

ADITYA BIRLA



8/C

Ref. No.:HIL/EC/GP-IV-5/2017/11-133

Date: 10.11.2017
29

Shri Kanwarjeet Singh (IFS)
Additional Principal Chief Conservator of Forest,
Ministry of Environment Forests & Climate Change (MoEF)
Regional Office, (West Central Zone)
Ground Floor, East Wing
New Secretary Building,
Civil Lines, Nagpur -440001

Sub.: Six Monthly Environment Clearance Compliance Status Report for Gare Palma - IV/5 Coal Mine along with Environmental Monitoring reports of Ambient Air, Water, and Noise etc.

Ref. Environment Clearance No. J-11015/ 8/1998-IA.II (M) Dated: - 16th April 2015.

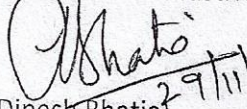
Sir,

With reference to subject matter on referred letter, we are submitting the six monthly Environmental Clearance Compliance status report along with environmental monitoring reports for Ambient Air, Water, Noise, during the period of April 2017 to September 2017.

This is for your kind information please.

Thanking you,

Yours faithfully,
For Hindalco Industries Limited,


(Dipesh Bhatia)
Vice President
Gare Palma IV/5,

Encl. : Six Monthly Environmental Clearance Compliance Report as Annexure-A.

CC To:

1. Zonal Officer, Central Pollution Control Board, Sahkar Bhawan, 3rd Floor, North T.T. Nagar, Bhopal - 462 003 (M. P.)
2. The Member Secretary, Chhattisgarh Environment Conservation Board, Paryavas Bhavan, Naya Raipur Chhattisgarh.
3. Regional Officer, Chhattisgarh Environment Conservation Board (CECB), T.V. Tower Road, Raigarh (C.G.)

Hindalco Industries Limited

Gare Palma Mines (IV/4 & IV/5), Vill & Po: Milupara, Tehsil: Tamnar Dist: Raigarh- 496107, Chhattisgarh, T: +91 7762 228212

Website : www.hindalco.com E mail : hindalco@adityabirla.com

Registered Office : Century Bhavan, 3rd Floor, Dr. Annie, Besant Road, Worli, Mumbai 400 030, India, T +91 22 6662 6666

Corporate Identity No. L27020MH1958PLC011238.





Compliance Report on conditions of Environment Clearance for Gare-Palma IV/5 coal mining project Transfer by Ministry of Environment & Forests vide letter no. J-11015/ 8/1998-IA.II (M) Dated: - 16th April 2015 for Under Ground Mining 1.0 Million Ton/Annum Production Capacity

| SI No | Conditions | Status |
|-------|---|---------------|
| 1 | Any change in scope of work will attract the provisions of Environment Protection Act (EPA), 1986 and Environment Impact Assessment Notification, 2006 in conjunction with the subsequent amendments/circulars. | Noted please. |
| 2 | All conditions stipulated in the EC letter No.J-11015/8/1998-IA.II (M) dated 31 st August, 2000 shall remain unchanged. | Noted please. |
| 3 | The successful bidder shall be liable, if any, for any act of violation of the EPA 1986/EIA Notification 2006/subsequent amendments and circulars which it has inherited during the transfer. | Noted please. |
| 4 | Successful bidder shall be liable for compliance of all court directions, if any. | Noted please. |

Compliance Report on conditions of Environment Clearance for Gare-Palma IV/5 coal mining project given by Ministry of Environment & Forests vide letter no. J-11015/ 8/1998-IA.II (M) Dated: - 31st August 2000 for Under Ground Mining 1.0 Million Ton/Annum Production Capacity

| SI no | Specific Conditions | Status |
|-------|--|---|
| i | Regular Monitoring of subsidence movement on the surface over working areas and impact on water bodies/ vegetation/ structures/ surroundings should be continued till movement ceases completely. In case of observation of any high rates of subsidence movement, appropriate measures should be taken to avoid loss of life and materials. Cracks should be effectively plugged with ballast and clayey soil/ suitable material. | The method of mining at Gare Palma IV/5 coal mine is Board & Pillar. Regular monitoring of subsidence movement on the surface over and around the working area and impact on natural pattern, water bodies, vegetation, structure, roads and surroundings is being done internal expert. During the observation no subsidence movement has been observed. In future, if any, appropriate effective corrective measures will be taken to avoid loss of life and material. Cracks will be effectively plugged with ballast and clayey soil/suitable material if observed. |
| ii | Adequate underground barrier should be left in consultation with the Director General of Mines & Safety (DGMS). Depillaring should also be carried out after taking approval from DGMS. | Adequate underground barrier as required are being maintained between the working face and the river in consultation with DGMS and also at other places whenever required. Depillaring will be carried out after taking prior approval of the DGMS. |
| iii | Garland drains should be constructed around the waste rock and ore stockpiles to prevent surface run-off. | Garland drain have been constructed around the coal stock yard to prevent the surface run-off. |
| iv | A Green Belt of adequate width should be raised by planting the local species along the mine | Planation in mines area is being done. At present around 37000 nos. of trees have been planted |

Gare Palma IV/5 Coal Mine, Milupara



| | | |
|----------|--|--|
| | boundary, Waste rock dumps, ore stockpile, ventilation fan road and selected open areas in consultation with local DFO/ Agriculture Department. Density of tree should be at least 2500 plants per ha. | including the Mine boundary and other places. Trees species planted are Gulmohar, Ashoka Aam, Imli, Shisam, Eucalyptus, Neem, Jamun, Accassia spp. etc. in consultation with DFO. Plantation has been carried out @2500 per hectare and will also be ensure in future. Plantation details enclosed as Annexure -I. |
| v | Compensation to the 14 land losers from whom private land will be acquired should be paid as per the state government norms. | Compensation to the 14 land losers has been paid by the company. |
| vi | The project authority should conduct a subsidence estimation study and submit the report to the Ministry within six months. | Subsidence estimation study report has been submitted to the Ministry by Prior allottee. |
| vii | The project proponent will construct "Check dams "at the sites proposed by the State Ground water Department in their report. While undertaking the proposed mining, the construction of the check dams should be carried out in with Ground water survey department, Government of MP (presently Chhattisgarh) and should have necessary financial provision and technical expertise. This should be communicated to the MoEF and CGWB. | As per requirement the check dams at the site will be constructed in consultation with state forest department and Ground water survey department, Government of Chhattisgarh and will be communicated to MOEF& CC and CGWB. |
| viii | Regular monitoring of the Ground water level and quality should be carried out by establishing a network of existing wells and constructing new Piezometer during the mining operations. The interval of monitoring should be four times a year- Pre monsoon (April to May), Monsoon (August), Post Monsoon (November) and winter (January). The data thus collected may be sent regularly to MoEF and CGWB for information. | Regular monitoring of groundwater level and quality is being carried out by establishing a network of existing wells. Report on ground water level monitoring and quality is enclosed as Annexure-II. |
| ix | Digital processing of the entire lease using remote sensing technique should be regularly once in three years for monitoring land use pattern and report submitted to MoEF and its regional officer. | Study report on digital processing of entire mine lease area has been submitted in last six monthly report. |
| x | A detailed mine decommissioning plan should be submitted to the MoEF, five years in advance for approval. | Detailed mine decommissioning plan will be submitted to the Ministry of Environment and forests, five years in advance for approval. |
| B | General Conditions | |
| i | No change in mining technology and scope of working should be made without prior approval of the MoEF. | Agreed and will be complied accordingly. |
| ii | No change in the calendar plan including excavation quantum of mineral coal and waste should be made. | Agreed and will be complied accordingly. |
| iii | Four ambient air quality stations should be established in the core zone as well as the buffer zone for RPM, SPM, SO ₂ , NO _x & CO Monitoring. Location of stations should be decided based on | Four ambient air quality monitoring stations have been established in consultation with the State Pollution Control Board and regular monitoring is |



| | | |
|------|--|--|
| | the meteorology data, topographical features and environmental and ecologically sensitive targets in consultation with the State Pollution Control Board. | being carried out. Monitoring Report is enclosed as Annexure -III. |
| iv | Data of ambient air quality (RPM, SPM, SO ₂ , NO _x & CO) should be regularly submitted to the Ministry including its Regional Officer at Bhopal (Currently Raipur) and the State Pollution Control Board & Central Pollution Control Board (Currently Raipur). | Ambient air quality monitoring report is enclosed as Annexure -III. |
| v | Drill should be wet operated. | Wet drilling is under practice. |
| vi | Fugitive dust emission from all the sources should be controlled, regularly monitored and the data recorded properly. Water spraying arrangement on haul roads, Wagons, loading dump trucks (loading and unloading) should be provided and properly maintained. | Fixed type water sprinkler has been provided at all along the roads, and loading points etc. to control the fugitive dust emission. |
| vii | Adequate measures should be taken for control of noise level below 80db in the work environment. Workers engaged in blasting and drilling operation, operations of HEMM etc. should be provided with ear plugs/ muffs | Ear muffs/plugs has been provided to the all workers engaged in blasting and drilling operations, operations of HEMM etc. The Noise monitoring report is enclosed as Annexure-IV. |
| viii | Industrial waste water (workshop and waste water from the mine) should be properly collected and treated so as to conform on the standards prescribed under GSR 422 dated 19.05.1993 and 31.12.1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents in to the pond. | Two numbers of Lamella clarifier (ETP-2 x200 m ³ per hour) plant has been installed for treatment of mine water. Report on water quality is enclosed as Annexure-V |
| ix | Acid mine water if any has to be treated and disposed off after conforming to the standards prescribed by the competent authority. | There is no acid mine water. Lamella clarifier (ETP) plant has been installed for treatment of mine water. Report on water quality is enclosed as Annexure-V. |
| x | Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board | Environmental laboratory has been established with adequate number and type of pollution monitoring and analysis equipment in consultation with the state pollution control Board. However we have engaged NABL laboratory for environmental quality monitoring of the mines area. |
| xi | Personnel working in dust area should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance of the workers should be undertaken periodically to observe any contractions due to exposure to coal dust and take corrective measures if needed. | Personnel working in dusty areas are wearing protective respiratory devices and they have also been provided with adequate training and information on safety and health aspect. Occupational health surveillance programme of the workers is being undertaken periodically to observe any contraction due to exposure to coal dust and corrective measures will be taken accordingly. |
| xii | A separate environmental management cell with suitable qualified personnel should be set up under | Environmental Management cell has been established. Copy enclosed as Annexure-VI. |



| | | |
|------|--|---|
| | the control of a senior executive who will report directly to the Head of the Organization. | |
| xiii | 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 Ministry. | The funds earmarked for environmental protection measures has been kept in separate account and not been diverted for other purposes. Annexure-VII. |
| xiv | The Regional Officer of the ministry located at Bhopal (currently Raipur) shall monitor compliance of the stipulated conditions. The project authorities should extent full co-operation to the officer (s) of the Regional Officer by furnishing requisite data information / monitoring reports | Agreed and cooperation will be extended on time to time. |
| xv | A copy of the clearance letter will be marked to concerned Panchayat/ local NGO if any from whom suggestion / representation has been received while processing the proposal | Complied by Prior Allottee. |
| xvi | 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 | Complied by Prior Allottee. |
| xvii | The project authorities should advertise at least two local newspapers widely circulated around the project one of which shall be in vernacular language of the locality concerned informing that the project has been accorded environmental clearance and the copy of the clearance letter is available with the State Pollution Control Board and may also be seen at web site of the MoEF at http://envfor.nic.in | Complied by Prior Allottee. |



Annexure-I

Year wise Plantation Detail for Gare-Palma IV/5 Coal Mines

(Milupara Underground coal mine)

| Sl. No. | Year | Plantation area in Acre | Numbers of saplings planted. (Approx.) | Nos. of saplings |
|---------|-----------|-------------------------|---|--|
| 1 | Upto 2015 | Coal mine lease area. | 30000 | <i>Neem, Mahua, , Jamun, Mango, Guava, Imli, Drumstick, Teak, Shivan /</i> |
| 2 | 2016 | Coal mine lease area | 2000 | <i>Ghamar, Sisham, Sirus, Bamboo, Peltafarm, Nilgiri etc.</i> |
| 3 | 2017 | Coal mine lease area | 5000 | |
| Total | | | 37000 | |

Gare Palma IV/5 Coal Mine, Milupara



Ground water level monitoring in and around the Coal Mine area
(October 2017)

| Sr.No. | Location | Types of structure | Water level (MBGL) October 17 |
|--------|--|--------------------|-------------------------------|
| 1 | Bankheta (Near HIL Office) | Borewell | 9.0 |
| 2 | Banjikhoh (Near Office) | Dugwell | 3.45 |
| 3 | Milupara (PHC-HIL) | Dugwell | 3.50 |
| 4 | Urba (Near Intermediate school) | Dugwell | 4.80 |
| 5 | Sakta (Near Primary School) | Dugwell | 2.20 |
| 6 | Sidarpara (Primary School compound) | Dugwell | 7.0 |
| 7. | Beljor Village | Dugwell | 5.5 |



GLOBAL ENVIRONMENT & MINING SERVICES

(Consulting Engineers, Mine designers, Geologist & Surveyors)

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e-mail : gems_hpt@yahoo.com

Website : globalmining.in

Water Sample Analysis Report

| TEST REPORT | | | |
|---------------------------------------|--|-------------------------|------------|
| Report No.: GEMS/TR/17-18/1423 | Date: 30.08.2017 | | |
| Name and Address of Customer | Hindalco Industries Limited, Gare Plama - VI/5, Milupara U/G Coal Mine, Village - Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107. | | |
| Order /Reference: | M/PO/SRV/1718/0125, dtd. 02.08.2017 | | |
| Sample Drawn By | Laboratory | Date of Sampling | 20.08.2017 |
| Sample Received On | 23.08.2017 | | |
| Start of Analysis | 23.08.2017 | End of Analysis | 28.08.2017 |
| Monitoring for | Ground Water | | |
| Sampling Location | RO Outlet Milupara | | |
| Sampling Procedure | IS:3025(Part I):1987 RA 2003; APHA 22nd Ed. 2012, 1060-B, 1-39 | | |
| Sample Quantity/Packing | 5 L X 1 No. PVC Can 1 L X 1 No. PVC Can 1 L X 1 No. Glass Bottle | | |

| Sr. No. | Parameter | Unit | Result | Acceptable Limit for Drinking Water (IS 10500:2012) | Method Reference |
|---------|--|--------|--------|---|--|
| 1 | Turbidity | NTU | 0.44 | 1.0 (max) | APHA 22 nd Ed.2012,2130-B,2-13 |
| 2 | pH | - | 7.07 | 6.5 To 8.5 | APHA 22 nd Ed.2012,4500-H ⁺ -B, 4-92 |
| 3 | Electrical Conductivity | µS/cm | 110.1 | -- | IS 3025(part-14):1984, RA 2013 |
| 4 | Residual Chlorine | mg/Lit | N.D. | 0.2 (max) | APHA 22 nd Ed.2012,4500-Cl-G, 4 - 69 |
| 5 | Total Solid | mg/Lit | 88.7 | -- | APHA 22 nd Ed.2012,2540-B, 2-64 |
| 6 | Total Dissolved Solids | mg/Lit | 86.7 | 500 (max) | IS 3025(part-16):1984, RA 2006 |
| 7 | Total Suspended Solids | mg/Lit | 2 | -- | APHA 22 nd Ed.2012,2540-D, 2-66 |
| 8 | Alkalinity Total (as CaCO ₃) | mg/Lit | 44.0 | 200 (max) | IS 3025(part-23):1986, RA 2003 |
| 9 | Total Hardness (as CaCO ₃) | mg/Lit | 62.0 | 200 (max) | APHA 22 nd Ed.2012,2340-C, 2-44,45 |
| 10 | Calcium Hardness (as CaCO ₃) | mg/Lit | 32.0 | -- | APHA 22 nd Ed.2012,3500-Ca-B, 3-67 |
| 11 | Magnesium Hardness (as CaCO ₃) | mg/Lit | 30.0 | -- | APHA 22 nd Ed.2012,3500-Mg-B, 3-84 |
| 12 | Calcium (as Ca) | mg/Lit | 12.8 | 75 (max) | APHA 22 nd Ed.2012,3500-Ca-B, 3-67 |
| 13 | Magnesium (as Mg) | mg/Lit | 7.2 | 30 (max) | APHA 22 nd Ed.2012,3500-Mg-B, 3-84 |
| 14 | Chloride (as Cl) | mg/Lit | 4.99 | 250 (max) | APHA 22 nd Ed.2012,4500-Cl-B, 4-72 |
| 15 | Sulphate (as SO ₄) | mg/Lit | 6.6 | 200 (max) | APHA 22 nd Ed.2012,4500-SO ₄ -E, 4-190 |
| 16 | Nitrate (as NO ₃) | mg/Lit | 0.02 | 45 (max) | APHA 22 nd Ed.2012,4500-NO ₃ -B, 4-122 |

Gare Palma IV/5 Coal Mine, Milupara



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Report No. 1423 Cont....

| Sr. No. | Parameter | Unit | Result | Acceptable Limit for Drinking Water (IS 10500:2012) | Method Reference |
|---------|---|--------|--------|---|---|
| 17 | Phosphate (as P) | mg/Lit | N.D. | -- | APHA 22 nd Ed.2012,4500-P-C, 4-153 |
| 18 | Sodium (as Na) | mg/Lit | 2.48 | -- | APHA 22 nd Ed.2012,3500-Na-B, 3-97 |
| 19 | Potassium (as K) | mg/Lit | 8.44 | -- | APHA 22 nd Ed.2012,3500-K-B, 3-87 |
| 20 | Boron (as B) | mg/Lit | N.D. | 0.5 (max) | APHA 22 nd Ed.2012,4500-B-B, 4-25 |
| 21 | Iron (as Fe) | mg/Lit | N.D. | 0.3 (max) | APHA 22 nd Ed.2012,3111-B,3-18 |
| 22 | Fluoride (as F) | mg/Lit | 0.34 | 1.0 (max) | APHA 22 nd Ed.2012,4500-F-B & D, 4-84 & 87 |
| 23 | Manganese (as Mn) | mg/Lit | N.D. | 0.1 (max) | APHA 22 nd Ed.2012,3111-B, 3-18 |
| 24 | Lead (as Pb) | mg/Lit | N.D. | 0.01 (max) | APHA 22 nd Ed.2012,3111-B, 3-18 |
| 25 | Nickel (as Ni) | mg/Lit | N.D. | 0.02 (Max) | APHA 22 nd Ed.2012,3500-Ni, 3-108 |
| 26 | Zinc (as Zn) | mg/Lit | N.D. | 5.0 (max) | APHA 22 nd Ed.2012,3111-B, 3-18 |
| 27 | Copper (as Cu) | mg/Lit | N.D. | 0.05 (max) | APHA 22 nd Ed.2012,3111-B, 3-18 |
| 28 | Cadmium (as Cd) | mg/Lit | N.D. | 0.003 (Max) | APHA 22 nd Ed.2012,3500-Cd, 3-105 |
| 29 | Mercury (as Hg) | mg/Lit | N.D. | 0.001 (max) | APHA 22 nd Ed.2012,3112-B, 3-23 |
| 30 | Arsenic (as As) | mg/Lit | N.D. | 0.01 (max) | APHA 22 nd Ed.2012,3114-C, 3-38 |
| 31 | Selenium (as Se) | mg/Lit | N.D. | 0.1 (max) | APHA 22 nd Ed.2012,3114-C, 3-38 |
| 32 | Chromium (as Cr) | mg/Lit | N.D. | 0.001 (max) | APHA 22 nd Ed.2012,3500-Cr-B, 3-69 |
| 33 | Anionic Detergent (as MBAS) | mg/Lit | N.D. | 0.02 (max) | APHA 22 nd Ed.2012,5540-C, 5-53 |
| 34 | Phenolic Compound (as C ₆ H ₅ OH) | mg/Lit | N.D. | 0.001 (max) | APHA 22 nd Ed.2012,5540-B & C, 5-47 |
| 35 | Poly-nuclear Aromatic Hydrocarbon (PAH) | µg/Lit | N.D. | 0.0001 (max) | APHA 22 nd Ed.2012,6440-6-93 |
| 36 | Mineral Oil | mg/Lit | N.D. | 0.05 (max) | IS 3025 (part-39) : 1991, RA 2003, Ed. 2.1 |
| 37 | Oil & Grease | mg/Lit | N.D. | -- | IS 3025 (Part 39):1991, RA 2003, Ed 2.1 |



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Website : globalmining.in

Report No. 1423 Cont....

| Sr. No. | Parameter | Unit | Result | Acceptable Limit for Drinking Water (IS 10500:2012) | Method Reference |
|---------------------------------|---------------------|------------|--------|---|---|
| Microbiological Analysis | | | | | |
| 1 | Total Coliforms | MPN/100 ML | N.D. | Shall not be detectable in any 100 ml sample | APHA 22 nd Ed.2012,9921-B & C, 9-66 & 69 |
| Pesticides | | | | | |
| 1 | p,p DDT | µg/L | N.D. | 1 | US EPA 508-1995 |
| 2 | o,p DDT | µg/L | N.D. | 1 | US EPA 508-1995 |
| 3 | p,pDDE | µg/L | N.D. | 1 | US EPA 508-1995 |
| 4 | p,p DDD | µg/L | N.D. | 1 | US EPA 508-1995 |
| 5 | O,p DDD | µg/L | N.D. | 1 | US EPA 508-1995 |
| 6 | Gamma-HCH (Lindane) | µg/L | N.D. | 2 | US EPA 508-1995 |
| 7 | Alpha-HCH | µg/L | N.D. | 0.01 | US EPA 508-1995 |
| 8 | Beta-HCH | µg/L | N.D. | 0.04 | US EPA 508-1995 |
| 9 | Delta HCH | µg/L | N.D. | 0.04 | US EPA 508-1995 |
| 10 | Alpha-Endosulfan | µg/L | N.D. | 0.4 | US EPA 508-1995 |
| 11 | Beta-Endosulfan | µg/L | N.D. | 0.4 | US EPA 508-1995 |
| 12 | Endosulfansulphate | µg/L | N.D. | 0.4 | US EPA 508-1995 |
| 13 | Monocrotophos | µg/L | N.D. | 1 | US EPA 8141A-1994 |
| 14 | Ethion | µg/L | N.D. | 3 | US EPA 8141A-1994 |
| 15 | Chloropyrifos | µg/L | N.D. | 30 | US EPA 8141A-1994 |
| 16 | Phorate | µg/L | N.D. | 2 | US EPA 8141A-1994 |
| 17 | Phoratesulphoxide | µg/L | N.D. | - | US EPA 8141A-1994 |
| 18 | Phoratesulphone | µg/L | N.D. | - | US EPA 8141A-1994 |
| 19 | 2,4-D | µg/L | N.D. | 30 | US EPA 515.1-1995 |
| 20 | Alachlor | µg/L | N.D. | 20 | US EPA 508-1995 |
| 21 | Atrazine | µg/L | N.D. | 2 | US EPA 532-2000 |
| 22 | Methyl parathion | µg/L | N.D. | 0.3 | US EPA 8141A-1994 |
| 23 | Methyl paraxone | µg/L | N.D. | - | US EPA 8141A-1994 |
| 24 | Malathion | µg/L | N.D. | 190 | US EPA 8141A-1994 |
| 25 | Malaaxon | µg/L | N.D. | - | US EPA 8141A-1994 |
| 26 | Aldrin | µg/L | N.D. | 0.03 | US EPA 508-1995 |
| 27 | Dieldrin | µg/L | N.D. | 0.03 | US EPA 508-1995 |
| Remarks: N.D.- Not Detected | | | | | |

For Global Environment & Mining Services

S. N. Gulhane
Chief (Laboratory)



Note:

1. The result listed refers only to the tested sample(s) and applicable parameter(s).
2. This report is not to be reproduced except in full, without written approval of the laboratory.

Gare Palma IV/5 Coal Mine, Milupara



Sub Divisional Water Testing Lab, Gharghoda

(National Rural Drinking Water Programme)

District Raigarh Block Tomnar Village As Under
(Code No.)

Particulars of sample

(i) Date of Collection 31/03/2017
(ii) Date of Received — u —
(iii) Date of Analysis — u —
Reference (if any) 393/30.3.2017

Details of Location & Source

(i) Kelo River (up stream)
(ii) — u — (Down stream)
(iii) Bendera Nala
(iv) Dumen Nala
(v) Banjikhol (Bor well)

| Sl No. | Characteristics | Units | Acceptable | Cause for rejection | RESULTS | | | | |
|------------------------|---|-----------------|-----------------|---------------------|-----------------|------------|------|------|------|
| | | | | | I | II | III | IV | V |
| PHYSICAL | | | | | | | | | |
| 1. | Temperature | °C | — | — | 30° | 30° | 30° | 30° | 30° |
| 2. | Turbidity | N.T.U | 2.5 | 10 | 1.90 | 2.08 | 1.75 | 1.36 | 1.05 |
| 3. | Colour | Pt.Cobalt Scale | 5.0 | 25 | | | | | |
| 4. | Taste & Odour | - | Unobjectionable | Unobjectionable | Unobjectionable | | | | |
| CHEMICAL | | | | | | | | | |
| 5. | PH | PH Scale | 7.0 To 8.5 | 6.5 To 9.2 | 7.65 | 7.30 | 7.85 | 7.21 | 7.05 |
| 6. | Conductivity | Micro mhos/cm | - | - | | Not tested | | | |
| 7. | Total Alkalinity | mg/l | - | - | | | | | |
| 8. | Chlorides | mg/l | 200 | 1000 | 240 | 210 | 230 | 200 | 140 |
| 9. | Nitrates | mg/l | 45 | 45 | NIL | NIL | NIL | NIL | NIL |
| 10. | Total Hardness as Ca CO ₃ | mg/l | 200 | 600 | 112 | 84 | 198 | 136 | 104 |
| 11. | Calcium (as Ca) | mg/l | 75 | 200 | 84 | 60 | 178 | 134 | 58 |
| 12. | Magnesium (as mg) | mg/l | 30 | 150 | 28 | 24 | 20 | 62 | 46 |
| 13. | Total Dissolved Solids | mg/l | 500 | 1500 | | Not tested | | | |
| 14. | Iron | mg/l | 0.1 | 1.0 | NIL | NIL | NIL | NIL | 1.0 |
| 15. | Fluorides | mg/l | 1.0 | 1.5 | NIL | NIL | NIL | NIL | NIL |
| 16. | Residual Chlorine by Jar Test | ppm | - | - | | Not tested | | | |
| 17. | Coagulant Dose | mg/l | - | - | | | | | |
| Bacteriological | | | | | | | | | |
| 18. | Coliform Organism at 37°C | M.P.N. 100ml | 24Hr. 48Hr. | | NIL | NIL | NIL | NIL | NIL |
| 19. | Faecal Coliforms | Per 100 ml | | | NIL | NIL | NIL | NIL | NIL |
| 20. | Special test :- (i) (ii) REMARKS | | | | | | | | |

Sample no. (i) to (iv) are acceptable & sample no. (v) is not acceptable for drinking purpose

TESTED BY
[Signature]
Chemist
Water Testing Lab. Gharghoda
Distt- Raigarh (C.G)

[Signature]
Assistant Engineer
P.H.E. Sub. Dn. Gharghoda
Distt- Raigarh (C.G)

[Signature]
Sub Engineer/ Incharge
Water Testing Lab.
P.H.E. Sub.Dn. Gharghoda



Annexure -III

Ambient Air Quality Monitoring report



GLOBAL ENVIRONMENT & MINING SERVICES

(Consulting Engineers, Mine designers, Geologist & Surveyors)

3rd Main Road, Basaveswara Badavane,
HOSPET - 583201, Dist., Bellary (Karnataka)

Ph : +918394 229433, 651111

e-mail : gems_hpt@yahoo.com

Website : globalmining.in

Ambient Air Quality Monitoring Report

| TEST REPORT | |
|--------------------------------|--|
| Report No.: GEMS/TR/17-18/1416 | Date: 30.08.2017 |
| Name and Address of Customer | Hindalco Industries Limited, Gare Plama - VI/5, Milupara U/G Coal Mine, Village - Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107. |
| Order /Reference: | M/PO/SRV/1718/0125, dtd. 02.08.2017 |
| Sample Drawn By | Laboratory |
| Sample Received On | 21.08.2017 |
| Start of Analysis | 21.08.2017 |
| End of Analysis | 24.08.2017 |
| Monitoring for | Ambient Air Quality Monitoring |
| Sampling Location | Office Area, Milupara |
| Sampling Procedure | As per method reference |
| Sample Quantity/Packing | Filter Paper (PM10): 1X1 No., Filter Paper (PM2.5): 1X1 No. SO ₂ : 30mLX1 No. PVC Bottle, NO ₂ : 30mLX1 No. PVC Bottle Rubber Bladder: 1X1 No. |

| Meteorological Data/ Environmental Conditions | | | | | |
|--|--------------------------|-----------------------|----------------|--|------|
| Avg. Wind Velocity | Prominent Wind Direction | Relative Humidity (%) | | Temperature (°C) | |
| | | Max. | Min. | Max. | Min. |
| -- | -- | -- | -- | -- | -- |
| Location | Near Office | Duration of Sampling | | 24 Hours | |
| Parameter | Unit | Result | NAAQM Standard | Method Reference | |
| Particulate Matter size less than 10 microns (PM10) | µg/m ³ | 73 | 100 | IS 5182 (Part 23): 2006 & CPCB Guidelines Vol.-I | |
| Particulate Matter size less than 2.5 microns (PM2.5) | µg/m ³ | 38 | 60 | Instrument Manufacturer Operating Instructions. | |
| Sulphur Dioxide (SO ₂) | µg/m ³ | 32 | 80 | IS 5182 (Part 2): 2001, RA 2006 & CPCB Guidelines Vol.-I | |
| Nitrogen Dioxide (NO ₂) | µg/m ³ | 41 | 80 | IS 5182 (Part 6): 2006 & CPCB Guidelines Vol.-I | |
| Carbon Monoxide (CO)* | mg/m ³ | 2.8 | 4.0 | IS 5182(Part 10):1999, RA 2003 | |
| Remarks: * Except CO, all results are on the basis of 24 hour sampling., N.D. - Not Detected | | | | | |

For Global Environment & Mining Services

S. N. Gulhane
Chief (Laboratory)



Note:

1. The result listed refers only to the tested sample(s) and applicable parameter(s).
2. This report is not to be reproduced except in full, without written approval of the laboratory.

Gare Palma IV/5 Coal Mine, Milupara



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e-mail : gems_hpt@yahoo.com
Website : globalmining.in

Ambient Air Quality Monitoring Report

| TEST REPORT | | | |
|------------------------------|--|------------------|------------------|
| Report No.: | GEMS/TR/17-18/1417 | | Date: 30.08.2017 |
| Name and Address of Customer | Hindalco Industries Limited, Gare Plasma – VI/5, Milupara U/G Coal Mine, Village – Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107. | | |
| Order /Reference: | M/PO/SRV/1718/0125, dtd. 02.08.2017 | | |
| Sample Drawn By | Laboratory | Date of Sampling | 19.08.2017 |
| Sample Received On | 21.08.2017 | | |
| Start of Analysis | 21.08.2017 | End of Analysis | 24.08.2017 |
| Monitoring for | Ambient Air Quality Monitoring | | |
| Sampling Location | ETP Area, Kondkel | | |
| Sampling Procedure | As per method reference | | |
| Sample Quantity/Packing | Filter Paper (PM10): 1X1 No., Filter Paper (PM2.5): 1X1 No. SO ₂ : 30mLX1 No. PVC Bottle, NO ₂ : 30mLX1 No. PVC Bottle Rubber Bladder: 1X1 No. | | |

| Meteorological Data/ Environmental Conditions | | | | | |
|--|--------------------------|-----------------------|----------------|--|------|
| Avg. Wind Velocity | Prominent Wind Direction | Relative Humidity (%) | | Temperature (°C) | |
| | | Max. | Min. | Max. | Min. |
| -- | -- | -- | -- | -- | -- |
| Location | Near ETP | Duration of Sampling | | 24 Hours | |
| Parameter | Unit | Result | NAAQM Standard | Method Reference | |
| Particulate Matter size less than 10 microns (PM10) | µg/m ³ | 76 | 100 | IS 5182 (Part 23): 2006 & CPCB Guidelines Vol.-I | |
| Particulate Matter size less than 2.5 microns (PM2.5) | µg/m ³ | 42 | 60 | Instrument Manufacturer Operating Instructions. | |
| Sulphur Dioxide (SO ₂) | µg/m ³ | 29 | 80 | IS 5182 (Part 2): 2001, RA 2006 & CPCB Guidelines Vol.-I | |
| Nitrogen Dioxide (NO ₂) | µg/m ³ | 38 | 80 | IS 5182 (Part 6): 2006 & CPCB Guidelines Vol.-I | |
| Carbon Monoxide (CO)* | mg/m ³ | 2.1 | 4.0 | IS 5182(Part 10):1999, RA 2003 | |
| Remarks: * Except CO, all results are on the basis of 24 hour sampling., N.D. - Not Detected | | | | | |

For Global Environment & Mining Services

S. N. Gulhane
Chief (Laboratory)



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Gare Palma IV/5 Coal Mine, Milupara



Noise level Monitoring



GLOBAL ENVIRONMENT & MINING SERVICES
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Website : globalmining.in

Noise Level Monitoring Report

| TEST REPORT | |
|---------------------------------------|--|
| Report No.: GEMS/TR/17-18/1428 | Date: 30.08.2017 |
| Name and Address of Customer | Hindalco Industries Limited, Gare Plama – VI/5, Milupara U/G Coal Mine, Village – Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107. |
| Order /Reference: | M/PO/SRV/1718/0125, dtd. 02.08.2017 |
| Sample Drawn By | Laboratory |
| Sample Received On | Not Applicable |
| Monitoring for | Noise Level Monitoring |
| Sampling Location | Inside Coal Mine & Outside Coal Mine (As described below) |
| Sampling Procedure | Manufacturer's Instruction |
| Sample Quantity/Packing | Not Applicable |

| Location | Unit | Result | | Limit (Industrial Zone) | |
|---------------------------|-------|----------|------------|-------------------------|------------|
| | | Day Time | Night Time | Day Time | Night Time |
| Office Area, Milupara | dB(A) | 66 | 60 | 75 | 70 |
| Incline Area, Milupara | dB(A) | 61 | 54 | | |
| Bunker Area, Milupara | dB(A) | 60 | 54 | | |
| Weighbrige Area, Milupara | dB(A) | 66 | 60 | | |
| DG Set Area, Kondkel | dB(A) | 74 | 68 | | |
| Bunker Area, Kondkel | dB(A) | 70 | 65 | | |
| Office Area, Kondkel | dB(A) | 73 | 67 | | |

| Location | Unit | Result | | Limit (Residential Area) | |
|----------------------|-------|----------|------------|--------------------------|------------|
| | | Day Time | Night Time | Day Time | Night Time |
| Outside Plant | | | | | |
| HIL Staff Quarter | dB(A) | 53 | 40 | 55 | 45 |
| HIL Colony, Kondkel | dB(A) | 51 | 43 | | |
| Sidarpara Village | dB(A) | 52 | 42 | | |

For Global Environment & Mining Services

S. N. Gulhane
Chief (Laboratory)



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ETP Water Analysis



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Website : globalmining.in

Effluent Sample Analysis Report

| TEST REPORT | |
|--------------------------------|---|
| Report No.: GEMS/TR/17-18/1425 | Date: 30.08.2017 |
| Name and Address of Customer | Hindalco Industries Limited, Gare Plasma – VI/5, Milupara U/G Coal Mine, Village – Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107. |
| Order /Reference: | M/PO/SRV/1718/0125, dtd. 02.08.2017 |
| Sample Drawn By | Laboratory |
| Sample Received On | 23.08.2017 |
| Start of Analysis | 23.08.2017 |
| Monitoring for | Effluent Water |
| Sampling Location | ETP Outlet - I |
| Sampling Procedure | IS:3025(Part I):1987 RA 2003; APHA 22nd Ed. 2012, 1060-B, 1-39 |
| Sample | 5 L X 1 No. PVC Can |
| Quantity/Packing | 1 L X 1 No. Glass Bottle |

| Sr. No. | Parameter | Unit | Result | The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water | Method Reference |
|---------|----------------------------|-----------|--------|--|--|
| 1 | Colour and Odour | Hazen & - | Absent | See 6 of Annexure-I | APHA 22 nd Ed. 2012,2120-B,2-6 |
| 2 | Temperature | NTU | 27.0 | Shall not exceed 5°C above the receiving water temperature | APHA 22 nd Ed.2012,2130-B,2-13 |
| 3 | pH | - | 7.61 | 5.5 to 9.0 | APHA 22 nd Ed.2012,4500-H ⁺ -B, 4-92 |
| 4 | Total Residual Chlorine | mg/Lit | N.D. | 1.0 | APHA 22 nd Ed.2012,4500-CI-G, 4 – 69 |
| 5 | Total Suspended Solids | mg/Lit | 12 | 100 | APHA 22 nd Ed.2012,2540-D, 2-66 |
| 6 | Dissolved Phosphate (as P) | mg/Lit | N.D. | 5.0 | APHA 22 nd Ed.2012,4500-P-C, 4-153 |
| 7 | Fluoride (as F) | mg/Lit | 1.9 | 2.0 | APHA 22 nd Ed.2012,4500-F-B & D, 4-84 & 87 |
| 8 | Lead (as Pb) | mg/Lit | N.D. | 0.1 | APHA 22 nd Ed.2012,3111-B, 3-18 |
| 9 | Zinc (as Zn) | mg/Lit | N.D. | 5.0 | APHA 22 nd Ed.2012,3111-B, 3-18 |
| 10 | Copper (as Cu) | mg/Lit | N.D. | 3.0 | APHA 22 nd Ed.2012,3111-B, 3-18 |
| 11 | Cadmium (as Cd) | mg/Lit | N.D. | 2.0 | APHA 22 nd Ed.2012,3500-Cd, 3-105 |



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Website : globalmining.in

Report No. 1425 Cont....

| Sr. No. | Parameter | Unit | Result | The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water | Method Reference |
|---------|--|--------|--------|--|---|
| 12 | Mercury (as Hg) | mg/Lit | N.D. | 0.01 | APHA 22 nd Ed.2012,3112-B, 3-23 |
| 13 | Arsenic (as As) | mg/Lit | N.D. | 0.2 | APHA 22 nd Ed.2012,3114-C, 3-38 |
| 14 | Selenium (as Se) | mg/Lit | N.D. | 0.05 | APHA 22 nd Ed.2012,3114-C, 3-38 |
| 15 | Total Chromium (as Cr) | mg/Lit | N.D. | 2.0 | APHA 22 nd Ed.2012,3500-Cr-B, 3-69 |
| 16 | Chemical Oxygen Demand (COD) | mg/Lit | 76 | 250 | APHA 22 nd Ed.2012, 5520-B, 5-17 |
| 17 | Biochemical Oxygen Demand (BOD) | mg/Lit | 12 | 30 | IS 3025 (Part 44):1993, RA 2003 |
| 18 | Oil & Grease | mg/Lit | N.D. | 10 | IS 3025 (Part 39):1991, RA 2003, Ed 2.1 |
| 19 | Phenoile Compounds (as C ₆ H ₅ OH) | mg/Lit | N.D. | 1.0 | IS 3025 (Part 43):1992, RA 2003 |

Remarks: N.D.- Not Detected

For Global Environment & Mining Services

S. N. Gulhane
Chief (Laboratory)



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Gare Palma IV/5 Coal Mine, Milupara



Annexure –VI

Environment Management Cell



Date: 02.03.2016

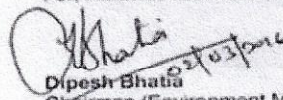
Environment Management Cell

An Environment Management Cell of Gare Palma IV/5 Coal Mine is hereby constituted consisting of the following persons which will take care of Environment related matters such as Pollution Monitoring, Pollution Control, Plantation, Waste management, Awareness & Training Programs etc in the mine area.

| Sr. No. | Name of person | Designation in the mine | Designation in the EMD Cell |
|---------|------------------------|-------------------------|-----------------------------|
| 1. | Dipesh Bhatia | Astt Vice President | Chairman |
| 2. | Dr.V.Mishra | DGM (HR & Admin) | Member |
| 3. | A.N.Swamy | DGM (Mines) | Vice -Chairman |
| 4. | S. K. Jain | DGM (E & M) | Member |
| 5. | B. Gopal Krishna | AGM (MINES) | Member |
| 6. | Ajay Agrawal | AGM (Commercial) | Member |
| 7. | Dipankar Khan | DGM (Geology) | Member |
| 8. | Sandeep Kumar Mishra | Manager (EMD) | Secretary |
| 9. | B.P.Chandra | Jr.Engineer (Civil) | Member |
| 10. | Girja Shankar Tamrakar | Jr.Engineer (EMD) | Member |

The Environment Cell Meeting will be held on every 4th day of the month. All members are requested to be present in the meeting and to discuss on issues related to Environmental Management.

For, Hindalco Industries Limited


Dipesh Bhatia
Chairman (Environment Management Cell)
Gare Palma IV/5 Coal Mine

HINDALCO INDUSTRIES LIMITED
Gare Palma IV/4 & IV/5
VIII & P.O. Milupara, Tehsil - Tarnetar
Dist : Raigarh 495 107, Chhattisgarh

REGISTERED OFFICE
Century Bhavan, 3rd Floor, Dr. Annie
Besant Road, Worli, Mumbai 400 030
Telephone : +91 22 6662 6666

Website : www.hindalco.com
E-mail : hindalco@adityabirla.com
Corporate
Identity No. L27620MH1056PLC011238

Gare Palma IV/5 Coal Mine, Milupara



Annexure -VII

| Environment Expenditure 2017-18 | | | | | |
|----------------------------------|----------------------------------|--------------------|------------|------------------|-----------------------|
| Sl.No | Description | Order No. | Order Date | Cost Center Code | Amount |
| A. Water Management | | | | | |
| 1 | Chemical | | | | ₹ 526,022.63 |
| 2 | Maintenance | | | | ₹ 554,035.00 |
| | | | | | ₹ 1,080,057.63 |
| B. Air Management | | | | | |
| 1 | Environmental Monitoring | M/PO/SRV/1718/0125 | 02.08.2017 | S5440002 | ₹ 560,382.00 |
| 2 | Dust suppression | | | | ₹ 163,925.57 |
| | | | | | ₹ 724,307.57 |
| C. Green belt Maintenance | | | | | |
| 1 | PLANTATION WITH PIT DIGGING | M/PO/SRV/1718/0163 | 31.08.2017 | S5340076 | ₹ 188,800.00 |
| 2 | Electric Lawn Mower | M/PO/NBN/1718/0055 | 14.11.2017 | S53CX094 | ₹ 29,524.32 |
| 3 | Electric brush cutter purchase | M/PO/SPR/1718/0259 | 31.10.2017 | | ₹ 28,253.92 |
| | | | | | ₹ 246,578.24 |
| D. Others | | | | | |
| 1 | Painting and writing work at WTP | M/PO/SRV/1718/0209 | 04.11.2017 | S5340076 | ₹ 9,000.00 |
| 2 | painting work of flower pot | M/PO/SRV/1718/0223 | 24.11.2017 | S5340076 | ₹ 3,990.00 |
| | | | | | ₹ 12,990.00 |
| Grand Total (A+B+C+D) | | | | | ₹ 2,063,933.44 |

Gare Palma IV/5 Coal Mine, Milupara



Annexure –VIII

| M/s Hindalco Industries Limited , Gare Palma Mines GP IV/5 | |
|---|----------------------|
| CSR Acitivity Wise Details April- September ,2017 | |
| Focus Areas/Project Activities | Expenditure |
| Education | Costs (Lakhs) |
| Teachers Provided to Various Schools excluding balwadi teachers | 3.46 |
| Computer Literacy classes run by us for students if any | 0.8375 |
| Best Teacher award | 0.125 |
| Gift Distribution to students in Schools | 0.15 |
| Bus Services | 6.095 |
| Others | 0.275 |
| Health | |
| Total Pulse Polio administerd cases (April-March) | 0.02 |
| Toilets Constructed - our Own Funding | 2.94 |
| Drinking Water supply through Tanker | 1.145 |
| Infra structure | |
| Community Hall/ centres | 3.824 |
| Cannel Construction | 0.52 |
| Social | |
| Road Cleaning of Transporting Road | 6.407 |
| Petrolling Vehicle for local Police Station for safety of Area | 1.13 |
| Harihar Chhattisgarh | 2.5 |
| Other (Donation for Social program) | 3.84 |
| Donation for Local Cultrure Program | 3.5 |
| Total | 36.7685 |

Gare Palma IV/5 Coal Mine, Milupara