



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/DIG/37/ 700 /2019

November 22, 2019

Ref.: Environmental Clearance letter No.-J-11015/372/2010-IA.II(M)dated-30<sup>th</sup> September 2013.

**SUB: Half Yearly Compliance Status Report of Environment Clearance conditions issued by MoEFCC, New Delhi to Digwadih Colliery, Tata Steel Limited, Dhanbad for the period April'19 to September'19.**


Dear Sir,

We are enclosing herewith compliance report for the period **April'19 to September'19** for the EC granted vide letter no.- J-11015/372/2010-IA.II(M) dated- 30th September 2013 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](mailto: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, 5<sup>th</sup> Floor  
1582, Rajdanga Main Road, Kolkata -700107.

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

**TATA STEEL LIMITED**

Jharia Collieries Jamadoba 828 112 Dhanbad India  
Tel 91 326 2320263/2320265/2320267 Fax 91 326 2320268  
Regd. Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001  
Tel 91 22 66658282 Fax 91 22 66657724  
Corporate Identity Number L27100MH1907PLC000260 Website [www.tatasteel.com](http://www.tatasteel.com)

# **HALF YEARLY COMPLIANCE REPORT**

**(PERIOD: APRIL'19 – SEPTEMBER'19)**

## **DIGWADIH COLLIERY**

**(CAPACITY: EXPANSION FROM 0.38 TO 0.6 MTPA RAW COAL)**  
**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-11015/372/2010-  
IA.II(M) DATED- 30.09.2013 ISSUED BY GOVT. OF INDIA, MINISTRY OF  
ENVIRONMENT, FOREST AND CLIMATE CHANGE, NEW DELHI.**

**Compliance status of Digwadih Colliery of M/s Tata Steel Ltd. for (Expansion from 0.38 MTPA to 0.6 MTPA in ML area 314.57 ha), dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/372/2010-IA.II (M) dated September 30, 2013**

S. No.	Condition	Compliance Status
<b>Specific Condition</b>		
(i)	The maximum production from the mines shall not exceed beyond that for which environmental clearance has been granted.	<p>It is being strictly followed. The EC capacity is for 0.6 MTPA raw coal while the raw coal production for Digwadih Colliery is well below the limit. The production details are:</p> <p>FY19 - 0.261 MTPA  FY18 – 0.259 MTPA  FY17 – 0.262 MTPA  FY16 – 0.308 MTPA  FY15 – 0.25 MTPA</p>
(ii)	The impact on the Damodar river due to mining activity which is at a distance of 2 km be studied through a reputed 3 <sup>rd</sup> Party and submitted to the SPCB and the regional office of the MoEF for monitoring.	<p>The underground coal mines operated by Tata Steel Ltd are adjacent to the Damodar River. Other coal mines of BCCL &amp; SAIL are also in close proximity to the river basin. Major source of pollution of Damodar River is the flow of industrial effluents and untreated sewage water into the river. A number of OB dumps lie close to the river banks causing the flow of sediments into the river.</p> <p>As per the hydrology study conducted by Indian School of Mines, Dhanbad, the impact of the underground mines of Tata Steel Ltd is minimal. This is due to the following reasons</p> <ul style="list-style-type: none"> <li>• The mining activity does not require any diversion of river/streams or natural drain. As land profile does not change appreciably in case of underground mines with backfilling of mined out areas, there is no change in surface drainage till date and unlikely to occur in future.</li> <li>• Surface water quality also does not undergo any change, as there is no discharge to surface drainage in dry season. In Monsoon, the excess mine water discharged gets mixed with storm water.</li> <li>• Large settling tanks are available for storage and sedimentation of mine water before its discharge to conform to the norms. The industrial wastewater generated during vehicle washing from the central workshop catering to all the mines is treated in oil and grease trap followed by recycling of water.</li> <li>• The two coal washeries of Tata Steel are operating on Zero Liquid discharge (ZLD) principle.</li> <li>• Sewage water generated from our townships is treated in Soak pit and Septic tank arrangement. Now we are replacing it with Packaged Sewage Treatment Plant (PSTP). Already one STP of 200 KLD has been installed in one colony and remaining colonies are also proposed to be covered with STP.</li> </ul>

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(iii)	Details of underground transportation of coal from mine to coal yard/ rail yard be submitted to the MoEF for record.	Coal from the mine is sent to the captive Jamadoba coal washery for beneficiation purpose through a network of underground conveyor belts. The detailed diagram of transportation network has already been submitted in earlier compliance report.
(iv)	Adequate care be taken to prevent sand spillages from the trucks/tippers.	The trucks that are being used for the transportation of sand are properly covered using tarpaulin sheets. Larger trucks have been engaged for reducing no of cycles. To ensure the compliance, every vehicle is checked as per vehicle checklist on PUC, Tyre/body condition, emission check at every entry point. Quality checks are done on trucks to ensure its health and punitive action is taken against defaulters by the management.
(v)	The test results of the study of leaching of heavy metals from bottom-ash be submitted to SPCB and the regional office of the MoEF for monitoring.	A study conducted in 2013, by Indian School of Mines, Dhanbad to assess the leachability characteristics of fly ash and bottom ash samples taken from our, has determined that the concentration of heavy metals in the leachates were invariably well below the permissible limits for discharge of effluents as per the Indian standards IS 2490 (1993). The test results have already been submitted in December'13 and also re-submitted in April'18.
(vi)	The CSR activities shall be need based and detailed CSR plan be prepared for implementation.	The CSR plan for each financial year is prepared by TSRDS (Tata Steel Rural Development Society) only after proper discussions to assess the needs have been held with the elected/ senior members of the communities where our CSR activities are to be undertaken.
(vii)	The detailed breakup of funds during 2012-13 be submitted to the MoEF for record. A social audit to be got done annually by a reputed institute and uploaded on the company's website.	The detailed breakup has already been submitted to MOEF. The Corporate Sustainability Reports viz. Integrated Reports are made annually for the company which is certified by an assurance agency. It also includes the Social Audit of the company. All the reports are uploaded on the Tata Steel website. Further, an internal Social audit is also conducted once in five years. In 2012, a HDI (Human Development Index) survey of surrounding villages was conducted with the help of XLRI, Jamshedpur.
(viii)	There should be no OB dumps at the end of the mining.	Since this is an underground mine, it is not applicable.
(ix)	Regular monitoring of subsidence movement on the surface over and around the working area and impact on natural drainage pattern, water	Regular monitoring of subsidence is done by Central Institute for Mining and Fuel Research, Dhanbad. According to the subsidence reports, the impact of subsidence is negligible since the underground mine workings are now at great depth and proper filling of

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	bodies, vegetation, structure, roads, and surroundings shall be continued till movement ceases completely. In case of observation of any high rate of subsidence movement, appropriate effective corrective measures shall be taken to avoid loss of life and material. Cracks shall be effectively plugged with ballast and clayey soil/suitable material.	voids through sand stowing is being done. The latest subsidence report has been submitted to MoEFCC, Regional Office, Ranchi in hard copy and soft copy vide mail dt. 19.04.2018. The latest subsidence study report is attached here.
(x)	If subsidence is found exceeding the permitted limits, then the landowners shall be adequately compensated with mutual agreement of the landowners.	It will be strictly followed.
(xi)	Mining shall be carried out as per statuette at a safe distance from the river/nallah flowing adjacent to the lease boundary.	Since this is an underground project, there is hardly any impact on the river/ nallah. The closest jore is at a distance of about 2kms from the mine office area. Therefore, no impact on the course of flow in the jore is anticipated.
(xii)	High root density tree species shall be selected and planted over areas likely to be affected by subsidence.	Impact on land by subsidence has been found to be negligible as per the subsidence monitoring reports prepared by CIMFR, Dhanbad.
(xiii)	Coal extraction shall also be optimized in areas where agricultural production is continuing. Some pillars shall be left below the agricultural land. No depillaring & coal extraction should be carried out below habitation, H.T. Lines & beneath road, water bodies.	It will be strictly followed.
(xiv)	Subsidence shall be monitored closely and if subsidence is found exceeding the permitted limits, then the landowners shall be adequately compensated with mutual agreement with the landowners.	Regular monitoring of subsidence is being done by CIMFR, Dhanbad.
(xv)	3-tier plantation should be developed 2 km stretch of road from the mine using native species.	Plantation along stretches of road has been done. 3-tier plantation is not feasible due to presence of private land around the periphery of colliery. Details on greenbelt developed is provided in Annexure-I.

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(xvi)	Garland drains (size, gradient and length) around the safety areas such as mine shaft and low lying areas 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 sites. 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 colliery area to channelize the surface runoff. The details of size of garland drain mapped in surface plan has been submitted earlier in April'18.
(xviii)	The locations of monitoring stations in the Jharia Coalfields should be finalized in consultation with the Jharkhand State Pollution Control Board. The smoke/dust emission varies from source to source (fuel wood, coal, flyash from TPPs, silica from natural dust, etc). Mineralogical composition study should be undertaken on the composition of the suspended particulate matter (PM10 and PM2.5) in Jharia Coalfields and also quantified. These studies would help ascertain source and extent of the air pollution, based on which appropriate mitigative measures could be taken.	The locations of monitoring stations for our colliery have already been finalized in consultation with JSPCB, Dhanbad. The mineralogical composition study has being carried out by an independent laboratory (recognized by MoEFCC and NABL) and the results are provided in Annexure-II.
(xix)	Water sprinkling system shall be provided to check fugitive emissions from loading operations, conveyor system, haulage roads, transfer points, etc. Major approach roads shall be black topped and properly maintained.	Water spraying arrangement is present in the underground mines at all transfer points. Water spraying via tankers is done on sand transportation routes. Major approach roads have been black-topped and maintained regularly.
(xx)	Transportation of coal from the mine to railway siding should be by 20T mechanically covered trucks.	Not applicable due to transportation of coal via underground belt conveyor network system directly to washery.

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<p><b>(xxi)</b></p>	<p>A progressive afforestation plan shall be prepared and implemented over the mine lease area acquired and shall include areas under green belt development, areas along roads, infrastructure, along ML boundary and township etc, by planting native species in consultation with the local DFO/Agriculture Department.</p>	<p>Tree plantation activities are carried out every year on the barren/ degraded areas, areas along road-side, infrastructure, etc of the colliery leasehold. Apart from these, fruit plants are distributed to employees and also to villagers, schools, institutions, etc. The environment department is responsible for implementing the afforestation plan which is prepared along with the mine management. In the last two years, about 10000 trees have been planted in the leasehold areas. High root density trees of native species are planted under annual plantation program this year. We have covered around 39 Nos of species under tree plantation jobs this year:</p> <table border="1" data-bbox="722 703 1453 1123"> <tr> <td>Babul</td> <td>Mango</td> <td>Areca palm</td> <td>Semal</td> </tr> <tr> <td>Bael</td> <td>Mahaneem</td> <td>Bargad</td> <td>Palash</td> </tr> <tr> <td>Kala siris</td> <td>Imli</td> <td>Guler/ Dumar</td> <td>Ammda</td> </tr> <tr> <td>Alostromia</td> <td>Karipatta</td> <td>Shisham</td> <td>Mahua</td> </tr> <tr> <td>Kaju</td> <td>Karma</td> <td>Gulmohar</td> <td>Bija</td> </tr> <tr> <td>Sitaphal</td> <td>Kadam</td> <td>Sal</td> <td>Togger</td> </tr> <tr> <td>Kathal</td> <td>Teak/ Sagwan</td> <td>Lagerstroemia</td> <td>Jamun</td> </tr> <tr> <td>Neem</td> <td>Radhachuda</td> <td>Pipal</td> <td>Arjun</td> </tr> <tr> <td>Kachnar</td> <td>Phoenix palm</td> <td>Guava</td> <td>Ber</td> </tr> <tr> <td>Jungle Jalebi</td> <td>Amla</td> <td>Ashoka</td> <td></td> </tr> </table>	Babul	Mango	Areca palm	Semal	Bael	Mahaneem	Bargad	Palash	Kala siris	Imli	Guler/ Dumar	Ammda	Alostromia	Karipatta	Shisham	Mahua	Kaju	Karma	Gulmohar	Bija	Sitaphal	Kadam	Sal	Togger	Kathal	Teak/ Sagwan	Lagerstroemia	Jamun	Neem	Radhachuda	Pipal	Arjun	Kachnar	Phoenix palm	Guava	Ber	Jungle Jalebi	Amla	Ashoka	
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<p><b>(xxii)</b></p>	<p>Regular monitoring of groundwater level and quality shall be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality in May. Data thus collected shall be submitted to the MoEF and to the CPCB quarterly within one month of monitoring.</p>	<p>The monitoring of groundwater level and quality is done four times a year. The groundwater quality report &amp; groundwater level for the Post-Monsoon (November) and winter season (January) are provided in Annexure-I.</p>																																								
<p><b>(xxiii)</b></p>	<p>Acid Water Treatment Plant, volume of water to be treated and disposal of brine should be provided.</p>	<p>Not applicable.</p>																																								

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<b>(xxiv)</b>	Mine discharge water outside the ML shall be monitored, particularly for TDS and treated to conform to prescribed levels before discharge into the natural environment.	<p>There is one mine-water outlet point in the colliery which is regularly monitored by the Environmental Laboratory. The analysis results are given below:</p> <table border="1"> <thead> <tr> <th>Month</th> <th>Temp</th> <th>pH</th> <th>TSS</th> <th>TDS</th> <th>BOD</th> <th>COD</th> <th>Oil &amp; Grease</th> </tr> </thead> <tbody> <tr> <td>Limits</td> <td>&lt;40°C</td> <td>5.5-9.0</td> <td>100 mg/l</td> <td>2100 mg/l</td> <td>30mg/l</td> <td>250 mg/l</td> <td>10 mg/l</td> </tr> <tr> <td>April'19</td> <td>33</td> <td>7.7</td> <td>14</td> <td>888</td> <td>2.4</td> <td>16</td> <td>0.6</td> </tr> <tr> <td>May'19</td> <td>30</td> <td>7.5</td> <td>11</td> <td>864</td> <td>1.5</td> <td>16</td> <td>0.8</td> </tr> <tr> <td>June'19</td> <td colspan="7">No Discharge</td> </tr> <tr> <td>July'19</td> <td>30</td> <td>7.6</td> <td>08</td> <td>836</td> <td>2.1</td> <td>16</td> <td>0.6</td> </tr> <tr> <td>August'19</td> <td>30</td> <td>7.3</td> <td>10</td> <td>612</td> <td>2.4</td> <td>16</td> <td>0.8</td> </tr> <tr> <td>September'19</td> <td>31</td> <td>7.5</td> <td>07</td> <td>704</td> <td>2.8</td> <td>16</td> <td>1.2</td> </tr> <tr> <td>Min</td> <td>30</td> <td>7.3</td> <td>07</td> <td>612</td> <td>1.5</td> <td>16</td> <td>0.6</td> </tr> <tr> <td>Max</td> <td>33</td> <td>7.7</td> <td>14</td> <td>888</td> <td>2.8</td> <td>16</td> <td>1.2</td> </tr> <tr> <td>Average</td> <td>30.8</td> <td>7.52</td> <td>10</td> <td>780.8</td> <td>2.24</td> <td>16</td> <td>0.8</td> </tr> </tbody> </table>	Month	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease	Limits	<40°C	5.5-9.0	100 mg/l	2100 mg/l	30mg/l	250 mg/l	10 mg/l	April'19	33	7.7	14	888	2.4	16	0.6	May'19	30	7.5	11	864	1.5	16	0.8	June'19	No Discharge							July'19	30	7.6	08	836	2.1	16	0.6	August'19	30	7.3	10	612	2.4	16	0.8	September'19	31	7.5	07	704	2.8	16	1.2	Min	30	7.3	07	612	1.5	16	0.6	Max	33	7.7	14	888	2.8	16	1.2	Average	30.8	7.52	10	780.8	2.24	16	0.8
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<b>(xxv)</b>	The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource, in case water table shows a declining trend. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.	<p>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.</p> <p>Further, there are a number of ponds existing on the surface of the mining lease which act as 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>																																																																																								
<b>(xxvi)</b>	Besides carrying out regular periodic health checkup of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health checkup for occupational diseases and hearing impairment, if any, through an agency such as NIOH, Ahmedabad within a period of one year and the results reported to this Ministry and to DGMS.	The periodic health checkup 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 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. Some sample reports and as well as past records have been submitted in previous compliance report.																																																																																								
<b>(xxvii)</b>	The mining in the existing mines would be phased out after	It is not applicable in our case.																																																																																								



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	expiry of the current mining lease and after reclamation of mined over area. The operating mines may be analyzed and monitored for compliance of conditions, having bearing with movement of wild life until such time they are closed/ phased out.																													
(xxviii)	Project specific CSR for an amount of Rs 5/Tonne of coal production should be provided for the activities under CSR undertaken for the neighboring villages shall be for not less than Rs 10 per tonne of coal and the progress made thereon shall be uploaded by the company annually on the company website. Monitoring of the impacts of activities under CSR shall be carried out periodically.	<p>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.</p> <p>CSR data submitted is for Jharia Division which comprises all 5 collieries and 2 washeries. Jamadoba Washery, Digwadih Colliery and 6&amp;7 Pits Colliery are adjacent to each other and fall under same leasehold area i.e. Jamadoba group of collieries. The core zone and buffer zone of all above units overlap to each other and in many cases, the villages are same where CSR work is going on. Therefore, we have a central budget for CSR which is managed by a team of experts who are dedicatedly involved in providing benefits and improving standard of living in over 50+ villages and municipal wards. Hence, separate CSR expenditure for individual unit cannot be estimated. For calculation/ statutory reporting purpose, the consolidated CSR expenditure can be divided into unit-wise based on size of leasehold area of individual units.</p> <table border="1"> <thead> <tr> <th>S. No.</th> <th>Unit</th> <th>Area (Ha)</th> <th>CSR expenditure in FY19 (in Lakhs)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Jamadoba Colliery and Jamadoba Coal Washery</td> <td>927.17</td> <td>240.60</td> </tr> <tr> <td>2</td> <td>Digwadih Colliery</td> <td>314.57</td> <td>81.63</td> </tr> <tr> <td>3</td> <td>6 &amp; 7 Pits Colliery</td> <td>168.12</td> <td>43.63</td> </tr> <tr> <td>4</td> <td>Bhelatand A. Colliery and BCPP</td> <td>529.68</td> <td>137.45</td> </tr> <tr> <td>5</td> <td>Sijua Colliery</td> <td>238.66</td> <td>61.93</td> </tr> <tr> <td></td> <td><b>Total</b></td> <td><b>2178.2</b></td> <td><b>565.24</b></td> </tr> </tbody> </table> <p>The progress report is uploaded every year on the company website. Internal social audits are carried out regularly to assess the impact of CSR activities. The CSR report with photographs are provided in Annexure.</p>	S. No.	Unit	Area (Ha)	CSR expenditure in FY19 (in Lakhs)	1	Jamadoba Colliery and Jamadoba Coal Washery	927.17	240.60	2	Digwadih Colliery	314.57	81.63	3	6 & 7 Pits Colliery	168.12	43.63	4	Bhelatand A. Colliery and BCPP	529.68	137.45	5	Sijua Colliery	238.66	61.93		<b>Total</b>	<b>2178.2</b>	<b>565.24</b>
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(xxix)	A Final Mine Closure Plan along with details of Corpus	Mine Closure Plan has been approved by Ministry of Coal, New Delhi. Details on deposition of closure cost in																												

**Compliance status of Digwadih Colliery of M/s Tata Steel Ltd. for (Expansion from 0.38 MTPA to 0.6 MTPA in ML area 314.57 ha), dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/372/2010-IA.II (M) dated September 30, 2013**

	Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	escrow account along with expenditure incurred for progressive closure is regularly submitted to Office of Coal controller. Final mine closure along with details of corpus fund will be submitted to MoEFCC 5 years in advance.
(xxx)	<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 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>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> <p>Moreover, Digwadih Colliery 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>

**Compliance status of Digwadih Colliery of M/s Tata Steel Ltd. for (Expansion from 0.38 MTPA to 0.6 MTPA in ML area 314.57 ha), dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/372/2010-IA.II (M) dated September 30, 2013**

<b>B.</b>	<b>GENERAL CONDITIONS</b>	
<b>(i)</b>	No change in technology and scope of working shall be made without prior approval of the MoEF.	It is being strictly followed. Bord and Pillar method is being used for mining.
<b>(ii)</b>	No change in the calendar plan including quantum of mineral coal and waste being produced shall be made.	It will be strictly followed.
<b>(iii)</b>	Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring PM10, PM2.5, SO2 and NOx. 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, in RSPM etc. shall be carried out at least once in six months.	<p>The Air quality monitoring stations are:</p> <ul style="list-style-type: none"> <li>(i)Jamadoba Group Office (Core Zone)</li> <li>(ii)New Village Colony, Jamadoba (Buffer Zone)</li> <li>(iii)Digwadih 12 No. Colony (Buffer Zone)</li> <li>(iv)6&amp;7 Pits Kalimandir area (Buffer Zone)</li> </ul> <p>Monitoring of heavy metals in ambient air is being performed by an independent laboratory (recognized by MoEFCC/NABL) once in six months. The results are enclosed as Annexure-II.</p>
<b>(iv)</b>	Data on ambient air quality (PM10, PM2.5, SO2 and NOx and heavy metals such as Hg, As, Ni, Cr, etc) and other monitoring data shall be regularly submitted to the Ministry including its Regional Office at Bhubaneswar and to the SPCB and the CPCB once in six months. Random verification of samples through analysis from independent laboratories	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 Digwadih Colliery of M/s Tata Steel Ltd. for (Expansion from 0.38 MTPA to 0.6 MTPA in ML area 314.57 ha), dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/372/2010-IA.II (M) dated September 30, 2013**

	recognised under the EP Rules, 1986 shall be furnished as part of the compliance report.																																																																																							
(v)	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>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 August'19 is given below:</p> <table border="1"> <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></td> <td>Pit Bottom, 9 Pit, 11 Seam</td> <td>-</td> <td>65.4</td> <td>8 hrs./shift</td> </tr> <tr> <td>2</td> <td rowspan="3">11 Seam</td> <td>2<sup>nd</sup> L (N) / 15<sup>th</sup> D , 350 Pump 11 Seam</td> <td>-</td> <td>73.6</td> <td>8 hrs./shift</td> </tr> <tr> <td>3</td> <td>15<sup>th</sup> D / 4<sup>th</sup> R , Haulage 11 Seam</td> <td>-</td> <td>72.1</td> <td>8 hrs./shift</td> </tr> <tr> <td>4</td> <td>Sub Station, 6<sup>th</sup> L(S) / 40<sup>th</sup> 11 Seam</td> <td>-</td> <td>63.8</td> <td>8 hrs./shift</td> </tr> <tr> <td>5</td> <td>9 Seam</td> <td>4 ½ drift / '0'level , 9 Seam</td> <td>-</td> <td>72.9</td> <td>8 hrs./shift</td> </tr> <tr> <td>6</td> <td rowspan="7">8 Seam (North)</td> <td>Hoist 1<sup>st</sup> R / '0'L , 8 Seam</td> <td>-</td> <td>74.6</td> <td>8 hrs./shift</td> </tr> <tr> <td>7</td> <td>Transformer Room, 1<sup>st</sup> D / 1<sup>st</sup> DL 8 Seam</td> <td>-</td> <td>64.1</td> <td>8 hrs./shift</td> </tr> <tr> <td>8</td> <td>Miner Station , 3<sup>rd</sup> L / 4<sup>th</sup> D</td> <td>-</td> <td>62.7</td> <td>8 hrs./shift</td> </tr> <tr> <td>9</td> <td>Auxiliary Fan , 5<sup>th</sup> D / 3<sup>rd</sup> L 8 Seam</td> <td>-</td> <td>83.6</td> <td>8 hrs./shift</td> </tr> <tr> <td>10</td> <td>Belt discharge to 2 L Belt , 5<sup>th</sup> R / 2<sup>nd</sup> L</td> <td>-</td> <td>69.8</td> <td>8 hrs./shift</td> </tr> <tr> <td>11</td> <td>Auxiliary Fan , 4<sup>th</sup> L belt 4<sup>th</sup> D &amp; 5<sup>th</sup> D</td> <td>-</td> <td>77.7</td> <td>8 hrs./shift</td> </tr> <tr> <td>12</td> <td>H.P Pump 20<sup>th</sup> / 4<sup>th</sup> L</td> <td>-</td> <td>74.3</td> <td>8 hrs./shift</td> </tr> <tr> <td>13</td> <td rowspan="3">Surface</td> <td>Pit Top</td> <td>-</td> <td>68.2</td> <td>8 hrs./shift</td> </tr> <tr> <td>14</td> <td>MMV Fan House at Operator's seat</td> <td>-</td> <td>81.8</td> <td>8 hrs./shift</td> </tr> <tr> <td>15</td> <td>Tele monitoring cum Nitrogen Plant at operator's seat</td> <td>-</td> <td>66.4</td> <td>8 hrs./shift</td> </tr> </tbody> </table>	S.No.	Unit / Place	Equipment / Location	Distance (meter away)	Leq (dB 'A')	Exposure Hours	1		Pit Bottom, 9 Pit, 11 Seam	-	65.4	8 hrs./shift	2	11 Seam	2 <sup>nd</sup> L (N) / 15 <sup>th</sup> D , 350 Pump 11 Seam	-	73.6	8 hrs./shift	3	15 <sup>th</sup> D / 4 <sup>th</sup> R , Haulage 11 Seam	-	72.1	8 hrs./shift	4	Sub Station, 6 <sup>th</sup> L(S) / 40 <sup>th</sup> 11 Seam	-	63.8	8 hrs./shift	5	9 Seam	4 ½ drift / '0'level , 9 Seam	-	72.9	8 hrs./shift	6	8 Seam (North)	Hoist 1 <sup>st</sup> R / '0'L , 8 Seam	-	74.6	8 hrs./shift	7	Transformer Room, 1 <sup>st</sup> D / 1 <sup>st</sup> DL 8 Seam	-	64.1	8 hrs./shift	8	Miner Station , 3 <sup>rd</sup> L / 4 <sup>th</sup> D	-	62.7	8 hrs./shift	9	Auxiliary Fan , 5 <sup>th</sup> D / 3 <sup>rd</sup> L 8 Seam	-	83.6	8 hrs./shift	10	Belt discharge to 2 L Belt , 5 <sup>th</sup> R / 2 <sup>nd</sup> L	-	69.8	8 hrs./shift	11	Auxiliary Fan , 4 <sup>th</sup> L belt 4 <sup>th</sup> D & 5 <sup>th</sup> D	-	77.7	8 hrs./shift	12	H.P Pump 20 <sup>th</sup> / 4 <sup>th</sup> L	-	74.3	8 hrs./shift	13	Surface	Pit Top	-	68.2	8 hrs./shift	14	MMV Fan House at Operator's seat	-	81.8	8 hrs./shift	15	Tele monitoring cum Nitrogen Plant at operator's seat	-	66.4	8 hrs./shift
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**Compliance status of Digwadih Colliery of M/s Tata Steel Ltd. for (Expansion from 0.38 MTPA to 0.6 MTPA in ML area 314.57 ha), dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/372/2010-IA.II (M) dated September 30, 2013**

(vi)	Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, and treated so as to conform to the standards including for heavy metals before discharge prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time. Oil and grease trap shall be installed before discharge of workshop effluents.	No industrial wastewater is generated in 6&7 Pits Colliery premises. There is a central workshop and garage in Jamadoba where Effluent Treatment Plant having oil and grease trap facility has been provided.
(vii)	Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transportation of the mineral shall be covered with tarpaulins and optimally loaded.	Only the vehicles having valid PUC certificates are being allowed to operate for sand transportation. Some of the vehicle fitness certificates and PUC certificates have been shared in hard copies and over mail at <i>ro.ranchi-mef@gov.in</i> . Coal transportation is done through underground belt network. Only sand transportation is done through trucks which are covered with tarpaulins as well as optimally loaded.

(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 recognised 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)	Monitoring of outlet points should be carried out and records of same should be maintained and submitted to the Regional Office of the MOEF as part of the Compliance Report.	There is one mine-water outlet point in the colliery which is regularly monitored by the Environmental Laboratory. The analysis results has been provided in point no. (xxiv) of specific condition.
(x)	There is one mine-water outlet point in	Persons working in dusty area have been provided

**Compliance status of Digwadih Colliery of M/s Tata Steel Ltd. for (Expansion from 0.38 MTPA to 0.6 MTPA in ML area 314.57 ha), dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/372/2010-IA.II (M) dated September 30, 2013**

	the colliery which is regularly monitored by the Environmental Laboratory. The analysis results has been provided in point no. (xxiv) of specific condition.	with dust masks & have been given awareness training on safety & health aspects. Regular PME (Periodic Medical Examinations) are being done. The details have been provided earlier. IME and PME records of last three years have been shared in hard copies and over mail at <i>ro.ranchi-mef@gov.in</i> earlier.																											
(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.																											
(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.	<p>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. 795.27 lakhs. The details are given below-</p> <table border="1"> <thead> <tr> <th>S. No.</th> <th>Environment Management Activity</th> <th>Expenditure in Lakhs</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Stowing activities i.e filling of U/G voids for surface protection and prevention of subsidence</td> <td>699.23</td> </tr> <tr> <td>2.</td> <td>Fire Control measures (Fire/Isolation Stopping and Nitrogen plant)</td> <td>43.84</td> </tr> <tr> <td>3.</td> <td>Goaf Filling activities, drain repairing and maintenance, settling tank maintenance jobs</td> <td>4.03</td> </tr> <tr> <td>4.</td> <td>Water spraying costs in underground and surface</td> <td>5.66</td> </tr> <tr> <td>5.</td> <td>Making potable water in Water Treatment Plant &amp; Supply to colonies</td> <td>24.77</td> </tr> <tr> <td>6.</td> <td>Horticultural activities including green belt development and regular lawn and garden maintenance</td> <td>16.71</td> </tr> <tr> <td>7.</td> <td>Plantation of saplings and maintenance</td> <td>1.04</td> </tr> <tr> <td></td> <td><b>Total Cost incurred</b></td> <td><b>795.27</b></td> </tr> </tbody> </table>	S. No.	Environment Management Activity	Expenditure in Lakhs	1.	Stowing activities i.e filling of U/G voids for surface protection and prevention of subsidence	699.23	2.	Fire Control measures (Fire/Isolation Stopping and Nitrogen plant)	43.84	3.	Goaf Filling activities, drain repairing and maintenance, settling tank maintenance jobs	4.03	4.	Water spraying costs in underground and surface	5.66	5.	Making potable water in Water Treatment Plant & Supply to colonies	24.77	6.	Horticultural activities including green belt development and regular lawn and garden maintenance	16.71	7.	Plantation of saplings and maintenance	1.04		<b>Total Cost incurred</b>	<b>795.27</b>
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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	It has been complied with. Details are provided in Annexure.																											

**Compliance status of Digwadih Colliery of M/s Tata Steel Ltd. for (Expansion from 0.38 MTPA to 0.6 MTPA in ML area 314.57 ha), dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/372/2010-IA.II (M) dated September 30, 2013**

	at <a href="http://envfor.nic.in">http://envfor.nic.in</a> .	
(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, 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.	It has been complied with. Details are provided in Annexure.
(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 mine's office has been done.
(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 is being complied

**Compliance status of Digwadih Colliery of M/s Tata Steel Ltd. for (Expansion from 0.38 MTPA to 0.6 MTPA in ML area 314.57 ha), dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/372/2010-IA.II (M) dated September 30, 2013**



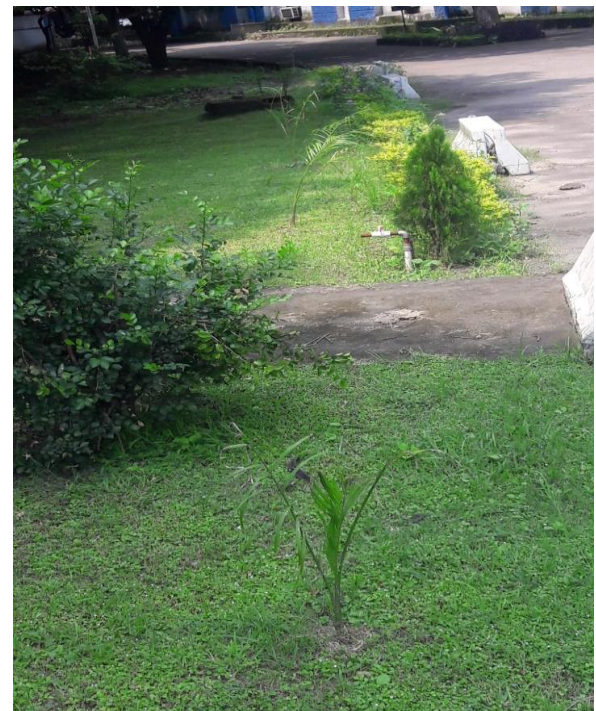
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	compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/ information/monitoring reports.	
(xix)	The environmental statement for each financial 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 2018-19 has been submitted to JSPCB on 23 <sup>rd</sup> September 2019 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**

# Annexure- Greenbelt Development Report

Glimpses of already existing green belt and plantation activities done in this monsoon season in and around Digwadih colliery premises to enhance the green cover have been depicted in the pictures below:



Picture: Plantation done in this monsoon season in and around Digwadih Colliery premises



Picture: Developed Green belt in and around Digwadih Colliery premises



Picture: Developed Green belt in and around Digwadih Colliery premises

**AIR QUALITY REPORT**

Core zone &amp; Buffer zone

Period- April'19 to June'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 <sup>3</sup>	RSPM 24 Hourly Limit- 300 µg/m <sup>3</sup>	SO <sub>2</sub> 24 Hourly Limit- 120 µg/m <sup>3</sup>	NO <sub>x</sub> 24 Hourly Limit- 120 µg/m <sup>3</sup>		
Jamadoba Group Office	23°42'15.3" N/ 86°24'11" E	03.04.19	Clear	156.2	77.0	14.0	12.0		
		20.05.19	Clear	162.3	82.3	12.1	11.7		
		10.06.19	Clear	168.9	79.3	14.5	15.4		
Buffer zone (as per NAAQS 2009 for ambient air quality standards)									
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100µg/m <sup>3</sup>	PM2.5 24 Hourly Limit- 60µg/m <sup>3</sup>	SO <sub>2</sub> 24 Hourly Limit- 80µg/m <sup>3</sup>	NO <sub>2</sub> 24 Hourly Limit- 80µg/m <sup>3</sup>		
Digwadih 12 No. Colony	23°41'42" N/ 86°24'45.3" E	15.04.19	Clear	84.4	48.9	11.1	10.9		
		08.05.19	Clear	93.4	52.3	12.2	10.7		
		21.06.19	Rainy	94.3	56	11.0	12.0		
New Village Colony, Jamadoba	23°41'51" N/ 86°23'19" E	08.04.19	Rainy	80.0	42.3	10.4	11.4		
		21.05.19	Clear	78.2	41.1	10.4	11.4		
		14.06.19	Clear	89.2	58.3	12.5	11.4		
6&7 Pits Kalimandir colony	23°43'15" N/ 86°24'12" E	26.04.19	Clear	85.5	49.0	13.1	14.2		
		27.05.19	Clear	82.3	46.6	9.8	11.0		
		03.06.19	Clear	78.3	42.3	9.7	10.3		



Manager (Environment)

**AIR QUALITY REPORT**

Core zone &amp; Buffer zone

Period- July'19 to September'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 <sup>3</sup>	RSPM 24 Hourly Limit- 300 µg/m <sup>3</sup>	SO <sub>2</sub> 24 Hourly Limit- 120 µg/m <sup>3</sup>	NO <sub>x</sub> 24 Hourly Limit- 120 µg/m <sup>3</sup>		
Jamadoba Group Office	23°42'15.3" N/ 86°24'11" E	15.07.19	Clear	164.8	75.1	12.7	13.5		
		02.08.19	Clear	172.5	76.1	13.4	14.3		
		06.09.19	Rainy	154.4	64.8	13.5	11.7		
Buffer zone (as per NAAQS 2009 for ambient air quality standards)									
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100µg/m <sup>3</sup>	PM2.5 24 Hourly Limit- 60µg/m <sup>3</sup>	SO <sub>2</sub> 24 Hourly Limit- 80µg/m <sup>3</sup>	NO <sub>2</sub> 24 Hourly Limit- 80µg/m <sup>3</sup>		
Digwadih 12 No. Colony	23°41'42" N/ 86°24'45.3" E	08.07.19	Rainy	87.3	46.2	8.6	11.0		
		28.08.19	Rainy	84.2	41.7	7.8	10.6		
		19.09.19	Clear	73.4	34.8	8.1	8.9		
New Village Colony, Jamadoba	23°41'51" N/ 86°23'19" E	03.07.19	Rainy	76.0	53.8	9.6	7.0		
		09.08.19	Clear	77.2	54.8	10.2	7.4		
		10.09.19	Clear	80.3	33.4	9.6	7.8		
6&7 Pits Kalimandir colony	23°43'15" N/ 86°24'12" E	22.07.19	Clear	77.8	32.9	8.7	8.3		
		17.08.19	Clear	76.2	30.4	8.8	7.8		
		17.09.19	Clear	83.6	36.7	9.8	9.6		



Manager (Environment)

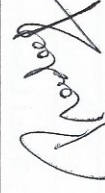
**Ground Water Quality Analysis (Hand Pump & Dug well)**  
**Pre - Monsoon Season- May'2019**

S.No	Date	Location	Time	Sample Parameter			
				Depth in meter (m)	pH	Electrical Conductivity, $\mu\text{S/m}$	Total Hardness (as $\text{CaCO}_3$ ), mg/l
1	20.05.19	Purnadh (Jorapokhar)	10:05AM	8.90	7.5	752	564
2	20.05.19	Bhowra 13 No	10:25AM	3.10	7.3	670	548
3	20.05.19	Mohalbani Basti	10:40AM	6.87	7.1	726	612
4	20.05.19	Digwadih 12 No	11:15AM	4.78	7.6	612	544
5	20.05.19	Digwadih 10 No F & J	11:50AM	3.86	7.2	1390	864
6	21.05.19	Kalimela Shivmandir	10:40AM	2.10	7.4	816	648
7	21.05.19	Kalimela Kalimandir	11:00AM	4.29	7.4	814	688
8	21.05.19	Lower Dungari	11:35AM	6.48	7.3	654	594
9	21.05.19	Upper Dungari	11:50AM	3.48	7.8	694	544
10	21.05.19	Pattia Basti	12:20PM	3.56	7.6	644	568
11	21.05.19	Kenduadh Basti	12:55PM	3.10	7.6	732	636
12	20.05.19	Jorapokhar Kushtand	09:20AM	3.84	7.4	786	598
13	21.05.19	Jamadoba 3 No	10:05AM	5.18	7.5	696	588
14	20.05.19	6&7 Pits (Ayodhya Nagri)	12:20PM	3.49	7.4	688	592

  
**Manager (Environment)**

**Ground Water Quality Analysis (Hand Pump & Dug well)  
Monsoon Season- August'2019**

S.No	Date	Location	Time	Sample Parameter			
				Depth in meter (m)	pH	Electrical Conductivity, $\mu\text{S}/\text{m}$	Total Hardness (as $\text{CaCO}_3$ ), $\text{mg}/\text{l}$
1	22.08.19	Purnadih (Jorapokhar)	09:40AM	1.83	7.4	702	624
2	22.08.19	Bhowra 13 No	10:00AM	1.85	7.3	624	544
3	22.08.19	Mohalbani Basti	10:20AM	1.12	7.1	676	584
4	22.08.19	Digwadih 12 No	10:40AM	1.57	7.2	564	504
5	22.08.19	Digwadih 10 No F & J	10:55AM	2.11	7.0	1328	712
6	22.08.19	Kalimela Shivmandir	11:50AM	1.0	7.3	782	584
7	22.08.19	Kalimela Kalimandir	12:00PM	1.32	7.3	768	532
8	22.08.19	Lower Dungari	12:15PM	1.42	7.2	504	498
9	22.08.19	Upper Dungari	12:35PM	1.21	7.1	648	488
10	22.08.19	Pattia Basti	12:55PM	1.13	7.1	602	436
11	22.08.19	Kenduadih Basti	01:10PM	1.18	7.2	684	544
12	22.08.19	Jorapokhar Kushtand	09:20AM	1.26	7.0	736	462
13	22.08.19	Jamadoba 3 No	11:35AM	1.46	7.2	646	444
14	22.08.19	6&7 Pits (Ayodhya Nagri)	11:15AM	1.39	7.3	638	472



**Manager (Environment)**



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FORMAT NO. ECO/QS/FORMAT/10 TEST REPORT NO: ECO LAB/AAQ-1/08/19  
TEST REPORT ISSUE DATE: 30.08.2019

**TEST REPORT OF AMBIENT AIR\***

Name of the Customer : Tata Steel Colliery (Jamadoba Group)  
Address of the Customer : Jamadoba, Distt. Dhanbad  
Jharkhand  
Date of Sampling : 14.08.2019  
Sample Collected By : Mr.R K Pandey& Mr. Aman Dixit  
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 <sup>th</sup> , 2009
1.	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	32.50	12.5-1000	60
2.	PM <sub>10</sub> (µg/m <sup>3</sup> )	IS:5182 (Part-23)	68.40	12.5-1000	100
3.	SO <sub>2</sub> (µg/m <sup>3</sup> )	IS:5182 (Part-2)	19.10	9-200	80
4.	NO <sub>2</sub> (µg/m <sup>3</sup> )	IS:5182 (Part-6)	22.60	6-200	80
5.	NH <sub>3</sub> (µg/m <sup>3</sup> )	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	13.350	2-700	400
6.	O <sub>3</sub> (µg/m <sup>3</sup> )	IS:5182(Part-9)	11.10	2-200	180
7.	CO (mg/m <sup>3</sup> )	IS:5182 (Part-10)	1.20	0.2-500	04
8.	Pb(µg/m <sup>3</sup> )	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m <sup>3</sup> )	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m <sup>3</sup> )	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m <sup>3</sup> )	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m <sup>3</sup> )	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

*Ravi Bhargava*  
Analyst

*Ravi Bhargava*  
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*Ravi Bhargava*  
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FORMAT NO. ECO/QS/FORMAT/10 TEST REPORT NO: ECO LAB/AAQ-2/08/19  
TEST REPORT ISSUE DATE: 30.08.2019

**TEST REPORT OF AMBIENT AIR\***

Name of the Customer : Tata Steel Colliery (Jamadoba Group)  
Address of the Customer : Jamadoba, Distt. Dhanbad  
Jharkhand  
Date of Sampling : 13.08.2019  
Sample Collected By : Mr.R K Pandey& Mr. Aman Dixit  
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 <sup>th</sup> , 2009
1.	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	28.20	12.5-1000	60
2.	PM <sub>10</sub> (µg/m <sup>3</sup> )	IS:5182 (Part-23)	60.40	12.5-1000	100
3.	SO <sub>2</sub> (µg/m <sup>3</sup> )	IS:5182 (Part-2)	15.12	9-200	80
4.	NO <sub>2</sub> (µg/m <sup>3</sup> )	IS:5182 (Part-6)	19.90	6-200	80
5.	NH <sub>3</sub> (µg/m <sup>3</sup> )	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	13.10	2-700	400
6.	O <sub>3</sub> (µg/m <sup>3</sup> )	IS:5182(Part-9)	15.80	2-200	180
7.	CO (mg/m <sup>3</sup> )	IS:5182 (Part-10)	0.76	0.2-500	04
8.	Pb(µg/m <sup>3</sup> )	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m <sup>3</sup> )	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m <sup>3</sup> )	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m <sup>3</sup> )	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m <sup>3</sup> )	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

*Ravi Bhargava*  
Analyst

*Reena*  
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*Reena*  
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**ecoMen**  
LABORATORIES PVT. LTD.FORMAT NO. ECO/QS/FORMAT/10 TEST REPORT NO: ECO LAB/AAQ-3/08/19  
TEST REPORT ISSUE DATE: 30.08.2019**TEST REPORT OF AMBIENT AIR\***

Name of the Customer : Tata Steel Colliery (Jamadoba Group)  
 Address of the Customer : Jamadoba, Distt. Dhanbad  
 Jharkhand  
 Date of Sampling : 13.08.2019  
 Sample Collected By : Mr.R K Pandey& Mr. Aman Dixit  
 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 <sup>th</sup> , 2009
1.	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	32.38	12.5-1000	60
2.	PM <sub>10</sub> (µg/m <sup>3</sup> )	IS:5182 (Part-23)	67.20	12.5-1000	100
3.	SO <sub>2</sub> (µg/m <sup>3</sup> )	IS:5182 (Part-2)	18.30	9-200	80
4.	NO <sub>2</sub> (µg/m <sup>3</sup> )	IS:5182 (Part-6)	27.15	6-200	80
5.	NH <sub>3</sub> (µg/m <sup>3</sup> )	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	12.60	2-700	400
6.	O <sub>3</sub> (µg/m <sup>3</sup> )	IS:5182(Part-9)	20.60	2-200	180
7.	CO (mg/m <sup>3</sup> )	IS:5182 (Part-10)	0.86	0.2-500	04
8.	Pb(µg/m <sup>3</sup> )	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m <sup>3</sup> )	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m <sup>3</sup> )	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m <sup>3</sup> )	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m <sup>3</sup> )	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 *Ravi Bhargava*

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Quality Manager *Ravi Bhargava*

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FORMAT NO. ECO/QS/FORMAT/10 TEST REPORT NO: ECO LAB/AAQ-4/08/19  
 TEST REPORT ISSUE DATE: 30.08.2019

**TEST REPORT OF AMBIENT AIR\***

Name of the Customer : Tata Steel Colliery (Jamadoba Group)  
 Address of the Customer : Jamadoba, Distt. Dhanbad  
 Jharkhand  
 Date of Sampling : 16.08.2019  
 Sample Collected By : Mr.R K Pandey& Mr. Aman Dixit  
 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 <sup>th</sup> , 2009
1.	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	29.10	12.5-1000	60
2.	PM <sub>10</sub> (µg/m <sup>3</sup> )	IS:5182 (Part-23)	67.80	12.5-1000	100
3.	SO <sub>2</sub> (µg/m <sup>3</sup> )	IS:5182 (Part-2)	20.40	9-200	80
4.	NO <sub>2</sub> (µg/m <sup>3</sup> )	IS:5182 (Part-6)	34.60	6-200	80
5.	NH <sub>3</sub> (µg/m <sup>3</sup> )	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	17.30	2-700	400
6.	O <sub>3</sub> (µg/m <sup>3</sup> )	IS:5182(Part-9)	22.90	2-200	180
7.	CO (mg/m <sup>3</sup> )	IS:5182 (Part-10)	1.07	0.2-500	04
8.	Pb(µg/m <sup>3</sup> )	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m <sup>3</sup> )	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m <sup>3</sup> )	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m <sup>3</sup> )	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m <sup>3</sup> )	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

*[Signature]*  
Analyst

*[Signature]*  
Authorized Signatory  
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Quality Manager

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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AN/08/19

TEST REPORT ISSUE DATE: 30.08.2019

**TEST REPORT OF AMBIENT NOISE LEVEL**

Name of the Customer : Tata Steel Colliery (Jamadoba Group)  
 Address of the Customer : Jamadoba, Distt. Dhanbad  
 Jharkhand  
 Sample Collected By : Mr.R K Pandey& Mr. Aman Dixit  
 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	16.08.2019	67.5	55.5	57.8	54.3	48.7	52.7
2.	Officer's Colony, 12 No. Digwadih	13.08.2019	53.2	46.7	50.3	46.5	38.7	41.3
3.	General Manager's Office Area	13.08.2019	52.3	43.8	48.7	41.7	35.6	38.2
4.	Jamadoba Colliery	16.08.2019	69.7	51.6	66.4	64.9	48.7	52.3

**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.

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Analyst

*Reena*  
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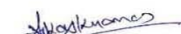


FORMAT NO. ECO/QS/FORMAT/10    TEST REPORT NO: ECO LAB/MCPM/08/19  
 TEST REPORT ISSUE DATE: 30.08.2019

**MINERALOGICAL COMPOSITION OF PARTICULATE MATTER**

Name of the Customer : M/s Tata Steel Ltd. (Jamadoba Group)  
 Address of the Customer : Jamadoba,  
 Distt. Dhanbad - 828 112  
 Month : August, 2019

S.NO.	Locations	Date of Sampling	Mineralogical Composition (in %)			
			Silica (SiO <sub>2</sub> )	Ferrous oxide (FeO)	Alumina (Al <sub>2</sub> O <sub>3</sub> )	Calcium Oxide CaO
1	Officers Colony, 12 No. Digwadih	13.08.2019	1.88	0.09	1.30	3.45
2	Central Work Shop Area, Jamadoba	14.08.2019	2.79	0.15	1.30	2.87

  
Analyst

  
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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/08/19

TEST REPORT ISSUE DATE: 03.09.2019

**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. Aman Dixit  
 Sample Quantity : As per requirement  
 Date of Sampling : 14.08.2019  
 Date of Sample Receiving : 19.08.2019  
 Date of Analysis : 19.08.2019 to 02.09.2019  
 Source of Sample : Purnadih (Jorapokhar), Well, 40Feet  
 Sample ID Code : ELW-10031

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)	27.1	10-100	-	-
3.	Electrical Conductivity (µmhos/cm)	APHA, 23rd Ed. 2017, 2510-A+B	921.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23rd Ed. 2017 (2540B)	621.0	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.75	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+B	232.0	5-1500	200	600
7.	Total Hardness as CaCO <sub>3</sub> (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	284.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	67.2	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23rd Ed. 2017, 3500 Mg A+B	28.18	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	0.12	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	102.0	5-1000	250.0	1000.0
13.	Sulfate as SO <sub>4</sub> (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	75.2	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO <sub>3</sub> (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	10.2	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.38	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	0.17	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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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/08/19

TEST REPORT ISSUE DATE: 03.09.2019

**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. Aman Dixit  
 Sample Quantity : As per requirement  
 Date of Sampling : 14.08.2019  
 Date of Sample Receiving : 19.08.2019  
 Date of Analysis : 19.08.2019 to 02.09.2019  
 Source of Sample : Digwadih 10 No, Well, 50 Feet  
 Sample ID Code : ELW-10032

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)	27.1	10-100	-	-
3.	Electrical Conductivity (µmhos/cm)	APHA, 23rd Ed. 2017, 2510-A+B	801.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23rd Ed. 2017 (2540B)	535.0	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.65	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+B	208.0	5-1500	200	600
7.	Total Hardness as CaCO <sub>3</sub> (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, 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	0.21	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	84.0	5-1000	250.0	1000.0
13.	Sulfate as SO <sub>4</sub> (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	58.0	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO <sub>3</sub> (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	16.2	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	0.14	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

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/08/19

TEST REPORT ISSUE DATE: 03.09.2019

**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. Aman Dixit  
Sample Quantity : As per requirement  
Date of Sampling : 14.08.2019  
Date of Sample Receiving : 19.08.2019  
Date of Analysis : 19.08.2019 to 02.09.2019  
Source of Sample : Kalimela Kalimandir, Well, 20Feet  
Sample ID Code : ELW-10033

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)	27.2	10-100	-	-
3.	Electrical Conductivity (µmhos/cm)	APHA, 23rd Ed. 2017, 2510-A+B	723.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23rd Ed. 2017 (2540B)	460.0	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.76	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+B	180.0	5-1500	200	600
7.	Total Hardness as CaCO <sub>3</sub> (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	212.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	59.2	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23rd Ed. 2017, 3500 Mg A+B	15.55	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	0.10	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	72.0	5-1000	250.0	1000.0
13.	Sulfate as SO <sub>4</sub> (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	42.6	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO <sub>3</sub> (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	14.1	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.78	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	0.10	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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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/08/19

TEST REPORT ISSUE DATE: 03.09.2019

## 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. Aman Dixit  
 Sample Quantity : As per requirement  
 Date of Sampling : 14.08.2019  
 Date of Sample Receiving : 19.08.2019  
 Date of Analysis : 19.08.2019 to 02.09.2019  
 Source of Sample : Upper Dungari, Well, 15 Feet  
 Sample ID Code : ELW-10034

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)	26.8	10-100	-	-
3.	Electrical Conductivity (µmhos/cm)	APHA, 23rd Ed. 2017, 2510-A+B	1002.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23rd Ed. 2017 (2540B)	684.0	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.67	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+ B	260.0	5-1500	200	600
7.	Total Hardness as CaCO <sub>3</sub> (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	288.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	75.2	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	0.21	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 <sub>4</sub> (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	45.5	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO <sub>3</sub> (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	16.6	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.72	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	0.22	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.

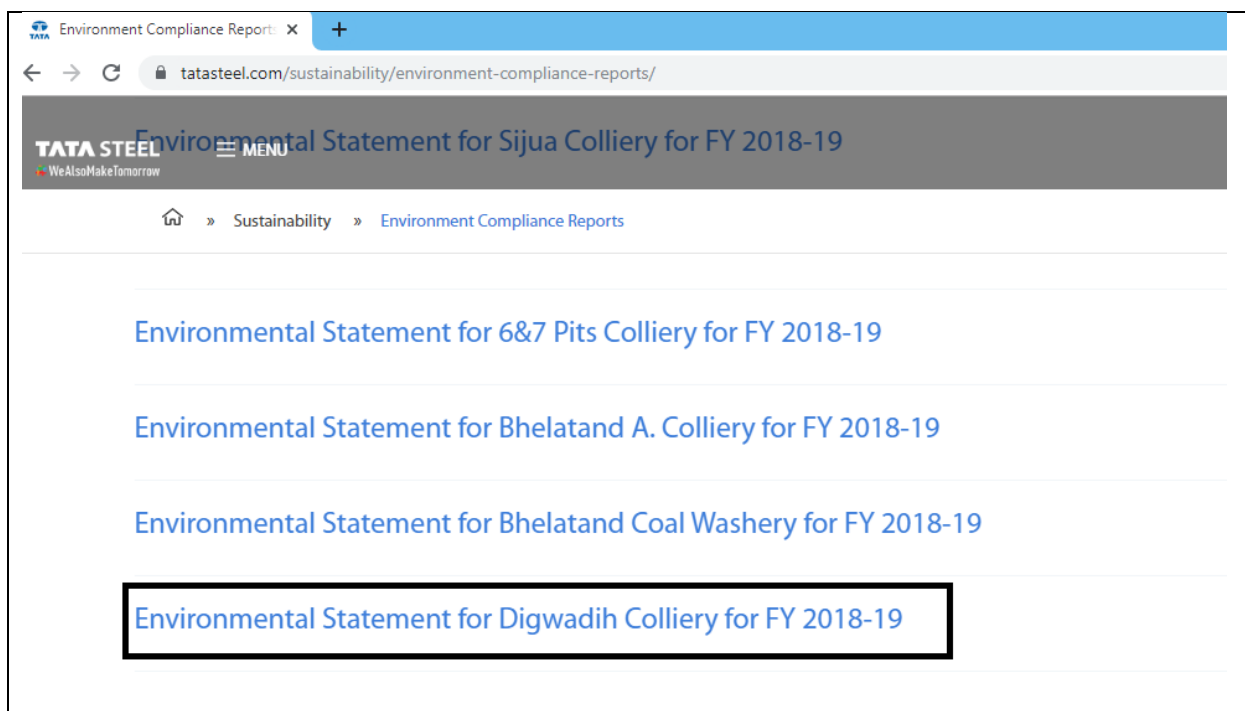
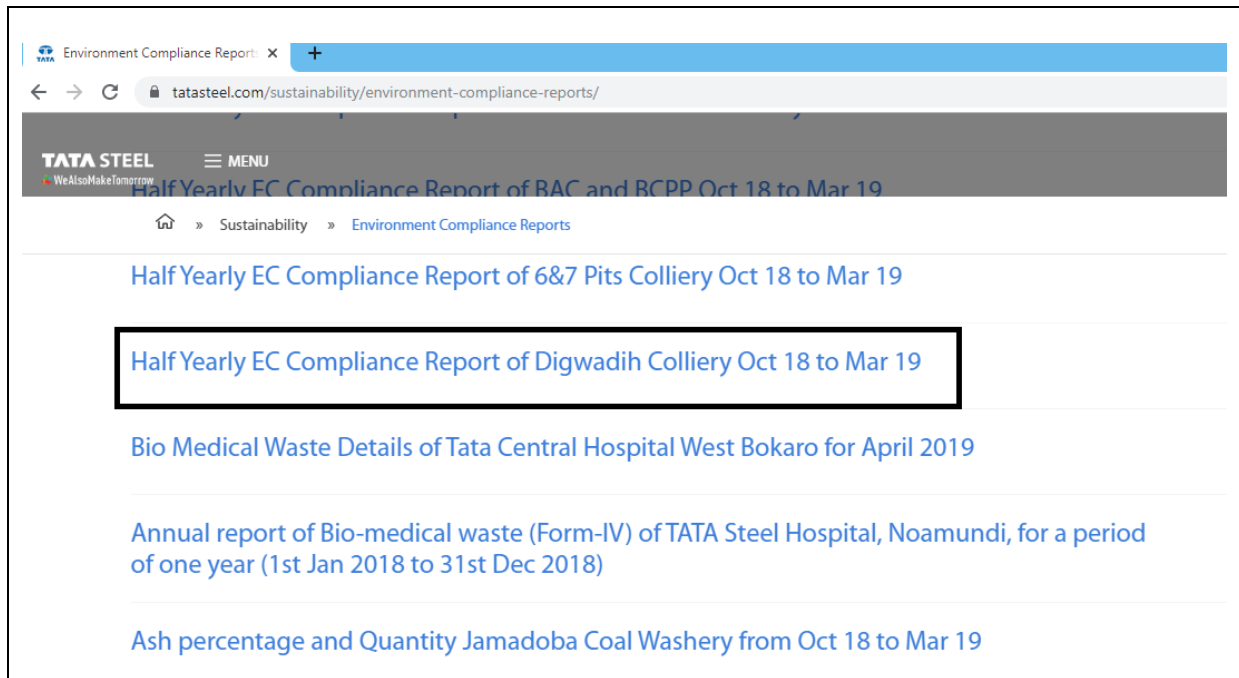
BDL = Below Detection Limit

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Upload of compliance report on company's website



## ENVIRONMENTAL POLICY

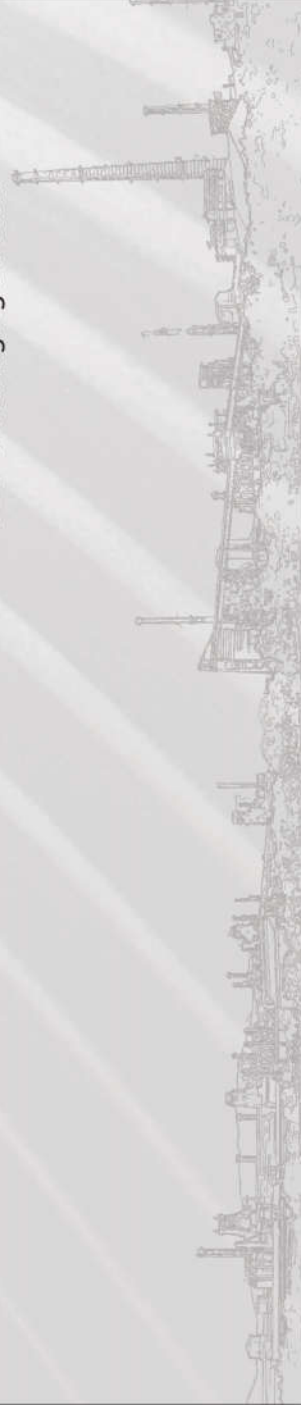
Tata Steel's environmental responsibilities are driven by our commitment to preserve the environment and are integral to the way we do business.

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



GM (J)

Chief (HR/IR)

Publication

**DAINIK BHASKAR, DHANBAD** Date **11-10-13**



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**TATA STEEL**

**सूचना**

जन साधारण को सूचित किया जाता है कि भारत सरकार, वन एवं पर्यावरण मंत्रालय के पत्रांक संख्या- J -11015/372/2010-IA.II(M) डिगवाडीह कोलियरी (0.38 मिलियन टन प्रति वर्ष से 0.6 मिलियन टन प्रति वर्ष, विस्तारीकरण परियोजना) मेसर्स टाटा स्टील लिमिटेड, डिगवाडीह, जिला-धनबाद को पर्यावरण स्वीकृति प्रदान की गई है। जिसकी प्रतिलिपि क्षेत्रीय कार्यालय, झारखंड राज्य प्रदूषण नियंत्रण परिषद, धनबाद में उपलब्ध है तथा भारत सरकार, वन एवं पर्यावरण मंत्रालय के इंटरनेट साइट :- <http://envfor.nic.in> में भी देखी जा सकती है।

महाप्रबंधक (झारिया)

टाटा स्टील, जामाडोबा (धनबाद)

GM (J)

Chief (HR/IR)

Publication

**PRABHAT KHABAR, DHANBAD** Date **11-10-13**



**TATA STEEL**  
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GM (J)  Chief (HR/IR)

Publication HINDUSTAN, DHANBAD Date 11-10-13



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महाप्रबंधक (झरिया)  
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**TATA STEEL**

**सूचना**

जन साधारण को सूचित किया जाता है कि भारत सरकार, वन एवं पर्यावरण मंत्रालय के पत्रांक संख्या- J -11015/372/2010-IA.II(M) डिगवाडीह कोलियरी (0.38 मिलियन टन प्रति वर्ष से 0.6 मिलियन टन प्रति वर्ष, विस्तारीकरण परियोजना) मेसर्स टाटा स्टील लिमिटेड, डिगवाडीह, जिला-धनबाद को पर्यावरण स्वीकृति प्रदान की गई है। जिसकी प्रतिलिपि क्षेत्रीय कार्यालय, झारखंड राज्य प्रदूषण नियंत्रण परिषद्, धनबाद में उपलब्ध है तथा भारत सरकार, वन एवं पर्यावरण मंत्रालय के इंटरनेट साइट :- <http://envfor.nic.in> में भी देखी जा सकती है।

महाप्रबंधक (झरिया)

टाटा स्टील, जामाडोबा (धनबाद)



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-

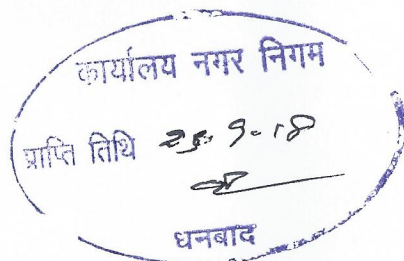
1. Digwadih Colliery (for expansion from 0.38 MTPA to 0.6 MTPA in ML area 314.57 ha), dist. Dhanbad, Jharkhand.
2. 6 & 7 Pits Colliery (for expansion from 0.28 MTPA to 0.6 MTPA in ML area 168.12 ha), dist. Dhanbad, Jharkhand.
3. Jamadoba Coal Washery (for expansion from 1 MTPA to 2 MTPA in 7 Ha area),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



## Activities under Corporate Social Responsibility-

### Training

- Training on System of Rice Intensification (SRI)- 211 farmers adopted SRI cultivation out of 278 trained in FY16
- Training on Second Cropping, Field based training on 2<sup>nd</sup> Cropping, Pisciculture Promotion (Expenditure around Rs 0.87 Laks out of which total income by the farmers were raised by Rs16Laks)

### New Enterprise by SHGs

- Candle making unit by Pragya Mahila Samiti, Sarguja
- Mushroom Cultivation by Gramin Mahila Shayog Samiti, a SHG of Sokohkulih village
- Duck Rearing by Pragya Mahila Swayam Sahayata Samiti "SHG" of Sirguja Village and Shiv Guru Mahila samiti, Upper Dungri village, Harijan Tola
- Tailoring Shop by Jai Maa Gramin Mahila Samity in Bhelatand
- Total Savings by SHGs is Rs11.90 Laks by 35 SHGs

### Employability Training

- 13 students are supported in ITC Tamar
- 14 students in House Keeping Training in Kolabera
- 50 people trained in driving training

### Health

- 4 multi specialty health camps organized in which 2797 cases were treated

### Education

- 225 students received Jyoti Fellowship out of which 54 were new.
- In the reporting period 2668 students received support in 15 PMC
- 60 students received support through our Asha Ki Kiran center

### Infrastructure Development

- PCC road, Sewage drains, construction of new Community Halls/ Sheds, Renovation of comm. Halls and sheds, Renovation of old Ponds, Construction of new Ponds, Construction of sitting Platforms



**Monthly inspection and monitoring of sand lease by Monitoring committee comprises of executives from Environment, Survey, Local Villagers, Transporters, Mining**



**Multi Specialised Health Camp organised at Ichhar High School, Raghunathpur**

Multi Specialized health camp was held on 29<sup>th</sup> June '17 at Ichhar High School, Raghunathpur Block -2 at Purulia . Around 897 patients benefitted from the camp; 442 females and 455 males were attended by a special team of Specialist Doctors from Tata Central Hospital, Jamadoba. Free consultations and Health check-ups were provided in Medicine, Gynaecology, E.N.T., Paediatrics, Homeopathy, Dermatology, Dental, Orthopaedics and Pathology. A day long Specialized health camp was conducted where free medicines were also provided.

