



To
The Additional Principal Chief Conservator of Forest,
Regional Office (Eastern Central Zone)
Ministry of Environment, Forests and Climate Change, Govt. of India
Bungalow No. A-2, Shyamali Colony,
Ranchi – 834002, Jharkhand.

Ref No. - JMB/ENV/JCPP/38/ 164 /2019

May 23, 2019

Ref.: Environmental Clearance letter No.- J-11015/203/2011-IA.II(M) dated- 3rd March 2014.

SUB: Half Yearly Compliance Status Report of Environment Clearance conditions issued by MoEFCC, New Delhi to Jamadoba Coal washery, Tata Steel Limited, Dhanbad for the period October'18 to March'19.

Dear Sir,

We are enclosing herewith compliance report for the period **October'18 to March'19** for the EC granted vide letter no.- J-11015/203/2011-IA.II(M) dated- 3rd March 2014 issued by Ministry of Environment, Forest and Climate Change, New Delhi.

Copy of the compliance report is also being sent in soft format through email at ro.ranchi-mef@gov.in for your kind perusal. We trust the information furnished is in line with your requirement.

Thanking you,

Yours faithfully,

Head (Planning)
Jharia Division, Tata Steel Ltd.

Encl: As above.

Copy to: Member Secretary, CPCB, Eastern Zonal Office, Southend Conclave, 502, 5th Floor
1582, Rajdanga Main Road, Kolkata -700107.

Copy to: Member Secretary, JSPCB, T.A. Division Building (Ground Floor), H.E.C, Dhurwa,
Ranchi - 834004.

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HALF YEARLY COMPLIANCE REPORT
(PERIOD: OCTOBER'18 – MARCH'19)

JAMADOBA COAL WASHERY
(CAPACITY: EXPANSION FROM 1 TO 2 MTPA RAW COAL
THROUGHPUT)
TEHSIL: JHARIA, DIST: DHANBAD, JHARKHAND



TATA STEEL LIMITED, JHARIA DIVISION

P.O.- JAMADOBA, DIST. - DHANBAD,
STATE- JHARKHAND, PIN CODE – 828112.

**ENVIRONMENTAL CLEARANCE GRANTED VIDE LETTER NO. - J-11015/203/2011-
IA.II(M) DATED- 03.03.2014 ISSUED BY GOVT. OF INDIA, MINISTRY OF
ENVIRONMENT, FOREST AND CLIMATE CHANGE, NEW DELHI.**

Compliance status of Expansion of Jamadoba Coal washery (1 MTPA to 2 MTPA in 7 ha Area) of M/s Tata Steel Ltd. Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/203/2011-IA.II (M) dated March 3, 2014

S. No.	Condition	Compliance Status
Specific Condition		
(i)	Adequate green belt shall be provided around coal handling and other areas.	Greenery has been developed in many areas around the washery premises. Since the expansion job has been completed, remaining area is also being developed since last monsoon. The report on greenbelt development with photographs is provided in Annexure-I.
(ii)	Action plan be developed and implemented for abandoned tailing ponds and for their restoration to the original land use.	Action plan for cut-off of tailing ponds from tailing management system is in place. Abandoned tailing ponds are presently being reclaimed by backfilling. Technical reclamation is going on in two large ponds. After technical reclamation, biological reclamation will take place by planting native species in this monsoon season.
(iii)	Fly ash generated from the captive power plant of the washery be utilized for house construction, roads and such uses, strictly complying to the timeline in the EIA Notification, 2006 and maintaining proper records.	This is not applicable as we have ceased the operation of our captive Jamadoba power plant since April'15.
(iv)	No use of fly ash with sand will take place for stowing in underground mines.	This will be strictly followed for our captive underground mines.
(v)	Transportation of fly ash to be done properly by mechanically covered trucks.	This is not applicable as there is no fly ash being generated since April'15.
(vi)	The proponent shall connect all the villages in the leasehold area with water pipeline connection.	All the villages in the leasehold areas will be supplied safe drinking water through pipeline connection. A network of more than 22000 metres of pipeline connection has been established along with 33 water tanks (capacity of 4500 litres).
(vii)	The proponent shall expedite and implement the pilot plant to convert mine water into drinking/domestic water to supply the same to the population of Dhanbad and surrounding areas and shall continue to carry out this activity.	Mine water is already being converted into potable water by Tata Steel in our 4 nos. Water Treatments Plants (located at Jamadoba, Digwadiah, Bhelatand and Malkera having cumulative capacity of around 8000 KL/D). The treated water is then supplied to our colonies and leasehold villages. This will continue in future too.

Compliance status of Expansion of Jamadoba Coal washery (1 MTPA to 2 MTPA in 7 ha Area) of M/s Tata Steel Ltd. Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/203/2011-IA.II (M) dated March 3, 2014

(viii)	Tanks/ponds shall be regularly cleaned and maintained. Plantation activities shall be intensified in the mine areas.	Tanks/ ponds are regularly cleaned and maintained by TSRDS. Some of the glimpses of the activities are shown below. Plantation activities are undertaken every year in the barren mine leasehold areas. Further, TSRDS engages with the villagers for plantation in the village lands. In FY2018-19, total 5 Nos of new ponds have been developed and 9 Nos of old ponds have been renovated by deepening and siltation removal.																																								
(ix)	The proponent shall expedite the activities undertaken by TSRDS in over 30 villages in the leasehold area over 15000 households covering a population of about 1.4 lakh.	CSR activities of TSRDS are managed by a team of experts who are dedicatedly involved in providing benefits and improving standard of living in over 30 villages. The list of activities are developed in consultation with the village representatives and implemented in a time-bound manner.																																								
(x)	CSR activities of TSRDS are managed by a team of experts who are dedicatedly involved in providing benefits and improving standard of living in over 30 villages. The list of activities are developed in consultation with the village representatives and implemented in a time-bound manner.	The proposed CSR expenditure for the entire company is decided as per the new Company Rules. Once the CSR budget for company is fixed, a share of that amount is dedicated and utilized for implementing the CSR activities at our Jharia Division level. The CSR expenditure for FY19 is Rs.5.65 crores.																																								
(xi)	Cost for additional environmental protection measures shall be not less than Rs. 503.00 lakhs. The status of implementation including costs incurred shall be regularly reported to this Ministry and its respective Regional Office in the region as part of the compliance report and also uploaded on the company website.	<p>The status of implementation of environmental protection measures under expansion project as on date is as follows:</p> <table border="1" data-bbox="852 1291 1477 1717"> <thead> <tr> <th>S. No.</th> <th>Items</th> <th>Proposed Expenditure (in Cr.)</th> <th>Actual Expenditure (in Cr.)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Effluent Management/ Standby Thickener</td> <td>0.30</td> <td>3.59</td> </tr> <tr> <td>2.</td> <td>Dry fog dust suppression system</td> <td>0.70</td> <td>0.72</td> </tr> <tr> <td>3.</td> <td>Dust Extraction System</td> <td>0.30</td> <td>0.34</td> </tr> <tr> <td>4.</td> <td>Tailing dewatering</td> <td>10.0</td> <td>17.46</td> </tr> <tr> <td>5.</td> <td>EIA/EMP</td> <td>0.20</td> <td>0.25</td> </tr> <tr> <td>6.</td> <td>Concretization of working complex</td> <td>1.00</td> <td>1.75</td> </tr> <tr> <td>7.</td> <td>Mechanized Sweeping</td> <td>1.00</td> <td>-</td> </tr> <tr> <td>8.</td> <td>Transport Road</td> <td>0.50</td> <td>0.75</td> </tr> <tr> <td>9.</td> <td>Total</td> <td>14.00</td> <td>24.86</td> </tr> </tbody> </table> <p>It is also uploaded on company website as part of compliance report. The regular expenditure incurred for environment protection and management are mentioned in Point no. xii of General Condition.</p>	S. No.	Items	Proposed Expenditure (in Cr.)	Actual Expenditure (in Cr.)	1.	Effluent Management/ Standby Thickener	0.30	3.59	2.	Dry fog dust suppression system	0.70	0.72	3.	Dust Extraction System	0.30	0.34	4.	Tailing dewatering	10.0	17.46	5.	EIA/EMP	0.20	0.25	6.	Concretization of working complex	1.00	1.75	7.	Mechanized Sweeping	1.00	-	8.	Transport Road	0.50	0.75	9.	Total	14.00	24.86
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Compliance status of Expansion of Jamadoba Coal washery (1 MTPA to 2 MTPA in 7 ha Area) of M/s Tata Steel Ltd. Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/203/2011-IA.II (M) dated March 3, 2014

(xii)	The slope of the embankment towards the river shall be at least 1:3 for stability and shall be stabilized with plantation using native species selected from the study area.	The washery is about 1.5 kms away from the Damodar River. Hence it is not applicable.
(xiii)	Top soil shall be stored in the earmarked area and used within a year of its generation for green belt development and for plantation/reclamation.	There are no top soil dumps hence it is not applicable.
(xiv)	No external OB dump shall be created for the expansion project. Monitoring and management of existing reclaimed dumpsites shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its respective Regional Office on yearly basis.	Not applicable as this is a washery project.
(xv)	Catch drains and siltation ponds of appropriate size shall be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected shall be utilised for watering the mine area, roads, green belt development, etc. The drains shall be regularly desilted and maintained properly.	There are no soil or OB dumps in the washery premises. Only the by-products are stored in the stockyards located in the washery premises which are sold off within a week.
(xvi)	Garland drains (size, gradient and length) and sump capacity shall be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material.	Garland drains of adequate size and gradient already exist around the washery area to channelize the surface runoff. The runoff is diverted to the tailing ponds and clear water is utilized in the washery. It is further strengthened under washery expansion jobs. Layout of surface runoff management system is provided as Annexure.
(xvii)	Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data.	Not applicable as we do not have any opencast mines.

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(xviii)	Crushers at the CHP shall be operated with high efficiency bag filters/water sprinkling system shall be provided to check fugitive emissions from crushing operations, conveyor system which shall be closed, haulage roads, transfer points, etc.	The following measures have been implemented: i) Dry-fog system at all transfer points of CHP and further extension in expansion project. ii) Enclosures around crushers. iii) Belts have been covered on top and both sides. These arrangements will protect the coal mass moving on belt from blowing wind. In this way, the dust getting air borne is being minimized. iv) Fixed water sprinklers on the haulage roads. v) In addition, movable water sprinklers are also being deployed on the roads for dust suppression. vi) Dust Extraction System vii) Strengthening of tailing management system viii) Concretisation of working complex
(xix)	Drills shall be wet operated only.	Not applicable as this is coal beneficiation plant
(xx)	Controlled blasting shall be practiced with use of delay detonators and only during daytime. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders shall be implemented.	Not applicable as this is coal beneficiation plant
(xxi)	The Washery shall be a zero-discharge and no wastewater shall be discharged from the washery into the drains/natural watercourses. No groundwater shall be used for washery operations. Recycled water shall be used for development and maintenance of green belt and in the plant operations.	Washery is already operating on a zero-discharge principle. No waste-water is discharged into the drains/ natural water systems. Only mine water is utilized for the washery operations as make up water requirement. The recycled water is again used for plant operations and green-belt development.
(xxii)	The raw coal, washed coal and middling and coal wastes (rejects) shall be stacked properly at earmarked site(s) within sheds/stockyards fitted with wind breakers/shields. Adequate measures shall be taken to ensure that the stored minerals do not catch fire. The storage period shall be not more than 2-3 days.	The material is being stacked properly at stockyards located within the washery. We have a well-established system for disposal of rejects/ tailings to consumers so that storage period is not more than 2-3 days.

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(xxiii)	The proponent shall maintain proper records of the ash content of raw (ROM) coal, clean coal, middling and coal rejects along with quantum of raw coal obtained and washed and dispatched every month and the same shall be uploaded on the company website every month.	Proper records are already maintained and being uploaded on the company website. The records are attached here as Annexure V.
(xxiv)	All internal roads shall be concreted or black topped and the approach roads used for the project shall be blacked topped. Facilities for parking of trucks carrying raw coal from the linked coalmines shall be created within the Unit.	All the internal roads have been concreted while the approach roads are black-topped. There is a facility for parking of trucks within the unit.
(xxv)	Roads used for coal transportation to the linked DRI/TPP shall be developed with 3-tier avenue plantation using a mix of native species. The trucks used for coal transportation shall be high capacity trucks. Drivers of trucks for coal transportation shall be engaged based on past records of road safety and compliance of safety regulations and shall be suitably sensitized about road safety and maintenance of vehicles to keep vehicular emissions to be within prescribed limits.	There is no linked DRI/TPP. <ul style="list-style-type: none"> - Raw coal is received via underground coal conveyor belt network and therefore no truck transportation of coal is involved. - Clean coal is dispatched via rail from the Rail-yard situated on the washery premises. The clean coal is kept in storage bins and directly transferred to the rail wagons through covered coal-conveying system. - As for the trucks moving within the washery, utilized for shifting of tailings and rejects to storage yard, all the given provisions related to road safety and driver competence are being strictly complied with.
(xxvi)	The roads (internal/approach and roads used for the project) shall be regularly cleaned with mechanical sweepers and with water sprinklers. A 3-tier avenue plantation shall be developed along the major approach roads, internal roads and nearby roads used by the company.	Fixed Water sprinklers have already been installed in the washery premises. Plantation along the road-side is done wherever feasible. A three-tier green belt will be developed along the boundary of washery during the next monsoon period as construction activity job is still going on.
(xxvii)	Green belt shall be developed along the areas such as the washery unit, crushing unit, and stockyards and at transfer points and in between mine operations and habitations.	Greenery has been developed in many areas around the washery premises. Saplings have been planted along the boundary of washery during this monsoon period for greenbelt development.

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(xxviii)	Hoppers of the coal crushing unit at the crushing shed and washery unit shall be fitted with high efficiency bag filters/Dust extractors and mist spray water sprinkling system shall be installed and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points of belt conveyor systems which shall be closed and from transportation roads.	Dry-fog dust suppression system has been already installed to suppress the dust generated at CHP and transfer points of belt conveyor systems. Fixed-type water sprinklers are also installed on the internal roads of the washery. These are always operated effectively to check the fugitive emissions. Fugitive dust emission monitoring is done on half-yearly basis. The values are within the stipulated norms.
(xxix)	The proponent shall ensure that coal such as stones, shale and other wastes of an ash content of 77% or more only shall be dumped into the mine voids. Coal rejects with an ash content of 76% or less shall be fully utilized for power generation in linked TPP.	It is being followed.
(xxx)	Regular monitoring of groundwater level and quality including levels of heavy metals such as Hg, Cd, Cr, Se, etc shall be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity and quality of ground water as per IS: 10500 shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons. Proper records of the data thus collected shall be maintained submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring.	The monitoring of groundwater level and quality is done four times a year. The groundwater quality report & groundwater level for the Post-Monsoon (November) and winter season (January) are provided in Annexure-I. The monitoring of heavy metals such as Hg, Cd, Cr, Se, etc in the groundwater was done during the hydro-geological study conducted by Indian School of Mines, Dhanbad. Data has been provided in previous compliance reports.
(xxxii)	As the entire mine water is proposed to be used for the mine-cum-washery operations, measures shall be taken for recharging ground water in and around the mine in the study area. A Plan for water conservation and recharge measures of ground water along with budgetary provisions be prepared and implemented in consultation with the Central/State Ground Water Board to	More than 50% of the water pumped out during underground mining activity is re-circulated back into the mine for the purpose of stowing. Backfilling of mine voids by stowing is done using sand which is having the porosity to hold the underground water thus helping aquifer to retain the underground water. Further, there are a number of ponds existing on the surface of the mining lease which act as

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	<p>mitigate the adverse impact of mining which may lead to depletion of ground water in the area. The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource in case monitoring of groundwater levels indicate decline of water table. Any additional water requirement for mining operation shall be met from rainwater use only. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.</p>	<p>natural reservoirs for recharging ground water. These ponds/ tanks are regularly cleaned and maintained by our CSR department. As per the hydro-geological report, the variation in the ground water level is only seasonal.</p> <p>The water requirement of the nearby villages is being met by the company already. Now piped drinking water is being provided.</p>
(xxxii)	<p>ETP shall also be provided for treatment of effluents from workshop, CHP and an STP shall be provided in the colony and the treated effluents shall be used for green belt development. Outflow of rainfall, if any, from the mine shall meet prescribed norms and the water quality of such discharge including levels of heavy metals such as Hg, Cd, Cr., Se, etc shall be monitored at the exit points and records maintained thereof and also uploaded on the company website. Online monitoring equipment shall be installed by the proponent to ensure that the water quality parameters of mine water discharge are well within the General Discharge Standards under EP, Rules, 1986.</p>	<p>No effluent is discharged outside of the washery. There is no separate workshop in the washery premises. A central workshop exists in Jamadoba Colliery with Effluent Treatment Plant facility having Oil and Grease Trap. A Sewage Treatment Plant (STP) has been installed in one of the colonies of Jharia Division and its treated water used for gardening and other purpose. One more STP of 50 KLD is being installed at Railway Colony Jamadoba.</p>
(xxxiii)	<p>Besides carrying out regular periodic health check-up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, through a recognised agency found in the district, and the results reported to this Ministry and to DGMS.</p>	<p>Not applicable as this is coal beneficiation plant. Though PME is done for washery workers periodically at our Occupational Health centre. Records of the same has been furnished earlier.</p>

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(xxxiv)	For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1: 5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MOEF and its concerned Regional Office in the region.	Not applicable as there is no proposed changes in land use and land cover due to washery. Though, we have engaged a consultant for the study of land use. Report of the same will be submitted in next compliance report.
(xxxv)	Land oustees shall be compensated as per the norms laid out R&R Policy of CIL or the National R&R Policy or R&R Policy of the State Government whichever is higher.	Not applicable
(xxxvi)	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests five year before mine closure for approval. Habitat Restoration Plan of the mine area shall be carried out using a mix of native species found in the original ecosystem, which were conserved in-situ and ex-situ in an identified area within the lease for reintroduction in the mine during mine reclamation and at the post mining stage for habitat restoration and for development of grasslands.	Not applicable.
(xxxvii)	<p>Corporate Environment Responsibility:</p> <p>a) The Company shall have a well laid down Environment Policy approved by the Board of Directors.</p> <p>b) The Environment Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.</p> <p>c) The hierarchical system or</p>	<p>The Company already has an Environment Policy approved by the Managing Director and it addresses all the issues mentioned. Tata Steel Environmental Policy is attached as Annexure-IV.</p> <p>The status of adherence to the policy and compliance to Environmental laws and regulations is regularly discussed at higher levels. Any non-compliance noticed is corrected at divisional level. If any issue is beyond our control, it is brought to the notice of higher management.</p>

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	<p>Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished.</p> <p>d) To have proper checks and balances, the company shall have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.</p>	<p>Moreover, Jamadoba Coal Washery is IMS (Integrated Management System: Quality Management System, Environment Management System and OHSAS) certified unit addressing all environment aspects, impacts and needs and expectation of interested parties with respect to environment protection.</p>
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B.	GENERAL CONDITIONS	
(i)	No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.	The points mentioned in the EC letter will be strictly followed.
(ii)	No change in the calendar plan of production for quantum of mineral coal shall be made.	It will be strictly followed.
(iii)	Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM10, PM2.5, SO2 and NOx monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.	The Air quality monitoring stations are: (i) Jamadoba Group Office (Core Zone) (ii) New Village Colony, Jamadoba (Buffer Zone) (iii) Digwadih 12 No. Colony (Buffer Zone) (iv) 6&7 Pits Kalimandir area (Buffer Zone) Monitoring of heavy metals in ambient air is being performed by an independent laboratory (recognised by NABL and MoEFCC) once in six months. The results are enclosed as Annexure-II.
(iv)	Data on ambient air quality (PM10, PM 2.5, SO2 and NOx) and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly submitted to the Ministry including its concerned Regional Office and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognized under the EPA rules, 1986 shall be furnished as part of compliance report.	Ambient air quality report (PM10, PM 2.5, SO2 and NOx) for the period from Oct'18 to Mar'19 is attached as Annexure-I. Additionally, M/s Ecomen Laboratories Pvt. Ltd (an MoEFCC and NABL recognised Laboratory) has done monitoring on ambient air quality (PM10, PM 2.5, SO2, NOx, CO, NH3, O3) and heavy metals (As, Ni, Cd and Cr) in the month of Aug'18. The results are enclosed as Annexure-II.

Compliance status of Expansion of Jamadoba Coal washery (1 MTPA to 2 MTPA in 7 ha Area) of M/s Tata Steel Ltd. Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/203/2011-IA.II (M) dated March 3, 2014

<p>(v)</p>	<p>Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.</p>	<p>Regular noise survey is being conducted in the underground work environment. Workers are provided with ear-plugs/ muffs in high noise areas. The noise levels monitored in the month of March'19 is given below:</p> <table border="1" data-bbox="792 447 1481 1360"> <thead> <tr> <th>S. No.</th> <th>Unit / Place</th> <th>Equipment / Location</th> <th>Distance (meter away)</th> <th>Leq (dB 'A')</th> <th>Exposure Hours</th> </tr> </thead> <tbody> <tr> <td>1</td> <td rowspan="2">NRD JCPP</td> <td>Roller Crusher</td> <td>-</td> <td>82.7</td> <td>2 hrs/Shift</td> </tr> <tr> <td>2</td> <td>Jaw Crusher</td> <td>-</td> <td>80.9</td> <td>2 hrs/Shift</td> </tr> <tr> <td>3</td> <td rowspan="15">Main Plant</td> <td>Main Plant Control Room</td> <td>-</td> <td>67.2</td> <td>8 hrs/Shift</td> </tr> <tr> <td>4</td> <td>Screen floor, Stand – II vibrating Screen</td> <td>4 m.</td> <td>82.5</td> <td>2 hrs/Shift</td> </tr> <tr> <td>5</td> <td>Dense pump pit, Stand- I floor</td> <td>2 m.</td> <td>80.1</td> <td>2 hrs/Shift</td> </tr> <tr> <td>6</td> <td>Primary Magnetic Separator No- 1 & 2</td> <td>2 m.</td> <td>81.6</td> <td>4 hrs/Shift</td> </tr> <tr> <td>7</td> <td>Clean Coal Screen 211# 1</td> <td>2 m.</td> <td>80.8</td> <td>8 hrs/Shift</td> </tr> <tr> <td>8</td> <td>Clean Coal Screen 211# 2</td> <td>2 m.</td> <td>81.2</td> <td>8 hrs/Shift</td> </tr> <tr> <td>9</td> <td>Mixer Box Floor (Near Control Room Side)</td> <td>2 m.</td> <td>78.4</td> <td>8 hrs/Shift</td> </tr> <tr> <td>10</td> <td>Discharge Shute (Screen 215# 1)</td> <td>2 m.</td> <td>80.2</td> <td>2 hrs/Shift</td> </tr> <tr> <td>11</td> <td>Discharge Shute (Screen 215# 2)</td> <td>2 m.</td> <td>77.9</td> <td>2 hrs/Shift</td> </tr> <tr> <td>12</td> <td>Main Control Room</td> <td>-</td> <td>67.6</td> <td>8 hrs/Shift</td> </tr> <tr> <td>13</td> <td>PTS (Control Room)</td> <td>-</td> <td>60.7</td> <td>8 hrs/Shift</td> </tr> <tr> <td>14</td> <td>CHP (Control Room)</td> <td>-</td> <td>70.8</td> <td>8 hrs/Shift</td> </tr> <tr> <td>15</td> <td>In front of Diesel & Loco Shed</td> <td>-</td> <td>75.3</td> <td>4 hrs/Shift</td> </tr> <tr> <td>16</td> <td>Discharge point of Conveyor-6 to Con.- 1</td> <td>2 m.</td> <td>81.9</td> <td>2 hrs/Shift</td> </tr> <tr> <td>17</td> <td>Centrifuge Section Screen bowl</td> <td>-</td> <td>81.2</td> <td>8 hrs/Shift</td> </tr> <tr> <td>18</td> <td>Stand #2 Cross-over Bridge</td> <td>4 m.</td> <td>80.1</td> <td>4 hrs/Shift</td> </tr> </tbody> </table>	S. No.	Unit / Place	Equipment / Location	Distance (meter away)	Leq (dB 'A')	Exposure Hours	1	NRD JCPP	Roller Crusher	-	82.7	2 hrs/Shift	2	Jaw Crusher	-	80.9	2 hrs/Shift	3	Main Plant	Main Plant Control Room	-	67.2	8 hrs/Shift	4	Screen floor, Stand – II vibrating Screen	4 m.	82.5	2 hrs/Shift	5	Dense pump pit, Stand- I floor	2 m.	80.1	2 hrs/Shift	6	Primary Magnetic Separator No- 1 & 2	2 m.	81.6	4 hrs/Shift	7	Clean Coal Screen 211# 1	2 m.	80.8	8 hrs/Shift	8	Clean Coal Screen 211# 2	2 m.	81.2	8 hrs/Shift	9	Mixer Box Floor (Near Control Room Side)	2 m.	78.4	8 hrs/Shift	10	Discharge Shute (Screen 215# 1)	2 m.	80.2	2 hrs/Shift	11	Discharge Shute (Screen 215# 2)	2 m.	77.9	2 hrs/Shift	12	Main Control Room	-	67.6	8 hrs/Shift	13	PTS (Control Room)	-	60.7	8 hrs/Shift	14	CHP (Control Room)	-	70.8	8 hrs/Shift	15	In front of Diesel & Loco Shed	-	75.3	4 hrs/Shift	16	Discharge point of Conveyor-6 to Con.- 1	2 m.	81.9	2 hrs/Shift	17	Centrifuge Section Screen bowl	-	81.2	8 hrs/Shift	18	Stand #2 Cross-over Bridge	4 m.	80.1	4 hrs/Shift
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<p>(vi)</p>	<p>Industrial wastewater (workshop and wastewater from the mine) shall 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 before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.</p>	<p>No waste-water is discharged outside the washery premises. 100% water is recirculated back for re-use in the washery. There is a central workshop and garage in Jamadoba Effluent Treatment Plant which includes oil and grease trap has been provided.</p>																																																																																																		
<p>(vii)</p>	<p>Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be</p>	<p>Only the vehicles having valid PUC certificates are being allowed to operate. Coal transportation through trucks is done only from BCCL mines till washery and it is ensured that only</p>																																																																																																		

Compliance status of Expansion of Jamadoba Coal washery (1 MTPA to 2 MTPA in 7 ha Area) of M/s Tata Steel Ltd. Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/203/2011-IA.II (M) dated March 3, 2014

	covered with tarpaulins and optimally loaded.	optimally loaded trucks with proper tarpaulin cover are allowed into the washery premises.
(viii)	Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with SPCB and data got analysed through a laboratory recognized under EP Rules, 1986.	We have a fully equipped Environment Cell Laboratory with qualified personnel. Laboratory has been recognized and registered with the Jharkhand State Pollution Control Board vide letter ref no. B-3922, dated-30.08.2012. The monitoring and analysis is also done at regular intervals by M/s Ecomen Laboratories Pvt. Ltd., an MoEF recognised laboratory (vide its notification 03.01.2014). We have also installed a Continuous Ambient Air Quality Monitoring Station at Jamadoba for real time monitoring.
(ix)	Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.	Persons working in dusty area have been provided with dust masks & have been given awareness training on safety & health aspects. Regular PME (Periodic Medical Examinations) are being done.
(x)	Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed and records maintained thereof. The quality of environment due to outsourcing and the health and safety issues of the outsourced manpower should be addressed by the company while outsourcing.	The occupational health surveillance programme of the workers is done regularly by our Occupational Health Department, Tata Central Hospital, Jamadoba. We have a PME (Periodic Medical Examination) centre approved by DGMS where annually 20% of the workers identified from workforce engaged in active mining operations are subjected to full medical checkup including hearing impairment checkup, etc. These results are regularly submitted to DGMS as per mines rules. Contractual workers health examination is also done by PME centre.
(xi)	A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.	We have a separate Environmental Management Cell with four qualified personnel (One Head and Two Senior Managers and One Manager). The reporting of Environmental Cell is directly to General Manager of the Division.

Compliance status of Expansion of Jamadoba Coal washery (1 MTPA to 2 MTPA in 7 ha Area) of M/s Tata Steel Ltd. Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/203/2011-IA.II (M) dated March 3, 2014

(xii)	The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its Regional Office at Bhubaneswar.	The Environment Cell has a separate fund for Environmental protection measures and for complying with legal requirements. The annual environmental expenditure for the financial year 2017-18 is Rs. 106.28 lakhs. The details are given below- <table border="1" data-bbox="782 472 1399 1045"> <thead> <tr> <th>S. No.</th> <th>Environment Management Activity</th> <th>Expenditure in Lakhs</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Tailings Management System</td> <td>7.5</td> </tr> <tr> <td>2.</td> <td>Dust suppression system</td> <td>7</td> </tr> <tr> <td>3.</td> <td>Housekeeping measures includes removing spillage, improvement of roads</td> <td>24.5</td> </tr> <tr> <td>4.</td> <td>Spillage control measures</td> <td>3</td> </tr> <tr> <td>5.</td> <td>Mechanical dewatering system</td> <td>25</td> </tr> <tr> <td>6.</td> <td>Water spraying on roads for dust control</td> <td>4</td> </tr> <tr> <td>7.</td> <td>Chemical Dewatering</td> <td>14.4</td> </tr> <tr> <td>8.</td> <td>Horticultural activities including green belt development and regular lawn and garden maintenance</td> <td>16.71</td> </tr> <tr> <td>9.</td> <td>Plantation of saplings and maintenance</td> <td>4.17</td> </tr> <tr> <td colspan="2">Total Cost incurred</td> <td>106.28</td> </tr> </tbody> </table>	S. No.	Environment Management Activity	Expenditure in Lakhs	1.	Tailings Management System	7.5	2.	Dust suppression system	7	3.	Housekeeping measures includes removing spillage, improvement of roads	24.5	4.	Spillage control measures	3	5.	Mechanical dewatering system	25	6.	Water spraying on roads for dust control	4	7.	Chemical Dewatering	14.4	8.	Horticultural activities including green belt development and regular lawn and garden maintenance	16.71	9.	Plantation of saplings and maintenance	4.17	Total Cost incurred		106.28
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(xiii)	The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days 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 may also be seen at the website of the ministry of Environment & Forests at http://envfor.nic.in .	It has been complied with. Details are provided in Annexure.																																	
(xiv)	A copy of the environmental clearance letter shall be marked to concerned Panchayat/Zila Parishad, Municipal Corporation or Urban Local Body and local NGO, if any,	It has been complied with. Details are provided in Annexure.																																	

Compliance status of Expansion of Jamadoba Coal washery (1 MTPA to 2 MTPA in 7 ha Area) of M/s Tata Steel Ltd. Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/203/2011-IA.II (M) dated March 3, 2014

	from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on the company's website.	
(xv)	A copy of the clearance letter shall be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Centre and Collector's Office/Tehsildar's Office for 30 days.	It has been complied with.
(xvi)	The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in the public domain. The monitoring data of environmental quality parameters (air, water, noise and soil) and critical pollutants such as PM10, PM2.5, SO2 and NOx (ambient and stack if any) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mines office and in corporate office and on the company's website.	The clearance letter has been uploaded on the company's website. The compliance status (as Half-yearly compliance report) is being uploaded in company's website (Enclosed as Annexure-III). The display of information near the washery's office has been provided.
(xvii)	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the MOEF, the respective Zonal offices of CPCB and the SPCB.	It has been complied with.

Compliance status of Expansion of Jamadoba Coal washery (1 MTPA to 2 MTPA in 7 ha Area) of M/s Tata Steel Ltd. Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/203/2011-IA.II (M) dated March 3, 2014

(xviii)	The Regional Office of this Ministry located at Bhopal shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/information/monitoring reports.	It will be complied with.
(xix)	The environmental statement for each financial year ending 31st March in Form-V is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MOEF by E-mail.	The environmental statement for financial year 2017-18 has been submitted to JSPCB on 24th September 2018 and it is also uploaded on the company website (Annexure- III). The soft copy of Environment Statement is also sent to MOEF by email at ro.ranchi-mef@gov.in.

**Head Planning
Tata Steel Limited,
Jharia Division**

AIR QUALITY REPORT

Core zone & Buffer zone

Period- January'19 to March'19

No. of sampling points: 4

Core zone (as per Air quality standards for coal mines in EPA Notification, 1988)									
Location	Latitude/ Longitude	Date	Weather Condition	SPM 24 Hourly Limit- 700 µg/m ³	RSPM 24 Hourly Limit- 300 µg/m ³	SO ₂ 24 Hourly Limit- 120 µg/m ³	NO _x 24 Hourly Limit- 120 µg/m ³		
Jamadoba Group Office	23°42'15.3" N/ 86°24'11" E	14.01.19	Clear	181.4	81.9	13.6	13.4		
		11.02.19	Clear	177.6	80.2	14.1	15.9		
		18.03.19	Clear	167.3	78.4	12.4	15.2		
Buffer zone (as per NAAQS 2009 for ambient air quality standards)									
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100µg/m ³	PM2.5 24 Hourly Limit- 60µg/m ³	SO ₂ 24 Hourly Limit- 80µg/m ³	NO ₂ 24 Hourly Limit- 80µg/m ³		
Digwadith 12 No. Colony	23°41'42" N/ 86°24'45.3" E	21.01.19	Clear	79.7	42.9	9.1	12.3		
		15.02.19	Clear	78.3	43.4	9.2	11.7		
		25.03.19	Clear	77.2	41.2	10.3	11.9		
New Village Colony, Jamadoba	23°41'51" N/ 86°23'19" E	18.01.19	Clear	74.2	41.3	8.7	9.6		
		25.02.19	Rainy	72.7	47.3	8.4	10.2		
		04.03.19	Rainy	74.6	45.8	9.4	10.5		
6&7 Pits Kalimandir colony	23°43'15" N/ 86°24'12" E	28.01.19	Clear	83.7	50.2	9.6	8.7		
		18.02.19	Clear	79.6	44.8	10.5	8.5		
		22.03.19	Clear	80.7	42.7	11.2	12.9		

Sr. Manager (Environment)

AIR QUALITY REPORT

Core zone & Buffer zone

Period- October'18 to December'18

No. of sampling points: 4

Core zone (as per Air quality standards for coal mines in EPA Notification, 1988)									
Location	Latitude/ Longitude	Date	Weather Condition	SPM 24 Hourly Limit- 700 µg/m ³	RSPM 24 Hourly Limit- 300 µg/m ³	SO ₂ 24 Hourly Limit- 120 µg/m ³	NO _x 24 Hourly Limit- 120 µg/m ³		
Jamadoba Group Office	23°42'15.3" N/ 86°24'11" E	05.10.18	Clear	162.6	70.3	14.1	15.5		
		28.11.18	Clear	172.84	72.1	14.2	14.8		
		10.12.18	Clear	163.64	77.84	15.2	12.3		
Buffer zone (as per NAAQS 2009 for ambient air quality standards)									
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100µg/m ³	PM2.5 24 Hourly Limit- 60µg/m ³	SO ₂ 24 Hourly Limit- 80µg/m ³	NO ₂ 24 Hourly Limit- 80µg/m ³		
Digwadih 12 No. Colony	23°41'42" N/ 86°24'45.3" E	11.10.18	Rainy	73.1	49.1	9.2	9.2		
		16.11.18	Clear	72.4	45.3	9.1	10.1		
		24.12.18	Clear	77.43	43.7	9.6	11.8		
New Village Colony, Jamadoba	23°41'51" N/ 86°23'19" E	09.10.18	Clear	80.4	46.3	7.4	8.4		
		22.11.18	Clear	82.5	47.8	7.8	8.8		
		03.12.18	Clear	83.42	48.5	7.7	8.9		
6&7 Pits Kalimandir colony	23°43'15" N/ 86°24'12" E	30.10.18	Clear	82.6	51.4	8.6	7.6		
		08.11.18	Clear	73.7	50.2	8.3	7.7		
		17.12.18	Rainy	69.32	51.3	8.8	9.6		


Sr. Manager (Environment)

**Ground Water Quality Analysis (Hand Pump & Dugwell)
Winter Season- January' 2019**

S.No	Date	Location	Time	Sample Parameter			
				Depth in meter (m)	pH	Electrical Conductivity, $\mu\text{S/m}$	Total Hardness (as CaCO_3), mg/l
1	08.01.19	Purnadih (Jorapokhar)	11:25AM	6.30	7.2	696	560
2	08.01.19	Bhowra 13 No	11:35AM	1.95	7.0	648	494
3	08.01.19	Mohalbani Basti	11:50AM	7.70	7.3	710	524
4	08.01.19	Digwadih 12 No	12:05PM	4.60	7.2	500	432
5	08.01.19	Digwadih 10 No F & J	12:15PM	5.60	7.0	792	610
6	14.01.19	Kalimela Shivmandir	02:35PM	1.22	7.2	747	632
7	14.01.19	Kalimela Kalimandir	02:27PM	3.81	7.3	786	616
8	14.01.19	Lower Dungari	02:15PM	6.35	7.3	590	548
9	14.01.19	Upper Dungari	02:00PM	3.19	7.2	610	568
10	08.01.19	Pattia Basti	01:00PM	3.05	7.2	544	488
11	08.01.19	Kenduadih Basti	01:25PM	2.10	7.0	612	576
12	08.01.19	Jorapokhar Kushtand	02:00PM	2.68	7.1	682	612
13	08.01.19	Jamadoba 3 No	02:35PM	2.78	7.2	640	612
14	08.01.19	6&7 Pits (Ayodhya Nagri)	12:45PM	2.00	7.1	596	548


Sr. Manager (Environment)

**Ground Water Quality Analysis (Hand Pump & Dugwell)
Post-Monsoon Season- November' 2018**

S.No	Date	Location	Time	Sample Parameter			
				Depth in meter (m)	pH	Electrical Conductivity, $\mu\text{S/m}$	Total Hardness (as CaCO_3), mg/l
1	09.11.18	Purnadih (Jorapokhar)	11:00AM	4.80	7.8	584	460
2	09.11.18	Bhowra 13 No	09:40AM	1.90	7.3	612	484
3	09.11.18	Mohalbari Basti	09:50AM	5.62	7.4	648	496
4	09.11.18	Digwadih 12 No	10:15AM	4.16	7.5	632	530
5	09.11.18	Digwadih 10 No F & J	10:30AM	4.04	7.4	588	444
6	09.11.18	Kalimela Shivmandir	11:35AM	1.10	7.6	596	402
7	09.11.18	Kalimela Kalimandir	11:45AM	2.06	7.3	560	408
8	09.11.18	Lower Dungari	12:10PM	5.82	7.2	846	588
9	09.11.18	Upper Dungari	12:30PM	2.41	7.1	730	512
10	09.11.18	Pattia Basti	01:05PM	2.97	7.3	568	416
11	09.11.18	Kenduadih Basti	01:15PM	1.84	7.5	612	452
12	09.11.18	Jorapokhar Kushband	11:20AM	2.47	7.6	604	448
13	09.11.18	Jamadoba 3 No	01:50PM	2.64	7.5	632	416
14	09.11.18	6&7 Pits (Ayodhya Nagri)	01:35PM	2.00	7.2	608	446



Sr. Manager (Environment)

Annexure- I Greenbelt Development Report

Green belt developed around JCPP is given in the pictures below. Plantation in this monsoon has been done in JCPP to enhance the green belt. The plantations are done in areas in front of MCC building, and near the boundary wall of JCPP to enhance the green cover around the operational areas of washery. Since the washery is in construction phase, three tier plantation has been done in some patches around the boundary wall of the washery premises. Once the washery starts to operate, further plantation will be taken up.



Picture: Existing Green Belt around JCPP

Photographs of some recent plantation activities in this monsoon season are shown below:



Picture: Plantation in area in front of MCC building(JCPP) during this monsoon season.



Picture: Plantation around some patches of the boundary wall of washery (JCPP) during this monsoon season.

Third Party Monitoring Report

ECOMEN LABORATORIES PVT. LTD.

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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi (Valid Upto 02.01.19)

FORMAT NO. ECO/QS/FORMAT/15

TEST REPORT NO: ECO LAB/AAQ-1/02/19

TEST REPORT ISSUE DATE: 11.03.2019

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Jamadoba Grup)
Address of the Customer : Jamadoba, Distt. Dhanbad
Jharkhand
Date of Sampling : 27.02.2019
Sample Collected By : Ecomen Teem
Sampling Method : IS: 5182
Instrument Used : RDS & FDS
Location : Central Work Shop Area, Jamadoba

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	39.73	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	85.91	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	16.71	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	29.22	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	18.35	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	26.52	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	1.16	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item.

Note: Below Detection Limit

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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi (Valid Upto 02.01.19)

FORMAT NO. ECO/QS/FORMAT/15

TEST REPORT NO: ECO Lab/AAQ-2/02/19

Test Report Issue date: 11.03.2019

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Jamadoba Grup)
 Address of the Customer : Jamadoba, Distt. Dhanbad
 Jharkhand
 Date of Sampling : 27.02.2019
 Sample Collected By : Ecomen Teem
 Sampling Method : IS: 5182
 Instrument Used : RDS & FDS
 Location : Officers Colony, 12 No. Digwadih

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	33.98	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	77.53	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	14.61	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	26.22	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	15.35	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	19.44	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	0.72	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item.

Note: Below Detection Limit

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FORMAT NO. ECO/QS/FORMAT/15

TEST REPORT NO: ECO Lab/AAQ-3/02/19

Test Report Issue date: 11.03.2019

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Jamadoba Grup)
 Address of the Customer : Jamadoba, Distt. Dhanbad
 Jharkhand
 Date of Sampling : 26.02.2019
 Sample Collected By : Ecomen Teem
 Sampling Method : IS: 5182
 Instrument Used : RDS & FDS
 Location : General Manager's Office Area

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	42.15	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	84.18	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	15.66	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	28.77	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	16.21	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	25.21	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	0.87	0.2-500	04
8.	Pb (µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item.

Note: Below Detection Limit

 Analyst


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FORMAT NO. ECO/QS/FORMAT/15

TEST REPORT NO: ECO Lab/AAQ-4/02/19

Test Report Issue date: 11.03.2019

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Jamadoba Grup)
 Address of the Customer : Jamadoba, Distt. Dhanbad
 Jharkhand
 Date of Sampling : 28.02.2019
 Sample Collected By : Ecomen Teem
 Sampling Method : IS: 5182
 Instrument Used : RDS & FDS
 Location : Jamadoba Colliery

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	45.31	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	86.93	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	18.37	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	35.29	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	17.28	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	24.32	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	1.21	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item.

Note: Below Detection Limit

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Analyst

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Ravi Bhargava
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FORMAT NO. ECO/QS/FORMAT/15

TEST REPORT NO: ECO LAB/AAQ-1/03/19

TEST REPORT ISSUE DATE: 11.03.2019

TEST REPORT OF AMBIENT NOISE LEVEL

Name of the Customer : Tata Steel Colliery (Jamadoba Grup)
 Address of the Customer : Jamadoba, Distt. Dhanbad
 Jharkhand
 Sample Collected By : Ecomen Team
 Instrument Used : Noise Meter (HTC)

Sl. No.	Locations	Date of Monitoring	Day Time			Night Time		
			Max.	Min.	Leq.	Max.	Min.	Leq.
1.	Central Work Shop Area Jamadoba	28-01.03.2019	65.3	59.7	60.4	59.6	53.8	54.2
2.	Officer's Colony, 12 No. Digwadih	27-28.02.2019	56.9	51.5	52.7	49.8	46.1	47.8
3.	General Manager's Office Area	26-27.02.2019	62.7	56.8	57.3	54.6	49.8	50.1
4.	Jamadoba Colliery	26-27.02.2019	66.3	62.4	63.1.9	62.9	57.6	58.3

Noise (Ambient Standard)

Area Code	Category of area	Limit in dB (A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Note:

- Day time is reckoned in between 6:00 AM and 10:00 PM.
- Night time is reckoned in between 10:00 PM and 6:00 AM
- Silence zone is defined as area up to 100m around such premises as hospitals, Educational institutions & courts. The silence zones are to be declared by a competent authority.
- Mixed categories of areas should be declared as one of the four above-mentioned Categories by the competent authority and the corresponding standard shall apply.

Ravi Bhargava
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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO:ECO LAB/WW/02/19

TEST REPORT ISSUE DATE:09.03.2019

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Jamadoba Group)
 Address of the Customer : Jamadoba,
 Distt. Dhanbad - 828 112
 Sampling Method : APHA, 23rd Ed. 2017
 Sample Collected by : Mr.R. K. Pandey
 Sample Quantity : As per requirement
 Date of Sampling : 27.02.2019
 Date of Sample Receiving : 02.03.2019
 Date of Analysis : 02.03.2019 to 09.03.2019
 Source of Sample : JCPP (Final Settling Pond)

Sl. No.	TESTS	PROTOCOL	RESULT	Range of Testing / Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	7.65	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	18.2	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	796.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	5.2	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	32.4	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit


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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO:ECO LAB/GW/02/19

TEST REPORT ISSUE DATE:09.03.2019

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Jamadoba Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr.R. K. Pandey
Sample Quantity : As per requirement
Date of Sampling : 25.02.2019
Date of Sample Receiving : 02.03.2019
Date of Analysis : 02.03.2019 to 09.03.2019
Source of Sample : Bhowra 13 No. (well)
Ground Water Level : 10.0 Meter


Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23rd Ed. 2017, (2550 A+B)	26.3	10-100	-	-
3.	Electrical Conductivity (μ mhos/cm)	APHA, 23rd Ed. 2017, 2510-A+B	1012.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23rd Ed. 2017 (2540B)	685.0	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.92	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+B	252.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	352.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	100.8	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23rd Ed. 2017, 3500 Mg A+B	24.3	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23rd Ed. 2017, 3500 Fe B	0.14	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	112.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	82.3	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	14.2	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.32	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax
18.	Nickel as Ni (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax
19.	Arsenic as As (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax
20.	Lead as Pb (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	0.21	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax
23.	Cyanide as CN (mg/l)	APHA, 23rd Ed. 2017, 4500CN , A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested.

BDL = Below Detection Limit


Analyst


Authorized Signatory


Quality Manager

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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi (Valid Upto 02.01.19)

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO:ECO LAB/GW/02/19

TEST REPORT ISSUE DATE:09.03.2019

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Jamadoba Group)
 Address of the Customer : Jamadoba,
 Distt. Dhanbad - 828 112
 Sampling Method : APHA, 23rd Ed. 2017
 Sample Collected by : Mr.R. K. Pandey
 Sample Quantity : As per requirement
 Date of Sampling : 25.02.2019
 Date of Sample Receiving : 02.03.2019
 Date of Analysis : 02.03.2019 to 09.03.2019
 Source of Sample : Mohalbari Basti (Hand Pump)
 Ground Water Level : 56.0Meter

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991 (Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23rd Ed. 2017, (2550 A+B)	26.4	10-100	-	-
3.	Electrical Conductivity (μ mhos/cm)	APHA, 23rd Ed. 2017, 2510-A+B	845.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23rd Ed. 2017 (2540B)	510.0	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.72	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+ B	216.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	280.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	78.4	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23rd Ed. 2017, 3500 Mg A+B	20.41	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23rd Ed. 2017, 3500 Fe B	0.16	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	90.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	42.3	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	19.0	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.49	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax
18.	Nickel as Ni (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax
19.	Arsenic as As (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax
20.	Lead as Pb (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	0.12	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax
23.	Cyanide as CN (mg/l)	APHA, 23rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested.

BDL = Below Detection Limit


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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi (Valid Upto 02.01.19)

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO:ECO LAB/GW/02/19

TEST REPORT ISSUE DATE:09.03.2019

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Jamadoba Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr.R. K. Pandey
Sample Quantity : As per requirement
Date of Sampling : 25.02.2019
Date of Sample Receiving : 02.03.2019
Date of Analysis : 02.03.2019 to 09.03.2019
Source of Sample : Jamadoba 3No.
Ground Water Level : 10.0 Meter

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991 (Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23rd Ed. 2017, (2550 A+B)	26.5	10-100	-	-
3.	Electrical Conductivity (µmhos/cm)	APHA, 23rd Ed. 2017, 2510-A+B	760.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23rd Ed. 2017 (2540B)	480.0	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.90	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+ B	212.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	248.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	64.0	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23rd Ed. 2017, 3500 Mg A+B	21.38	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23rd Ed. 2017, 3500 Fe B	0.11	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	60.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23rd Ed. 2017, 4500-SO ₄ -E	43.3	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23rd Ed. 2017, 4500-NO ₃ -B	11.5	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.39	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax.
18.	Nickel as Ni (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax.
19.	Arsenic as As (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax.
20.	Lead as Pb (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	0.12	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax.
23.	Cyanide as CN (mg/l)	APHA, 23rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested.

BDL = Below Detection Limit

Analyst

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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi (Valid Upto 02.01.19)

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO:ECO LAB/GW/02/19

TEST REPORT ISSUE DATE:09.03.2019

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Jamadoba Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr.R. K. Pandey
Sample Quantity : As per requirement
Date of Sampling : 25.02.2019
Date of Sample Receiving : 02.03.2019
Date of Analysis : 02.03.2019 to 09.03.2019
Source of Sample : Lower Dungari, (Well)
Ground Water Level : 11.0 Meter

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23rd Ed. 2017, (2550 A+B)	26.9	10-100	-	-
3.	Electrical Conductivity (µmhos/cm)	APHA, 23rd Ed. 2017, 2510-A+B	932.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23rd Ed. 2017 (2540B)	602.0	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.95	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+ B	252.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	268.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	72.0	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23rd Ed. 2017, 3500 Mg A+B	21.38	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23rd Ed. 2017, 3500 Fe B	0.17	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	66.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	42.2	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	9.65	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.37	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax
18.	Nickel as Ni (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax
19.	Arsenic as As (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax
20.	Lead as Pb (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	0.14	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax
23.	Cyanide as CN (mg/l)	APHA, 23rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested.

BDL = Below Detection Limit

Ravi Bhargava
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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi (Valid Upto 02.01.19)

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO:ECO LAB/GW/02/19

TEST REPORT ISSUE DATE:09.03.2019

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Jamadoba Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr.R. K. Pandey
Sample Quantity : As per requirement
Date of Sampling : 25.02.2019
Date of Sample Receiving : 02.03.2019
Date of Analysis : 02.03.2019 to 09.03.2019
Source of Sample : Jorapokhra kushtand (Hand Pump)
Ground Water Level : 47.0 Meter

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA,23rd Ed.2017, (2550 A+B)	26.3	10-100	-	-
3.	Electrical Conductivity (μ mhos/cm)	APHA,23 rd Ed.2017, 2510-A+B	698.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA,23 rd Ed.2017 (2540B)	506.0	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.56	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+ B	204.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	276.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	70.4	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	24.3	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23rd Ed. 2017, 3500 Fe B	0.20	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	54.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	38.9	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	13.6	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.32	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax
19.	Arsenic as As (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax
20.	Lead as Pb (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	0.12	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017,3111 A+B	BDL	0.05-50	0.05	No Relax
23.	Cyanide as CN (mg/l)	APHA, 23rd Ed. 2017, 4500CN , A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested.

BDL = Below Detection Limit


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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi (Valid Upto 02.01.19)

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/SW/02/19

TEST REPORT ISSUE DATE: 09.03.2019

TEST REPORT OF SURFACE WATER

Name of the Customer : M/s Tata Steel Ltd. (Jamadoba Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr.R. K. Pandey
Sample Quantity : As per requirement
Date of Sampling : 23.02.2019
Date of Sample Receiving : 02.03.2019
Date of Analysis : 02.03.2019 to 09.03.2019
Source of Sample : Damoder River Up Stream

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA, 23 rd Ed. 2017, 4500H+A+B,	7.79	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	BDL	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017 (2540C)	245.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA, 23 rd Ed. 2017 (4500 A+C)	6.1	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA, 23 rd Ed. 2017 (5210A+ B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	28.0	5-1000	-
7.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017 (4500 -C)	0.62	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017 (4500 -SO ₄ ²⁻ E)	20.2	1.0-250	400.0

*The result are related only to item tested - The parameters are not included in IS: 2296 Class-C
BDL - Below Detection Limit


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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/SW/02/19

TEST REPORT ISSUE DATE: 09.03.2019

TEST REPORT OF SURFACE WATER

Name of the Customer : M/s Tata Steel Ltd. (Jamadoba Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad – 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr.R. K. Pandey
Sample Quantity : As per requirement
Date of Sampling : 23.02.2019
Date of Sample Receiving : 02.03.2019
Date of Analysis : 02.03.2019 to 09.03.2019
Source of Sample : Damoder River Down Stream

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA, 23 rd Ed. 2017, 4500H+A+B,	7.86	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	BDL	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017 (2540C)	326.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA, 23 rd Ed. 2017 (4500 A+C)	6.5	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA, 23 rd Ed. 2017 (5210A+ B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	32.0	5-1000	-
7.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017 (4500 - C)	0.66	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017 (4500 -SO ₄ ²⁻ E)	23.0	1.0-250	400.0

*The result are related only to item tested - The parameters are not included in IS: 2296 Class-C
BDL - Below Detection Limit


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FROM THE PRESS

Publication **PRABHAT KHAZAR, DHANBAD** Date **11-3-14**


TATA STEEL
सूचना

जन साधारण को सूचित किया जाता है कि भारत सरकार, वन एवं पर्यावरण मंत्रालय के पत्रांक संख्या - J-11015/203/2011-IA.II(M) के जरिए जामाडोबा कोल वाशरी (1.0 मिलियन टन प्रतिवर्ष से 2.0 मिलियन टन प्रतिवर्ष विस्तारीकरण परियोजना) मेसर्स टाटा स्टील लिमिटेड, जामाडोबा, जिला-धनबाद को पर्यावरण स्वीकृति प्रदान की गयी है, जिसकी प्रतिलिपि क्षेत्रीय कार्यालय, झारखण्ड राज्य प्रदूषण नियंत्रण परिषद, धनबाद में उपलब्ध है तथा भारत सरकार, वन एवं पर्यावरण मंत्रालय के इंटरनेट साइट <http://envfor.nic.in> पर भी देखी जा सकती है।

महाप्रबंधक (झरिया)
टाटा स्टील, जामाडोबा (धनबाद)

FROM THE PRESS

Publication **HINDUSTANI, DHANBAD** Date **11-3-14**



**TATA
TATA STEEL**

सूचना

जन साधारण को सूचित किया जाता है कि भारत सरकार, वन एवं पर्यावरण मंत्रालय के पत्रांक संख्या - J-11015/203/2011-IA.II(M) के जरिए जामाडोबा कोल वाशरी (1.0 मिलियन टन प्रतिवर्ष से 2.0 मिलियन टन प्रतिवर्ष विस्तारीकरण परियोजना) मेसर्स टाटा स्टील लिमिटेड, जामाडोबा, जिला-धनबाद को पर्यावरण स्वीकृति प्रदान की गयी है, जिसकी प्रतिलिपि क्षेत्रीय कार्यालय, झारखण्ड राज्य प्रदूषण नियंत्रण परिषद, धनबाद में उपलब्ध है तथा भारत सरकार, वन एवं पर्यावरण मंत्रालय के इंटरनेट साइट <http://envfor.nic.in> पर भी देखी जा सकती है।

महाप्रबंधक (झरिया)

टाटा स्टील, जामाडोबा (धनबाद)

CORPORATE COMMUNICATIONS
JHARIA DIVISION

FROM THE PRESS

Publication

DAINIK BHASKAR, DHANBAD Date 11-3-14


TATA
TATA STEEL

सूचना

जन साधारण को सूचित किया जाता है कि भारत सरकार, वन एवं पर्यावरण मंत्रालय के पत्रांक संख्या - J-11015/373/2010-IA.II(M) के जरिए 6 एवं 7 पिट्स कोलियरी (0.28 मिलियन टन प्रतिवर्ष से 0.6 मिलियन टन प्रतिवर्ष विस्तारीकरण परियोजना) मेसर्स टाटा स्टील लिमिटेड, जामाडोबा, जिला-धनबाद को पर्यावरण स्वीकृति प्रदान की गयी है, जिसकी प्रतिलिपि क्षेत्रीय कार्यालय, झारखण्ड राज्य प्रदूषण नियंत्रण परिषद, धनबाद में उपलब्ध है तथा भारत सरकार, वन एवं पर्यावरण मंत्रालय के इंटरनेट साइट <http://envfor.nic.in> पर भी देखी जा सकती है।

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टाटा स्टील, जामाडोबा (धनबाद)

CORPORATE COMMUNICATIONS
JHARIA DIVISION

FROM THE PRESS

Publication **DAINIK JAGRANI, DHANBAD** Date 11-3-14



TATA
TATA STEEL

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महाप्रबंधक (झारिया)

टाटा स्टील, जामाडोबा (धनबाद)

CORPORATE COMMUNICATIONS
JHARIA DIVISION

Annexure- III Receipt of EC at Municipal Commissioner Dhanbad

Municipal Commissioner,
Dhanbad.

Ref No.: JMB/ENV/DIG/37/ 805 /2018

September 17 , 2018

Sub: Submission of copy of Environmental Clearance granted to units of M/s Tata Steel Limited

Dear Sir,

Please find enclosed the letter of Environmental Clearance (EC) granted by MoEFCC to various units of Tata Steel Limited, Jharia Division, Dhanbad as per the following details-

1. Digwadih Colliery (for expansion from 0.38 MTPA to 0.6 MTPA in ML area 314.57 ha), dist. Dhanbad, Jharkhand.
2. 6 & 7 Pits Colliery (for expansion from 0.28 MTPA to 0.6 MTPA in ML area 168.12 ha), dist. Dhanbad, Jharkhand.
3. Jamadoba Coal Washery (for expansion from 1 MTPA to 2 MTPA in 7 Ha area), dist. Dhanbad, Jharkhand.

The copy of EC letter and its compliance is also uploaded in website (<http://www.tatasteel.com/sustainability/environment-compliance-reports/>) for your kind perusal.

Thanking You,

Yours faithfully,


Head, Planning
Jharia Division



Upload of compliance report on company's website

The screenshot shows the Tata Steel website's 'Environment Compliance Reports' page. The page title is 'Bio Medical Waste Details of Tata Central Hospital West Bokaro for November 2018'. The breadcrumb trail is 'Sustainability » Environment Compliance Reports'. The page lists six reports, with the fourth one highlighted by a red box:

- Half Yearly EC Compliance Report of 6&7 Pits Colliery Apr 18 to Sep 18
- Half Yearly EC Compliance Report of BAC and BCPP Apr 18 to Sep 18
- Half Yearly EC Compliance Report of Digwadih Colliery Apr 18 to Sep 18
- Half Yearly EC Compliance Report of Jamadoba Coal Washery Apr 18 to Sep 18**
- Half Yearly EC Compliance Report of Lagla Mahal Apr 18 to Sep 18
- Half Yearly EC Compliance Report of Mahal Saharjuri Apr 18 to Sep 18

The screenshot shows the Tata Steel website's 'Environment Compliance Reports' page. The page title is 'Environment Statement for the financial year ending March 2018 for Lagla Mahal Sand'. The breadcrumb trail is 'Sustainability » Environment Compliance Reports'. The page lists five environment statements, with the third one highlighted by a red box:

- Environment Statement for the financial year ending March 2018 for 6&7 Pits Colliery
- Environment Statement for the financial year ending March 2018 for Jamadoba Colliery
- Environment Statement for the financial year ending March 2018 for Jamadoba Coal Washery**
- Environment Statement for the financial year ending March 2018 for Digwadih Colliery
- Environment Statement for the financial year ending March 2018 for Bhelatand Coal Washery

ENVIRONMENTAL POLICY

Tata Steel's environmental responsibilities are driven by our commitment to preserve the environment and are integral to the way we do business.

1. We are committed to deal proactively with Climate Change issue by efficient use of natural resources & energy; reducing and preventing pollution; promoting waste avoidance and recycling measures; and product stewardship.
 - We shall identify, assess and manage our environment impact.
 - We shall regularly monitor, review and report publicly our environmental performance.
 - We shall develop & rehabilitate abandoned sites through afforestation and landscaping and shall protect and preserve the biodiversity in the areas of our operations.
 - We shall enhance awareness, skill and competence of our employees and contractors so as to enable them to demonstrate their involvement, responsibility and accountability for sound environmental performance.
2. We are committed to continual improvement in our environmental performance.
 - We shall set objective-targets, develop, implement and maintain management standards and systems, and go beyond compliance of the relevant industry standards, legal and other requirements.
3. We will truly succeed when we sustain our environmental achievement and are valued by the communities in which we work.

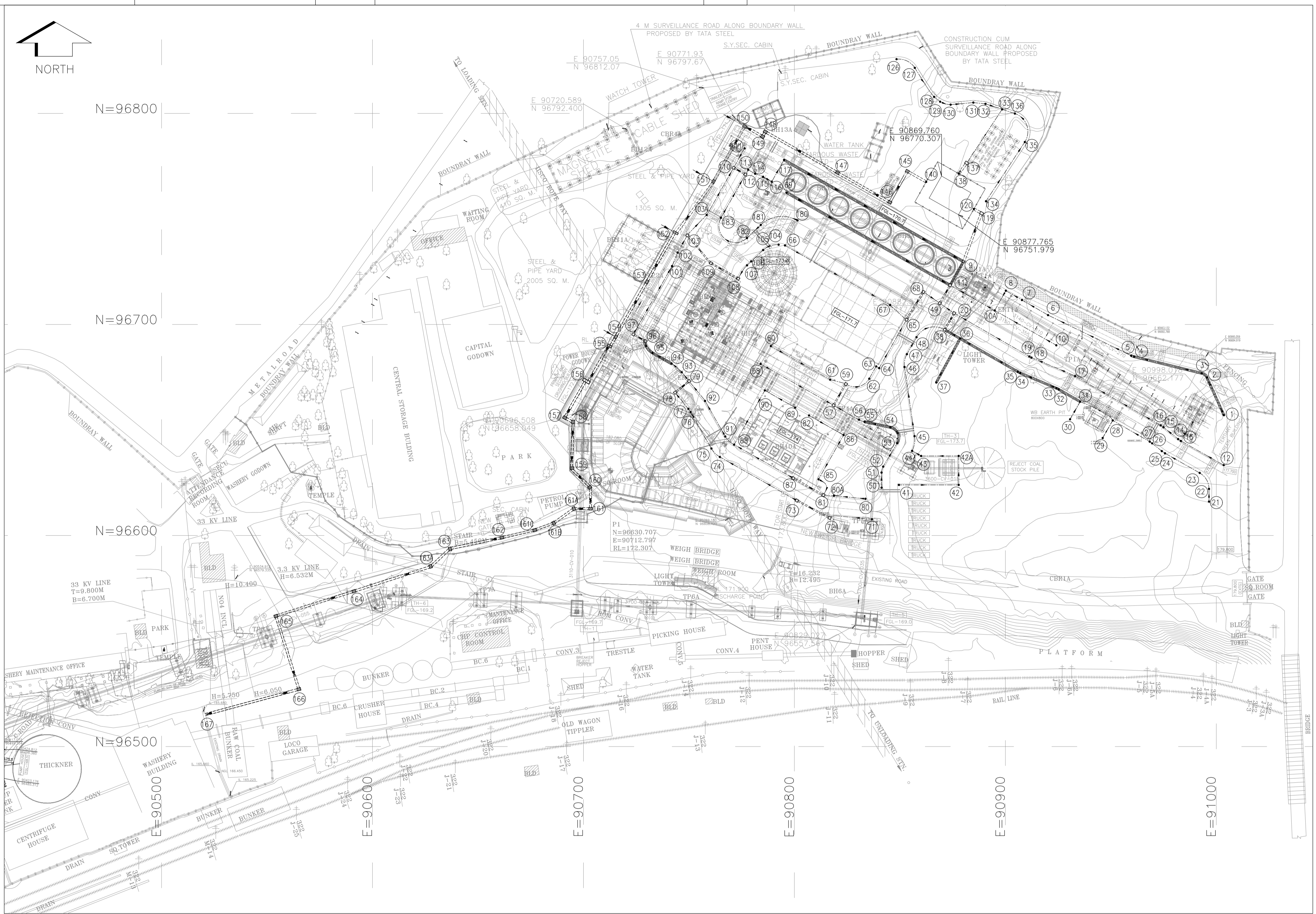
Date : November 1, 2017



T V Narendran
CEO & Managing Director



TATA DRG. NO. TCE.7840A-670-GA-6197-R1 TCE DRG NO TCE DRG NO TCE DRG NO TCE DRG NO TCE DRG NO



TATA
TATA CONSULTING ENGINEERS LTD.
ISSUED FOR CONSTRUCTION
 18-02-2017
 Date..... Signature.....

- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETER, LEVEL & CO-ORDINATES ARE IN METERS UNLESS OTHERWISE STATED.
 - THIS DRAWING HAS BEEN PREPARED BASED ON THE PLANT GENERAL LAYOUT DRG.NO: TCE.7840A-670-GA-1001.
 - THE SCHEME SHOWN IN THE DRAWING HAS BEEN PREPARED BASED ON THE "RECORD NOTES OF DISCUSSION OF JAMADOBA MAIN PLANT HELD ON 23-05-2016 & 26-05-2016 & 31-05-2016 AT CHIEF RMPP OFFICE IN JAMSHEDPUR".
 - ALL THE RAIN WATER FROM NEW 2MTPA BENEFICIATION PLANT AREA SHALL BE ROUTED TO SETTLING PIT THROUGH STORM WATER DRAIN. THE PIT SHALL BE GUARDED SUITABLY TO PREVENT UNAUTHORIZED HUMAN OR ANIMAL ENTRY.
 - ALL THE GARLAND DRAINS AROUND THE BUILDINGS / FACILITIES SHALL BE CONNECTED TO STORM WATER DRAIN
 - FLOCCULENT DOSING SYSTEM SHALL BE INSTALLED TO INCREASE SETTLING VELOCITY OF COAL PARTICLES. CLEAR WATER FROM SETTLING PIT SHALL BE PUMPED BACK FOR PROCESS USE.
 - IN SPECIAL CASE (LIKE HEAVY RAIN, BREAKDOWN OF DOSING SYSTEM) OUTLET OF TANK SHALL BE CONNECTED TO EXISTING DRAIN THAT IS PRESENTLY ROUTED TO EXISTING SETTLING POND AND APPROPRIATE ACTION WOULD BE TAKEN.
 - FOR RC DETAILS & CHART PLEASE REF. DRG. NO:TCE.TCE.7840A-670-GA-6198 & TCE.7840A-670-GA-6196.
 - BEFORE CONSTRUCTION OF PROPOSED DRAIN, PIPE & MANHOLE THE FINISHED/EXISTING GROUND LEVEL SHOULD BE CHECKED, TO VERIFY THE DRAIN TOP LEVEL AS IT SHOULD MATCH WITH THE FINISHED/EXISTING GROUND LEVEL. IF ANY DISCREPANCY FOUND WITH THE LEVELS GIVEN IN THIS DRAWING, IT SHOULD BE INFORMED BEFORE CONSTRUCTION WORK.
 - WHEREVER TOP LEVEL OF DRAIN IS ABOVE GROUND LEVEL OR ROAD EDGE LEVEL BY MORE THAN 50MM, CUTOFF SHALL HAVE TO BE PROVIDED ON BOTH SIDE OF THE DRAIN OF 100 MM WIDE AND DEPTH WILL BE REQUIRED FROM THE DRAIN TOP UPTO ROAD LEVEL/GROUND LEVEL AT 1500MM INTERVALS. THIS IS REQUIRED TO HAVE FLOW OF WATER FROM ROAD AND SURROUNDING GROUND INTO THE DRAIN.

LEGEND

CENTER LINE OF STORM WATER DRAIN SHOWN THUS.....	→
RC PRECAST COVER OVER DRAIN SHOWN THUS.....	▨
RCC CATCH PIT SHOWN THUS.....	□
RCC MANHOLE OF INTERNAL SIZE 1.2MX1.2M SHOWN THUS.....	⊠
RCC MANHOLE OF INTERNAL SIZE 3MX1.5M SHOWN THUS.....	⊞
RCC NP3 PIPE SHOWN THUS.....	---
SETTLING PIT SHOWN THUS.....	▭

LAYOUT PLAN FOR STORM WATER DRAINAGE SYSTEM
 (SCALE - 1:1000)

FOR RD ISSUE ONLY		ISSUE		REVISIONS		CLEARED		APPD		DATE	
DEPT	SIGNATURE	DATE	R1	R2	DRN	CHEM	CIVIL	ELEC	I&C	MECH	ADG
CHEM					SD						29-12-2016
CIVIL					SD						14-02-2017
ELEC											
I&C											
MECH											

REV. NO.	DATE	DETAIL OF REVISION	BY	CHD.	APP.	ACKD. BY	REF. DRAWING NO.	DETAIL OF REF. DRAWING	NOTES
1									
2									
3									
4									

CONSULTANT		TATA CONSULTING ENGINEERS LIMITED MUMBAI		TATA STEEL LTD. JAMSHEDPUR		
PROJECT		JAMADOBA 2 MTPA COAL BENEFICIATION PLANT				
DETAIL		LAYOUT FOR STORM WATER DRAINAGE SYSTEM		DEPT.	XXXXXXX	CODE1
CONTRACT/ORDER REF.		3800010845/109 DT-25-02-2015		AREA	XXXXXXX	CODE2
DRG NO.		TCE.7840A-670-GA-6197		SUBJECT	XXXXXXX	CODE3
SCALE		AS NOTED		SHT. SIZE	A1	REV.
				TATA DRG. NO.		

Annexure

FOOD BASKET SURVEY

Food basket survey was conducted for 181 respondents of the neighbouring villages of Jamadoba and Bhelatand Group. The survey was conducted across 24 hamlets and wards nearby our operations area with the following objectives:-

1. To know the living conditions of the people.
2. To know the minimum wage of the people.
3. Develop an action plan to improve the living conditions by identifying gaps.

The following hamlets and municipal wards (24 villages) were surveyed:-

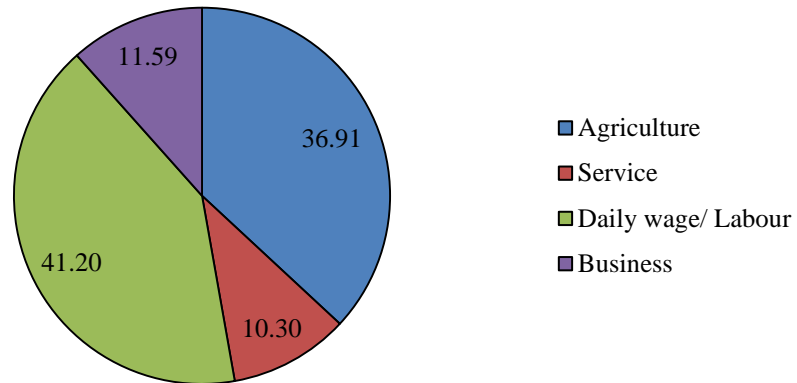
Baidnawadih, Banskapuria, Belubakhar, Bhelatand, Birajdih, Bustar, Chhatand, Debogram, Digwadih-10 no., Dukhidih, Dumri-4 no., Jahajtand, Jorapokhar, Kalimela, Kasiatand, Kushtand, Lalbunglow, Noonudih, Patia, Purnadih, Suyakanali, Tata Sijua-12 no, Tata Sijua 6 no., Upper Dungri.

Observations: -

- It was observed that there was a great skewedness in economic well among the population. The average income per Family is Rs. 8823.00 (181 beneficiaries).
- Out of 181 Households, 295 were earning members.
- The minimum earnings per day in unorganised sector and casual workers is approx. Rs208.00 (Total earning / total no. of earning members)
- No. of members per family is $991/181 = 5.47$
- Average Working persons per family is $295/181 = 1.63$
- The major demands that have come up is ameliorating unemployment and Drinking water and combating social evils like Alcoholism, Dowry and Domestic Violence. Unemployment is especially to the new generation who may not be having adequate number of jobs.
- The major livelihood is wage labour and also a substantial number of Population is engaged in Agriculture. Only a few are unemployed.

Livelihood	Numbers	Percentage (%)
Agriculture	86	36.90
Service	24	10.30
Daily wage/ Labour	96	41.20
Business	27	11.59
TOTAL	233	100%

LIVELIHOOD PATTERN %



Expenditure in (Rs) Per Family Per Month

S.No.	Expenditure Item	Expenditure in Rupees	Expenditure per family per month in Rupees
1	Transportation	49376	272
2	House	0	0
3	Electricity	24005	132.62
4	Water	3003	17.00
5	Education	65426	361.46
6	Medical	84259	465.37
7	Clothing	88034	486.37
8	Soc. Oblg.	25581.31	141.33
9	Food	3598.16	3598.16
10	Fuel	37851	209.12
	Total	381133.5	5683.43

- Total Expenditure per month- Rs 3,81,133.5
- Average expenditure per family per month- Rs 5683.58
- Average expenditure per member- (5683.58/5.4)= Rs 1052.4
- Income per family- Rs 8823
- Income per month per individual Earning member= Rs 208.00 x 26= Rs 5,408.00
- Expenditure Per person on food per month= Rs 3598.16/5.4= Rs 719.63
- % of Expenditure Spent on food by per person per month= 719.63/1052.40*100=68.37%

BASIC NEED WAGE:

Basic food expense per person X 100/% expense on food X 1/Avg working persons per family X Avg Family Size X 1.1

$$=719.63 \times 100/68.37 \times 1/1.63 \times 5.4 \times 1.1 = \text{Rs}3835.68$$

So, The Basic Need Wage is Rs 3835.68