



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/BAC/39/ 864 /2022

November 24, 2022

Ref.: Environmental Clearance letter no. - J-11015/29/2012-IA.II(M) dated- April 28, 2017.

**SUB: Half Yearly Compliance Status Report of Environment Clearance conditions issued by MoEFCC, New Delhi to Bhelatand A. Colliery & Bhelatand Coal Washery, Tata Steel Limited, Dhanbad for the period April'22 to September'22.**

Dear Sir,

We are enclosing herewith compliance report for the period **April'22 to September'22** for the EC granted vide letter no.- J-11015/29/2012-IA.II(M) dated- April 28, 2017 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.

Copy to: Head, Bhelatand A. Colliery

Copy to: Head, Bhelatand Coal Washery

Copy to: Sr. Manager (Environment)

**TATA STEEL LIMITED**  
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Tel 91 326 2320263/2320265/2320267 Fax 91 326 2320268  
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Corporate Identity Number L27100MH1907PLC000260 Website [www.tatasteel.com](http://www.tatasteel.com)

**HALF YEARLY COMPLIANCE REPORT**  
**(PERIOD: APRIL'22 – SEPTEMBER'22)**

**BHELATAND A. COLLIERY**  
**(EXPANSION FROM 0.38 MTPA TO 0.41 MTPA OF RAW**  
**COAL PRODUCTION)**  
**AND**  
**BHELATAND COAL WASHERY**  
**(EXPANSION FROM 0.96 MTPA TO 1.5 MTPA RAW COAL**  
**THROUGHPUT)**

**P.O.: BHELATAND, DIST: DHANBAD, JHARKHAND**



**TATA STEEL LIMITED, JHARIA DIVISION**

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

**Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017**

S. No.	Condition	Compliance Status
<b>Specific Condition</b>		
(i)	The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC.	It is being strictly followed. The EC capacity of Bhelatand A. Colliery is for 0.41 MTPA raw coal production is well within the limit. The EC capacity of Bhelatand Coal Washery is for 1.5 MTPA raw coal throughput which is also being maintained within the limit.
(ii)	The washery shall be as per the project report submitted and presented to EAC.	It is being strictly complied with.
(iii)	The validity of the EC is for the life of mine or as specified in the EIA Notification, 2006, whichever is earlier.	The mining lease of Bhelatand A. Colliery is valid for 999 years i.e. 20.01.2903 and life of mine as per approved mining plan is 25 years (Base year is FY13-14). However, the validity of EC for mines as per EIA Notification amendment dt. 14.09.2016 is kept as 30 years. Therefore, the EC is valid till 31.03.2038.
(iv)	Transportation of coal should be carried out by covered conveyor belts. Mitigative measures to be undertaken to control dust and other fugitive emission all along the roads by providing sufficient numbers of water sprinklers.	<ul style="list-style-type: none"> <li>• The transportation of coal from underground colliery to coal handling plant (CHP) is through covered conveyor belt networks.</li> <li>• Dry-fog system has been already installed to suppress the dust generated at CHP and transfer points of belt conveyor systems.</li> <li>• Fixed-type water sprinklers are also installed on the internal roads of the washery. These are operated effectively at all times to check the fugitive emissions.</li> <li>• Fugitive dust emission monitoring is done on half-yearly basis. The values are within the stipulated norms.</li> </ul>
(v)	Continuous monitoring of occupational safety and other health hazards, and the corrective action need to be ensured.	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 and washery plant are subjected to full medical checkup every year including hearing impairment checkup, etc. These results are regularly submitted to DGMS as per mines rules.

**Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017**

(vi)	Modern practices for agriculture to be encouraged with promotion of organic farming through training and demonstration (where ever feasible )	Farmers have been effectively trained in SRI (Systems of root intensification) which helps in more production of quality grains with lesser seed requirements. This helps farmers to produce grains at lesser cost. Matka Khad, etc. promotes organic farming which helps farmers to use less chemicals (pesticides, insecticides etc.). In this programmes farmers received hands on demonstration and training on organic farming.
(vii)	Special emphasis should be on training and demonstration on conservation of crops and foods and food processing (Wherever feasible)	For the conservation of crops and foods, the following training programs are being through our CSR wing, TSRDS (Tata Steel Rural Development Society)- <ul style="list-style-type: none"> <li>• SRI</li> <li>• Second crops (Rabi crops)</li> <li>• Dry land farming</li> <li>• Fisheries training Pisciculture</li> <li>• Mushroom cultivation</li> <li>• Vegetable cultivation</li> </ul>
(viii)	CCTV cameras to be installed at washery gate to check compliance of covering of trucks.	CCTV cameras at washery entrance gate and near weigh bridge gate have been provided. It is to be mentioned here that no truck is allowed into the premises which are not covered by tarpaulin sheets.
(ix)	This is an underground mine. Afforestation /green belt development takes place every year on the open surface within leasehold areas. Massive plantation shall be carried out in open spaces in and around the mine and a 3-tier avenue plantation along the main approach road to the mine.	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Avenue plantation is done in residential colony and along the road side every year.</li> </ul>
(x)	There will be no external /internal OB dumps	Since this is an underground mine, it is not applicable.
(xi)	Wastewater shall be effectively treated and recycled completely either for washery or maintenance of green belt around the plant.	Washery is already operating on a zero-discharge principle. No wastewater is discharged into the drains/ natural water systems. The recycled water is again used for plant operations and green-belt development.
(xii)	The assurances given during the Public Hearing and as per the Action plan developed by the proponent should be implemented.	The assurances given during the public hearing with respect to environment and CSR are already being executed.

**Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017**

(xiii)	Hoppers of the coal crushing unit and washer unit shall be fitted with high efficiency bag filters or mist spray water sprinkling system and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points of closed belt conveyor systems and from transportation roads.	<ul style="list-style-type: none"> <li>• Dry-fog system has been installed to suppress the dust generated at CHP and transfer points of belt conveyor systems.</li> <li>• Fixed-type water sprinklers are also installed on the internal roads of the washery. <ul style="list-style-type: none"> <li>• The Dust Extraction system (Bag filters) is installed at Coal Handling Plant. Extracted dust is mixed in water and then fed into the Tailing Thickener. These are operated effectively at all times to check the fugitive emissions.</li> </ul> </li> </ul>
(xiv)	All approach roads shall be black topped and internal roads shall be concreted. The roads shall be regularly cleaned with mechanical sweepers.	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. Mechanical sweepers were mobilized for internal roads.
(xv)	Records of quantum and ash content of raw coal being washed and clean coal and coal rejects produced from every batch of washing shall be maintained and details thereof be made available to Ministry whenever directed.	Proper records of quantity and ash content of raw coal being washed, clean/washed coal, and other by-products are being maintained regularly.
(xvi)	No ground water shall be used for the plant operations. Any additional water requirement envisaged shall be obtained by recycle/reuse of treated effluent and from rainwater harvesting measure.	No ground water is used for washery plant operations. Since, washery is operating on Zero Liquid Discharge Principle; all processed water is recycled back and reused for operations. The make-up water requirement is met by mine water from adjoining Bhelatand Colliery and Katri river. There are total 8 ponds (Capacity- 20622 m3) for tailing management which also act as surface runoff and rainwater storage ponds. In addition to that, Rooftop rainwater harvesting structure has been constructed in office premises of Bhelatand washery.
(xvii)	Socio – economic and welfare measures for the local communities for the adjoining villages shall be implemented under CSR. Activities to be undertaken for the adjoining villages shall be identified in consultation with the local authorities, the details of status of implementation of CSR and expenditure thereon	CSR activities are being carried out through our CSR wing, TSRDS, which is managed by a team of experts who are full time 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 annual expenditure on CSR is updated in Integrated Report of Tata Steel every year which is uploaded in company's website.

**Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017**

	which should be annually updated on the company website.	
(xviii)	Heavy metal content in raw coal, and washed coal shall be analysed once in a year and records maintained thereof.	Heavy metal content analysis in raw coal and washed coal is being done from a NABL approved lab & the data are being maintained.
<b>General Conditions:</b>		
<b>A. Mining</b>		
(i)	No change in mining technology and scope of work shall be made without prior approval of the Ministry of Environment Forest and climate Change. No change in the calendar plan including excavation, quantum of coal and waste should be made.	It is being strictly followed and complied with.
(ii)	Mining shall be carried out as per the approved mining plan, and also abiding by the relevant laws related to coal mining and the circulars issued by Directorate General Mines Safety (DGMS) An approved progressive Mine Closure Plan shall strictly be complied with and submitted.	It is being strictly followed. Mining is being carried out as per the approved mining plan in accordance with other mining rules, DGMS permissions etc. The mine closure plan was also approved along with mining plan by Ministry of Coal, Govt of India. The provisions of mine closure plan are being complied with. As per progressive closure activities, plantation for green cover in and around leasehold area is being done.
<b>B. Land Reclamation</b>		
(i)	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment, Forest and Climate Change its Regional Office.	Complied. The land use study has been completed by Indian School of Mines (IIT-ISM) Dhanbad and the report is submitted vide letter no. JMB/ENV/BAC/39/466/2021 dated: 27.06.2021 to Regional Office, MoEFCC at Ranchi
(ii)	Final mine void depth should not be more than 40m. The void area should be converted into water body. The remaining area should be back filled up to ground level and covered with thick top soil. The land after mining should be restored for agriculture or forestry purpose.	It is not applicable as this is an underground mine.
(iii)	The top soil, if any, shall temporarily be stored at earmarked site (s) only and it should not be kept unutilized	There is no generation of top soil due to mining activities as this is an underground mine. Mining is being done by Board and Pillar method with sand

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	<p>for long. The topsoil shall be used for land reclamation and plantation. The overburden dumps should be vegetated with suitable native species to prevent erosion and surface run off. The entire excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self – sustaining Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly basis.</p>	<p>stowing. The rehabilitation is also not applicable in this case as there is no change in land use pattern due to underground mining operation.</p>
(iv)	<p>Greenbelt shall be developed all along the mine lease area in a phased manner. The width of the green belt along forest area should not be less than 7.5 m, and the total area covered by 3 tier green belt shall not be less than 100 ha. A 3-tier green belt comprising of a mix of native species shall be developed all along the major approach roads.</p>	<ul style="list-style-type: none"> <li>• Greenery has been developed in many areas around the colliery and washery premises. There is no forest land in core and buffer zone. However, green belt is being developed in the leasehold area.</li> <li>• 3-Tier plantation along the roads with native species is done on available vacant areas.</li> </ul>
<b>C. Emissions, Effluents, and waste Disposal</b>		
(i)	<p>Transportation of coal by road should be carried out by covered trucks only. Effective measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of PM10 and PM 2.5 such as haul road, loading and unloading point and transfer points. Fugitive dust emission from all the sources shall be controlled regularly it shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board in this regard.</p>	<ul style="list-style-type: none"> <li>• Transportation of raw coal from Bhelatand A. Colliery to washery is done through underground belt conveyors. The washed coal from washery is sent via rail network. The sand used for stowing is transported through Tarpaulin sheet covered trucks only.</li> <li>• Dry-fog 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. In addition to these, movable water sprinkler ply on regular intervals for dust suppression. The ambient air quality report is submitted to SPCB every quarter.</li> </ul>

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(ii)	Vehicular emission shall be kept under control and regularly. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing centres.	Raw coal transportation is done through underground belt network. Only the vehicles having valid PUC certificates are being allowed to operate for sand transportation.
(iii)	Adequate ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely 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 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.	<p>Based on meteorological data, total four ambient air quality stations are established in core zone and buffer zone. Monitoring and analysis of PM10, PM2.5, SO2, NO2 are done on monthly basis.</p> <p>The Air quality monitoring stations are:</p> <ul style="list-style-type: none"> <li>(i) Bhelatand Office Area (Core Zone)</li> <li>(ii) Russi Vihar Colony, Sijua (Buffer Zone)</li> <li>(iii) Malkera Colony (Buffer Zone)</li> <li>(iv) Bhelatand Colony (Buffer Zone)</li> </ul> <p>Monitoring of heavy metals in ambient air is being performed by an independent laboratory (recognised by NABL/MoEFCC) once in six months. The results are enclosed as <b>Annexure-I</b>.</p>
(iv)	Crusher / feeder and breaker material transfer points should invariably be provided with dust suppression system. Belt – Conveyors should be fully covered to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.	<p>The following measures have been implemented:</p> <ul style="list-style-type: none"> <li>i) Dry-fog system at all transfers points of CHP.</li> <li>ii) Dust extraction system (Bag filters) in CHP</li> <li>ii) Enclosures around crushers.</li> <li>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.</li> <li>iv) Fixed water sprinklers on the haulage roads.</li> <li>v) In addition, movable water sprinklers are also being deployed on the roads for dust suppression.</li> </ul>
(v)	The project proponent shall not alter the major channels around the site. Appropriate embankment should be	During the course of action, there is no proposed diversion or rechannelling of the water course is involved. The prominent stream in the region is Katri Nadi, a tributary of Damodar river.



**Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017**

	provided along the side of the river/nallah flowing near or adjacent to the mine. The embankment constructed along the river/nallah boundary should be of suitable dimensions and critical patches should be strengthened by stone pitching on the river front side and stabilised with plantation so as to withstand the peak water flow and prevent mine inundation.	Appropriate embankment along the Katri river is already provided. Stone pitching has been provided on the embankment. The dense vegetation already exists between the river channel and lease which shall be strengthened further to check the peak water flow and prevent mine inundation.
(vi)	Rainwater harvesting shall be implemented for conservation and augmentation of ground water resource in the area in consultation with Central Ground Water Board.	Every year Tata Steel through its CSR wing constructed as well as renovate the old pond by removal of silts in and around Bhelatand lease area for conservation and augmentation of ground water. These ponds act as surface reservoir for rainwater. In addition to that, Rooftop rainwater harvesting structure has been constructed in office premises of Bhelatand washery .
(vii)	Catch drain and siltation ponds of appropriate size shall be constructed around the mine working coal heaps and OB dumps to prevent run off of water and flow of sediments directly into the river and other water bodies. The water so collected should be utilized for watering the mine area. Roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly. Sump capacity should provide adequate retention period to allow proper setting of silt material. Dimension of the retaining wall to be constructed at the toe of the dump and OB benches within the mine to check run – off and siltation should be based on the rainfall.	<ul style="list-style-type: none"> <li>• There are no soil or OB dumps in the colliery and washery premises. Only the by-products are stored in the stockyards located in the washery premises which are sold off within 10-15 days.</li> <li>• 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 after settle is re-utilized in the washery.</li> </ul>
(viii)	Industrial waste water (CHP, workshop and waste water from the	No waste-water is discharged outside the washery premises. 100% water is re-circulated back for re-

**Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017**

	<p>mine) should be properly collected and treated so as to conform to the standards prescribed under the Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.</p>	<p>use in the washery. There is a central workshop and garage in Jamadoba where Effluent Treatment Plant having oil and grease trap facility has been provided. Some of the mine water is sent back into underground during stowing and remaining water is used for dust suppression, washery make-up water, greenbelt development and drinking water supply to colonies and stakeholders. We have also commissioned an STP for canteen wastewater in Colliery premises. Treated water of STP is used in horticulture and greenbelt development.</p>
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<b>D. Noise &amp; Vibration Control</b>		
(i)	<p>Adequate measure shall be taken for control of noise levels below 85dBA in the work environment Workers engaged in blasting in drilling operation of HEMM, etc shall be provided with 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. Since this is an underground mine where no HEMM is used. Coal preparation is done by drilling &amp; solid blasting. The noise levels report is provided as <b>Annexure- I</b>.</p>
(ii)	<p>Controlled blasting techniques should be practiced with use of delay detonators to mitigate ground vibrations and fly rocks.</p>	<p>Not applicable as it is an underground mine. However, due to implementation of various mitigation measures, and use of delay detonators due to blasting in underground vibration does not cause damage to any structure on the surface.</p>
<b>E. Occupational Health &amp; Safety</b>		
(i)	<p>Besides carrying out regular periodic health check – up of their workers, 20% of the workers identified from workforce engaged in active mining operation shall be subjected to health check – up for occupational diseases and hearing impairment ,if any, through an specialised agency / institution within the District/ State and the results reported to this Ministry and to DGMS.</p>	<p>The periodic health check-up 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 check-up every year including hearing impairment check-up, etc. These results are regularly submitted to DGMS as per mines rules.</p>
(ii)	<p>Personal working in dusty area should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Supervisory</p>	<p>Persons working in dusty area have been provided with dust masks &amp; have been given awareness training on safety &amp; health aspects. Regular PME</p>

**Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017**

	staff shall be held responsible for ensuring compulsory wearing of dust mask.	(Periodic Medical Examinations) are also being done.
(iii)	In case of outsourcing of work through MDO, the project proponent shall ensure the strict enforcement of above condition.	Not applicable
<b>F. Biodiversity</b>		
(i)	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the state Forest and Wildlife Department. A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office.	Tata Steel has engaged a global organisation viz. IUCN (International Union for Conservation of Nature) which work in the field of faunal and floral conservation. We have prepared a Biodiversity Management Plan (BMP) and thereafter prepared BMP action plan (BAP) in association with IUCN for enhancement of biodiversity. We have already started to implement the BAP in our area for conservation and enhancement of flora and fauna. Some key initiatives for biodiversity enhancement are medicinal garden development, Native species plantation and Butterfly park development, artificial niche nesting etc.
<b>G. Implementation of Action Plan as per public Hearing And CSR Activities</b>		
(i)	Implementation of Action Plan on the issues raised during the Public Hearing shall be ensured. The Project proponent shall complete all the tasks as per Action plan submitted with budgetary provisions during the public Hearing. Land oustees should be compensated as per the norms laid out R&R Policy of the Company or the National R&R Policy of the State Government, whichever is higher.	The implementation of action plan on the issues raised during public hearing is already in progress. R&R is not applicable in this project.
(ii)	The Board of every company, shall ensure that the company spends in every financial year, at least two per cent. of the average net profits of the company made during the three immediately preceding financial year, in pursuance of its corporate Social Responsibility policy under Section 135 of the Companies Act,2013, for the socio economic development of the neighbourhood.	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 of Tata Steel -Jharia Division in FY 22 was Rs.5.07 crores.

**Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017**

<b>H. Corporate Environment Responsibility</b>		
(i)	The Company should have a well laid down Environment Policy approved by the Board of Directors.	The Company already has an Environment Policy approved by the Managing Director.
(ii)	To have proper checks and balances, the Company should 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.	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.
(iii)	A separate environment management cell with suitable qualified personnel should be set – up under the control of a Senior Executive, who will report directly to the Head of the Organization	We have a separate Environmental Management Cell with qualified personnel. The reporting of Environmental Cell is directly to General Manager of the Division.
(iv)	The funds earmarked for environment protection measures should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office.	The Environment Cell has a separate fund for Environmental protection measures and for complying with legal requirements. The year-wise expenditure is being already submitted to JSPCB as Environment Statement in Form-V. The total annual environmental expenditure for the financial year 2021-22 is Rs. 390.16 lakhs.
<b>I. Statutory Obligations</b>		
(i)	Environment clearance is granted subject to final outcome of Hon’ble Supreme Court of India, High Court, NGT and any other Court of Law, if any, as may be applicable to the project.	It shall be strictly followed.
(ii)	This Environmental Clearance is subject to obtaining requisite NBWL Clearance from the Standing Committee of National Board for Wildlife , if any , applicable to the project	Not applicable.
(iii)	The project proponent shall obtain Consent to Establish and Consent to Operate from the concerned State Pollution Control Board prior to increase in capacity of washery and effectively implement all the conditions stipulated therein.	The consent to establish has been granted by JSPCB (Ref no.- JSPCB/HO/RNC/CTE-342731/2017/686 dt. 20.11.2017). The Consent to Operate has been granted by JSPCB (Ref no.- JSPCB/HO/RNC/CTO-1581391/2018/1733 dt. 01.11.2018) valid till 31.03.2023 The conditions of

**Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017**

		CTE and CTO are being complied with and submitted to JSPCB.
(iv)	Project proponent shall obtain the necessary prior permission from the Central Ground Water Authority (CGWA) for drawl of water (surface and ground water).	No Objection Certificate for withdrawal of mine water has been approved by CGWA, New Delhi vide letter No. CGWA/NOC/MIN/ORIG/2021 /13942 and is valid till 02/12/2023
<b>J. Monitoring of Project</b>		
(i)	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year pre – monsoon (April-May) , monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground water Authority and Regional Director , Central Ground Water Board.	The monitoring of groundwater level and quality is done four times a year. The groundwater quality report & groundwater level are provided in <b>Annexure-I.</b>
(ii)	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, central Pollution Control Board and State Pollution Control Board.	It is being complied with. We are submitting the six-monthly compliance reports to MoEF&CC, its regional office, CPCB and SPCB twice a year. In adherence with the guideline as per notification dt. 26.11.2018, from now onwards, we are sending only soft copy of the compliance status report over mail.
(iii)	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	It shall be complied with.
(iv)	The activities pertaining to development of green belt/horticulture shall be reported to concern Regional Office of MoEF&CC on six monthly	In our leasehold area, every year plantation of sapling is being done and saplings are distributed every year outside the leasehold area. In addition to above, maintenance of old saplings (converted into

**Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017**

	basis from the data of commencement of mining operation.	plants) and developing green area of the region is also being done. The greenbelt development plan has been submitted to MoEF&CC earlier.
(v)	For half yearly monitoring reports. The data should be monitored for period of April to September and October to March of the financial years and submitted to the concerned authorities Within 2 months of the completion of periodicity of monitoring.	The cycle of April to September and October to March of every financial year is being followed for submission of compliance and monitoring reports.
<b>K. Miscellaneous</b>		
(i)	A copy of clearance letter will be marked to concerned panchayat/local NGO, if any, from whom suggestion / representation has been received while processing the proposal.	The copy of Clearance letter has been sent to District Commissioner, Municipal Commissioner and other government offices on 11 <sup>th</sup> May, 2017.
(ii)	An electronic copy of the EC letter shall be marked to the concerned State Pollution Control Board, Regional office , District Industry Sector and Collector's Office / Tehsildar Office for information in public domain within 30 days.	The electronic copy of EC letter has been forwarded to DC office, JSPCB Dhanbad office, JSPCB Ranchi office via mail on 11 <sup>th</sup> May, 2017.
(iii)	The EC 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 public domain. The monitoring data of environmental quality parameter (air, water, noise and soil) and critical pollutant such as PM10, PM2.5, SO2 and Nox (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.	The EC letter is already uploaded in company's website. The compliance reports shall also be uploaded once in six months in company's website with all monitoring reports. The display board at entrance of mine and washery covers all environment quality parameters and applicable statutory requirements as per the guidelines.
(iv)	The project authorities should advertise at least in two local newspapers widely circulated ,one of which shall be in the vernacular language of the locality concerned , within 7 days of the issue of the	The Notice has been advertised in two local newspapers viz. Prabhat Khabar (Hindi) and Hindustan (Hindi) on May 05, 2017.

**Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017**

	clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the SPCB and also at web site of the Ministry of Environment, Forest and Climate Change at <a href="http://www.environmentclearance.nic.in">www.environmentclearance.nic.in</a> and a copy of the same should be forwarded to the Regional Office	
(v)	The Environmental Statement for each financial year ending 31 March in Form-V is mandated to be submitted by the PP for 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 Office of the MoEF&CC by e-mail.	The environmental statement for financial year 2020-21 has been submitted to JSPCB vide letter no. JMB/ENV/ESSA/05/723/2022 on 28 <sup>th</sup> September 2022 and it is also uploaded on the company website. The soft copy of Environment Statement is also sent to MOEF by email at <a href="mailto:ro.ranchi-mef@gov.in">ro.ranchi-mef@gov.in</a> .

**AIR QUALITY REPORT**

Core zone &amp; Buffer zone

Period- April'22 to June'22

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 $\mu\text{g}/\text{m}^3$	RSPM 24 Hourly Limit- 300 $\mu\text{g}/\text{m}^3$	SO <sub>2</sub> 24 Hourly Limit- 120 $\mu\text{g}/\text{m}^3$	NO <sub>x</sub> 24 Hourly Limit-120 $\mu\text{g}/\text{m}^3$
Sijua Mine Office Area	23°46'33.2" N/ 86°19'51" E	08.04.22	Clear	236.8	85.2	12.4	14.6
		20.05.22	Clear	226.3	82.7	11.4	12.2
		17.06.22	Cloudy	204.3	74.0	10.7	11.2
Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	06.04.22	Clear	224.3	82.7	14.7	15.9
		18.05.22	Clear	232.4	87.9	12.5	13.7
		20.06.22	Cloudy	216.1	76.5	11.9	12.8
Buffer zone (as per NAAQS 2009 for ambient air quality standards)							
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100 $\mu\text{g}/\text{m}^3$	PM2.5 24 Hourly Limit- 60 $\mu\text{g}/\text{m}^3$	SO <sub>2</sub> 24 Hourly Limit- 80 $\mu\text{g}/\text{m}^3$	NO <sub>2</sub> 24 Hourly Limit- 80 $\mu\text{g}/\text{m}^3$
Sijua Russi Vihar Colony	23°46'45.8" N/ 86°20'18.6" E	12.04.22	Clear	81.5	40.2	11.7	12.9
		17.05.22	Clear	84.0	43.2	13.1	14.7
		15.06.22	Clear	81.5	42.4	12.1	13.7
Malkera Colony	23°47'10" N/ 86°17'39" E	04.04.22	Clear	71.6	35.9	10.4	11.3
		13.05.22	Clear	78.2	39.4	12.3	13.5
		16.06.22	Clear	80.7	41.0	11.9	12.6
Bhelatand Colony	23°46'10.7" N/ 86°18'49"E	07.04.22	Clear	77.2	38.1	12.3	14.5
		16.05.22	Cloudy	70.5	34.8	10.7	11.6
		13.06.22	Clear	84.2	45.4	12.6	13.1


**Sr. Manager (Environment)**



**AIR QUALITY REPORT**

Core zone &amp; Buffer zone

Period- July'22 to September'22

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 $\mu\text{g}/\text{m}^3$	RSPM 24 Hourly Limit- 300 $\mu\text{g}/\text{m}^3$	SO <sub>2</sub> 24 Hourly Limit- 120 $\mu\text{g}/\text{m}^3$	NO <sub>x</sub> 24 Hourly Limit-120 $\mu\text{g}/\text{m}^3$
Sijua Mine Office Area	23°46'33.2" N/ 86°19'51" E	11.07.22	Clear	218.3	80.7	12.5	14.7
		16.08.22	Clear	210.5	77.6	13.5	15.4
		12.09.22	Cloudy	174.8	67.1	11.7	13.9
Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	14.07.22	Cloudy	198.4	72.2	10.8	12.1
		18.08.22	Clear	187.6	68.7	12.4	14.6
		16.09.22	Clear	206.3	74.5	13.5	15.7
Buffer zone (as per NAAQS 2009 for ambient air quality standards)							
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100 $\mu\text{g}/\text{m}^3$	PM2.5 24 Hourly Limit- 60 $\mu\text{g}/\text{m}^3$	SO <sub>2</sub> 24 Hourly Limit-80 $\mu\text{g}/\text{m}^3$	NO <sub>2</sub> 24 Hourly Limit- 80 $\mu\text{g}/\text{m}^3$
Sijua Russi Vihar Colony	23°46'45.8" N/ 86°20'18.6" E	06.07.22	Clear	73.2	36.7	10.8	12.4
		22.08.22	Clear	69.2	34.4	11.5	12.9
		14.09.22	Cloudy	71.2	35.9	12.0	13.4
Malkera Colony	23°47'10" N/ 86°17'39" E	13.07.22	Cloudy	69.8	34.3	10.5	11.4
		17.08.22	Clear	75.1	38.3	12.4	13.6
		13.09.22	Clear	72.5	36.3	13.4	14.8
Bhelatand Colony	23°46'10.7" N/ 86°18'49" E	07.07.22	Clear	78.6	39.2	11.7	12.9
		24.08.22	Clear	72.6	36.9	10.8	11.7
		15.09.22	Cloudy	70.6	34.1	12.1	13.7


**Sr. Manager (Environment)**

**Ground Water Quality Analysis (Hand Pump & Dung Well)**  
**(Pre- Monsoon Season- May'2022)**

S.No	Date	Location	Time	Sample Parameter		
				Depth in meter (m)	pH	Electrical Conductivity, $\mu\text{S/m}$
1	20.05.2022	Ruddi Basti	10:55 AM	6.78	7.5	864
2	20.05.2022	Rampur Basti	12:45 PM	6.52	7.6	835
3	20.05.2022	Malkera Trigunait Basti	11:45 AM	3.94	7.6	910
4	20.05.2022	Sijua 6 No	01:10 PM	4.28	7.4	842
5	20.05.2022	Sijua 12 No	01:30 PM	4.26	7.5	834
6	20.05.2022	Rampur Basti, (Roadside)	12:20 PM	8.76	7.3	822
7	20.05.2022	Bansh Kapuria	02:35 PM	6.98	7.4	776
8	20.05.2022	Pasitand Basti	12:05 PM	4.62	7.5	810
9	20.05.2022	Bhelatand 500 Qtr. (Back Side)	02:15 PM	1.78	7.6	836



**Sr. Manager (Environment)**

**Ground Water Quality Analysis (Hand Pump & Dung Well)**  
**(Monsoon Season- August'2022)**

S.No	Date	Location	Time	Sample Parameter		
				Depth in meter (m)	pH	Electrical Conductivity, $\mu\text{S/m}$
1	17.08.2022	Ruddi Basti	10:55 AM	2.43	7.2	724
2	17.08.2022	Rampur Basti	12:45 PM	4.98	7.0	819
3	17.08.2022	Malkera Trigunait Basti	11:45 AM	2.63	7.2	782
4	17.08.2022	Sijua 6 No	01:10 PM	2.68	7.1	810
5	17.08.2022	Sijua 12 No	01:30 PM	1.52	7.2	910
6	17.08.2022	Rampur Basti, (Roadside)	12:20 PM	3.65	7.0	742
7	17.08.2022	Bansh Kapuria	02:35 PM	2.76	7.2	698
8	17.08.2022	Pasitand Basti	12:05 PM	2.41	7.0	634
9	17.08.2022	Bhelatand 500 Qtr. (Back Side)	02:15 PM	1.02	7.1	835



**Sr. Manager (Environment)**

**NOISE SURVEY REPORT- Bhelatand A. Colliery**

Date- 26.07.2022

S.No.	Unit / Place	Equipment / Location	Distance (meter)	Leq (dB 'A')	Exposure Hours
1	U/G	1413 Belt Drive ,14 seam (W)	-	70.2	6 hrs./shift
2		1 <sup>st</sup> L/10 <sup>th</sup> R Belt Drive	-	75.4	6 hrs./shift
3		2 <sup>nd</sup> L/31 <sup>st</sup> R , Auxiliary Fan	-	70.1	5 hrs./shift
4		LHD Machine	-	75.5	4 hrs./shift
5	Surface	Fan House	-	85.3	8 hrs./shift
6		1 Pit Winder	-	65.6	8 hrs./shift
7		Compressor Room	-	80.2	8 hrs./shift
8		2 Pit Winder	-	65.4	8 hrs./shift


**Sr. Manager (Environment)**

**NOISE SURVEY REPORT- Bhelatand Coal Washery**

Date- 18.08.2022

S.No.	Unit / Place	Equipment / Location	Distance (meter)	Leq (dB 'A')	Exposure Hours
1	U/G	1413 Belt Drive ,14 seam (W)	-	70.2	6 hrs./shift
2		1 <sup>st</sup> L/10 <sup>th</sup> R Belt Drive	-	75.4	6 hrs./shift
3		2 <sup>nd</sup> L/31 <sup>st</sup> R , Auxiliary Fan	-	70.1	5 hrs./shift
4		LHD Machine	-	75.5	4 hrs./shift
5	Surface	Fan House	-	85.3	8 hrs./shift
6		1 Pit Winder	-	65.6	8 hrs./shift
7		Compressor Room	-	80.2	8 hrs./shift
8		2 Pit Winder	-	65.4	8 hrs./shift


**Sr. Manager (Environment)**



# ADITI R&D SERVICES

Testing Laboratory

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Email ID: sindriaditi@gmail.com  
Website: aditirnds.com  
Phone: 0326-2952377 (O)  
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/22-23/505

Date: 23.05.2022

## TEST REPORT OF AMBIENT AIR QUALITY


- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 16.05.2022 to 17.05.2022
- Date of Testing : 20.05.2022 to 21.05.2022
- Test Procedure : As per IS-5182

### TEST RESULTS

LOCATION - RUSSI VIHAR COLONY				
	Avg. Ambient Temperature	34°C	Avg. Humidity	48%
Sl No.	Particulars	Value	CPCB STANDARD	
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	76.80	100 µg/m <sup>3</sup>	
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	41.60	60 µg/m <sup>3</sup>	
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	18.94	80 µg/m <sup>3</sup>	
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	27.69	80 µg/m <sup>3</sup>	
5.	Ozone, µg/m <sup>3</sup>	19.34	180 µg/m <sup>3</sup>	
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	15.82	400 µg/m <sup>3</sup>	
7.	CO, mg/m <sup>3</sup>	1.86	4 mg/m <sup>3</sup>	
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>	
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>	
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>	
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>	
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>	

Remarks: The ambient air quality is within the prescribed National Ambient Air Quality Standard.

NOTE: BDL - Below Detection Limit

  
Sr. Chemist  
Aditi R&D Services



  
23.05.22  
Quality Manager  
Aditi R&D Services

### Statements :

- The test report refers only to the particular item(s) submitted for testing.
- The test results reported in this report are valid at the time of and under the stated condition of measurement.
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Phone: 0326-2952377 (O)  
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/22-23/506

Date: 23.05.2022

## TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 16.05.2022 to 17.05.2022
- Date of Testing : 20.05.2022 to 21.05.2022
- Test Procedure : As per IS-5182

### TEST RESULTS

LOCATION - SIJUA COLLIERY, 15 PIT				
Avg. Ambient Temperature		35 <sup>o</sup> C	Avg. Humidity	48%
Sl No.	Particulars	Value	CPCB STANDARD	
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	90.44	100 µg/m <sup>3</sup>	
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	48.92	60 µg/m <sup>3</sup>	
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	22.37	80 µg/m <sup>3</sup>	
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	29.30	80 µg/m <sup>3</sup>	
5.	Ozone, µg/m <sup>3</sup>	22.68	180 µg/m <sup>3</sup>	
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	18.92	400 µg/m <sup>3</sup>	
7.	CO, mg/m <sup>3</sup>	1.86	4 mg/m <sup>3</sup>	
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>	
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>	
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>	
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>	
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>	

Remarks: The ambient air quality is within the prescribed National Ambient Air Quality Standard.

NOTE: BDL - Below Detection Limit

*S. R. Roy*  
Sr. Chemist  
Aditi R&D Services



*Phoukany*  
23.05.22  
Quality Manager  
Aditi R&D Services

### Statements :

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Ref. No.: - ARDS/22-23/507

Date: 23.05.2022

## TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 16.05.2022 to 17.05.2022
- Date of Testing : 20.05.2022 to 21.05.2022
- Test Procedure : As per IS-5182

### TEST RESULTS

LOCATION - SIJUA GROUP OFFICE			
	Avg. Ambient Temperature	35 <sup>o</sup> C	Avg. Humidity
SI No.	Particulars	Value	CPCB STANDARD
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	88.63	100 µg/m <sup>3</sup>
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	48.61	60 µg/m <sup>3</sup>
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	21.84	80 µg/m <sup>3</sup>
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	28.86	80 µg/m <sup>3</sup>
5.	Ozone, µg/m <sup>3</sup>	18.26	180 µg/m <sup>3</sup>
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	20.53	400 µg/m <sup>3</sup>
7.	CO, mg/m <sup>3</sup>	0.76	4 mg/m <sup>3</sup>
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>
9.	As, µg/m <sup>3</sup>	BDL	6 µg/m <sup>3</sup>
10.	Ni, µg/m <sup>3</sup>	BDL	20 µg/m <sup>3</sup>
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>
12.	Benzoapyrene µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>

Remarks: The ambient air quality is within the prescribed National Ambient Air Quality Standard.

NOTE: BDL - Below Detection Limit

*S. R. Dey*  
Sr. Chemist  
Aditi R&D Services



*P. Phani Prasad*  
23.05.22  
Quality Manager  
Aditi R&D Services

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# ADITI R&D SERVICES

## Testing Laboratory

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Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/22-23/508

Date: 23.05.2022

### TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 16.05.2022 to 17.05.2022
- Date of Testing : 20.05.2022 to 21.05.2022
- Test Procedure : As per IS-5182

### TEST RESULTS

LOCATION – W.T.P. MALKERA				
	Avg. Ambient Temperature	34 <sup>o</sup> C	Avg. Humidity	46%
Sl No.	Particulars	Value	CPCB STANDARD	
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	92.40	100 µg/m <sup>3</sup>	
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	51.54	60 µg/m <sup>3</sup>	
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	19.32	80 µg/m <sup>3</sup>	
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	23.50	80 µg/m <sup>3</sup>	
5.	Ozone, µg/m <sup>3</sup>	19.48	180 µg/m <sup>3</sup>	
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	21.35	400 µg/m <sup>3</sup>	
7.	CO, mg/m <sup>3</sup>	1.43	4 mg/m <sup>3</sup>	
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>	
9.	As, µg/m <sup>3</sup>	BDL	6 µg/m <sup>3</sup>	
10.	Ni, µg/m <sup>3</sup>	BDL	20 µg/m <sup>3</sup>	
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>	
12.	Benzoapyrene µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>	

Remarks: The ambient air quality is within the prescribed National Ambient Air Quality Standard.

NOTE: BDL - Below Detection Limit

*S. D. Roy*

Sr. Chemist  
Aditi R&D Services



*Chhotaray*  
23.05.22

Quality Manager  
Aditi R&D Services

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## TEST REPORT OF NOISE (AMBIENT) LEVEL MONITORING

Ref. No. & Date	NAME AND ADDRESS OF THE CLIENT			
ARDS/22-23/446 Date: 18.05.2022	TATA STEEL JHARIA DIVISION			
Date of Monitoring	TATA STEEL COLLIERY (SIJUA GROUP)			
	DIST. - DHANBAD (JHARKHAND)			
16.05.2022 - 17.05.2022	Avg. Ambient Temperature(°C)	Average Humidity (%)	Weather Condition	Status of the plant
Work Order 4700092573/932 Dt. 20.07.2021	35	49	Clear	Running

### MONITORING RESULTS

Sl. No	Place of Monitoring	Day Time (6 AM to 10 PM) Avg. dB(A)			Night Time (10 PM to 6 AM) Avg. dB(A)			Noise level (Ambient standard) for Industrial Area as per CPCB Noise Pollution (Regulation and Control) (Amendment) Rules, 2000 notified vide S.O. 1046(E) Dt. 22.11.2020 Limit in dB(A) Leq	
		MAX	MIN	AVG. dB(A) Leq	MAX	MIN	AVERAGE dB(A) Leq	Day Time	Night Time
	LOCATION						Industrial Area	Industrial Area	
	SIJUA GROUP								
1.	Sijua Group Office	52	49	50.75	46	42	44.45	75	70
2.	Sijua Colliery 15 Pit	61	48	58.20	47	42	45.18		
								Residential Area	Residential Area
3.	Russi Vihar Colony	49	45	47.45	45	41	43.45	65	55
4.	WTP Malkera	54	43	51.32	43	40	41.75		

Remarks: Noise level is well within the standard specified limit for Industrial Area.

  
Sr. Chemist  
Aditi R&D Services



  
18.05.21  
Quality Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/480

Date: 21.05.2022

## TEST REPORT OF MINERALOGICAL COMPOSITION OF PARTICULATE MATTER

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 17.05.2022
- Date of Testing : 20.05.2022
- Test Procedure : As per IS

### TEST RESULTS

Sl No.	Particulars	Mineralogical Composition (%)			
		SiO <sub>2</sub>	FeO	Al <sub>2</sub> O <sub>3</sub>	CaO
1.	Sijua Group Office	1.72	0.17	1.61	2.6
2.	WTP , Malkera	1.56	0.13	1.49	2.92

*S.R. Roy*  
Sr. Chemist  
Aditi R&D Services



*Phanikant*  
21.05.22  
Quality Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/566

Date: 28.05.2022

## TEST REPORT OF SURFACE WATER

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Katri River (Up Stream)  
2. Katri River (Down Stream)
- Date of Sample Collection: 16.05.2022 To 17.05.2022
- Date of Testing : 20.05.2022 To 27.05.2022
- Test : pH, TDS, Turbidity, DO, BOD, Cl, F, SO<sub>4</sub>

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		Limit as per IS 2296 Class - C	Test Method
		Katri River (Up Stream)	Katri River (Down Stream)		
1.	pH,	7.55	7.70	6.5 - 8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	525	575	1500(Max.)	IS-3025 (P-16): 1984
3.	Turbidity, NTU	8.5	15.5	-	IS-3025 (P-10):1984
4.	Dissolved Oxygen, mg/l	5.6	5.5	4 (Min.)	IS-3025 (P-38):1989
5.	Bio chemical Oxygen Demand, mg/l	1.1	1.3	3	IS-3025 (P-44):1994
6.	Chloride as Cl, mg/l	54	70	-	IS-3025 (P-32):1988
7.	Fluoride as F, mg/l	0.56	0.60	1.5 (Max.)	IS-3025 (P-60):2008
8.	Sulphate as SO <sub>4</sub> , mg/l	46	52	400 (Max.)	IS-3025 (P-24):1986

*S. R. Roy*  
Sr. Chemist  
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*P. Choudhary*  
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Ref. No.: - ARDS/22-23/567

Date: 28.05.2022

## TEST REPORT OF MINE WATER DISCHARGE

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code :
  1. Bhelatand A Colliery
  2. 15 Pit Sijua Colliery
  3. 8 Pit Sijua Colliery
  4. 2 Pit Sijua Colliery
  5. B.C.P.P. Final Setting Pond
- Date of Sample Collection: 16.05.2022 To 17.05.2022
- Date of Testing : 20.05.2022 To 27.05.2022
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE					Limit as per IS-2296 Class B (For Bathing)	Test Method
		Bhelatand A Colliery	15 Pit Sijua Colliery	8 Pit Sijua Colliery	2 Pit Sijua Colliery	B.C.P.P . Final Setting Pond		
1.	pH,	7.95	8.05	8.12	8.24	7.78	6.5-8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	748	815	765	775	755	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	23	26	28	30	26	-	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	1.6	1.8	1.7	1.4	1.7	3	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	62	48	32.8	54	52	-	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	B.D.L	B.D.L	B.D.L.	B.D.L	B.D.L.	-	IS-3025 (P-39):2021

*S. R. Ray*  
Sr. Chemist  
Aditi R&D Services



*P. Phoukay*  
28.05.22  
Quality Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/568

Date: 28.05.2022

## TEST REPORT OF SEWAGE

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. S.T.P. Outlet Sijua Canteen  
2. S.T.P. Outlet Bhelatand Canteen  
3. S.T.P. Outlet Aadarsh Nagar
- Date of Sample Collection: 16.05.2022 To 17.05.2022
- Date of Testing : 20.05.2022 To 27.05.2022
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE			MoEF&C Notification 1 <sup>st</sup> Jan.2016 Permissible Max. Desirable Limit	Test Method
		S.T.P. Outlet Sijua Canteen	S.T.P. Outlet Bhelatand Canteen	S.T.P. Outlet Aadarsh Nagar		
1.	pH,	8.20	8.30	7.79	6.0 – 9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	732	734	738	2100	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	26	28	30	100	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	14.2	13.6	15.2	30	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	82	58	64	250	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	1.4	1.6	1.8	10	IS-3025 (P-39):2021

*S.R. Roy*  
Sr. Chemist  
Aditi R&D Services



*A.P. Jha*  
28.05.22  
Quality Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/569

Date: 28.05.2022

## TEST REPORT OF DRINKING WATER

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Canteen Bhelatand Colliery  
2. Canteen Sijua Colliery
- Date of Sample Collection: 16.05.2022 To 17.05.2022
- Date of Testing : 20.05.2022 To 27.05.2022
- Test : Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boran.

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		IS as per IS 10500:1991		Test Method
		Canteen Bhelatand Colliery	Canteen Sijua Colliery	Desirable	Permissible	
1.	Colour, (Hazen Unit)	1	1	5.00	15.0	IS 3025 (P-4):2021
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-5):2018
3.	Taste,	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-7):2017
4.	Turbidity, NTU	1	1	1.0	5.0	IS 3025 (P-10):1984
5.	pH	8.45	8.5	6.5-8.5	No. Relax.	IS-3025(P-11): 1983
6.	Total Hardness as CaCO <sub>3</sub> , mg/l	254.8	262.64	200	600	IS 3025 (P-21):2009
7.	Chloride as Cl, mg/l	63.52	67.49	250	1000	IS 3025 (P-32):1988
8.	Res. Free chlorine as Cl <sub>2</sub> mg/l	BDL	BDL	0.20	1.0	IS 3025 (P-26):2021
9.	Total Dissolved Solids, mg/l	385	405	500	2000	IS 3025 (P-16):1984
10.	Calcium as Ca, mg/l	78.4	86.24	75	200	IS 3025 (P-40):1991
11.	Copper as Cu, mg/l	BDL	BDL	0.05	1.5	IS 3025 (P-42):1992

Continued on Page 2

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- 2 -

Sl. No.	PARAMETERS OF TEST	VALUE		IS as per IS 10500:1991		Test Method
		Canteen Bhelatand Colliery	Canteen Sijua Colliery	Desirable	Permissible	
12.	Manganese as Mn, mg/l	BDL	BDL	0.10	0.30	IS 3025 (P-59):2006
13.	Sulphate as SO <sub>4</sub> , mg/l	57	59	200	400	IS 3025 (P-24):1986
14.	Nitrate as NO <sub>3</sub> , mg/l	3.3	3.6	45	No. Relax	IS 3025 (P-34):1988
15.	Fluoride as F, mg/l	0.34	0.28	1.0	1.5	IS 3025 (P-60):2008
16.	Phenolic Compound as (C <sub>6</sub> H <sub>5</sub> OH) mg/l	BDL	BDL	0.001	0.002	IS 3025 (P-43):1992
17.	Mercury as Hg, mg/l	BDL	BDL	0.001	No. Relax	IS 3025 (P-48):1994
18.	Cadmium as Cd, mg/l	BDL	BDL	0.003	No. Relax	IS 3025 (P-41):1992
19.	Arsenic as As, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-37):1988
20.	Cyanide as CN, mg/l	BDL	BDL	0.05	No. Relax	IS 3025 (P-27):1986
21.	Lead as Pb, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-47):1994
22.	Zinc as Zn, mg/l,	0.1	6.12	5	15	IS 3025 (P-42):1992
23.	Total Coliform, No./100ml	Absent	Absent	Absent	Absent	IS 3025 (P-49):1994
24.	Hexavalent Chromium as Cr, mg/l	BDL	BDL	0.05	No. Relax	IS 3025 (P-52):2003
25.	Mineral Oil, mg/l	BDL	BDL	0.5	No. Relax	IS 3025 (P-39):1989
26.	Alkalinity as CaCO <sub>3</sub> , mg/l,	336	332	200	600	IS 3025 (P-23):1983
27.	Aluminium as Al, mg/l	BDL	BDL	0.03	0.2	IS 3025 (P-55):2003
28.	Boran as B, mg/l	BDL	BDL	0.5	1.0	IS 3025 (P-57):2005

NOTE: BDL - Below Detection Limit

  
Sr. Chemist  
Aditi R&D Services



  
28.05.22  
Quality Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/ 570

Date: 28.05.2022

## TEST REPORT OF GROUND WATER

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Ruddi Basti  
2. Rampur Basti  
3. Sijua 6 No.  
4. Bansh Kapuria  
5. Pasitand Basti
- Date of Sample Collection : 16.05.2022 To 17.05.2022
- Date of Testing : 20.05.2022 To 27.05.2022
- Test : Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

## TEST RESULT

Sl. No	PARAMETERS OF TEST	VALUE					IS as per IS 10500:1991		Test Method
		Ruddi Basti	Rampur Basti	Sijua 6 No.	Bans h Kapu ria	Pasit and Basti	Desir-able	Permis-sible	
1.	Colour, (Hazen Unit)	01	02	02	01	02	5	15	IS 3025 (P-4):2021
2.	Temperature °C	35	35	34	34	36	-	-	-
3.	Electrical Conductivity, $\mu$ mhos/cm	780	650	850	750	810	-	-	-
4.	Total Dissolved Solids, mg/l	508	422	552	490	526	-	-	IS 3025(P-6):1984
5.	pH	7.9	8.5	7.3	8.4	7.6	6.5-8.5	No Relax	IS-3025(P-11):1983
6.	Total Hardness as CaCO <sub>3</sub> , mg/l	258.72	254.8	278.32	297.92	294	200	600	IS 3025(P-1):2009
7.	Calcium as Ca, mg/l	47.04	43.90	51.74	56.45	54.88	75	200	IS 3025(P-0):1991
8.	Magnesium as Mg, mg/l	32.88	33.79	34.70	36.53	36.53	30	100	IS 3025(P-6):1994
9.	Chloride as Cl, mg/l	55.58	63.52	67.43	67.49	79.40	250	1000	IS 3025(P-2):1988
10.	Fluoride as F, mg/l	0.36	0.40	0.34	0.42	0.38	1.0	1.5	IS 3025(P-0):2008

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- 2 -

Sl. No.	PARAMETERS OF TEST	VALUE					IS as per IS 10500:1991		Test Method
		Ruddi Basti	Rampur Basti	Sijua 6 No.	Bansh Kapuri a	Pasit and Basti	Desi r-able	Permissible	
11	Sulphate as SO <sub>4</sub> , mg/l	56	58	48	54	58	200	400	IS 3025(P-24):1986
12.	Nitrate as NO <sub>3</sub> , mg/l	11.5	11.4	10.8	11.2	11.6	45	No. Relax	IS 3025(P-34):1988
13.	Alkalinity as CaCO <sub>3</sub> , mg/l,	224	332	432	348	404	200	600	IS 3025(P-23):1983
14.	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-47):1994
15.	Zinc as Zn, mg/l,	0.16	0.12	0.14	0.17	0.12	5	15	IS 3025(P-42):1992
16.	Iron a Fe, mg/l	0.12	0.14	0.16	0.18	0.16	0.3	No. Relax	IS 3025(P-53):2003
17.	Copper as Cu, mg/l	BDL	BDL	BDL	BDL	BDL	0.05	1.5	IS3025 (P-42):1992
18.	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025(P-48):1994
19.	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025(P-41):1992
20.	Nickel as Ni, mg/l	BDL	BDL	BDL	BDL	BDL	0.02	No. Relax	IS 3025(P-37):1992
21.	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-37):1988
22.	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-27):1986
23.	Total Chromium as Cr, mg/l	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-52):2003

NOTE: BDL - Below Detection Limit

*S. R. Roy*  
Sr. Chemist  
Aditi R&D Services



*P. Prasad*  
Quality Manager  
Aditi R&D Services, Sindri

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# ADITI R&D SERVICES

## Testing Laboratory

NABL ACCREDITED

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Website: aditimdservices.com  
Phone: 0326-2952377 (O)  
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/22-23/1430

Date: 26.08.2022

### TEST REPORT OF AMBIENT AIR QUALITY

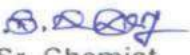
- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 22.08.2022 to 23.08.2022
- Date of Testing : 24.08.2022 to 25.08.2022
- Test Procedure : As per IS-5182

### TEST RESULTS

LOCATION – RUSSI VIHAR COLONY				
	Avg. Ambient Temperature	33 <sup>o</sup> C	Avg. Humidity	70%
Sl No.	Particulars	Value	CPCB STANDARD	
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	72.50	100 µg/m <sup>3</sup>	
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	38.00	60 µg/m <sup>3</sup>	
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	16.65	80 µg/m <sup>3</sup>	
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	24.32	80 µg/m <sup>3</sup>	
5.	Ozone, µg/m <sup>3</sup>	16.20	180 µg/m <sup>3</sup>	
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	12.30	400 µg/m <sup>3</sup>	
7.	CO, mg/m <sup>3</sup>	1.25	4 mg/m <sup>3</sup>	
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>	
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>	
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>	
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>	
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>	

Remarks: The ambient air quality is within the prescribed National Ambient Air Quality Standard.

NOTE: BDL - Below Detection Limit

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services

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Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/22-23/1431

Date: 26.08.2022

## TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 22.08.2022 to 23.08.2022
- Date of Testing : 24.08.2022 to 25.08.2022
- Test Procedure : As per IS-5182

### TEST RESULTS

LOCATION - SIJUA COLLIERY, 15 PIT				
	Avg. Ambient Temperature	33 <sup>0</sup> C	Avg. Humidity	70%
Sl No.	Particulars	Value	CPCB STANDARD	
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	87.60	100 µg/m <sup>3</sup>	
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	43.20	60 µg/m <sup>3</sup>	
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	18.35	80 µg/m <sup>3</sup>	
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	23.25	80 µg/m <sup>3</sup>	
5.	Ozone, µg/m <sup>3</sup>	19.83	180 µg/m <sup>3</sup>	
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	16.65	400 µg/m <sup>3</sup>	
7.	CO, mg/m <sup>3</sup>	1.32	4 mg/m <sup>3</sup>	
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>	
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>	
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>	
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>	
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>	

Remarks: The ambient air quality is within the prescribed National Ambient Air Quality Standard.

NOTE: BDL - Below Detection Limit

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services

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Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/22-23/1432

Date: 26.08.2022

## TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 22.08.2022 to 23.08.2022
- Date of Testing : 24.08.2022 to 25.08.2022
- Test Procedure : As per IS-5182

### TEST RESULTS

LOCATION - SIJUA GROUP OFFICE				
	Avg. Ambient Temperature	33 <sup>0</sup> C	Avg. Humidity	70%
SI No.	Particulars	Value	CPCB STANDARD	
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	84.32	100 µg/m <sup>3</sup>	
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	42.10	60 µg/m <sup>3</sup>	
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	18.30	80 µg/m <sup>3</sup>	
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	24.65	80 µg/m <sup>3</sup>	
5.	Ozone, µg/m <sup>3</sup>	16.30	180 µg/m <sup>3</sup>	
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	18.25	400 µg/m <sup>3</sup>	
7.	CO, mg/m <sup>3</sup>	0.68	4 mg/m <sup>3</sup>	
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>	
9.	As, µg/m <sup>3</sup>	BDL	6 µg/m <sup>3</sup>	
10.	Ni, µg/m <sup>3</sup>	BDL	20 µg/m <sup>3</sup>	
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>	
12.	Benzoapyrene µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>	

Remarks: The ambient air quality is within the prescribed National Ambient Air Quality Standard.

NOTE: BDL - Below Detection Limit

*S. R. Ojha*

Sr. Chemist  
Aditi R&D Services



*[Signature]*  
Technical Manager  
Aditi R&D Services

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Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/22-23/1433

Date: 26.08.2022

## TEST REPORT OF AMBIENT AIR QUALITY

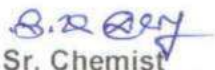
- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 22.08.2022 to 23.08.2022
- Date of Testing : 24.08.2022 to 25.08.2022
- Test Procedure : As per IS-5182

### TEST RESULTS

LOCATION – W.T.P. MALKERA				
	Avg. Ambient Temperature	33 <sup>o</sup> C	Avg. Humidity	70%
Sl No.	Particulars	Value	CPCB STANDARD	
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	87.25	100 µg/m <sup>3</sup>	
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	48.65	60 µg/m <sup>3</sup>	
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	15.23	80 µg/m <sup>3</sup>	
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	20.90	80 µg/m <sup>3</sup>	
5.	Ozone, µg/m <sup>3</sup>	14.25	180 µg/m <sup>3</sup>	
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	18.50	400 µg/m <sup>3</sup>	
7.	CO, mg/m <sup>3</sup>	1.10	4 mg/m <sup>3</sup>	
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>	
9.	As, µg/m <sup>3</sup>	BDL	6 µg/m <sup>3</sup>	
10.	Ni, µg/m <sup>3</sup>	BDL	20 µg/m <sup>3</sup>	
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>	
12.	Benzoapyrene µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>	

Remarks: The ambient air quality is within the prescribed National Ambient Air Quality Standard.

NOTE: BDL - Below Detection Limit

  
Sr. Chemist

Aditi R&D Services



  
Technical Manager  
Aditi R&D Services

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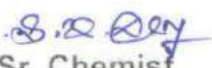
## TEST REPORT OF NOISE (AMBIENT) LEVEL MONITORING

Ref. No. & Date	NAME AND ADDRESS OF THE CLIENT			
ARDS/22-23/1422 Date: 25.08.2022	TATA STEEL JHARIA DIVISION TATA STEEL COLLIERY (SIJUA GROUP) DIST. - DHANBAD (JHARKHAND)			
Date of Monitoring				
22.08.2022 - 23.08.2022	Avg. Ambient Temperature (°C)	Average Humidity (%)	Weather Condition	Status of the plant
Work Order 4700092573/932 Dt. 20.07.2021	33	70	Clear	Running

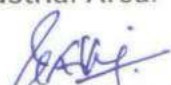
### MONITORING RESULTS

Sl. No	Place of Monitoring	Day Time (6 AM to 10 PM) Avg. dB(A)			Night Time (10 PM to 6 AM) Avg. dB(A)			Noise level (Ambient standard) for Industrial Area as per CPCB Noise Pollution (Regulation and Control) (Amendment) Rules, 2000 notified vide S.O. 1046(E) Dt. 22.11.2020 Limit in dB(A) Leq	
		MAX	MIN	AVG. dB(A) Leq	MAX	MIN	AVERAGE dB(A) Leq	Day Time	Night Time
LOCATION								Industrial Area	Industrial Area
SIJUA GROUP									
1.	Sijua Group Office	53	47	50.96	42	37	40.18	75	70
2.	Sijua Colliery 15 Pit	65	49	62.10	43	38	41.18		
								Residential Area	Residential Area
3.	Russi Vihar Colony	52	48	50.45	42	36	39.96	65	55
4.	WTP Malkera	49	40	46.50	40	38	39.11		

Remarks: Noise level is well within the standard specified limit for Industrial Area.

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/1434

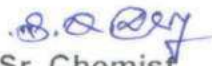
Date: 26.08.2022

## TEST REPORT OF MINERALOGICAL COMPOSITION OF PARTICULATE MATTER

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 23.08.2022
- Date of Testing : 25.08.2022
- Test Procedure : As per IS

### TEST RESULTS

Sl No.	Particulars	Mineralogical Composition (%)			
		SiO <sub>2</sub>	FeO	Al <sub>2</sub> O <sub>3</sub>	CaO
1.	Sijua Colliery , 15 Pit	1.59	0.12	1.53	1.9
2.	Russi Vihar Colony	1.49	0.10	1.34	2.21

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/1498

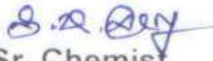
Date: 03.09.2022

## TEST REPORT OF SURFACE WATER

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Katri River (Up Stream)  
2. Katri River (Down Stream)
- Date of Sample Collection: 22.08.2022 To 23.08.2022
- Date of Testing : 24.08.2022 To 02.09.2022
- Test : pH, TDS, Turbidity, DO, BOD, Cl, F, SO<sub>4</sub>

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		Limit as per IS 2296 Class - C	Test Method
		Katri River (Up Stream)	Katri River (Down Stream)		
1.	pH,	7.2	7.3	6.5 - 8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	299	317	1500(Max.)	IS-3025 (P-16): 1984
3.	Turbidity, NTU	01	01	-	IS-3025 (P-10):1984
4.	Dissolved Oxygen, mg/l	4.5	5.9	4 (Min.)	IS-3025 (P-38):1989
5.	Bio chemical Oxygen Demand, mg/l	2.7	2.3	3	IS-3025 (P-44):1994
6.	Chloride as Cl, mg/l	26	22	-	IS-3025 (P-32):1988
7.	Fluoride as F, mg/l	0.60	0.62	1.5 (Max.)	IS-3025 (P-60):2008
8.	Sulphate as SO <sub>4</sub> , mg/l	47	46	400 (Max.)	IS-3025 (P-24):1986

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/1499

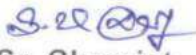
Date: 03.09.2022

## TEST REPORT OF MINE WATER DISCHARGE

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Bhelatand A Colliery  
2. 15 Pit Sijua Colliery  
3. 8 Pit Sijua Colliery  
4. 2 Pit Sijua Colliery  
5. B.C.P.P. Final Setting Pond
- Date of Sample Collection: 22.08.2022 To 23.08.2022
- Date of Testing : 24.08.2022 To 02.09.2022
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE					Limit as per IS-2296 Class B (For Bathing)	Test Method
		Bhelatand A Colliery	15 Pit Sijua Colliery	8 Pit Sijua Colliery	2 Pit Sijua Colliery	B.C.P.P. Final Setting Pond		
1.	pH,	7.80	7.5	7.8	8.2	7.6	6.5-8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	710	915	800	810	825	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	34	42	39	27	38	-	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	1.8	2.2	2.4	1.6	1.8	3	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	66	56	44	58	54	-	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	B.D.L	0.4	1.2	B.D.L	B.D.L.	-	IS-3025 (P-39):2021

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Testing Laboratory

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Ref. No.: - ARDS/22-23/1500

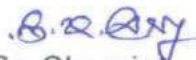
Date: 03.09.2022

## TEST REPORT OF SEWAGE

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. S.T.P. Outlet Sijua Canteen  
2. S.T.P. Outlet Bhelatand Canteen  
3. S.T.P. Outlet Aadarsh Nagar
- Date of Sample Collection: 22.08.2022 To 23.08.2022
- Date of Testing : 24.08.2022 To 02.09.2022
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE			MoEF&C Notification 1 <sup>st</sup> Jan.2016 Permissible Max. Desirable Limit	Test Method
		S.T.P. Outlet Sijua Canteen	S.T.P. Outlet Bhelatand Canteen	S.T.P. Outlet Aadarsh Nagar		
1.	pH,	8.40	7.6	7.8	6.0 - 9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	810	789	782	2100	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	38	39	35	100	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	14.6	14.8	16.6	30	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	76	62	70	250	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	2.2	6.4	1.2	10	IS-3025 (P-39):2021

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/1501

Date: 03.09.2022

## TEST REPORT OF DRINKING WATER

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Canteen Bhelatand Colliery  
2. Canteen Sijua Colliery
- Date of Sample Collection: 22.08.2022 To 23.08.2022
- Date of Testing : 24.08.2022 To 02.09.2022
- Test : OLOUR, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boran.

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		IS as per IS 10500:1991		Test Method
		Canteen Bhelatand Colliery	Canteen Sijua Colliery	Desirable	Permissible	
1.	Colour, (Hazen Unit)	1	1	5.00	15.0	IS 3025 (P-4):2021
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-5):2018
3.	Taste,	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-7):2017
4.	Turbidity, NTU	1	1	1.0	5.0	IS 3025 (P-10):1984
5.	pH	8.4	8.5	6.5-8.5	No. Relax.	IS-3025(P-11): 1983
6.	Total Hardness as CaCO <sub>3</sub> , mg/l	248	240	200	600	IS 3025 (P-21):2009
7.	Chloride as Cl, mg/l	66	76	250	1000	IS 3025 (P-32):1988
8.	Res. Free chlorine as Cl <sub>2</sub> mg/l	BDL	BDL	0.20	1.0	IS 3025 (P-26):2021
9.	Total Dissolved Solids, mg/l	466	452	500	2000	IS 3025 (P-16):1984
10.	Calcium as Ca, mg/l	80	76	75	200	IS 3025 (P-40):1991
11.	Copper as Cu, mg/l	BDL	BDL	0.05	1.5	IS 3025 (P-42):1992

Continued on Page 2

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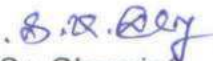
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- 2 -

Sl. No.	PARAMETERS OF TEST	VALUE		IS as per IS 10500:1991		Test Method
		Canteen Bhelatand Colliery	Canteen Sijua Colliery	Desirable	Permissible	
12.	Manganese as Mn, mg/l	BDL	BDL	0.10	0.30	IS 3025 (P-59):2006
13.	Sulphate as SO <sub>4</sub> , mg/l	55	51	200	400	IS 3025 (P-24):1986
14.	Nitrate as NO <sub>3</sub> , mg/l	4.3	4.7	45	No. Relax	IS 3025 (P-34):1988
15.	Fluoride as F, mg/l	0.42	0.26	1.0	1.5	IS 3025 (P-60):2008
16.	Phenolic Compound as (C <sub>6</sub> H <sub>5</sub> OH) mg/l	BDL	BDL	0.001	0.002	IS 3025 (P-43):1992
17.	Mercury as Hg, mg/l	BDL	BDL	0.001	No. Relax	IS 3025 (P-48):1994
18.	Cadmium as Cd, mg/l	BDL	BDL	0.003	No. Relax	IS 3025 (P-41):1992
19.	Arsenic as As, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-37):1988
20.	Cyanide as CN, mg/l	BDL	BDL	0.05	No. Relax	IS 3025 (P-27):1986
21.	Lead as Pb, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-47):1994
22.	Zinc as Zn, mg/l,	0.18	0.15	5	15	IS 3025 (P-42):1992
23.	Total Coliform, No./100ml	Absent	Absent	Absent	Absent	IS 3025 (P-49):1994
24.	Hexavalent Chromium as Cr, mg/l	BDL	BDL	0.05	No. Relax	IS 3025 (P-52):2003
25.	Mineral Oil, mg/l	BDL	BDL	0.5	No. Relax	IS 3025 (P-39):1989
26.	Alkalinity as CaCO <sub>3</sub> , mg/l,	304	284	200	600	IS 3025 (P-23):1983
27.	Aluminium as Al, mg/l	BDL	BDL	0.03	0.2	IS 3025 (P-55):2003
28.	Boron as B, mg/l	BDL	BDL	0.5	1.0	IS 3025 (P-57):2005

NOTE: BDL - Below Detection Limit

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/1502

Date: 03.09.2022

## TEST REPORT OF GROUND WATER

- Name of the industry : TATA STEEL JHARIA DIVISION  
TATA STEEL COLLIERY (SIJUA GROUP)  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Malkera Trigunait Basti  
2. Sijua 12 No.  
3. Rampur Basti (Road Side)  
4. Bhelatand Basti (Near 500 Quarters)
- Date of Sample Collection : 22.08.2022 To 23.08.2022
- Date of Testing : 24.08.2022 To 02.09.2022
- Test : Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

## TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE				IS as per IS 10500:1991		Test Method
		Malkera Trigunait Basti	Sijua 12 No	Rampur Basti (Road Side)	Bhelatand Basti (Near 500 Quarters)	Desirable	Permissible	
1.	Colour, (Hazen Unit)	01	01	01	02	5	15	IS 3025 (P-4):2021
2.	Temperature °C	34	34	33	32	-	-	-
3.	Electrical Conductivity, µmhos/cm	810	1280	850	1110	-	-	-
4.	Total Dissolved Solids, mg/l	624	776	490	594	500	2000	IS 3025(P-6):1984
5.	pH	6.9	7.6	8.4	7.2	6.5-8.5	No Relax	IS-3025(P-11):1983
6.	Total Hardness as CaCO <sub>3</sub> , mg/l	312	322	268	420	300	600	IS 3025(P-1):2009
7.	Calcium as Ca, mg/l	87.2	90	73.6	92.8	75	200	IS 3025(P-0):1991
8.	Magnesium as Mg, mg/l	22.56	23.2	20.2	45.2	30	100	IS 3025(P-6):1994
9.	Chloride as Cl, mg/l	48	63.46	67.64	70	250	1000	IS 3025(P-2):1988
10.	Fluoride as F, mg/l	0.32	0.42	0.38	0.44	1.0	1.5	IS 3025(P-0):2008

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*[Signature]*

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2

Sl. No.	PARAMETERS OF TEST	VALUE				IS as per IS 10500:1991		Test Method
		Malkera Trigunait Basti	Sijua 12 No	Rampur Basti (Road Side)	Bhelatand Basti (Near 500 Quarters)	Desirable	Permissible	
11	Sulphate as SO <sub>4</sub> , mg/l	91	93.4	48.5	62.7	200	400	IS 3025(P-24):1986
12	Nitrate as NO <sub>3</sub> , mg/l	10.6	10.8	11.2	11.4	45	No. Relax	IS 3025(P-34):1988
13	Alkalinity as CaCO <sub>3</sub> , mg/l,	480	348	300	408	200	600	IS 3025(P-23):1983
14	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-47):1994
15	Zinc as Zn, mg/l,	0.18	0.15	0.2	0.16	5	15	IS 3025(P-42):1992
16	Iron a Fe, mg/l	0.25	0.2	0.15	0.18	0.3	No. Relax	IS 3025(P-53):2003
17	Copper as Cu, mg/l	BDL	BDL	BDL	BDL	0.05	1.5	IS3025 (P-42):1992
18	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025(P-48):1994
19	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025(P-41):1992
20	Nickel as Ni, mg/l	BDL	BDL	BDL	BDL	0.02	No. Relax	IS 3025(P-37):1992
21	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-37):1988
22	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-27):1986
23	Total Chromium as Cr, mg/l	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-52):2003

NOTE: BDL - Below Detection Limit

  
Sr. Chemist  
Aditi R&D Services



  
Technical Manager  
Aditi R&D Services, Sindri

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