



## HINDALCO INDUSTRIES LTD.

### SAMRI BAUXITE MINES

P.O. : KUSMI DISTT. : SURGUJA (CHHATTISGARH), INDIA, PIN : 497 222  
PH. NO. : (07778) 274442, 274326, 274327, FAX : (07778) 274325

Ref : II(M)/CCF/210/2013/T

Date : 06.12.2013

To,  
**The Chief Conservator of Forest (Central),**  
**MoEF Regional Office (Western Zone)**  
Kendriya Paryavaran Bhawan, Link Road  
Bhopal-462016

**Sub:-** Status of compliance of EC condition (Half yearly status of compliance report) Tatijharia Bauxite Mine (Lease area- 1218.762 Ha.) of Hindalco Industries Limited of Chhattisgarh state from Apr-2013 to Sep-2013.

Ref No:- Environment Clearance Letter No-J-11015/337/2007-IA. II(M) dated August 9, 2007

**Dear Sir,**


We do hereby submit half yearly status of compliance report of EC condition with respect of Tatijharia Bauxite Mine, Lease area -1218.762 Ha, of Hindalco Industries Limited located in Balrampur- Ramanujanj district of Chhattisgarh state from Apr -2013 to Sep-2013.

We assure that we comply all the conditions laid down in the consent letter and also abide to follow all the Rules and Regulations.

Thanking you,

Yours' faithfully

For, Hindalco Industries Limited

  
(M. K. Nayak)  
Agent of Mines

Encl:-

1. Half Yearly Status of compliance of Environment condition as annexure-I.
2. Copy of Diversion of Revenue Forest Land enclosed as annexure -II.
3. Apr-13 to Jun-13, Environment Status Report enclosed as annexure -III
4. Renewal copy of Consent to Operate from CECB enclosed as annexure -IV
5. Yearly Production report enclosed as annex-V.
6. Status report of mined out, reclaimed and afforested land as annexure-VI.
7. Actual expenditure incurred in environment measure from Apr-13 to Sep-13 as annex-VII.

06.12.2013

**Status of Compliance from Apr-2013 to Sep-2013 of Environmental  
Condition laid down by MOEF**

**Tatijharia Bauxite Mine**

The status of compliance of the conditions (as per point no.3) with reference to the environment clearance letter no.J-11015/337/2007-IA, II(M) dated 9.8.2012 of Ministry of Environment & Forests, New Delhi, to maintain the production capacity of Tatijharia Bauxite Mine as under.

**A Specific condition:-**

- (i) The wild life management plan has been prepared and approved by PCCF Raipur.
- (ii) We accept the condition.
- (iii) The conservation plan for schedule I fauna have been prepared. The authenticated list of flora and fauna for core and buffer zone is enclosed for perusal please. (Annexure- I).
- (iv) The mining operation is restricted to well above ground water table during currency of mining operation. The ultimate depth of working will be about 14 meters below whereas the water table in the core zone is about 50-52 meters.
- (v) Top soil and solid waste is being utilized for simultaneous back filling of mined out area for reclamation purpose and practice is followed.
- (vi) OB is stacked at earmark location and slope of dump is maintained less than 28 degree. All protective measure such as retaining walls, bunds



and also plantation on available land are being taken to prevent erosion of soil.

- (vii) Garland drains have been made around the active mining pits coupled with arrester to arrest silt from soil and dumps are maintained. The garland drains are regularly desilted before the monsoon.
  
- (viii) We undertake that no natural water course is obstructed during mining operation.
  
- (ix) Controlled blasting is in practiced in the mine. Dust extractors are being used during drilling operations. Cord relay & effective blast design are used to control blast vibration and fly rocks. Blasting is carried out only in day hours.
  
- (x) The plantation in reclaimed area is carried out as per plan and is carried out as suggested. The density is being maintained about 2500 plant per hectare with the species like jatorpha, Kasia-Samia, mango, babul, pears, & guava etc. Social forestry is also being encouraged among the local villagers.
  
- (xi) The ground water table does not intersect during our mining operation because of shallow depth of mining
  
- (xii) Regular water spraying with 12 KL water tanker in the mine lease hold area is being carried out regularly to control air pollution. The ambient air quality is within the stipulated norms.
  
- (xiii) Regular monitoring of ground water quality is being carried out. The analysis reports are being submitted to Regional Office, CECB, Ambikapur and other regulating authority.
  
- (xiv) Till date three rain water harvesting ponds has been made at lease area.
  
- (xv) If required, the permission will be taken from competent authority.
  
- (xvi) No endanger fauna is present in mines area however all possible measures is taken to prevent ecological status of project area.
  
- (xvii) Regular and periodic maintenance of HEMM is being carried out for control of vehicular emission in mines area. The bauxite ore are transported in trucks with tarpaulin cover.
  
- (xviii) All workers are provided personal protective equipment and training are also being imparted to them for safety & health, sanitation and will be continued. Health awareness camps including HIV are organized for all

workmen. One doctor having MBBS qualification has been appointed for facilitation of OHS. The records related to initial and periodical medical examination of all workmen is maintained.

(xix) We accept the condition.

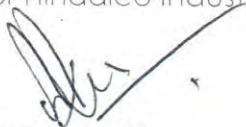
**(B) General Condition.**

- (i) No change in mining technology and scope of working will be done without approval of MOEF New Delhi.
- (ii) Calendar plan will be followed and there will not be any change in calendar plan.
- (iii) The suggestion of local forest department will be implemented for conservation of flora and fauna in and around lease hold area.
- (iv) Ambient Air quality monitoring is being carried out as per guideline and will be followed.
- (v) Data of ambient air quality (RPM, SPM, SO<sub>2</sub>, Nox) are being submitted to CECB and will be submitted to other regulatory authorities as per guidelines.
- (vi) Fugitive dust emission from generating sources is being controlled. The dust extractor, wet drilling, regular water spraying with 12 KL water tanker in the mine lease hold area is being carried out regularly.
- (vii) The noise level in working are being maintained below the limit prescribed and will be maintained. The operators of HEMM are being provided earplug/muffs. The proper maintenance of HEMM is being carried out to control noise emission.
- (viii) No waste water is generated from the mine however as suggested measures will be taken if required.
- (ix) All workers are provided personal protective equipment and training are also being imparted to them for safety & health and will be continued as per guidelines.
- (x) Periodical and Initial medical examination of all workers are being carried out as per provision of Mines Act.

- (xi) Separate Environment cell is already in place at Samri Mines Division headed by GM (Mines) and comprises of suitable qualified persons.
- (xii) In case of final closure of mine the information will be submitted to Regional Office, Ministry of Environment & Forests, Bhopal.
- (xiii) Adequate fund provision is already earmarked for environmental protection measures and will not be diverted to other purpose. The year wise expenditure will be submitted to concern authorities as per guidelines.
- (xiv) The same will be intimated to Regional Office, Ministry of Environment & Forests, Bhopal.
- (xv) All cooperation is being extended to regulatory authorities and will be extended as earlier.
- (xvi) Although no suggestion/representation has been received by any Panchayat/Local NGO while processing the proposal. However we have forwarded the copy of clearance letter to Panchayat in our area. The copy of same has been already submitted to your good office.
- (xvii) The copy has been displayed by CECB in Balrampur Collectorate.
- (xviii) The information regarding environment clearance has been published in two local new papers namely Hari Bhumi & Ambika Vani. The copy of same has been already submitted to your good office.

Hope the above compliance will be found in order.

Yours truly,  
For Hindalco Industries Limited



**(M K Nayak)**  
**Agent of Mines.**  
**(M. K. Nayak)**  
**Agent of mines**  
**Samri mines Division**  
**Hindalco Industries Ltd**



Annex ~~XVII~~ B  
(18)  
Annex - D

Telegram : PARYAVARAN,  
NEW DELHI

दूरभाष :

Telephone :

टेलिग्राफ (द्विभाषीय) :

Telex : (bi-lingual) : W-26195 DOE IN

FAX : 4360678

TATISHARIA

भारत सरकार  
पर्यावरण एवं वन मंत्रालय  
GOVERNMENT OF INDIA  
MINISTRY OF ENVIRONMENT & FORESTS  
पर्यावरण भवन, नं० जी० ओ० कॉम्प्लेक्स  
PARYAVARAN BHAWAN, C.G.O. COMPLEX  
लोधी रोड, नई दिल्ली - 110003  
LODHI ROAD, NEW DELHI - 110003  
Dated: 17<sup>th</sup> March, 1996.

No.3-2J/95-FC

To

The Secretary (Forests),  
Government of Madhya Pradesh  
Bhopal.

*Sfg*  
Suraj Gupta  
R.O.P.

R.O.P./N.G.P./348/2006/A

Sub: Diversion of 514.019 ha. of revenue forest land in  
favour of M/s HINDALCO Industries Ltd. for Bauxite  
mining in District Sarguja.

Sir,

I am directed to refer to your letter no.F.5/19/95/10/3  
dated 9.3.95 on the above mentioned subject seeking prior  
approval of the Central Government in accordance with Section-2  
of the Forest (Conservation) Act, 1980 and to say that the  
proposal has been examined by the Advisory Committee constituted  
by the Central Government under Section-3 of the aforesaid  
Act.

2. After careful consideration of the proposal of the State  
Government and on the basis of the recommendation of the above  
mentioned Advisory Committee, the Central Government hereby  
conveys its approval under Section-2 of the Forest (Conservation)  
Act, 1980 for diversion of 514.019 ha. of revenue forest land  
in favour of M/s HINDALCO Industries Ltd. for Bauxite mining  
in District Sarguja subject to the following conditions:

- 1) Legal status of forest land shall remain unchanged.
- 11) Compensatory afforestation shall be carried out over  
double the degraded forest land at the project cost.

APPROVED



- III) Reclamation of the mining area will be done in consultation with the State Forest Deptt. at the project cost as per plan prepared in this regard.
- IV) Demarcation of the mining area will be done on the ground at the project cost.
- V) Forest land will not be used for construction of buildings etc. and any purpose other than those mentioned in the proposal.
- VI) Lease period shall remain coterminus with lease under MMRD Act subject to maximum of 20 years.
- VII) Free fuelwood will be provided to the labourers and staff working at the project site at the project cost.
- VIII) Any other condition the State Govt. may impose.
- IX) This clearance is subject to the environmental clearance of the project under the Environment Protection Act.

Yours faithfully,

( R.K. CHAUDHRY )  
Asstt. Inspector General of Forests.

Copy to:

1. The Principal Chief Conservator of Forests Government of Madhya Pradesh, Bhopal.
2. Nodal Officer, Office of the Principal Chief Conservator of Forests, Govt. of Madhya Pradesh, Bhopal.
3. The CCF (Central), Regional Office, Bhopal.
4. RO(HQ), New Delhi.
5. Guard file.

24.11.96.  
( R.K. CHAUDHRY )  
AIGF.

APPROVED



**Environmental Status Report**  
**for**  
**Tatijharia Bauxite Mine**  
**at**  
**Post & Teh.: Samri, (Kusmi) Dist: Balrampur-**  
**Ramanujganj (C.G.)**  
**Duration: April- May- June -2013**

for



*(M. K. Nayak)*  
Agent of mines  
Samri mines Division  
Hindalco Industries Ltd

**M/s Hindalco Industries Limited.,**

*Prepared and Compiled by*



Recognised by MoEF (GOI) Notifn. No. D.L.33004/99 Dt.24.10.2007  
NABL (DST GOI) Cert. No. T-1550 Dt. 16/05/2011  
NABL (DST GOI) Cert. No.T-1826 dt. 04/10/2010  
QCI-NABET Scheme for Accreditation of EIA Consultant  
ISO 9001:2008 vide Registration No. 44 100 094152-E3  
Head Office: 60, Bajiprabhu Nagar, Nagpur-440 033, MS  
Lab. : FP-34, 35, Food Park, MIDC, Butibori, Nagpur - 441122  
Ph. : (0712) 2242077, 9373287475 Fax: (0712) 2242077  
Email: [anacommssp@gmail.com](mailto:anacommssp@gmail.com), [anacolibnssp@gmail.com](mailto:anacolibnssp@gmail.com)  
website: [www.anacoliboratories.com](http://www.anacoliboratories.com), [www.anacolibnsp.com](http://www.anacolibnsp.com)



## 1.1 Introduction

**Hindalco Industries Limited (Hindalco)** is one among the flagship companies of the Aditya Birla Group of Industries and is one of the largest corporate groups in India. This group is a leading manufacturer of Aluminum in India, having integrated facilities encompassing bauxite, mining, refining and smelting to achieve Aluminum.

Various processing units of Hindalco are strategically located in different parts of the nation to achieve optimum benefits. Over the past few decades the group has grown multifold in its production capacities, product mix and diversification in mining. The Chhattisgarh Environment Conservation Board (CECB) granted permission for establishing the Bauxite mine to Hindalco at block Tatijharia, Kudag and Samri mines in Surguja District of Chhattisgarh State.

**HINDALCO INDUSTRIES LTD.** awarded the work to M/s ANACON LABORATORIES PVT. LTD. NAGPUR (ALPL) for carrying out monitoring of parameters for assessing pollution levels and preparation of monthly report (April-May-June-2013) as per the requirement of Chhattisgarh Environment Conservation Board (CECB) and Ministry of Environment and Forest (MoEF) for Tatijharia mining lease in Surguja District, Chhattisgarh State.

## 1.2 Background Information of Tatijharia Mine

Hindalco was granted Tatijharia Bauxite mining lease over an area of 1218.762 ha in Tatijharia, Post Jamira, Tehsil Samri of Surguja district, Chhattisgarh on 25/06/1998 for a period of 20 years. The mining operations were started on 01/04/2004. The production capacity of bauxite is 4.0 Lakh Tonnes Per Annum (LTPA).

## 1.3 Salient Features of Tatijharia Bauxite Mine

The deposits occur in Tatijharia block, Post Jamira Tehsil Samri of Surguja district. This deposit has been identified as one of the resources to cater the raw material requirements of the Hindalco Alumina refinery at Renukoot, Uttar Pradesh. The salient features of the project are presented below: **(Table 1)**

**Table 1**  
**Salient Features of Tatijharia Bauxite Mines**

S.No.	Particulars	Details
1.	Survey of India Toposheet No.	64 M /15
2.	Latitude	23 <sup>0</sup> 21' 02"N to 23 <sup>0</sup> 24' 15"N
3.	Longitude	83 <sup>0</sup> 54' 50"E to 83 <sup>0</sup> 56' 30"E
4.	Elevation	1140-m above Mean Sea Level
5.	Climatic Conditions (as per IMD, Ambikapur)	Annual maximum temp.: 30.3 <sup>0</sup> C Annual minimum temp. : 17.7 <sup>0</sup> C Average annual rainfall : 1401.1 mm
6.	Mining lease area	1218.762ha.
7.	Method of mining	Open cast (Semi-Mechanized)
8.	Mode of transportation	Trucks
9.	Land use	Agricultural and Barren land
10.	Nearest Road	Samri to Kusmi (18 km)
11.	Nearest Airport	Ranchi (141.97 km, E)
12.	Nearest Town	Ambikapur (116.km, SW)

#### 1.4 Environmental Monitoring

Regular monitoring of environmental parameters is of immense importance to assess the status of environment during mining operation. With the knowledge of baseline conditions, the monitoring program will serve as an indicator for any deterioration in environment conditions due to mining operation of the project. Suitable mitigation steps will be taken in time to safeguard the environment, based on monitoring reports. Monitoring is important in the control of pollution since the efficiency of control measures can only be determined by monitoring.

In order to find out impact of mining activity on sensitive receptors, it is necessary to monitor Environmental Quality to know ground level concentrations of pollutants within and around the mining lease area, accordingly Hindalco Industries through ALPL has been monitoring at the following locations air, water and Noise quality on monthly basis during these months (Table 2).



1.5 Air Environment

1.5.1 Ambient Air Quality Monitoring

Ambient Air Quality monitored at 8 locations in the core zone and buffer zone with reference to Tatijharia mine lease area shown in(Fig. 1).

**Table 2**  
**Locations of Ambient Air Quality Monitoring (AAQM) & Fugitive Emission**

S.No.	Core Zone	S.No.	Buffer Zone
1	Mining Area (Piprapat Mines)	5	Samri Chowk
2	Tatijharia East/Weighbridge	6	Rajenderpur Mines
3	Virhorepat	7	Saraidih
4	Tatijharia West	8	Gopatu

The sampling stations are selected at the above mentioned locations, in downwind and upwind directions of the mining site in the core zone and buffer zone. ALPLis carrying out regular monitoring for PM2.5, RPM(PM10), SO<sub>2</sub>,NO<sub>x</sub> andSPM, RSPM,SO<sub>2</sub>,NO<sub>x</sub>Pb, Hg, As and Crat above Ambient Air Quality Monitoring (AAQM) locations. The dust fall rate wasmeasuredin the mining area (BKB campus) and Tatijharia village during April 2013.The AAQM sampling sites are selected considering seasonal variation in wind speed and wind direction.

**Sampling Duration and Frequency**

Ambient air quality monitoring was carried out for the parametersPM2.5, RPM(PM10),SO<sub>2</sub>, NO<sub>x</sub> andSPM,RSPM, SO<sub>2</sub>,NO<sub>x</sub>Pb,Hg,As and CrfromApril, May, June-2013as per CPCB norms.Sampling Frequency is given in **Table-3**.

Data is compared with the present revised standards mentioned in the latest Gazette Notification of the Central Pollution Control Board (CPCB)(August-20, 1994), and as per consent conditions mentioned in consent letter.

**TABLE 3 MONITORED PARAMETERS AND FREQUENCY OF SAMPLING**

Parameters	Sampling frequency
Suspended Particulate Matter	24 hourly sample twice a week for Three months
Respirable Particulate Matter	24 hourly sample twice a week for Three months
Particulate Matter 2.5	
Sulphur dioxide (So2)	24 hourly sample twice a week for Three months
Oxides of Nitrogen (NOx)	24 hourly sample twice a week for Three months
Pb,Hg,As,Cr	8 hourly samples for 24 hour twice a week for three months



## Methods and Instruments used for Sampling

The air samples were analyzed as per methods specified by Central Pollution Control Board (CPCB).

The levels of Suspended Particulate Matter (SPM), Respirable Particulate Matter (RPM), Sulphur Dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>), Pb, Hg, As and Cr were monitored for establishing the baseline status. SPM and RPM was collected with the help of respirable particulate sampler operating 24 hours by drawing air which passes through the cyclone at the rate of 1.0 -1.5 m<sup>3</sup>/min which collects the particles less than 10 µm diameter over glass fiber filter paper and the bigger particulates from 10 to 100 µm are collected into the cup provided at the bottom of the cyclone.. The dust deposited over the filter paper is measured as RPM. PM 2.5 collected with the help of Fine Dust sampler operating 24 hours. Due to the high flow rate of air, the dust fall rate was measured using dust fall jar. The jar was exposed for one month in the mining area and (BKB campus) Tatijharia village during June. The jar was filled with 2 lit of distilled water. The water in the jar is mixed with copper sulphate solution (0.02 N solution) to prevent any growth of algae. The water level in the jar is constantly maintained in such a way that 2 lit of water is always retained. The measurement techniques used for various pollutants and other details are given in (Table 4).

### 1.5.2 Ambient Air Quality

The background levels of SPM, RPM (PM<sub>10</sub>), PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, Pb, Hg, As and Cr are required to compute fugitive emissions. The sampling locations are selected at the above mentioned locations in downwind and upwind directions of the mine. The Minimum, Maximum concentration, Arithmetic mean (AM), Geometric mean (GM) and 98 Percentile are presented in tabular form (Table 6 to 13).

The month wise statistical analysis of SPM is presented in (Table 6) for the mining area. The minimum and maximum values vary between 129 to 332 µg/m<sup>3</sup> respectively during study period at all the 8 locations. The average value were ranged between 144 to 306 µg/m<sup>3</sup> and 98<sup>th</sup> percentile value were ranged between 157 to 331 µg/m<sup>3</sup> in the study area.

The minimum and maximum values of RSPM varied between 47 to 84 µg/m<sup>3</sup> respectively (Table 7). The average values varied between 51 to 81 µg/m<sup>3</sup>. The 98<sup>th</sup> percentile values varied between 54 to 84 µg/m<sup>3</sup> in the mining area. The overall values of SPM and RSPM were well within the CPCB limits prescribe for industrial and residential area in the study area during the study period.



The minimum and maximum values of PM<sub>2.5</sub> varied between 18 to 26 µg/m<sup>3</sup> respectively (Table 8). The average values varied between 22 to 24 µg/m<sup>3</sup>. The 98<sup>th</sup> percentile values varied between 24 to 26 µg/m<sup>3</sup> in the mining area.

The minimum and maximum values of SO<sub>2</sub> concentrations varied between 5 to 13 µg/m<sup>3</sup> respectively. The average values range between 7 to 11 µg/m<sup>3</sup> and 98<sup>th</sup> percentile values varied between 8 to 12 µg/m<sup>3</sup> (Table 9).

The minimum and maximum concentrations of NO<sub>x</sub> varied between 7 to 32 µg/m<sup>3</sup> respectively. The average concentration varied between 11 to 28 µg/m<sup>3</sup> 98<sup>th</sup> percentile values varied between 13 to 32 µg/m<sup>3</sup> in the study region (Table 10).

Pb, As, Cr and Hg was not detected at any of the locations in SPM samples as well as RSPM Samples.

The Dust fall rate during the month of April-2013 was observed 26.3 and 19.8 month MT/km<sup>2</sup>/month in the Mining area Piprapat and Tatijharia village respectively. (Table 14).

Graphical presentation of AAQ are shown is shown in (Fig. 2)

Overall the ambient air concentrations of SPM, PM 10(RPM), PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> and CO were well within the limits of concentrations promulgated by CPCB, New Delhi in the study area.

### 1.5.3 Meteorology: Wind Pattern

The data of wind pattern collected during the study period (April-May-June-2013) indicates that the wind was blowing dominantly from 270 (W), during study period, for 60.7 % hours wind was found to be calm. The details of wind pattern in form of wind frequency distribution are presented below in tabular form as well as in graphical illustration. The wind rose diagram is also presented in subsequent Fig.1 & 2.

Table.04

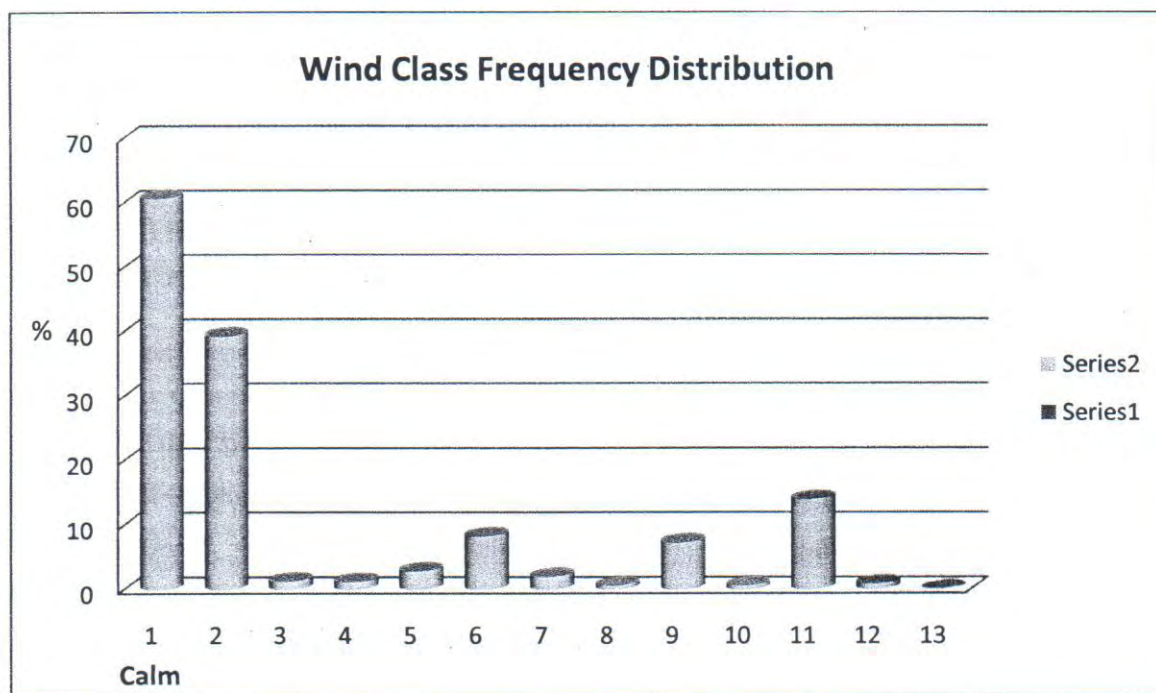
Wind Frequency Distribution Data

Directions / Wind Classes (m/s)	<0.3-<0.1	0.3-1.4	1.0-5.0	1.5-3.0	5.1-11.0-19	Total
0	60.7	0.0	0.1	0.9	0.3	1.3
22.5	0.0	0.0	0.0	0.1	1.0	1.2
45	0.0	0.0	0.0	2.2	0.7	2.9
90	0.0	0.0	0.0	4.8	3.5	8.3
135	0.0	0.0	0.1	1.5	0.4	2.0
180	0.0	0.0	0.0	0.1	0.4	0.6
225	0.0	0.0	0.0	3.4	3.9	7.3
247.5	0.0	0.0	0.0	0.1	0.4	0.6
270	0.0	0.0	0.1	5.7	8.2	14.0

315	0.0	0.0	0.0	0.7	0.1	0.9
337.5	0.0	0.0	0.0	0.0	0.1	0.1
<b>Sub-Total</b>	<b>60.7</b>	<b>0.0</b>	<b>0.3</b>	<b>19.5</b>	<b>19</b>	<b>39.2</b>
<b>Calms</b>						<b>60.7</b>
<b>Non Clam</b>						<b>39.3</b>
<b>Total</b>						<b>100</b>

**SUMMARY OF WIND PATTERN**

Season	First Predominant Winds	Second Predominant Winds	Calm Condition
April- June 2013	W (14.0%)	E (8.3%)	60.7 %



**Fig.01 Wind Class Frequency Distribution**



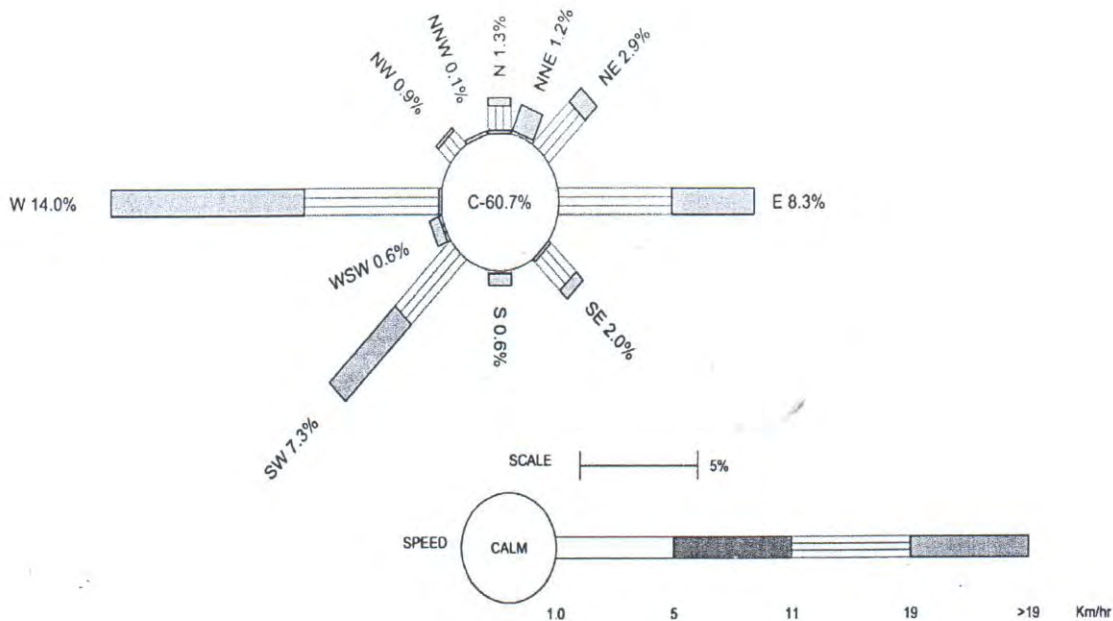


Fig.02 Wind Rose Diagram (April to June -2013)

## 1.6 Noise Environment

The Director General of Mines Safety in its circular No. DG (Tech)/18 of 1975, has prescribed the noise level in mining occupations (TLV) for workers, in an 8 hour shift period with unprotected ear as 90 dB(A) or less. There will be some noise sources in mines, which produce noise levels above 90 dB(A), however, the workers are not expected to be exposed continuously for 8 hours. In order to maintain this statutory requirement Noise monitoring has been carried out in and around the mining lease area.

Work zone noise level in the mining area shall increase due to blasting excavation and transportation. The impacts due to the mining activities on the noise levels shall be negligible if all the precautions for the elimination of the noise are taken. The mining activities will be undertaken during daytime only. The daytime equivalent noise levels, when all the machineries are in operation, shall be minimized as the machineries have been provided with noise control equipment. Noise monitoring carried out on monthly basis at three locations namely mining area Tatijharia mines, Gopatu and Rajenderpur mines in each month is shown in (Fig. 3).

### Identification of sampling locations

Noise at different noise generating sources has been identified based on the activities in the village area and ambient noise due to traffic.

The noise monitoring has been conducted for determination of ambient noise levels in the mining area and villages. The noise levels at each location were recorded for 24 hours.

#### **Method of Monitoring**

Sound Pressure Level (SPL) measurements were monitored at three locations. The readings were taken for every hour for 24 hours. The day noise levels have been monitored during 6 am to 10 pm and night levels during 10 pm to 6 am at three locations within 10-km radius of the study area.

#### **Instrument used for monitoring**

Noise levels were measured using integrated sound level meter manufactured by Envirotech made in India (Model no. SLM-100). This instrument is capable of measuring the Sound Pressure Level (SPL), Leq.

#### **Method of monitoring**

Noise level monitoring was carried out continuously for 24 hours with one hour interval starting at 06.00 hrs to 06.00 hrs next day.

Noise levels monitored during day and night at 3 locations are found to be below the stipulated standard of CPCB as for Industrial area as 75dB(A) and 70dB(A) for day and night respectively as given in (Table 12).

### **1.7 Water Quality**

The existing status of water quality for groundwater and surface water was assessed by collecting the water samples from underground wells from the village Tatijharia, Samri, Betpani, Gopata and surface water sample from nallahs nearby Gopatu village. The physico-chemical analysis of ground and surface water samples collected during study period reported as average of three month given in (Table 13). The overall water quality found to be below the stipulated standards of IS 10500-2012 for ground water and found to be fit for drinking purpose for tested parameters. Surface water quality is satisfactory as per IS 2296 Class C-1982 limits for surface water. Thus the impacts due to mining activities in each month have been found to be insignificant.



**Table 5**  
**Measurement Techniques for various pollutants**

S. No	Parameter	Technique	Technical Protocol	Minimum Reportable Value ( $\mu\text{g}/\text{m}^3$ )
1.	Suspended Particulate Matter	Respirable Dust Sampler (Gravimetric Method)	IS-5182 (Part - IV)	5
2.	PM 10 (Respirable Particulate Matter)	Respirable Dust Sampler (Gravimetric Method)	IS-5182 (Part-IV)	5
3.	PM 2.5	Fine Dust Sampler	-	5
4.	Sulphur Dioxide	Modified West and Gaeke	IS-5182 (Part - II)	4
5.	Oxide of Nitrogen	Jacob &Hochheiser Method	IS-5182 (Part - VI)	4
6.	Dust Full	Gravimetric	IS-5182 (Part-I)	-

**Table 6**  
**Statistical analysis of SPM**

Location	Month & Year	Min.	Max.	A.M.	Unit : $\mu\text{g}/\text{m}^3$	
					G.M.	98%
Mining Area (Piprapat Mines)	April-2013	264	309	287	287	308
	May-2013	258	302	280	280	301
	June-2013	261	308	285	285	307
Tatijharia East/weighbridge	April-2013	279	332	306	306	331
	May-2013	218	287	253	253	286
	June-2013	239	291	265	265	290
Virhorepat	April-2013	198	242	220	220	241
	May-2013	212	259	236	236	258
	June-2013	167	183	175	175	183
Tatijharia (West)	April-2013	224	269	247	247	268
	May-2013	253	282	268	268	281
	June-2013	172	209	191	191	208
Samri Chowk	April-2013	238	297	268	268	296
	May-2013	267	312	290	290	311



	June-2013	201	229	215	215	228
Rajenderpur Mines	April-2013	197	218	208	208	218
	May-2013	212	264	238	238	263
	June-2013	173	196	185	185	196
Saraidih	April-2013	167	182	175	175	182
	May-2013	176	197	187	187	197
	June-2013	143	172	158	158	171
Gopatu	April-2013	143	174	159	159	173
	May-2013	164	212	188	188	211
	June-2013	129	158	144	144	157

**Table 7**  
**Statistical analysis of RSPM**

Unit :  $\mu\text{g}/\text{m}^3$

Location	Month & Year	Min.	Max.	A.M.	G.M.	98%
Mining Area (Piprapat Mines)	April-2013	74	81	78	78	81
	May-2013	78	83	81	81	83
	June-2013	67	76	72	72	76
Tatijharia East/weighbridge	April-2013	76	84	80	80	84
	May-2013	64	76	70	70	76
	June-2013	59	68	64	64	68
Virhorepat	April-2013	61	69	65	65	69
	May-2013	54	63	59	59	63
	June-2013	48	57	53	53	57
Tatijharia (West)	April-2013	57	64	61	61	64
	May-2013	61	72	67	67	72
	June-2013	48	59	54	54	59
Samri Chowk	April-2013	53	61	57	57	61
	May-2013	49	68	59	59	68
	June-2013	51	59	55	55	59
Rajenderpur Mines	April-2013	63	72	68	68	72
	May-2013	67	79	73	73	79



	June-2013	57	63	60	60	63
Saraidih	April-2013	48	59	54	54	59
	May-2013	52	63	58	58	63
	June-2013	47	54	51	51	54
Gopatu	April-2013	52	63	58	58	63
	May-2013	57	68	63	63	68
	June-2013	48	56	52	52	56

**Table 8**  
**Statistical analysis of PM 2.5**

Unit :  $\mu\text{g}/\text{m}^3$

Location	Month & Year	Min.	Max.	A.M.	G.M.	98%
Mining Area	April-2013	19	24	22	22	24
	May-2013	21	26	24	24	26
	June-2013	18	25	22	22	25

**Table 9**  
**Statistical Analysis of SO<sub>2</sub>**

Unit:  $\mu\text{g}/\text{m}^3$

Location	Month & Year	Min.	Max.	A.M.	G.M.	98%
Mining Area (Piprapat Mines)	April-2013	9	12	11	11	12
	May-2013	7	10	9	9	10
	June-2013	9	12	11	11	12
Tatijharia East/weighbridge	April-2013	9	12	11	11	12
	May-2013	7	10	9	9	10
	June-2013	6	11	9	9	11
Virhorepat	April-2013	6	9	8	8	9
	May-2013	7	11	9	9	11
	June-2013	6	11	9	9	11
Tatijharia (West)	April-2013	8	13	11	11	13
	May-2013	7	11	9	9	11
	June-2013	6	9	8	8	9
Samri Chowk	April-2013	6	11	9	9	11
	May-2013	8	12	10	10	12

	June-2013	6	9	8	8	9
Rajenderpur Mines	April-2013	7	11	9	9	11
	May-2013	6	11	9	9	11
	June-2013	5	9	7	7	9
Saraidih	April-2013	6	9	8	8	9
	May-2013	7	11	9	9	11
	June-2013	6	9	8	8	9
Gopatu	April-2013	6	8	7	7	8
	May-2013	7	9	8	8	9
	June-2013	6	8	7	7	8

**Table 10**  
**Statistical Analysis of NO<sub>x</sub>**

Unit : µg/m<sup>3</sup>

Location	Month & Year	Min.	Max.	A.M.	G.M.	98%
Mining Area (Piprapat Mines)	April-2013	18	29	24	24	29
	May-2013	16	26	21	21	26
	June-2013	24	31	28	28	31
Tatijharia East/weighbridge	April-2013	24	32	28	28	32
	May-2013	21	30	26	26	30
	June-2013	19	30	25	25	30
Virhorepat	April-2013	12	21	17	17	21
	May-2013	14	26	20	20	26
	June-2013	10	18	14	14	18
Tatijharia (West)	April-2013	12	19	16	16	19
	May-2013	11	18	15	15	18
	June-2013	9	16	13	13	16
Samri Chowk	April-2013	9	13	11	11	13
	May-2013	11	16	14	14	16
	June-2013	9	16	13	13	16
Rajenderpur Mines	April-2013	11	18	15	15	18
	May-2013	9	16	13	13	16
	June-2013	12	18	15	15	18
Saraidih	April-2013	9	16	13	13	16



	May-2013	11	18	15	15	18
	June-2013	9	14	12	12	14
Gopatu	April-2013	8	14	11	11	14
	May-2013	9	16	13	13	16
	June-2013	7	14	11	11	14

**Table 11**  
**Statistical Analysis of Pb**

Unit:  $\mu\text{g}/\text{m}^3$

Location	Month & Year	Min.	Max.	A.M.	G.M.	98%
Mining Area (Piprapat Mines)	April-2013	0.028	0.032	0.030	0.030	0.032
	May-2013	0.032	0.049	0.041	0.041	0.049
	June-2013	0.029	0.036	0.033	0.033	0.036
Tatijharia East/weighbridge	April-2013	0.038	0.048	0.043	0.043	0.048
	May-2013	0.036	0.048	0.042	0.042	0.048
	June-2013	0.041	0.051	0.046	0.046	0.051
Virhorepat	April-2013	0.018	0.021	0.020	0.020	0.021
	May-2013	0.016	0.019	0.018	0.018	0.019
	June-2013	0.014	0.018	0.016	0.016	0.018
Tatijharia (West)	April-2013	0.019	0.021	0.020	0.020	0.021
	May-2013	0.021	0.028	0.025	0.025	0.028
	June-2013	0.016	0.019	0.018	0.018	0.019
Samri Chowk	April-2013	0.029	0.034	0.032	0.032	0.034
	May-2013	0.026	0.031	0.029	0.029	0.031
	June-2013	0.021	0.029	0.025	0.025	0.029
Rajenderpur Mines	April-2013	0.018	0.024	0.021	0.021	0.024
	May-2013	0.021	0.028	0.025	0.025	0.028
	June-2013	0.019	0.023	0.021	0.021	0.023
Saraidih	April-2013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	May-2013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	June-2013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Gopatu	April-2013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	May-2013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	June-2013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005



**Table 12**  
**Statistical Analysis of Hg**

Unit:  $\mu\text{g}/\text{m}^3$

Location	Month & Year	Min.	Max.	A.M.	G.M.	98%
Mining Area (Piprapat Mines)	April-2013	0.014	0.018	0.016	0.016	0.018
	May-2013	0.018	0.024	0.021	0.021	0.024
	June-2013	0.023	0.032	0.028	0.028	0.032
Tatijharia East/weighbridge	April-2013	0.024	0.032	0.028	0.028	0.032
	May-2013	0.021	0.029	0.025	0.025	0.029
	June-2013	0.018	0.024	0.021	0.021	0.024
Virhorepat	April-2013	0.016	0.021	0.019	0.019	0.021
	May-2013	0.018	0.023	0.021	0.021	0.023
	June-2013	0.014	0.019	0.017	0.017	0.019
Tatijharia (West)	April-2013	0.018	0.022	0.020	0.020	0.022
	May-2013	0.017	0.021	0.019	0.019	0.021
	June-2013	0.018	0.022	0.020	0.020	0.022
Samri Chowk	April-2013	0.019	0.024	0.022	0.022	0.024
	May-2013	0.021	0.026	0.024	0.024	0.026
	June-2013	0.018	0.023	0.021	0.021	0.023
Rajenderpur Mines	April-2013	0.024	0.031	0.028	0.028	0.031
	May-2013	0.018	0.029	0.024	0.024	0.029
	June-2013	0.021	0.024	0.023	0.023	0.024
Saraidih	April-2013	<0.01	<0.01	<0.01	<0.01	<0.01
	May-2013	<0.01	<0.01	<0.01	<0.01	<0.01
	June-2013	<0.01	<0.01	<0.01	<0.01	<0.01
Gopatu	April-2013	<0.01	<0.01	<0.01	<0.01	<0.01
	May-2013	<0.01	<0.01	<0.01	<0.01	<0.01
	June-2013	<0.01	<0.01	<0.01	<0.01	<0.01



**Table 13**  
**Statistical Analysis of As**

Unit:  $\mu\text{g}/\text{m}^3$

Location	Month & Year	Min.	Max.	A.M.	G.M.	98%
Mining Area (Piprapat Mines)	April-2013	0.83	0.97	0.90	0.90	0.97
	May-2013	0.68	0.79	0.74	0.74	0.79
	June-2013	0.64	0.71	0.68	0.68	0.71
Tatijharia East/weighbridge	April-2013	0.93	1.11	1.02	1.02	1.11
	May-2013	0.76	0.84	0.80	0.80	0.84
	June-2013	0.52	0.64	0.58	0.58	0.64
Virhorepat	April-2013	0.32	0.41	0.37	0.37	0.41
	May-2013	0.29	0.38	0.34	0.34	0.38
	June-2013	0.18	0.24	0.21	0.21	0.24
Tatijharia (West)	April-2013	0.21	0.32	0.27	0.27	0.32
	May-2013	0.24	0.37	0.31	0.31	0.37
	June-2013	0.19	0.26	0.23	0.23	0.26
Samri Chowk	April-2013	0.61	0.82	0.72	0.72	0.82
	May-2013	0.58	0.76	0.67	0.67	0.76
	June-2013	0.52	0.71	0.62	0.62	0.71
Rajenderpur Mines	April-2013	0.62	0.69	0.66	0.66	0.69
	May-2013	0.52	0.61	0.57	0.57	0.61
	June-2013	0.38	0.49	0.44	0.44	0.49
Saraidih	April-2013	<0.1	<0.1	<0.1	<0.1	<0.1
	May-2013	<0.1	<0.1	<0.1	<0.1	<0.1
	June-2013	<0.1	<0.1	<0.1	<0.1	<0.1
Gopatu	April-2013	<0.1	<0.1	<0.1	<0.1	<0.1
	May-2013	<0.1	<0.1	<0.1	<0.1	<0.1
	June-2013	<0.1	<0.1	<0.1	<0.1	<0.1

**Table 14**  
**Dust fall Rate (April -2013)**

Sl.No.	Lacatioin	Rate (MT/km2/month)
1	Mining Area(Piprapat Mines)	26.3
2	Tatijharia Village	19.8

**Table 15**  
**Noise Level Monitoring**

Unit: dB(A) Leq

Sl. No.	Location	April-2013		May-2013		June-2013	
		Day	Night	Day	Night	Day	Night
1	Tatijharia East/ weighbridge	69	58	72	63	64	58
2	Rajenderpur mine	71	67	68	61	63	57
3	Gopatu Village	53	41	49	42	51	39

CPCB Standards for Residential Area: 55 (Day time) 45 (Night time)  
Industrial Area: 75 (Day time) 70 (Night time)  
Note: D -Day, N - Night

**Table 15-A**

**HEMM Spot Noise Level Monitoring**  
Unit: dB(A) Leq

Sl. No.	Location	April-2013		May-2013		June-2013	
		Min.	Max.	Min.	Max.	Min.	Max.
1	Mining Area (Piprapat Mines)	73.8	79.4	78.2	81.6	74.9	81.6

**1.9 Ground Water Quality:-**Most of the villages in the nearby plant area have hand pumps and wells, as most of the residents of these villages make use of this water for drinking and other domestic uses for TABLE NO.13



**Table 16**  
**Report on Chemical Examination of Ground Water**

Location: GW1: Samari Colony  
GW3: Tatijharia

GW2: Kudag  
GW4: SamariChowk

Sr. No	Test Parameters	Units	Permissible Requirement As per IS:10500-2012	Results			
				GW1	GW2	GW3	GW4
1	Apparent Colour	Hazen units	5	3	4	3	2
2	Turbidity NTU	NTU	5	3.1	2.8	3.2	2.4
3	pH Value	-	6.5 to 8.5	7.71	8.02	7.68	7.73
4	Total Hardness	mg / l	300	163.4	173.1	177.2	166.8
5	Iron (as Fe)	mg / l	0.3	0.16	0.19	0.21	0.18
6	Chlorides (as Cl)	mg / l	250	42.9	47.8	51.3	34.9
7	TDS	mg / l	500	238.7	187.6	229.3	242.8
8	Calcium (as Ca)	mg / l	75	53.7	58.9	61.2	56.7
9	Magnesium (as Mg)	mg / l	30	7.1	6.3	5.9	6.1
10	Sulphate (as SO <sub>4</sub> )	mg / l	200	17.2	16.8	19.2	16.4
11	Nitrates (as NO <sub>3</sub> )	mg / l	45	< 2	< 2	< 2	< 2
12	Fluoride (as F)	mg / l	1	0.3	0.4	0.3	<0.1
13	Total Alkalinity	mg / l	200	118.6	109.8	132.7	108.9
14	Free Residual Chlorine	mg / l	Min.0.2	< 0.1	< 0.1	< 0.1	< 0.1
15	Electrical Conductivity at 25°C	µs/cm	-	812.4	729.8	804.3	912.7
16	Copper as(Cu)	mg / l	0.05	< 0.03	< 0.03	< 0.03	< 0.03
17	Manganese as (Mn)	mg / l	0.1	<0.05	< 0.05	< 0.05	< 0.05
18	Cadmium as (Cd)	mg / l	0.01	< 0.001	< 0.001	< 0.001	< 0.001
19	Selenium as (Se)	mg / l	0.01	< 0.001	< 0.001	< 0.001	< 0.001
20	Arsenic as (As)	mg / l	0.05	< 0.01	< 0.01	< 0.01	< 0.01
21	Mercury as (Hg)	mg / l	0.001	<0.0005	<0.0005	<0.0005	<0.0005
22	Lead as (Pb)	mg / l	0.05	< 0.01	< 0.01	0.01	< 0.01



23	Zinc as (Zn)	mg / l	5	< 0.1	< 0.1	< 0.1	< 0.1
24	Aluminum as (Al)	mg / l	0.03	0.003	0.002	0.003	0.002
25	Boron as (B)	mg / l	1	0.3	0.2	0.3	0.3
26	Chromium as (Cr <sup>6+</sup> )	mg / l	0.05	< 0.03	< 0.03	< 0.03	< 0.03
27	Cyanide as (CN)	mg / l	0.05	< 0.005	< 0.005	< 0.005	< 0.005
28	Odour	-	unobjectionable	unobjectionable	unobjectionable	unobjectionable	unobjectionable
29	Taste	-	Acceptable	-	-	-	-
30	Total Coliform	MPN/100 ml	Absent	Absent	Absent	Absent	Absent
31	Phenolic Compounds	mg / l	0.001	< 0.001	< 0.001	< 0.001	< 0.001
32	Mineral oil	mg / l	0.01	< 0.01	< 0.01	< 0.01	< 0.01
33	Total Chromium as Cr	mg / l	0.05	< 0.01	< 0.01	< 0.01	< 0.01

ND: Not Detected (< 0.001), Unob: Unobjectionable

**Remark:**-Based upon request of the party, sample was tested for above mentioned parameters only. Sample complies with IS:10500:2012, for test conducted, indicating that it is fit for drinking purpose with respect to tested parameters.

**Table 17**  
**Monthly Report on Chemical Examination of Surface Water**  
**(Nalah Near Gopatu)**

S.No	Parameters	Unit	IS : 2296 Class 'C'	Results
				April 2013
1	pH Value	-	6.5 to 8.5	7.32
2	Total Hardness (CaCO <sub>3</sub> )	mg / l	\$	104
3	Iron as (Fe)	mg / l	50	7.9
4	Chlorides as (Cl)	mg / l	600	31.6
5	Electrical Conductivity	µS/cm	\$	459
6	Total Dissolved Solids (TDS)	mg / l	1500	124
7	Calcium as (Ca)	mg / l	\$	28
8	Magnesium as (Mg)	mg / l	\$	8
9	Sulphate as (SO <sub>4</sub> )	mg / l	400	32
10	Nitrates as (NO <sub>3</sub> )	mg / l	\$	16.7
11	Fluoride as (F)	mg / l	0.5	0.3
12	Alkalinity	mg / l	\$	73
13	Chemical Oxygen demand (COD)	mg / l	\$	16.8
14	BOD at 27°C for 3days	mg / l	3	6.1
15	Total Suspended Solid (TSS)	mg / l	\$	48

\$: Limits not specified

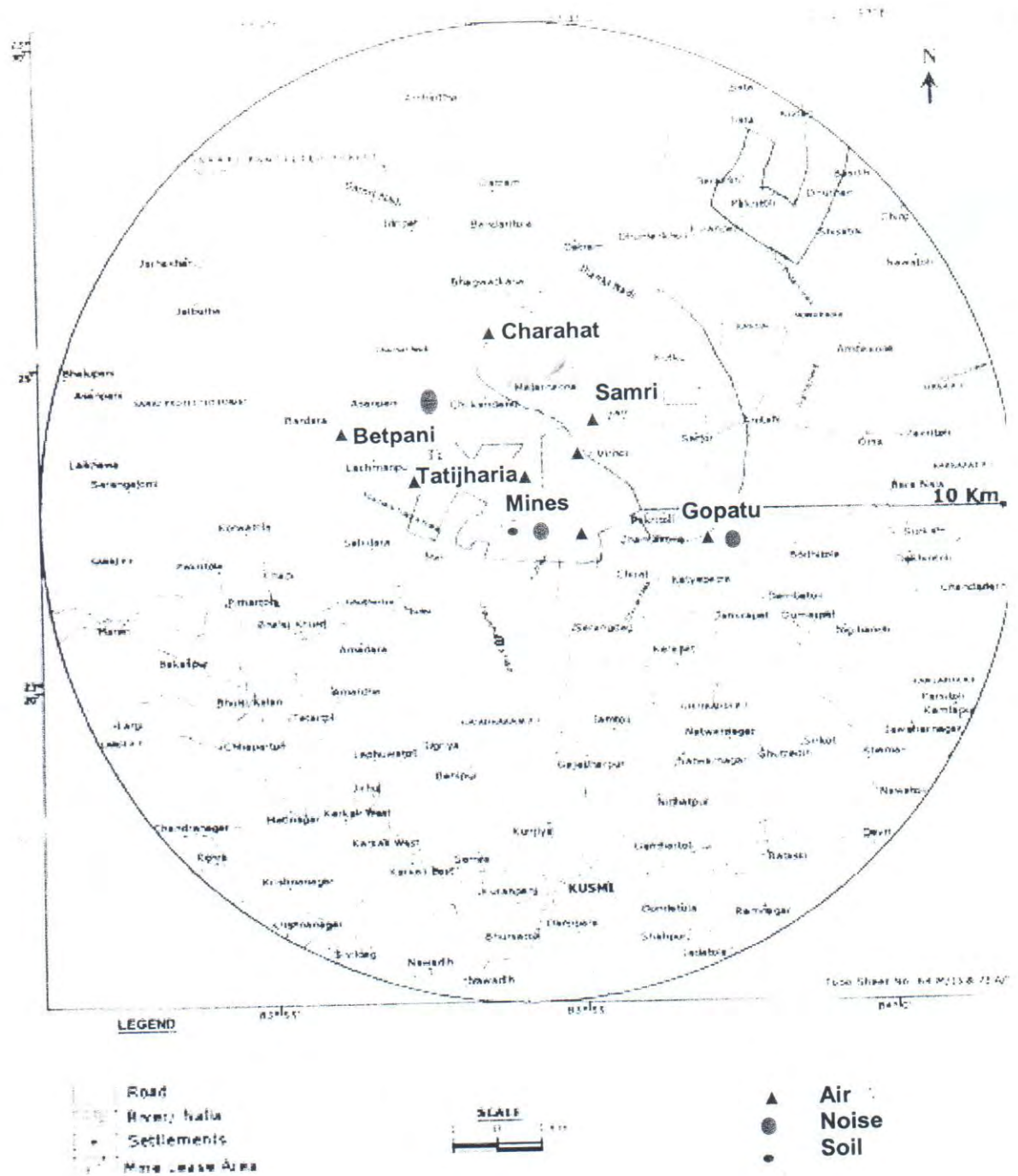


Table 18

Report on Soil Analysis, Tatijharia

Date of collection: April -2013 Sample Location: Tatijhariya village

Sr. No	Test Parameters	Measurement Unit	Results
1	pH	-	7.41 at 26 <sup>0</sup> C
2	Electrical Conductivity at 25 <sup>0</sup> C	µs/cm	412
3	Texture	-	Clay
4	Sand	%	16.9
5	Silt	%	28.7
6	Clay	%	46.4
7	Bulk Density	g/cc	2.3
8	Porosity	%	0.52
9	Water Holding Capacity	%	0.34
10	Exchangeable Calcium as Ca	mg/kg	32.9
11	Exchangeable Magnesium as Mg	mg/kg	3.1
12	Exchangeable Sodium as Na	mg/kg	42.8
13	Available Potassium as K	kg/hect.	7.1
14	Available Phosphorous as P	kg/hect.	109
15	Available Nitrogen as N	kg/hect.	51.8
16	Organic Matter	%	4.3
17	Organic Carbon	%	1.4
18	Water Soluble Chloride as Cl <sup>+</sup>	mg/kg	12.3
19	Water Soluble Sulphate as SO <sub>4</sub>	mg/kg	5.4
20	Sodium Absorption Ratio	-	13
21	CEC	meq/100 gm	51
22	Total Iron	%	8.03
23	Available Manganese	mg/kg	0.003
24	Available Zinc	mg/kg	0.001
25	Available Boron	mg/kg	0.001

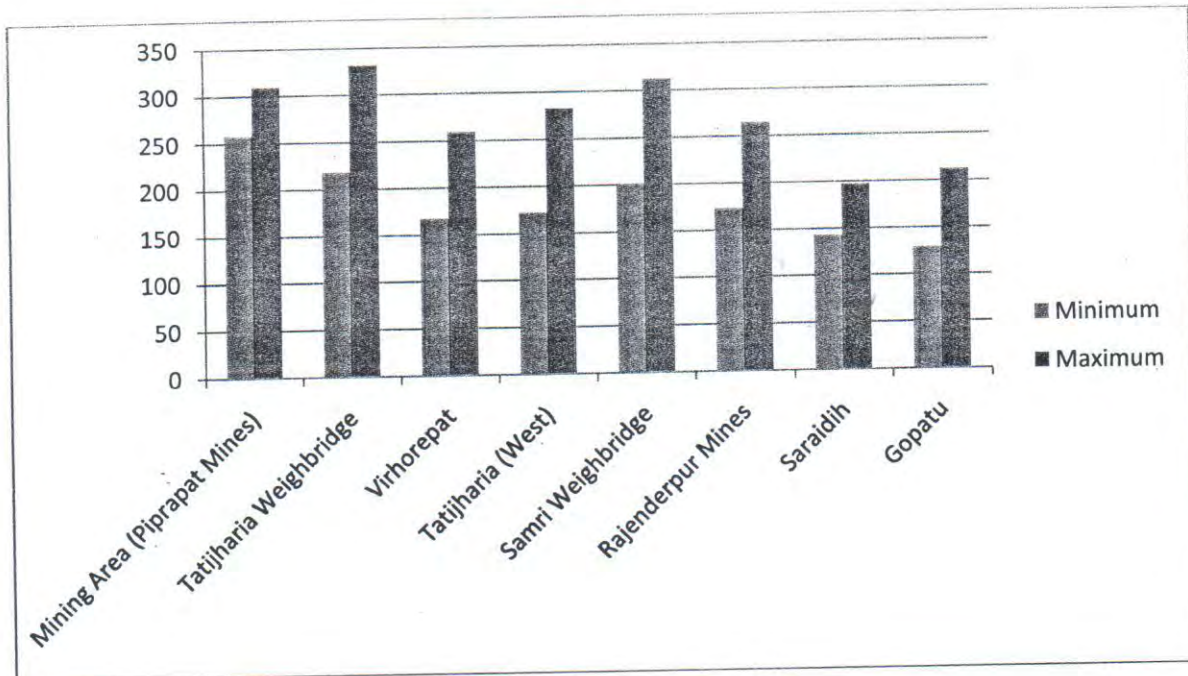


**FIG 1: SAMPLING LOCATIONS FOR AIR, NOISE & SOI**

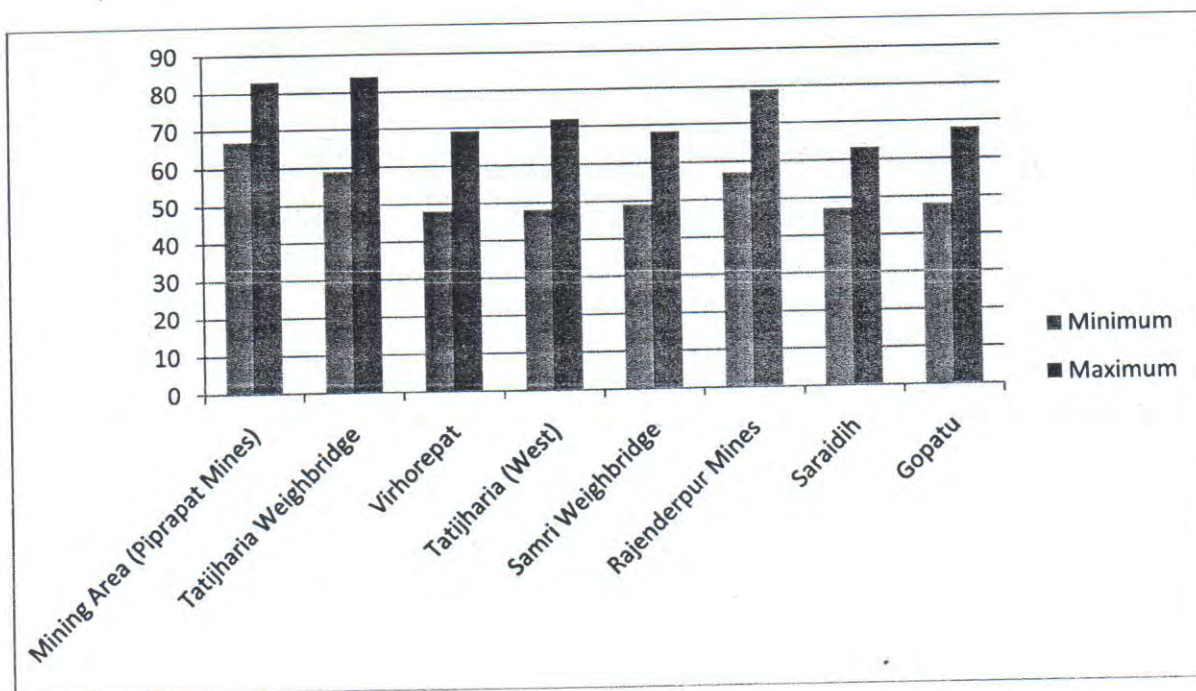


**Fig 2: GRAPHICAL PRESENTATION OF AAQ**

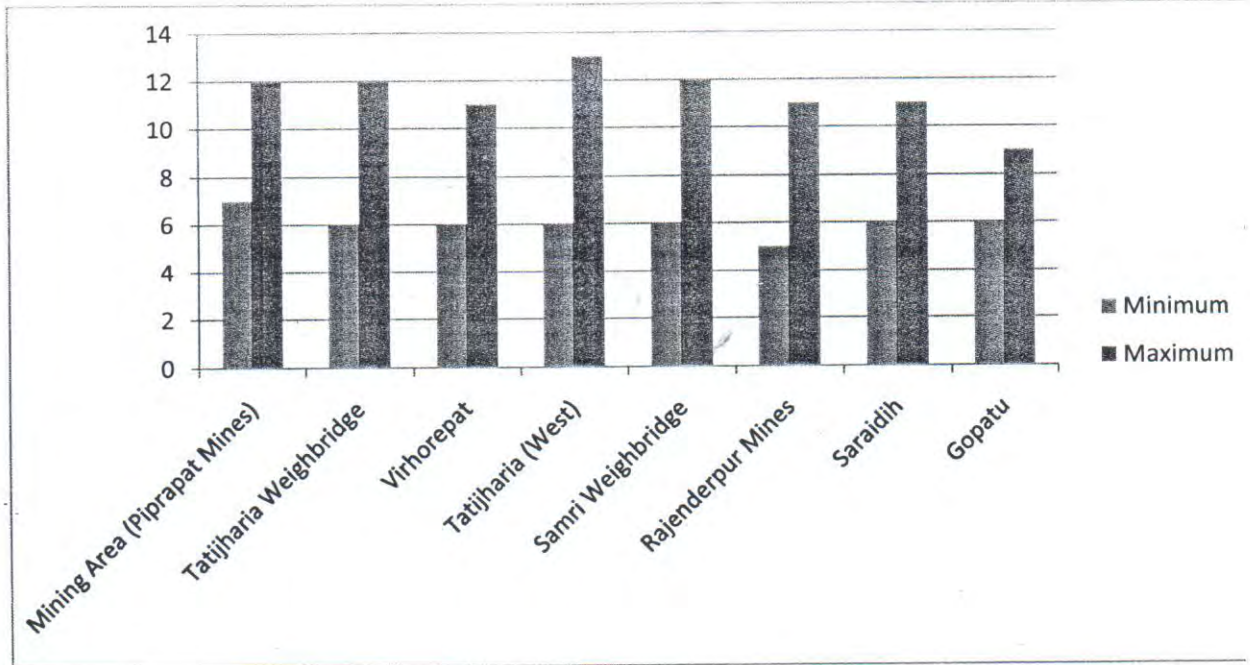
**SPM**



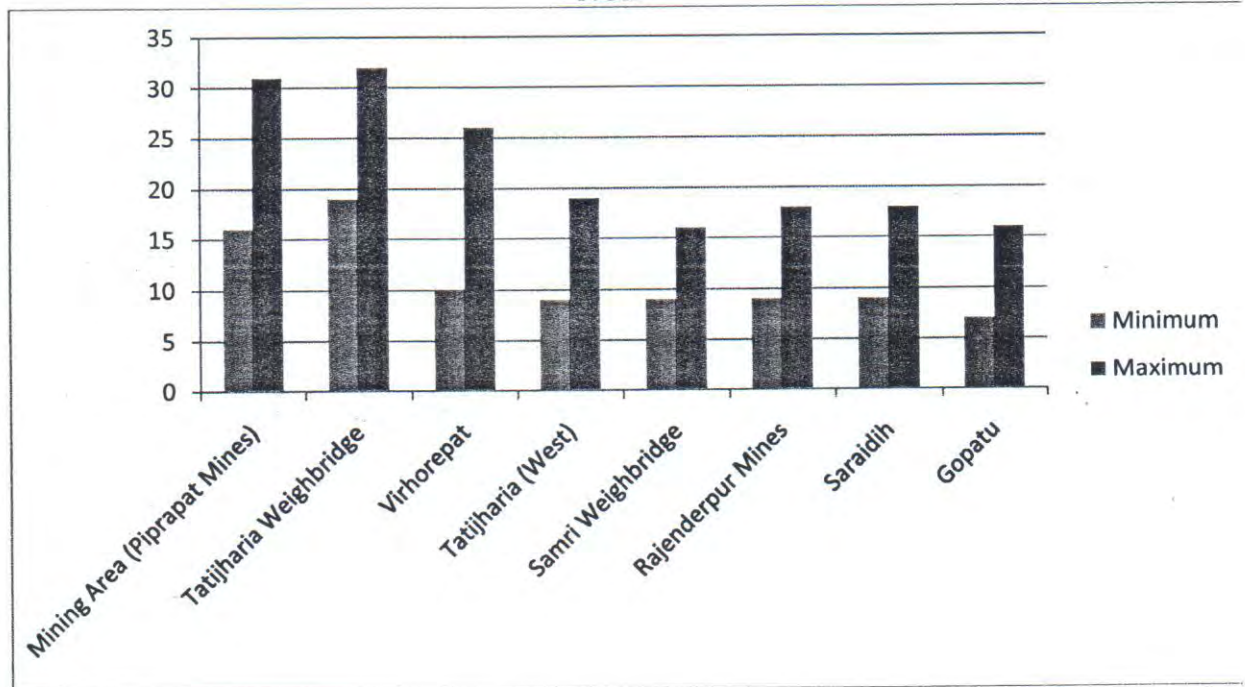
**R.S.P.M.**



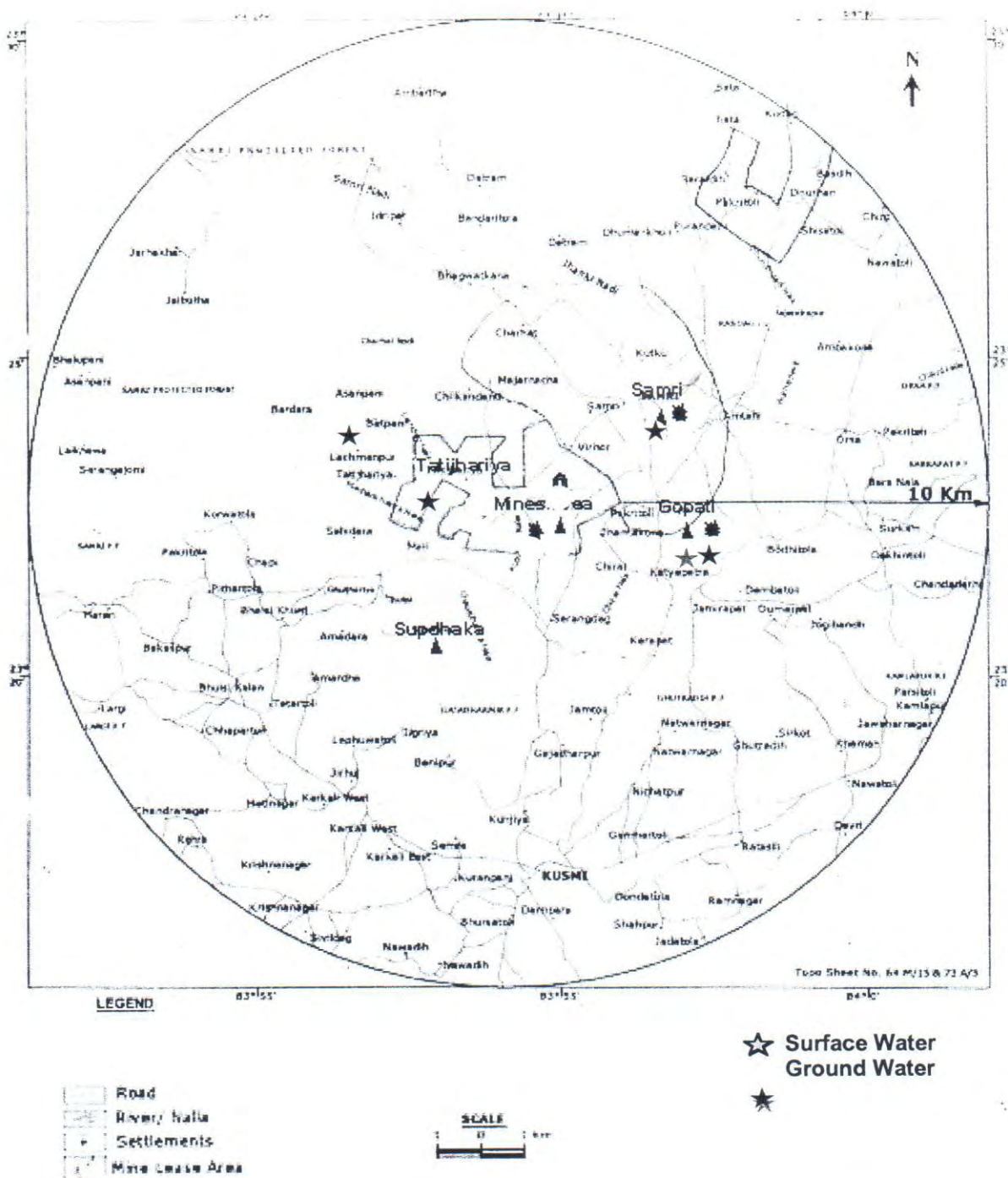
SO<sub>2</sub>



NO<sub>x</sub>







**FIG 3: SAMPLING LOCATIONS FOR WATER**

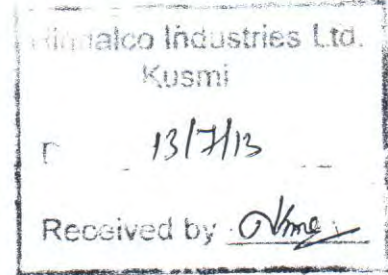


**छत्तीसगढ़ पर्यावरण संरक्षण मंडल, रायपुर**  
**CHHATTISGARH ENVIRONMENT CONSERVATION BOARD, RAIPUR**  
 Commercial Complex, Housing Board Colony, Kabir Nagar, Raipur - 492 099  
 E-mail: hncecb@gmail.com, Ph-0771-2970076, Fax- 0771-2970074

No. 1825/TS/CECB/2013

Raipur, dated: 5/7/2013

To, ✓  
 M/s Hindalco Industries Limited,  
 Tatijharia Bauxite Mine,  
 Village- Tatijharia & Betpani,  
 Tehsil-Samri,  
 District- Balrampur (C.G.)



Sub: Renewal of consent of the Board for Bauxite Ore Mine under section 25/26 of the Water (Prevention and Control of Pollution) Act, 1974.

- Ref: 1. Consent of the Board for Bauxite Ore Mine issued under section 25/26 of the Water (Prevention and Control of Pollution) Act, 1974 vide letter no. 6884/TS/C ECB/2007 Raipur, dated: 24/12/2007.
2. Last renewal of the Board for Bauxite Ore Mine issued under section 25/26 of the Water (Prevention and Control of Pollution) Act, 1974 vide letter no. 1103TS/CECB/2012 Raipur, dated: 01/06/2012.
3. Your Letter No. HIL/TATI/CECB/143/2012/SAMRI, dated: 25/08/2012 and subsequent correspondence ending letter dated: 10/05/2013.

--: 00 :--

With reference to your above application consent is hereby renewed for a period of One year i.e. from 01/12/2012 to 30/11/2013, subject to the fulfillment of the terms and conditions incorporated in the schedule of the consent letter No. 6884/TS/CECB/2007 Raipur, dated: 24/12/2007 and additional conditions mentioned below.

This renewal of consent is valid for: -

Name of Product	Production Capacity
Mining of bauxite ore	4.0 Lakhs Tonne per Annum [Four Lakhs Tonne per Annum]

### Additional Conditions

1. Industry shall ensure the treated effluent quality within prescribed effluent standard all the time. Industry shall not discharge effluent out side the mine lease area in any circumstances; hence zero discharge condition shall be maintained all the time.
2. All internal roads shall be made pucca. Good house keeping practices shall be adopted. Dust muck generated on the road shall be dispose doff properly.
3. Bauxite ore shall be transported in duly covered vehicles.



4. Industry shall submit Environment Statement to this Board as per provision of Environment (Protection) amendment Rule, 1993 for the previous year ending 31st March on or before 30th September every year.
5. All the solid waste rejects shall be disposed off properly and reclaimed scientifically. Industry shall obtain authorization under Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 from the Board (If required).
6. Extensive tree plantation shall be carried out in the reclaimed areas and within the mining lease area.

Please acknowledge the receipt of this letter.

For & on behalf of  
Chhattisgarh Environment Conservation Board Raipur (C.G.)



**Member Secretary**  
Chhattisgarh Environment Conservation Board  
Raipur (C.G.)

Endt. No. /TS/CECB/2013  
Copy to: -

Raipur, dated: \_\_\_ / \_\_\_ /2013

- 1- Regional Officer, Regional Office, Chhattisgarh Environment Conservation Board, Ambikapur (C.G.). Please ensure compliance and report, if any condition/conditions are violated by the industry.
- 2- Cess Section, Chhattisgarh Environment Conservation Board, Raipur (C.G.)

**Member Secretary**  
Chhattisgarh Environment Conservation Board  
Raipur (C.G.)

छत्तीसगढ़ पर्यावरण संरक्षण मंडल, रायपुर  
CHHATTISGARH ENVIRONMENT CONSERVATION BOARD, RAIPUR

Commercial Complex, Housing Board Colony, Kabir Nagar, Raipur - 492 099

E-mail: hocecb@gmail.com, Ph.-0771-2970070, Fax- 0771-2970074

No. 1827 /TS/CECB/2013

Raipur, dated: 5/7/2013

To, ✓  
M/s Hindalco Industries Limited,  
Tatijharia Bauxite Mine,  
Village- Tatijharia & Betpani,  
Tehsil-Samri,  
District- Balrampur (C.G.)

Recd.

13/7/13

Received by: *OKing*  
13/7/13

Sub: Renewal of consent of the Board for Bauxite Ore Mine under section 21 of the Air (Prevention and Control of Pollution) Act, 1981.

- Ref: 1. Consent of the Board for Bauxite Ore Mine issued under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 vide letter no. 6886/TS/CECB/2007 Raipur, dated: 24/12/2007.
2. Last renewal of the Board for Bauxite Ore Mine issued under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 vide letter no. 1105/TS/CECB/2012 Raipur, dated: 01/06/2012.
3. Your Letter No. HIL/TATI/CECB/143/2012/SAMRI, dated: 25/08/2012 and subsequent correspondence ending letter dated: 10/05/2013

--:: 00 ::--

With reference to your above application consent is hereby renewed for a period of one year i.e. from 01/12/2012 to 30/11/2013, subject to the fulfillment of the terms and conditions incorporated in the consent letter No. 6886/TS/CECB/2007 Raipur, dated: 24/12/2007 and additional conditions mentioned below.

This renewal of consent is valid for: -

Name of Product	Production Capacity
Mining of bauxite ore	4.0 Lakhs Tonne per Annum [Four Lakhs Tonne per Annum]

**Additional Conditions**

1. Industry shall operate & maintain the existing air pollution control facilities to ensure the emission of air pollutants within the prescribed emission standard the all time. Industry shall install some additional fixed type water sprinklers in haul roads fapproach roads for dust suppression. The industry shall also maintain the ambient air quality in and around the mine lease area within prescribed limits.



2. All internal roads shall be made pucca. Good house keeping practices shall be adopted by the industry. Dust muck generated on the road shall be dispose doff properly.
3. Blasting operations shall be carried out as per the standards prescribed by Director General of Mine Safety.
4. Industry shall transport Bauxite Ore in duly covered vehicles to avoid dust emission during transportation.
5. Industry shall submit Environment Statement to this Board as per provision of Environment (Protection) amendment Rule, 1993 for the previous year ending 31st March on or before 30th September every year.
6. Extensive tree plantation shall be carried out in the reclaimed areas and with mining lease area to the plants.

Please acknowledge the receipt of this letter.

For & on behalf of  
Chhattisgarh Environment Conservation Board Raipur (C.G.)




**Member Secretary**  
Chhattisgarh Environment Conservation Board  
Raipur (C.G.)

Endt. No. /TS/CECB/2013  
Copy to: -

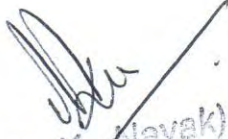
Raipur, dated:      /      /2013

Regional Officer, Regional Office, Chhattisgarh Environment Conservation Board, Ambikapur (C.G.). Please ensure compliance and report, if any condition/conditions are violated by the industry.

  
**Member Secretary**  
Chhattisgarh Environment Conservation Board  
Raipur (C.G.)

## ANNEXURE-V

Lease	EC (in Lakh Tonnes)	Production { (April-2013 to September-2013 (in Tonnes))}
Samri	5.0	213083.00
Tatijharia	4.0	194670.00
Kudag	0.6	26541.00

  
(M. K. Nayak)  
Agent of mines  
Samri mines Division  
Hindalco Industries Ltd



## TATIJHARIA LEASE

Particulars	Tatijharia Lease
Approved lease area	1218.762 Ha
Total Mined out up to the year (2012-13)	75.1357 Ha
Total Reclaimed up to the year (2012-13)	65.2542 Ha
Total afforestation in reclaimed land up to the year (2012-13)	21.56 Ha
Total nos. of plants up to the year (2012-13)	52850
% of survival of plants	75
Mined out during April 2013 to September 2013	3.633 Ha
Reclaimed during April 2013 to September 2013	3.062 Ha
Afforestation (2013-14)	4875
Afforestation in 2013-14 (Ha.)	2.000

  
 (M. K. Nayak)  
 Agent of mines  
 Samri mines Division  
 Hindalco Industries Ltd

Actual Expenditure incurred in Environment Management Plan:-

Composite cost during the year 2013-14 (Apr to Sep) for environment protection & pollution control by Samri Mines division, it includes Samri Bauxite Mine , Tatijharia Bauxite Mine & Kudag Bauxite Mine of Chhattisgarh state.

SI No-	Environment Protection Measures	Actual Cost (Lacs)	
		Budget (2013-14)	Actual (Up to Sep-13)
1	Pollution Control	6.0	3.20
2	Environment Monitoring	3.15	1.48
3	Green Belt	11.0	8.15
4	Reclamation/Rehabilitation of mined out area	---	--
5	<b>Rural Development</b> (This include capital cost of on going construction of 2.5km ring road , Building for 6 Bed hospital & Primary School)		80.86
6	Total		93.69

- Environment monitoring jobs has been out sourced to Annacon Lab, recognized by MoEF (GOI) & NABL etc.
- One centralized nursery has been established at Samri mines among three leases viz, Samri, Tatijharia & Kudag.
- Reclamation and rehabilitation is part of mining operation. Mined out area has been backfilled by using mines rejects, laterite, morrum and at the top of surface by top soil. As per type of the land we decide for cultivation or planting species. Cost of reclamation /rehabilitation already included in the mining operation.
- 

  
 (M. K. Nayak)  
 Agent of mines  
 Samri mines Division  
 Hindalco Industries Ltd