

Ref No: HIL/LHD/VP (M)/MoEF/ 118

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 Kujam-II Bauxite Mining project of M/s Hindalco Industries Limited located in Dist- Gumla, Jharkhand for the period Oct' 2012 - March' 2013.

Ref: Environmental Clearance letter no J-11015/242/2005-IA II(M) dated 14th August 2006 Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for Kujam-II (157.38 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

# <u>KUJAM - II BAUXITE MINES (157.38 Ha)</u> <u>Period : Oct'12 – March'13</u>

# MoEF Environment Clearance ref. no.: J-11015/242/2005 - IA.II(M) dated 14 Aug'06

Sl No	Conditions	Compliance Status
	Specific Conditions	
1	All the conditions stipulated by the State Pollution Control Board in their NOC should be effectively implemented.	Complied
2	The mining operations shall not intersect groundwater table. Prior approval of the MoEF and CGWA shall be obtained for mining below water table.	The mining operation is confined to shallow depth (20m max) and as per the study conducted by authorized agency [Center for Ground Water Studies, Kolkata (WB)] during NovDec '06, the ground water level is in the range of 80-100m from ground level. Hence mining operation will not intersect ground water table.
3	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.	This provision has been taken care of during land acquisition with permission of competent authority i.e. concerned Deputy Commissioner (D.C.) and consent of Raiyat (Land Owner) for 20 years period. All the lands concerned are non-agricultural land (Documents already submitted)
4	Top soil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	It is being ensured & the top soil is being used for reclamation & rehabilitation of mined out areas. Details of land reclamation is enclosed as Annexure
5	The waste generated in the initial period shall be dumped temporarily and backfilled in the mined out area. There shall be no permanent external OB dump in the project area. Concurrent backfilling should start from the fifth year onwards. 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 on six monthly basis.	complied

6	Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil and mineral dump. 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 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 settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.	Catch drains and siltation ponds of appropriate size have been constructed to arrest silt and sediment flows from soil and mineral dump.
7	Plantation shall be raised in an area of 43.5 ha including a green belt of adequate width by planting the native species around the ML area, roads, etc. in consultation with the local DFO/Agriculture Department. The density of the trees should be around 1500 plants per ha.	Plantation is being carried out as per the stipulated condition.
8	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 study has been conducted by Centre for Ground Water Studies, Kolkata, a reputed agency in the field. The same is being studied by us and will be sent to Regional Director, Central Ground Water Board along with our observation for his opinion prior to implementation of scheme.
9	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 (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.	It is being monitored. Monitoring report is enclosed as Annexure
10	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	As per Lease agreement, we are having permission of DC for use of water. Water cess is being paid regularly to JSPCB.

11	The project proponent shall monitor the spring discharge on long term basis (at lease one major spring) both in terms of quantity and quality of water and records maintained. Six monthly report should be submitted to the Ministry of Environment and Forests and its Regional Office located at Bhubneshwar.  Vehicular emissions should be kept under control	To keep vehicular emissions in control
12	and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.	vehicles are periodically checked & repaired. All measures are being taken to control vehicular emission.
13	Drills should either be operated with dust extractors or should be equipped with water injection system	Complied.
14	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented	Blasting time is fixed from 12.00 Noon to 1.00PM. and strictly followed. All mitigative efforts are being done to minimize vibration and control fly rocks due to blasting.
15	Consent to operate should be obtained from SPCB prior to start of production of mine	Consent to operate obtained and the same is valid up to 31.12.13.  (Annexure)
16	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	No colony is proposed. The domestic waste water from drinking water facility will be treated through soak pit and sullage will be used as manure. There will be no wastewater generation from Mining.
17	Land oustees and land loser/affected people should be compensated and rehabilitated as per the National Policy on Resettlement and Rehabilitation of project Affected Families (NPRR), 2003	All land acquisition activities is done as per CNT Act and project affected people / families as have been compensated and rehabilitated as per State Government's R&R Policy which is in line with NPRR,2003.
18	The higher benches of the excavated void to be converted into water reservoir shall be terraced and afforested to stabilize the slopes. Peripheral fencing shall be done along the excavated area.	Planned to implement the same at appropriate time.
19	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.	Final mine Closure Plan will be submitted at appropriate time. Presently we are having approved progressive mine Closure Plan

# **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 & Forests.	Complied.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made	Complied.
3	Conservation measures for protection of flora and fauna in the core & buffer zone should be drawn up in consultation with the local forest and wildlife departments.	Agreed. To be carried out with the local forest and wildlife departments.
4	Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO2, 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.	Complied. Monitoring report enclosed.
5	Data on ambient air quality (RPM, SPM, SO2, NOx) should be regularly submitted to the Ministry including its Regional office located at Bhopal and the State Pollution Control Board / Central Pollution Control Board once in six months.	Monitoring activity initiated, Report annexed.
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.	Water tanker with sprinkling facility have been provided along haul roads, loading unloading,& at transfer points to arrest dust emissions.
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.	PPEs provided to all the worker employed in the mine.
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 31st December, 1993 or as amended from time to time. Oil and grease trap	Presently there is no waste water generated from mine.

	should be installed before discharge of workshop effluents.	
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.	Complied PPE's provided and also periodic training on health and safety issues being organized through VT centre. Occupational health survey has also been done periodically.
10	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) already formed and informed.
11	The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Final mine closure plan will be submitted at appropriate time. Presently we are having approved progressive mine closure plan.
12	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.	Separate budget has been prepared for the purpose. Copy enclosed
13	The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Vide Point no. 11 above.
14	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.	Agreed.
15	A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom and suggestion / representation has been received while processing the proposal.	Complied
16	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's	Complied

	office/ Tehsildar's Office for 30 days.	
17	The project authorities should advertise at least in two local newspapers widely circulated, one of 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 <a href="http://envfor.nic.in">httD://envfor.nic.in</a> and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar.	Complied. (Documents already submitted)



Report No. : CA:GL:3120015207

DATE: 19/10/2012

JOE No.: 1212806597

Report Control No.:3125016390

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

N.A

SAMPLING METHOD

SAMPLE DESCRIPTION AMBIENT AIR QUALITY MONITORING

MARK/LOCATION

SITE:GURDARI/KUJAM-II/KUJAM-I/AMTIPANI BAUXITE MINES (NETERHAT PLATEAU)

LOCATION: MINE LEASE AREA (CORE ZONE) DATE:04.10.12 TO 05.10.12

SAMPLE RECD ON

11/10/2012

**TEST START DATE** 

11/10/2012

TEST END DATE

19/10/2012

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	8.7 µg/m3	80 µg/m3	
PARTICULATE MATTER(10)	IS:5182(PART 23)2006	77.6 µg/m3	100 µg/m3	
PARTICULATE MATTER(2.5)	USPEA CFR40(50), Appendix L	31.5 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.

J. A. Auffa **Asish Chakraborty** Manager Laboratory

Page 1 of 1

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Report No.: CA:GL:3120015208

DATE: 19/10/2012

JOE No.: 1212806597

Report Control No.:3125016391

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: CHATAM VILLAGE (BUFFER ZONE) LOCATION: MINE LEASE AREA (CORE ZONE) Lumm

DATE:04.10.12 TO 05.10.12

SAMPLE RECD ON TEST START DATE

11/10/2012

TEST END DATE

1	1/1	0/2	01	2
1	9/1	0/2	01	2

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	10.6 µg/m3	80 µg/m3
PARTICULATE MATTER(10)	IS:5182(PART 23)2006	60.5 µg/m3	100 µg/m3
PARTICULATE MATTER(2.5)	USPEA CFR40(50), Appendix L	29.9 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.

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Report No.: CA:GL:3120015209

DATE: 19/10/2012

JOE No. : 1212806597

Report Control No.:3125016392

SAMPLE DRAWN BY SGS INDIA PRIVATE LIMITED SAMPLE IDENTIFIED AS : AMBIENT AIR QUALITY MONITORING

**CUSTOMER NAME** 

**ADDRESS** 

HINDALCO INDUSTRIES LIMITED (MINES DIVISION)

CITY

LOHARDAGA, JHARKHAND

835302

COUNTRY

INDIA

SAMPLING METHOD

N.A.

SAMPLE DESCRIPTION AMBIENT AIR QUALITY MONITORING

MARK/LOCATION

SITE:GURDARI/KUJAM-II/KUJAM-I/AMTIPANI BAUXITE MINES (NETERHAT PLATEAU) LOCATION: RAJADERA VILLAGE (BUFFER ZONE)

DATE:05.10.12 TO 06.10.12

SAMPLE RECD ON

11/10/2012

TEST START DATE

11/10/2012

TEST END DATE

19/10/2012

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	6.4 µg/m3	80 µg/m3
PARTICULATE MATTER(10)	IS:5182(PART 23)2006	86.5 µg/m3	100 µg/m3
PARTICULATE MATTER(2.5)	USPEA CFR40(50), Appendix L	39.0 µg/m3	60 µg/m3
SULPHUR DIOXIDE (SO2)	IS 5182:PART 2:2001	< 4.0 µg/m3	80 µg/m3

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

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J. A. Ruffa Asish Chakraborty Manager Laboratory

Page 1 of 1

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Report No.: CA:GL:3120015210

Report Control No.:3125016393

JOE No.: 1212806597

SAMPLE DRAWN BY SGS INDIA PRIVATE LIMITED

CUSTOMER NAME

SAMPLE IDENTIFIED AS : AMBIENT AIR QUALITY MONITORING HINDALCO INDUSTRIES LIMITED (MINES DIVISION)

**ADDRESS** 

LOHARDAGA, JHARKHAND

CITY

835302

COUNTRY

INDIA

SAMPLING METHOD

NA

SAMPLE DESCRIPTION

AMBIENT AIR QUALITY MONITORING

MARK/LOCATION

SITE:GURDARI/KUJAM-II/KUJAM-I/AMTIPANI BAUXITE MINES (NETERHAT PLATEAU) LOCATION: DMAIL VILLAGE (BUFFER ZONE)

DATE:05.10.12 TO 06.10.12

SAMPLE RECD ON

11/10/2012

11/10/2012 19/10/2012

TEST START DATE TEST END DATE

PARTICULATE MATTER(2.5)

SULPHUR DIOXIDE (SQ2)

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	8.6 µg/m3	80 µg/m3
PARTICULATE MATTER(10)	IS:5182(PART 23)2006	73.5 µg/m3	100 µg/m3

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

60 µg/m3

80 µg/m3

per pro SGS India Private Ltd.

DATE: 19/10/2012

t. A. Duta Asish Chakraborty Manager Laboratory

29.8 µg/m3

< 4.0 µg/m3

Page 1 of 1

USPEA CFR40(50), Appendix L

IS 5182:PART 2:2001

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Report No.: CA:GL:3120013023

DATE: 12/09/2012

JOE No.: 1212805743

Control No.:3125014098

### 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

IN PLASTIC BOTTLE

SAMPLE CONDITION SAMPLE QTY.

6.5L APP

IL RKILOCATION

**GURDARI PAKRIGRAH WELL** 

**COLLECTED ON** REGISTERED ON 29/08/2012, TIME: 1.00 PM

**TEST START DATE** 

01/09/2012 01/09/2012

TEST END DATE

12/09/2012

TESTS	PROTOCOL	RESULT	As	MENT/LIMIT per IS (REAFF.1993 ) Permissible
ALKALINITY (as CaCO3)	IS 3025:PART 23 :1986(Reaff.1998)	11.88 mg/l	200mg/l	600mg/l '
ALUMINIUM (as AI)	IS 3025 : Part 55 : 2003	0.09 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.

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04.01.2420043023	DATE: 12/09/2012
Report No. : CA:GL:3120013023	

DE No. : 1212805743	Control No.:3125014098		REQUIREM	ENT/I IMIT
TESTS	PROTOCOL	RESULT	As p 10500:1991(	er IS
			Desirable	Permiss ible
CALCIUM (as Ca)	IS 3025:PART 40 :1991(Reaff,2003)	3.80 mg/l	75mg/l	200mg/l
CHLORIDE ( as CI)	Clause 2 of IS 3025 Part 32:1988(Reaff. 1999)	4.02 mg/l	250mg/l	1000mg/l
	IS 3025:PART 52:2003	<0.01 mg/l	0.05mg/l	No Relax.
CHROMIUM (Cr6+) 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/100n
Faecal coliforms	IS 1622:1981(Reaff2003)	Absent/100ml		ABS/100r
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)		0.3mg/l	1 mg/l
LEAD (as Pb)	IS 3025:PART 47:1994(Reaff.2003) BY ICPOES	0.01 mg/l	0.05mg/l	No Rela
MAGNESIUM ( as Mg)	IS 3025:PART 46 :1994(Reaff.1999)	<1.0 mg/l	30mg/l	100mg/
MANGANESE	IS:3025(PART 59) 2006	0.07 mg/l	0.1mg/l	0.3mg/

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Report No. : CA:GL:31	20013023	DATE: 12/09/2012
110 P 01 124280E743	Control No.:3125014098	

JOE No. : 1212805743 Contr 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/i
NITRATE	IS 3025:PART 34 :1988(Reaff.1999)	1.93 mg/l	45mg/l	No Relax.
ODOUR	IS 3025:PART 5:1983(Reaff.2002)	Unobjectionable	Unobject.	Unobject.
рН	IS 3025:PART 11:1983(Reaff.2002)	7.2 *	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	<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 m
TOTAL HARDNESS (as CaCO3)	IS 3025:PART 21 :1983(Reaff.2002)	11.40 mg/l	300mg/l	
TURBIDITY( in NTU )	IS 3025:PART 10 :1984(Reaff.2002)	8.20	5.0NTU	10NTU

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Control No.:3125014098			
PROTOCOL	RESULT	As	MENT/LIMIT per IS (REAFF.199:
		Desirable	Permiss ible
IS 3025 Part 49:1991(Reaff.2003) BY ICPOES	0.25 mg/l	5mg/l	15mg/l
IS 3025:PART 16:1984(Reaff.2002)	24 mg/l	500mg/l	2000mg/l
		***** End of	Report ****
	IS 3025 Part 49:1991(Reaff.2003) BY ICPOES IS 3025:PART	PROTOCOL RESULT  IS 3025 Part 0.25 mg/l 49:1991(Reaff.2003) BY ICPOES IS 3025:PART 24 mg/l	PROTOCOL RESULT REQUIRED  As  10500:1991  Desirable  IS 3025 Part 0.25 mg/l 5mg/l  49:1991(Reaff.2003) BY ICPOES  IS 3025:PART 24 mg/l 500mg/l

Dr.Nemal Ghosh Manager Laboratory

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Report No.: CA:GL:3120013020

Control No.:3125014051

JOE No.: 1212805742

### 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.

6.5L APP

MARK/LOCATION

KUJAM-BHATIAPAT 30.08.12, TIME: 1.30 PM

COLLECTED ON REGISTERED ON

01/09/2012

TEST START DATE

01/09/2012

**TEST END DATE** 

11/09/2012

TESTS	PROTOCOL R	RESULT	REQUIREMENT/LIMIT <u>As per IS</u> 10500:1991(REAFF,1993)	
			Desirable	Permiss ible
ALKALINITY (as CaCO3)	IS 3025:PART 23 :1986(Reaff.1998)	8.64 mg/l	200mg/l	600mg/l '
ALUMINIUM (as AI)	IS 3025 : Part 55 : 2003	0.03 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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DATE: 11/09/2012



Report No. : CA:GL:31	20013020	DATE: 11/09/2012	
JOE No. : 1212805742	Control No.:3125014051		

JOE NO. : 1212000142				
TESTS	PROTOGOL	RESULT	As	MENT/LIMIT per IS (REAFF.199
			Desirable	Permissible
CALCIUM (as Ca)	IS 3025:PART 40 :1991(Reaff.2003)	1.90 mg/l	75mg/l	200mg/l
CHLORIDE ( as CI)	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/100n
Faecal coliforms	IS 1622:1981(Reaff2003)	Absent/100ml		ABS/100r
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)	<0.05 mg/l	0.3mg/l	1 mg/l
LEAD (as Pb)	IS 3025:PART 47:1994(Reaff.2003) BY ICPOES	0.02 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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Report No. : CA:GL:3	120013020	DATE: 11/09/2012
JOE No. : 1212805742	Control No.:3125014051	

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)	6.35 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)	7.0*	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	<0.10 ppm*	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/100 ml		10/100 ml
TOTAL HARDNESS (as CaCO3)	IS 3025:PART 21 :1983(Reaff.2002)	6.65 mg/l	300mg/l	600mg/l
TURBIDITY( In NTU )	IS 3025:PART 10 :1984(Reaff.2002)	1.90	5.0NTU	10NTU

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Report No. : CA:GL:3120013020		DATE	: 11/09/2012	2
JOE No. : 1212805742	Control No.:3125014051			
TESTS	PROTOCOL	RESULT	As	MENT/LIMIT per IS 1(REAFF.1993
			Desirable	Permissible
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)	24 mg/l	500mg/I	2000mg/l
Remarks: Based on the above postule immunity permissible limit as per DL=Detection Limit Abs=Absent	arameters the sample complies	with maximum of DL=Below Detect	lesirable and tion Limit ;	
* Analysed at site				

\*\*\* End of Report \*\*\*\* per pro \$GS India Private Ltd.

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Report No. : CA:GL:3120013019

JOE No.: 1212805741

DATE: 11/09/2012

Control No.:3125014050

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

**GROUN WATER** IN PLASTIC BOTTLE

SAMPLE CONDITION SAMPLE QTY.

6.5L APP

MARK/LOCATION

KUJAM-BHATIAPATH WELL

**COLLECTED ON** 

30/09/12, TIME:12.30 PM

"EGISTERED ON EST START DATE

01/09/2012 01/09/2012

**TEST END DATE** 

11/09/2012

TESTS	PROTOCOL	RESULT	As	MENT/LIMIT per IS I(REAFF.1993 ) Permissible
ALKALINITY (as CaCO3)	IS 3025:PART 23 :1986(Reaff.1998)	8.64 mg/l	200mg/l	600mg/I
ALUMINIUM (as AI)	IS 3025 : Part 55 : 2003	<0.02 mg/l	0.03mg/l	0.2mg/I
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.

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Report No. : CA:GL:3120013019 DATE: 11/09/2012 JOE No.: 1212805741 Control No :3125014050

AUDIO AND THE SECOND STREET ST	Control No.:3125014050			
TESTS	PROTOCOL	RESULT	As	MENT/LIMIT per IS 1(REAFF.1993
			Desirable	Permissible
CALCIUM (as Ca)	IS 3025:PART 40 :1991(Reaff.2003)	3.04 mg/l	75mg/l	200mg/l
CHLORIDE ( as CI)	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/100 ml		ABS/100ml
Faecal coliforms	IS 1622:1981(Reaff2003)	Absent/100 ml		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)	0.02 mg/l	0.3mg/l	1 mg/l
LEAD (as Pb)	IS 3025:PART 47:1994(Reaff.2003) BY ICPOES	0.02 mg/l	0.05mg/l	No Relax.
MAGNESIUM ( as Mg)	IS 3025:PART 46 :1994(Reaff.1999)	<1.0 mg/l	30mg/l	100mg/i
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:3120013019	)	DATE :	11/09/201:	
JOE No. : 1212805741	ontrol No.:3125014050	DATE:	11/09/2012	2
TESTS	PROTOCOL	RESULT	As	MENT/LIMIT per IS I(REAFF.1993
MERCURY (as Hg)			Desirable	) Permissible
, <b>.</b> ,	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/i
NITRATE	IS 3025:PART 34 :1988(Reaff.1999)	7.83 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)	7.0*	6.5-8.5	No Relax.
PHENOLIC COMPOUNDS (as C6H5OH)	IS 3025(Part 43)1992(Reaff 2005)	<0.001 mg/i	0.001mg/l	0.002mg/l
RESIDUAL FREE CHLORINE	GEN/SOP/CALLAB-13	<0.10 ppm*	0.2mg/l	***
SELENIUM	IS 3025:PART 56:2003 (BY ICPOES)	<0.005 mg/l	0.01mg/i	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)	8.4 MPN/100ml		10/100 ml
TOTAL HARDNESS (as CaCO3)	IS 3025:PART 21 :1983(Reaff.2002)	10.45 mg/l	300mg/I	600mg/l
TURBIDITY( In NTU )	IS 3025:PART 10 :1984(Reaff.2002)	2.04	5.0NTU	10NTU

tory, Behala Industrial Complex, Phase II, First Floor, 620, Diamond Harbour Road, Kolkata-700034 Phone: 81-33-64996700,64994701, Fax: 91-33-24470267

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SGS India Pvt. Ltd. Laboratory, Behala Industrial Complex, Phase II, First Floor, 820, Diagnost Mathematical Complex, Phase III, First Floor, 820, Diagnost Mathematical Complex,



Report No. : CA:GL:3120013019 DATE: 11/09/2012 JOE No. : 1212805741 Control No.:3125014050 TESTS PROTOCOL RESULT REQUIREMENT/LIMIT As per IS 10500:1991(REAFF.1993 ) Permissible Desirable ZINC (as Zn) IS 3025 Part <0.01 mg/l 5mg/l 15mg/l 49:1991(Reaff.2003) BY ICPOES TOTAL DISSOLVED SOLIDS **IS 3025:PART** 24 mg/l 500mg/l 16:1984(Reaff.2002) 2000mg/l Remarks : Based on the above parameters the sample complies with maximum desirable and maximum permissible limit as per IS:10500:1991 (Reaff 1993) , BDL=Below Detection Limit ; DL=Detection Limit Abs=Absent Analysed at site \*\*\* End of Report \*\*\*\* per pro SGS Inglia Private Ltd. Dr.Nemal Ghosh Manager Laboratory

Page 4 of 4

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

**Print Date** 

: 22/03/2013

JOE No : KG13-001961

Report No : KG13-001961.001

Report Control No : KGR0000012735

Sample Described by Customer as : SOIL(COMPOSITE)

Client Name

: Hindalco Industries Limited(Mines Division)

**Client Address** 

: Lohardaga,

Postal Code

: 835203

State

: Jharkhand

Country

Sample Type

: India

Received

: SOIL(COMPOSITE) : 12/03/2013

Registered

: 12/03/2013

Marks on Sample ; Location:Reclaimed area in Quarry 6A

Sampling Site : Gurdari/Kujam-II/Amtipani/Kujam-I Bauxite Mines(Netalhat Plateau)
: 24.02.2013

Quantity

: 2.5Kg app

Test Start/End Date : 12/03/2013 - 21/03/2013

Analysis	Method Resu		Limit of Reporting (LOR)	Unit
Conductivity (1:5) Soil Suspention. (1:2 aqueous solution)	F.A.U.N (2007)	37.6	1.00	µs/cm
pH (1:2) Soil Suspention (1:2 equeous solution)	F.A.U.N (2007)	6	0.50	=
Porosity	F.A.U.N (2007)	48.02		722
Bulk Density	By Bulk Density Apparatus	1.07		%
Phosphorus (as P)	F.A.U.N (2007)	<20.000	0.10	gram/m
Texture	F.A.U.N (2007)	Sandy clay	20.00	mg/kg
Clay	F.A.U.N (2007)	37.5		
Sand	F.A.U.N (2007)	30 <del>30</del> 50 <del>30 4</del> 70	5.00	%
Silt	F.A.U.N (2007)	47.5	1.00	%
Available Chloride (as CI)		15.0	1.00	%
Service Co. 1 to	Soil & Agriculture Organization (U.N-2007)	<20.00	20.00	mg/kg
Available Nitrogen	Food & Agriculture Organization (U.N-2007)	322.46	20.00	mg/kg

Page 1 of 2

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date : 22/03/2013

Report No : KG13-001961.001

JOE No : KG13-001961

Analysis	Report Control No : Method	KGR0000012735 Result	Limit of Reporting (LOR)	Unit
Available Batanatanatana			(2017)	
Available Potassium (as K)	Soil & Water Book By P.K. Gupta	1577.59	1.00	mg/kg
Available Magnesium (as Mg)	Soil & Water Book By P.K.	2378.12		nigrkg
Lead (as Pb)	Gupta	23/0.12	1.00	mg/kg
	USEPA 3052	18.73	2.00	mg/kg
Chromium (as Cr)	USEPA 3052	95.95	2.00	
Mercury (as Hg)	USEPA 3052	<1.00	20 74 To	mg/kg
Total Organic Matter	Black & Walkely Wet Digestion		1.00	mg/kg
	Method Valkery vvet Digestion	0.53	0.01	%

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI Authorized Signatory

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

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Page 2 of 2

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

**Print Date** 

JOE No : KG13-001961

: 22/03/2013

Report No : KG13-001961.002

Report Control No : KGR0000012735

Sample Described by Customer as : SOIL(COMPOSITE)

Client Name

: Hindalco Industries Limited(Mines Division)

Client Address Postal Code

: Lohardaga, : 835203 : Jharkhand

State Country

: India

Sample Type

: SOIL(COMPOSITE)

Received Registered

: 12/03/2013 : 12/03/2013

Marks on Sample

: Location:Reclaimed area in quarry 6B

Sampling Site

: Gurdari/Kujam-II/Amtipani/Kujam-I Bauxite Mines(Netalhat Plateau)

Sample Collected : 24.02.2013

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 Suspention.	F.A.U.N (2007)			
(1:2 aqueous solution)		30.5	1.00	µs/cm
pH (1:2) Soil Suspention	F.A.U.N (2007)			
(1:2 aqueous solution)	,	6	0.50	-
Porosity	F.A.U.N (2007)	50.05		
Bulk Density	By Bulk Density Apparatus	50.25	*	%
Phosphorus (as P)	F.A.U.N (2007)	1.05	0.10	gram/ml
Texture	F.A.U.N (2007)	<20.000	20.00	mg/kg
Clay		Clay		
Sand	F.A.U.N (2007)	42.5	5.00	%
Silt	F.A.U.N (2007)	40.0	1.00	
	F.A.U.N (2007)	17.5	1.00	%
Available Chloride (as CI)	Soil & Agriculture Organization	21.56	Eq. (	%
Available Nitrogen	(U.N-2007) Food & Agriculture		20.00	mg/kg
	Organization (U.N-2007)	339.84	20.00	mg/kg

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SAMPLE COLLECTED BY SGS INDIA PVT, LTD.

Print Date : 22/03/2013

Report No : KG13-001961.002

JOE No : KG13-001961

Analysis	Report Control No : H	(GR0000012735		
	Method	Result	Limit of Reporting (LOR)	Unit
Available Potassium (as K)	Soil & Water Book By P.K.	1769.11	1.00	
Available Magnesium (as Mg)	Gupta Soil & Water Book By P.K.	****	1.00	mg/kg
Lead (as Pb)	Gupta USEPA 3052	2304.82	1.00	mg/kg
Chromium (as Cr)	7.57	10.84	2.00	mg/kg
Mercury (as Hg)	USEPA 3052	62.20	2.00	mg/kg
	USEPA 3052	<1.00	1.00	-
Total Organic Matter	Black & Walkely Wet Digestion Method	0.69	0.01	mg/kg %

Per pro SGS India Private Ltd

Satya Manna

Section Incharge - ENVI

**Authorized Signatory** 

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

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Page 2 of 2

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SAMPLE DRAWN BY SGS INDIA PVT, LTD.

**Print Date** 

: 18/03/2013

JOE No : KG13-001952

Report No : KG13-001952.001

Report Control No : KGR0000012027

Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name Client Address

: Hindalco Industries Limited(Mines Division) : Lohardaga,

Postal Code

: 835203

: Jharkhand

State

Country Sample Type

: India : AMBIENT AIR QUALITY MONITORING

Received

: 12/03/2013

: 12/03/2013

Registered Marks on Sample

: Location : Mines Lease Area, date : 22.02.2013

Sampling Site

: Gurdari/Kujam-II/Amtipani/Kujam-I Bauxite Mines(Neterhal plateau)

Test Start/End Date : 12/03/2013 - 18/03/2013

Analysis	Method	Result			ent/Limit as Per NAAQS
			ua/m3	Min	Max
Particulate Matter (PM10 )	IS:5182 (Part-23 ):2006	81	ug/m3	-	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	41.36	ug/m3		60
Oxides of Nitrogen (NOx)	IS:5182 (Part-6):1975 (Reaff.2004)	8.19	ug/m3	-	80
Sulphur Dioxide (SO2)	IS:5182 (Part-2):2001 (Reaff,2006)	<5.00	ug/m3	_	80
Carbon Monoxide	By NDIR Spectroscopy.	< 0.10	PPM		

Remark: CO Analyzed at site.

### Page 1 of 2

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Print Date : 18/03/2013

Report No : KG13-001952.001

JOE No : KG13-001952

Report Control No : KGR0000012027

Per pro SGS India Private Ltd

Satya Manna

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Section Incharge - ENVI

**Authorized Signatory** 

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

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SAMPLE DRAWN BY SGS INDIA PVT. LTD.

**Print Date** 

: 18/03/2013

Report No : KG13-001952.002

JOE No : KG13-001952

Report Control No

Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

: KGR0000012027

Client Name

: Hindalco Industries Limited(Mines Division)

**Client Address** 

: Lohardaga,

Postal Code

: 835203 ; Jharkhand

State

Country

: India

Sample Type

: AMBIENT AIR QUALITY MONITORING

Received

: 12/03/2013

Registered

: 12/03/2013

Marks on Sample

: Location : Chatam Village, date : 22.02.2013 : Gurdari/Kujam-II/Amtipani/Kujam-I Bauxite Mines(Neterhal plateau)

Sampling Site

Test Start/End Date : 12/03/2013 - 18/03/2013

Analysis	Method	Result	Result Unit	Requirement/Limit as P NAAQS		
				Min	Max	
Particulate Matter (PM10)	IS:5182 (Part-23 ):2006	79	ug/m3		100	
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	32.08	ug/m3		60	
Oxides of Nitrogen (NOx)	IS:5182 (Part-6):1975 (Reaff.2004)	6.59	ug/m3	•	80	
Sulphur Dioxide (SO2)	IS:5182 (Part-2):2001 (Reaff.2006)	<5.00	ug/m3	-	80	
Carbon Monoxide	By NDIR Spectroscopy.	< 0.10	PPM			

Remark: CO Analyzed at site.

#### Page 1 of 2

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SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

Report No : KG13-001952.002

JOE No : KG13-001952

Report Control No : KGR0000012027

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Satya Manna

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Section Incharge - ENVI **Authorized Signatory** 

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SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

Report No : KG13-001952.003

JOE No : KG13-001952

Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Report Control No

: KGR0000012027

**Client Name** 

: Hindalco Industries Limited(Mines Division)

Client Address

: Lohardaga,

Postal Code

: 835203

State

: Jharkhand : India

Country

: AMBIENT AIR QUALITY MONITORING

Sample Type Received

: 12/03/2013

Registered

: 12/03/2013

Marks on Sample : Location : Dmail Village, date : 23.02.2013

Sampling Site

: Gurdari/Kujam-II/Amtipani/Kujam-I Bauxite Mines(Neterhal plateau)

Test Start/End Date : 12/03/2013 - 18/03/2013

Analysis	Method	Result	Unit		ent/Limit as Pei IAAQS
				Min	Max
Particulate Matter (PM10 )	IS:5182 (Part-23 ):2006	67	ug/m3	•	100
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	25.94	ug/m3	•	60
Oxides of Nitrogen (NOx)	IS:5182 (Part-6):1975 (Reaff.2004)	6.37	ug/m3	( <del>*</del> )	80
Sulphur Dioxide (SO2)	IS:5182 (Part-2):2001 (Reaff.2006)	<5.00	ug/m3	-	80
Carbon Monoxide	By NDIR Spectroscopy.	<0.10	PPM		

Remark: CO Analyzed at site.

Page 1 of 2

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SAMPLE DRAWN BY SGS INDIA PVT. LTD.

**Print Date** 

: 18/03/2013

Report No : KG13-001952.003

JOE No : KG13-001952

Report Control No : KGR0000012027

Per pro SGS India Private Ltd

¿ yarma >-Satya Manna

Section Incharge - ENVI **Authorized Signatory** 

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

Page 2 of 2

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Report No : KG13-001952.004

# **Test Report**

SAMPLE DRAWN BY SGS INDIA PVT. LTD.

**Print Date** : 18/03/2013

JOE No : KG13-001952

Report Control No : KGR0000012027 Sample Described by Customer as : AMBIENT AIR QUALITY MONITORING

Client Name

Client Address

: Hindalco Industries Limited(Mines Division) : Lohardaga,

Postal Code

: 835203

State

: Jharkhand

Country

: India

Sample Type Received

: AMBIENT AIR QUALITY MONITORING

: 12/03/2013 : 12/03/2013

Registered Marks on Sample

: Location : Rajadera Village, date : 23.02.2013

Sampling Site

: Gurdari/Kujam-II/Amtipani/Kujam-I Bauxite Mines(Neternal plateau)

Test Start/End Date : 12/03/2013 - 18/03/2013

Analysis	Method	Result	Unit	Requirement/Limit as		
				Min	Max	
Particulate Matter (PM10)	IS:5182 (Part-23 ):2006	50	ug/m3	-	100	
Particulate Matter (PM2.5)	USEPA CFR(40) Appendix-L	20.66	ug/m3		60	
Oxides of Nitrogen (NOx)	IS:5182 (Part-6):1975 (Reaff.2004)	5.06	ug/m3		80	
Sulphur Dioxide (SO2)	IS:5182 (Part-2):2001 (Reaff.2006)	<5.00	ug/m3		80	
Carbon Monoxide	By NDIR Spectroscopy.	< 0.10	PPM			

Remark: CO Analyzed at site.

### Page 1 of 2

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SAMPLE DRAWN BY SGS INDIA PVT. LTD.

Print Date : 18/03/2013

Report No : KG13-001952.004

JOE No : KG13-001952

Report Control No : KGR0000012027

Per pro SGS India Private Ltd

Satya Manna

Narmo --

Section Incharge - ENVI **Authorized Signatory** 

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

### Page 2 of 2

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date: 02/04/2013

Report No : KG13-002097.004

JOE No: KG13-002097

Report Control No : KGR0000013918

Sample Described by Customer as : SPRING WATER

Client Name

: Hindalco Industries Limited(Mines Division)

**Client Address** Postal Code

: Lohardaga.

: 835203

State

: Jharkhand

Country

: India

Sample Type

: SPRING WATER

Received

: 18/03/2013

: 18/03/2013

Registered

: Location: Gurdari-Pol-pol Village

Marks on Sample Quantity

; 5.5L app

Sample Collected

: 12.03.2013, time : 11.30 am

Test Start/End Date : 18/03/2013 - 01/04/2013

Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:201	
			****	Acceptable	Permissible
Colour	IS:3025 (Part-4):1983 (Reaff.2006)	15.0	Hz	5	15
Odour	IS:3025 (Part-5):1983 (Reaff 2006)	Agreeable		Agreeable	Agreeable
Taste	IS:3025 (Part-8):1983 (Reaff,2006)	Agreeable		Agreeable	Agreeacie
pH	IS:3025 (Part-11):1983 (Reaff.2006)	7.20*		65	3.5
Total Hardness (as CaCO3)	IS:3025 (Part-21):1983 (Reaff.2006)	12.12	mg/L	200	600
Iron (as Fe)	IS:3025 (Part-2)	0.80	mg/L	03	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	<0.10	mg/L	10	1.5
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff,2003)	<0.10	mg/L	0.2	:0
Chloride (as CI)	IS:3025 (Part-32):1988 (Reaff.1999)	<5.00	mg/L	250	1000
Total Dissolved Soilds	IS:3025 (Part-16 :1984 (Reaff.1996)	23.00	mg/L	500	2000
E.coli	IS:1622:1981(Reaff.2003)	Absent	per 100ml		Absent/100m

Page 1 of 3

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Print Date: 02/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002097.004

JOE No: KG13-002097

Analysis	Report Control No Method			
	-	Result	Unit	Requirement/Limit As per IS:10500:2012

Coliform bacteria				Acceptable	Permissi
	IS:1822-1981 (Reaffirmation 2003)	Present	per 100ml		Absent/10
Calcium (as Ca)	IS:3025 (Part-40):1991 (Reaff.2003)	3.23	mg/L	75	2
Magnesium (as Mg)	IS:3025 (Part-46):1994	<1.00	mg/L	30	
Copper (as Cu)	(Reaff.1999) IS:3025 (Part-2)		37		,
Manganese (as Mn)	IS:3025 (Part-2)	<0.01	mg/L	0.05	
Sulphate (as SO4)	IS:3025 (Part-24):1986	0.07	mg/L	0.1	
Vitrate (as NO3)	(Reaff.1998)	4.32	mg/L	200	4
	IS:3025 (Part-34):1988 (Reaff.1999)	0.70	mg/L	45	No relaxati
Phenolic Compound (as C6H5OH)	IS:3025 (Part-43):1992 (Reaff.2003)	< 0.001	mg/L	0.001	0.00
Mercury (as Hg)	IS:3025 (Part-48):1994	< 0.001	mg/L	0 001	
admium (as Cd)	(Reaff.1999) IS:3025 (Part-41):1992	<b>~0.000</b>	-		No relaxati
elenium (as Se)	(Reaff.2003) IS:3025 (Part-2)	<0.003	mg/L	0.003	No relaxation
rsenic (as As)	IS:3025 (Part-37):1988	<0.005	mg/L	0.01	No relaxation
yanide (as CN)	(Reaff, 1999)	<0.005	mg/L	0.01	No relaxation
21 t	IS:3025 (Part-27):1986 (Reaff.2003)	<0.020	mg/L	0.05	No relaxation
ead (as Pb)	IS:3025 (Part-47):1994 (Reaff,1999)	0.034	mg/L	0.01	
inc (as Zn)	IS:3025 (Part-2)	<0.01			No relaxation
nionic Surface Active Agent (as	IS:13428:2005: Annex K	<0.05	mg/L	5	1
BAS) hromlum (as Cr)		-0.03	mg/L	0.2	1
ineral Oil	IS:3025 (Part-2)	< 0.01	mg/L	0.05	No relaxatio
	IS:3025 (Part-39) :1991 (Reaff.2003)	< 0.01	mg/L	2.2	No relaxatio
otal Alkalinity (as CaCO3)	IS:3025 (Part-23):1986 (Reaff,2003)	16.55	mg/L	200	60
uminium (as Al)	IS:3025 (Part-55):2003	0.49			
oron (as B)	IS:3025 (Part-57):2005	0.12	mg/L	0.03	0.3
rbidity	IS:3025 (Part-10):1984	4.55	mg/L	0.5	1.0

Page 2 of 3

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Print Date: 02/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No: KG13-002097.004

JOE No: KG13-002097

: KGR0000013918

Analysis

Report Control No Method

Result

Unit

Requirement/Limit

As per IS:10500:2012

Acceptable Permissible

Remark: 'Analyzed at site

Per pro SGS India Private Lt

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Asish Chakraborty Laboratory Manager **Authorized Signatory** 

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

#### Page 3 of 3

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Print Date: 02/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No: KG13-002097.005

JOE No: KG13-002097

Report Control No : KGR0000013918

Sample Described by Customer as :

SPRING WATER

Client Name

: Hindalco Industries Limited(Mines Division)

**Client Address** Postal Code

: Lohardaga,

: 835203

State

: Jharkhand

Country

: India

Sample Type

: SPRING WATER

Received

: 18/03/2013 : 18/03/2013

Registered Marks on Sample

: Location: Kujum-Deepa Kujam

Quantity

: 5.5L app

Sample Collected

: 13.03.2013, time : 12.00 pm

Test Start/End Date : 18/03/2013 - 01/04/2013

Analysis	sis Method		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
Н	IS:3025 (Part-11):1983 (Reaff,2006)	7.00*		6.5	8.5
Total Hardness (as CaCO3)	IS:3025 (Part-21):1983 (Reaff.2006)	4.54	mg/L	200	600
Iron (as Fe)	IS:3025 (Part-2)	0.05	mg/L	03	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	<0.10	mg/L	10	1 5
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff.2003)	<0.10	mg/L	0.2	1.0
Chloride (as CI)	IS.3025 (Part-32):1988 (Reaff.1999)	<5.00	mg/L	250	1000
Total Dissolved Soilds	IS:3025 (Part-16:1984 (Reaff,1996)	12.80	mg/L	500	2000
E.coli	IS:1622:1981(Reaff.2003)	Absent	per 100ml		Absent/100n
	1 2 3				

#### Page 1 of 3

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Print Date: 02/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002097.005

JOE No: KG13-002097

Report	Control No	KGR0000013918

Result

Analysis Method

Unit Requirement/Limit As per IS:10500:2012

				Acceptable	Permissibl
Coliform bacteria	IS:1622-1981 (Reaffirmation 2003)	Present	per 100mi		Absent/100m
Calcium (as Ca)	IS:3025 (Part-40):1991 (Reaff.2003)	1.41	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 :
Manganese (as Mn)	IS:3025 (Part-2)	< 0.01	mg/L	0.1	0
Sulphate (as SO4)	IS:3025 (Part-24):1986 (Reaff.1998)	<2.00	mg/L	200	40
Nitrate (as NO3)	IS:3025 (Part-34):1988 (Reaff.1999)	2.33	mg/L	45	No relaxatio
Phenolic Compound (as C6H5OH)	IS:3025 (Part-43):1992 (Reaff.2003)	<0.001	mg/L	0.001	0.00
Mercury (as Hg)	IS:3025 (Part-48):1994 (Reaff.1999)	<0.001	mg/L	0.001	No relaxatio
Cadmium (as Cd)	IS:3025 (Part-41):1992 (Reaff.2003)	<0.003	mg/L	0.003	No relaxatio
Selenium (as Se)	IS:3025 (Part-2)	< 0.005	mg/L	0 01	No relaxatio
Arsenic (as As)	IS:3025 (Part-37):1988 (Reaff 1999)	< 0.005	mg/L	0.01	No relaxatio
Cyanide (as CN)	IS:3025 (Part-27):1986 (Reaff.2003)	<0.020	mg/L	0.05	No relaxatio
Lead (as Pb)	IS:3025 (Part-47):1994 (Reaff.1999)	0.030	mg/L	0 01	No relaxatio
Zinc (as Zn)	IS:3025 (Part-2)	<0.01	mg/L	5	1
Anionic Surface Active Agent (as MBAS)	IS:13428:2005; Annex K	<0.05	mg/L	0.2	1.
Chromium (as Cr)	IS:3025 (Part-2)	<0.01	mg/L	0.05	No relaxatio
Mineral Oil	IS:3025 (Part-39):1991 (Reaff.2003)	<0.01	mg/L	0.5	No relaxatio
Total Alkalinity (as CaCO3)	IS:3025 (Part-23):1986 (Reaff.2003)	5.52	mg/L	200	60
Aluminium (as Al)	IS:3025 (Part-55):2003	<0.03	mg/L	0.03	0.
Boron (as B)	IS:3025 (Part-57):2005	0.10	mg/L	0.5	1.
Turbidity	IS:3025 (Part-10):1984 (Reaff.2006)	2.15	NTU	1	

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date: 02/04/2013

Report No : KG13-002097.005

JOE No: KG13-002097

Analysis

Report Control No

: KGR0000013918

Method

Result

Unit

Requirement/Limit

As per IS:10500:2012

Acceptable Permissible

Remark: 'Analyzed at site.

Per pro SGS India Private Lt

Dr. Or Mangaly

Asish Chakraborty Laboratory Manager **Authorized Signatory** 

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

Page 3 of 3

WARNING. The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and I or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report Control No : KGR0000013687

Print Date: 01/04/2013

Report No: KG13-002094.003

JOE No: KG13-002094

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 Marks on Sample : 18/03/2013 : Location : Gurdari-Office

Quantity

: 5.5L app

Sample Collected

: 12.03.2013, time :10.30 am

Test Start/End Date : 18/03/2013 - 01/04/2013

Analysis	alysis Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	
Colour	IS:3025 (Part-4):1983 (Reaff.2006)	15.0	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)	7.10*		6.5	8.5
Total Hardness (as CaCO3)	IS:3025 (Part-21):1983 (Reaff.2006)	6.06	mg/L	200	600
Iron (as Fe)	IS:3025 (Part-2)	9.22	mg/L	0.3	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	<0.10	mg/L	10	1.5
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff.2003)	<0.10	mg/L	0.2	1 0
Chloride (as CI)	IS:3025 (Part-32):1988 (Reaff.1999)	<5.00	mg/L	250	1000
Total Dissolved Soilds	IS:3025 (Part-16 :1984 (Reaff.1996)	18.00	mg/L	500	žin i
E.coli	IS:1622:1981(Reaff.2003)	Absent	per 100ml		Absent/100.n
Coliform bacteria	IS:1622-1981 (Reaffirmation 2003)	Absent	per 100ml		Absent/100m
Calcium (as Ca)	IS:3025 (Part-40) :1991 (Reaff.2003)	2.02	mg/L	75	200
Magnesium (as Mg)	IS:3025 (Part-46) :1994 (Reaff,1999)	<1.00	mg/L	30	166

Page 1 of 3

V/ARNING. The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accents an experty with regard to the origin or source from which the sample(s) is/are said to be extracted.

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Print Date: 01/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002094.003

JOE No: KG13-002094

	Report Control No	: KGR0000013687			
Analysis	Method	Result	Unit		ment/Limit 10500:2012
				Acceptable	Permissibl
Copper (as Cu)	IS:3025 (Part-2)	0 02	mg/L	0.05	1 :
Manganese (as Mn)	IS:3025 (Part-2)	0.05	mg/L	0.1	Б.
Sulphate (as SO4)	IS:3025 (Part-24):1986 (Reaff 1998)	5.27	mg/L	200	400
Nitrate (as NO3)	IS:3025 (Part-34):1988 (Reaff,1999)	2 92	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 relaxatыя
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 relavation
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)	0.04	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 Oll	IS:3025 (Part-39) :1991 (Reaff.2003)	<0.01	mg/L	0.5	No ciaxation
Total Alkalinity (as CaCO3)	IS:3025 (Part-23): 1986 (Reaft,2003)	9.93	mg/L	200	6.4
Aluminium (as Al)	IS:3025 (Part-55):2003	< 0.03	mg/L	0.03	00
Boron (as B)	IS:3025 (Part-57):2005	0 12	mg/L	0.5	F 1
Turbidity	IS:3025 (Part-10):1984 (Reaff.2006)	3.50	NTU	1	t,

Remark: 'Analyzed at site.

#### Page 2 of 3

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Print Date: 01/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002094.003

JOE No: KG13-002094

Report Control No : KGR0000013687

Per pro SGS India Private Lt

Mr challant of M

Asish Chakraborty **Laboratory Manager Authorized Signatory** 

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

#### Page 3 of 3

WARNING. The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date: 01/04/2013

Report No : KG13-002094.004

JOE No: KG13-002094

Report Control No : KGR0000013687

Sample Described by Customer as :

**GROUND WATER** 

**Client Name** 

: Hindalco Industries Limited(Mines Division)

**Client Address** Postal Code

: Lohardaga,

: 835203

State

: Jharkhand

Country

: India

Sample Type

: GROUND WATER

Received

: 18/03/2013

Registered

: 18/03/2013

Marks on Sample

: Location: Gurdari-Sagatali

Quantity

: 5.5L app

Sample Collected

: 12.03.2013, 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)	10.0	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
рН	IS:3025 (Part-11):1983 (Reaff.2006)	7.00*		6.5	8.5
Total Hardness (as CaCO3)	IS:3025 (Part-21):1983 (Reaff,2006)	17.17	mg/L	200	620
Iron (as Fe)	IS:3025 (Part-2)	6.88	mg/L	0.3	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	0.36	mg/L	1.0	! 5
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff.2003)	<0.10	mg/L	0.2	10
Chloride (as CI)	IS:3025 (Part-32):1988 (Reaff 1999)	5.39	mg/L	250	000
Total Dissolved Soilds	IS:3025 (Part-16:1984 (Reaff,1996)	36.00	mg/L	500	2000
E.coli	IS:1622:1981(Reaff.2003)	Absent	per 100ml		Absent/100m
Coliform bacteria	IS:1622-1981 (Reaffirmation 2003)	Absent	per 100ml		Absent/100m
Calcium (as Ca)	IS:3025 (Part-40) :1991 (Reaff.2003)	5.25	mg/L	75	200
Magnesium (as Mg)	IS:3025 (Part-46) :1994 (Reaff.1999)	<1.00	mg/L	30	1(,,)

Page 1 of 3

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date: 01/04/2013

Report No : KG13-002094.004

JOE No: KG13-002094

Analysis	nalysis Report Control No Method		Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissible
Copper (as Cu)	IS:3025 (Part-2)	0.05	mg/L	0.05	1.5
Manganese (as Mn)	IS:3025 (Part-2)	0.06	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)	5.07	mg/L	45	No retaxation
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	<0.005	mg/L	0.01	No relaxation
Zinc (as Zn)	(Reaff.1999) IS:3025 (Part-2)	0.07	mg/L	5	14
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	2000	No relaxation
Total Alkalinity (as CaCO3)	IS:3025 (Part-23):1986 (Reaff.2003)	20.96	mg/L	200	500
Aluminium (as AI)	IS:3025 (Part-55):2003	< 0.03	mg/L	0 03	0.0
Boron (as B)	IS:3025 (Part-57):2005	0.13	mg/L	0.5	0.2
Turbidity	IS:3025 (Part-10):1984 (Reaff,2006)	27.50	NTU	1	10

Remark: \*Analyzed at site.

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date: 01/04/2013

Report No: KG13-002094.004

JOE No: KG13-002094

Report Control No : KGR0000013687

Per pro SGS India Private Lt

De de aleadato

Asish Chakraborty Laboratory Manager **Authorized Signatory** 

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

#### Page 3 of 3

WARNING The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting of the Client's direction. The Findings constitute no warranty of the sample(s) representativeness of any goods and strictly relate to the sample(s). The Company accepts no leading with regard to the origin or source from which the sample(s) is/are said to be extracted.

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days for all other samples.

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Print Date: 01/04/2013

SAMPLE COLLECTED BY SG\$ INDIA PVT. LTD.

Report Control No : KGR0000013687

Report No : KG13-002094.005

JOE No: KG13-002094

Sample Described by Customer as : GROUND WATER

: Hindalco Industries Limited(Mines Division)

Method

**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: Gurdari Deepapath

Quantity

Analysis

: 5.5L app

Sample Collected

: 12.03.2013, time : 11.45 am

Test Start/End Date : 18/03/2013 - 01/04/2013

	Metilod .	Result	Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissibl
Colour	IS:3025 (Part-4):1983 (Reaff.2006)	10.0	Hz	5	1
Odour	IS:3025 (Part-5):1983	Agreeable		Agreeable	Agreeaph
Taste	(Reaff.2006) IS:3025 (Part-8):1983	Agreeable		Agreeable	•
рН	(Reaff.2006) IS:3025 (Part-11):1983	7.10*		6.5	Agreeaco
Total Hardness (as CaCO3)	(Reaff.2006) IS:3025 (Part-21):1983	50.50	mg/L	200	8 : 600
Iron (as Fe)	(Reaff.2006) IS:3025 (Part-2)	03	mg/L	0.3	
Fluoride (as F)	IS.3025 (Part-50):2008	0.45	mg/L	1.0	No relaxation
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff.2003)	<0.10	mg/L	0.2	16
Chloride (as CI)	IS:3025 (Part-32):1988	10.77	mg/L	250	1000
Total Dissolved Soilds	(Reaff.1999) IS:3025 (Part-16:1984	86.00	mg/L	500	2000
E.coli	(Reaff.1996) : IS:1622:1981(Reaff.2003)	Absent	per 100ml		Absent/100m
Coliform bacteria	IS:1622-1981 (Reaffirmation	Absent	per 100ml		
Calcium (as Ca)	2003) IS:3025 (Part-40) :1991	12 12	mg/L	75	Absent/100m
Magnesium (as Mg)	(Reaff.2003) IS:3025 (Part-46) :1994 (Reaff.1999)	4.91	mg/L	30	200

Page 1 of 3

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Print Date: 01/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002094.005

JOE No: KG13-002094

	Report Control No	: KGR0000013687			
Analysis	Method	Result	Unit	Requirement/Limit As per IS:10500:2012	
*				Acceptable	Permissibl
Copper (as Cu)	IS:3025 (Part-2)	0.01	mg/L	0.05	1 1
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)	10.02	mg/L	45	No relaxation
Phenolic Compound (as C6H5OH)	IS:3025 (Part-43):1992 (Reaff.2003)	<0.001	mg/L	0.001	6 002
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)	0.02	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)	33.09	mg/L	200	660
Aluminium (as AI)	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)	17.40	NTU	1	5

#### Page 2 of 3

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date: 01/04/2013

Report No : KG13-002094.005

JOE No: KG13-002094

Report Control No : KGR0000013687

Per pro SGS India Private Lt

Dr. Orahadaly

Asish Chakraborty Laboratory Manager **Authorized Signatory** 

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

#### Page 3 of 3

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Print Date: 01/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002094.006

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: Gurdari Kuttupani

Quantity

; 5.5L app

Sample Collected

: 12.03.2013, time : 2.00 pm

Test Start/End Date : 18/03/2013 - 01/04/2013

Analysis	Method		Unit	Requirement/Limit As per IS:10500:2012	
				Acceptable	Permissibl
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)	7.30*		6.5	8.5
Total Hardness (as CaCO3)	IS:3025 (Part-21):1983 (Reaff.2006)	51.51	mg/L	200	600
iron (as Fe)	IS:3025 (Part-2)	0.25	mg/L	0.3	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	<0.10	mg/L	1.0	No retaxation
Residual Free Chlorine	IS:3025 (Part-25):1986 (Reaff.2003)	<0.10	mg/L	0.2	1.3
Chloride (as CI)	IS:3025 (Part-32):1988 (Reaff.1999)	<5.00	mg/L	250	1000
Total Dissolved Soilds	IS:3025 (Part-16:1984	74.00	mg/L	500	
.coli	(Reaff.1996) IS:1622:1981(Reaff.2003)	Absent	per 100ml	500	2000
Coliform bacteria	IS:1622-1981 (Reaffirmation	Absent	per 100ml		Absent/100m
Calcium (as Ca)	2003) IS:3025 (Part-40):1991	12.93	mg/L	75	Absent/10(#n
dagnesium (as Mg)	(Reaff.2003) IS:3025 (Part-46) :1994 (Reaff.1999)	4.66	mg/L	30	200

Page 1 of 3

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Print Date: 01/04/2013

#### SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002094.006

JOE No: KG13-002094

		KGR0000013687			
Analysis	Method	Result	Unit		ment/Limit 10500:2012
				Acceptable	Permissibl
Copper (as Cu)	IS:3025 (Part-2)	<0.01	mg/L	0.05	
Manganese (as Mn)	IS:3025 (Part-2)	< 0.01	mg/L	0.1	e:
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)	1.28	mg/L	45	No relaxation
Phenolic Compound (as C6H5OH)	IS:3025 (Part-43):1992 (Reaff.2003)	<0.001	mg/L	0.001	0.00;
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 relaxatio
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)	0.23	mg/L	5	
Anionic Surface Active Agent (as MBAS)	IS:13428:2005: Annex K	<0.05	mg/L	0.2	1 (
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)	60.67	mg/L	200	609
Aluminium (as Al)	IS:3025 (Part-55):2003	<0.03	mg/L	0.03	0.1
Boron (as B)	IS:3025 (Part-57):2005	0.11	mg/L	0.5	1 (
Turbidity	IS:3025 (Part-10):1984 (Reaff 2006)	4.45	NTU	1	5

#### Page 2 of 3

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Print Date: 01/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002094.006

JOE No: KG13-002004

Report Control No : KGR0000013687

Per pro SGS India Private Lt

Av challedoly

Asish Chakraborty Laboratory Manager **Authorized Signatory** 

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

#### Page 3 of 3

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Print Date: 01/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002094.007

JOE No: KG13-002094

Report Control No : KGR0000013687

Sample Described by Customer as : GROUND WATER

: Hindalco Industries Limited(Mines Division)

Client Address

: Lohardaga,

Postal Code

: 835203

State

: Jharkhand

Country

: India

Sample Type

: GROUND WATER

Received

: 18/03/2013

Registered Marks on Sample

: 18/03/2013 : Location: Kajum Navatuli2

Quantity

: 5.5L app

Sample Collected

: 13.03.2013, time: 10.00 am

Test Start/End Date : 18/03/2013 - 01/04/2013

Analysis	Method	Result	Unit		nent/Limit 10500:2012
				Acceptable	Permissible
Colour	IS:3025 (Part-4):1983 (Reaff.2006)	10.0	Hz	5	. 15
Odour	IS:3025 (Part-5):1983 (Reaff.2006)	Agreeable		Agreeable	Agreeable
Tasto	IS:3025 (Part-8):1983 (Reaff.2006)	Agreeable		Agreeable	Agreeable
pH	IS:3025 (Part-11):1983 (Reaff.2006)	7.20*		6.5	C.E
Total Hardness (as CaCO3)	IS:3025 (Part-21):1983 (Reaff,2006)	29.29	mg/L	200	100
Iron (as Fe)	IS:3025 (Part-2)	0.2	mg/L	0.3	No relaxation
Fluoride (as F)	IS:3025 (Part-60):2008	0.16	mg/L	1.0	1.5
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff.2003)	<0.10	mg/L	0.2	1 (
Chloride (as CI)	IS:3025 (Part-32):1988 (Reaff,1999)	5.39	mg/L	250	1000
Total Dissolved Soilds	IS:3025 (Part-16:1984 (Reaff.1996)	49.00	mg/L	500	2000
E.coli	IS:1622:1981(Reaff.2003)	Absent	per 100ml		Absent/100m
Coliform bacteria	IS:1522-1981 (Reaffirmation 2003)	Absent	per 100ml		Absent/100m
Calcium (as Ca)	IS:3025 (Part-40) :1991 (Reaff.2003)	8.08	mg/L	75	200
Magnesium (as Mg)	IS:3025 (Part-46) :1994 (Reaff.1999)	2.21	mg/L	30	100

Page 1 of 3

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date: 01/04/2013

Report No : KG13-002094.007

JOE No: KG13-002094

	Report Control No :	KGR0000013687			
Analysis	Method	Result	Unit		nent/Limit 10500:2012
				Acceptable	Permissib
Copper (as Cu)	IS:3025 (Part-2)	0.01	mg/L	0.05	1
Manganese (as Mn)	IS:3025 (Part-2)	0.02	mg/L	0.1	C.
Sulphate (as SO4)	IS:3025 (Part-24):1986 (Reaff 1998)	<2.00	mg/L	200	40
Nitrate (as NO3)	IS:3025 (Part-34):1988 (Reaff.1999)	5.37	mg/L	45	No relaxatio
Phenolic Compound (as C6H5OH)	IS:3025 (Part-43):1992 (Reaff.2003) _	<0.001	mg/L	0.001	0.00
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 relaxatio
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)	0.11	mg/L	5	1:
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)	31.99	mg/L	200	600
Aluminium (as Al)	IS:3025 (Part-55):2003	<0.03	mg/L	0.03	0:
Boron (as B)	IS:3025 (Part-57):2005	0.12	mg/L	0.5	1 (
Turbidity	IS:3025 (Part-10):1984 (Reaff.2006)	17.50	NTU	1	5

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date: 01/04/2013

Report No : KG13-002094.007

JOE No: KG13-002094

Report Control No

: KGR0000013687

Per pro SGS India Private Lt

Mr challedolf

Asish Chakraborty Laboratory Manager Authorized Signator;

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

Page 3 of 3

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SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Print Date: 01/04/2013

Report No : KG13-002094.008

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

: 18/03/2013

Registered

Marks on Sample

: Location : Kujam-Bhatipath

Quantity

; 5.5L app

Sample Collected

: 13.03.2013,time :11.00 am

Test Start/End Date : 18/03/2013 - 01/04/2013

Analysis	Method	Result	Unit		ment/Limit 10500:2012
				Acceptable	Permissible
Colour	IS:3025 (Part-4):1983 (Reaff.2006)	5.0	Hz	5	!5
Odour	IS:3025 (Part-5):1983 (Reaff.2006)	Agreeable		Agreeable	Agrea-iiia
Taste	IS:3025 (Part-8):1983 (Reaff.2006)	Agreeable		Agreeable	Agreeable
pH	IS:3025 (Part-11):1983 (Reaff.2006)	7.10*		6.5	8.5
Total Hardness (as CaCO3)	IS:3025 (Part-21):1983 (Reaff.2006)	9 09	mg/L	200	500
Iron (as Fe)	IS:3025 (Part-2)	0.13	mg/L	0.3	No retaxation
Fluoride (as F)	IS:3025 (Part-60):2008	<0.10	mg/L	1.0	1 %
Residual Free Chlorine	IS:3025 (Part-26):1986 (Reaff.2003)	<0.10	mg/L	0.2	1.0
Chloride (as CI)	IS:3025 (Part-32):1988 (Reaff,1999)	5.03	mg/L	250	1000
Total Dissolved Soilds	IS:3025 (Part-16 :1984 (Reaff.1996)	21.00	mg/L	500	2000
E.coli	IS:1622:1981(Reaff.2003)	Absent	per 100ml		Absent/100m
Coliform bacteria	IS:1622-1981 (Reaffirmation 2003)	Absent	per 100mi		Absent/100m
Calcium (as Ca)	IS:3025 (Part-40) :1991 (Reaff.2003)	3.03	mg/L	75	200
Magnesium (as Mg)	IS:3025 (Part-46) :1994 (Reaff.1999)	<1.00	mg/L	30	:00

Page 1 of 3

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Print Date: 01/04/2013

SAMPLE COLLECTED BY SGS INDIA PVT. LTD.

Report No : KG13-002094.008

JOE No: KG13-002094

	Report Control No :	KGR0000013687			
Analysis	Method	Result	Unit		nent/Limit 10500:2012
2				Acceptable	Permissib
Copper (as Cu)	IS:3025 (Part-2)	<0.01	mg/L	0.05	1
Manganese (as Mn)	IS:3025 (Part-2)	< 0.01	mg/L	0.1	0
Sulphate (as SO4)	IS:3025 (Part-24):1986 (Reaff,1998)	<2.00	mg/L	200	4
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	0.0
Mercury (as Hg)	IS:3025 (Part-48):1994 (Reaff.1999)	<0.001	mg/L	0.001	No relaxate
Cadmium (as Cd)	IS:3025 (Part-41):1992 (Reaff,2003)	<0.003	mg/L	0.003	No relaxati
Selenium (as Se)	IS:3025 (Part-2)	< 0.005	mg/L	0.01	No relaxati
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 relaxate
Lead (as Pb)	IS:3025 (Part-47):1994 (Reaff.1999)	<0.005	mg/L	0.01	No relaxate
Zinc (as Zn)	IS:3025 (Part-2)	0.14	mg/L	5	
Anionic Surface Active Agent (as MBAS)	IS:13428:2005: Annex K	<0.05	mg/L	0.2	1
Chromium (as Cr)	IS:3025 (Part-2)	<0.01	mg/L	0.05	No relaxati
Mineral Oil	IS:3025 (Part-39):1991 (Reaff 2003)	<0.01	mg/L	0.5	No relaxati
Total Alkalinity (as CaCO3)	IS:3025 (Part-23) :1986 (Reaff.2003)	12.13	mg/L	200	6
Aluminium (as Al)	IS:3025 (Part-55):2003	< 0.03	mg/L	0.03	0
Boron (as B)	IS:3025 (Part-57):2005	0.13	mg/L	0.5	1
Turbidity	IS:3025 (Part-10):1984 (Reaff.2006)	0.45	NTU	1	

#### Page 2 of 3

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SAMPLE COLLECTED BY SGS INDIA PVT, LTD.

Print Date: 01/04/2013

Report No : KG13-002094.008

JOE No: KG13-002094

Report Control No : KGR0000013687

Per pro SGS India Private Lt

Av challedoly

Asish Chakraborty Laboratory Manager **Authorized Signatory** 

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

#### Page 3 of 3

WARNING The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client of direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

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# SII (GIVS

# झारखण्ड राज्य प्रदूषण नियंत्रण पर्षद्

# JHARKHAND STATE POLLUTION CONTROL BOARD

[CONSTITUTED UNDER SECTION 4 OF THE WATER (PREVENTION & CONTROL OF POLLUTION ACT, 1974]
T.A.DIVISION BUILDING (GROUND FLOOR), HEC COMPEX, DHURWA, RANCHI-834004.
Phone No:-0651- 2400852, 2400851, Fax No:- 2400850.

Ref.No. PC/RNC/C-8/12

Dated-

#### **CONSENT TO OPERATE**

With reference to the application dated 28.08.2012 of M/s Hindalco Industries Ltd; Court Road, P.O.+ Dist -Gumla, I/C Kujam II Bauxite Mines-157.38 Ha. 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 1,50,000 TPA of Bauxite ore At- Kujam-II, Dist- Gumla for the period from 01.01.2013 to 31.12.2013 with the following conditions:

- 1. That, he(they) shall 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.
- 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.
- 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.

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- 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, Bhubneshwar 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 30<sup>th</sup> 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, the unit shall submit the status of compliance Environmental Clearance every quarter to the Board.
- 14. That the 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 road;
- 17. That, the unit shall ensure that no transport vehicle should ply on road without covering the materials;
- 18. That, the unit shall submit compliance report of Environmental Clearance order dated 14.08.2006 and submit photographs in compliance of special condition No. vi and viii of the same.

Sd/-(Sanjay Kumar Sinha) Member Secretary.

Memo No. G. G. Ranchi, Dated - J. G. Ranchi,

Member Secretary.

and

Xess/Con/72



#### 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.

SI 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

<sup>\*\*</sup>part of OB removed cost.

Convener

Environment Management Cell.



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.

Distr. Lohardaga (Jharkhand)

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

				Oroshindon		
SN	Name of Leases	Lease Area (in Ha)	Production (in MT)	Overburgen 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	475877	7.42	7.17
3	Gurdari	584.19	324648	832640	14.70	24.7
4	Kujam-I	80.87	149018	158530	14.70	12.10
2	Kujam-II	157.38	149542	677633	18 18	11.10
9	Amtipani	190.95	149579	468731	18.02	11.41
7	Shrengdag	155.81	259630	570878	10.02	25.00
8	Serengdag Bauxite Mines	140.06	99772	133089	6.57	33.00
6	Jalim & Sanai	12.14	49505	34438	1 24	3.00
10	Bagru	75.41	84320	188767	1.24	0.80
11	Hisri New	14.55	99651	115676	1 24	000
12	Chiro-Kukud	152.57	64847	78598	3.13	5.37
M/s Miner	M/s Minerals & Minerals Limited				01:0	70.0
1	Pakhar Bauxite Mines	15.58	34445	115848	1.25	2 00
2	Pakhar (109.507)	109.507	99840	204868	6.76	1.00
			2.000	2000	0.7.0	1.32