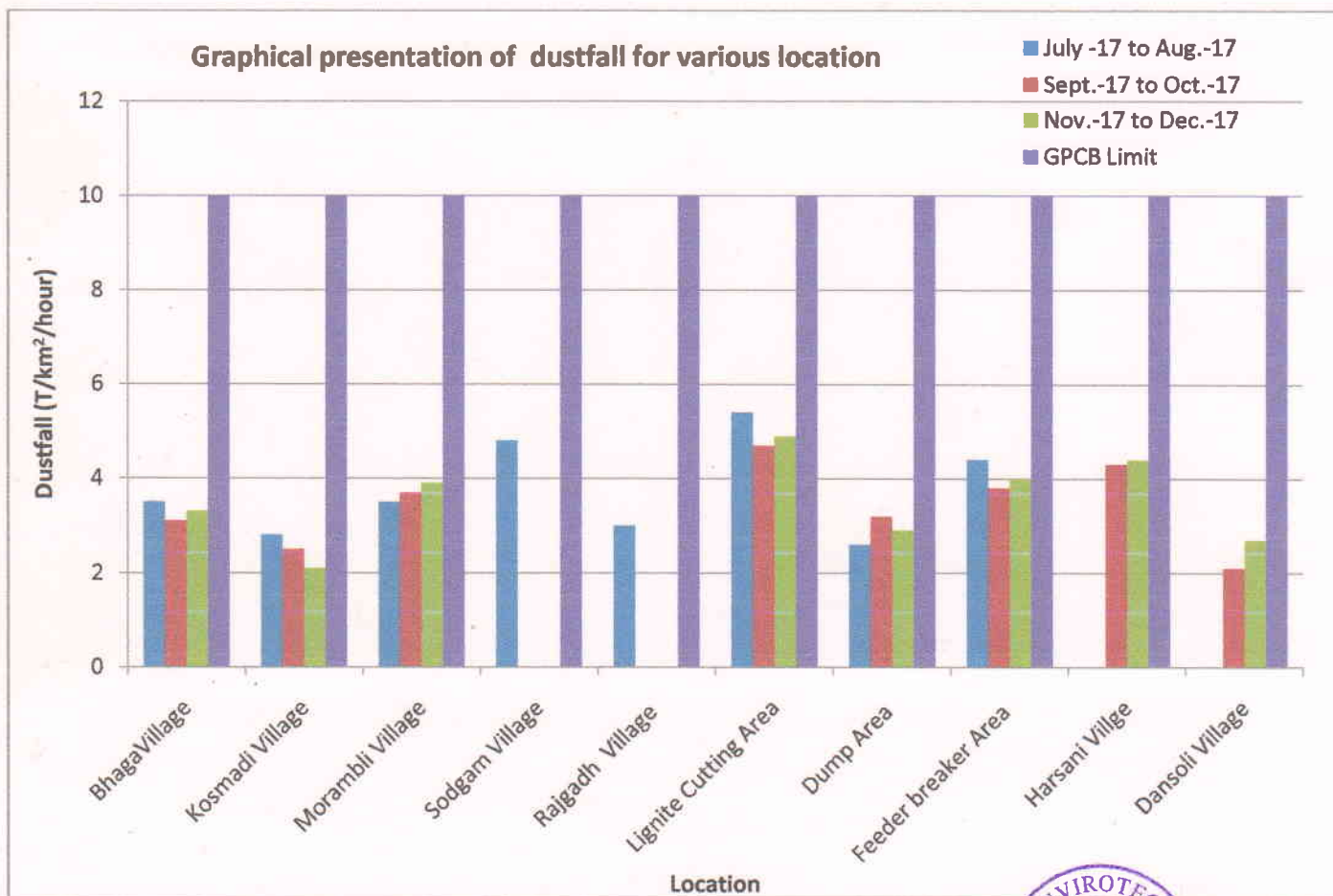
**(Mangrol-Valia Lignite Mine)**

Report period: July-2017-December-2017

Parameter: Dust fall (T/km<sup>2</sup>/month)

**Comparative Results of Dustfall for Various Locations**

Description	Bhaga Village	Kosmadi Village	Morambli Village	Sodgam Village	Rajgadh Village	Lignite cutting Area	Dump Area	Feeder Breaker Area	Harsani Village	Dansoli Village
July -17 to Aug.-17	3.5	2.8	3.5	4.8	3.0	5.4	2.6	4.4	-	-
Sept.-17 to Oct.-17	3.1	2.5	3.7	-	-	4.7	3.2	3.8	4.3	2.1
Nov.-17 to Dec.-17	3.3	2.1	3.9	-	-	4.9	2.9	4.0	4.4	2.7
GPCB Limit	10									



CIN : U74140GJ2010PTC059798

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**NOISE LEVEL**  
**COMPARATIVE**  
**ANALYSIS REPORTS**



Work order No: SLPP/Mines/Envt.Monitoring 2017-18/11Dated 15.07.2017

Comparative Results for the period of July-2017-December-2017

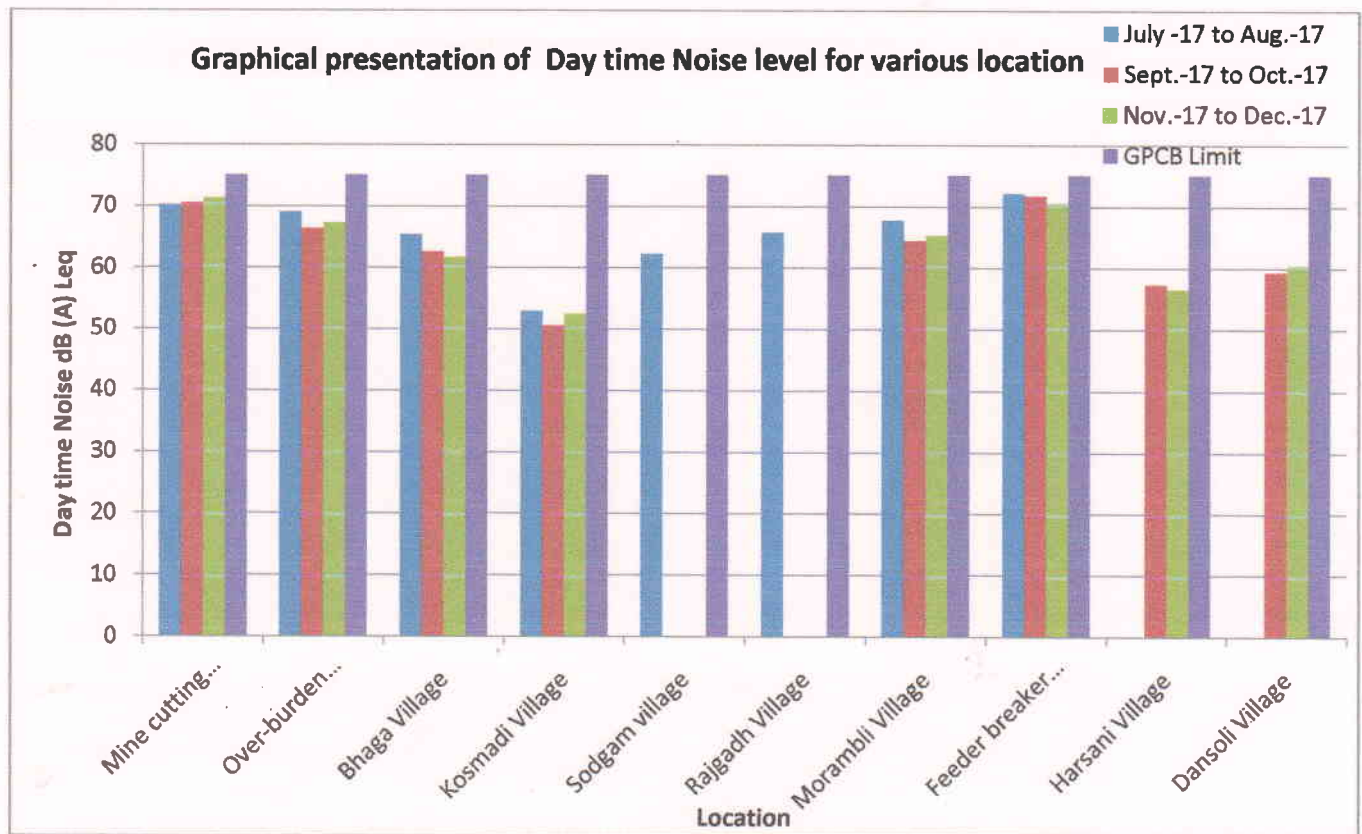
(Mangrol-Valia Lignite Mine)

Report period: July-2017-December-2017

Parameter: Noise level (dB(A)) (For day time)

**Comparative Results of Noise level for Various Locations (Day time)**

Description	Mine cutting area	Over-burden dump area	Bhaga Village	Kosmadi Village	Sodgam Village	Rajgadh Village	Morambli Village	Feeder breaker area	Harsani Village	Dansoli Village
July -17 to Aug.-17	70.2	69.0	65.4	52.9	62.2	65.7	67.7	72.1	-	-
Sept.-17 to Oct.-17	70.5	66.3	62.6	50.6	-	-	64.4	71.7	57.4	59.4
Nov.-17 to Dec.-17	71.3	67.3	61.7	52.5	-	-	65.3	70.6	56.6	60.5
GPCB Limit	75									



CIN : U74140GJ2010PTC059798

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Work order No: SLPP/Mines/Envt.Monitoring 2017-18/11 Dated 15.07.2017

Comparative Results for the period of July-2017-December-2017

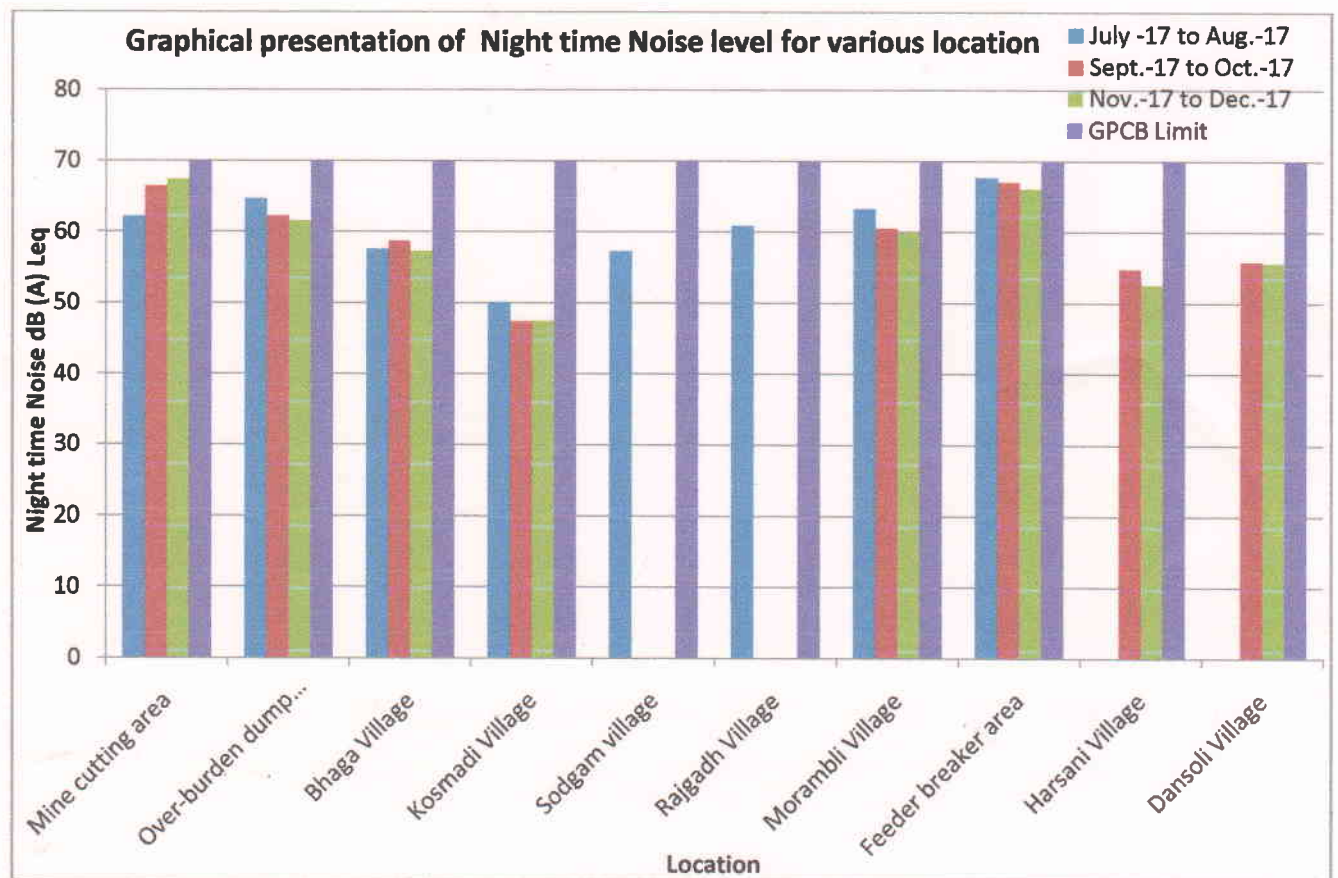
(Mangrol-Valia Lignite Mine)

Report period: July-2017-December-2017

Parameter: Noise level (dB(A)) (For Night time)

**Comparative Results of Noise level for Various Locations (Night time)**

Description	Mine cutting area	Over-burden dump area	Bhaga Village	Kosmadi Village	Sodgam Village	Rajgadh Village	Morambl Village	Feeder breaker area	Harsani Village	Dansoli Village
July -17 to Aug.-17	62.2	64.7	57.6	50.1	57.3	60.9	63.3	67.7	-	-
Sept.-17 to Oct.-17	66.4	62.3	58.7	47.4	-	-	60.5	67.0	54.8	55.8
Nov.-17 to Dec.-17	67.4	61.6	57.3	47.5	-	-	60.0	66.1	52.6	55.6
GPCB Limit	70									



CIN : U74140GJ2010PTC059798

Greenleaf Envirotech Pvt. Ltd., Nr. Rangoli Flats, Radhanpur Road, Mehsana - 384002. Gujarat, India.

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**WEATHER**  
**MONITORING DATA**



**Variation in Temperature for the period of July-2017 to Dec-2017**

Sr.No.	Times in Hrs.	Monitoring Date		
		July-17 to Aug-17	Sept-17 to Oct.-17	Nov.-17 to Dec.-17
		30/08/2017 31/08/2017	26/09/2017- 27/09/2017	21/12/2017- 22/12/2017
1.	09.00	26	31	24
2.	10.00	27	31	26
3.	11.00	27	31	26
4.	12.00	28	36	28
5.	13.00	28	36	28
6.	14.00	28	36	29
7.	15.00	29	36	29
8.	16.00	28	36	29
9.	17.00	28	36	28
10.	18.00	28	33	27
11.	19.00	27	32	27
12.	20.00	27	31	26
13.	21.00	27	31	25
14.	22.00	26	30	25
15.	23.00	26	30	24
16.	00.00	26	30	24
17.	01.00	26	30	24
18.	02.00	25	30	23
19.	03.00	25	30	23
20.	04.00	25	30	23
21.	05.00	25	30	23
22.	06.00	25	30	23
23.	07.00	25	30	23
24.	08.00	25	30	23
<b>24 Hrs. Max.</b>		29	36	28
<b>24 Hrs. Min.</b>		25	30	23
<b>24 Hrs. Avg.</b>		26.5	31.9	25.4



CIN : U74140GJ2010PTC059798

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**Variation in Relative Humidity for the period of July-2017 to Dec-2017**

Sr.No.	Times in Hrs.	Monitoring Date		
		July-17 to Aug-17	Sep-17 to Oct.-17	Nov-17 to Dec-17
		30/08/2017-31/08/2017	10/10/2017-11/10/2017	21/12/2017-22/12/2017
1.	09.00	91	50	36
2.	10.00	90	42	36
3.	11.00	90	40	34
4.	12.00	90	39	32
5.	13.00	89	40	32
6.	14.00	89	40	32
7.	15.00	89	40	32
8.	16.00	87	45	33
9.	17.00	86	45	34
10.	18.00	86	49	34
11.	19.00	86	49	34
12.	20.00	87	50	34
13.	21.00	88	52	33
14.	22.00	88	52	33
15.	23.00	89	56	33
16.	00.00	89	56	34
17.	01.00	89	56	34
18.	02.00	90	56	34
19.	03.00	91	56	32
20.	04.00	90	56	32
21.	05.00	90	56	32
22.	06.00	90	55	31
23.	07.00	90	55	31
24.	08.00	90	55	31
<b>24 Hrs. Max.</b>		<b>91</b>	<b>56</b>	<b>36</b>
<b>24 Hrs. Min.</b>		<b>86</b>	<b>39</b>	<b>31</b>
<b>24 Hrs. Avg.</b>		<b>88.9</b>	<b>49.5</b>	<b>33.0</b>



CIN : U74140GJ2010PTC059798

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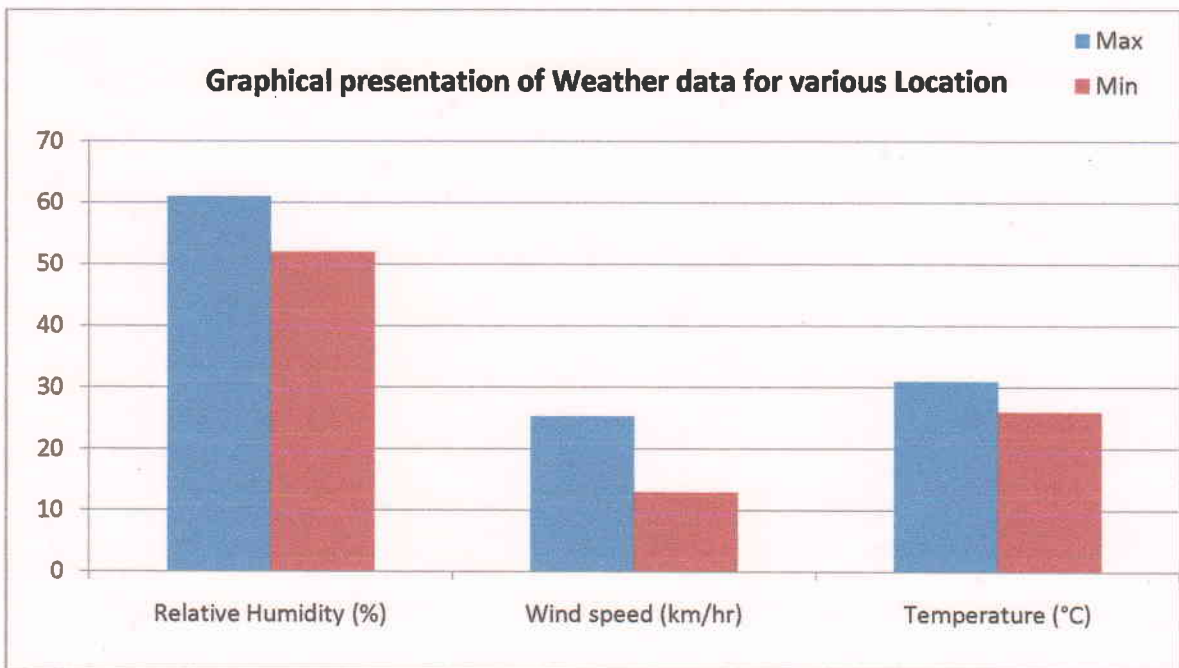
Branch Office : 304, Kankavati Complex, Singanpor-Cauzway Road, Katargam, Surat - 395004, Tel : +91-9725519974.



**Comparative Results for the period of July-2017 to Dec-2017**

**WEATHER MONITORING AT VALIA PIT**

Description	Relative Humidity (%)	Wind speed (km/hr)	Temperature (°C)
<b>Max</b>	61	25.3	31
<b>Min</b>	52	13	26



CIN : U74140GJ2010PTC059798

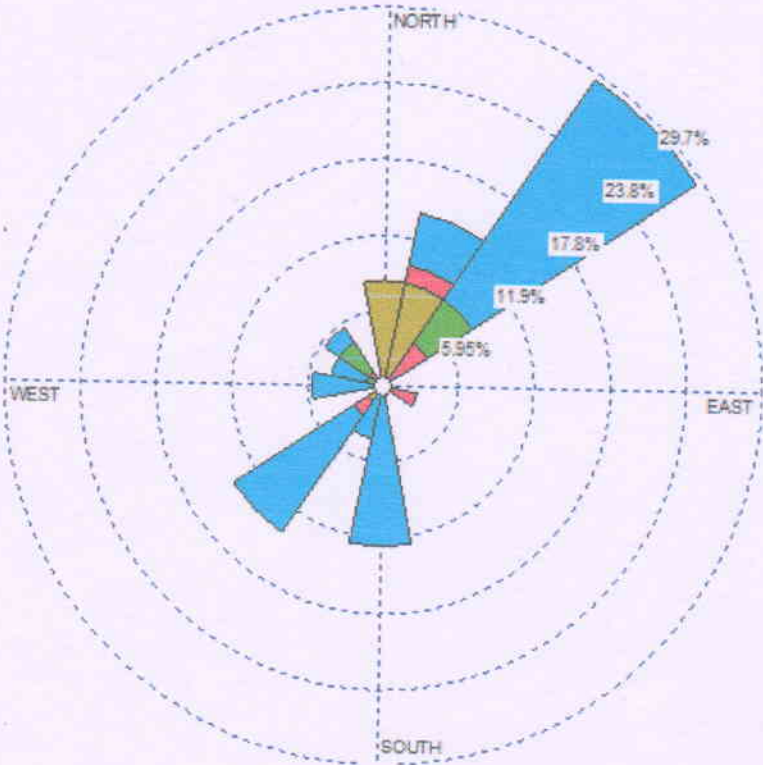
Greenleaf Envirotech Pvt. Ltd., Nr. Rangoli Flats, Radhanpur Road, Mehsana - 384002. Gujarat, India.

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WIND ROSE PLOT  
GIPCL Valia

Display:  
Wind Speed  
Direction (blowing from)



WIND SPEED (m/s)

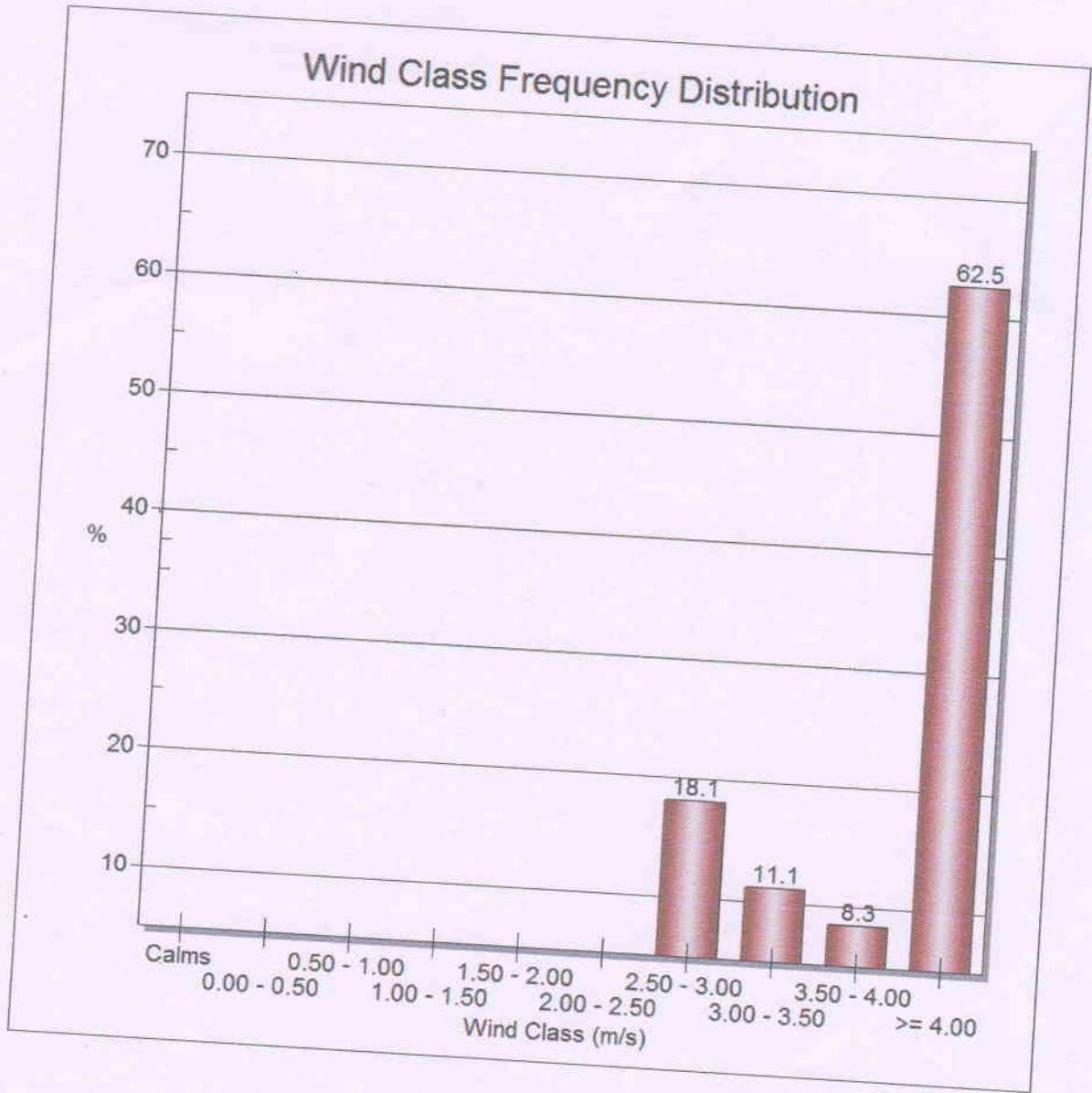
- 0 - 4.00
- 3.50 - 4.00
- 3.00 - 3.50
- 2.50 - 3.00
- 2.00 - 2.50
- 1.50 - 2.00
- 1.00 - 1.50
- 0.50 - 1.00
- 0.00 - 0.50

Calm: 0.00%

COMMENTS:	OUT. PERIOD: Start Date: 30/05/2017 - 00:00 End Date: 23/12/2017 - 00:00	COMPANY NAME: <b>GIPCL Valia</b>	
	CALM WIND: <b>0.00%</b>	WORKER: Greenleaf Envirotech Pvt. Ltd.	PROJECT NO.: <b>03</b>
	AVG. WIND SPEED: <b>4.57 m/s</b>	TOTAL COUNT: <b>72 hrs.</b>	
		DATE: <b>04/01/2018</b>	

© PLOT Valia - Greenleaf Envirotech Pvt. Ltd.





**Comparative**  
**Reports of Peizometer**  
**Reading**



Work order No: SLPP/Mines-Valia/Envr.Monitoring 2017-18/11 Dated 15.07.2017

**Variation in Peizometer reading for the period of July-2017 to December-2017**

DATA LOGGER ID	DATE/TIME	BATTERY VOLTAGE (V)	WATER LEVEL (mWC)	TEMPERATURE (° C)	BAROMETRIC (hPa)
B009	02-07-17 14:00	3.1	-5.87	28.4	993.4
B009	04-07-17 14:00	3.1	-5.77	28.4	996.7
B009	06-07-17 14:00	3.1	-5.80	28.4	997.2
B009	08-07-17 14:00	3.09	-5.82	28.4	998.3
B009	10-07-17 14:00	3.09	-5.85	28.4	999.1
B009	12-07-17 14:00	3.09	-5.85	28.4	997.9
B009	14-07-17 14:00	3.09	-5.82	28.4	995.2
B009	16-07-17 14:00	3.09	-5.73	28.4	994.5
B009	18-07-17 14:00	3.09	-5.60	28.4	993.5
B009	20-07-17 14:00	3.09	-5.42	28.4	990.6
B009	22-07-17 14:00	3.09	-5.35	28.4	993.9
B009	24-07-17 14:00	3.09	-5.15	28.4	993.8
B009	26-07-17 14:00	3.08	-5.09	28.4	995.1
B009	28-07-17 14:00	3.09	-4.99	28.4	998.4
B009	30-07-17 14:00	3.09	-4.88	28.4	998.9



Work order No: SLPP/Mines-Valia/Envr.Monitoring 2017-18/11 Dated 15.07.2017

**Variation in Peizometer reading for the period of July-2017 to December-2017**

DATA LOGGER ID	DATE/TIME	BATTERY VOLTAGE (V)	WATER LEVEL (mWC)	TEMPERATURE (°C)	BAROMETRIC (hPa)
B009	01-08-17 14:00	3.08	-4.80	28.4	999.2
B009	03-08-17 14:00	3.08	-4.73	28.4	996.8
B009	05-08-17 14:00	3.08	-4.67	28.4	996
B009	07-08-17 14:00	3.08	-4.64	28.4	997.6
B009	09-08-17 14:00	3.07	-4.58	28.4	998.3
B009	11-08-17 14:00	3.08	-4.54	28.4	999.3
B009	13-08-17 14:00	3.08	-4.51	28.4	1000
B009	15-08-17 14:00	3.07	-4.48	28.4	1000.8
B009	17-08-17 14:00	3.07	-4.47	28.4	997.6
B009	19-08-17 14:00	3.07	-4.47	28.4	996.4
B009	21-08-17 14:00	3.07	-4.35	28.4	992.5
B009	23-08-17 14:00	3.07	-4.20	28.4	998.7
B009	25-08-17 14:00	3.07	-4.13	28.4	996.3
B009	27-08-17 14:00	3.07	-4.01	28.4	994.3
B009	29-08-17 14:00	3.07	-3.84	28.4	989.1
B009	31-08-17 14:00	3.07	-3.72	28.3	998.2



Work order No: SLPP/Mines-Valia/Envt.Monitoring 2017-18/11 Dated 15.07.2017

### Variation in Peizometer reading for the period of July-2017 to December-2017

DATA LOGGER ID	DATE/TIME	BATTERY VOLTAGE (V)	WATER LEVEL (mWC)	TEMPERATURE (°C)	BAROMETRIC (hPa)
B009	02-09-17 14:00	3.06	-3.68	28.4	999.2
B009	04-09-17 14:00	3.06	-3.67	28.4	1002.2
B009	06-09-17 14:00	3.06	-3.62	28.4	1001.1
B009	08-09-17 14:00	3.06	-3.60	28.4	999.6
B009	10-09-17 14:00	3.06	-3.59	28.4	999.4
B009	12-09-17 14:00	3.06	-3.60	28.4	999.7
B009	14-09-17 14:00	3.06	-3.59	28.4	1000.3
B009	16-09-17 14:00	3.06	-3.58	28.4	997.3
B009	18-09-17 14:00	3.06	-3.54	28.4	997.7
B009	20-09-17 14:00	3.05	-3.52	28.4	996.3
B009	22-09-17 14:00	3.05	-3.51	28.4	999.8
B009	24-09-17 14:00	3.05	-3.52	28.4	1002.9
B009	26-09-17 14:00	3.05	-3.49	28.4	1001.1
B009	28-09-17 14:00	3.05	-3.49	28.4	1000.2
B009	30-09-17 14:00	3.05	-3.49	28.4	1001.6



Work order No: SLPP/Mines-Valia/Envr.Monitoring 2017-18/11 Dated 15.07.2017

### Variation in Peizometer reading for the period of July-2017 to December-2017

DATA LOGGER ID	DATE/TIME	BATTERY VOLTAGE (V)	WATER LEVEL (mWC)	TEMPERATURE (°C)	BAROMETRIC (hPa)
B009	02-10-17 14:00	3.05	-3.50	28.4	999.2
B009	04-10-17 14:00	3.05	-3.52	28.4	1001.0
B009	06-10-17 14:00	3.05	-3.54	28.4	998.9
B009	08-10-17 14:00	3.05	-3.51	28.4	997.5
B009	10-10-17 14:00	3.05	-3.51	28.4	996.7
B009	12-10-17 14:00	3.05	-3.46	28.4	999.0
B009	14-10-17 14:00	3.05	-3.47	28.4	998.2
B009	16-10-17 14:00	3.05	-3.41	28.4	1000.0
B009	18-10-17 14:00	3.05	-3.42	28.4	1000.7
B009	20-10-17 14:00	3.05	-3.39	28.4	999.4
B009	22-10-17 14:00	3.05	-3.39	28.4	1001.8
B009	24-10-17 14:00	3.05	-3.40	28.4	1004.6
B009	26-10-17 14:00	3.05	-3.38	28.4	1004.9
B009	28-10-17 14:00	3.05	-3.39	28.4	1005.0
B009	30-10-17 14:00	3.05	-3.36	28.4	1005.4





Work order No: SLPP/Mines-Valia/Envnt.Monitoring 2017-18/11 Dated 15.07.2017

**Variation in Peizometer reading for the period of July-2017 to December-2017**

DATA LOGGER ID	DATE/TIME	BATTERY VOLTAGE (V)	WATER LEVEL (mWC)	TEMPERATURE (°C)	BAROMETRIC (hPa)
B009	01-11-17 14:00	3.05	-3.40	28.4	1005.0
B009	03-11-17 14:00	3.05	-3.39	28.4	1002.8
B009	05-11-17 14:00	3.04	-3.40	28.4	1004.5
B009	07-11-17 14:00	3.04	-3.42	28.4	1004.5
B009	09-11-17 14:00	3.04	-3.44	28.4	1003.6
B009	11-11-17 14:00	3.04	-3.47	28.4	1004.7
B009	13-11-17 14:00	3.04	-3.43	28.4	1000.8
B009	15-11-17 14:00	3.04	-3.43	28.4	1002.0
B009	17-11-17 14:00	3.04	-3.44	28.4	1003.1
B009	19-11-17 14:00	3.04	-3.44	28.4	1004.8
B009	21-11-17 14:00	3.04	-3.48	28.4	1003.8
B009	23-11-17 14:00	3.04	-3.49	28.4	1002.6
B009	25-11-17 14:00	3.04	-3.53	28.4	1005.5
B009	27-11-17 14:00	3.04	-3.52	28.4	1004.7
B009	29-11-17 14:00	3.04	-3.55	28.4	1005.1



Work order No: SLPP/Mines-Valia/Envt.Monitoring 2017-18/11 Dated 15.07.2017

**Variation in Peizometer reading for the period of July-2017 to December-2017**

DATA LOGGER ID	DATE/TIME	BATTERY VOLTAGE (V)	WATER LEVEL (mWC)	TEMPERATURE (°C)	BAROMETRIC (hPa)
B009	01-12-17 14:00	3.03	-3.56	28.4	1003.3
B009	03-12-17 14:00	3.04	-3.56	28.4	1003.9
B009	05-12-17 14:00	3.04	-3.59	28.4	1002.4
B009	07-12-17 14:00	3.04	-3.57	28.4	1004.3
B009	09-12-17 14:00	3.03	-3.58	28.4	1003.1
B009	11-12-17 14:00	3.03	-3.62	28.4	1005.9
B009	13-12-17 14:00	3.04	-3.60	28.4	1006.7
B009	15-12-17 14:00	3.03	-3.61	28.4	1006.7
B009	17-12-17 14:00	3.03	-3.63	28.4	1009.1
B009	19-12-17 14:00	3.03	-3.66	28.4	1009.3
B009	21-12-17 14:00	3.03	-3.67	28.4	1009.1
B009	23-12-17 14:00	3.03	-3.67	28.4	1005.7
B009	25-12-17 14:00	3.03	-3.68	28.4	1006.1
B009	27-12-17 14:00	3.03	-3.71	28.4	1005.8
B009	29-12-17 14:00	3.03	-3.73	28.4	1005.5
B009	31-12-17 14:00	3.03	-3.75	28.4	1003.6

