MINERALS & MINERALS LIMITED

Regd. Office P.O. & Dist. – Lohardaga (Jharkhand) PIN – 835302
Phone: 06526-224016, 224112, FAX: 06526-224118

Ref No: M&M/LHD/JP (M)/MoEF/ 0452 Date: 26.11.15

To,
The Additional Principal Chief Conservator of Forest (C)
Ministry of Environment, Forests and Climate Changes
Regional Office (ECZ), Ranchi-834002.

Sub: **Compliance Report of EC conditions for Bimarla (134.526 ha) Bauxite Mining project of M/sMinerals & Minerals Limited located in Gumla, Jharkhand for the period April'15 to Sep'15.**

Ref: **Environmental Clearance letter no J-11015/87/2009-IA.II (M) dated 24th Sep, 2013**

Sir.

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Bimarla (134.526 ha)** Bauxite Mining project of M/s Minerals & Minerals Limited, located in Gumla, Jharkhand for the period **April'15 to Sep'15.**

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR Minerals & Minerals Limited

(Bijesh Kumar Jha)
Joint President (Mines)

Enclosure: - As Above

Copy to: Regional Office, MoEF, Ranchi

Bimarla Bauxite Mines (Area 134.526 Ha)

Environmental Clearance –Vide letter no-J-11015/87/2009-IA.II (M) dated 24th Sep, 2013

Compliance Status, Period: April'15-September'15

Sl no	Specific Condition	Compliance
1	The project proponent shall obtain Consent to Establish and Consent to Operate from the Jharkhand State Pollution Control Board and effectively implement all the conditions stipulated therein.	Consent to Establish and operate obtained.
2	Implementations of conditions laid down in the letter of the State Department of Forests vide dated 11.05.2012 with regard to permission for transportation of ore through the forest land.	Implementations of the conditions as laid down in the letter are in process.
3	Necessary wildlife clearance as may be applicable to this project should be obtained. Measures for conservation of flora and fauna observed in the study area shall be undertaken. Wildlife Conservation Plan shall be implemented in consultation with the State Forests and Wildlife Department.	Wildlife Conservation Plan has been duly prepared. Conservation Plan will be implemented in consultation with the State Forests and Wildlife Department.
4	Adequate measures for control of air pollution in the area shall be taken and it shall be ensured that the pollution levels do not exceed the prescribed limits.	Is being complied.
5	No working shall be undertaken in the forest area for which forestry clearance has not been obtained.	Lease area is devoid of any forest land.
6	Necessary prior clearance, as applicable shall be obtained from CGWA for working below groundwater	Mining will be confined to above ground water table level only.

	table.	
7	The Company shall submit within 3 months their policy towards Corporate Environment Responsibility which should inter-alia provide for (i) Standard operating process / process to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions, (ii) Hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions and (iii) System of reporting of non-compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders.	Implementation of the stipulated condition are fulfilled.
8	The mining operations shall be restricted to above the groundwater table and it should not intersect the groundwater table, In case of working below the groundwater table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydrogeological study shall be carried out.	Mining will be confined to above ground water table level only. Mining will not intersect the ground water table.
9	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations. The first order streams and the seasonal nallahs originating from the mining lease area shall be protected	No natural watercourse and/or water resources will be obstructed due to any mining operations. The first order streams and the seasonal nallahs originating from the mining lease area will be protected.
10	The top soil, if any shall temporarily be stored at	Is being complied.

	earmarked site(s) only and it should not be kept unutilized for long; The topsoil shall be used for land reclamation and plantation.	
11	Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office, Bhubaneswar on six monthly basis.	Will be complied.
12	Catch drains and siltation ponds of appropriate size shall be constructed around the working pit, sub-grade dump, soil and mineral dumps to arrest flow of silt and sediment directly into the agricultural fields and the water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted, particularly after monsoon, and maintained properly, Garland drains settling tanks and check dams of appropriate size, gradient and length shall be constructed for both around the mine pit and sub-grade dump to prevent run off of water and flow sediments directly into the agricultural fields and the water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the	Will be complied.

	corners of the garland drains and desilted at regular intervals.	
13	Dimension of the retaining wall at the toe of sub-grade dump and OB benches within the mine to check run-off and siltation should be based on the rain fall data.	Will be complied.
14	The plantation is proposed over an area of 24 ha with 2500 samplings per ha.	Will be complied progressively.
15	Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Is being complied.
16	The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	Suitable measures will be undertaken to augment ground water.
17	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezometers during the mining operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in	Regular monitoring for ground water level and quality will be carried out.

	consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.	
18	Monitoring of the springs shall be carried out for the quality and quantity of water regularly so as to ensure that there is no adverse impact- on the same due to the project. Records in this regards shall be maintained.	Monitoring of springs will be carried out as applicable.
19	It shall be ensured that there is no change in the hydrology of the area due to the project.	Agreed
20	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.	Rain water harvesting measures will be implemented.
21	Appropriate mitigative measures shall be taken to prevent pollution of the all the water bodies, in consultation with the State Pollution Control Board	Will be complied.
22	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral from mine face to	Will be complied.

	the beneficiation plant. The vehicles shall be covered with a tarpaulin and shall not be overloaded.	
23	Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Blasting operation will be carried out only during the daytime only (during 12.00 to 1.00 PM). Controlled blasting technique will be implemented.
24	Drills shall either be operated with dust extractors or equipped with water injection system.	Will be implemented.
25	Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Will be complied
26	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.	Suitable measures will be taken.
27	The project authorities should undertake sample survey to generate data on pre project community health status within a radius of 1 km from proposed mine.	Will be complied.
28	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn	Will be complied.

	and followed accordingly.	
29	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Required infrastructure Will be constructed phase wise.
30	The critical parameters such as RSPM (Particulate matter with size less than 10pm i.e. PMio) and NOx in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharged water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (TSS)1. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The Circular No. 3-20012/1/2006- IA.11 (M) dated 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry www„envfor.nican shall also be referred in this regard for its compliance.	Will be complied as per statute.
31	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	Will be complied in due time.

Sl No	General Conditions	Compliance
1	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	Agreed
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Agreed
3	Conservation measures for protection of flora and fauna in the core and buffer zone should be drawn up in consultation with the local forest and wildlife department	Will be complied.
4	At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e., PM10) and NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board	Monitoring is being carried out and reported to concern authorities.
5	Data on ambient air quality [(RSPM (Particulate matter with size less than 10micron i.e., PM10) and NOx] should be regularly submitted to the Ministry including its Regional office located at: Bhubaneswar and the State Pollution Control	Monitoring is being carried out and reported to concern authorities.

	Board / Central Pollution Control Board once in six months.	
6	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Suitable water spraying arrangement will be done.
7	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	Measures will be taken for control of noise level.
8	Industrial waste water (workshop and waste water from the Mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31' December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	Will be complied after commissioning of mining operation.
9	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Will be undertaken as per statutory.

10	A separate environmental management cell with suitable qualified personnel directly to the Head of the Organization.	Centralized separate environment management cell with suitable qualified persons is already formulated.
11	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.	The fund earmarked for environmental protection measures is being kept in separate account and will not be diverted for other purpose. Annual expenditure is being reported to the Ministry.
12	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Will be reported in due time.
13	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	Agreed.
14	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of	Six monthly compliance is being submitted timely to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central

	monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their vvebsite and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board	Pollution Control Board and the State Pollution Control Board. And also uploaded in Hindalco's website.
15	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.	Displayed.
16	The environmental statement for each financial year ending 31 March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.	Is being complied.

17	The project authorities should advertise at least in two local newspapers of the which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar	Complied. Relevant paper cutting duly submitted.

GEMS PROJECTS PVT.LTD.
In Association with M/s MAHARASTRA ENVIRO POWER LTD, Nagpur
(NABL ACCREDITED LABORATORY)

M/S HINDALCO INDUSTRIES LIMITED

MINES DIVISION, DIST.-LOHARDAGA, JHARKHAND

REPORT

OF

ENVIRONMENTAL MONITORING DATA OF KORLE BIMARLA PLATEAU

FOR

(JULY TO SEPTEMBER QUARTER-2015)

1236/2 Lajpat Nagar, Near Lala Lajpat Rai School, Pundag, Argora, Ranchi, Jharkhand- 834004
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CONTENT

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In Association with M/s MAHARASTRA ENVIRO POWER LTD, Nagpur
(NABL ACCREDITED LABORATORY)

Report No: SEPT005/2015-16 Date: 3rd October 2015

Sample described by customer: **AMBIENT AIR QUALITY MONITORING**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: **AMBIENT AIR QUALITY MONITORING**
Received: 30.09.2015
Registered: 30.09.2015
Marks on Sample: Location: **Korle-Bimarla Mine 134.52 ha., Mine site Near Panchayat Bhawan**
Sample collected on:30.09.2015
Test Start/End Date: 30.09.2015

LOCATION/IDENTIFICATION: : **Korle-Bimarla Mine 134.52 ha., Mine site Near Panchayat Bhawan**

PARAMETERS		UNIT	LIMIT	METHOD	Concentration
Sulphur Dioxide	SO_2	$\mu g/m^3$	80	IS:5182 (Part-2):2001 (Reaff:2006)	38.50
Nitrogen Dioxide	NO_x	$\mu g/m^3$	80	IS:5182 (Part-6): 1975(Reaff:2004)	49.20
Particulate Matter (size less than 10 µm)	PM_{10}	$\mu g/m^3$	100	IS:5182 (Part-23)	69.9
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	$\mu g/m^3$	60	USEPA CFR (40) Appendix-L	42.1
Carbon Monoxide	CO	$\mu g/m^3$	2	EPA 600/P-99/001F	0.40

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Report No: SEPT005/2015-16 Date: 3rd October 2015

Sample described by customer: **AMBIENT AIR QUALITY MONITORING**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: **AMBIENT AIR QUALITY MONITORING**
Received: 30.09.2015
Registered: 30.09.2015
Marks on Sample: Location: **Korle-Bimarla Mine 134.52 ha., Near Weigh Bridge**
Sample collected on:30.09.2015
Test Start/End Date: 30.09.2015/30.09.2015

LOCATION/IDENTIFICATION: : **Korle-Bimarla Mine 134.52 ha., Near Weigh Bridge**

PARAMETERS		UNIT	LIMIT	METHOD	Concentration
Sulphur Dioxide	SO_2	$\mu g/m^3$	80	IS:5182 (Part-2):2001 (Reaff:2006)	39.00
Nitrogen Dioxide	NO_x	$\mu g/m^3$	80	IS:5182 (Part-6): 1975(Reaff:2004)	46.50
Particulate Matter (size less than 10 µm)	PM_{10}	$\mu g/m^3$	100	IS:5182 (Part-23)	70.7
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	$\mu g/m^3$	60	USEPA CFR (40) Appendix-L	45.3
Carbon Monoxide	CO	$\mu g/m^3$	2	EPA 600/P-99/001F	0.50

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Report No: SEPT005/2015-16 Date: 3rd October 2015

Sample described by customer: **AMBIENT AIR QUALITY MONITORING**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: **AMBIENT AIR QUALITY MONITORING**
Received: 30.09.2015
Registered: 30.09.2015
Marks on Sample: Location: **Korle Village**
Sample collected on:30.09.2015
Test Start/End Date: 30.09.2015

LOCATION/IDENTIFICATION: **Korle Village**

PARAMETERS		UNIT	LIMIT	METHOD	Concentration
Sulphur Dioxide	SO_2	$\mu g/m^3$	80	IS:5182 (Part-2):2001 (Reaff:2006)	18.50
Nitrogen Dioxide	NO_x	$\mu g/m^3$	80	IS:5182 (Part-6): 1975(Reaff:2004)	29.30
Particulate Matter (size less than 10 µm)	PM_{10}	$\mu g/m^3$	100	IS:5182 (Part-23)	48.5
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	$\mu g/m^3$	60	USEPA CFR (40) Appendix-L	29.4
Carbon Monoxide	CO	$\mu g/m^3$	2	EPA 600/P-99/001F	0.20

GEMS PROJECTS PVT. LTD. RANCHI

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(NABL ACCREDITED LABORATORY)

Report No: SEPT005/2015-16	Date: 3rd October 2015
Sample described by customer: Measurement of Noise	

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: **Measurement of Noise**
Sampling Method: Instrumental, using Sound level Metter
Test Start: 29.09.2015
End Date: 30.09.2015

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result)	Dates
Month			Average of 16 continuous hours in Sep-15		Average of 8 continuous hours in Sep-15	
Korle-Bimarla Mines Pit	dB (A) L_{eq}	75	68.3	70	58.9	30/09/2015

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(NABL ACCREDITED LABORATORY)

Report No: SEPT005/2015-16 Date: 3rd October 2015

Sample described by customer : **DRINKING WATER**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: **DRINKING WATER**
Received: 29.09.2015
Registered: 29.09.2015
Marks on Sample: Location: **Korle-Bimarla Mines Drinking Water**
Sample collected on:29.09.2015
Quantity: 5 L X 2 No. PVC Can
Test Start/End Date: 29.09.2015/02.10.2015
Sample collected by: **M/S GEMS PROJECT PVT LTD.**

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.8	1 Max	APHA 22nd Ed. 2012, 2130-B, 2-13
5	pH	--	7.3	6.5-8.5	APHA 22nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.05	0.2 min	APHA 22nd Ed. 2012, 4500-Cl-G, 4-69
7	Total Dissolved Solids	mg/l	109	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22nd Ed. 2012, 4500-ClG, 4-69
9	Dichioramines	mg/l	<0.05	--	APHA 22nd Ed. 2012, 4500-ClG, 4-69
10	Total hardness (as CaCO3)	mg/l	65	200 max	APHA 22nd Ed. 2012, 4500-ClG, 4-69
11	Alkalinirty Total (as CaCO3)	mg/l	70	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	9.0	250 max	APHA 22nd Ed. 2012, 4500-Cl-b, 4-72
13	Sulphate (as SO4)	mg/l	6.0	200 max	APHA 22nd Ed. 2012, 4500-so4-e, 4-190
14	Nitrate (as NO3)	mg/l	1.30	45 max	APHA 22nd Ed. 2012, 4500-NO3-E, 4-125
15	Fluoride (as F)	mg/l	0.4	1 max	APHA 22nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.16	0.5 max	APHA 22nd Ed. 2012, 4500-BB, 4-25

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Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
17	Calcium (as Ca)	mg/l	21.5	75 max	APHA 22nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	3.5	30 max	APHA 22nd Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22nd Ed. 2012, 4500-NH3-F, 4-115
20	Iron (as Fe)	mg/l	0.15	0.3 max	APHA 22nd Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22nd Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.09	0.03 max	APHA 22nd Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22nd Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.07	5 max	APHA 22nd Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22nd Ed. 2012, 3114-B, 3-18
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22nd Ed. 2012, 3112-B, 3-18
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3114-B, 3-18
31	Nickel (as Ni)	mg/l	<0.05	0.02 max	APHA 22nd Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22nd ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22nd ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C6H5OH)	mg/l	N.D	0.001 max	APHA 22nd ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22nd ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22nd ED. 2012, 4500-S2-C 4- 175 & F 4-178

GEMS PROJECTS PVT. LTD. ★ RANCHI

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
Microbiological Analysis					
1	Total Colliforms	MPN/100mL	<1.1	N.D	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	Absent	N.D	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
Pesticides Residues					
3	p.p DDT	µg/L	N.D	1	US EPA 508-1995
4	o.p DDT	µg/L	N.D	1	US EPA 508-1995
5	p.p DDE	µg/L	N.D	1	US EPA 508-1995
6	o.p DDE	µg/L	N.D	1	US EPA 508-1995
7	p.p DDD	µg/L	N.D	1	US EPA 508-1995
8	o.p DDD	µg/L	N.D	1	US EPA 508-1995
9	γ-HCH (Lindance)	µg/L	<0.01	2	US EPA 508-1995
10	α –HCH	µg/L	<0.01	0.01	US EPA 508-1995
11	β–HCH	µg/L	N.D	0.04	US EPA 508-1995
12	δ- HCH	µg/L	N.D	0.04	US EPA 508-1995
13	Butachlor	µg/L	N.D	125	US EPA 508-1995
14	Alachlor	µg/L	N.D	20	US EPA 508-1995
15	Atrazine	µg/L	N.D	2	US EPA 508-1995
16	α Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
17	β Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
18	Endosulfan Sulphate	µg/L	N.D	0.4	US EPA 508-1995
19	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20	Malathion	µg/L	N.D	190	US EPA 8141A-1994
21	Methoyl Parathion	µg/L	N.D	0.3	US EPA 8141A-1994
22	Monocrotophos	µg/L	N.D	1	US EPA 8141A-1994
23	Phorate	µg/L	N.D	2	US EPA 8141A-1994
24	Chlorpyrifos	µg/L	N.D	30	US EPA 8141A-1994
25	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
Remarks: N.D- Not Detected					

Note: Water tested and found to suitable for drinking purpose

GEMS PROJECTS PVT.LTD.

In Association with M/s MAHARASTRA ENVIRO POWER LTD, Nagpur
(NABL ACCREDITED LABORATORY)

Report No: SEPT005/2015-16 Date: 3rd October 2015

Sample described by customer : **SOIL**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: **SOIL**
Received: 29.09.2015
Registered: 29.09.2015
Marks on Sample: Location: **Top Soil of Korla-Bimarla Mines (134.52 ha.), Minerals & Minerals**
Sample collected on:29.09.2015
Quantity: 2KGS
Test Start/End Date: 29.09.2015/02.10.2015
Sample collected by: **M/S GEMS PROJECT PVT LTD**

Sl. No.	Analysis		Method	Result	Unit
1	Colour	--	--	Gray	
2	Texture	--	F.A.U.N (2007)	Loamy Sand	
3	Bulk density	--	By Bulk density Apparatus	1.52	gm/cm3
4	Water Holding Capacity	--	F.A.U.N (2007)	25.0	%
5	pH	--	F.A.U.N (2007)	7.50	--
6	Electrical Conductivity	--	F.A.U.N (2007)	205.0	µs/cm
7	Organic Carbon	--		0.60	%
8	Organic matter	--	Black & White Wet Digestion method	0.95	%
9	Available Nitrogen	--		120.0	mg/kg
10	Available Phosphorus	--		15.0	mg/kg
11	Available Potassium	--		360	mg/kg
12	Exchangeable calcium			25.00	meq/100gm
13	Exchangeable Magnesium			1.30	meq/100gm
14	Exchangeable Sodium			2.50	meq/100gm
15	Exchangeable Potassium			1.70	meq/100gm
16	Total Exchangeable bases		USEPA 3052	32.00	meq/100gm
17	Manganese		USEPA 3052	0.59	mg/kg
18	Arsenic		USEPA 3052	1.75	mg/kg
19	Silica		USEPA 3052	58.0	%
20	Aluminum		USEPA 3052	10.0	%
21	Iron		USEPA 3052	7.00	%
22	Calcium		USEPA 3052	9.00	%
23	Magnesium		USEPA 3052	1.85	%
24	Sodium		USEPA 3052	0.70	%
25	Potassium		USEPA 3052	0.28	%
26	Sulphate		USEPA 3052	0.70	%

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ADITYA BIRLA

HINDALCO

Date:26.11.2015

OFFICE ORDER

In connection with the earlier office order dated 10.11.2014 the re constituted team of Environment management cell to ensure compliance of various environmental Acts, regulations & rules at Mines Division, Hindalco, Lohardaga as follows:

The Environment Management Cell will consist of:

1. B. K. Mahapatra, DGM (Quality & Environment), Convenor.

Members:

2. Ajay Kumar Pandey, Manager (Bagru Mines)
3. A Anbarasu, Mines Manager (Serengdag Mines)
4. S P Jha, Mines Manager (Pakhar Mines)
5. Kiran Sankar Singh, Mines Manager (Gurdari)
6. Vidya Sagar Singh, Mines Manager (Kujam)
7. Amar Bharati, Mines Manager (Amtipani)
8. Rajesh Ambastha, Mines Manager (Chiro Kukud & Orsa)
9. Ananda Sahu, Mines Manager (Bimarla Bauxite Mines)
10. Biplab Mukherjee (Asst. Manager- Geology)

By order

Bijesh Kumar Jha
Joint President (Mines)

Cc to: - All Mines Manager
All Department head
Notice Board.

HINDALCO INDUSTRIES LIMITED
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Corporate Identity No. L27020MH1958PLC011238

BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2015-16

The composite cost during the year 2015-16 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115,13 Ha), Pakhar (15.58 Ha), Pakhar (109.507 Ha),*Pakhar (8.09 Ha),Pakhar (35.12Ha)*, Serengdag (140.06 Ha), Serengdag (155.81 Ha), Jalim & Sanai (12.14 Ha), Gurdari (584.19 Ha), Amtipani (190.95 Ha), Kujam I (80.97 Ha) Kujam II (157.38 Ha) and Bagru (75.41 Ha), Hisri New (14.55 Ha), Chiro kukud, *Orsa pat(196.36 Ha)*, Bhusar (65.31 Ha)& *Bimarla Bauxite Mines (134.52 Ha)*.

Sl No	Description	Budget (in Rupees) FY 2015-16	Actual (in Rupees) FY 2015-16 (from April to Sep'2015)
1	Pollution Control & Environment monitoring	**15,40,000/-**	**2,62,293/-**
2	Reclamation/ Back filing & Rehabilitation	**3,89,90,000/-**	**1,45,51,281/-**
3	Green belt & Plantation	**60,00,000/-**	**28,68,213/-**
4	Rural Development	**1,64,71,000/-**	**1,04,36,128/-**

**Part of OB removed cost.

Convener
Environment Management Cell
Hindalco Industries Limited

PRODUCTION, MINED OUT, BACKFILLED, PRODUCTION AND OVERBURDEN REMOVAL FROM APR-15 TO SEP-15

NAME OF THE MINES	MINING LEASE AREA (IN HA)	MINED OUT AREA (HA)	BACK FILLED AREA (HA)	PRODUCTION (In MT)	OVERBURDEN (In Cu.M)
Shrengdag Bauxite Mines	155.81	4.04	3.50	140103.00	428240.00
Gurdari Bauxite Mines	584.19	5.66	4.92	175340.00	273881.00
Jalim & Sanai	12.14	0.50	0.05	23569.00	16500.00
Serangdag	140.06	0.00	0.00	0.00	0.00
Pakhar Buxite Mines	115.13	1.43	1.90	104145.00	143361.70
Pakhar Buxite Mines	8.09	0.00	0.00	0.00	0.00
Kujam-I	80.87	1.54	0.47	84970.00	82735.79
Kujam-II	157.38	3.46	1.26	77365.00	215398.22
Amtipani	190.95	2.27	1.53	89045.00	121267.01
Chiro-Kukud	152.57	1.28	2.97	51890.00	80377.18
Orsa Bauxite Mines	196.36	0.00	0.00	0.00	0.00
Hisri New	14.55	0.00	0.00	0.00	0.00
Bhusar	65.31	0.00	0.00	0.00	0.00
Bagru	75.41	0.00	0.00	0.00	0.00
Minerals & Minerals Limited					
Pakhar Buxite Mines	109.51	1.40	1.62	157280.00	137012.31
Pakhar Buxite Mines	15.58	0.00	0.00	0.00	0.00
Bimarla Bauxite Mines	134.53	0.00	0.00	0.00	0.00

Convener
Environment Management Cell
Hindalco Industries Limited

Monitored water level (FY 2015-16)

Fig in meter

Location (Mines)	Elevation (Mtr)	Well type	Monsoon (July-Sep)		Post Monsoon (November)		Winter (January)		Pre Monsoon (April-May)	
			Inside ML	Outside ML	Inside ML	Outside ML	Inside ML	Outside ML	Inside ML	Outside ML
Bagru	905	Open Well		21.74		24.13				
	910	Open Well		24.32		24.55				
	915	Open Well		29.41		28.43				
	903	Open Well		22.83		33.11				
	909	Open Well		17.54		28.74				
	1000	Open Well		24.95		22.69				
Pakhar	1083	Hand Pump	35.36		31.63					
Sherengdag	1027	Open Well		25.84		28.36				
	1094	Hand Pump	41.74		39.55					
	1081	Hand Pump	39.65		31.30					
	1055	Hand Pump	33.07		27.53					
	1066	Hand Pump	27.76		26.27					
Gurdari	1045	Hand Pump	29.32		27.85					
	1061	Hand Pump	28.36		24.93					
	1059	Hand Pump	38.11		36.20					
	1075	Hand Pump	27.98		26.82					
	1075	Hand Pump	28.37		29.33					
Kujam	1040	Open Well		33.97		21.88				
	1041	Open Well		33.66		24.85				
	1064	Hand Pump	31.55		28.68					
	1052	Hand Pump	22.39			21.12				
Chiro Kukud	1148	Hand Pump	33.40		28.39					
	1151	Hand Pump	37.62		31.85					
	1084	Hand Pump	34.25		33.11					

Convenor
(Quality & Environment)