ADITYA BIRLA

HINDALCO

Ref No: HIL/LHD/JP (M)/MoEF/943 Date: 25.11.14

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

Sub: **Compliance Report of EC conditions for Serengdag Bauxite Mining (140.07 Ha) project of M/s Hindalco Industries Limited located in Dist- Gumla, Jharkhand for the period April'14 to Sep'14.**

Ref: **Environmental Clearance letter no J-11015/243/2005-IA II (M) dated 23th June 2006**

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Serengdag (140.07 Ha)** Bauxite Mining project of M/s Hindalco located in Gumla, Jharkhand for the period **April'14 to Sep'14.**

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED

(Bijesh Kumar Jha)
Joint President (Mines)

Enclosure: - As Above

HINDALCO INDUSTRIES LIMITED
Hindalco Complex
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Website www.hindalco.com

Compliance of conditions laid down in Environmental Clearance
SERENDAG BAUXITE MINES (140.07 Ha)
Period: April'14 – Sep'14
MoEF Environment Clearance ref: No. J-11015/243/2005-IA.II(M) dated 23 June'06

Sl No	Conditions	Compliance Status
	Specific Conditions	
1	All the conditions stipulated by the State Pollution Control Board in their consent to establish should be effectively implemented.	Implementations of the stipulated conditions are fulfilled.
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.	This provision was taken care during lease renewal as per Lease Deed made on 23.08.1979, the said permission was granted by competent authority D.C. office Ranchi (Documents already submitted)
3	Necessary forestry clearance under the Forest (Conservation) Act, 1980 for an area of 62.18 ha forestland shall be obtained before starting mining operation in that area	We have submitted an application for the diversion of 62.18 Ha forest land to DFO, Gumla. Forest clearance process is under progress.
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.	Top soil is being stacked separately. It has been identified to use the same for reclamation and rehabilitation at appropriate time.
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.	The Wastes generated are being stacked separately for temporary period and over the time it will be used for backfilling.
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 de-silted 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	Commensurate with the progress of mining activities over the period of time, construction of catch drains and siltation ponds/parapet walls is under implementation.

	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.	
7	Plantation shall be raised in an area of 37.1 ha including a green belt of adequate width by planting the native species around the ML area, roads, 06 dump sites etc. in consultation with the local DFO/Agriculture Department. The density of the trees should be around 1500 plants per ha.	Green belt development programme will keep pace with progress of mining activity. Around 2000 plantation carried out during the FY2014-15.
8	The mining operations shall not intersect groundwater table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table.	Mining operation is confined within shallow depth (20 m max) and as per the study conducted by authorized agency [Centre for Ground Water Studies, Kolkata (WB)] during Oct'05; the ground water level is in the range of 80 – 100 m from ground level.
9	The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	Suitable conservation measures implemented to augment ground water resources in the area.
10	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.	Regular monitoring is being carried out by recognized agency. Report Annexed.
11	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	We have permission for water drawl as per mining lease deed. Water cess is being paid regularly to JSPCB.
12	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.	Complied.

13	Vehicular emissions should be kept under control 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.	Regular maintenance of vehicles are undertaken to minimize vehicular emission. Care is taken on regular basis to arrest spillage/fugitive dust emission. Tarpaulin is used to cover trucks carrying bauxite.
14	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.	Mined out pit converted into water reservoir, plantation carried out to stabilize the terraced.
15	Drills should either be operated with dust extractors or should be equipped with water injection system	Wet drilling is done in the drill holes intermittently for dust suppression by pumping water.
16	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 operation is being carried out only during the daytime. Controlled blasting procedure is in practiced.
17	Consent to operate should be obtained from SPCB prior to start of production of mine	Consent to operate has been obtained from JSPCB prior to start of mining activity.
18	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	The sewage water from domestic uses is collected in Soak Pits. There is no residential accommodation in the mine area hence ETP is not required.
19	The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered flora and fauna spotted in the study area. Action plan for conservation of endangered 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.	No endangered species of Flora and Fauna has been reported in the project area. Suitable conservation measures to protect endangered flora & fauna implemented.
20	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 prepared & 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.	Being adhered to.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made	Excavation of OB and Bauxite is being done as per the approved mining plan/scheme and obtained EC capacity. Quantum of mineral and OB excavated during the FY2014-15 is annexed.
3	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.	Monitoring is being done. AAQ monitoring report attached.
4	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 is being done. AAQ monitoring report attached.
5	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.	Monitoring is being done. AAQ monitoring report attached.
6	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.	Complied. PPE is being provided to all workers.
7	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 should be installed before discharge of workshop effluents.	Suitably mentioned as applicable.

8	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.	Usages of PPEs are in practice. Occupational Health Surveillance is being practiced.
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	Already formed and intimated. (Annexure)
10	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.
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 & actual expenses for environmental protection measure is submitted. (Annexure).
12	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 sl. No. 10.
13	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
14	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
15	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days.	Displayed.

16	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 httD:/ /envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar.	Complied. (Documents already submitted)

ADITYA BIRLA

HINDALCO

Date: 10.11.14

OFFICE ORDER

In connection with the earlier office order dated 30.10.2013 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. Ajay Kumar Pandey, Manager (Bagru Mines)
3. A Anbarasu, Mines Manager (Serengdag Mines)
4. S P Jha, Mines Manager (Pakhar Mines)
5. Kiran Sankar Singh, Mines Manager (Gurdari)
6. Vidya Sagar Singh, Mines Manager (Kujam)
7. Amar Bharati, Mines Manager (Amtipani)
8. Rajesh Ambastha, Mines Manager (Chiro Kukud & Orsa)
9. Biplab Mukherjee (Asst Manager- Geology)

By order

Bijesh Kumar Jha
Joint President (Mines)

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

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HINDALCO

BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2014-15

The composite cost during the year 2014-15 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115,13 Ha), Pakhar (15.58 Ha), Pakhar (109.507 Ha),*Pakhar (8.09 Ha),Pakhar (35.12Ha)*, Serengdag (140.06 Ha), Serengdag (155.81 Ha), Jalim & Sanai (12.14 Ha), Gurdari (584.19 Ha), Amtipani (190.95 Ha), Kujam I (80.97 Ha) Kujam II (157.38 Ha) and Bagru (75.41 Ha), Hisri New (14.55 Ha), Chiro kukud, *Orsa pat(196.36 Ha)*, Bhusar (65.31 Ha)& *Bimarla Bauxite Mines (134.52 Ha)*.

Sl No	Description	Budget (in Lakh Rupees) FY 2014-15	Actual (in Lakh Rupees) FY 2014-2015 (from April'14 to Sep'14)
1	Pollution Control & Environment monitoring	**5.50**	**6.00**
2	Reclamation/ Back filing & Rehabilitation	**42.50**	**36.00**
3	Green belt & Plantation	**60.03**	**54.46**
4	Rural Development	**85.29**	**111.37**

**Part of OB removed cost.

Convener
Environment Management Cell
Hindalco Industries Limited

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PRODUCTION, MINED OUT, BACKFILLED, PRODUCTION AND OVERBURDEN REMOVAL FROM APR-14 TO SEP-14

SL	Name of Mines	Mining lease area (Ha)	Mined Out area (in Acres)	Backfilled area (in Acres)	Production (in MT)	Overburden Removal (in Cub.M.)
1	Shrengdag Bauxite Mines	155.81	7.80	4.80	105050	205180
2	Gurdari Bauxite Mines	584.19	22.10	11.80	168585	4024704
3	Jalim & Sanai	12.14	0.70	0.30	5311	12450
4	Serangdag	140.07	2.00	0.50	31650	30600
5	Pakhar Buxite Mines	115.13	3.69	1.50	137290	206568
6	Pakhar Buxite Mines	8.09	0.00	0.00	0.00	0.00
7	Pakhar Buxite Mines	38.95	0.00	0.00	0.00	0.00
8	Kujam-I	80.87	4.15	3.46	37960	51491
9	Kujam-II	157.38	13.84	12.75	104325	121798
10	Amtipani	190.95	4.03	3.26	93330	52493
11	Chiro-Kukud	152.57	3.95	6.42	17584	18797
12	Orsa Bauxite Mines	196.36	0.00	0.00	0.00	0.00
13	Hisri New	14.55	1.29	0.65	54529	9471
14	Bagru	75.41	0.00	0.00	0.00	0.00
15	Bhusar	65.31	0.94	1.50	82032	82626
	Minerals & Minerals Limited					
16	Pakhar Buxite Mines	109.507	4.21	3.51	183605	162580
17	Pakhar Buxite Mines	15.58	0.30	0.20	31175	98966
18	Bimarla Bauxite Mines	134.526	0.00	0.00	0.00	0.00

Monitored water level

Fig in meter

Location (Mines)	Elevation (Mtr)	Well type	Monsoon 2014		Post Monsoon 2014	
			Inside ML	Outside ML	Inside ML	Outside ML
Bagru	905	Open Well		21.72		24.15
	910	Open Well		24.30		24.55
	915	Open Well		29.40		28.44
	903	Open Well		22.85		33.12
	909	Open Well		17.55		28.75
	1000	Open Well		24.90		22.66
Pakhar	1083	Hand Pump	35.35		31.65	
Sherengdag	1027	Open Well		25.85		28.35
	1094	Hand Pump	41.75		39.54	
	1081	Hand Pump	39.65		31.30	
	1055	Hand Pump	33.05		27.55	
	1066	Hand Pump	27.75		26.25	
Gurdari	1045	Hand Pump	29.30		27.84	
	1061	Hand Pump	28.35		24.90	
	1059	Hand Pump	38.15		36.63	
	1075	Hand Pump	28.22		26.88	
	1075	Hand Pump	28.36		29.30	
Kujam	1040	Open Well		33.95		21.85
	1041	Open Well		33.65		24.82
	1064	Hand Pump	31.58		28.65	
	1052	Hand Pump				21.12
Chiro Kukud	1148	Hand Pump	33.45		28.40	
	1151	Hand Pump	37.60		31.80	
	1084	Hand Pump	34.35		36.86	

Eco Ventures Pvt. Ltd.

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E: ecoventures.mumbai@gmail.com /ecoventures@eco-ventures.in

Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

SHERENGDAG PLATEAU- ENVIRONMENTAL MONITORING REPORT

SEPTEMBER 2014

Vijay Pandey
SENIOR EXECUTIVE

For Mahabal Enviro Eng. Pvt. Ltd.

Authorised Signatory

Mahabal Enviro Eng. Pvt. Ltd. Ranchi

Mahabal Enviro Engineers Pvt. Ltd.

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E-mail:mahabalranchi@gmail.com

Report no: SEPT003/2014-15 **Date:** 1st October,2014

Sample described by customer: SURFACE WATER

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample type: SURFACE WATER
Received:28.09.2014
Registered: 28.09.2014
Marks on Sample: Location: Sherengdag Mined Out Pit - Water Harvesting Pond
Sample collected on: 27.09.2014
Quantity: 5 L X 2 No. PVC Can
Test Start/End Date: 28.09.2014/29.09.2014
Sample collected by: Mahabal EnviroEngineers Pvt Limited

S.No	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method Reference
1.	Colour	Hazen	< 1	5 Max	APHA 22nd Ed. 2012, 2120-B, 2-6
2.	Odour	-	Agreeable	Agreeable	IS 3025 (Part 5):1983, Reaffirmed 2006
3.	Taste	-	Agreeable	Agreeable	IS 3025 (Part 7):1984, Reaffirmed 2006
4.	Turbidity	NTU	0.4	1 Max	APHA 22nd Ed. 2012, 2130-B, 2-13
5.	pH	-	7.0	6.5-8.5	APHA 22nd Ed. 2012, 4500-H+-B, 4-92
6.	Free Chlorides(Residual)	mg/l	<0.05	0.2 min	APHA 22nd Ed. 2012, 4500-Cl G, 4-69
7	Total Dissolved Solids	mg/l	102	500 Max	IS 3025 (Part 16):1984 Reaffirmed 2006
8.	Monochloramines	mg/l	<0.05	-	APHA 22nd Ed. 2012, 4500-ClG, 4-69
9.	Dichloramines	mg/l	<0.05	-	APHA 22nd Ed. 2012, 4500-ClG, 4-69
10.	Total Hardness (as $CaCO_3$)	mg/l	50	200 Max	APHA 22nd Ed. 2012, 2340-C, 2-44,45
11.	Alkalinity Total (as $CaCO_3$)	mg/l	65	200 Max	IS 3025 (Part 23):1986 Reaffirmed 2009
12.	Chloride (as Cl)	mg/l	7.2	250 Max	APHA 22nd Ed. 2012, 4500-Cl-B, 4-72
13.	Sulphate (as SO_4)	mg/l	4.1	200 Max	APHA 22nd Ed. 2012, 4500-SO4-E, 4-190

Mahabal Enviro Eng. Pvt. Ltd. Ranchi

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S.No	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14.	Nitrate (as NO3)	mg/l	1.0	45 Max	APHA 22nd Ed. 2012, 4500-NO_3-E, 4-125
15.	Fluoride (as F)	mg/l	0.22	1 Max	APHA 22nd Ed. 2012, 4500-FB& D, 4-84, 4-87
16.	Boron (as B)	mg/l	0.14	0.5 Max	APHA 22nd Ed. 2012, 4500-BB, 4-25
17.	Calcium(as Ca)	mg/l	16.4	75 Max	APHA 22nd Ed. 2012, 3500-Ca-B, 3-67
18.	Magnesium (as Mg)	mg/l	4.0	30 Max	APHA 22nd Ed. 2012, 3500- Mg- B, 3-84
19.	Ammonical Nitrogen/ Total Ammonia	mg/l	<0.1	-	APHA 22nd Ed. 2012, 4500 NH3-F, 4-115
20.	Iron (as Fe)	mg/l	0.10	0.3 Max	APHA 22nd Ed. 2012, 3111-B,3-18
21.	Manganese (as Mn)	mg/l	N.D	0.1 Max	APHA 22nd Ed. 2012, 3111-B, 318
22.	Aluminium (as Al)	mg/l	0.07	0.03 Max	APHA 22nd Ed. 2012, 3500- Al-B, 3-61
23.	Cadmium (as Cd)	mg/l	N.D	0.003 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
24.	Chromium Total (as Cr)	mg/l	N.D	0.05 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
25.	Copper (as Cu)	mg/l	N.D.	0.05 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
26.	Lead (as Pb)	mg/l	N.D	0.01 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
27.	Zinc (as Zn)	mg/l	0.10	5 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
28.	Arsenic (as As)	mg/l	<0.01	0.01 Max.	APHA 22nd Ed. 2012, 3114-C,3-38
29.	Mercury (as Hg)	mg/l	N.D.	0.001 Max.	APHA 22nd Ed. 2012, 3112-B,3-23
30.	Selenium (as Se)	mg/l	N.D.	0.01 Max.	APHA 22nd Ed. 2012, 3114-C, 3-38
31.	Nickel (as Ni)	mg/l	<0.06	0.02 Max.	APHA 22nd Ed. 2012, 3111 B,3-18
32.	Mineral Oil	mg/l	N.D.	0.5 Max.	IS 3025 (Part 39): 1991, Reaffirmed 2003, Ed. 2.1
33.	Cyanide (as CN)	mg/l	N.D.	0.05 Max.	APHA 22nd Ed. 2012, 4500-CN, C & E, 4-39 & 4-44
34.	Anionic detergents as MBAS	mg/l	<0.1	0.2 Max.	APHA 22nd Ed. 2012, 5540-C, 5-53
35.	Phenolic compounds (as C_6H_5OH)	mg/l	N.D	0.001 Max.	APHA 22nd Ed. 2012, 5530- B & C, 5-47
36.	Polynuclear aromatic hydrocarbons (PAH)	µg/L	N.D	0.0001 mg/L Max.	APHA 22nd Ed. 2012, 6440, 6-93
37.	Polychlorinated Biphenyls (PCBs)	µg/L	N.D	0.0005 mg/l Max.	USEPA Method 8082
38.	Sulphide (as S)	mg/l	N.D	-	APHA 22nd Ed. 2012, 4500- S2-C 4-175 & F 4-178

Mahabal Enviro Eng. Pvt. Ltd. Ranchi

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E-mail:mahabalranchi@gmail.com

S.No	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
Microbiological Analysis					
1.	Total Colliforms	MPN/ 100 mL	<1.1	N.D	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69
2.	E-Coli	MPN/ 100 mL	Absent	N.D	APHA 22nd Ed. 2012, 9221-B, C & G, 9-66, 9-69 and 9- 76
Pesticides Residues					
3.	p,p DDT	µg/L	N.D	1	US EPA 508-1995
4.	o,p DDT	µg/L	N.D	1	US EPA 508-1995
5.	p,p DDE	µg/L	N.D	1	US EPA 508-1995
6.	o,p DDE	µg/L	N.D	1	US EPA 508-1995
7.	p,p DDD	µg/L	N.D	1	US EPA 508-1995
8.	o,p DDD	µg/L	N.D	1	US EPA 508-1995
9.	γ-HCH (Lindane)	µg/L	<0.01	2	US EPA 508-1995
10.	α-HCH	µg/L	<0.01	0.01	US EPA 508-1995
11.	β-HCH	µg/L	N.D	0.04	US EPA 508-1995
12	δ - HCH	µg/L	N.D	0.04	US EPA 508-1995
13.	Butachlor	µg/L	N.D	125	US EPA 508-1995
14.	Alachlor	µg/L	N.D	20	US EPA 508-1995
15.	Atrazine	µg/L	N.D	2	US EPA 532-2000
16.	α Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
17.	β Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
18.	Endosulfan Sulphate	µg/L	N.D	0.4	US EPA 508-1995
19.	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20.	Malathion	µg/L	N.D	190	US EPA 8141A -1994
21.	Methyl Parathion	µg/L	N.D	0.3	US EPA 8141A -1994
22.	Monocrotophos	µg/L	N.D	1	US EPA 8141A-1994
23.	Phorate	µg/L	N.D	2	US EPA 8141A -1994
24.	Chlorpyrifos	µg/L	N.D	30	US EPA 8141A -1994
25.	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26.	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
Remarks: N.D- Not Detected					

Conclusion: The Physical & Chemical Analysis report indicates that water is not contaminated.

Vijay Pandey
SENIOR EXECUTIVE

For Mahabal Enviro Eng. Pvt. Ltd.

Authorised Signatory

Mahabal Enviro Eng. Pvt. Ltd. Ranchi

Mahabal Enviro Engineers Pvt. Ltd.

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Report no: SEPT003/2014-15 Date: 1st October,2014

Sample described by customer: DRINKING WATER

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample type: DRINKING WATER
Received:28.09.2014
Registered: 28.09.2014
Marks on Sample: Location: Spring water near Sherengdag
Sample collected on: 27.09.2014
Quantity: 5 L X 2 No. PVC Can
Test Start/End Date: 28.09.2014/29.09.2014
Sample collected by: Mahabal Enviro Engineers Pvt Limited

S.No	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method Reference
1.	Colour	Hazen	< 1	5 Max	APHA 22nd Ed. 2012, 2120-B, 2-6
2.	Odour	-	Agreeable	Agreeable	IS 3025 (Part 5):1983, Reaffirmed 2006
3.	Taste	-	Agreeable	Agreeable	IS 3025 (Part 7):1984, Reaffirmed 2006
4.	Turbidity	NTU	0.4	1 Max	APHA 22nd Ed. 2012, 2130-B, 2-13
5.	pH	-	6.1	6.5-8.5	APHA 22nd Ed. 2012, 4500-H+-B, 4-92
6.	Free Chlorides(Residual)	mg/l	<0.05	0.2 min	APHA 22nd Ed. 2012, 4500-Cl G, 4-69
7	Total Dissolved Solids	mg/l	90	500 Max	IS 3025 (Part 16):1984 Reaffirmed 2006
8.	Monochloramines	mg/l	<0.05	-	APHA 22nd Ed. 2012, 4500-ClG, 4-69
9.	Dichloramines	mg/l	<0.05	-	APHA 22nd Ed. 2012, 4500-ClG, 4-69
10.	Total Hardness (as $CaCO_3$)	mg/l	58	200 Max	APHA 22nd Ed. 2012, 2340-C, 2-44,45
11.	Alkalinity Total (as $CaCO_3$)	mg/l	69	200 Max	IS 3025 (Part 23):1986 Reaffirmed 2009
12.	Chloride (as Cl)	mg/l	8.1	250 Max	APHA 22nd Ed. 2012, 4500-Cl-B, 4-72
13.	Sulphate (as SO_4)	mg/l	5.0	200 Max	APHA 22nd Ed. 2012, 4500-SO4-E, 4-190

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S.No	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14.	Nitrate (as NO3)	mg/l	1.0	45 Max	APHA 22nd Ed. 2012, 4500-NO_3-E, 4-125
15.	Fluoride (as F)	mg/l	0.21	1 Max	APHA 22nd Ed. 2012, 4500-FB& D, 4-84, 4-87
16.	Boron (as B)	mg/l	0.19	0.5 Max	APHA 22nd Ed. 2012, 4500-BB, 4-25
17.	Calcium(as Ca)	mg/l	17.2	75 Max	APHA 22nd Ed. 2012, 3500-Ca-B, 3-67
18.	Magnesium (as Mg)	mg/l	3.0	30 Max	APHA 22nd Ed. 2012, 3500- Mg- B, 3-84
19.	Ammonical Nitrogen/ Total Ammonia	mg/l	<0.1	-	APHA 22nd Ed. 2012, 4500 NH3-F, 4-115
20.	Iron (as Fe)	mg/l	0.15	0.3 Max	APHA 22nd Ed. 2012, 3111-B,3-18
21.	Manganese (as Mn)	mg/l	N.D	0.1 Max	APHA 22nd Ed. 2012, 3111-B, 318
22.	Aluminium (as Al)	mg/l	0.08	0.03 Max	APHA 22nd Ed. 2012, 3500- Al-B, 3-61
23.	Cadmium (as Cd)	mg/l	N.D	0.003 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
24.	Chromium Total (as Cr)	mg/l	N.D	0.05 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
25.	Copper (as Cu)	mg/l	N.D	0.05 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
26.	Lead (as Pb)	mg/l	N.D	0.01 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
27.	Zinc (as Zn)	mg/l	0.02	5 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
28.	Arsenic (as As)	mg/l	<0.01	0.01 Max.	APHA 22nd Ed. 2012, 3114-C,3-38
29.	Mercury (as Hg)	mg/l	N.D.	0.001 Max.	APHA 22nd Ed. 2012, 3112-B,3-23
30.	Selenium (as Se)	mg/l	N.D.	0.01 Max.	APHA 22nd Ed. 2012, 3114-C, 3-38
31.	Nickel (as Ni)	mg/l	<0.06	0.02 Max.	APHA 22nd Ed. 2012, 3111 B,3-18
32.	Mineral Oil	mg/l	N.D.	0.5 Max.	IS 3025 (Part 39): 1991, Reaffirmed 2003, Ed. 2.1
33.	Cyanide (as CN)	mg/l	N.D.	0.05 Max.	APHA 22nd Ed. 2012, 4500-CN, C & E, 4-39 & 4-44
34.	Anionic detergents as MBAS	mg/l	<0.1	0.2 Max.	APHA 22nd Ed. 2012, 5540-C, 5-53
35.	Phenolic compounds (as C_6H_5OH)	mg/l	N.D	0.001 Max.	APHA 22nd Ed. 2012, 5530- B & C, 5-47
36.	Polynuclear aromatic hydrocarbons (PAH)	µg/L	N.D	0.0001 mg/L Max.	APHA 22nd Ed. 2012, 6440, 6-93
37.	Polychlorinated Biphenyls (PCBs)	µg/L	N.D	0.0005 mg/l Max.	USEPA Method 8082
38.	Sulphide (as S)	mg/l	N.D	-	APHA 22nd Ed. 2012, 4500- S2-C 4-175 & F 4-178

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E-mail:mahabalranchi@gmail.com

S.No	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
Microbiological Analysis					
1.	Total Colliforms	MPN/ 100 mL	<1.1	N.D	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69
2.	E-Coli	MPN/ 100 mL	Absent	N.D	APHA 22nd Ed. 2012, 9221-B, C & G, 9-66, 9-69 and 9- 76
Pesticides Residues					
3.	p,p DDT	µg/L	N.D	1	US EPA 508-1995
4.	o,p DDT	µg/L	N.D	1	US EPA 508-1995
5.	p,p DDE	µg/L	N.D	1	US EPA 508-1995
6.	o,p DDE	µg/L	N.D	1	US EPA 508-1995
7.	p,p DDD	µg/L	N.D	1	US EPA 508-1995
8.	o,p DDD	µg/L	N.D	1	US EPA 508-1995
9.	γ-HCH (Lindane)	µg/L	<0.01	2	US EPA 508-1995
10.	α-HCH	µg/L	<0.01	0.01	US EPA 508-1995
11.	β-HCH	µg/L	N.D	0.04	US EPA 508-1995
12	δ - HCH	µg/L	N.D	0.04	US EPA 508-1995
13.	Butachlor	µg/L	N.D	125	US EPA 508-1995
14.	Alachlor	µg/L	N.D	20	US EPA 508-1995
15.	Atrazine	µg/L	N.D	2	US EPA 532-2000
16.	α Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
17.	β Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
18.	Endosulfan Sulphate	µg/L	N.D	0.4	US EPA 508-1995
19.	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20.	Malathion	µg/L	N.D	190	US EPA 8141A -1994
21.	Methyl Parathion	µg/L	N.D	0.3	US EPA 8141A -1994
22.	Monocrotophos	µg/L	N.D	1	US EPA 8141A-1994
23.	Phorate	µg/L	N.D	2	US EPA 8141A -1994
24.	Chlorpyrifos	µg/L	N.D	30	US EPA 8141A -1994
25.	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26.	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
Remarks: N.D- Not Detected					

Conclusion: The Physical & Chemical Analysis report indicates that water is not contaminated.

For Mahabal Enviro Eng. Pvt. Ltd.

Authorised Signatory

Vijay Pandey
SENIOR EXECUTIVE

Mahabal Enviro Eng. Pvt. Ltd. Ranchi

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Hindalco Industries:Environmental Monitoring report **September 2014**

Report no: SEPT007/2014-15 **Date:** 1st October,2014

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample type: AMBIENT AIR QUALITY MONITORING
Received:28.09.2014
Registered: 28.09.2014
Marks on Sample: Location: Sherengdag Plateau- Sherengdag A Pit Quary No 1
Sample collected on: 27.09.2014
Test Start/End Date: 29.09.2014/01.10.2014

LOCATION / IDENTIFICATION: Sherengdag Plateau- Sherengdag A Pit Quary No 1

PARAMETERS		UNIT	LIMIT	METHOD	01/10/2014
Sulphur Dioxide	SO_2	µg/m³	80	IS:5182 (Part-2):2001 (Reaff:2006)	52.5
Nitrogen Dioxide	NO_2	µg/m³	80	IS:5182(Part-6):1975 (Reaff:2004)	49.5
Particulate Matter (size less than 10 µm)	PM_{10}	µg/m³	100	IS:5182 (Part 23)	60.1
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	µg/m³	60	USEPA CFR(40) Appendix-L	38.5
Carbon Monoxide	CO	mg/m³	2	EPA 600/P-99/001F	0.6

Vijay Pandey
SENIOR EXECUTIVE

For Mahabal Enviro Eng. Pvt. Ltd.

Authorised Signatory

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Hindalco Industries:Environmental Monitoring report **September 2014**

Report no: SEPT007/2014-15 **Date:** 1st October,2014

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample type: AMBIENT AIR QUALITY MONITORING
Received: 28.09.2014
Registered: 28.09.2014
Marks on Sample: Location: Sherengdag Plateau- Sherengdag Village-1
Sample collected on: 27.09.2014
Test Start/End Date: 29.09.2014/01.10.2014

LOCATION / IDENTIFICATION: Sherengdag Plateau- Sherengdag Village-1

PARAMETERS		UNIT	LIMIT	METHOD	01/10/2014
Sulphur Dioxide	SO_2	µg/m³	80	IS:5182 (Part-2):2001 (Reaff:2006)	50.6
Nitrogen Dioxide	NO_2	µg/m³	80	IS:5182(Part-6):1975 (Reaff:2004)	53.5
Particulate Matter (size less than 10 µm)	PM_{10}	µg/m³	100	IS:5182 (Part 23)	55.8
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	µg/m³	60	USEPA CFR(40) Appendix-L	40.1
Carbon Monoxide	CO	mg/m³	2	EPA 600/P-99/001F	0.7

Vijay Pandey
SENIOR EXECUTIVE

For Mahabal Enviro Eng. Pvt. Ltd.
Authorised Signatory

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Report no: SEPT007/2014-15 **Date:** 1st October,2014

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample type: AMBIENT AIR QUALITY MONITORING
Received: 28.09.2014
Registered: 28.09.2014
Marks on Sample: Location: Sherengdag Plateau- Sherengdag B Pit
Sample collected on: 27.09.2014
Test Start/End Date: 28.09.2014/30.09.2014

LOCATION / IDENTIFICATION: Sherengdag Plateau- Sherengdag B Pit

PARAMETERS		UNIT	LIMIT	METHOD	30/09/2014
Sulphur Dioxide	SO_2	µg/m³	80	IS:5182 (Part-2):2001 (Reaff:2006)	52.5
Nitrogen Dioxide	NO_2	µg/m³	80	IS:5182(Part-6):1975 (Reaff:2004)	56.5
Particulate Matter (size less than 10 µm)	PM_{10}	µg/m³	100	IS:5182 (Part 23)	49.5
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	µg/m³	60	USEPA CFR(40) Appendix-L	41.2
Carbon Monoxide	CO	mg/m³	2	EPA 600/P-99/001F	0.5

Vijay Pandey
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For Mahabal Enviro Eng. Pvt. Ltd.
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Report no: SEPT007/2014-15 **Date:** 1st October,2014

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample type: AMBIENT AIR QUALITY MONITORING
Received: 28.09.2014
Registered: 28.09.2014
Marks on Sample: Location: Sherengdag Plateau- Jalim & Sanai Pit
Sample collected on: 27.09.2014
Test Start/End Date: 28.09.2014/30.09.2014

LOCATION / IDENTIFICATION: Sherengdag Plateau- Jalim & Sanai Pit

PARAMETERS		UNIT	LIMIT	METHOD	30/09/2014
Sulphur Dioxide	SO_2	µg/m³	80	IS:5182 (Part-2):2001 (Reaff:2006)	53.8
Nitrogen Dioxide	NO_2	µg/m³	80	IS:5182(Part-6):1975 (Reaff:2004)	53.5
Particulate Matter (size less than 10 µm)	PM_{10}	µg/m³	100	IS:5182 (Part 23)	48.2
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	µg/m³	60	USEPA CFR(40) Appendix-L	39.5
Carbon Monoxide	CO	mg/m³	2	EPA 600/P-99/001F	0.4

Vijay Pandey
SENIOR EXECUTIVE

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E-mail:mahabalranchi@gmail.com

Report no: SEPT007/2014-15 **Date:** 1st October,2014

Sample Description: Measurement of Noise

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: Measurement of Noise Level.
Sampling Method: Instrumental, Using Sound level Meter
Sampling Done by: Mahabal Enviro.
Test Start: 26.09.2014
End Date: 27.09.2014

Location / Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Month			Average of 24 continuous hours in Sep- 14		Average of 24 continuous hours in Sep- 14	
Sherendag Mining Area	dB(A) L_{eq}	75	53.0	70	43.9	27/09/2014

Vijay Pandey
SENIOR EXECUTIVE

For Mahabal Enviro Engg. Pvt. Ltd.

Authorised Signatory

Mahabal Enviro Engg. Pvt. Ltd. Ranchi

Mahabal Enviro Engineers Pvt. Ltd.

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E-mail:mahabalranchi@gmail.com

Report no: SEPT007/2014-15 Date: 1st October,2014

Sample Description: Measurement of Noise: Spot Noise

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample: Location: Sherengdag Mine Pit
Sample Description: Measurement of Noise Level.
Sampling Method: Instrumental, Using Sound level Meter
Sampling Done by: Mahabal Enviro.
Test Start: 27.09.2014
End Date: 27.09.2014

Location / Identification	Unit	Limit (day)	Result	Dates
POCKLAN	dB(A) L_{eq}	75	68.4	27/09/2014
COMPRESSOR	dB(A) L_{eq}	75	72.3	27/09/2014
WAGAN DRILL	dB(A) L_{eq}	75	73.1	27/09/2014

Note : (i) The value is the Leq. of twenty readings taken in location (Day time).

Vijay Pandey
SENIOR EXECUTIVE

For Mahabal Enviro Engg. Pvt. Ltd.

Authorised Signatory

Mahabal Enviro Engg. Pvt. Ltd. Ranchi