

# **Gujarat Industries Power Company Limited**



At. : Nani Naroli, Ta: Mangrol  
Dist.: Surat -394112

## **Six Monthly Report of Vastan Limestone Pit**

# **ENVIRONMENTAL MONITORING & ANALYSIS REPORT**

For the period of July 2021 to December -2021

Prepared By

**ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.**



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## 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 constant 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 and Climate Change (MoEF & CC), Govt. of India, New Delhi, it is mandatory to collect the samples of Air/Gaseous emissions and effluent, to analyses the samples from a recognized laboratory and submit the analysis reports to GPCB & MoEF.

**Gujarat Industries Power Company Limited** (GIPCL) - Surat Lignite Power Plant is situated at Village – Nani Naroli, Tal. Mangrol, Dist. Surat. This company engaged in the generation of Electricity. The Industry has awarded the contract for bimonthly monitoring and analysis to M/s. Ecosystem Resource Management Pvt. Ltd. Surat.

**Ecosystem Resource Management Pvt. Ltd.** is one of the leading companies in the field of Environmental Consultancy Service Providers in India. ERM has a well-equipped and developed **NABL Accredited and MoEF & CC** recognized laboratory to carry out the analysis in air, stack emission, fugitive emission, water & waste water, noise, soil, and solid waste etc.

## Scope of work for Vastan Lime Stone Pit

### I. Ambient Air Monitoring:-

| Sr. No. | No. of stations & Location            | Duration | Frequency  | Parameters        | Method of Analysis                              |
|---------|---------------------------------------|----------|------------|-------------------|-------------------------------------------------|
| 1.      | 4 Nos. within the Core & Buffer Zone. | 24 hours | Bi-Monthly | PM <sub>10</sub>  | IS 5182 Part 23 2006/Reaffirmed 2017            |
|         |                                       |          |            | PM <sub>2.5</sub> | SOP No.WI/5.4/02-B/03,Issue No.1Date:01/01/2010 |
|         |                                       |          |            | SO <sub>2</sub>   | IS 5182 Part II 2001/Reaffirmed 2017            |
|         |                                       |          |            | NO <sub>x</sub>   | IS 5182(Part VI):2006/Reaffirmed 2017           |
|         |                                       |          |            | CO                | IS 5182(Part 10):1999/Reaffirmed 2014           |

### II. Dust Fall Measurement:-

| Sr. No. | No. of station and locations          | Duration  | Frequency  | Parameters | Method of analysis                                                                           |
|---------|---------------------------------------|-----------|------------|------------|----------------------------------------------------------------------------------------------|
| 1.      | 9 Nos. within the Core & Buffer Zone. | One Month | Bi-Monthly | Dust fall  | Methods of air sampling and analysis, 3 <sup>rd</sup> edition by James P. Lodge, JR., Editor |

### III. Noise Monitoring:-

| Sr. No. | Noise of stations and locations                       | Duration | Frequency  | Parameters              | Method of analysis      |
|---------|-------------------------------------------------------|----------|------------|-------------------------|-------------------------|
| 1.      | 10 Nos. at various location within the plant premises | 24 hours | Bi-Monthly | Day & night Noise level | Using Sound level Meter |

### Weather Monitoring:-

| Sr. No. | No. of stations and locations | Duration | Frequency  | Parameters                                                                                                                               | Method of analysis                                                        |
|---------|-------------------------------|----------|------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| 1.      | 1 No. at Site.                | 24 hours | Bi-Monthly | Dry Bulb & Wet Bulb Temp., Atmospheric Pressure, Relative Humidity, Wind Speed, Wind Direction, Rain Fall and its Min. Max. & Avg. Value | As per IS 8829 on hourly basis for 24 hrs by using mechanical Instrument. |

### Water Quality Monitoring:-

| Sr. No. | No. of stations and locations                                                          | Duration | Frequency  | Parameters                                             | Method of analysis                                                                                                                                |
|---------|----------------------------------------------------------------------------------------|----------|------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.      | 7 Nos. of Bore well , 2 No. of Surface Water sample located both in Core & Buffer Zone | 1        | Bi-Monthly | Physical parameters, Chemical Parameters, Heavy metals | As per the standard methods for the examination of water and waste water APHA 23 <sup>rd</sup> Edition 2017 and various Indian standards IS 3025. |

# **Comparative Ambient Air Monitoring & Dust fall Monitoring Report & Graphical Presentation**

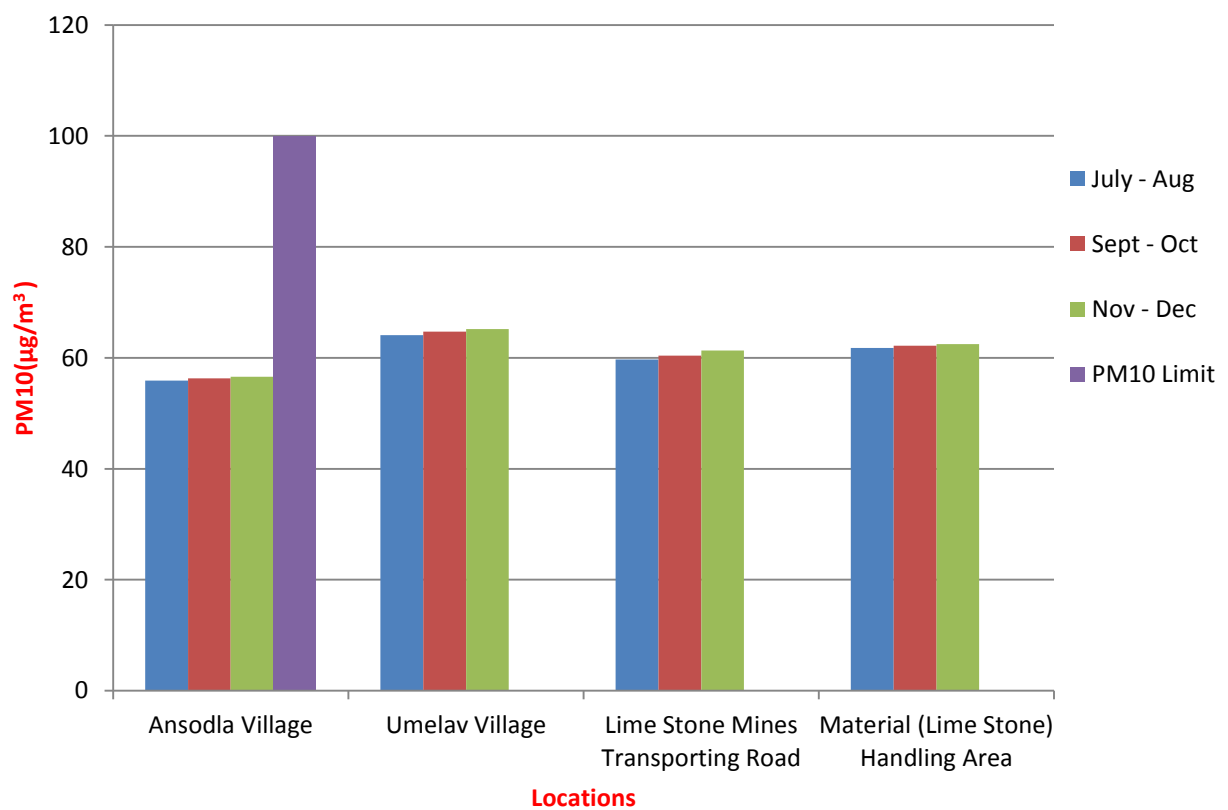
## Six Monthly Variations in Ambient Air Quality

Parameter: PM<sub>10</sub> (Respirable Particulate Matter)

Period: July – 2021 to December – 2021

| Sr. No. | Location                               | Results (µg/m <sup>3</sup> )         |                                       |                                |
|---------|----------------------------------------|--------------------------------------|---------------------------------------|--------------------------------|
|         |                                        | Bi-Monthly<br>July to Aug. -<br>2021 | Bi-Monthly<br>Sept. to Oct. -<br>2021 | Bi-Monthly<br>Nov. – Dec. 2021 |
| 1       | Ansodla Village                        | 55.9                                 | 56.3                                  | 56.6                           |
| 2       | Umelav Village                         | 64.1                                 | 64.7                                  | 65.2                           |
| 3       | Lime Stone Mines<br>Transporting Road  | 59.7                                 | 60.4                                  | 61.3                           |
| 4       | Material (Lime Stone)<br>Handling Area | 61.8                                 | 62.2                                  | 62.5                           |
|         | Limit                                  | 100(µg/m <sup>3</sup> )              |                                       |                                |

## Graphical Presentation for the PM10 Parameter at Various Locations



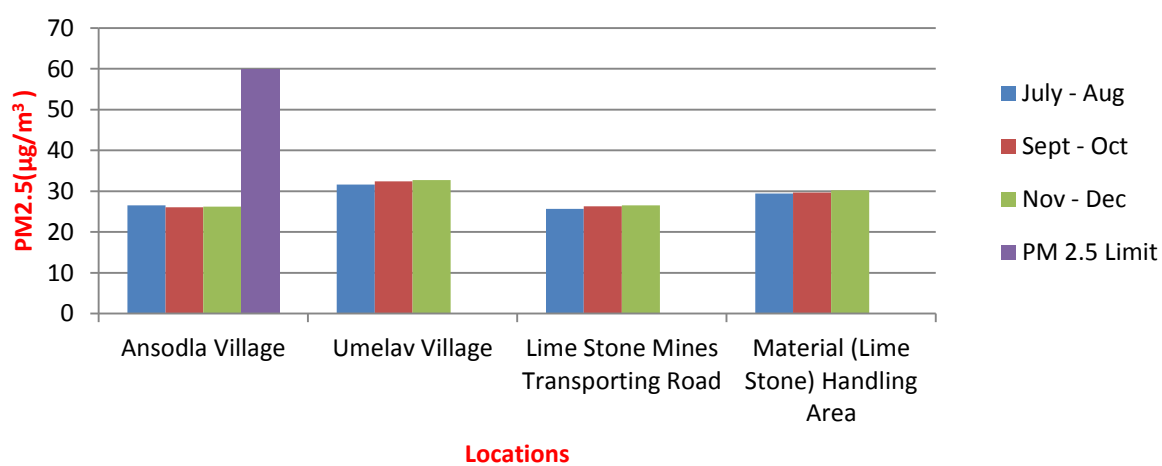
## Six Monthly Variations in Ambient Air Quality

Parameter: PM<sub>2.5</sub> (Respirable Particulate Matter)

Period: July – 2021 to December – 2021

| Sr. No. | Location                               | Results (µg/m <sup>3</sup> )         |                                       |                                |
|---------|----------------------------------------|--------------------------------------|---------------------------------------|--------------------------------|
|         |                                        | Bi-Monthly<br>July to Aug. -<br>2021 | Bi-Monthly<br>Sept. to Oct. -<br>2021 | Bi-Monthly<br>Nov. – Dec. 2021 |
| 1       | Ansodla Village                        | 26.5                                 | 26.1                                  | 26.2                           |
| 2       | Umelav Village                         | 31.6                                 | 32.4                                  | 32.7                           |
| 3       | Lime Stone Mines<br>Transporting Road  | 25.7                                 | 26.3                                  | 26.5                           |
| 4       | Material (Lime Stone)<br>Handling Area | 29.4                                 | 29.7                                  | 30.2                           |
|         | Limit                                  | 60(µg/m <sup>3</sup> )               |                                       |                                |

## Graphical Presentation for the PM2.5 Parameter at Various Locations



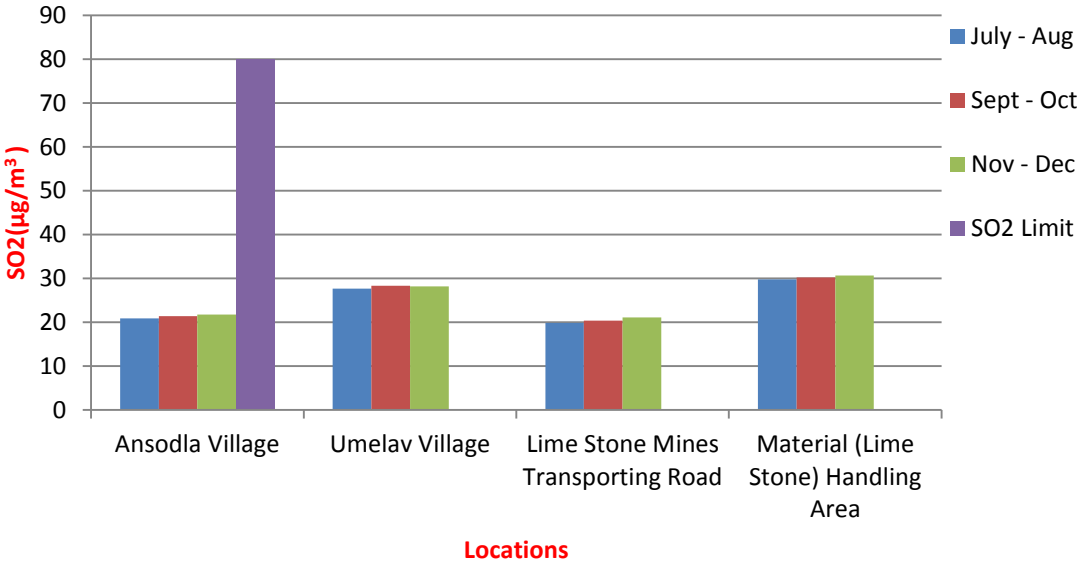
## Six Monthly Variations in Ambient Air Quality

Parameter: SO<sub>2</sub> (Sulphur Dioxide)

Period: July – 2021 to December – 2021

| Sr. No. | Location                            | Results (µg/m <sup>3</sup> )         |                                       |                                |
|---------|-------------------------------------|--------------------------------------|---------------------------------------|--------------------------------|
|         |                                     | Bi-Monthly<br>July to Aug. -<br>2021 | Bi-Monthly<br>Sept. to Oct. -<br>2021 | Bi-Monthly<br>Nov. – Dec. 2021 |
| 1       | Ansodla Village                     | 20.9                                 | 21.4                                  | 21.8                           |
| 2       | Umelav Village                      | 27.7                                 | 28.3                                  | 28.2                           |
| 3       | Lime Stone Mines Transporting Road  | 19.9                                 | 20.4                                  | 21.1                           |
| 4       | Material (Lime Stone) Handling Area | 29.8                                 | 30.2                                  | 30.7                           |
|         | Limit                               | 80(µg/m <sup>3</sup> )               |                                       |                                |

## Graphical Presentation for the SO2 Parameter at Various Locations



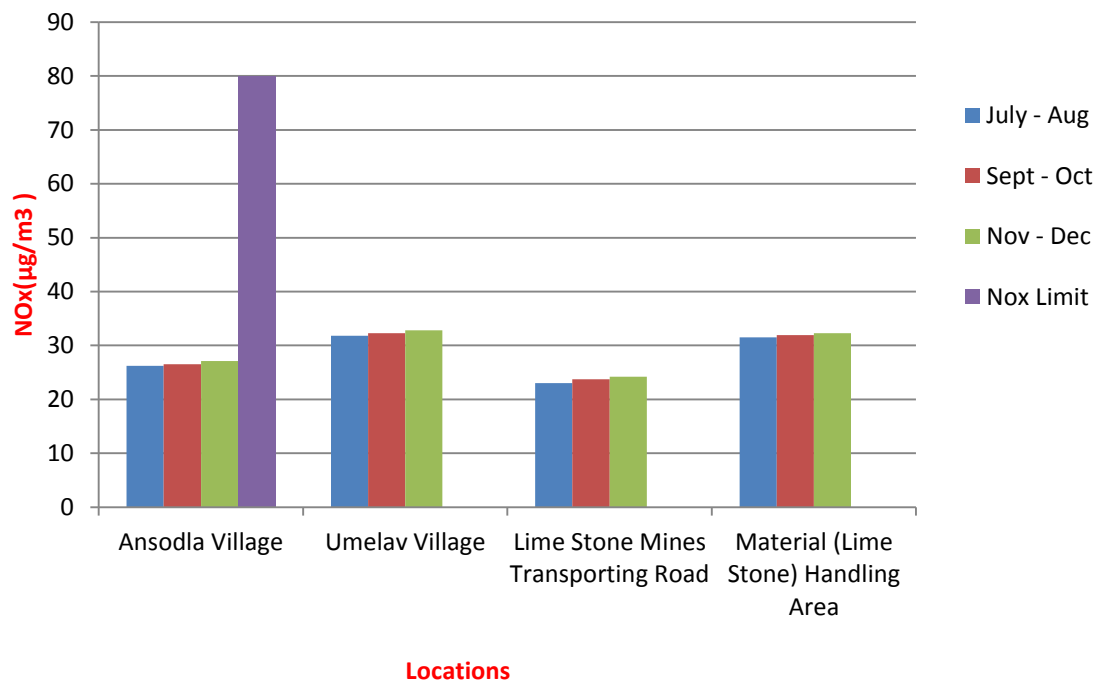
## Six Monthly Variations in Ambient Air Quality

Parameter: NO<sub>x</sub> (Nitrogen dioxide)

Period: July – 2021 to December – 2021

| Sr. No. | Location                            | Results (µg/m <sup>3</sup> )         |                                       |                                |
|---------|-------------------------------------|--------------------------------------|---------------------------------------|--------------------------------|
|         |                                     | Bi-Monthly<br>July to Aug. -<br>2021 | Bi-Monthly<br>Sept. to Oct. -<br>2021 | Bi-Monthly<br>Nov. – Dec. 2021 |
| 1       | Ansodla Village                     | 26.2                                 | 26.5                                  | 27.1                           |
| 2       | Umelav Village                      | 31.8                                 | 32.3                                  | 32.8                           |
| 3       | Lime Stone Mines Transporting Road  | 23.0                                 | 23.7                                  | 24.2                           |
| 4       | Material (Lime Stone) Handling Area | 31.5                                 | 31.9                                  | 32.3                           |
|         | Limit                               | 80(µg/m <sup>3</sup> )               |                                       |                                |

## Graphical Presentation for the NO<sub>x</sub> Parameter at Various Locations



## Six Monthly Variations in Ambient Air Quality

**Parameter: CO (Carbon Monoxide)**

**Period: July – 2021 to December – 2021**

| <b>Sr.<br/>No.</b> | <b>Location</b>                     | <b>Results (<math>\mu\text{g}/\text{m}^3</math>)</b> |                                            |                                        |
|--------------------|-------------------------------------|------------------------------------------------------|--------------------------------------------|----------------------------------------|
|                    |                                     | <b>Bi-Monthly<br/>July to Aug. - 2021</b>            | <b>Bi-Monthly<br/>Sept. to Oct. - 2021</b> | <b>Bi-Monthly<br/>Nov. – Dec. 2021</b> |
| <b>1</b>           | Ansodla Village                     | 991                                                  | 998                                        | 1008                                   |
| <b>2</b>           | Umelav Village                      | 1237                                                 | 1248                                       | 1258                                   |
| <b>3</b>           | Lime Stone Mines Transporting Road  | 1062                                                 | 1071                                       | 1078                                   |
| <b>4</b>           | Material (Lime Stone) Handling Area | 959                                                  | 965                                        | 978                                    |
|                    | <b>Limit</b>                        | <b>2000(<math>\mu\text{g}/\text{m}^3</math>)</b>     |                                            |                                        |

## Graphical Presentation for the CO Parameter at Various Locations



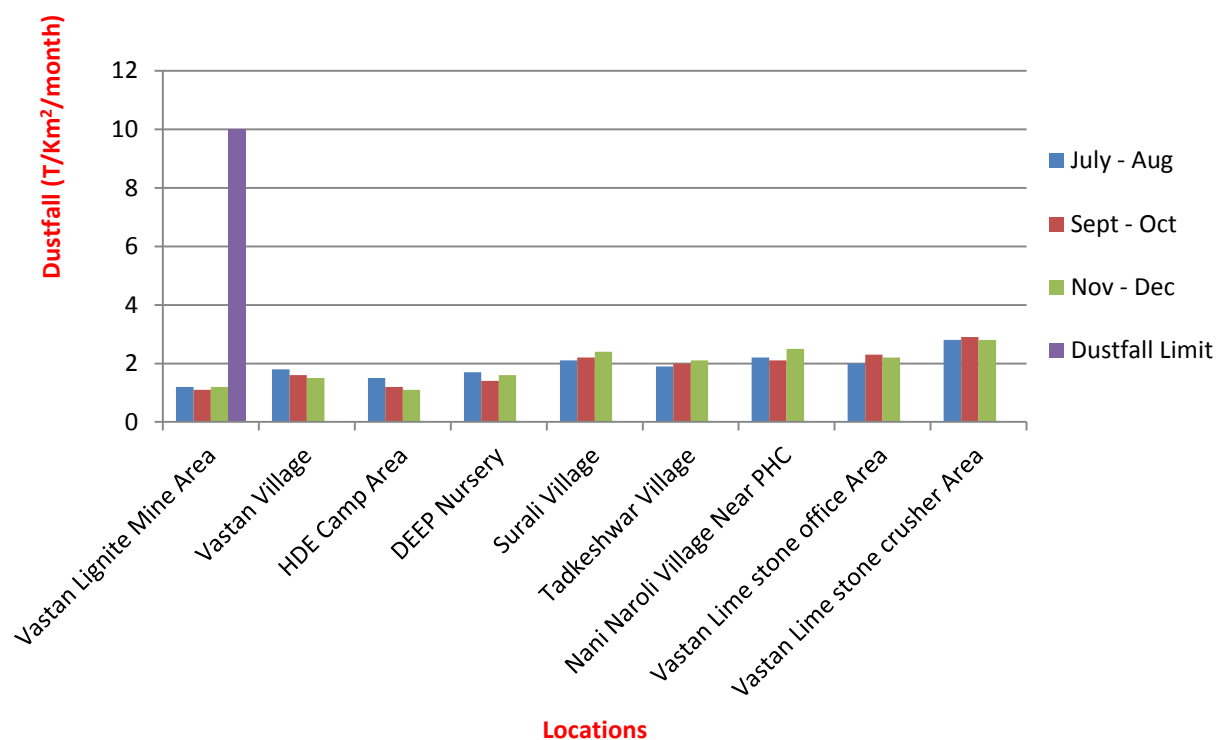
## Six Monthly Variations in Ambient Air Quality

Parameter: Dust Fall

Period: July – 2021 to December – 2021

| Sr. No. | Location                       | Results (T/Km <sup>2</sup> /month)  |                                     |                             |
|---------|--------------------------------|-------------------------------------|-------------------------------------|-----------------------------|
|         |                                | Bi-Monthly<br>July to Aug -<br>2021 | Bi-Monthly<br>Sept to Oct -<br>2021 | Bi-Monthly<br>Nov- Dec 2021 |
| 1       | Vastan Lignite Mine Area       | 1.2                                 | 1.1                                 | 1.2                         |
| 2       | Vastan Village                 | 1.8                                 | 1.6                                 | 1.5                         |
| 3       | HDE Camp Area                  | 1.5                                 | 1.2                                 | 1.1                         |
| 4       | DEEP Nursery                   | 1.7                                 | 1.4                                 | 1.6                         |
| 5       | Surali Village                 | 2.1                                 | 2.2                                 | 2.4                         |
| 6       | Tadkeshwar Village             | 1.9                                 | 2.0                                 | 2.1                         |
| 7       | Nani Naroli Village Near PHC   | 2.2                                 | 2.1                                 | 2.5                         |
| 8       | Vastan Lime stone office Area  | 2.0                                 | 2.3                                 | 2.2                         |
| 9       | Vastan Lime stone crusher Area | 2.8                                 | 2.9                                 | 2.8                         |
|         | Limit                          | 10                                  |                                     |                             |

## Graphical Presentation for the Dustfall Parameter at Various Locations



# **Comparative Water Analysis Test Report & Graphical Presentation**

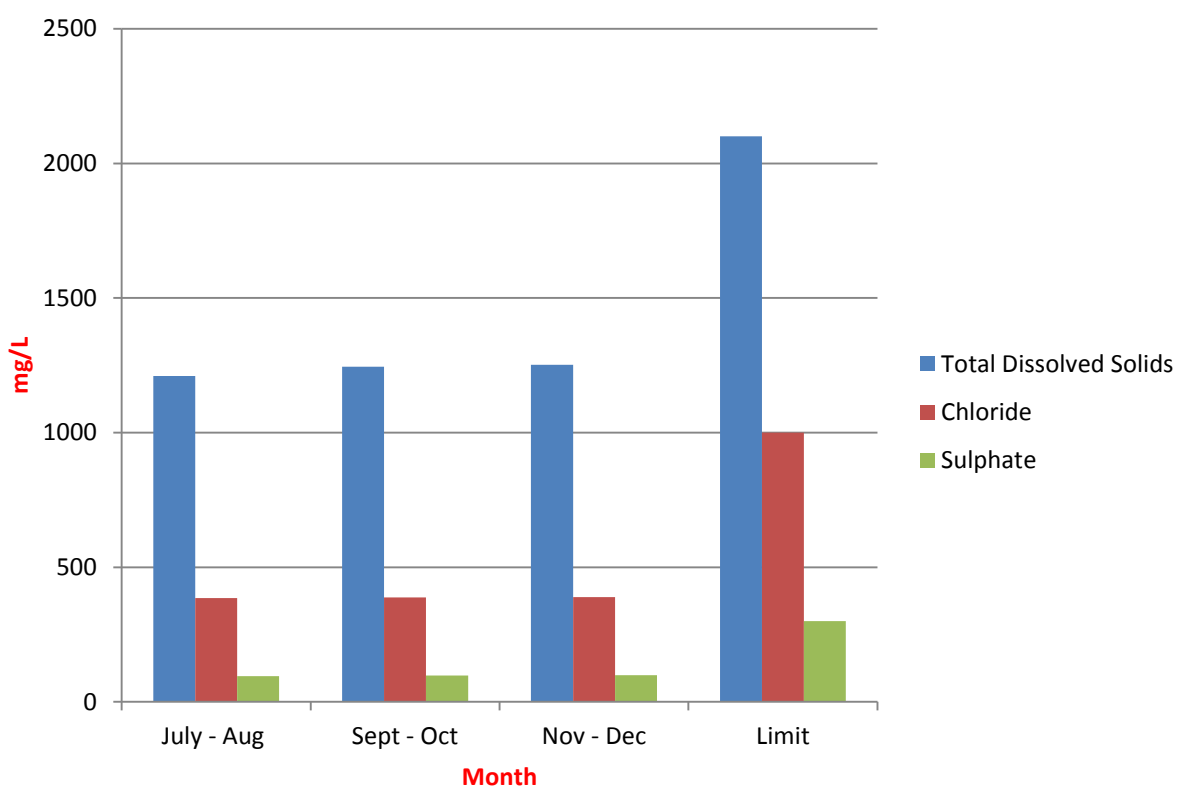
## Six Monthly Variations in Bore water

**Sampling point: Bore well (Hand Pump in Surali Village)**

**Period: July – 2021 to December – 2021**

| Sr. No. | Parameter                                        | Unit                                             | Bi-Monthly July-Aug 2021 | Bi-Monthly Sept - Oct 2021 | Bi-Monthly Nov - Dec 2021 | MoEF Limit                                                        |
|---------|--------------------------------------------------|--------------------------------------------------|--------------------------|----------------------------|---------------------------|-------------------------------------------------------------------|
| 1       | Temperature                                      | <sup>0</sup> C                                   | 28.5                     | 28.1                       | 27.8                      | Shall not exceed 5 <sup>o</sup> c above the receiving water temp. |
| 2       | pH@ 25 <sup>o</sup> C                            | pH unit                                          | 7.50                     | 7.62                       | 7.81                      | 5.5-9.0                                                           |
| 3       | Colour                                           | pt. Co. Scale                                    | < 5                      | < 5                        | < 5                       | --                                                                |
| 4       | Total Suspended Solids (TSS) @105 <sup>o</sup> C | mg/L                                             | 2.0                      | 2.2                        | 2.0                       | 100                                                               |
| 5       | Total Dissolved Solids (TDS) @180 <sup>o</sup> C | mg/L                                             | 1210                     | 1245                       | 1252                      | 2100                                                              |
| 6       | Total volatile Solids                            | mg/L                                             | 1.1                      | 1.2                        | 1.1                       | --                                                                |
| 7       | COD                                              | mg/L                                             | < 4                      | < 4                        | < 4                       | 250                                                               |
| 8       | BOD (5 days at 20 <sup>o</sup> C)                | mg/L                                             | < 2                      | < 2                        | < 2                       | 30                                                                |
| 9       | Oil & Grease                                     | mg/L                                             | < 0.1                    | < 0.1                      | < 0.1                     | 10                                                                |
| 10      | Chloride                                         | mg/L                                             | 385                      | 388                        | 389                       | 1000                                                              |
| 11      | Sulphate                                         | mg/L                                             | 95                       | 98                         | 99                        | 300                                                               |
| 12      | Fluoride                                         | mg/L                                             | 0.7                      | 0.8                        | 0.7                       | 2.0                                                               |
| 13      | Phosphate as PO <sub>4</sub> <sup>3-</sup>       | mg/L                                             | 1.2                      | 1.3                        | 1.2                       | --                                                                |
| 14      | Total Residual Chlorine                          | mg/L                                             | < 0.10                   | < 0.10                     | < 0.10                    | 1.0                                                               |
| 15      | Free Available Chlorine                          | mg/L                                             | < 0.10                   | < 0.10                     | < 0.10                    | --                                                                |
| 16      | Phenolic Compound                                | mg/L                                             | < 0.10                   | < 0.10                     | < 0.10                    | 1.0                                                               |
| 17      | Lead                                             | mg/L                                             | < 0.05                   | < 0.05                     | < 0.05                    | 0.1                                                               |
| 18      | Copper                                           | mg/L                                             | < 0.05                   | < 0.05                     | < 0.05                    | 3.0                                                               |
| 19      | Hexavalent Chromium                              | mg/L                                             | < 0.03                   | < 0.03                     | < 0.03                    | 0.1                                                               |
| 20      | Total Chromium                                   | mg/L                                             | < 0.03                   | < 0.03                     | < 0.03                    | 2.0                                                               |
| 21      | Zinc                                             | mg/L                                             | < 0.1                    | < 0.1                      | < 0.1                     | 5.0                                                               |
| 22      | Iron                                             | mg/L                                             | 0.6                      | 0.8                        | 0.9                       | 3.0                                                               |
| 23      | Calcium                                          | mg/L                                             | 118                      | 120                        | 122                       | --                                                                |
| 24      | Magnesium                                        | mg/L                                             | 69                       | 72                         | 73                        | --                                                                |
| 25      | Percentage Sodium                                | %                                                | 30.5                     | 30.8                       | 31.3                      | --                                                                |
| 26      | Total Coliform(MPN)                              | Present/ Absent                                  | Absent                   | Absent                     | Absent                    | --                                                                |
| 27      | Bioassay Test                                    | % Survival of fish after 96 hrs in 100% effluent | 100                      | 100                        | 100                       | 90%Survival of fish after 96 Hours in 100% of effluent            |

## Graphical Presentation for the variation of TDS, Chloride, Sulphate in Bore well (Hand Pump in Surali Village)



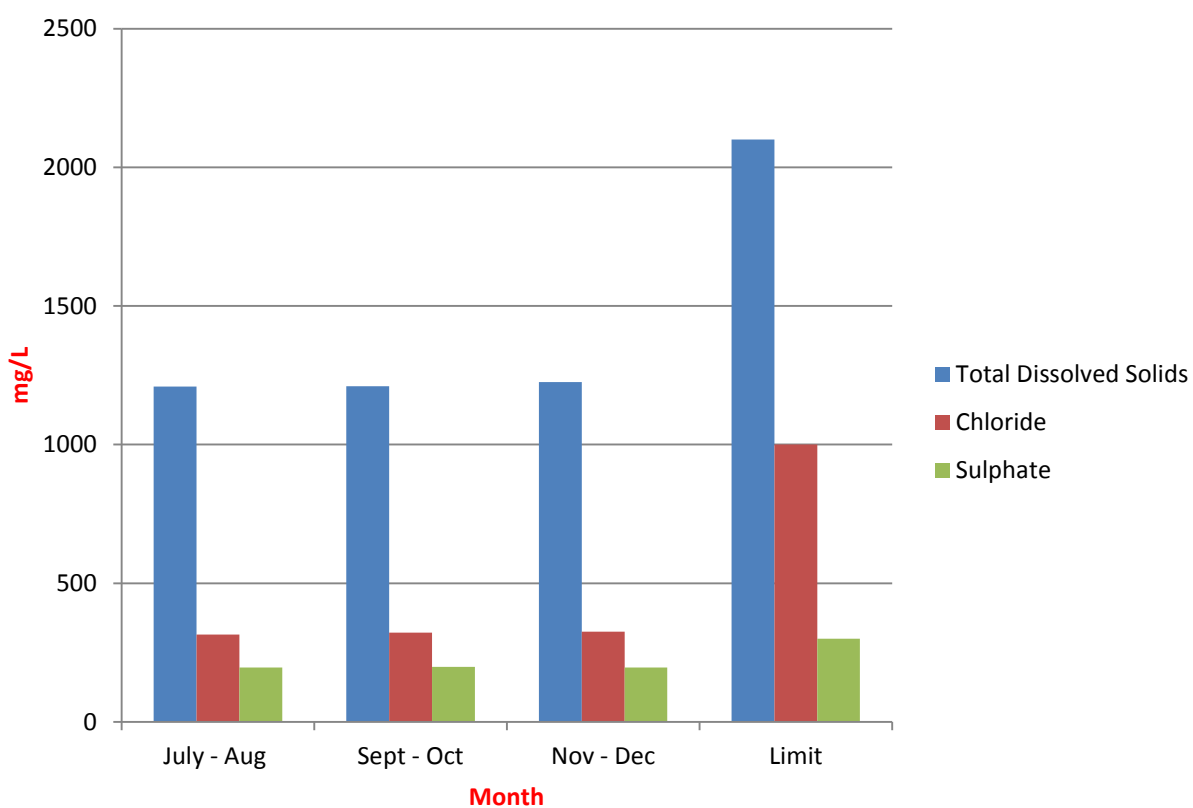
## Six Monthly Variations in Bore water Data

**Sampling point: Bore well (Mosali Char Rasta)**

**Period: July – 2021 to December – 2021**

| Sr. No. | Parameter                                  | Unit                                             | Bi-Monthly<br>July-Aug<br>2021 | Bi-Monthly<br>Sept - Oct 2021 | Bi-Monthly<br>Nov - Dec 2021 | MoEF Limit                                             |
|---------|--------------------------------------------|--------------------------------------------------|--------------------------------|-------------------------------|------------------------------|--------------------------------------------------------|
| 1       | Temperature                                | °C                                               | 29.3                           | 29.1                          | 28.5                         | Shall not exceed 5°c above the receiving water temp    |
| 2       | pH@ 25 °C                                  | pH unit                                          | 7.55                           | 7.68                          | 7.84                         | 5.5-9.0                                                |
| 3       | Colour                                     | pt. Co. Scale                                    | < 5                            | < 5                           | < 5                          | --                                                     |
| 4       | Total Suspended Solids (TSS) @105 °C       | mg/L                                             | 1.6                            | 1.4                           | 1.3                          | 100                                                    |
| 5       | Total Dissolved Solids (TDS) @180 °C       | mg/L                                             | 1210                           | 1210                          | 1226                         | 2100                                                   |
| 6       | Total volatile Solids                      | mg/L                                             | 1.3                            | 1.3                           | 1.2                          | --                                                     |
| 7       | COD                                        | mg/L                                             | < 4                            | < 4                           | < 4                          | 250                                                    |
| 8       | BOD (5 days at 20° C)                      | mg/L                                             | < 2                            | < 2                           | < 2                          | 30                                                     |
| 9       | Oil & Grease                               | mg/L                                             | < 0.1                          | < 0.1                         | < 0.1                        | 10                                                     |
| 10      | Chloride                                   | mg/L                                             | 315                            | 322                           | 325                          | 1000                                                   |
| 11      | Sulphate                                   | mg/L                                             | 196                            | 198                           | 196                          | 300                                                    |
| 12      | Fluoride                                   | mg/L                                             | 0.1                            | 0.3                           | 0.5                          | 2.0                                                    |
| 13      | Phosphate as PO <sub>4</sub> <sup>3-</sup> | mg/L                                             | 1.3                            | 1.1                           | 1.2                          | --                                                     |
| 14      | Total Residual Chlorine                    | mg/L                                             | < 0.10                         | < 0.10                        | < 0.10                       | 1.0                                                    |
| 15      | Free Available Chlorine                    | mg/L                                             | < 0.10                         | < 0.10                        | < 0.10                       | --                                                     |
| 16      | Phenolic Compound                          | mg/L                                             | < 0.10                         | < 0.10                        | < 0.10                       | 1.0                                                    |
| 17      | Lead                                       | mg/L                                             | < 0.05                         | < 0.05                        | < 0.05                       | 0.1                                                    |
| 18      | Copper                                     | mg/L                                             | < 0.05                         | < 0.05                        | < 0.05                       | 3.0                                                    |
| 19      | Hexavalent Chromium                        | mg/L                                             | < 0.03                         | < 0.03                        | < 0.03                       | 0.1                                                    |
| 20      | Total Chromium                             | mg/L                                             | < 0.03                         | < 0.03                        | < 0.03                       | 2.0                                                    |
| 21      | Zinc                                       | mg/L                                             | < 0.1                          | < 0.1                         | < 0.1                        | 5.0                                                    |
| 22      | Iron                                       | mg/L                                             | 0.8                            | 0.8                           | 0.9                          | 3.0                                                    |
| 23      | Calcium                                    | mg/L                                             | 109                            | 115                           | 117                          | --                                                     |
| 24      | Magnesium                                  | mg/L                                             | 71                             | 79                            | 80                           | --                                                     |
| 25      | Percentage Sodium                          | %                                                | 29.8                           | 29.6                          | 30.2                         | --                                                     |
| 26      | Total Coliform(MPN)                        | Present/<br>Absent                               | Absent                         | Absent                        | Absent                       | --                                                     |
| 27      | Bioassay Test                              | % Survival of fish after 96 hrs in 100% effluent | 100                            | 100                           | 100                          | 90%Survival of fish after 96 Hours in 100% of effluent |

## Graphical Presentation for the variation of TDS, Chloride, Sulphate in Bore well (Mosali Char Rasta)



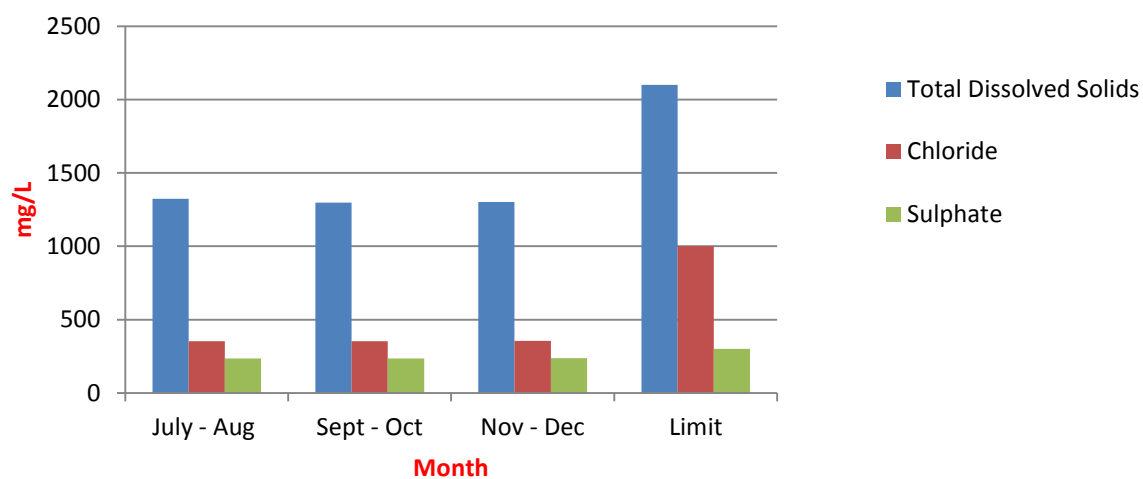
## Six Monthly Variations in Bore water

**Sampling point: Bore well (Vastan Village)**

**Period: July – 2021 to December – 2021**

| Sr. No. | Parameter                                        | Unit                                             | Bi-Monthly July-Aug 2021 | Bi-Monthly Sept - Oct 2021 | Bi-Monthly Nov - Dec 2021 | MoEF Limit                                             |
|---------|--------------------------------------------------|--------------------------------------------------|--------------------------|----------------------------|---------------------------|--------------------------------------------------------|
| 1       | Temperature                                      | <sup>0</sup> C                                   | 28.6                     | 28.9                       | 29.2                      | Shall not exceed 5°c above the receiving water temp    |
| 2       | pH@ 25 <sup>0</sup> C                            | pH unit                                          | 7.50                     | 7.50                       | 7.59                      | 5.5-9.0                                                |
| 3       | Colour                                           | pt. Co. Scale                                    | < 5                      | < 5                        | < 5                       | --                                                     |
| 4       | Total Suspended Solids (TSS) @105 <sup>0</sup> C | mg/L                                             | 2.0                      | 2.1                        | 2.2                       | 100                                                    |
| 5       | Total Dissolved Solids (TDS) @180 <sup>0</sup> C | mg/L                                             | 1325                     | 1298                       | 1302                      | 2100                                                   |
| 6       | Total volatile Solids                            | mg/L                                             | 1.0                      | 1.3                        | 1.2                       | --                                                     |
| 7       | COD                                              | mg/L                                             | < 4                      | < 4                        | < 4                       | 250                                                    |
| 8       | BOD (5 days at 20 <sup>0</sup> C )               | mg/L                                             | < 2                      | < 2                        | < 2                       | 30                                                     |
| 9       | Oil & Grease                                     | mg/L                                             | < 0.1                    | < 0.1                      | < 0.1                     | 10                                                     |
| 10      | Chloride                                         | mg/L                                             | 352                      | 352                        | 355                       | 1000                                                   |
| 11      | Sulphate                                         | mg/L                                             | 235                      | 235                        | 237                       | 300                                                    |
| 12      | Fluoride                                         | mg/L                                             | 0.9                      | 0.9                        | 0.8                       | 2.0                                                    |
| 13      | Phosphate as PO <sub>4</sub> <sup>3-</sup>       | mg/L                                             | 1.1                      | 1.1                        | 1.2                       | --                                                     |
| 14      | Total Residual Chlorine                          | mg/L                                             | < 0.10                   | < 0.10                     | < 0.10                    | 1.0                                                    |
| 15      | Free Available Chlorine                          | mg/L                                             | < 0.10                   | < 0.10                     | < 0.10                    | --                                                     |
| 16      | Phenolic Compound                                | mg/L                                             | < 0.10                   | < 0.10                     | < 0.10                    | 1.0                                                    |
| 17      | Lead                                             | mg/L                                             | < 0.05                   | < 0.05                     | < 0.05                    | 0.1                                                    |
| 18      | Copper                                           | mg/L                                             | < 0.05                   | < 0.05                     | < 0.05                    | 3.0                                                    |
| 19      | Hexavalent Chromium                              | mg/L                                             | < 0.03                   | < 0.03                     | < 0.03                    | 0.1                                                    |
| 20      | Total Chromium                                   | mg/L                                             | < 0.03                   | < 0.03                     | < 0.03                    | 2.0                                                    |
| 21      | Zinc                                             | mg/L                                             | < 0.1                    | < 0.1                      | < 0.1                     | 5.0                                                    |
| 22      | Iron                                             | mg/L                                             | 0.8                      | 0.8                        | 0.9                       | 3.0                                                    |
| 23      | Calcium                                          | mg/L                                             | 108                      | 95                         | 96                        | --                                                     |
| 24      | Magnesium                                        | mg/L                                             | 38                       | 32                         | 34                        | --                                                     |
| 25      | Percentage Sodium                                | %                                                | 28.6                     | 28.6                       | 29.2                      | --                                                     |
| 26      | Total Coliform(MPN)                              | Present/ Absent                                  | Absent                   | Absent                     | Absent                    | --                                                     |
| 27      | Bioassay Test                                    | % Survival of fish after 96 hrs in 100% effluent | 100                      | 100                        | 100                       | 90%Survival of fish after 96 Hours in 100% of effluent |

## Graphical Presentation for the variation of TDS, Chloride, Sulphate in Bore well (Vastan Village)



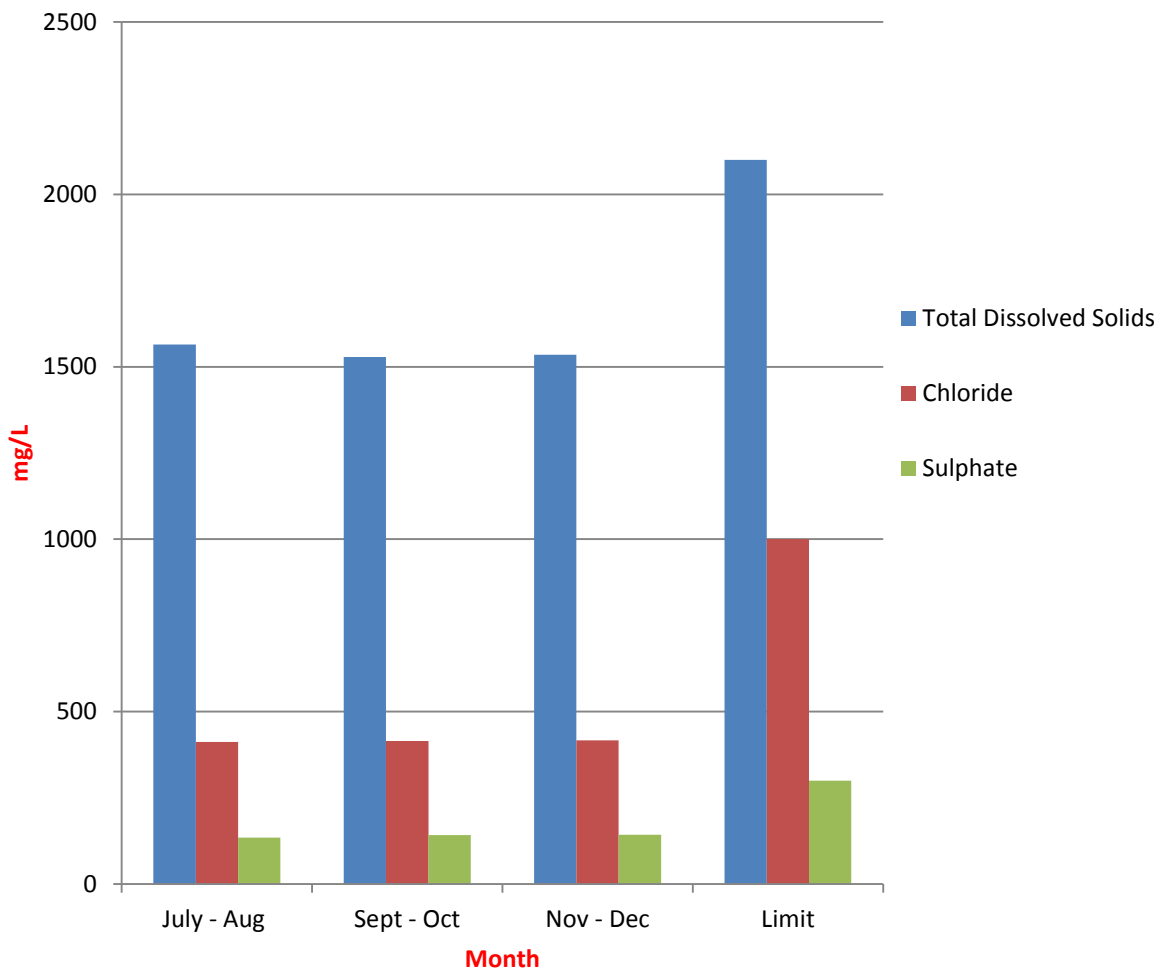
## Six Monthly Variations in Bore water

**Sampling point: Bore well (Hand Pump in Dungri Village)**

**Period: July – 2021 to December – 2021**

| Sr. No. | Parameter                                  | Unit                                             | Bi-Monthly July-Aug 2021 | Bi-Monthly Sept - Oct 2021 | Bi-Monthly Nov - Dec 2021 | MoEF Limit                                             |
|---------|--------------------------------------------|--------------------------------------------------|--------------------------|----------------------------|---------------------------|--------------------------------------------------------|
| 1       | Temperature                                | <sup>0</sup> C                                   | 26                       | 26.3                       | 27.2                      | Shall not exceed 5°c above the receiving water temp    |
| 2       | pH@ 25°C                                   | pH unit                                          | 7.55                     | 7.62                       | 7.68                      | 5.5-9.0                                                |
| 3       | Colour                                     | pt. Co. Scale                                    | <5                       | <5                         | <5                        | --                                                     |
| 4       | Total Suspended Solids (TSS) @105 °C       | mg/L                                             | 1.9                      | 1.7                        | 1.6                       | 100                                                    |
| 5       | Total Dissolved Solids (TDS) @180° C       | mg/L                                             | 1565                     | 1528                       | 1535                      | 2100                                                   |
| 6       | Total volatile Solids                      | mg/L                                             | 0.9                      | 0.9                        | 1.0                       | --                                                     |
| 7       | COD                                        | mg/L                                             | < 4                      | < 4                        | < 4                       | 250                                                    |
| 8       | BOD (5 days at 20° C)                      | mg/L                                             | < 2                      | < 2                        | < 2                       | 30                                                     |
| 9       | Oil & Grease                               | mg/L                                             | <0.1                     | <0.1                       | <0.1                      | 10                                                     |
| 10      | Chloride                                   | mg/L                                             | 412                      | 415                        | 417                       | 1000                                                   |
| 11      | Sulphate                                   | mg/L                                             | 135                      | 142                        | 143                       | 300                                                    |
| 12      | Fluoride                                   | mg/L                                             | 0.9                      | 0.9                        | 0.8                       | 2.0                                                    |
| 13      | Phosphate as PO <sub>4</sub> <sup>3-</sup> | mg/L                                             | 1.3                      | 1.3                        | 1.2                       | --                                                     |
| 14      | Total Residual Chlorine                    | mg/L                                             | <0.1                     | <0.1                       | <0.1                      | 1.0                                                    |
| 15      | Free Available Chlorine                    | mg/L                                             | < 0.1                    | < 0.1                      | < 0.1                     | --                                                     |
| 16      | Phenolic Compound                          | mg/L                                             | < 0.1                    | < 0.1                      | < 0.1                     | 1.0                                                    |
| 17      | Lead                                       | mg/L                                             | < 0.05                   | < 0.05                     | < 0.05                    | 0.1                                                    |
| 18      | Copper                                     | mg/L                                             | < 0.05                   | < 0.05                     | < 0.05                    | 3.0                                                    |
| 19      | Hexavalent Chromium                        | mg/L                                             | < 0.03                   | < 0.03                     | < 0.03                    | 0.1                                                    |
| 20      | Total Chromium                             | mg/L                                             | < 0.03                   | < 0.03                     | < 0.03                    | 2.0                                                    |
| 21      | Zinc                                       | mg/L                                             | < 0.1                    | < 0.1                      | < 0.1                     | 5.0                                                    |
| 22      | Iron                                       | mg/L                                             | 0.9                      | 0.9                        | 0.8                       | 3.0                                                    |
| 23      | Calcium                                    | mg/L                                             | 122                      | 122                        | 123                       | --                                                     |
| 24      | Magnesium                                  | mg/L                                             | 56                       | 56                         | 57                        | --                                                     |
| 25      | Percentage Sodium                          | %                                                | 30.1                     | 30.1                       | 30.2                      | --                                                     |
| 26      | Total Coliform(MPN)                        | Present/<br>Absent                               | Absent                   | Absent                     | Absent                    | --                                                     |
| 27      | Bioassay Test                              | % Survival of fish after 96 hrs in 100% effluent | 100                      | 100                        | 100                       | 90%Survival of fish after 96 Hours in 100% of effluent |

## Graphical Presentation for the variation of TDS, Chloride, Sulphate in Bore well (Hand Pump in Dungri Village)



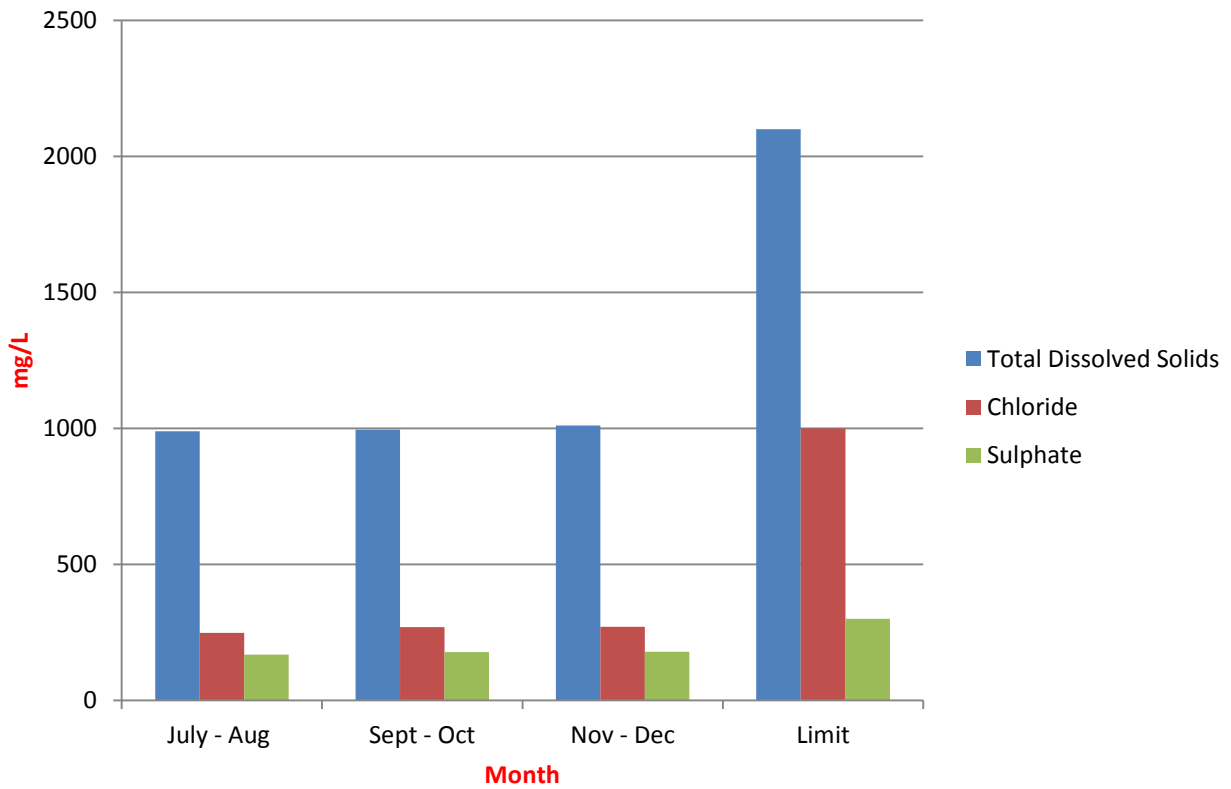
## Six Monthly Variations in water

**Sampling point: (Natural pond in Vastan village)**

**Period: July – 2021 to December – 2021**

| Sr. No. | Parameter                                  | Unit                                             | Bi-Monthly July-Aug 2021 | Bi-Monthly Sept - Oct 2021 | Bi-Monthly Nov - Dec 2021 | MoEF Limit                                             |
|---------|--------------------------------------------|--------------------------------------------------|--------------------------|----------------------------|---------------------------|--------------------------------------------------------|
| 1       | Temperature                                | °C                                               | 28.2                     | 28.8                       | 27.4                      | Shall not exceed 5°c above the receiving water temp    |
| 2       | pH@ 25°C                                   | pH unit                                          | 7.35                     | 7.49                       | 7.62                      | 5.5-9.0                                                |
| 3       | Colour                                     | pt. Co. Scale                                    | < 5                      | < 5                        | < 5                       | --                                                     |
| 4       | Total Suspended Solids (TSS) @105 °C       | mg/L                                             | 7.9                      | 6.5                        | 6.1                       | 100                                                    |
| 5       | Total Dissolved Solids (TDS) @180° C       | mg/L                                             | 989                      | 995                        | 1010                      | 2100                                                   |
| 6       | Total volatile Solids                      | mg/L                                             | <1                       | <1                         | <1                        | --                                                     |
| 7       | COD                                        | mg/L                                             | <4                       | <4                         | <4                        | 250                                                    |
| 8       | BOD (5 days at 20° C)                      | mg/L                                             | <2                       | <2                         | <2                        | 30                                                     |
| 9       | Oil & Grease                               | mg/L                                             | < 0.1                    | < 0.1                      | < 0.1                     | 10                                                     |
| 10      | Chloride                                   | mg/L                                             | 248                      | 269                        | 271                       | 1000                                                   |
| 11      | Sulphate                                   | mg/L                                             | 168                      | 178                        | 179                       | 300                                                    |
| 12      | Fluoride                                   | mg/L                                             | 0.7                      | 0.7                        | 0.8                       | 2.0                                                    |
| 13      | Phosphate as PO <sub>4</sub> <sup>3-</sup> | mg/L                                             | 1.1                      | 1.2                        | 1.1                       | --                                                     |
| 14      | Total Residual Chlorine                    | mg/L                                             | < 0.1                    | < 0.1                      | < 0.1                     | 1.0                                                    |
| 15      | Free Available Chlorine                    | mg/L                                             | < 0.10                   | < 0.10                     | < 0.10                    | --                                                     |
| 16      | Phenolic Compound                          | mg/L                                             | < 0.10                   | < 0.10                     | < 0.10                    | 1.0                                                    |
| 17      | Lead                                       | mg/L                                             | < 0.05                   | < 0.05                     | < 0.05                    | 0.1                                                    |
| 18      | Copper                                     | mg/L                                             | < 0.05                   | < 0.05                     | < 0.05                    | 3.0                                                    |
| 19      | Hexavalent Chromium                        | mg/L                                             | < 0.03                   | < 0.03                     | < 0.03                    | 0.1                                                    |
| 20      | Total Chromium                             | mg/L                                             | < 0.03                   | < 0.03                     | < 0.03                    | 2.0                                                    |
| 21      | Zinc                                       | mg/L                                             | < 0.1                    | < 0.1                      | < 0.1                     | 5.0                                                    |
| 22      | Iron                                       | mg/L                                             | <0.1                     | <0.1                       | <0.1                      | 3.0                                                    |
| 23      | Calcium                                    | mg/L                                             | 88                       | 91                         | 93                        | --                                                     |
| 24      | Magnesium                                  | mg/L                                             | 32                       | 43                         | 44                        | --                                                     |
| 25      | Percentage Sodium                          | %                                                | 23.6                     | 23.8                       | 23.8                      | --                                                     |
| 26      | Total Coliform(MPN)                        | Present/ Absent                                  | Absent                   | Absent                     | Absent                    | --                                                     |
| 27      | Bioassay Test                              | % Survival of fish after 96 hrs in 100% effluent | 100                      | 100                        | 100                       | 90%Survival of fish after 96 Hours in 100% of effluent |

## Graphical Presentation for the variation of TDS, Chloride, Sulphate Natural pond in Vastan village



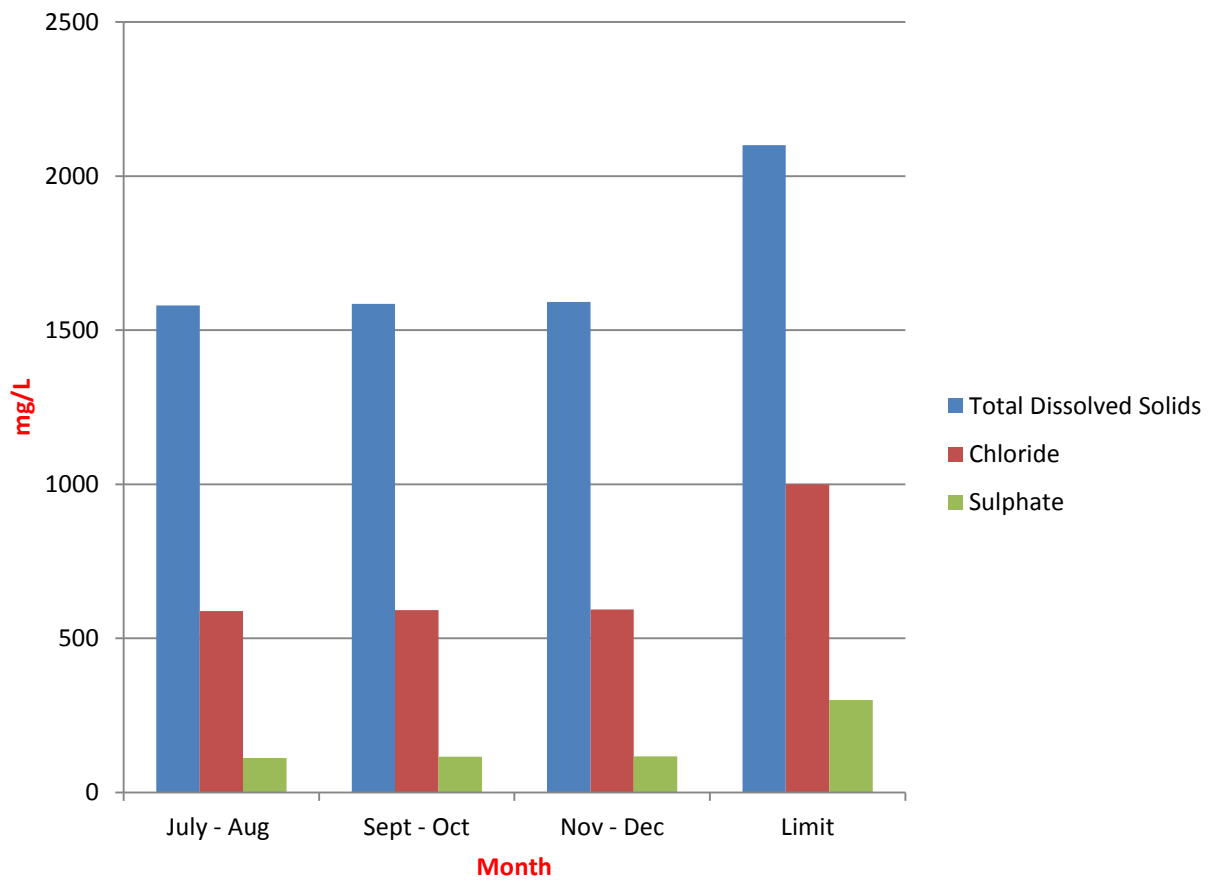
## Six Monthly Variations in Bore water

**Sampling point: Bore well (Ansodla Village)**

**Period: July – 2021 to December – 2021**

| Sr. No. | Parameter                                  | Unit                                             | Bi-Monthly July-Aug 2021 | Bi-Monthly Sept - Oct 2021 | Bi-Monthly Nov - Dec 2021 | MoEF Limit                                             |
|---------|--------------------------------------------|--------------------------------------------------|--------------------------|----------------------------|---------------------------|--------------------------------------------------------|
| 1       | Temperature                                | °C                                               | 26                       | 26.3                       | 26.8                      | Shall not exceed 5°c above the receiving water temp    |
| 2       | pH@ 25°C                                   | pH unit                                          | 7.7                      | 7.4                        | 7.51                      | 5.5-9.0                                                |
| 3       | Colour                                     | pt. Co. Scale                                    | < 5                      | < 5                        | < 5                       | --                                                     |
| 4       | Total Suspended Solids (TSS) @105 °C       | mg/L                                             | 1.4                      | 1.2                        | 1.1                       | 100                                                    |
| 5       | Total Dissolved Solids (TDS) @180° C       | mg/L                                             | 1580                     | 1585                       | 1591                      | 2100                                                   |
| 6       | Total volatile Solids                      | mg/L                                             | 1.2                      | 1.0                        | 1.1                       | --                                                     |
| 7       | COD                                        | mg/L                                             | < 4                      | < 4                        | < 4                       | 250                                                    |
| 8       | BOD (5 days at 20° C)                      | mg/L                                             | < 2                      | < 2                        | < 2                       | 30                                                     |
| 9       | Oil & Grease                               | mg/L                                             | < 0.1                    | < 0.1                      | < 0.1                     | 10                                                     |
| 10      | Chloride                                   | mg/L                                             | 589                      | 592                        | 594                       | 1000                                                   |
| 11      | Sulphate                                   | mg/L                                             | 112                      | 116                        | 117                       | 300                                                    |
| 12      | Fluoride                                   | mg/L                                             | 0.8                      | 0.9                        | 1.0                       | 2.0                                                    |
| 13      | Phosphate as PO <sub>4</sub> <sup>3-</sup> | mg/L                                             | 1.0                      | 1.1                        | 1.2                       | --                                                     |
| 14      | Total Residual Chlorine                    | mg/L                                             | < 0.1                    | < 0.1                      | < 0.1                     | 1.0                                                    |
| 15      | Free Available Chlorine                    | mg/L                                             | < 0.10                   | < 0.10                     | < 0.10                    | --                                                     |
| 16      | Phenolic Compound                          | mg/L                                             | < 0.10                   | < 0.10                     | < 0.10                    | 1.0                                                    |
| 17      | Lead                                       | mg/L                                             | < 0.05                   | < 0.05                     | < 0.05                    | 0.1                                                    |
| 18      | Copper                                     | mg/L                                             | < 0.05                   | < 0.05                     | < 0.05                    | 3.0                                                    |
| 19      | Hexavalent Chromium                        | mg/L                                             | < 0.03                   | < 0.03                     | < 0.03                    | 0.1                                                    |
| 20      | Total Chromium                             | mg/L                                             | < 0.03                   | < 0.03                     | < 0.03                    | 2.0                                                    |
| 21      | Zinc                                       | mg/L                                             | < 0.10                   | < 0.10                     | < 0.10                    | 5.0                                                    |
| 22      | Iron                                       | mg/L                                             | 0.8                      | 0.9                        | 1.0                       | 3.0                                                    |
| 23      | Calcium                                    | mg/L                                             | 168                      | 169                        | 171                       | --                                                     |
| 24      | Magnesium                                  | mg/L                                             | 74                       | 75                         | 76                        | --                                                     |
| 25      | Percentage Sodium                          | %                                                | 33.8                     | 33.8                       | 34.3                      | --                                                     |
| 26      | Total Coliform(MPN)                        | Present/ Absent                                  | Absent                   | Absent                     | Absent                    | --                                                     |
| 27      | Bioassay Test                              | % Survival of fish after 96 hrs in 100% effluent | 100                      | 100                        | 100                       | 90%Survival of fish after 96 Hours in 100% of effluent |

## Graphical Presentation for the variation of TDS, Chloride, Sulphate Bore well (Ansodla Village)



## Six Monthly Variations in surface water

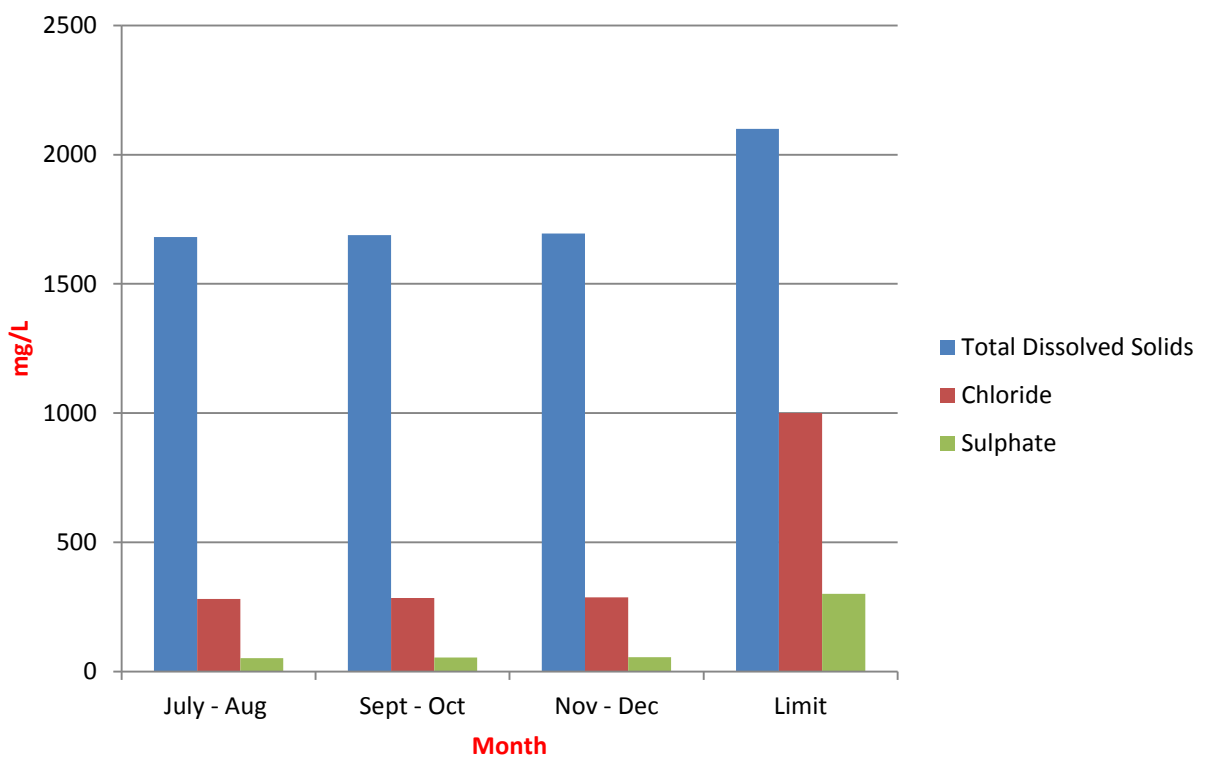
**Sampling point: Surface water (Nani naroli village)**

**Period: July – 2021 to December – 2021**

| Sr. No. | Parameter                                   | Unit                                                  | Bi-Monthly July-Aug 2021 | Bi-Monthly Sept - Oct 2021 | Bi-Monthly Nov - Dec 2021 | MoEF Limit                                             |
|---------|---------------------------------------------|-------------------------------------------------------|--------------------------|----------------------------|---------------------------|--------------------------------------------------------|
| 1       | Temperature                                 | <sup>0</sup> C                                        | 29                       | 29.2                       | 28.7                      | Shall not exceed 5°c above the receiving water temp    |
| 2       | pH@ 25°C                                    | pH unit                                               | 7.6                      | 7.10                       | 7.36                      | 5.5-9.0                                                |
| 3       | Colour                                      | pt. Co. Scale                                         | <5                       | <5                         | <5                        | --                                                     |
| 4       | Total Suspended Solids (TSS) @105 °C        | mg/L                                                  | 1.4                      | 1.6                        | 1.4                       | 100                                                    |
| 5       | Total Dissolved Solids (TDS) @180° C        | mg/L                                                  | 1682                     | 1689                       | 1695                      | 2100                                                   |
| 6       | Total volatile Solids                       | mg/L                                                  | 1.3                      | 1.1                        | 1.1                       | --                                                     |
| 7       | COD                                         | mg/L                                                  | <4                       | <4                         | <4                        | 250                                                    |
| 8       | BOD (5 days at 20° C)                       | mg/L                                                  | <2                       | <2                         | <2                        | 30                                                     |
| 9       | Oil & Grease                                | mg/L                                                  | <0.1                     | <0.1                       | <0.1                      | 10                                                     |
| 10      | Chloride                                    | mg/L                                                  | 281                      | 285                        | 287                       | 1000                                                   |
| 11      | Sulphate                                    | mg/L                                                  | 52                       | 54                         | 55                        | 300                                                    |
| 12      | Fluoride                                    | mg/L                                                  | 0.7                      | 0.6                        | 0.7                       | 2.0                                                    |
| 13      | Phosphate as PO <sub>4</sub> <sup>---</sup> | mg/L                                                  | 1.1                      | 1.0                        | 1.1                       | --                                                     |
| 14      | Total Residual Chlorine                     | mg/L                                                  | <0.1                     | <0.1                       | <0.1                      | 1.0                                                    |
| 15      | Free Available Chlorine                     | mg/L                                                  | <0.1                     | <0.1                       | <0.1                      | --                                                     |
| 16      | Phenolic Compound                           | mg/L                                                  | <0.1                     | <0.1                       | <0.1                      | 1.0                                                    |
| 17      | Lead                                        | mg/L                                                  | <0.05                    | <0.05                      | <0.05                     | 0.1                                                    |
| 18      | Copper                                      | mg/L                                                  | <0.05                    | <0.05                      | <0.05                     | 3.0                                                    |
| 19      | Hexavalent Chromium                         | mg/L                                                  | <0.03                    | <0.03                      | <0.03                     | 0.1                                                    |
| 20      | Total Chromium                              | mg/L                                                  | <0.03                    | <0.03                      | <0.03                     | 2.0                                                    |
| 21      | Zinc                                        | mg/L                                                  | <0.1                     | <0.1                       | <0.1                      | 5.0                                                    |
| 22      | Iron                                        | mg/L                                                  | 0.9                      | 0.9                        | 0.8                       | 3.0                                                    |
| 23      | Calcium                                     | mg/L                                                  | 87                       | 88                         | 89                        | --                                                     |
| 24      | Magnesium                                   | mg/L                                                  | 36                       | 38                         | 39                        | --                                                     |
| 25      | Percentage Sodium                           | %                                                     | 27.8                     | 27.4                       | 28.5                      | --                                                     |
| 26      | Total Coliform(MPN)                         | Presen t/<br>Absent                                   | Absent                   | Absent                     | Absent                    | --                                                     |
| 27      | Bioassay Test                               | %<br>Surviv al of fish after 96 hrs in 100% effluen t | 100                      | 100                        | 100                       | 90%Survival of fish after 96 Hours in 100% of effluent |

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## Graphical Presentation for the variation of TDS, Chloride, Sulphate Surface water (Nani naroli village)



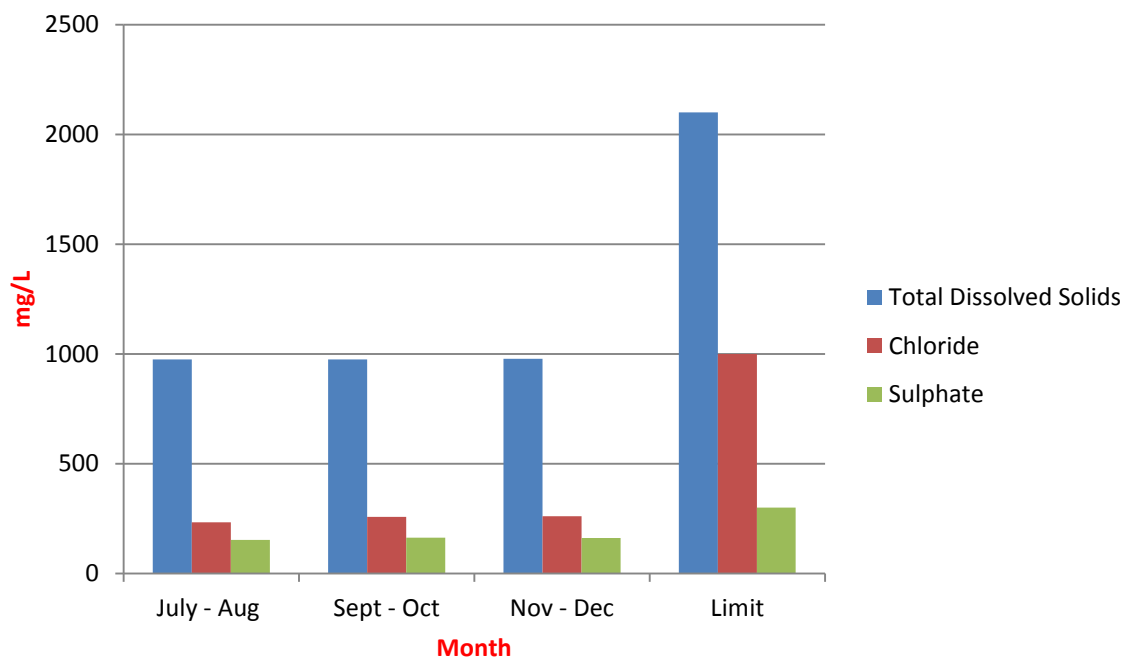
## Six Monthly Variations in surface water

**Sampling point: (Vastan Lignie Mine Accumulated Rain Water)**

**Period: July – 2021 to December – 2021**

| Sr. No. | Parameter                                     | Unit                                                               | Bi-Monthly<br>July - Aug<br>2021 | Bi-Monthly<br>Sept - Oct 2021 | Bi-Monthly<br>Nov - Dec 2021 | MoEF Limit                                                      |
|---------|-----------------------------------------------|--------------------------------------------------------------------|----------------------------------|-------------------------------|------------------------------|-----------------------------------------------------------------|
| 1       | Temperature                                   | <sup>0</sup> C                                                     | 27.2                             | 27.8                          | 27.3                         | Shall not exceed<br>5°c above the<br>receiving water<br>temp    |
| 2       | pH@ 25°C                                      | pH unit                                                            | 7.50                             | 7.58                          | 7.60                         | 5.5-9.0                                                         |
| 3       | Colour                                        | pt. Co.<br>Scale                                                   | < 5                              | < 5                           | < 5                          | --                                                              |
| 4       | Total Suspended<br>Solids (TSS)<br>@105 °C    | mg/L                                                               | 8.2                              | 7.9                           | 7.5                          | 100                                                             |
| 5       | Total Dissolved<br>Solids (TDS)<br>@180° C    | mg/L                                                               | 975                              | 975                           | 978                          | 2100                                                            |
| 6       | Total volatile<br>Solids                      | mg/L                                                               | <1                               | <1                            | <1                           | --                                                              |
| 7       | COD                                           | mg/L                                                               | <4                               | <4                            | <4                           | 250                                                             |
| 8       | BOD (5 days at<br>20° C)                      | mg/L                                                               | <2                               | <2                            | <2                           | 30                                                              |
| 9       | Oil & Grease                                  | mg/L                                                               | < 1                              | < 1                           | < 1                          | 10                                                              |
| 10      | Chloride                                      | mg/L                                                               | 232                              | 258                           | 260                          | 1000                                                            |
| 11      | Sulphate                                      | mg/L                                                               | 152                              | 162                           | 161                          | 300                                                             |
| 12      | Fluoride                                      | mg/L                                                               | 0.6                              | 0.8                           | 0.9                          | 2.0                                                             |
| 13      | Phosphate as<br>PO <sub>4</sub> <sup>3-</sup> | mg/L                                                               | 0.7                              | 0.6                           | 0.7                          | --                                                              |
| 14      | Total Residual<br>Chlorine                    | mg/L                                                               | < 0.1                            | < 0.1                         | < 0.1                        | 1.0                                                             |
| 15      | Free Available<br>Chlorine                    | mg/L                                                               | < 0.10                           | < 0.10                        | < 0.10                       | --                                                              |
| 16      | Phenolic<br>Compound                          | mg/L                                                               | < 0.10                           | < 0.10                        | < 0.10                       | 1.0                                                             |
| 17      | Lead                                          | mg/L                                                               | <0.02                            | <0.02                         | <0.02                        | 0.1                                                             |
| 18      | Copper                                        | mg/L                                                               | <0.50                            | <0.50                         | <0.50                        | 3.0                                                             |
| 19      | Hexavalent<br>Chromium                        | mg/L                                                               | < 0.03                           | < 0.03                        | < 0.03                       | 0.1                                                             |
| 20      | Total Chromium                                | mg/L                                                               | < 0.03                           | < 0.03                        | < 0.03                       | 2.0                                                             |
| 21      | Zinc                                          | mg/L                                                               | <0.10                            | <0.10                         | <0.10                        | 5.0                                                             |
| 22      | Iron                                          | mg/L                                                               | <0.05                            | <0.05                         | <0.05                        | 3.0                                                             |
| 23      | Calcium                                       | mg/L                                                               | 74                               | 77                            | 79                           | --                                                              |
| 24      | Magnesium                                     | mg/L                                                               | 31                               | 35                            | 36                           | --                                                              |
| 25      | Percentage<br>Sodium                          | %                                                                  | 22.9                             | 23.7                          | 24.3                         | --                                                              |
| 26      | Total<br>Coliform(MPN)                        | Present/<br>Absent                                                 | Absent                           | Absent                        | Absent                       | --                                                              |
| 27      | Bioassay Test                                 | %<br>Survival<br>of fish<br>after 96<br>hrs in<br>100%<br>effluent | 100                              | 100                           | 100                          | 90%Survival of<br>fish after 96<br>Hours in 100%<br>of effluent |

### Graphical Presentation for the variation of TDS, Chloride, Sulphate (Lignite Mine Discharge)



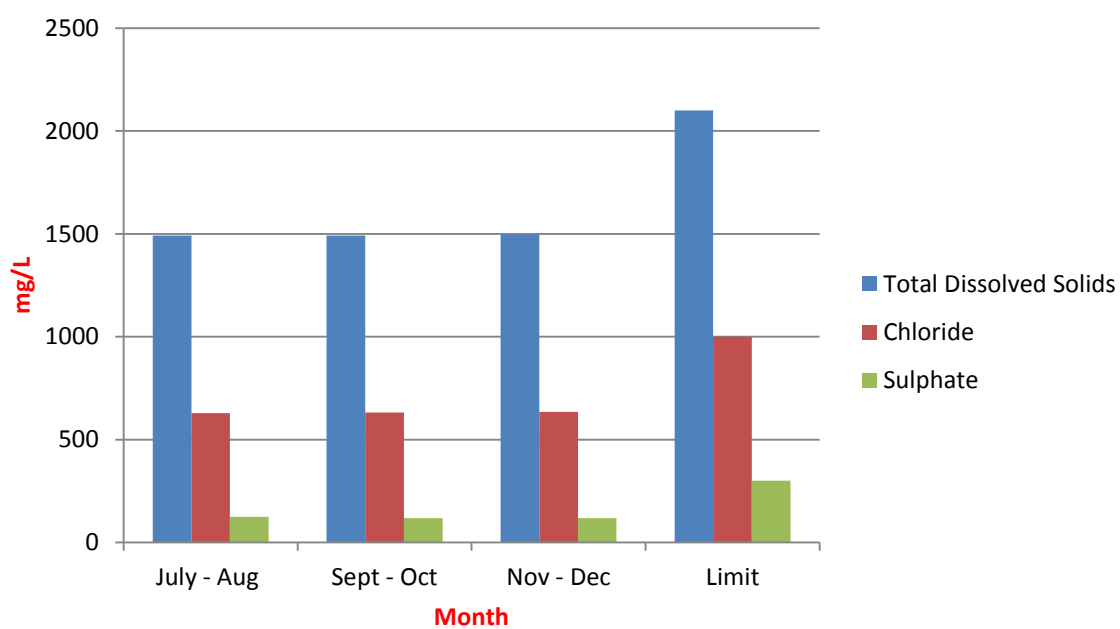
## Six Monthly Variations in surface water

**Sampling point: (Limestone Accumulated Rain Water)**

**Period: July – 2021 to December – 2021**

| Sr. No. | Parameter                                     | Unit                                                         | Bi-Monthly<br>July -Aug<br>2021 | Bi-Monthly<br>Sept - Oct<br>2021 | Bi-Monthly<br>Nov - Dec 2021 | MoEF Limit                                                      |
|---------|-----------------------------------------------|--------------------------------------------------------------|---------------------------------|----------------------------------|------------------------------|-----------------------------------------------------------------|
| 1       | Temperature                                   | °C                                                           | 26..9                           | 27.2                             | 27.8                         | Shall not exceed<br>5°c above the<br>receiving water<br>temp    |
| 2       | pH@ 25°C                                      | pH unit                                                      | 7.48                            | 7.56                             | 7.64                         | 5.5-9.0                                                         |
| 3       | Colour                                        | pt. Co.<br>Scale                                             | < 5                             | < 5                              | < 5                          | --                                                              |
| 4       | Total<br>Suspended<br>Solids (TSS)<br>@105 °C | mg/L                                                         | 10                              | 10                               | 09                           | 100                                                             |
| 5       | Total Dissolved<br>Solids (TDS)<br>@180° C    | mg/L                                                         | 1492                            | 1492                             | 1498                         | 2100                                                            |
| 6       | Total volatile<br>Solids                      | mg/L                                                         | 3.1                             | 3.1                              | 2.9                          | --                                                              |
| 7       | COD                                           | mg/L                                                         | 31                              | 31                               | 30                           | 250                                                             |
| 8       | BOD (5 days at<br>20° C)                      | mg/L                                                         | 8                               | 8                                | 9                            | 30                                                              |
| 9       | Oil & Grease                                  | mg/L                                                         | < 1                             | < 1                              | < 1                          | 10                                                              |
| 10      | Chloride                                      | mg/L                                                         | 629                             | 632                              | 635                          | 1000                                                            |
| 11      | Sulphate                                      | mg/L                                                         | 125                             | 118                              | 119                          | 300                                                             |
| 12      | Fluoride                                      | mg/L                                                         | 1.1                             | 1.1                              | 1.0                          | 2.0                                                             |
| 13      | Phosphate as<br>PO <sub>4</sub> <sup>3-</sup> | mg/L                                                         | 0.8                             | 0.8                              | 0.8                          | --                                                              |
| 14      | Total Residual<br>Chlorine                    | mg/L                                                         | < 0.1                           | < 0.1                            | < 0.1                        | 1.0                                                             |
| 15      | Free Available<br>Chlorine                    | mg/L                                                         | < 0.10                          | < 0.10                           | < 0.10                       | --                                                              |
| 16      | Phenolic<br>Compound                          | mg/L                                                         | < 0.10                          | < 0.10                           | < 0.10                       | 1.0                                                             |
| 17      | Lead                                          | mg/L                                                         | <0.1                            | <0.1                             | <0.1                         | 0.1                                                             |
| 18      | Copper                                        | mg/L                                                         | 0.6                             | 0.6                              | 0.6                          | 3.0                                                             |
| 19      | Hexavalent<br>Chromium                        | mg/L                                                         | < 0.03                          | < 0.03                           | < 0.03                       | 0.1                                                             |
| 20      | Total Chromium                                | mg/L                                                         | < 0.03                          | < 0.03                           | < 0.03                       | 2.0                                                             |
| 21      | Zinc                                          | mg/L                                                         | 0.15                            | 0.15                             | 0.15                         | 5.0                                                             |
| 22      | Iron                                          | mg/L                                                         | 0.8                             | 0.8                              | 0.9                          | 3.0                                                             |
| 23      | Calcium                                       | mg/L                                                         | 124                             | 126                              | 127                          | --                                                              |
| 24      | Magnesium                                     | mg/L                                                         | 45                              | 36                               | 37                           | --                                                              |
| 25      | Percentage<br>Sodium                          | %                                                            | 32.6                            | 32.2                             | 32.8                         | --                                                              |
| 26      | Total<br>Coliform(MPN)                        | Present/<br>Absent                                           | Absent                          | Absent                           | Absent                       | --                                                              |
| 27      | Bioassay Test                                 | % Survival<br>of fish after<br>96 hrs in<br>100%<br>effluent | 90                              | 90                               | 90                           | 90%Survival of<br>fish after 96<br>Hours in 100% of<br>effluent |

## Graphical Presentation for the variation of TDS, Chloride, Sulphate (Limestone Pit Discharge)



# **Comparative Noise Monitoring Report & Graphical Presentation**

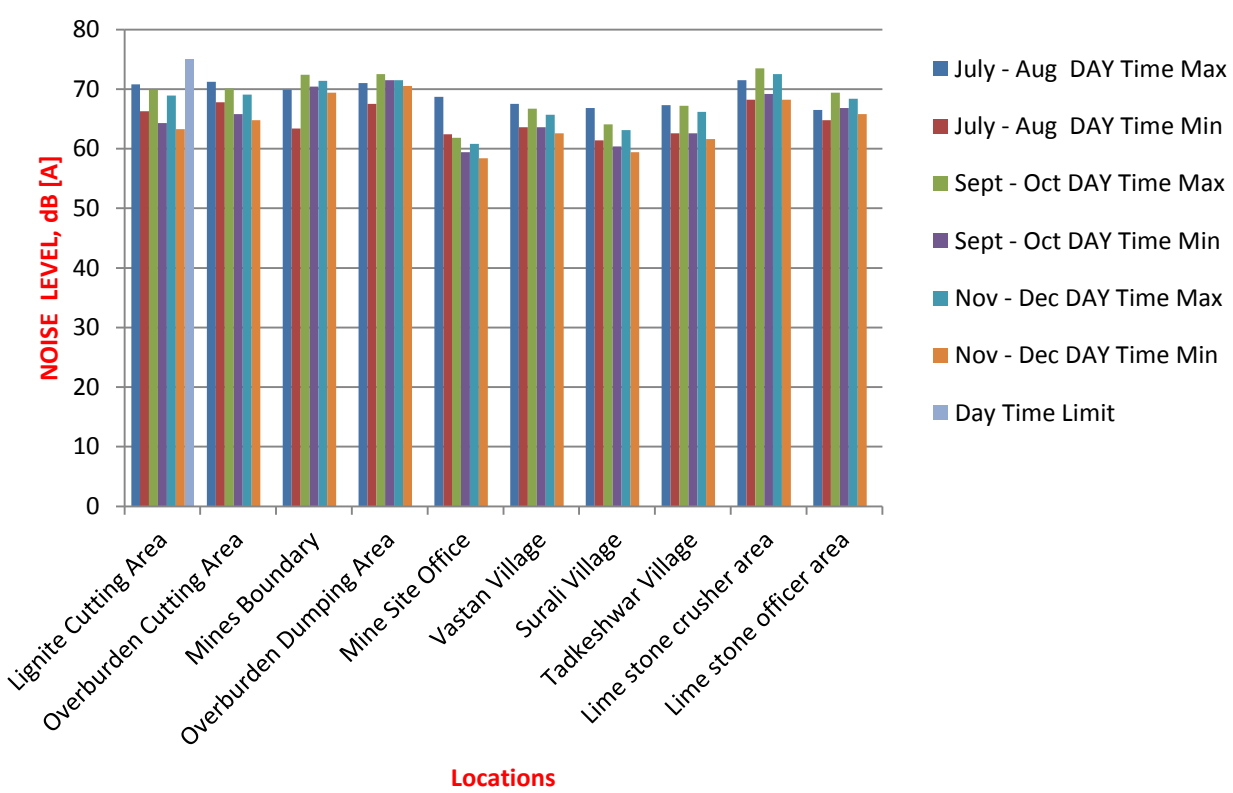
## Six Monthly Variations in Noise Level

**Parameter: Noise**

**Period: July – 2021 to December – 2021**

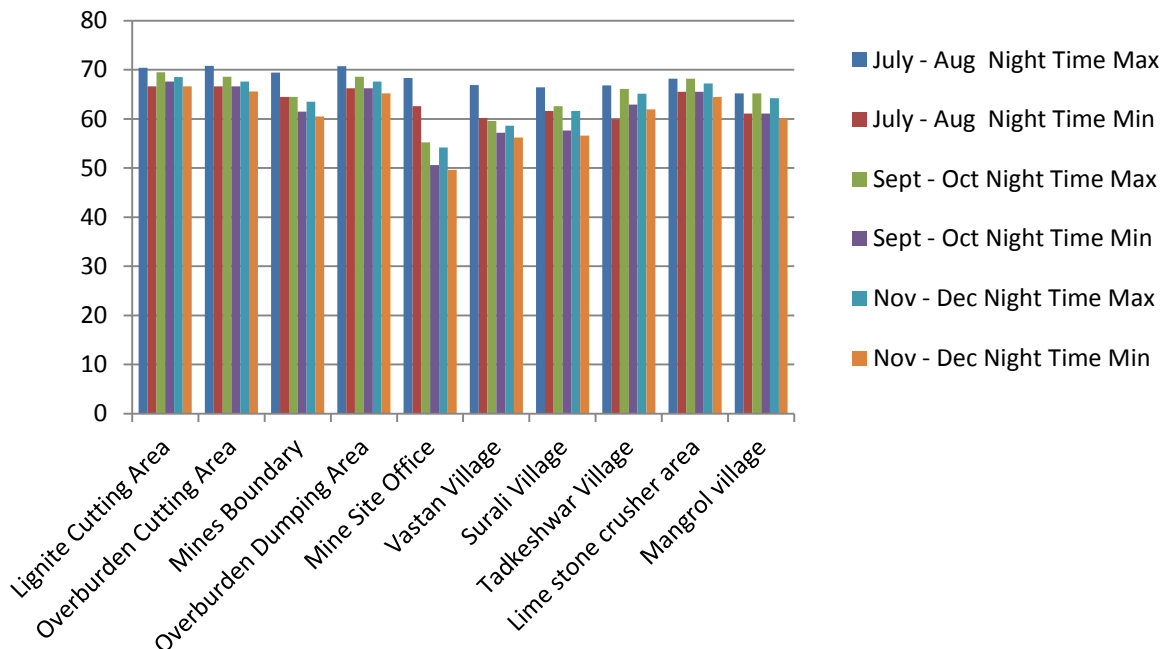
| SR<br>·<br>N<br>O. | LOCATION                | NOISE LEVEL, dB [A]               |      |               |      |                                  |      |               |      |                                 |      |               |      |
|--------------------|-------------------------|-----------------------------------|------|---------------|------|----------------------------------|------|---------------|------|---------------------------------|------|---------------|------|
|                    |                         | Bi-Monthly<br>July. to Aug - 2021 |      |               |      | Bi-Monthly<br>Sept to Oct - 2021 |      |               |      | Bi-Monthly<br>Nov to Dec - 2021 |      |               |      |
|                    |                         | DAY Time                          |      | Night Time    |      | DAY Time                         |      | Night Time    |      | DAY Time                        |      | Night Time    |      |
|                    |                         | Max                               | Min  | Max           | Min  | Max                              | Min  | Max           | Min  | Max                             | Min  | Max           | Min  |
| 1                  | Lignite Cutting Area    | 70.8                              | 66.3 | 70.4          | 66.6 | 69.9                             | 64.3 | 69.5          | 67.6 | 68.9                            | 63.3 | 68.5          | 66.6 |
| 2                  | Overburden Cutting Area | 71.2                              | 67.8 | 70.8          | 66.6 | 70.1                             | 65.8 | 68.6          | 66.6 | 69.1                            | 64.8 | 67.6          | 65.6 |
| 3                  | Mines Boundary          | 69.9                              | 63.4 | 69.4          | 64.5 | 72.4                             | 70.4 | 64.5          | 61.5 | 71.4                            | 69.4 | 63.5          | 60.5 |
| 4                  | Overburden Dumping Area | 71.0                              | 67.5 | 70.7          | 66.2 | 72.5                             | 71.5 | 68.6          | 66.2 | 71.5                            | 70.5 | 67.6          | 65.2 |
| 5                  | Mine Site Office        | 68.7                              | 62.4 | 68.3          | 62.6 | 61.8                             | 59.4 | 55.2          | 50.6 | 60.8                            | 58.4 | 54.2          | 49.6 |
| 6                  | Vastan Village          | 67.5                              | 63.6 | 66.9          | 60.2 | 66.7                             | 63.6 | 59.6          | 57.2 | 65.7                            | 62.6 | 58.6          | 56.2 |
| 7                  | Surali Village          | 66.8                              | 61.4 | 66.4          | 61.6 | 64.1                             | 60.4 | 62.6          | 57.6 | 63.1                            | 59.4 | 61.6          | 56.6 |
| 8                  | Tadkeshwar Village      | 67.3                              | 62.6 | 66.8          | 59.9 | 67.2                             | 62.6 | 66.1          | 62.9 | 66.2                            | 61.6 | 65.1          | 61.9 |
| 9                  | Lime stone crusher area | 71.5                              | 68.2 | 68.2          | 65.5 | 73.5                             | 69.2 | 68.2          | 65.5 | 72.5                            | 68.2 | 67.2          | 64.5 |
| 10                 | Lime stone officer area | 66.5                              | 64.8 | 65.2          | 61.1 | 69.4                             | 66.8 | 65.2          | 61.1 | 68.4                            | 65.8 | 64.2          | 60.1 |
|                    | <b>GPCB limit</b>       | <b>75 (dB)</b>                    |      | <b>70(dB)</b> |      | <b>75 (dB)</b>                   |      | <b>70(dB)</b> |      | <b>75 (dB)</b>                  |      | <b>70(dB)</b> |      |

## Graphical Presentation for the Parameter Noise Level at Various Locations During Day Time



## Graphical Presentation for the Parameter Noise Level at Various Locations During Night Time

NOISE LEVEL, dB [A]



Loations

# **Comparative Micro Meteorological Data and Wind rose & Wind Frequency Distribution**

## Six Monthly Variations in Micrometeorological data

Period: July – 2021 to December – 2021

| Dry Bulb Temperature (°C) |                                  |                                  |                                 |
|---------------------------|----------------------------------|----------------------------------|---------------------------------|
| Time in Hrs.              | Bi-Monthly<br>July. to Aug- 2021 | Bi-Monthly<br>Sept to Oct - 2021 | Bi-Monthly<br>Nov to Dec - 2021 |
| 10.00                     | 34.2                             | 29.9                             | 25.5                            |
| 11.00                     | 35.3                             | 35.5                             | 30.2                            |
| 12.00                     | 36.8                             | 38.4                             | 31.4                            |
| 13.00                     | 36.4                             | 38.0                             | 31.5                            |
| 14.00                     | 36.1                             | 37.5                             | 31.4                            |
| 15.00                     | 36.0                             | 37.1                             | 31.5                            |
| 16.00                     | 35.8                             | 36.4                             | 31.1                            |
| 17.00                     | 35.2                             | 32.1                             | 29.7                            |
| 18.00                     | 35.0                             | 30.2                             | 27.6                            |
| 19.00                     | 34.9                             | 28.4                             | 26.4                            |
| 20.00                     | 34.3                             | 27.5                             | 24.3                            |
| 21.00                     | 34.0                             | 27.1                             | 22.6                            |
| 22.00                     | 33.9                             | 26.8                             | 22.3                            |
| 23.00                     | 33.2                             | 26.7                             | 21.9                            |
| 00.00                     | 33.8                             | 26.6                             | 21.3                            |
| 01.00                     | 33.5                             | 26.5                             | 20.7                            |
| 02.00                     | 33.1                             | 26.3                             | 20.2                            |
| 03.00                     | 33.9                             | 26.1                             | 19.8                            |
| 04.00                     | 33.6                             | 25.6                             | 19.7                            |
| 05.00                     | 33.4                             | 25.1                             | 19.4                            |
| 06.00                     | 33.2                             | 25.0                             | 19.3                            |
| 07.00                     | 33.8                             | 25.8                             | 19.9                            |
| 08.00                     | 33.9                             | 27.6                             | 20.3                            |
| 09.00                     | 34.0                             | 29.0                             | 21.6                            |
| Maximum                   | 36.8                             | 38.4                             | 31.5                            |
| Minimum                   | 33.1                             | 25.0                             | 19.3                            |
| Average                   | 35.0                             | 31.7                             | 25.4                            |

## Six Monthly Variations in Micrometeorological data

**Period: July – 2021 to December – 2021**

| <b>Wet Bulb Temperature (°C)</b> |                                          |                                          |                                         |
|----------------------------------|------------------------------------------|------------------------------------------|-----------------------------------------|
| <b>Time in Hrs.</b>              | <b>Bi-Monthly<br/>July. to Aug- 2021</b> | <b>Bi-Monthly<br/>Sept to Oct - 2021</b> | <b>Bi-Monthly<br/>Nov to Dec - 2021</b> |
| 10.00                            | 29.8                                     | 27.2                                     | 23.1                                    |
| 11.00                            | 29.2                                     | 31.8                                     | 27.6                                    |
| 12.00                            | 29.0                                     | 33.0                                     | 30.3                                    |
| 13.00                            | 29.5                                     | 32.5                                     | 30.5                                    |
| 14.00                            | 29.9                                     | 32.1                                     | 30.7                                    |
| 15.00                            | 30.0                                     | 32.0                                     | 30.8                                    |
| 16.00                            | 29.8                                     | 31.5                                     | 29.4                                    |
| 17.00                            | 29.3                                     | 29.4                                     | 27.6                                    |
| 18.00                            | 29.0                                     | 28.0                                     | 26.4                                    |
| 19.00                            | 28.6                                     | 27.5                                     | 26.1                                    |
| 20.00                            | 28.1                                     | 26.2                                     | 23.5                                    |
| 21.00                            | 28.5                                     | 26.0                                     | 21.1                                    |
| 22.00                            | 28.3                                     | 25.5                                     | 20.9                                    |
| 23.00                            | 28.1                                     | 25.1                                     | 20.2                                    |
| 00.00                            | 28.6                                     | 25.0                                     | 20.1                                    |
| 01.00                            | 28.4                                     | 24.9                                     | 19.6                                    |
| 02.00                            | 28.2                                     | 24.3                                     | 19.3                                    |
| 03.00                            | 28.7                                     | 24.1                                     | 19.1                                    |
| 04.00                            | 28.6                                     | 23.8                                     | 18.8                                    |
| 05.00                            | 28.4                                     | 23.4                                     | 18.7                                    |
| 06.00                            | 28.0                                     | 23.1                                     | 18.6                                    |
| 07.00                            | 28.5                                     | 25.7                                     | 18.9                                    |
| 08.00                            | 28.9                                     | 26.9                                     | 20.3                                    |
| 09.00                            | 29.0                                     | 27.0                                     | 20.7                                    |
| <b>Maximum</b>                   | <b>30.0</b>                              | <b>33.0</b>                              | <b>30.8</b>                             |
| <b>Minimum</b>                   | <b>28.0</b>                              | <b>23.1</b>                              | <b>18.6</b>                             |
| <b>Average</b>                   | <b>29.0</b>                              | <b>28.1</b>                              | <b>24.7</b>                             |

## Six Monthly Variations in Micrometeorological data

Period: July – 2021 to December – 2021

| Relative Humidity % |                                  |                                  |                                 |
|---------------------|----------------------------------|----------------------------------|---------------------------------|
| Time in Hrs.        | Bi-Monthly<br>July. to Aug- 2021 | Bi-Monthly<br>Sept to Oct - 2021 | Bi-Monthly<br>Nov to Dec - 2021 |
| 10.00               | 79.0                             | 68.1                             | 96.0                            |
| 11.00               | 73.0                             | 62.5                             | 92.3                            |
| 12.00               | 63.0                             | 53.6                             | 89.0                            |
| 13.00               | 64.0                             | 54.2                             | 89.9                            |
| 14.00               | 65.0                             | 54.9                             | 90.8                            |
| 15.00               | 68.0                             | 55.0                             | 91.7                            |
| 16.00               | 67.0                             | 58.7                             | 92.2                            |
| 17.00               | 66.0                             | 61.2                             | 92.8                            |
| 18.00               | 65.0                             | 62.5                             | 93.0                            |
| 19.00               | 68.0                             | 62.9                             | 93.8                            |
| 20.00               | 70.0                             | 63.5                             | 94.2                            |
| 21.00               | 72.0                             | 64.0                             | 94.9                            |
| 22.00               | 74.0                             | 64.8                             | 95.5                            |
| 23.00               | 78.0                             | 68.7                             | 95.9                            |
| 00.00               | 79.0                             | 69.0                             | 96.0                            |
| 01.00               | 80.0                             | 70.5                             | 95.5                            |
| 02.00               | 81.0                             | 72.6                             | 94.6                            |
| 03.00               | 85.0                             | 73.0                             | 94.1                            |
| 04.00               | 84.0                             | 74.4                             | 93.7                            |
| 05.00               | 83.0                             | 74.9                             | 93.1                            |
| 06.00               | 82.0                             | 75.0                             | 92.0                            |
| 07.00               | 79.0                             | 72.3                             | 89.3                            |
| 08.00               | 73.0                             | 68.4                             | 89.9                            |
| 09.00               | 71.0                             | 66.0                             | 89.1                            |
| Maximum             | 85.0                             | 75.0                             | 96.0                            |
| Minimum             | 63.0                             | 53.6                             | 89.0                            |
| Average             | 74.0                             | 64.3                             | 92.5                            |

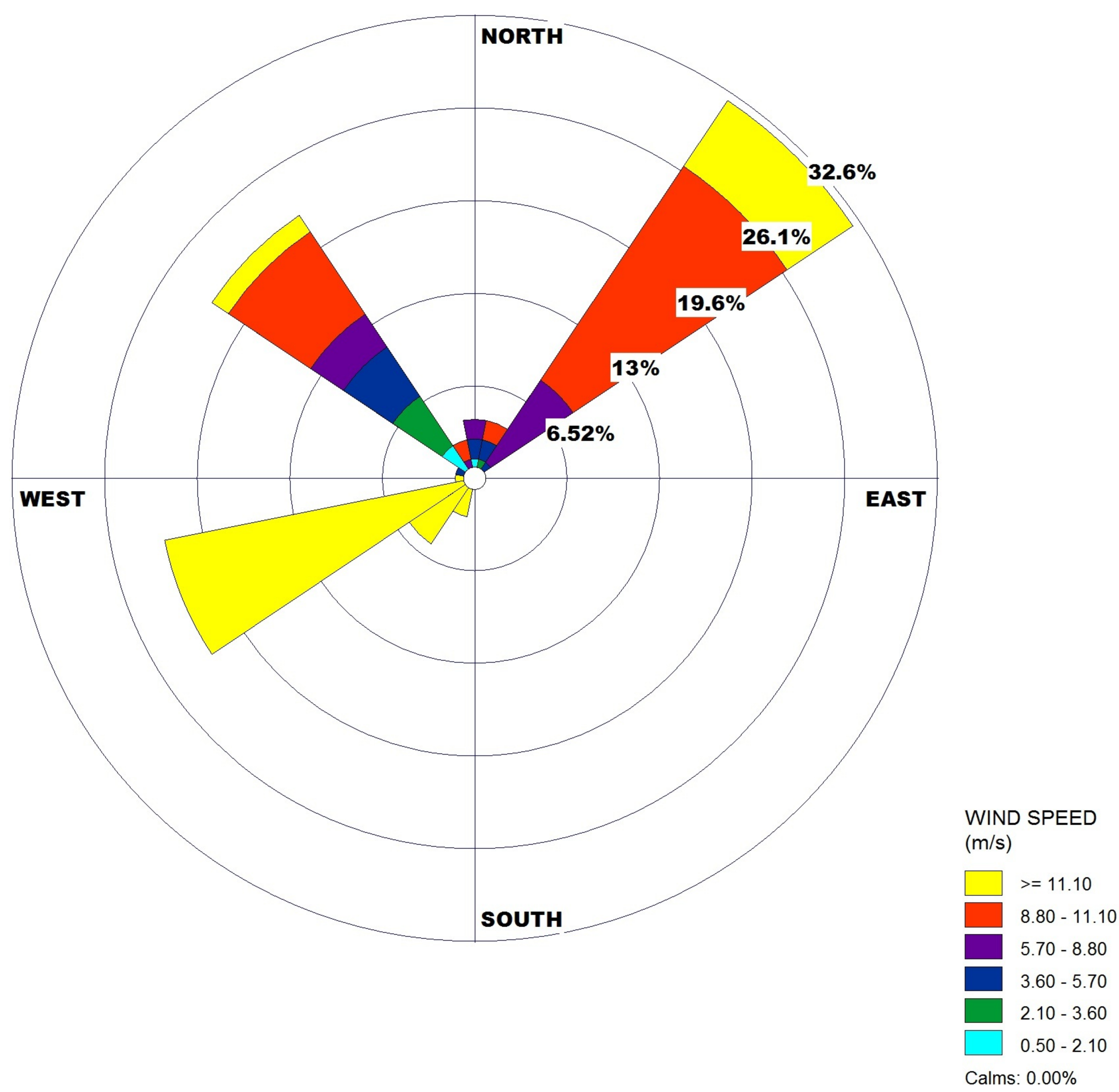
## Six Monthly Variations in Micrometeorological data

**Period: July – 2021 to December – 2021**

| Wind Speed (km/hour) |                                  |                                  |                                 |
|----------------------|----------------------------------|----------------------------------|---------------------------------|
| Time in Hrs.         | Bi-Monthly<br>July. to Aug- 2021 | Bi-Monthly<br>Sept to Oct - 2021 | Bi-Monthly<br>Nov to Dec - 2021 |
| 10.00                | 30                               | 3.0                              | 7.0                             |
| 11.00                | 32                               | 5.0                              | 9.0                             |
| 12.00                | 31                               | 9.0                              | 10.0                            |
| 13.00                | 34                               | 10.0                             | 9.8                             |
| 14.00                | 33                               | 11.0                             | 9.6                             |
| 15.00                | 32                               | 12.0                             | 7.5                             |
| 16.00                | 30                               | 11.0                             | 7.4                             |
| 17.00                | 31                               | 10.0                             | 7.3                             |
| 18.00                | 32                               | 9.0                              | 8.0                             |
| 19.00                | 34                               | 8.0                              | 8.5                             |
| 20.00                | 33                               | 6.0                              | 8.9                             |
| 21.00                | 31                               | 7.0                              | 9.2                             |
| 22.00                | 33                               | 5.0                              | 9.6                             |
| 23.00                | 32                               | 4.0                              | 9.9                             |
| 00.00                | 30                               | 3.0                              | 10.0                            |
| 01.00                | 31                               | 5.0                              | 10.2                            |
| 02.00                | 29                               | 4.0                              | 10.4                            |
| 03.00                | 28                               | 3.0                              | 10.9                            |
| 04.00                | 29                               | 1.0                              | 11.6                            |
| 05.00                | 28                               | 2.0                              | 11.9                            |
| 06.00                | 27                               | 3.0                              | 13.0                            |
| 07.00                | 24                               | 2.0                              | 10.2                            |
| 08.00                | 25                               | 4.0                              | 10.9                            |
| 09.00                | 26                               | 5.0                              | 11.3                            |
| <b>Maximum</b>       | <b>34</b>                        | <b>12.0</b>                      | <b>13.0</b>                     |
| <b>Minimum</b>       | <b>24</b>                        | <b>1.0</b>                       | <b>7.0</b>                      |
| <b>Average</b>       | <b>29</b>                        | <b>6.5</b>                       | <b>10.0</b>                     |

**WIND ROSE PLOT:**  
**M/s. Gujarat Industries Power Company Limited**  
**Vastan Limestone Pit**

**DISPLAY:**  
Wind Speed  
Direction (blowing from)



|           |                                                                |                                               |              |  |
|-----------|----------------------------------------------------------------|-----------------------------------------------|--------------|--|
| COMMENTS: | DATA PERIOD:                                                   | COMPANY NAME:                                 |              |  |
|           | Start Date: 22-07-2021 - 00:00<br>End Date: 29-12-2021 - 10:00 | M/s. Gujarat Industries Power Company Limited |              |  |
|           | CALM WINDS:                                                    | MODELER:                                      |              |  |
|           | 0.00%                                                          | M/s. Ecosystem Resource Management Pvt. Ltd.  |              |  |
|           | AVG. WIND SPEED:                                               | TOTAL COUNT:                                  |              |  |
|           | 15.06 m/s                                                      | 71 hrs.                                       |              |  |
|           |                                                                | DATE:                                         | PROJECT NO.: |  |
|           |                                                                | 07-01-2022                                    |              |  |

Wind Class Frequency Distribution

