



Ref No: HIL/LHD/VP (M)/MoEF/ 114

Date : 22.05.13

To,
Mr S Kerketta
Joint Director(S)
MoEF ,GOI, Eastern Regional Office
A/3,Chandrashekharpur,
Bhubaneshwar- 751023 (Orissa)

Sub: Compliance Report of EC conditions for Shrengdag (155.81 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Gumla, Jharkhand for the period Oct' 2012 - March' 2013.

Ref: **Environmental Clearance letter no J-11015/125/2006-IA II(M) dated 13th April 2007**

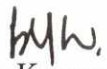
Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Shrengdag (155.81 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Gumla, Jharkhand for the period Oct' 2012 - March' 2013.**

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED


(Bijesh Kumar Jha)
VP (Mines)

Enclosure: - As Above

Compliance of conditions laid down in Environmental Clearance

SHRENGDAG BAUXITE MINES(155.81 Ha)

Period : Oct'12 – March'13

J-11015/125/2006-IA.II (M)Dated 13.4.2007

Sl No	Conditions	Compliance Status
Specific Conditions		
1	All the conditions stipulated by SPCB in their NOC shall be effectively implemented.	Being Complied.
2	The environmental clearance is subject to approval of the state land use Department, Government of Jharkhand for diversion of agricultural land for non-agricultural use.	Mining Lease is granted/renewed by the State Govt. after due consideration and Cabinet approval on recommendation of DC who is the competent authority to give permission for using the agricultural land for non-agricultural purpose
3	The exploration shall be completed within 2.5 years and thereafter the proponent shall come up with a firm proposal for mining, based on the estimated reserves. The reclamation plan, post mine land use and progressive greenbelt development plan shall also be prepared and submitted with the revised proposal.	Mining is going on as per duly approved mining plan. The reclamation plan, post mine land use and progressive greenbelt development plan have been covered in Mining Plan.
4	Mining shall not intersect groundwater. The mine working shall be restricted to ground water table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table.	Now, maximum depth of mining is 20 m. As per the survey, the ground water table is reported at 45-60 m below ground level. Hence there will be no intersecting of the ground water table due to mining activities.
5	The Project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operations.	It is being ensured. No natural water course has been obstructed as yet.
6	Top soil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	Sequential backfilling and reclamation of the mined out area are being exercised during mining operation. Whenever backfilling will be done to the mined out area, subsoil will be used for backfilling to reclaim and restore the damage area up to the extent possible.
7	The waste generated shall be concurrently backfilled in the mined out area. There shall be no external OB dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance	Overburden and waste rock from the crushing pit are being used for back filling. Year wise backfilling and plantation raised over the back filled are is provided. (Enclosed Annexure).

	status should be submitted to the Ministry of Environment & Forest on six month basis.	
8	<p>Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working. 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.</p> <p>Garland drain (size, gradient and length) shall be constructed for mine pit 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 setting of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.</p>	No run off is being generated from mining activities. However, to collect and manage rainwater during monsoon, part of mined out area is used as settling tank. Settled water is being used for sprinkling of quarry, roads, green belt development, etc.
9	Plantation shall be raised in an area of 70.68 ha including a green belt of adequate width by planting the native species around the ML area, roads, reclaimed area etc. in consultation with the local DFO / Agriculture Department. The density of the trees should be around 1500 plants per ha.	In 2012-13, we have plantation on 3.5 acres land has been done. Rest to be complied during the life of project.
10	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.	A plan has already been prepared on the basis of discussions with Scientists of State unit office of Central Ground Water Board, Ranchi to implement suitable conservation measures to augment ground water resources in the area and is also submitted to the Regional Director, Central Ground Water Board, Patna, for any suggestions. Recommendation of CGWB shall be implemented to augment the ground water resources of the area. Copy of letter already submitted to regional office.
11	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out four times in a year – pre-monsoon (April-May), monsoon	It is being monitored. Monitoring report is enclosed as Annexure

	(August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MOEF, Central Ground water Authority and Regional Director Central Ground Water Board.	
12	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	Rainwater harvested during rainy season is being used for sprinkling on haul roads and raising plantation. Spring water is drawn from the down the hill pockets ponds for drinking purposes. Hence, as per the terms and conditions in Part III, Clause 6 of Mining lease deed, we have obtained permission from the Deputy Commissioner for drawl of water from the surface water bodies. Water cess is being paid to JSPCB on regular basis.
13	Water monitoring both for quality and quantity shall be carried out at four locations namely one spring and three streams. Sixmonthly report should be submitted to the Ministry of Environment and Forest and its Regional Office located at Bhubneshwar.	Analysis of water quality at four locations is being carried out. Analysis data for period of reporting is enclosed in Annexure
14	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.	To keep vehicular emissions in control, company vehicles are periodically checked and repaired as and when required. All the transporters have been instructed to obtain PUC for their vehicles from the competent authority and submit to the concerned officer for verification
15	Drills should either be operated with dust extractors or should be equipped with water injection system.	Wet drilling is being done in the drill holes for dust suppression.
16	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibration and to arrest fly rocks and boulders should be implemented.	Blasting at Mines is done at fixed blasting period i.e. 12.00 Noon to 1.00 PM on working days. Mobile mining activities are not being practiced during blasting. All the precautionary and mitigative measures to control ground vibration and to arrest fly rocks is being exercised.
17	Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine.	Has been obtained and enclosed in Annexure
18	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	There is no effluent from mine, hence ETP has not been installed. The sewage water from domestic uses is being

		collected through individual Septic Tank and Soak Pits.
19	The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as Indian Python, <i>Presbytis phayrei</i> , <i>Melurus ursinus</i> etc. Spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. Copy of action plan may be submitted to the Ministry and its Regional Office within 3 months.	Action plan for conservation of flora and fauna spotted in the study area was prepared after due consultation with the local DFO and a copy of the same has already been submitted to the DFO for his comments, any suggestion and modification. On receipt of the same after vetting of State Forest Department, the action plan will be submitted to the MoEF
20	A Final Mine Closure plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval.	Progressive Mine Closure Plan duly approved by Indian Bureau of Mines is available with us. The same has already been informed to Regional Office of MoEF.

GENERAL CONDITIONS

Sl No	Conditions	Compliance Status
1	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forest	Complied.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Excavation of Over Burden and Bauxite is being done as per the approved calendar plan. Details of excavation, quantum of mineral, OB, etc have been furnished for the financial year 12-13 is Annexed
3	Four ambient air quality-monitoring station should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x monitoring. Location of the stations should be decided based on the metrological 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 locations have been fixed after due consultation of SPCB and regular monitoring is being carried out. Monitoring Reports is enclosed as Annexure

4	Data on ambient air quality (RPM, SPM, SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control Board once in six months.	Monitoring locations have been fixed after due consultation of SPCB. Monitoring Reports is enclosed as Annexure
5	Fugitive dust emission from all the sources should be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Two nos. of water tanker have been provided for sprinkling of water on haul roads and are generally being engaged at the places where active mining is in progress to contain fugitive dust. Water spraying at loading, unloading, etc is also being done manually.
6	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operation of HEMM, etc. should be provided with ear plug / muffs.	Noise monitoring is being done regularly at various locations of the work zone area. Workers engaged in operation of HEMMs, etc have also been provided with PPEs such as ear plug and ear muffs.
7	Industrial waste water (workshops and waste water from the mine) Should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	There is no effluent discharge from Mine. Workshop has an Oil Catchment Pit to trap oil and grease. It is being ensured to make it operational and effective as and when required and accordingly the O&M department is taking its due care.
8	Personnel working in dusty areas should wear protective respiratory devices and they should also 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.	Complied. Use of Personal Protective Equipment (PPE) by the individuals is being ensured. All the mine workers are being regularly and periodically sent to our own hospital for health checkup for any contraction of diseases due to exposure in dusty and noisy areas. Training on safety, health and environmental aspects of mining is being regularly imparted through VT centre and also through various other training programmes conducted by the State Government, recognized agencies, etc.
9	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	Separate Environmental Management Cell (EMC) has been constituted and is functioning effectively. Copy enclosed
10	The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final	Not applicable. The mine is running since 1976.

	approval of the project by the concerned authorities and the date of start of land development work.	
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 Bhubneshwar.	Statement of budgetary provision and actual expenses for the year 12-13 for environmental protection measure is enclosed. Separate funds earmarked for environmental protection measures.
12	The Regional Office of this Ministry located at Bhubneshwar 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.	Complied
13	The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional Officer, Bhubaneshwar, Central Pollution Control Board and State Pollution Control Board.	Complied
14	A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal.	Complied.
15	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Center and Collector's office / Tehsildar's Office for 30 days.	Complied.
16	The project authorities should advertise at least in two local newspapers widely circulated, one of which locality concerned, within 7days 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 Bhubneshwar.	Complied. Copies, of the advertisement made in the local newspapers, have already been submitted to the Regional Office.



Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 19/03/2013

Report No : KG13-001954 001

JOE No : KG13-001954

Report Control No : KGR000012255

Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : AMBIENT AIR QUALITY MONITORING
Received : 12/03/2013
Registered : 12/03/2013
Marks on Sample : Location : Mines Lease Area, date : 25.02.2013
Sampling Site : Shrengdag(155.81)/Serengdag(140.07)/Jalim & Sanal Bauxite Mines(Shrengda)
Test Start/End Date : 12/03/2013 - 19/03/2013

Analysis	Method	Result	Unit	Requirement/Limit as Per NAAQS	
				Min	Max
Particulate Matter (PM10)	IS:5182 (Part-23):2006	85	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	42.71	ug/m3	-	60
Oxides of Nitrogen (NOx)	IS:5182 (Part-6):1975 (Reaff.2004)	6.78	ug/m3	-	80
Sulphur Dioxide (SO2)	IS:5182 (Part-2):2001 (Reaff.2006)	<5.00	ug/m3	-	80
Carbon Monoxide	By NDIR Spectroscopy.	<1.00	mg/m3		

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Satya Manna

Section Incharge - ENVI

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Page 1 of 2

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Test Report

Report No : KG13-001954.001

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 19/03/2013

JOE No : KG13-001954

Report Control No : KGR0000012255

****End of Report****

Page 2 of 2

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Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 19/03/2013

Report No : KG13-001954.002

JOE No : KG13-001954

Report Control No : KGR0000012255

Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : AMBIENT AIR QUALITY MONITORING
Received : 12/03/2013
Registered : 12/03/2013
Marks on Sample : Location : Kachki Village, date : 25.02.2013
ampling Site : Shrengdag(155.81)/Serengdag(140.07)/Jalim & Sanal Bauxite Mines(Shrengda
Test Start/End Date : 12/03/2013 - 19/03/2013

Analysis	Method	Result	Unit	Requirement/Limit as Per NAAQS	
				Min	Max
Particulate Matter (PM10)	IS:5182 (Part-23):2006	46	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	21.01	ug/m3	-	60
Oxides of Nitrogen (NOx)	IS:5182 (Part-6):1975 (Reaff.2004)	11.40	ug/m3	-	80
Sulphur Dioxide (SO2)	IS:5182 (Part-2):2001 (Reaff.2006)	<5.00	ug/m3	-	80
Carbon Monoxide	By NDIR Spectroscopy.	<1.00	mg/m3		

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Satya Manna
Section Incharge - ENVI
Authorized Signatory

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Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 19/03/2013

Report No : KG13-001954.002

JOE No : KG13-001954

Report Control No : KGR0000012255

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Test Report

Print Date : 19/03/2013

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Report No : KG13-001954.003

JOE No : KG13-001954

Report Control No : KGR0000012255

Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : AMBIENT AIR QUALITY MONITORING
Received : 12/03/2013
Registered : 12/03/2013
Marks on Sample : Location : Pauri Village, date : 26.02.2013
sampling Site : Shrengdag(155.81)/Serengdag(140.07)/Jalim & Sanal Bauxite Mines(Shrengda
Test Start/End Date : 12/03/2013 - 19/03/2013

Analysis	Method	Result	Unit	Requirement/Limit as Per NAAQS	
				Min	Max
Particulate Matter (PM10)	IS:5182 (Part-23):2006	62	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	32.07	ug/m3	-	60
Oxides of Nitrogen (NOx)	IS:5182 (Part-6):1975 (Reaff.2004)	8.95	ug/m3	-	80
Sulphur Dioxide (SO2)	IS:5182 (Part-2):2001 (Reaff.2006)	<5.00	ug/m3	-	80
Carbon Monoxide	By NDIR Spectroscopy.	<1.00	mg/m3		

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Section Incharge - ENVI

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Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 19/03/2013

Report No : KG13-001954.003

JOE No : KG13-001954

Report Control No : KGR0000012255

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Page 2 of 2

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Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 19/03/2013

Report No : KG13-001954.004

JOE No : KG13-001954

Report Control No : KGR0000012255
Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name : Hindalco Industries Limited(Mines Division)
 Client Address : Lohardaga.
 Postal Code : 835203
 State : Jharkhand
 Country : India
 Sample Type : AMBIENT AIR QUALITY MONITORING
 Received : 12/03/2013
 Registered : 12/03/2013
 Marks on Sample : Location : Jalim Village, date : 26.02.2013
 Sampling Site : Shrengdag(155.81)/Serengdag(140.07)/Jalim & Sanal Bauxite Mines(Shrengda
 Test Start/End Date : 12/03/2013 - 19/03/2013

Analysis	Method	Result	Unit	Requirement/Limit as Per NAAQS	
				Min	Max
Particulate Matter (PM10)	IS:5182 (Part-23):2006	57	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	25.41	ug/m3	-	60
Oxides of Nitrogen (NOx)	IS:5182 (Part-6):1975 (Reaff.2004)	8.46	ug/m3	-	80
Sulphur Dioxide (SO2)	IS:5182 (Part-2):2001 (Reaff.2006)	<5.00	ug/m3	-	80
Carbon Monoxide	By NDIR Spectroscopy.	<1.00	mg/m3		

Per pro SGS India Private Ltd

Satya Manna
 Section Incharge - ENVI
 Authorized Signatory

Page 1 of 2

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Test Report

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 19/03/2013

Report No : KG13-001954.004

JOE No : KG13-001954

Report Control No : KGR0000012255

****End of Report****

Page 2 of 2

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Test Report

Print Date : 22/03/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-001960.001

JOE No : KG13-001960

Report Control No : KGR0000012732

Sample Described by Customer as : SOIL(COMPOSITE)

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : SOIL(COMPOSITE)
Received : 12/03/2013
Registered : 12/03/2013
Marks on Sample : Location:Barpat 2 No. Quarry Reclaimed area.
Sampling Site : Shrengdag(155.81)/(140.07)/Jalim&Sanal Bauxite Mines(Shrengdag plateau)
Sample Collected : 26.02.2013
Quantity : 2.5Kg app
Test Start/End Date : 12/03/2013 - 21/03/2013

Analysis	Method	Result	Limit of Reporting (LOR)	Unit
Conductivity (1:5) Soil Suspension. (1 : 2 aqueous solution)	F.A.U.N (2007)	32.1	1.00	µs/cm
pH (1:2) Soil Suspension (1 : 2 aqueous solution)	F.A.U.N (2007)	6	0.50	--
Porosity	F.A.U.N (2007)	51.28	-	%
Bulk Density	By Bulk Density Apparatus	1.10	0.10	gram/ml
Phosphorus (as P)	F.A.U.N (2007)	<20 000	20.00	mg/kg
Texture	F.A.U.N (2007)	Sandy clay loam	-	
Clay	F.A.U.N (2007)	34.3	5.00	%
Sand	F.A.U.N (2007)	48.2	1.00	%
Silt	F.A.U.N (2007)	17.5	1.00	%
Available Chloride (as Cl)	Soil & Agriculture Organization (U.N-2007)	21.47	20.00	mg/kg
Available Nitrogen	Food & Agriculture Organization (U.N-2007)	341.61	20.00	mg/kg

Page 1 of 2

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Test Report

Print Date : 22/03/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-001960.001

JOE No : KG13-001960

Report Control No : KGR0000012732

Analysis	Method	Result	Limit of Reporting (LOR)	Unit
Available Potassium (as K)	Soil & Water Book By P.K. Gupta	1090.86	1.00	mg/kg
Available Magnesium (as Mg)	Soil & Water Book By P.K. Gupta	1428.88	1.00	mg/kg
Lead (as Pb)	USEPA 3052	18.12	2.00	mg/kg
Chromium (as Cr)	USEPA 3052	70.60	2.00	mg/kg
Mercury (as Hg)	USEPA 3052	1.19	1.00	mg/kg
Total Organic Matter	Black & Walkely Wet Digestion Method	0.48	0.01	%

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

Authorized Signatory

****End of Report****

Page 2 of 2

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Test Report

Print Date : 22/03/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-001960.002

JOE No : KG13-001960

Report Control No : KGR0000012732

Sample Described by Customer as : SOIL(COMPOSITE)

Client Name : Hindalco Industries Limited(Mines Division)
Client Address : Lohardaga,
Postal Code : 835203
State : Jharkhand
Country : India
Sample Type : SOIL(COMPOSITE)
Received : 12/03/2013
Registered : 12/03/2013
Marks on Sample : Location:Harapart 3 No. Quarry Reclaimed Area
Sampling Site : Shrengdag(155.81)/(140.07)/Jalim&Sanal Bauxite Mines(Shrengdag plateau)
Sample Collected : 26.02.2013
Quantity : 2.5Kg app
Test Start/End Date : 12/03/2013 - 21/03/2013

Analysis	Method	Result	Limit of Reporting (LOR)	Unit
Conductivity (1:5) Soil Suspension. (1 : 2 aqueous solution)	F.A.U.N (2007)	26.0	1.00	µs/cm
pH (1:2) Soil Suspension (1 : 2 aqueous solution)	F.A.U.N (2007)	6	0.50	--
Porosity	F.A.U.N (2007)	48.58	-	%
Bulk Density	By Bulk Density Apparatus	1.12	0.10	gram/ml
Phosphorus (as P)	F.A.U.N (2007)	<20.000	20.00	mg/kg
Texture	F.A.U.N (2007)	Sandy clay loam	-	
Clay	F.A.U.N (2007)	32.5	5.00	%
Sand	F.A.U.N (2007)	57.5	1.00	%
Silt	F.A.U.N (2007)	10.0	1.00	%
Available Chloride (as Cl)	Soil & Agriculture Organization (U.N-2007)	<20.00	20.00	mg/kg
Available Nitrogen	Food & Agriculture Organization (U.N-2007)	280.28	20.00	mg/kg

Page 1 of 2

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Test Report

Print Date : 22/03/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-001960.002

JOE No : KG13-001960

Report Control No : KGR0000012732

Analysis	Method	Result	Limit of Reporting (LOR)	Unit
Available Potassium (as K)	Soil & Water Book By P.K. Gupta	1570.33	1.00	mg/kg
Available Magnesium (as Mg)	Soil & Water Book By P.K. Gupta	2095.47	1.00	mg/kg
Lead (as Pb)	USEPA 3052	12.75	2.00	mg/kg
Chromium (as Cr)	USEPA 3052	60.47	2.00	mg/kg
Mercury (as Hg)	USEPA 3052	<1.00	1.00	mg/kg
Total Organic Matter	Black & Walkely Wet Digestion Method	0.40	0.01	%

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

Authorized Signatory

****End of Report****

Page 2 of 2

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Test Report

Print Date : 02/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002097.001

JOE No : KG13-002097

Report Control No : KGR0000013918

Sample Described by Customer as : SPRING WATER

Client Name : Hindalco Industries Limited(Mines Division)
 Client Address : Lohardaga,
 Postal Code : 835203
 State : Jharkhand
 Country : India
 Sample Type : SPRING WATER
 Received : 18/03/2013
 Registered : 18/03/2013
 Marks on Sample : Location: Serendag-Chapa Kona
 Quantity : 5.5L app
 Sample Collected : 11.03.2013, time :11.00 am
 Test Start/End Date : 18/03/2013 - 01/04/2013

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible
Colour	IS:3025 (Part-4):1983 (Reaff.2006)	5.0	HZ	5	15
Odour	IS:3025 (Part-5):1983 (Reaff.2006)	Agreeable		Agreeable	Agreeable
Taste	IS:3025 (Part-8):1983 (Reaff.2006)	Agreeable		Agreeable	Agreeable
pH	IS:3025 (Part-11):1983 (Reaff.2006)	7.00*		6.5	8.5
Total Hardness (as CaCO ₃)	IS:3025 (Part-21):1983 (Reaff.2006)	2.52	mg/L	200	600
Iron (as Fe)	IS:3025 (Part-2)	0.23	mg/L	0.3	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	<0.10	mg/L	1.0	1.5
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff.2003)	<0.10	mg/L	0.2	1.0
Chloride (as Cl)	IS:3025 (Part-32):1988 (Reaff.1999)	<5.00	mg/L	250	1000
Total Dissolved Solids	IS:3025 (Part-16):1984 (Reaff.1996)	8.80	mg/L	500	2000
E.coli	IS:1622:1981(Reaff.2003)	Absent	per 100ml		Absent/100m

Page 1 of 3

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Test Report

Print Date : 02/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002097.001

JOE No : KG13-002097

Report Control No : KGR0000013918

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible
Coliform bacteria	IS:1622-1981 (Reaffirmation 2003)	Present	per 100ml	Absent/100m	1
Calcium (as Ca)	IS:3025 (Part-40):1991 (Reaff.2003)	<1.00	mg/L	75	200
Magnesium (as Mg)	IS:3025 (Part-46):1994 (Reaff.1999)	<1.00	mg/L	30	100
Copper (as Cu)	IS:3025 (Part-2)	<0.01	mg/L	0.05	1.5
Manganese (as Mn)	IS:3025 (Part-2)	<0.01	mg/L	0.1	0.3
Sulphate (as SO4)	IS:3025 (Part-24):1986 (Reaff.1998)	<2.00	mg/L	200	400
Nitrate (as NO3)	IS:3025 (Part-34):1988 (Reaff.1999)	<0.50	mg/L	45	No relaxation
Phenolic Compound (as C6H5OH)	IS:3025 (Part-43):1992 (Reaff.2003)	<0.001	mg/L	0.001	0.002
Mercury (as Hg)	IS:3025 (Part-48):1994 (Reaff.1999)	<0.001	mg/L	0.001	No relaxation
Cadmium (as Cd)	IS:3025 (Part-41):1992 (Reaff.2003)	<0.003	mg/L	0.003	No relaxation
Selenium (as Se)	IS:3025 (Part-2)	<0.005	mg/L	0.01	No relaxation
Arsenic (as As)	IS:3025 (Part-37):1988 (Reaff.1999)	<0.005	mg/L	0.01	No relaxation
Cyanide (as CN)	IS:3025 (Part-27):1986 (Reaff.2003)	<0.020	mg/L	0.05	No relaxation
Lead (as Pb)	IS:3025 (Part-47):1994 (Reaff.1999)	0.029	mg/L	0.01	No relaxation
Zinc (as Zn)	IS:3025 (Part-2)	<0.01	mg/L	5	15
Anionic Surface Active Agent (as MBAS)	IS:13428:2005 Annex K	<0.05	mg/L	0.2	1.0
Chromium (as Cr)	IS:3025 (Part-2)	<0.01	mg/L	0.05	No relaxation
Mineral Oil	IS:3025 (Part-39):1991 (Reaff.2003)	<0.01	mg/L	0.5	No relaxation
Total Alkalinity (as CaCO3)	IS:3025 (Part-23):1986 (Reaff.2003)	4.14	mg/L	200	600
Aluminium (as Al)	IS:3025 (Part-55):2003	<0.03	mg/L	0.03	0.2
Boron (as B)	IS:3025 (Part-57):2005	0.13	mg/L	0.5	1.0
Turbidity	IS:3025 (Part-10):1984 (Reaff.2006)	2.25	NTU	1	5

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Test Report

Print Date : 02/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002097.001

JOE No : KG13-002097

Report Control No : KGR0000013918

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	Acceptable	Permissible
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Remark : *Analyzed at site.

Per pro SGS India Private Lt

Asish Chakraborty
Laboratory Manager
Authorized Signatory

****End of Report****

Page 3 of 3

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Test Report

Print Date : 01/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002094.001

JOE No : KG13-002094

Report Control No : KGR0000013687

Sample Described by Customer as : GROUND WATER

Client Name : Hindalco Industries Limited(Mines Division)
 Client Address : Lohardaga,
 Postal Code : 835203
 State : Jharkhand
 Country : India
 Sample Type : GROUND WATER
 Received : 18/03/2013
 Registered : 18/03/2013
 Marks on Sample : Location: Serendag-Hadabad Village
 Quantity : 5.5L app
 Sample Collected : 11.03.2013, time : 2.30 pm
 Test Start/End Date : 18/03/2013 - 01/04/2013

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible
Colour	IS:3025 (Part-4):1983 (Reaff.2006)	20.0	Hz	5	15
Odour	IS:3025 (Part-5):1983 (Reaff.2006)	Agreeable		Agreeable	Agreeable
Taste	IS:3025 (Part-6):1983 (Reaff.2006)	Agreeable		Agreeable	Agreeable
pH	IS:3025 (Part-11):1983 (Reaff.2006)	7.20*		6.5	8.5
Total Hardness (as CaCO3)	IS:3025 (Part-21):1983 (Reaff.2006)	4.04	mg/L	200	600
Iron (as Fe)	IS:3025 (Part-2)	3.03	mg/L	0.3	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	<0.10	mg/L	1.0	1.5
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff.2003)	<0.10	mg/L	0.2	1.0
Chloride (as Cl)	IS:3025 (Part-32):1988 (Reaff.1999)	<5.00	mg/L	250	1000
Total Dissolved Solids	IS:3025 (Part-16):1984 (Reaff.1996)	15.00	mg/L	500	2000
E.coli	IS:1622:1981(Reaff.2003)	Absent	per 100ml		Absent/100ml
Coliform bacteria	IS:1622-1981 (Reaffirmation 2003)	Absent	per 100ml		Absent/100ml
Calcium (as Ca)	IS:3025 (Part-40):1991 (Reaff.2003)	1.01	mg/L	75	200
Magnesium (as Mg)	IS:3025 (Part-46):1994 (Reaff.1999)	<1.00	mg/L	30	100

Page 1 of 3

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Test Report

Print Date : 01/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002094.001

JOE No : KG13-002094

Report Control No : KGR0000013687

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible
Copper (as Cu)	IS:3025 (Part-2)	0.04	mg/L	0.05	1.5
Manganese (as Mn)	IS:3025 (Part-2)	0.03	mg/L	0.1	0.3
Sulphate (as SO ₄)	IS:3025 (Part-24):1986 (Reaff.1998)	<2.00	mg/L	200	400
Nitrate (as NO ₃)	IS:3025 (Part-34):1988 (Reaff.1999)	2.04	mg/L	45	No relaxation
Phenolic Compound (as C ₆ H ₅ OH)	IS:3025 (Part-43):1992 (Reaff.2003)	<0.001	mg/L	0.001	0.002
Mercury (as Hg)	IS:3025 (Part-48):1994 (Reaff.1999)	<0.001	mg/L	0.001	No relaxation
Cadmium (as Cd)	IS:3025 (Part-41):1992 (Reaff.2003)	<0.003	mg/L	0.003	No relaxation
Selenium (as Se)	IS:3025 (Part-2)	<0.005	mg/L	0.01	No relaxation
Arsenic (as As)	IS:3025 (Part-37):1988 (Reaff.1999)	<0.005	mg/L	0.01	No relaxation
Cyanide (as CN)	IS:3025 (Part-27):1986 (Reaff.2003)	<0.020	mg/L	0.05	No relaxation
Lead (as Pb)	IS:3025 (Part-47):1994 (Reaff.1999)	<0.005	mg/L	0.01	No relaxation
Zinc (as Zn)	IS:3025 (Part-2)	0.10	mg/L	5	15
Anionic Surface Active Agent (as MBAS)	IS:13428:2005: Annex K	<0.05	mg/L	0.2	1.0
Chromium (as Cr)	IS:3025 (Part-2)	<0.01	mg/L	0.05	No relaxation
Mineral Oil	IS:3025 (Part-39):1991 (Reaff.2003)	<0.01	mg/L	0.5	No relaxation
Total Alkalinity (as CaCO ₃)	IS:3025 (Part-23):1986 (Reaff.2003)	6.62	mg/L	200	600
Aluminium (as Al)	IS:3025 (Part-55):2003	<0.03	mg/L	0.03	0.2
Boron (as B)	IS:3025 (Part-57):2005	0.11	mg/L	0.5	1.0
Turbidity	IS:3025 (Part-10):1984 (Reaff.2006)	30.40	NTU	1	5

Remark : *Analyzed at site.

Page 2 of 3

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Test Report

Print Date : 01/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002094.001

JOE No : KG13-002094

Report Control No : KGR0000013687

Per pro SGS India Private Lt

Aish Chakraborty
Laboratory Manager
Authorized Signatory

****End of Report****

Page 3 of 3

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TEST REPORT

Report No. : CA:GL:3120015198 DATE : 18/10/2012

JOE No. : 1212806597

Report Control No.:3125016276

SAMPLE IDENTIFIED AS : AMBIENT AIR QUALITY MONITORING
CUSTOMER NAME HINDALCO INDUSTRIES LIMITED (MINES DIVISION)
ADDRESS LOHARDAGA, JHARKHAND
CITY 835302
COUNTRY INDIA
SAMPLING METHOD N.A.
SAMPLE DESCRIPTION AMBIENT AIR QUALITY MONITORING

MARK/LOCATION SITE:SHRENDAG(155.81)/SERENDGAG(140.07)/JALIM&SANAL BAUXITE
MINES(SHRENDAG PLATEAU)
LOCATION:MINES LEASE AREA (CORE ZONE)
DATE:29.09.12 TO 30.09.12
SAMPLE RECD ON 11/10/2012
TEST START DATE 11/10/2012
TEST END DATE 18/10/2012

Table with 4 columns: TESTS, PROTOCOL, RESULT, REQUIREMENT/LIMIT. Rows include CARBON MONOXIDE (CO), OXIDES OF NITROGEN (NOx), PARTICULATE MATTER(10), PARTICULATE MATTER(2.5), and SULPHUR DIOXIDE (SO2).

**** End of Report ****

per pro SGS India Private Ltd.

Signature of Asish Chakraborty, Manager Laboratory

Page 1 of 1

Signature of A. E. Datta

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TEST REPORT

Report No. : CA:GL:3120015199 DATE : 18/10/2012

JOE No. : 1212806597

Report Control No.:3125016277

SAMPLE IDENTIFIED AS : AMBIENT AIR QUALITY MONITORING
CUSTOMER NAME HINDALCO INDUSTRIES LIMITED (MINES DIVISION)
ADDRESS LOHARDAGA, JHARKHAND
CITY 835302
COUNTRY INDIA
SAMPLING METHOD N.A.
SAMPLE DESCRIPTION AMBIENT AIR QUALITY MONITORING

MARK/LOCATION SITE:SHRENDAG(155.81)/SERENDGAG(140.07)/JALIM&SANAL BAUXITE MINES(SHRENGDAG PLATEAU)
LOCATION:PAURNI VILLAGE (BUFFER ZONE)
DATE:29.09.12 TO 30.09.12
SAMPLE RECD ON 11/10/2012
TEST START DATE 11/10/2012
TEST END DATE 18/10/2012

Table with 4 columns: TESTS, PROTOCOL, RESULT, REQUIREMENT/LIMIT. Rows include CARBON MONOXIDE (CO), OXIDES OF NITROGEN (NOx), PARTICULATE MATTER(10), PARTICULATE MATTER(2.5), and SULPHUR DIOXIDE (SO2).

***** End of Report *****

per pro SGS India Private Ltd.

Signature of Asish Chakraborty, Manager Laboratory

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TEST REPORT

Report No. : CA:GL:3120015200

DATE : 18/10/2012

JOE No. : 1212806597

Report Control No.:3125016278

SAMPLE IDENTIFIED AS : AMBIENT AIR QUALITY MONITORING
 CUSTOMER NAME HINDALCO INDUSTRIES LIMITED (MINES DIVISION)
 ADDRESS LOHARDAGA, JHARKHAND
 CITY 835302
 COUNTRY INDIA
 SAMPLING METHOD N.A.
 SAMPLE DESCRIPTION AMBIENT AIR QUALITY MONITORING

MARK/LOCATION SITE:SHRENDAG(155.81)/SERENDGAG(140.07)/JALIM&SANAL BAUXITE
 MINES(SHRENDAG PLATEAU)
 LOCATION:KACHKI VILLAGE (BUFFER ZONE)
 DATE:30.09.12 TO 01.10.12
 SAMPLE RECD ON 11/10/2012
 TEST START DATE 11/10/2012
 TEST END DATE 18/10/2012

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT As per CPCB RESIDENTIAL AREA	
			MIN	MAX
CARBON MONOXIDE (CO)	USEPA CHAPTER-2	<0.1 ppm		1.7ppm(8h)
OXIDES OF NITROGEN (NOx)	IS 5182 PART 6:2006	5.3 µg/m3		80 µg/m3
PARTICULATE MATTER(10)	IS:5182(PART 23)2006	55.3 µg/m3		100 µg/m3
PARTICULATE MATTER(2.5)	USPEA CFR40(50), Appendix L	27.2 µg/m3		60 µg/m3
SULPHUR DIOXIDE (SO2)	IS 5182:PART 2:2001	< 4.0 µg/m3		80 µg/m3

**** End of Report ****

per pro SGS India Private Ltd.

S. A. Chakraborty
 Asish Chakraborty
 Manager Laboratory

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TEST REPORT

Report No. : CA:GL:3120015201

DATE : 18/10/2012

JOE No. : 1212806597

Report Control No.:3125016279

SAMPLE DRAWN BY SGS INDIA PRIVATE LIMITED

SAMPLE IDENTIFIED AS : AMBIENT AIR QUALITY MONITORING
CUSTOMER NAME HINDALCO INDUSTRIES LIMITED (MINES DIVISION)
ADDRESS LOHARDAGA, JHARKHAND
CITY 835302
COUNTRY INDIA
SAMPLING METHOD N.A.
SAMPLE DESCRIPTION AMBIENT AIR QUALITY MONITORING

MARK/LOCATION SITE:SHRENDAG(155.81)/SERENDGAG(140.07)/JALIM&SANAL BAUXITE
MINES(SHRENGDAG PLATEAU)
LOCATION:JALIM VILLAGE (BUFFER ZONE)
DATE:30.09.12 TO 01.10.12

SAMPLE RECD ON 11/10/2012
TEST START DATE 11/10/2012
TEST END DATE 18/10/2012

Table with 5 columns: TESTS, PROTOCOL, RESULT, REQUIREMENT/LIMIT (As per CPCB RESIDENTIAL AREA MIN, MAX). Rows include CARBON MONOXIDE (CO), OXIDES OF NITROGEN (NOx), PARTICULATE MATTER(10), PARTICULATE MATTER(2.5), and SULPHUR DIOXIDE (SO2).

***** End of Report *****

per pro SGS India Private Ltd.

Signature of Asish Chakraborty, Manager Laboratory

Page 1 of 1

Signature of R. Datta, Chemist cum QA

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TEST REPORT

Report No. : CA:GL:3120013026 DATE : 12/09/2012

JOE No. : 1212805744

Control No.:3125014125

SAMPLE COLLECTED BY SGS

SAMPLE IDENTIFIED AS : SPRING WATER
COMPANY NAME HINDALCO INDUSTRIES LIMITED (MINES DIVISION)
ADDRESS LOHARDAGA, JHARKHAND
CITY 835302
SAMPLING METHOD APHA 1060B 9060A
SAMPLE DESCRIPTION SPRING WATER
SAMPLE CONDITION IN PLASTIC BOTTLE
SAMPLE QTY. 5.5L APP
MARK/LOCATION SERENDAG BANDAPATH
COLLECTED ON 28/08/12, TIME:12.15 PM
REGISTERED ON 01/09/2012
TEST START DATE 03/09/2012
TEST END DATE 12/09/2012

Table with 4 columns: TESTS, PROTOCOL, RESULT, REQUIREMENT/LIMIT. Rows include ALKALINITY (as CaCO3), ALUMINIUM (as Al), ANIONIC DETERGENTS (as MBAS), ARSENIC (as As), BORON, and CADMIUM (as Cd).

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TEST REPORT

Report No. : CA:GL:3120013026	DATE : 12/09/2012
--------------------------------------	--------------------------

JOE No. : 1212805744 Control No.:3125014125

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT	
			As per IS	
			10500:1991(REAFF.1993)	
			Desirable	Permissible
CALCIUM (as Ca)	IS 3025:PART 40 :1991(Reaff.2003)	<1.0 mg/l	75mg/l	200mg/l
CHLORIDE (as Cl)	Clause 2 of IS 3025 Part 32:1988(Reaff. 1999)	<2.0 mg/l	250mg/l	1000mg/l
CHROMIUM (Cr6+)	IS 3025:PART 52:2003	<0.01 mg/l	0.05mg/l	No Relax.
COLOUR (HAZEN UNITS)	IS 3025:PART 4 :1983(Reaff.2002)	5	5.0	25
COPPER	IS 3025: PART 42:1992(Reaff. 2003) BY ICPOES	<0.01 mg/l	0.05mg/l	1.5mg/l
CYANIDE (as CN)	IS 3025:PART 27 :1986(Reaff.1998)	<0.02 mg/l	0.05mg/l	No Relax.
E.coli	IS 1622:1981(Reaff.2003)	Absent/100ml		ABS/100ml
Faecal coliforms	IS 1622:1981(Reaff2003)	Absent/100ml		ABS/100ml
FLUORIDE	IS:3025(PART 60):2008	<0.10 mg/l	1.0mg/l	1.5mg/l
IRON (as Fe)	IS 3025:PART 53:2003 (BY ICPOES)	0.10 mg/l	0.3mg/l	1 mg/l
LEAD (as Pb)	IS 3025:PART 47:1994(Reaff.2003) BY ICPOES	0.03 mg/l	0.05mg/l	No Relax.
MAGNESIUM (as Mg)	IS 3025:PART 46 :1994(Reaff.1999)	<1.0 mg/l	30mg/l	100mg/l
MANGANESE	IS:3025(PART 59) 2006	<0.01 mg/l	0.1mg/l	0.3mg/l

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TEST REPORT

Report No. : CA:GL:3120013026 **DATE : 12/09/2012**
 JOE No. : 1212805744 Control No. :3125014125

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT As per IS 10500:1991(REAFF.1993	
			Desirable	Permissible
MERCURY (as Hg)	IS 3025:PART 48 :1994(Reaff.1999)BY ICPOES	<0.001 mg/l	0.001mg/l	No Relax.
MINERAL OIL	CLAUSE 6 OF IS 3025:PART 39:1991(Reaff. 2003)	BDL(DL-0.01 mg/l)	0.01mg/l	0.03mg/l
NITRATE	IS 3025:PART 34 :1988(Reaff.1999)	5.53 mg/l	45mg/l	No Relax.
ODOUR	IS 3025:PART 5:1983(Reaff.2002)	Unobjectionable	Unobject.	Unobject.
pH	IS 3025:PART 11:1983(Reaff.2002)	7.4 *	6.5-8.5	No Relax.
PHENOLIC COMPOUNDS (as C6H5OH)	IS 3025(Part 43)1992(Reaff 2005)	<0.001 mg/l	0.001mg/l	0.002mg/l
RESIDUAL FREE CHLORINE	GEN/SOP/CALLAB-13 3	<0.10 mg/l *	0.2mg/l	--
SELENIUM	IS 3025:PART 56:2003 (BY ICPOES)	<0.005 mg/l	0.01mg/l	No Relax.
SULPHATE	CLAUSE 4 OF IS 3025:PART 24:1986(Reaff. 2003)	<2.0 mg/l	200mg/l	400mg/l
TASTE	IS 3025:PART 7 :1984(Reaff.2002)	Agreeable	Agreeable	-
Total Coliforms	IS 1622:1981(Reaff.2003)	<2 MPN/100ml		10/100 ml
TOTAL HARDNESS (as CaCO3)	IS 3025:PART 21 :1983(Reaff.2002)	3.80 mg/l	300mg/l	600mg/l
TURBIDITY(in NTU)	IS 3025:PART 10 :1984(Reaff.2002)	1.44	5.0NTU	10NTU

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TEST REPORT

Report No. : CA:GL:3120013026 DATE : 12/09/2012

JOE No. : 1212805744 Control No.:3125014125

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT	
			Desirable	Permissible
			As per IS 10500:1991(REAFF.1993)	
ZINC (as Zn)	IS 3025 Part 49:1991(Reaff.2003) BY ICPOES	0.01 mg/l	5mg/l	15mg/l
TOTAL DISSOLVED SOLIDS	IS 3025:PART 16:1984(Reaff.2002)	14 mg/l	500mg/l	2000mg/l

* Analyzed at site.

***** End of Report *****

per pro SGS India Private Ltd.

Dr.Nemai Ghosh
Manager Laboratory

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TEST REPORT

Report No. : CA:GL:3120013032

DATE : 13/09/2012

JOE No. : 1212805745

Control No.:3125014193

SAMPLE COLLECTED BY SGS

SAMPLE IDENTIFIED AS : GROUND WATER
 COMPANY NAME HINDALCO INDUSTRIES LIMITED (MINES DIVISION)
 ADDRESS LOHARDAGA, JHARKHAND
 CITY 835302
 SAMPLING METHOD APHA 1060B 9060A
 SAMPLE DESCRIPTION GROUND WATER
 SAMPLE CONDITION IN PLASTIC BOTTLE
 SAMPLE QTY. 5.5L APP
 MARK/LOCATION SERENDAG-HARAPATH
 COLLECTED ON 28/08/12, TIME: 3.00 PM
 REGISTERED ON 01/09/2012
 TEST START DATE 03/09/2012
 TEST END DATE 13/09/2012

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT	
			As per IS	
			10500:1991(REAFF.1993	
			Desirable	Permissible
ALKALINITY (as CaCO ₃)	IS 3025:PART 23 :1986(Reaff.1998)	<5.0 mg/l	200mg/l	600mg/l
ALUMINIUM (as Al)	IS 3025 : Part 55 : 2003	0.02 mg/l	0.03mg/l	0.2mg/l
ANIONIC DETERGENTS (as MBAS)	ANNEX. K of IS 13428: 2005	<0.05 mg/l	0.2mg/l	1mg/l
ARSENIC (as As)	IS 3025:PART 37:1988(Reaff.1999)BY ICPOES	<0.005 mg/l	0.01mg/l	No Relax.
BORON	Annex.H OF IS:13428:2005	<0.05 mg/l	1.0mg/l	5.0mg/l
CADMIUM (as Cd)	IS 3025:PART 41 :1992(Reaff.1998)BY ICPOES	<0.005 mg/l	0.01mg/l	No Relax.

Page 1 of 4

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TEST REPORT

Report No. : CA:GL:3120013032	DATE : 13/09/2012
JOE No. : 1212805745	Control No.:3125014193

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT	
			As per IS	
			10500:1991(REAFF.1993)	
			Desirable	Permissible
CALCIUM (as Ca)	IS 3025:PART 40 :1991(Reaff.2003)	<1.0 mg/l	75mg/l	200mg/l
CHLORIDE (as Cl)	Clause 2 of IS 3025 Part 32:1988(Reaff. 1999)	<2.0 mg/l	250mg/l	1000mg/l
CHROMIUM (Cr6+)	IS 3025:PART 52:2003	<0.01 mg/l	0.05mg/l	No Relax.
COLOUR (HAZEN UNITS)	IS 3025:PART 4 :1983(Reaff.2002)	10	5.0	25
COPPER	IS 3025: PART 42:1992(Reaff. 2003) BY ICPOES	<0.01 mg/l	0.05mg/l	1.5mg/l
CYANIDE (as CN)	IS 3025:PART 27 :1986(Reaff.1998)	<0.02 mg/l	0.05mg/l	No Relax.
E.coli	IS 1622:1981(Reaff.2003)	Absent/100ml		ABS/100ml
Faecal coliforms	IS 1622:1981(Reaff2003)	Absent/100ml		ABS/100ml
FLUORIDE	IS:3025(PART 60):2008	<0.10 mg/l	1.0mg/l	1.5mg/l
IRON (as Fe)	IS 3025:PART 53:2003 (BY ICPOES)	.85 mg/l	0.3mg/l	1 mg/l
LEAD (as Pb)	IS 3025:PART 47:1994(Reaff.2003) BY ICPOES	0.03 mg/l	0.05mg/l	No Relax.
MAGNESIUM (as Mg)	IS 3025:PART 46 :1994(Reaff.1999)	<1.0 mg/l	30mg/l	100mg/l
MANGANESE	IS:3025(PART 59) 2006	0.03 mg/l	0.1mg/l	0.3mg/l

Page 2 of 4

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TEST REPORT

Report No. : CA:GL:3120013032 **DATE : 13/09/2012**

JOE No. : 1212805745

Control No.:3125014193

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT	
			As per IS 10500:1991(REAFF.1993)	
			Desirable	Permissible
MERCURY (as Hg)	IS 3025:PART 48 :1994(Reaff.1999)BY ICPOES	<0.001 mg/l	0.001mg/l	No Relax.
MINERAL OIL	CLAUSE 6 OF IS 3025:PART 39:1991(Reaff. 2003)	BDL(DL-0.01 mg/l)	0.01mg/l	0.03mg/l
NITRATE	IS 3025:PART 34 :1988(Reaff.1999)	<0.50 mg/l	45mg/l	No Relax.
ODOUR	IS 3025:PART 5:1983(Reaff.2002)	Unobjectionable	Unobject.	Unobject.
pH	IS 3025:PART 11:1983(Reaff.2002)	7.6*	6.5-8.5	No Relax.
PHENOLIC COMPOUNDS (as C6H5OH)	IS 3025(Part 43)1992(Reaff 2005)	<0.001 mg/l	0.001mg/l	0.002mg/l
RESIDUAL FREE CHLORINE	GEN/SOP/CALLAB-13 3	<0.10 mg/l *	0.2mg/l	--
SELENIUM	IS 3025:PART 56:2003 (BY ICPOES)	<0.005 mg/l	0.01mg/l	No Relax.
SULPHATE	CLAUSE 4 OF IS 3025:PART 24:1986(Reaff. 2003)	<2.0 mg/l	200mg/l	400mg/l
TASTE	IS 3025:PART 7 :1984(Reaff.2002)	Agreeable	Agreeable	-
Total Coliforms	IS 1622:1981(Reaff.2003)	<2 MPN/100ml		10/100 ml
TOTAL HARDNESS (as CaCO3)	IS 3025:PART 21 :1983(Reaff.2002)	<1.0 mg/l	300mg/l	600mg/l
TURBIDITY(in NTU)	IS 3025:PART 10 :1984(Reaff.2002)	7.2	5.0NTU	10NTU

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TEST REPORT

Report No. : CA:GL:3120013032 **DATE : 13/09/2012**

JOE No. : 1212805745

Control No.:3125014193

TESTS	PROTOCOL	RESULT	REQUIREMENT/LIMIT	
			Desirable	Permissible


As per IS
10500:1991(REAFF.1993
}

ZINC (as Zn)	IS 3025 Part 49:1991(Reaff.2003) BY ICPOES	<0.01 mg/l	5mg/l	15mg/l
TOTAL DISSOLVED SOLIDS	IS 3025:PART 16:1984(Reaff.2002)	<10 mg/l	500mg/l	2000mg/l

Remarks : Based on the above parameters the sample does not comply with desirable limit with respect to colour and does not comply with respect to iron,turbidity with the permissible limit as per IS:10500:1991 (Reaff 1993),
BDL=Below Detection Limit ,
* analysed at site.

***** End of Report *****

per pro SGS India Private Ltd.


Dr.Nema Ghosh
Manager Laboratory

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Ref.No- PC/RNC/198/02-

Date.....

CONSENT TO OPERATE

With reference to the application dated 28.08.2012 of G.M. (Operation), M/s Hindalo Industries Ltd; Court Road, I/C Sherengdag Bauxite Mines-155.81 Ha, P.O+Dist- Gumila for consent under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and that under section 21 of the Air (Prevention & Control of Pollution) Act,1981, he (they) is (are) granted consent to bring into use his(their) new/altered/existing outlet(s) for discharge of trade effluent and (or) domestic sewage and to operate his (their) industrial plant to produce maximum 2,60,000 TPA of Bauxite At – Sherengdag, P.O + Dist- Gumila for the period from 01.01.2013 to 31.12.2013 with the following conditions :

1. That, he(they) shall not make any alteration, addition, deletion or modification in the mines without the prior clearance from the Board.
2. That, he(they) shall abide by the obligations provided under section 24, 31 and 33A of the Water (Prevention & Control of Pollution) Act, 1974 and shall extend co-operation to the Board in performing its functions entrusted under section 20, 21, 23, 30 and 32 of the Act.
3. That, he(they) shall comply with the requirements of the Water (Prevention & Control of Pollution) Cess Act, 1977 read with the Water (Prevention & Control of Pollution) Cess Rules, 1978.
4. That, he(they) shall abide by the obligations provided under section 22, 23 and 31A of the Air (Prevention & Control of Pollution) Act, 1981 and shall extend co-operation to the Board in performing its functions entrusted under sections 24, 25 and 26 of the Act.
5. That, he(they) shall abide by the obligations provided under sections 5, 7, 8 and 9 of the Environment (Protection) Act, 1986 and shall extend co-operation in performing the functions entrusted under section 3, 10 and 11 of the Act.
6. That, he(they) shall abide by the applicable provisions of the Environment (Protection) Rules, 1986, the Hazardous Wastes (Management, Handling & Transboundry Movement) Rules, 2008; the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989; the Bio-medical Waste (Management & Handling) Rules, 1998; the Municipal Solid Wastes (Management & Handling) Rules, 2000 and the Batteries (Management & Handling) Rules, 2001.
7. That, he(they) shall maintain the quality of discharge and (or) emission and (or) noise level of environmental pollutants in conformity with the standards as laid under Rule 3 of the Environment (Protection) Rules, 1986.
8. That, he(they) shall monitor his(their) effluent(s), emission(s) and the ambient air, noise level regularly and shall submit the report to the Board in compliance of the condition laid in paragraph 7.

9. That, he(they) shall establish well equipped environmental laboratory with the facilities of system(s) of continuous monitoring of effluent(s), emission(s) ambient water quality(ies), ambient air quality(ies) and ambient noise level(s) and transferring them (monitoring results) to his(their) website(s) and to the e-mail address(es) of the key persons of Jharkhand State Pollution Control Board, Zonal Office, Kolkata and Ministry of Environment & Forests, Regional Office, Bhubaneswar with simultaneous displaying at prominent locations in front of his(their)premises. [*Unit(s) of medium and large scale under 17 categories of polluting industries of category A of EIA Notification, 2006.]
10. That, he(they) shall submit the environmental statement every year by 30th September and shall harvest all rain water precipitating in the premises and do three tier tree plantation in the premises as air barrier.
11. That, he(they) shall submit application for consent under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and that under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 again 120 days before the expiration of the consent order 31.12.2013 or within 120 days from the date of receipt of the order, whichever is earlier.
12. That, unit shall submit quality report of Ambient Air Quality and Ground Water Quality every quarter of the year.
13. That, unit shall submit the status of compliance Environmental Clearance every quarter to the Board.
14. That, unit) shall reclaim the mined out area in phased manner as per EIA/EMP report.
15. That, the unit shall implement harvest rain water of the mine and recharge it to the ground by the method of Central Ground Water Board Guideline that fits most to the mine.
16. That, the unit shall make arrangement to control the fugitive emissions occurring during the mining activities and plying of vehicles on haul as well as transport roads.
17. That, the unit shall ensure that no transport vehicle should ply on road without covering the materials.
18. That, the proponent shall submit compliance report of Environmental Clearance dated 13.04.2007 and submit photographs in compliance of special condition No. VII and IX of the same.

[Handwritten signature]

Sd/-

(Sanjay Kumar Sinha)
MEMBER SECRETARY

Memo no. PC/RNC/198/02- *G 336*

Ranchi, Dated*30.11.13*

Copy forwarded to:- **G.M. (Operation), M/S Hindalco Industries Ltd; (I/C Sherendag Bauxite Mines- 155.81 Ha.), Court Road, P.O+Dist- Lohardaga/ Deputy Commissioner, *Gumla* D.F.O, Ranchi West Forest Division, Lohardaga/ D.M.O, *Gumla* Regional Officer, Regional Office, Ranchi for information & necessary action.**

[Handwritten signature]
30/11

(Sanjay Kumar Sinha)
MEMBER SECRETARY

[Handwritten signature]

ADITYA BIRLA



BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2012-13

The composite cost during the year 2012-13 (April to March) for environmental protection & pollution control by Jharkhand Mines division of Hindalco Industries Ltd for implementation 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, Chiro kukud, & Orsa pat.

Sl No	Description	Budget (in Lakh Rs.)	Actual (in Lakh Rs.) FY 2012-2013
1	Pollution Control & Environment monitoring	7.50	11.32
2	Reclamation/ Back filing & Rehabilitation	**	46.60
3	Green belt & Plantation	25.00	88.09
4	Rural Development	65.00	81.50

**part of OB removed cost.


Convener

Environment Management Cell.

HINDALCO INDUSTRIES LIMITED
Hindalco Complex
Court Road, Lohardaga-835302
Distt. Lohardaga (Jharkhand)

Telephone: +91 6526 224112/224015/223113
Fax: +91 6526 224118

Website: www.hindalco.com



Date:20.03.13

OFFICE ORDER

In connection with the earlier office order dated 12.11.2011 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, AGM (Quality & Environment), Convenor.

Members:

2. Utpal Gupta, Manager (Environment)
3. Biplab Mukherjee (Asst Manager Geology)
4. S. Joshi, Manager (Bagru Mines)
5. A. Anbarasu, Mines Manager (Serengdag A)
6. Ajay Pandey, Mines Manager (Pakhar)
7. Kiran Sankar Singh, Mines Manager (Gurdari)
8. Vidya Sagar Singh, Mines Manager (Serengdag B)
9. Ashish Upadhyay, Mines Manager (Kujam I & II)
10. Amar Bharati, Mines Manager (Amtipani)
11. Monaj Kumar Singh, Mines Manager (Pakhar 109.507 Ha)
12. Rajesh Ambastha, Mines Manager (Chiro Kukud & Orsa)

By order


Bijesh Kumar Jha
VP (Mines)

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

DETAILS OF PRODUCTION, OVERBURDEN HANDLING, AREA MINED OUT AND AREA RECLAIMED
FROM APR-12 TO MAR-13

SN	Name of Leases	Lease Area (in Ha)	Production (in MT)	Overburden Handling (in MT)	Mined Out Area (in Acres)	Reclaimed Area (in Acres)
1	Pakhar Bauxite Mines	8.09	78470	51682	0.75	1.10
2	Pakhar (115.13)	115.13	208503	425872	7.42	2.42
3	Gurdari	584.19	324648	832640	14.70	24.80
4	Kujam-I	80.87	149018	158530	14.70	12.10
5	Kujam-II	157.38	149542	677633	18.18	11.41
6	Amtipani	190.95	149579	468731	18.02	15.37
7	Shrengdag	155.81	259630	570878	19.50	35.00
8	Serengdag Bauxite Mines	140.06	99772	133089	6.52	5.80
9	Jalim & Sanai	12.14	49505	34438	1.24	0.80
10	Bagru	75.41	84320	188767	1.78	9.69
11	Hisri New	14.55	99651	115676	1.24	0.00
12	Chiro-Kukud	152.57	64847	78598	3.13	5.37
M/s Minerals & Minerals Limited						
1	Pakhar Bauxite Mines	15.58	34445	115848	1.25	2.00
2	Pakhar (109.507)	109.507	99840	204868	6.76	1.92