



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/ 400 /2021

May 28, 2021

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 MoEF&CC, New Delhi to Bhelatand A. Colliery & Bhelatand Coal Washery, Tata Steel Limited, Dhanbad for the period October'20 to March'21

Dear Sir,

We are enclosing herewith compliance report for the period **October'20 to March'21** 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 for your kind perusal. We trust the information furnished is in line with your requirement.

Thanking you,

Yours faithfully,

Head (Planning)
Jharia Division, Tata Steel Ltd.

Encl: As above.

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

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

Copy to: Regional Officer, JSPCB, HIG-1 Sardar Patel Nagar, Housing Colony, Hirapur,
Dhanbad

TATA STEEL LIMITED

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Tel 91 326 2320263/2320265/2320267 Fax 91 326 2320268

HALF YEARLY COMPLIANCE REPORT
(PERIOD: OCTOBER'20 – MARCH'21)

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																		
Specific Condition																				
(i)	The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC.	<p>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. The production details of last five years are as follow-</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Bhelatand A. Colliery- Raw Coal Production (MTPA)</th> <th>Bhelatand Coal Washery- Raw Coal Throughput (MTPA)</th> </tr> </thead> <tbody> <tr> <td>FY17</td> <td>0.270</td> <td>0.685</td> </tr> <tr> <td>FY18</td> <td>0.207</td> <td>0.625</td> </tr> <tr> <td>FY19</td> <td>0.295</td> <td>0.899</td> </tr> <tr> <td>FY20</td> <td>0.233</td> <td>0.729</td> </tr> <tr> <td>FY21</td> <td>0.245</td> <td>0.337</td> </tr> </tbody> </table>	Year	Bhelatand A. Colliery- Raw Coal Production (MTPA)	Bhelatand Coal Washery- Raw Coal Throughput (MTPA)	FY17	0.270	0.685	FY18	0.207	0.625	FY19	0.295	0.899	FY20	0.233	0.729	FY21	0.245	0.337
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(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"> • The transportation of coal from underground colliery to coal handling plant (CHP) is through covered conveyor belt networks. • 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. These are operated effectively at all times to check the fugitive emissions. • Fugitive dust emission monitoring is done on half-yearly basis. The values are within the stipulated norms. 																		

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

(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.
(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"> • SRI • Second crops (Rabi crops) • Dry land farming • Fisheries training Pisciculture • Mushroom cultivation • Vegetable cultivation
(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"> • 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. • Avenue plantation is done in residential colony and along the road side every year.
(x)	There will be no external /internal OB dumps	Since this is an underground mine, it is not applicable.

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

(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.
(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"> • Dry-fog system has been 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. • 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. <p>These are operated effectively at all times to check the fugitive emissions.</p>
(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 m ³) 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.

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

(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 which should be annually updated on the company website.	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.
(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 was done by CIMFR, Dhanbad during EIA/EMP study.
General Conditions:		
A. Mining		
(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. Land Reclamation		
(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.	It shall be complied with and report shall be submitted once in three year. Since this is an underground mine, hence there is no proposed changes in existing land use pattern as per EIA/EMP. The land use study has been completed by Indian School of Mines (IIT-ISM) Dhanbad and the final reports are awaited. Report of the same shall be submitted at the earliest.
(ii)	Final mine void depth should not be more than 40m. The void area should	It is not applicable as this is an underground mine.

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

	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.	
(iii)	The top soil, if any, shall temporarily be stored at earmarked site (s) only and it should not be kept unutilized 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.	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 stowing. The rehabilitation is also not applicable in this case as there is no change in land use pattern due to underground mining operation.
(iv)	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.	<ul style="list-style-type: none"> • 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. • 3-Tier plantation along the roads with native species is done on available vacant areas.
C. Emissions, Effluents, and waste Disposal		
(i)	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.	<ul style="list-style-type: none"> • Transportation of raw coal from Bhelatand A. Colliery to washery is done through underground belt conveyors. The washed coal from washery is sent to Jamshedpur, Kalinganagar, Angul or Haldia plant via rail network. The sand used for stowing is transported through Tarpaulin sheet covered trucks only.

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

	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.	<ul style="list-style-type: none"> • 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.
(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"> (i) Bhelatand Office Area (Core Zone) (ii) Russi Vihar Colony, Sijua (Buffer Zone) (iii) Malkera Colony (Buffer Zone) (iv) Bhelatand Colony (Buffer Zone) <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 Annexure-I.</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"> i) Dry-fog system at all transfers points of CHP. ii) Dust extraction system (Bag filters) in CHP ii) Enclosures around crushers. iii) Belts have been covered on top and both sides. <p>These arrangements will protect the coal mass</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

		<p>moving on belt from blowing wind. In this way, the dust getting air borne is being minimized.</p> <p>iv) Fixed water sprinklers on the haulage roads.</p> <p>v) In addition, movable water sprinklers are also being deployed on the roads for dust suppression.</p>
(v)	<p>The project proponent shall not alter the major channels around the site. Appropriate embankment should be 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.</p>	<p>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. 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.</p>
(vi)	<p>Rainwater harvesting shall be implemented for conservation and augmentation of ground water resource in the area in consultation with Central Ground Water Board.</p>	<p>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 .</p>
(vii)	<p>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</p>	<ul style="list-style-type: none"> • 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. • 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.

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

	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.	
(viii)	Industrial waste water (CHP, workshop and waste water from the 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.	No waste-water is discharged outside the washery premises. 100% water is re-circulated back for re-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.

D. Noise & Vibration Control

(i)	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.	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 & solid blasting. The noise levels report is provided as Annexure- I .
(ii)	Controlled blasting techniques should be practiced with use of delay detonators to mitigate ground vibrations and fly rocks.	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.

E. Occupational Health & Safety

(i)	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	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
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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

	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.	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.
(ii)	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 staff shall be held responsible for ensuring compulsory wearing of dust mask.	Persons working in dusty area have been provided with dust masks & have been given awareness training on safety & health aspects. Regular PME (Periodic Medical Examinations) are 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

F. Biodiversity

(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.
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G. Implementation of Action Plan as per public Hearing And CSR Activities

(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.
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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

(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 21 was Rs.3.29 crores.
H. Corporate Environment Responsibility		
(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 2019-20 is Rs. 366.75 lakhs.
I. Statutory Obligations		
(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	Not applicable.

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

	Committee of National Board for Wildlife , if any , applicable to the project	
(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 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 already been applied for to Central Ground Water Board in March'17 and it is under consideration at CGWA, Delhi.
J. Monitoring of Project		
(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 Annexure-I.
(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	It shall be complied with.

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

	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.	
(iv)	The activities pertaining to development of green belt/horticulture shall be reported to concern Regional Office of MoEF&CC on six monthly basis from the data of commencement of mining operation.	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 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.
K. Miscellaneous		
(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 th 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 th 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	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.

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

	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.	
(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 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 www.environmentclearance.nic.in and a copy of the same should be forwarded to the Regional Office	The Notice has been advertised in two local newspapers viz. Prabhat Khabar (Hindi) and Hindustan (Hindi) on May 05, 2017.
(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 2019-20 has been submitted to JSPCB on 28 th September 2020 and it is also uploaded on the company website. The soft copy of Environment Statement is also sent to MOEF by email at ro.ranchi-mef@gov.in .

Ambient Air Quality and Groundwater Quality Report (Period- October'20 to March'21)

Annexure- I

AIR QUALITY REPORT

Core zone & Buffer zone

Period- October'20 to December'20

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/m³	RSPM 24 Hourly Limit- 300 µg/m³	SO₂ 24 Hourly Limit- 120 µg/m³	NO_x 24 Hourly Limit-120 µg/m³
Sijua Mine Office Area	23°46'33.2" N/ 86°19'51" E	06.10.20	Rainy	184.2	84.3	13.4	13.9
		09.11.20	Clear	201.5	87.4	14.4	14.7
		28.12.20	Clear	186.7	89.4	14.8	13.2
Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	05.10.20	Clear	195.7	91.5	15.6	16.2
		10.11.20	Clear	210.7	90.3	14.7	15.6
		14.12.20	Clear	206.5	88.6	13.6	14.7
Buffer zone (as per NAAQS 2009 for ambient air quality standards)							
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit-100µg/m³	PM2.5 24 Hourly Limit-60µg/m³	SO₂ 24 Hourly Limit-80µg/m³	NO₂ 24 Hourly Limit-80µg/m³
Sijua Russi Vihar Colony	23°46'45.8" N/ 86°20'18.6" E	13.10.20	Clear	85.3	46.8	11.3	11.9
		12.11.20	Clear	82.7	50.4	13.5	14.7
		24.12.20	Cloudy	80.6	48.8	13.4	13.1
Malkera Colony	23°47'10" N/ 86°17'39" E	21.10.20	Rainy	82.6	43.5	10.1	10.8
		11.11.20	Clear	80.6	40.7	11.0	10.3
		16.12.20	Cloudy	81.3	42.7	11.2	10.8
Bhelatand Colony	23°46'10.7" N/ 86°18'49"E	14.10.20	Clear	84.3	47.1	11.3	11.7
		03.11.20	Clear	90.7	49.2	12.8	11.5
		09.12.20	Clear	89.5	48.2	13.5	12.6



Sr. Manager (Environment)

Ambient Air Quality and Groundwater Quality Report (Period- October'20 to March'21)

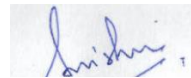
Annexure- I

AIR QUALITY REPORT
Core zone & Buffer zone

Period- January'21 to March'21

No. of sampling points: 4

Core zone (as per Air quality standards for coal mines in EPA Notification, 1988)							
Location	Latitude/ Longitude	Date	Weather Condition	SPM 24 Hourly Limit- 700 µg/m ³	RSPM 24 Hourly Limit- 300 µg/m ³	SO ₂ 24 Hourly Limit- 120 µg/m ³	NO _x 24 Hourly Limit-120 µg/m ³
Sijua Mine Office Area	23°46'33.2" N/ 86°19'51" E	21.01.21	Clear	182.2	85.7	13.2	12.8
		11.02.21	Clear	198.4	92.2	12.1	13.5
		18.03.21	Clear	205.7	90.4	12.2	13.8
Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	19.01.21	Clear	194.6	87.8	14.2	13.6
		03.02.21	Clear	178.6	84.9	15.8	14.7
		15.03.21	Clear	236.4	96.8	13.7	14.2
Buffer zone (as per NAAQS 2009 for ambient air quality standards)							
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit-100µg/m ³	PM2.5 24 Hourly Limit-60µg/m ³	SO ₂ 24 Hourly Limit-80µg/m ³	NO ₂ 24 Hourly Limit-80µg/m ³
Sijua Russi Vihar Colony	23°46'45.8" N/ 86°20'18.6" E	20.01.21	Clear	81.3	45.2	12.6	11.4
		08.02.21	Clear	87.3	47.6	10.2	11.8
		04.03.21	Clear	85.6	43.9	11.2	12.3
Malkera Colony	23°47'10" N/ 86°17'39" E	13.01.21	Clear	80.7	43.5	11.8	10.9
		15.02.21	Clear	84.4	46.3	12.7	13.9
		11.03.21	Clear	80.5	41.3	10.7	11.4
Bhelatand Colony	23°46'10.7" N/ 86°18'49"E	14.01.21	Clear	85.6	45.8	12.3	11.7
		25.02.21	Clear	82.9	42.7	10.6	12.8
		22.03.21	Clear	86.9	45.4	10.9	11.6



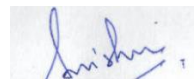
Sr. Manager (Environment)

Ambient Air Quality and Groundwater Quality Report (Period- October'20 to March'21)

Annexure- I

Ground Water Quality Analysis (Hand Pump & Dugwell) Post - Monsoon Season- November'2020

S.No	Date	Location	Time	Sample Parameter			
				Depth in meter (m)	pH	Electrical Conductivity, $\mu\text{S/m}$	Total Hardness (as CaCO_3), mg/l
1	12.11.20	Ruddi Basti	12:15 PM	2.10	7.2	694	712
2	11.11.20	Rampur Basti	11:51AM	4.30	7.3	468	354
3	12.11.20	Malkera Trigunait Basti	11:44AM	3.12	7.0	886	760
4	12.11.20	Sijua 6 No	11:18AM	3.80	7.2	793	689
5	12.11.20	Sijua 12 No	11:08AM	3.40	7.3	662	621
6	12.11.20	Rampur Basti, (Road Side)	11:46AM	9.26	7.0	694	580
7	12.11.20	Bansh Kapuria	11:59AM	5.97	7.2	668	620
8	11.11.20	Pasitand Basti	11:50 AM	3.94	7.1	584	442
9	12.11.20	Bhelatand 500 Qtr.(Back Side)	11:37AM	1.32	7.1	586	511



Sr. Manager (Environment)

Ambient Air Quality and Groundwater Quality Report (Period- October'20 to March'21)

Annexure- I

Ground Water Quality Analysis (Hand Pump & Dugwell) Winter Season- January'2021

S.No	Date	Location	Time	Sample Parameter			
				Depth in meter (m)	pH	Electrical Conductivity, $\mu\text{S/m}$	Total Hardness (as CaCO_3), mg/l
1	22.01.21	Ruddi Basti	02:45PM	2.48	7.4	724	684
2	22.01.21	Rampur Basti	12:25 PM	5.95	7.2	560	368
3	22.01.21	Malkera Trigunait Basti	11:40 AM	3.65	7.3	894	748
4	22.01.21	Sijua 6 No	12:50 PM	3.96	7.4	798	684
5	22.01.21	Sijua 12 No	01:15 PM	3.74	7.2	678	624
6	22.01.21	Rampur Basti, (Road Side)	12:10 PM	9.48	7.3	748	574
7	22.01.21	Bansh Kapuria	02:15 PM	6.12	7.2	684	622
8	22.01.21	Pasitand Basti	11:55 AM	4.18	7.3	596	448
9	22.01.21	Bhelatand 500 Qtr.(Back Side)	01:55 PM	1.64	7.4	592	516

Sr. Manager (Environment)

Ambient Air Quality and Groundwater Quality Report (Period- October'20 to March'21)

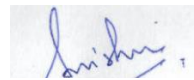
Annexure- I

NOISE SURVEY REPORT- Bhelatand A. Colliery

Date- 13.02.2021

S.No.	Unit / Place	Equipment / Location	Distance (meter)	Leq (dB 'A')	Exposure Hours
1	U/G 14/15 S I B F Surface	Transformer room, BL / 2 nd D-1 st D	-	65.0	8 hrs./shift
2		Roto Pump 1 st D- / KL	-	65.0	6 hrs./shift
3		Auxiliary Fan , 2 nd D / L Level-ML	-	79.0	2 hrs./shift
4		Auxiliary Fan , NL / 3 rd D - 4 th D	-	80.4	2 hrs./shift
5		Belt conveyer	-	67.1	6 hrs./shift
6		Pump Room , 2 nd D / KL	-	64.5	8 hrs./shift
7		M.M.V	-	76.3	8 hrs./shift
8		Compressor Room	-	70.9	8 hrs./shift
9		Pump Room	-	65.0	8 hrs./shift
10	Surface	Koepe Winding Room	-	65.0	8 hrs./shift
11		Substation	-	65.0	8 hrs./shift
12		Workshop	-	65.0	6 hrs./shift
13		2 Pit top	-	68.3	8 hrs./Shift

The warning limit is 85dB "A" and the danger limit is 90 dB "A" for 8 (Eight) hours of working. All the values are within permissible limit.



Sr. Manager (Environment)

Ambient Air Quality and Groundwater Quality Report (Period- October'20 to March'21)

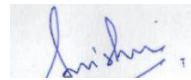
Annexure- I

NOISE SURVEY REPORT- Bhelatand Coal Washery Date-

03.02.2021

S. No.	Unit / Place	Equipment / Location	Distance (meter)	Leq (dB 'A')	Exposure Hours
1	Main Plant	Control Room	-	57.6	8 hrs./shift
2		SCBC Floor	-	65.8	8 hrs./shift
3		Screen Floor	-	75.4	8 hrs./shift
4		Cyclone Floor	-	70.2	8 hrs./shift
5		Radial Blending Control Room	-	60.8	8 hrs./shift
6		Flocculent dosing station	-	72.6	8 hrs./shift
7	Main Plant	Compressors Room	-	54.1	8 hrs./shift
8		Primary Pump House Floor	-	74.2	8 hrs./shift
9		Secondary Pump House Floor	-	73.9	8 hrs./shift
10		Conveyor Belt 301 discharge 306 conveyor	-	72.1	8 hrs./shift
1	Electrical Room	Control Room	-	57.6	8 hrs./shift
11		Sub Station	-	56.8	8 hrs./shift
12		MCC - I	-	57.2	8 hrs./shift
13		MCC - II	-	56.7	8 hrs./shift
14	MCC - III	-	57.3	8 hrs./shift	
15	NRD	NRD Laboratory Room	-	60.4	8 hrs./shift

The warning limit is 85dB "A" and the danger limit is 90 dB "A" for 8 (Eight) hours of working. All the values are within permissible limit.



Sr. Manager (Environment)

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E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1ZI

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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/10 TEST REPORT NO: ECO LAB/AAQ-1/11/2020
TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Sijua Group)
Address of the Customer : Jamadoba, Distt. Dhanbad Jharkhand
Date of Sampling : 10.11.2020
Sample Collected By : Mr. Virendra Pandey
Sampling Method : IS: 5182
Instrument Used : RDS & FDS
Location : Bhelatand Officers Colony

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	44.5	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	87.5	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	17.6	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	22.10	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	11.4	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	16.76	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	0.56	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit


Analyst


Authorized Signatory


Quality Manager

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E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1ZI

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LABORATORIES PVT. LTD.

An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AAQ-2/11/2020

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Sijua Group)
Address of the Customer : Jamadoba, Distt. Dhanbad, Jharkhand
Date of Sampling : 12.11.2020
Sample Collected By : Mr. Virendra Pandey
Sampling Method : IS: 5182
Instrument Used : RDS & FDS
Location : WTP Malkera

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	49.5	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	99.7	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	20.5	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	26.3	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	15.8	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	16.4	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	1.5	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit


Analyst


Authorized Signatory


Quality Manager

Ecomen-Laboratories Pvt. Ltd.

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Sector-H, Aliganj, Lucknow-226024

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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AAQ-3/11/2020

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Sijua Group)
Address of the Customer : Jamadoba, Distt. Dhanbad, Jharkhand
Date of Sampling : 13.11.2020
Sample Collected By : Mr. Virendra Pandey
Sampling Method : IS: 5182
Instrument Used : RDS & FDS
Location : Sijua Colliery 15 Pit

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	50.5	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	86.6	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	23.5	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	37.8	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	15.2	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	21.6	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	1.53	0.2-500	04
8.	Pb (µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit


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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AAQ-4//11/2020

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Sijua Group)
Address of the Customer : Jamadoba, Distt. Dhanbad, Jharkhand
Date of Sampling : 11.11.2020
Sample Collected By : Mr. Virendra Pandey
Sampling Method : IS: 5182
Instrument Used : RDS & FDS
Location : Russi Vihar Colony

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	39.3	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	77.5	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	18.6	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	37.4	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	16.8	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	30.6	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	2.4	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit.


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FORMAT NO. ECO/QS/FORMAT/10 TEST REPORT NO: ECO LAB/MCPM/11/20
TEST REPORT ISSUE DATE: 11.12.2020

MINERALOGICAL COMPOSITION OF PARTICULATE MATTER

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Month : November, 2020

S.NO.	Locations	Date of Sampling	Mineralogical Composition (in %)			
			Silica (SiO ₂)	Ferrous Oxide (FeO)	Alumina (Al ₂ O ₃)	Calcium Oxide CaO
1	WTP Malkera	12.11.2020	2.23	0.16	1.36	3.44
2	Bhelatand Officer's Colony	08.11.2020	2.36	0.20	1.47	3.35


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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AN/11/20

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF AMBIENT NOISE LEVEL

Name of the Customer : Tata Steel Colliery (Sijua Group)
Address of the Customer : Jamadoba, Distt. Dhanbad Jharkhand
Sample Collected By : Mr. Vinrendra Pandey
Instrument Used : Noise Meter (HTC)

Sl. No.	Locations	Date of Monitoring	Day Time			Night Time		
			Max.	Min.	Leq.	Max.	Min.	Leq.
1.	Bhelatand Officers Colony	10.11.2020	63.6	57.3	58.6	56.8	47.7	49.6
2.	WTP Malkera	10.11.2020	65.8	60.5	62.7	58.4	49.5	52.3
3.	Sijua Colliery 15 Pit	10.11.2020	71.4	64.5	66.4	61.3	54.3	55.8
4.	RussiVihar Colony	10.11.2020	60.6	48.2	50.6	50.5	44.6	46.3

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:

1. Day time is reckoned in between 6:00 AM and 10:00 PM.
2. Night time is reckoned in between 10:00 PM and 6:00 AM
3. 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.
4. 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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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/DW/1244/11/20
TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF DRINKING WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : W.T.P (Bhelatand)
Sample ID Code : ELW-12621

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.	Odour	APHA, 23rd Ed. 2017, 2150 B	Agreeable	Qualitative	Agreeable	Agreeable
3.	Taste	APHA, 23rd Ed. 2017, 2160 A+B	Agreeable	Qualitative	Agreeable	Agreeable
4.	Turbidity as (NTU)	APHA, 23rd Ed. 2017, 2130-A+B	1.20	1-100	1.0	5.0
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.63	2-12	6.5-8.5	No Relax.
6.	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540-C	480.0	5-5000	500	2000
7.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+B	168.0	5-1500	200	600
8.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	192.0	5-1500	200.0	600.0
9.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	56.0	5-1000	75.0	200.0
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	0.15	0.02-50	0.3	No Relax.
12.	Manganese as Mn (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.1-5	0.10	0.30
13.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	50.0	5-1000	250.0	1000.0
14.	Sulfate as SO ₄ (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	46.33	1.0-250	200.0	400.0
15.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	9.2	5-100	45.0	No Relax.
16.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.37	0.05-10	1.0	1.5
17.	Mercury as Hg (mg/l)	APHA, 23rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
18.	Cadmium as Cd (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	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.	Aluminium as Al (mg/l)	APHA, 23rd Ed. 2017, 3500Al A+B	BDL	1-100	0.03	0.2
23.	Chromium as Cr+6 (mg/l)	APHA, 23rd Ed. 2017, 3111A+B	BDL	0.05-100	0.05	No Relax.
24.	Cyanide as CN (mg/l)	APHA, 23rd Ed. 2017, 4500CN , A+D	BDL	0.02-10	0.05	No Relax.
25.	Free Residual Chlorine (mg/l)	APHA, 23rd Ed. 2017, 4500-Cl B	BDL	0.1-5	0.20	1.0
26.	Phenolic Compounds as C ₆ H ₅ OH (mg/l)	APHA, 23rd Ed. 2017, 5530 A+C	BDL	1-10	0.001	0.002
27.	Mineral Oil 6 (mg/l)	APHA, 23rd Ed. 2017, Class -6 Infrared Partition Method	BDL	0.01-10	0.5	No Relax.
28.	Boron as B (mg/l)	APHA, 23rd Ed. 2017, 4500 B A+C	0.22	0.2-10	0.5	1.0
29.	Total Coliform (MPN/100ml)	APHA, 23rd Ed. 2017, 9221 A+B	Absent	1.8	Absent	Absent

*The result are related only to item tested. BDL = Below Detection Limit

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Analyst

Abhishek
Authorized Signatory

Abhishek
Quality Manager

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/DW/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF DRINKING WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : Bhelatand Club
Sample ID Code : ELW-12622

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.	Odour	APHA, 23rd Ed. 2017, 2150 B	Agreeable	Qualitative	Agreeable	Agreeable
3.	Taste	APHA, 23rd Ed. 2017, 2160 A+B	Agreeable	Qualitative	Agreeable	Agreeable
4.	Turbidity as (NTU)	APHA, 23rd Ed. 2017, 2130-A+B	1.61	1-100	1.0	5.0
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.40	2-12	6.5-8.5	No Relax.
6.	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540-C	523.0	5-5000	500	2000
7.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+B	184.0	5-1500	200	600
8.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	220.0	5-1500	200.0	600.0
9.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	59.2	5-1000	75.0	200.0
10.	Copper as Cu (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23rd Ed. 2017, 3500 Fe B	0.20	0.02-50	0.3	No Relax.
12.	Manganese as Mn (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.1-5	0.10	0.30
13.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	38.0	5-1000	250.0	1000.0
14.	Sulfate as SO ₄ (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	42.6	1.0-250	200.0	400.0
15.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	13.2	5-100	45.0	No Relax.
16.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.20	0.05-10	1.0	1.5
17.	Mercury as Hg (mg/l)	APHA, 23rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
18.	Cadmium as Cd (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	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	0.08	0.02-50	5	15
22.	Aluminium as Al (mg/l)	APHA, 23rd Ed. 2017, 3500Al A+B	BDL	1-100	0.03	0.2
23.	Chromium as Cr+6 (mg/l)	APHA, 23rd Ed. 2017, 3111A+B	BDL	0.05-100	0.05	No Relax.
24.	Cyanide as CN (mg/l)	APHA, 23rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.
25.	Free Residual Chlorine (mg/l)	APHA, 23rd Ed. 2017, 4500-Cl B	BDL	0.1-5	0.20	1.0
26.	Phenolic Compounds as C ₆ H ₅ OH (mg/l)	APHA, 23 rd Ed. 2017, 5530 A+C	BDL	1-10	0.001	0.002
27.	Mineral Oil 6 (mg/l)	APHA, 23rd Ed. 2017, Class -6 Infrared Partition Method	BDL	0.01-10	0.5	No Relax.
28.	Boron as B (mg/l)	APHA, 23rd Ed. 2017, 4500 B A+C	0.24	0.2-10	0.5	1.0
29.	Total Coliform (MPN/100ml)	APHA, 23rd Ed. 2017, 9221 A+B	Absent	1.8	Absent	Absent

*The result are related only to item tested. BDL = Below Detection Limit

Ravi Bhargava
Analyst

Ravi Bhargava
Authorized Signatory

Abhishek
Quality Manager

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020

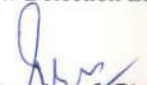
TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : Ruddi Basti
Sample ID Code : ELW-12629

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23 rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23 rd Ed. 2017, (2550 A+B)	25.2	10-100	-	-
3.	Electrical Conductivity (μ mhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	869.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	435.0	5-10000	-	-
5.	pH	APHA, 23 rd Ed. 2017, 4500H+ A+B	7.57	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23 rd Ed. 2017, 2320 A+ B	184.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 2340 A+C	196.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23 rd Ed. 2017, 3500 Ca A+B	43.2	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	21.38	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23 rd Ed. 2017, 3500 Fe B	0.17	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	30.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017, 4500-SO42- E	35.11	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 4500-NO3- B	10.23	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017, 4500-C	0.50	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23 rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax
19.	Arsenic as As (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax
20.	Lead as Pb (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	0.10	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax
23.	Cyanide as CN (mg/l)	APHA, 23 rd 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/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020


TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : Rampur Basti
Sample ID Code : ELW-12630

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23 rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23 rd Ed. 2017, (2550 A+B)	26.4	10-100	-	-
3.	Electrical Conductivity (μ mhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	967.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	534.0	5-10000	-	-
5.	pH	APHA, 23 rd Ed. 2017, 4500H+ A+B	7.55	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23 rd Ed. 2017, 2320 A+ B	192.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 2340 A+C	228.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23 rd Ed. 2017, 3500 Ca A+B	57.6	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	20.41	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23 rd Ed. 2017, 3500 Fe B	0.18	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	58.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017, 4500-SO ₄ - E	39.62	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 4500-NO ₃ - B	11.21	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017, 4500-C	0.49	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23 rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax
19.	Arsenic as As (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax
20.	Lead as Pb (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	0.20	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax
23.	Cyanide as CN (mg/l)	APHA, 23 rd 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/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020

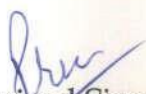
TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : Sijua 6 No.
Sample ID Code : ELW-12631

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23 rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23 rd Ed. 2017, (2550 A+B)	26.7	10-100	-	-
3.	Electrical Conductivity (µmhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	811.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	453.0	5-10000	-	-
5.	pH	APHA, 23 rd Ed. 2017, 4500H+ A+B	7.42	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23 rd Ed. 2017, 2320 A+ B	180.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 2340 A+C	236.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23 rd Ed. 2017, 3500 Ca A+B	64.0	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	18.46	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23 rd Ed. 2017, 3500 Fe B	0.23	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	54.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017, 4500-SO42- E	46.3	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 4500-NO3- B	9.55	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017, 4500-C	0.37	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23 rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax
19.	Arsenic as As (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax
20.	Lead as Pb (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	0.20	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax
23.	Cyanide as CN (mg/l)	APHA, 23 rd 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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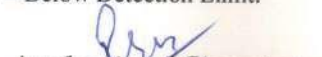
TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : Bansh Kapuria
Sample ID Code : ELW-12632

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23 rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23 rd Ed. 2017, (2550 A+B)	26.5	10-100	-	-
3.	Electrical Conductivity (μ mhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	792.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	462.0	5-10000	-	-
5.	pH	APHA, 23 rd Ed. 2017, 4500H+ A+B	7.49	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23 rd Ed. 2017, 2320 A+ B	176.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 2340 A+C	196.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23 rd Ed. 2017, 3500 Ca A+B	44.8	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	20.41	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23 rd Ed. 2017, 3500 Fe B	0.15	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	36.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017, 4500-SO42- E	49.5	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 4500-NO3- B	15.67	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017, 4500-C	0.34	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23 rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax
19.	Arsenic as As (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax
20.	Lead as Pb (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	0.12	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax
23.	Cyanide as CN (mg/l)	APHA, 23 rd Ed. 2017, 4500CN , A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested. BDL = Below Detection Limit.


Analyst


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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : Pasitand Basti
Sample ID Code : ELW-12633

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23 rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23 rd Ed. 2017, (2550 A+B)	26.3	10-100	-	-
3.	Electrical Conductivity (µmhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	640.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	435.0	5-10000	-	-
5.	pH	APHA, 23 rd Ed. 2017, 4500H+ A+B	7.34	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23 rd Ed. 2017, 2320 A+B	184.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 2340 A+C	192.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23 rd Ed. 2017, 3500 Ca A+B	43.2	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	20.41	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23 rd Ed. 2017, 3500 Fe B	0.20	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	30.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017, 4500-SO ₄ -E	36.4	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 4500-NO ₃ -B	11.1	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017, 4500-C	0.32	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23 rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax.
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax.
19.	Arsenic as As (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax.
20.	Lead as Pb (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	0.14	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax.
23.	Cyanide as CN (mg/l)	APHA, 23 rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested. BDL = Below Detection Limit.

Analyst

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Quality Manager

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/SW/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF SURFACE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : Katri River, Up Stream
Sample ID Code : ELW-12603

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA, 23 rd Ed. 2017, 4500H+A+B,	7.37	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	15.4	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017 (2540C)	561.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA, 23 rd Ed. 2017 (4500 A+C)	5.9	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA, 23 rd Ed. 2017 (5210A+ B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	74.0	5-1000	-
7.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017 (4500 -C)	0.52	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017 (4500 -SO ₄ ²⁻ E)	52.11	1.0-250	400.0

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

BDL - Below Detection Limit


Analyst


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TEST REPORT NO: ECO LAB/SW/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF SURFACE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : Katri River, Down Stream
Sample ID Code : ELW-12604

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA,23 rd Ed.2017, 4500H+A+B,	7.80	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	18.5	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA,23 rd Ed.2017 (2540C)	614.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA,23 rd Ed.2017 (4500 A+C)	5.1	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA,23 rd Ed.2017 (5210A+ B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	84.0	5-1000	-
7.	Fluorides as F (mg/l)	APHA,23 rd Ed.2017 (4500 - C)	0.59	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA,23 rd Ed.2017 (4500 -SO ₄ ²⁻ E)	60.1	1.0-250	400.0

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

Ahmad Khamis
Analyst

[Signature]
Authorized Signatory

[Signature]
Quality Manager

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : Bhelatand A. Colliery
Sample ID Code : ELW-12615

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	7.63	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	14.1	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	741.1	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	8.0	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	26.0	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit


Analyst


Authorized Signatory

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Quality Manager

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/1244/11/20
TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF WASTE WATER*


Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : 15 Pit Sijua Colliery
Sample ID Code : ELW-12616

Sl. No.	TESTS	PROTOCOL	RESULT	Range of Testing / Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	7.18	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	15.4	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	867.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	10.0	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	36.0	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit


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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/1244/11/20
TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : 2 Pit Sijua Colliery
Sample ID Code : ELW-12617

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	7.70	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	14.66	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	759.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	8.0	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	32.0	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit


Analyst


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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : BCPP (Final Settling Pond)
Sample ID Code : ELW-12618

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	7.36	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	28.8	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	724.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	8.5	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	60.0	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit


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TEST REPORT NO: ECO LAB/WW/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : ETP Inlet Sijua Canteen
Sample ID Code : ELW-12644

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	8.33	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	138.4	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	895.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	28.0	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	212.0	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit


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TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF WASTE WATER*


Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : ETP Outlet Sijua Canteen
Sample ID Code : ELW-12645

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H ¹ A+B	7.18	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	29.58	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	815.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	15.5	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	68.0	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit


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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : ETP Inlet Bhelatand Canteen
Sample ID Code : ELW-12646

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	7.88	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	129.4	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	768.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	27.0	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	156.0	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit


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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF WASTE WATER*


Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : ETP Outlet Bhelatand Canteen
Sample ID Code : ELW-12647

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	7.39	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	48.5	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	774.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	13.0	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	60.0	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit


Analyst


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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF WASTE WATER*


Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : STP Inlet Adarsh Nagar
Sample ID Code : ELW-12648

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	8.06	2-12
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	142.0	5-5000
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	820.0	10-10,000
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	42.0	5-10000
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	416.0	5-50000

*The result are related only to item tested.

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/1244/11/20

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : STP Outlet Adarsh Nagar
Sample ID Code : ELW-12649

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	7.53	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	36.0	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	905.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	17.0	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	132.0	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit


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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/MCPM/03/21

TEST REPORT ISSUE DATE: 09.04.2021

MINERALOGICAL COMPOSITION OF PARTICULATE MATTER

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Month : February, 2021

S.NO.	Locations	Date of Sampling	Mineralogical Composition (in %)			
			Silica (SiO ₂)	Ferrous oxide (FeO)	Alumina (Al ₂ O ₃)	Calcium Oxide CaO
1	Sijua Colliery 15Pit	11.02.2021	2.21	0.19	1.46	3.48
2	Russi Vihar Colony	11.02.2021	2.38	0.24	1.51	3.38

Archana
Analyst

Reena
Authorized Signatory

Reena
Quality Manager

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LABORATORIES PVT LTD.

An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/DW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF DRINKING WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Arvind Singh
Sample Quantity : As per requirement
Date of Sampling : 10.02.2021 to 13.02.2021
Date of Sample Receiving : 16.02.2021
Date of Analysis : 16.02.2021 to 27.02.2021
Source of Sample : W.T.P (Bhelatand)

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazem unit)	APHA, 23 rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Odour	APHA, 23 rd Ed. 2017, 2150 B	Agreeable	Qualitative	Agreeable	Agreeable
3.	Taste	APHA, 23 rd Ed. 2017, 2160 A+B	Agreeable	Qualitative	Agreeable	Agreeable
4.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130 A+B	1.22	1-100	1.0	5.0
5.	pH	APHA, 23 rd Ed. 2017, 4000H+ A+B	7.60	2-12	6.5-8.5	No Relax.
6.	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017, 2540-C	510.0	5-5000	500	2000
7.	Alkalinity (mg/l)	APHA, 23 rd Ed. 2017, 2320 A+ B	176.0	5-1500	200	600
8.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 2340 A+C	212.0	5-1500	200.0	600.0
9.	Calcium as Ca (mg/l)	APHA, 23 rd Ed. 2017, 3580 Ca A+B	99.20	5-1000	75.0	200.0
10.	Copper as Cu (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23 rd Ed. 2017, 3580 Fe B	0.18	0.02-50	0.3	No Relax.
12.	Manganese as Mn (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.1-5	0.10	0.30
13.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 ClA+B	52.8	5-1000	250.0	1000.0
14.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017, 4590-SO42- E	48.24	1.0-250	200.0	400.0
15.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 4500-NO3- B	9.8	5-100	45.0	No Relax.
16.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017, 4500-C	0.39	0.05-10	1.0	1.5
17.	Mercury as Hg (mg/l)	APHA, 23 rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
18.	Cadmium as Cd (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.002-7	0.003	No Relax.
19.	Arsenic as As (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax.
20.	Lead as Pb (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	0.12	0.02-50	5	15
22.	Aluminium as Al (mg/l)	APHA, 23 rd Ed. 2017, 3500Al A+B	BDL	1-100	0.03	0.2
23.	Chromium as Cr ⁺⁶ (mg/l)	APHA, 23 rd Ed. 2017, 3111A+B	BDL	0.05-100	0.05	No Relax.
24.	Cyanide as CN (mg/l)	APHA, 23 rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.
25.	Free Residual Chlorine (mg/l)	APHA, 23 rd Ed. 2017, 4500-C1 B	BDL	0.1-5	0.20	1.0
26.	Phenolic Compounds as C ₆ H ₅ OH (mg/l)	APHA, 23 rd Ed. 2017, 5530 A+C	BDL	1-10	0.001	0.002
27.	Mineral Oil 6 (mg/l)	APHA, 23 rd Ed. 2017, Class -6 Infrared Partition Method	BDL	0.01-10	0.5	No Relax.
28.	Boron as B (mg/l)	APHA, 23 rd Ed. 2017, 4500 B A+C	0.34	0.2-10	0.5	1.0
29.	Total Coliform (MPN/100ml)	APHA, 23 rd Ed. 2017, 9221 A+B	Absent	1.8	Absent	Absent

*The result are related only to item tested. BDL - Below Detection Limit

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Analyst

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/DW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF DRINKING WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Arvind Singh
Sample Quantity : As per requirement
Date of Sampling : 10.02.2021 to 13.02.2021
Date of Sample Receiving : 16.02.2021
Date of Analysis : 16.02.2021 to 27.02.2021
Source of Sample : Bhelatand Club

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazem unit)	APHA, 23rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Odour	APHA, 23rd Ed. 2017, 2150 B	Agreeable	Qualitative	Agreeable	Agreeable
3.	Taste	APHA, 23rd Ed. 2017, 2190 A+B	Agreeable	Qualitative	Agreeable	Agreeable
4.	Turbidity as (NTU)	APHA, 23rd Ed. 2017, 2130 A+B	1.63	1-100	1.0	5.0
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.48	2-12	6.5-8.5	No Relax.
6.	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540-C	540.0	5-5000	500	2000
7.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+B	192.0	5-1500	200	600
8.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	228.0	5-1500	200.0	600.0
9.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	87.6	5-1000	75.0	200.0
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, 3504 Fe B	0.22	0.02-50	0.3	No Relax.
12.	Manganese as Mn (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.1-5	0.30	0.30
13.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	42.2	5-1000	250.0	1000.0
14.	Sulfate as SO ₄ (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	46.4	1.0-250	200.0	400.0
15.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	14.0	5-100	45.0	No Relax.
16.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.21	0.05-10	1.0	1.5
17.	Mercury as Hg (mg/l)	APHA, 23rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
18.	Cadmium as Cd (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	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	0.11	0.02-50	5	15
22.	Aluminium as Al (mg/l)	APHA, 23rd Ed. 2017, 3590A1 A+B	BDL	1-100	0.03	0.2
23.	Chromium as Cr+6 (mg/l)	APHA, 23rd Ed. 2017, 3111A+B	BDL	0.05-100	0.05	No Relax.
24.	Cyanide as CN (mg/l)	APHA, 23rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.
25.	Free Residual Chlorine (mg/l)	APHA, 23rd Ed. 2017, 4500-ClB	BDL	0.1-5	0.20	1.0
26.	Phenolic Compounds as C ₆ H ₅ OH (mg/l)	APHA, 23rd Ed. 2017, 5530 A+C	BDL	1-10	0.001	0.002
27.	Mineral Oil 6 (mg/l)	APHA, 23rd Ed. 2017, Class-6 Infrared Partition Method	BDL	0.01-10	0.5	No Relax.
28.	Boron as B (mg/l)	APHA, 23rd Ed. 2017, 4800 B A+C	0.22	0.2-10	0.5	1.0
29.	Total Coliform (MPN/100ml)	APHA, 23rd Ed. 2017, 9221 A+B	Absent	1.8	Absent	Absent

*The result are related only to item tested. BDL - Below Detection Limit

Archana
Analyst

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/02/21
TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Arvind Singh
Sample Quantity : As per requirement
Date of Sampling : 10.02.2021 to 13.02.2021
Date of Sample Receiving : 16.02.2021
Date of Analysis : 16.02.2021 to 27.02.2021
Source of Sample : Ruddi Basti

SL No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10800:1991(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)	31.8	10-100	-	-
3.	Electrical Conductivity (μ mhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	920.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	436.0	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.59	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+ B	210.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	224.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3900 Ca A+B	65.6	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	14.58	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, 3509 Fe B	0.19	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	32.8	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	38.2	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	11.54	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.56	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax.
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax.
19.	Arsenic as As (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax.
20.	Lead as Pb (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	0.13	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax.
23.	Cyanide as CN (mg/l)	APHA, 23rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested. BDL - Below Detection Limit

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Analyst

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Arvind Singh
Sample Quantity : As per requirement
Date of Sampling : 10.02.2021 to 13.02.2021
Date of Sample Receiving : 16.02.2021
Date of Analysis : 16.02.2021 to 27.02.2021
Source of Sample : Rampur Basti

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)	32.4	10-100	-	-
3.	Electrical Conductivity (umhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	920.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	560.0	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.40	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+ B	204.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	240.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	62.4	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	20.41	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23rd Ed. 2017, 3500 Fe B	0.52	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	64.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	40.0	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	12.5	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.35	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax.
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax.
19.	Arsenic as As (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax.
20.	Lead as Pb (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	0.24	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax.
23.	Cyanide as CN (mg/l)	APHA, 23rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested. BDL = Below Detection Limit

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TEST REPORT NO: ECO LAB/GW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Arvind Singh
Sample Quantity : As per requirement
Date of Sampling : 10.02.2021 to 13.02.2021
Date of Sample Receiving : 16.02.2021
Date of Analysis : 16.02.2021 to 27.02.2021
Source of Sample : Sijua 6 No.

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10800:1991(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)	32.4	10-100	-	-
3.	Electrical Conductivity (μ mhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	780.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	472.0	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.54	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+B	188.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	224.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	60.8	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	17.49	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	0.24	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	56.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	42.0	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	10.5	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23rd Ed. 2017, 4500-C	0.40	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax.
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax.
19.	Arsenic as As (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax.
20.	Lead as Pb (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	0.22	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax.
23.	Cyanide as CN (mg/l)	APHA, 23rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested. BDL = Below Detection Limit

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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Arvind Singh
Sample Quantity : As per requirement
Date of Sampling : 10.02.2021 to 13.02.2021
Date of Sample Receiving : 16.02.2021
Date of Analysis : 16.02.2021 to 27.02.2021
Source of Sample : Bansh Kapuria

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)	32.6	10-100	-	-
3.	Electrical Conductivity (umhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	820.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	475.6	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.56	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+B	184.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (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	45.0	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	22.35	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	0.18	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23rd Ed. 2017, 4500 Cl A+B	36.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23rd Ed. 2017, 4500-SO42- E	32.0	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	16.24	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, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax.
19.	Arsenic as As (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax.
20.	Lead as Pb (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	0.14	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax.
23.	Cyanide as CN (mg/l)	APHA, 23rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested. BDL - Below Detection Limit.

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Arvind Singh
Sample Quantity : As per requirement
Date of Sampling : 10.02.2021 to 13.02.2021
Date of Sample Receiving : 16.02.2021
Date of Analysis : 16.02.2021 to 27.02.2021
Source of Sample : Pasitand Basti

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)	32.8	10-100	-	-
3.	Electrical Conductivity (umhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	658.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	380.0	5-10000	-	-
5.	pH	APHA, 23rd Ed. 2017, 4500H+ A+B	7.36	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23rd Ed. 2017, 2320 A+ B	168.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23rd Ed. 2017, 2340 A+C	172.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23rd Ed. 2017, 3500 Ca A+B	40.0	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	17.49	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	34.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017, 4500-SO42- E	40.0	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23rd Ed. 2017, 4500-NO3- B	12.5	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, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax.
19.	Arsenic as As (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax.
20.	Lead as Pb (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23rd Ed. 2017, 3111 A+B	0.19	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax.
23.	Cyanide as CN (mg/l)	APHA, 23rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested. BDL = Below Detection Limit.

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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AN/03/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF AMBIENT NOISE LEVEL

Name of the Customer : Tata Steel Colliery (Sijua Group)
 Address of the Customer : Jamadoba, Distt. Dhanbad Jharkhand
 Sample Collected By : Mr. Arvind Singh
 Instrument Used : Noise Meter (HTC)

Sl. No.	Locations	Date of Monitoring	Day Time			Night Time		
			Max.	Min.	Leq.	Max.	Min.	Leq.
1.	Bhelatand Officers Colony	10.02.2021	61.9	56.2	57.8	55.3	44.9	48.7
2.	WTP Malkera	10.02.2021	62.8	59.8	61.6	57.3	47.8	51.5
3.	Sijua Colliery 15 Pit	11.02.2021	67.9	64.6	63.4	59.8	52.6	54.8
4.	Russi Vihar Colony	11.02.2021	59.2	46.7	49.7	49.2	43.2	45.7

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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FORMAT NO. ECO/Q5/FORMAT/07

TEST REPORT NO: ECO LAB/SW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF SURFACE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
 Address of the Customer : Jamadoba,
 Distt. Dhanbad - 828 112
 Sampling Method : APHA, 23rd Ed. 2017
 Sample Collected by : Mr. Arvind Singh
 Sample Quantity : As per requirement
 Date of Sampling : 10.02.2021 to 13.02.2021
 Date of Sample Receiving : 16.02.2021
 Date of Analysis : 16.02.2021 to 27.02.2021
 Source of Sample : Katri River, Up Stream

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA,23 rd Ed.2017,4500H+A+B,	7.32	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	16.2	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA,23 rd Ed.2017 (2540C)	568.8	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA,23 rd Ed.2017 (4500 A+C)	5.8	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA,23 rd Ed.2017 (5210A+ B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	82.0	5-1000	-
7.	Fluorides as F (mg/l)	APHA,23 rd Ed.2017 (4500 -C)	0.55	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA,23 rd Ed.2017 (4500 -SO ₄ ²⁻ E)	54.28	1.0-250	400.0

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

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/SW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF SURFACE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
 Address of the Customer : Jamadoba,
 Distt. Dhanbad - 828 112
 Sampling Method : APHA, 23rd Ed. 2017
 Sample Collected by : Mr. Arvind Singh
 Sample Quantity : As per requirement
 Date of Sampling : 10.02.2021 to 13.02.2021
 Date of Sample Receiving : 16.02.2021
 Date of Analysis : 16.02.2021 to 27.02.2021
 Source of Sample : Katri River, Down Stream
 Sample ID Code : ELW-12604

Sl.No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA, 23 rd Ed. 2017, 4500H+A+B	7.88	2-12	6.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	14.20	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017 (2540C)	643.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA, 23 rd Ed. 2017 (4500 A+C)	5.8	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA, 23 rd Ed. 2017 (5210A+B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	86.2	5-1000	-
7.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017 (4500 - C)	0.61	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017 (4500 -SO ₄ ²⁻ E)	64.9	1.0-250	400.0

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

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
 Address of the Customer : Jamadoba,
 Distt. Dhanbad - 828 112
 Sampling Method : APHA, 23rd Ed. 2017
 Sample Collected by : Mr. Arvind Singh
 Sample Quantity : As per requirement
 Date of Sampling : 10.02.2021 to 13.02.2021
 Date of Sample Receiving : 16.02.2021
 Date of Analysis : 16.02.2021 to 27.02.2021
 Source of Sample : Bhelatand A. Colliery

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H A+B	7.80	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	16.4	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	752.6	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	11.4	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	29.5	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Arvind Singh
Sample Quantity : As per requirement
Date of Sampling : 10.02.2021 to 13.02.2021
Date of Sample Receiving : 16.02.2021
Date of Analysis : 16.02.2021 to 27.02.2021
Source of Sample : 15 Pit Sijua Colliery

Sl. No.	TESTS	PROTOCOL	RESULT	Range of Testing / Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H A+B	7.41	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	16.4	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	874.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	12.8	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	42.0	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
 Address of the Customer : Jamadoba,
 Distt. Dhanbad - 828 112
 Sampling Method : APHA, 23rd Ed. 2017
 Sample Collected by : Mr. Arvind Singh
 Sample Quantity : As per requirement
 Date of Sampling : 10.02.2021 to 13.02.2021
 Date of Sample Receiving : 16.02.2021
 Date of Analysis : 16.02.2021 to 27.02.2021
 Source of Sample : 2 Pit Sijua Colliery

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H ⁺ A+B	7.73	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	18.24	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	764.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 3520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	11.8	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 3229 A+B	40.5	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit

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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
 Address of the Customer : Jamadoba,
 Distt. Dhanbad - 828 112
 Sampling Method : APHA, 23rd Ed. 2017
 Sample Collected by : Mr. Arvind Singh
 Sample Quantity : As per requirement
 Date of Sampling : 10.02.2021 to 13.02.2021
 Date of Sample Receiving : 16.02.2021
 Date of Analysis : 16.02.2021 to 27.02.2021
 Source of Sample : BCPP (Final Settling Pond)

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4600H A+B	7.30	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	30.2	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	728.6	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	8.8	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	66.4	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
 Address of the Customer : Jamadoba,
 Distt. Dhanbad - 828 112
 Sampling Method : APHA, 23rd Ed. 2017
 Sample Collected by : Mr. Arvind Singh
 Sample Quantity : As per requirement
 Date of Sampling : 10.02.2021 to 13.02.2021
 Date of Sample Receiving : 16.02.2021
 Date of Analysis : 16.02.2021 to 27.02.2021
 Source of Sample : ETP Inlet Sijua Canteen

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23 rd Ed. 2017, 4500H A+B	8.40	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23 rd Ed. 2017, 2540D	156.0	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017, 2540C	912.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23 rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23 rd Ed. 2017, 5210 A+B	32.2	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23 rd Ed. 2017, 5220 A+B	224.8	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Arvind Singh
Sample Quantity : As per requirement
Date of Sampling : 10.02.2021 to 13.02.2021
Date of Sample Receiving : 16.02.2021
Date of Analysis : 16.02.2021 to 27.02.2021
Source of Sample : ETP Outlet Sijua Canteen

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23 rd Ed. 2017, 4500H A+B	7.26	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23 rd Ed. 2017, 2540D	32.50	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017, 2540C	828.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23 rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23 rd Ed. 2017, 5210 A+B	16.4	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23 rd Ed. 2017, 5220 A+B	72.8	5-50000	250.0

*The result are related only to item tested.

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Arvind Singh
Sample Quantity : As per requirement
Date of Sampling : 10.02.2021 to 13.02.2021
Date of Sample Receiving : 16.02.2021
Date of Analysis : 16.02.2021 to 27.02.2021
Source of Sample : ETP Inlet Bhelatand Canteen

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H A+B	7.92	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	140.0	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	778.3	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	28.4	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	164.6	5-50000	250.0

*The result are related only to item tested.

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
 Address of the Customer : Jamadoba,
 Distt. Dhanbad - 828 112
 Sampling Method : APHA, 23rd Ed. 2017
 Sample Collected by : Mr. Arvind Singh
 Sample Quantity : As per requirement
 Date of Sampling : 10.02.2021 to 13.02.2021
 Date of Sample Receiving : 16.02.2021
 Date of Analysis : 16.02.2021 to 27.02.2021
 Source of Sample : ETP Outlet Bhelatand Canteen

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23 rd Ed. 2017, 4500F A+B	7.44	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23 rd Ed. 2017, 2540D	52.7	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017, 2540C	782.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23 rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23 rd Ed. 2017, 5210 A+B	14.3	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23 rd Ed. 2017, 5220 A+B	71.2	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit

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TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Arvind Singh
Sample Quantity : As per requirement
Date of Sampling : 10.02.2021 to 13.02.2021
Date of Sample Receiving : 16.02.2021
Date of Analysis : 16.02.2021 to 27.02.2021
Source of Sample : STP Inlet Adarsh Nagar

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection
1	pH	APHA, 23rd Ed. 2017, 4500F A+B	8.16	2-12
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	154.0	5-5000
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	856.0	10-10,000
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	48.5	5-10000
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	420.3	5-50000

*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/WW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Arvind Singh
Sample Quantity : As per requirement
Date of Sampling : 10.02.2021 to 13.02.2021
Date of Sample Receiving : 16.02.2021
Date of Analysis : 16.02.2021 to 27.02.2021
Source of Sample : STP Outlet Adarsh Nagar

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23 rd Ed. 2017, 4500H A+B	7.62	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23 rd Ed. 2017, 2540D	38.5	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017, 2540C	918.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23 rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23 rd Ed. 2017, 5210 A+B	19.2	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23 rd Ed. 2017, 5220 A+B	138.6	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit

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FORMAT NO. ECO/QS/FORMAT/10 TEST REPORT NO: ECO LAB/AAQ-1/02/2021
TEST REPORT ISSUE DATE: 09.04.2021**TEST REPORT OF AMBIENT AIR***

Name of the Customer : Tata Steel Colliery (Sijua Group)
 Address of the Customer : Jamadoba, Distt. Dhanbad Jharkhand
 Date of Sampling : 10.02.2021
 Sample Collected By : Mr. Arvind Singh
 Sampling Method : IS: 5182
 Instrument Used : RDS & FDS
 Location : Bhelatand Officers Colony

Sl No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	42.8	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	89.64	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	18.10	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	21.95	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	12.64	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	18.42	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	0.62	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit

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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AAQ-1/02/2021

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Sijua Group)
 Address of the Customer : Jamadoba, Distt. Dhanbad, Jharkhand
 Date of Sampling : 10.02.2021
 Sample Collected By : Mr. Arvind Singh
 Sampling Method : IS: 5182
 Instrument Used : RDS & FDS
 Location : WTP Malkera

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	48.20	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	94.82	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	19.24	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	24.18	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	16.86	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	18.35	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	1.25	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit

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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AAQ-1/02/2021

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Sijua Group)
 Address of the Customer : Jamadoba, Distt. Dhanbad, Jharkhand
 Date of Sampling : 11.02.2021
 Sample Collected By : Mr. Arvind Singh
 Sampling Method : IS: 5182
 Instrument Used : RDS & FDS
 Location : Sijua Colliery 15 Pit

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	48.9	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	88.62	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	24.58	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	36.9	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	17.3	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	22.9	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	1.40	0.2-500	04
8.	Pb (µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. Note: Below Detection Limit

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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AAQ-1/02/2021

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Sijua Group)
 Address of the Customer : Jamadoba, Distt. Dhanbad, Jharkhand
 Date of Sampling : 11.02.2021
 Sample Collected By : Mr. Arvind Singh
 Sampling Method : IS: 5182
 Instrument Used : RDS & FDS
 Location : Russi Vihar Colony

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	41.5	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	82.2	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	18.94	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	21.6	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	18.6	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	20.94	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	1.96	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit.

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ENVIRONMENTAL MONITORING REPORT

of



M/s Tata Steel Ltd.

Distt. Dhanbad - 828 112
(Jharkhand)

for

February - 2021

Prepared by :

ecoMen

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