



**The Deputy Director General of Forests (C),
Ministry of Environment, Forest and Climate Change,
Integrated Regional Office, (IRO) - Ranchi,
2nd Floor, Headquarter, Jharkhand State Housing Board,
Harmu Chowk, Argora,
Ranchi, Jharkhand – 834002.**

RefNo. - JMB/ENV/JCPP/38/ 898 /2023
November 29th, 2023

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

**SUB: Half Yearly Compliance Status Report of Environment Clearance conditions issued
by MoEFCC, New Delhi to Jamadoba Coal washery, Tata Steel Limited, Dhanbad
for the period April'23 to September'23.**

Dear Sir,

We are enclosing herewith compliance report for the period **April'23 to September'23** for the EC granted vide letter no.- J-11015/203/2011-IA.II(M) dated- 3rd March 2014 issued by Ministry of Environment, Forest and Climate Change, New Delhi.

We trust the information furnished is in line with your requirement.

Thanking you,

Yours faithfully,

f-Jit

**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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HALF YEARLY COMPLIANCE REPORT
(PERIOD: APRIL'23 – SEPTEMBER'23)

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



TATA STEEL LIMITED, JHARIA DIVISION

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

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

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

S. No.	Condition	Compliance Status
Specific Condition		
(i)	Adequate green belt shall be provided around coal handling and other areas.	Greenery has been developed in many areas around the washery premises. Since the expansion job has been completed, remaining area is also being developed. Attached as Annexure-1 .
(ii)	Action plan be developed and implemented for abandoned tailing ponds and for their restoration to the original land use.	Action plan for cut-off of tailing ponds from tailing management system is in place. Abandoned tailing ponds have been reclaimed by backfilling. Technical reclamation have taken place in two large ponds. Biological reclamation has been completed by planting native species.
(iii)	Fly ash generated from the captive power plant of the washery be utilized for house construction, roads and such uses, strictly complying to the timeline in the EIA Notification, 2006 and maintaining proper records.	This is not applicable as we have ceased the operation of our captive Jamadoba power plant since April'15.
(iv)	No use of fly ash with sand will take place for stowing in underground mines.	This will be strictly followed for our captive underground mines.
(v)	Transportation of fly ash to be done properly by mechanically covered trucks.	This is not applicable as there is no fly ash being generated since April'15.
(vi)	The proponent shall connect all the villages in the leasehold area with water pipeline connection.	All the villages in the leasehold areas are being supplied safe drinking water through pipeline connection. A network of more than 22,000 metres of pipeline connection has been established along with 33 water tanks (capacity of 4500 litres).
(vii)	The proponent shall expedite and implement the pilot plant to convert mine water into drinking/domestic water to supply the same to the population of Dhanbad and surrounding areas and shall continue to carry out this activity.	Mine water is already being converted into potable water by Tata Steel in our 4 nos. Water Treatments Plants (located at Jamadoba, Digwadih, Bhelatand and Malkera having cumulative capacity of around 8000 KL/D). The treated water is then supplied to our colonies and leasehold villages. This will continue in future too.

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(viii)	Tanks/ponds shall be regularly cleaned and maintained. Plantation activities shall be intensified in the mine areas.	Tanks/ ponds are regularly cleaned and maintained by TSRDS. Plantation activities are undertaken every year in the barren mine leasehold areas. Further, TSRDS engages with the villagers for plantation in the village lands.
(ix)	The proponent shall expedite the activities undertaken by TSRDS in over 30 villages in the leasehold area over 15000 households covering a population of about 1.4 lakh.	CSR activities of TSRDS are managed by a team of experts who are dedicatedly involved in providing benefits and improving standard of living in over 30 villages. The list of activities are developed in consultation with the village representatives and implemented in a time-bound manner.
(x)	The CSR cost should be Rs 5 per Tonnes of Coal produced which should be adjusted as per the annual inflation.	The proposed CSR expenditure for the entire company is decided as per the new Company Rules. Once the CSR budget for company is fixed, a share of that amount is dedicated and utilized for implementing the CSR activities at our Jharia Division level. The CSR expenditure for FY23 is Rs. 11.84 crores.
(xi)	Cost for additional environmental protection measures shall be not less than Rs. 503.00 lakhs. The status of implementation including costs incurred shall be regularly reported to this Ministry and its respective Regional Office in the region as part of the compliance report and also uploaded on the company website.	The regular expenditure incurred for environment protection and management are submitted to MoEF&CC & SPCB in Annual Environment Statement and the status is uploaded on company website as a part of compliance report of AES.
(xii)	The slope of the embankment towards the river shall be at least 1:3 for stability and shall be stabilized with plantation using native species selected from the study area.	The washery is about 1.5 kms away from the Damodar River. Hence it is not applicable.
(xiii)	Top soil shall be stored in the earmarked area and used within a year of its generation for green belt development and for plantation/reclamation.	There are no topsoil dumps hence it is not applicable.

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(xiv)	No external OB dump shall be created for the expansion project. Monitoring and management of existing reclaimed dumpsites shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its respective Regional Office on yearly basis.	Not applicable as this is a washery project.
(xv)	Catch drains and siltation ponds of appropriate size shall be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected shall be utilised for watering the mine area, roads, green belt development, etc. The drains shall be regularly desilted and maintained properly.	There are no soil or OB dumps in the washery premises. Only the by-products are stored in the stockyards located in the washery premises which are sold off within a week.
(xvi)	Garland drains (size, gradient and length) and sump capacity shall be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material.	Garland drains of adequate size and gradient already exist around the washery area to channelize the surface runoff. The runoff is diverted to the tailing ponds and clear water is utilized in the washery.
(xvii)	Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data.	Not applicable as we do not have any opencast mines.
(xviii)	Crushers at the CHP shall be operated with high efficiency bag filters/water sprinkling system shall be provided to check fugitive emissions from crushing operations, conveyor system which shall be closed, haulage roads, transfer points, etc.	The following measures have been implemented: i) Dry-fog system at all transfer points of CHP ii) Enclosures around crushers. iii) Belts have been covered on top and both sides. These arrangements will protect the coal mass moving on belt from blowing wind. In this way, the dust getting air borne is being minimized. iv) Fixed water sprinklers on the haulage roads.

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		<p>v) In addition, movable water sprinklers are also being deployed on the roads for dust suppression.</p> <p>vi) Dust Extraction System</p> <p>vii) Strengthening of tailing management system</p> <p>viii) Concretization of working complex</p>
(xix)	Drills shall be wet operated only.	Not applicable as this is coal beneficiation plant
(xx)	Controlled blasting shall be practiced with use of delay detonators and only during daytime. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders shall be implemented.	Not applicable as this is coal beneficiation plant.
(xxi)	The Washery shall be a zero-discharge and no wastewater shall be discharged from the washery into the drains/natural watercourses. No groundwater shall be used for washery operations. Recycled water shall be used for development and maintenance of green belt and in the plant operations.	Washery is already operating on a zero-discharge principle. No wastewater is discharged into the drains/ natural water systems. Only mine water is utilized for the washery operations as make up water requirement. The recycled water is again used for plant operations and green-belt development.
(xxii)	The raw coal, washed coal and middling and coal wastes (rejects) shall be stacked properly at earmarked site(s) within sheds/stockyards fitted with wind breakers/shields. Adequate measures shall be taken to ensure that the stored minerals do not catch fire. The storage period shall be not more than 2-3 days.	The material is being stacked properly at stockyards located within the washery. We have a well-established system for disposal of rejects/ tailings to consumers so that storage period is not more than 2-3 days.
(xxiii)	The proponent shall maintain proper records of the ash content of raw (ROM) coal, clean coal, middling and coal rejects along with quantum of raw coal obtained and washed and dispatched every month and the same shall be uploaded on the company website every month.	Proper records are being maintained and the details are uploaded on the company website.
(xxiv)	All internal roads shall be concreted or black topped and the approach roads used for the project shall be blacked topped. Facilities for parking of trucks	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.

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	carrying raw coal from the linked coalmines shall be created within the Unit.	
(xxv)	Roads used for coal transportation to the linked DRI/TPP shall be developed with 3-tier avenue plantation using a mix of native species. The trucks used for coal transportation shall be high capacity trucks. Drivers of trucks for coal transportation shall be engaged based on past records of road safety and compliance of safety regulations and shall be suitably sensitized about road safety and maintenance of vehicles to keep vehicular emissions to be within prescribed limits.	<p>There is no linked DRI/TPP.</p> <ul style="list-style-type: none"> - Raw coal is received via underground coal conveyor belt network from captive collieries. - Clean coal is dispatched via rail from the Rail-yard situated on the washery premises. The clean coal is kept in storage bins and directly transferred to the rail wagons through covered coal-conveying system. - As for the trucks moving for transportation of tailings and rejects are properly covered with tarpaulin. All the given provisions related to road safety and driver competence are being strictly complied with.
(xxvi)	The roads (internal/approach and roads used for the project) shall be regularly cleaned with mechanical sweepers and with water sprinklers. A 3-tier avenue plantation shall be developed along the major approach roads, internal roads and nearby roads used by the company.	Fixed Water sprinklers have already been installed in the washery premises. Plantation along the road-side is done wherever feasible. A three-tier green belt development is in progress
(xxvii)	Green belt shall be developed along the areas such as the washery unit, crushing unit, and stockyards and at transfer points and in between mine operations and habitations.	Greenery has been developed in many areas around the washery premises. Saplings have been planted along the boundary of washery for greenbelt development.
(xxviii)	Hoppers of the coal crushing unit at the crushing shed and washery unit shall be fitted with high efficiency bag filters/Dust extractors and mist spray water sprinkling system shall be installed and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points of belt conveyor systems which shall be closed and from transportation roads.	<p>Dry-fog dust suppression system has been already installed to suppress the dust generated at CHP and transfer points of belt conveyor systems. Fixed-type water sprinklers are also installed on the internal roads of the washery. These are always operated effectively to check the fugitive emissions.</p> <p>Fugitive dust emission monitoring is done on regularly. The values are within the stipulated norms.</p>

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(xxix)	The proponent shall ensure that coal such as stones, shale and other wastes of an ash content of 77% or more only shall be dumped into the mine voids. Coal rejects with an ash content of 76% or less shall be fully utilized for power generation in linked TPP.	It is being followed.
(xxx)	Regular monitoring of groundwater level and quality including levels of heavy metals such as Hg, Cd, Cr, Se, etc shall be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity and quality of ground water as per IS: 10500 shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons. Proper records of the data thus collected shall be maintained submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring.	<p>The monitoring of groundwater level and quality is done regularly as per the requirements. The groundwater quality report & groundwater level are provided in Annexure II.</p> <p>The monitoring of heavy metals such as Hg, Cd, Cr, Se, etc in the groundwater is done on quarterly basis by NABL accredited third party and the report has been provided in Annexure-II.</p>
(xxxi)	As the entire mine water is proposed to be used for the mine-cum-washery operations, measures shall be taken for recharging ground water in and around the mine in the study area. A Plan for water conservation and recharge measures of ground water along with budgetary provisions be prepared and implemented in consultation with the Central/State Ground Water Board to mitigate the adverse impact of mining which may lead to depletion of ground water in the area. The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource in case monitoring of groundwater levels indicate decline of water table. Any additional water requirement for mining operation shall	<p>Some of the water pumped out during underground mining activity is re-circulated back into the mine for the purpose of stowing. Backfilling of mine voids by stowing is done using sand which is having the porosity to hold the underground water thus helping aquifer to retain the underground water.</p> <p>Further, there are several ponds existing on the surface of the mining lease which act as natural reservoirs for recharging ground water. These ponds/ tanks are regularly cleaned and maintained by our CSR department. As per the hydro-geological report, the variation in the ground water level is only seasonal.</p> <p>The water requirement of the nearby villages is being met by the company already. Now piped drinking water is being provided.</p>

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	be met from rainwater use only. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.	
(xxxii)	ETP shall also be provided for treatment of effluents from workshop, CHP and an STP shall be provided in the colony and the treated effluents shall be used for green belt development. Outflow of rainfall, if any, from the mine shall meet prescribed norms and the water quality of such discharge including levels of heavy metals such as Hg, Cd, Cr., Se, etc shall be monitored at the exit points and records maintained thereof and also uploaded on the company website. Online monitoring equipment shall be installed by the proponent to ensure that the water quality parameters of mine water discharge are well within the General Discharge Standards under EP, Rules, 1986.	No effluent is discharged outside of the washery. There is no separate workshop in the washery premises. A central workshop exists in Jamadoba Colliery with Effluent Treatment Plant facility having Oil and Grease Trap. One Sewage Treatment Plant (STP) of 50 KLD and one STP of 10 KLD has been installed in one of the colonies of Jamadoba and Jamadoba canteen. Their treated water is used for gardening and other purpose.
(xxxiii)	Besides carrying out regular periodic health check-up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, through a recognised agency found in the district, and the results reported to this Ministry and to DGMS.	Not applicable as this is coal beneficiation plant. Though PME is done for washery workers periodically at our Occupational Health centre. Records of the same has been furnished earlier.
(xxxiv)	For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1: 5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted	Complied. The land use study has been completed by Indian School of Mines (IIT-ISM) Dhanbad and the report is submitted vide letter no. JMB/ENV/BAC/38/467/2021 dated: 27.06.2021 to Regional Office, MoEFCC at Ranchi

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	to MOEF and its concerned Regional Office in the region.	
(xxxv)	Land oustees shall be compensated as per the norms laid out R&R Policy of CIL or the National R&R Policy or R&R Policy of the State Government whichever is higher.	Not applicable
(xxxvi)	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests five year before mine closure for approval. Habitat Restoration Plan of the mine area shall be carried out using a mix of native species found in the original ecosystem, which were conserved in-situ and ex-situ in an identified area within the lease for reintroduction in the mine during mine reclamation and at the post mining stage for habitat restoration and for development of grasslands.	Not applicable.
(xxxvii)	<p>Corporate Environment Responsibility:</p> <p>a) The Company shall have a well laid down Environment Policy approved by the Board of Directors.</p> <p>b) The Environment Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.</p> <p>c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished.</p> <p>d) To have proper checks and balances, the company shall have a well laid down system of reporting of non-</p>	<p>The Company already has an Environment Policy approved by the Managing Director and it addresses all the issues mentioned. Attached as an annexure- III.</p> <p>The status of adherence to the policy and compliance to Environmental laws and regulations is regularly discussed at higher levels. Any non-compliance noticed is corrected at divisional level. If any issue is beyond our control, it is brought to the notice of higher management.</p> <p>Moreover, Jamadoba Coal Washery is IMS (Integrated Management System: Quality Management System, Environment Management System and OHSAS) certified unit addressing all environment aspects, impacts and needs and expectation of interested parties with respect to environment protection.</p>

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	compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.	
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B.	GENERAL CONDITIONS	
(i)	No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.	The points mentioned in the EC letter will be strictly followed.
(ii)	No change in the calendar plan of production for quantum of mineral coal shall be made.	It will be strictly followed.
(iii)	Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM10, PM2.5, SO2 and NOx monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.	The Air quality monitoring stations are: (i) Jamadoba Group Office (Core Zone) (ii) New Village Colony, Jamadoba (Buffer Zone) (iii) Digwadih 12 No. Colony (Buffer Zone) (iv) 6&7 Pits Kalimandir area (Buffer Zone) Monitoring of heavy metals in ambient air is being performed by an independent laboratory (recognised by NABL and JSPCB). The results are enclosed as Annexure-II .
(iv)	Data on ambient air quality (PM10, PM 2.5, SO2 and NOx) and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly submitted to the Ministry including its concerned Regional Office and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognized under the EPA rules, 1986 shall be furnished as part of compliance report.	Ambient air quality report (PM10, PM 2.5, SO2 and NOx) for the period from Oct'22 to Mar'23 is attached as Annexure-I . Additionally, the third party monitoring is being done through a JSPCB & NABL accredited Laboratory for ambient air quality (PM10, PM 2.5, SO2, NOx, CO, NH3, O3) and heavy metals (As, Ni, Cd and Cr). The results are enclosed as Annexure-II .
(v)	Adequate measures shall be taken for control of noise levels below 85 dBA	Regular noise survey is being conducted in the underground work environment. Workers are

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	in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.	provided with ear-plugs/ muffs in high noise areas.
(vi)	Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.	No waste-water is discharged outside the washery premises. 100% water is recirculated back for re-use in the washery. There is a central workshop and garage in Jamadoba Effluent Treatment Plant which includes oil and grease trap has been provided.
(vii)	Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.	Only the vehicles having valid PUC certificates are being allowed to operate. Coal transportation through trucks is done only from BCCL mines till washery and it is ensured that only optimally loaded trucks with proper tarpaulin cover are allowed into the washery premises.
(viii)	Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with SPCB and data got analysed through a laboratory recognized under EP Rules, 1986.	We have a fully equipped Environment Cell Laboratory with qualified personnel. The monitoring and analysis is also done at regular intervals by a JSPCB & NABL recognized laboratory. We have also installed a Continuous Ambient Air Quality Monitoring Station at Jamadoba for real time monitoring.
(ix)	Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.	Persons working in dusty area have been provided with dust masks & have been given awareness training on safety & health aspects. Regular PME (Periodic Medical Examinations) are being done.
(x)	Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed and records maintained thereof. The quality of environment due to outsourcing and the health and safety	The occupational health surveillance programme of the workers is done regularly by our Occupational Health Department, Tata Central Hospital, Jamadoba. We have a PME (Periodic Medical Examination) centre approved by DGMS where annually 20% of the workers identified from workforce engaged in active mining operations are

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	issues of the outsourced manpower should be addressed by the company while outsourcing.	subjected to full medical checkup including hearing impairment checkup, etc. These results are regularly submitted to DGMS as per mines rules. Contractual workers health examination is also done by PME centre.
(xi)	A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.	We have a separate Environmental Management Cell with qualified personnel. The reporting of Environmental Cell is directly to General Manager of the Division.
(xii)	The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its Regional Office at Bhubaneswar.	The Environment Cell has a separate fund for Environmental protection measures and for complying with legal requirements. The annual environmental expenditure for the financial year 2022-23 is Rs. 1263.35 lakhs.
(xiii)	The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the ministry of Environment & Forests at http://envfor.nic.in .	It has been complied with. Attached as an Annexure-IV .
(xiv)	A copy of the environmental clearance letter shall be marked to concerned Panchayat/Zila Parishad, Municipal Corporation or Urban Local Body and local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on the company's website.	It has been complied with. Attached as an Annexure-V .
(xv)	A copy of the clearance letter shall be displayed on the website of the	It has been complied with.

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	concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Centre and Collector's Office/Tehsildar's Office for 30 days.	
(xvi)	The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in the public domain. The monitoring data of environmental quality parameters (air, water, noise and soil) and critical pollutants such as PM10, PM2.5, SO2 and NOx (ambient and stack if any) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mines office and in corporate office and on the company's website.	The clearance letter has been uploaded on the company's website. The compliance status (as Half-yearly compliance report) is being uploaded in company's website. The display of information near the washery's office has been provided.
(xvii)	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the MOEF, the respective Zonal offices of CPCB and the SPCB.	It has been complied with.
(xviii)	The Regional Office of this Ministry located at Bhopal shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/ information/monitoring reports.	It will be complied with.
(xix)	The environmental statement for each financial year ending 31st March in Form-V is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as	The environmental statement for financial year 2022-23 has been submitted to JSPCB on 29th September 2023 vide letter no. JMB/ENV/ESSA/05/734/2023 and it is also uploaded on the company website. The soft

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

	<p>prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MOEF by E-mail.</p>	<p>copy of Environment Statement is also sent to MOEF by email at ro.ranchi-mef@gov.in.</p>
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No. J-11015/203/2011-IA.II (M)
Government of India
Ministry of Environment & Forests
IA-II (Coal Mine) Division

Paryavaran Bhawan,
CGO Complex, Lodhi Road
New Delhi-110003
Dated: 03rd March, 2014

To,

The General Manger
Tata Steel Ltd., Jharia Division,
PO; Jamadoba, Dist. Dhanbad
Jharkhand - 828112

Sub.: Expansion of Jamadoba Coal washery (1 MTPA to 2 MTPA in 7 ha Area and 24°31' 30" to 24° 32' 30" N & 87° 25' 00" to 87° 30' 00" E) of M/s Tata Steel Ltd. Tehsil Jharia, dist. Dhanbad, Jharkhand - Environment Clearance – reg.

Sir,

This is with reference to letter no. TSLDEI/281/2011 dated 23.08.2011 with the application for Terms of Reference (TOR) and this Ministry's letter dated 30.11.2011 & revised letter no. dated 10.02.2012 granting TOR. Reference is also invited to the letter no TSLDEL/498/2012 dated 21.12.2012 and subsequent letter nos. dated 26.07.2013; 23.08.2013; 04.11.2013 and 03.01.2014 for environmental clearance on the above-mentioned subject.

2. The Ministry of Environment & Forests has considered the application. It is noted that the proposal is for grant of Environmental Clearance for expansion of Jamadoba Coal washery (1 MTPA to 2 MTPA in 7 ha Area and 24°31' 30" to 24° 32' 30" N & 87° 25' 00" to 87° 30' 00" E) of M/s Tata Steel Ltd. Tehsil Jharia, dist. Dhanbad, Jharkhand. The proposal was considered in the 73rd EAC meeting held on 6th – 7th May, 2013 and reconsidered in the 5th EAC meeting held on 25th - 26th November 2013. The proponent has informed that:

- i. It is an expansion proposal for which Ministry has issued the TOR dated 30.11.2011. It has been operational for last 60 years. Jamadoba coal washery receives coal from captive mines of Tata Steel & BCCL mines to beneficiate it in order to produce clean coal required for Tata Steel plant from Jharia division.
- ii. The proposal is for expansion in coal washery from 1 MTPA to 2 MTPA within the area of 7 ha with 100 % expansion.
- iii. It is a fully mechanized washery.
- iv. The company is in the process of expansion of production capacity of its mines to meet the coal demand at Jamshedpur. The demand for clean coal after expansion of the integrated steel plant at Jamshedpur (from 6.8 MTPA to 10 MTPA) has been estimated to be 7.30 MTPA.
- v. The raw coal (30-32%) is fed to the washery to produce clean coal with 15-18% ash as per customer requirement and rejects with 48 -50% ash and tailings with 38-42% ash. The process is based on cyclone separation for coarser particles and teetered bed separator and froth flotation for fine particles.

- vi. The Clean coal is sent to Jamshedpur works. The rejects are consumed in Power Plant and the tailings are disposed of to end user (viz. institutionalized customers including power plant, cement and brick kiln manufacturers).
- vii. Details of land usage are as under:

Sl. No.	Type of Land	Pre-mining	Post-mining	Core area
		Area (ha.)		
1	Main Plant	0.144	0	-
2	Office	0.0705	0	-
3	Infrastructure	0.806	0	-
4	Water Reservoir	0.25	0	-
5	Road	0.75	0	-
6	Effluent recycling system	1.90	0	-
7	Tailing slurry management	3.00	0	-
	Total	7 Ha	0	7 Ha

- viii. Damodar River flows at a distance of 2.5 KM from the washery.
- ix. Total estimated water requirement is 1240 m³/d. Range of ground water level is 78 – 7.98 m below ground level. The source of water is underground mine water. Washery is provided with effluent recycling system so as to take care of effluent generated due to cleaning and any overflow from the plant. The existing tailings management through ponds and subsequent recycling shall be phased out in stages till the mechanical tailing dewatering system is stabilized.
- x. The ambient air quality seasonal data has been documented for December 2011 to February 2012. Some of the data recorded (PM₁₀ values) are above limits but overall the results are within prescribed limits.
- xi. **Compliance:** This washery is an old washery and has been operating since 1952 and therefore the compliance of earlier EC from MoEF Regional Office is not available.
- xii. **Cost:** Total capital Cost is Rs. 135 Crore. CSR Cost is Rs. 5 Crore for Jharia Division. Environmental Management cost is Rs 14 crore.
- xiii. There is no involvement of forest land.
- xiv. No R& R is involved.
- xv. The thrust areas for CSR activities in Jharia Division are income generation Programme, Health & Hygiene, empowerment (Including SHG Development, Employability Training etc.), water supply network for surrounding villages & Infrastructure Related Jobs.
- xvi. The CSR expenditure budget is about Rs. 5 crores. This expenditure will include the expenditure required to comply with the above assurances.
- xvii. **Wildlife issues:** There are no national Parks, wildlife sanctuary, biosphere reserves found in the 10 km buffer zone.
- xviii. **Coal transportation:** The underground belt conveyors for coal transportation from captive underground mines to the washery site are already in practice. Transportation of coal to steel plant at Jamshedpur will be through Rail wagons.
- xix. **Afforestation:** Afforestation/ green belt development takes place every year on the open surface within leasehold areas
- xx. **Violation/Court Case:** There are no court cases/ violation pending with the project proponent.
- xxi. **Public hearing:** The public hearing was held on 20.09.2012 at Jamboda district in Dhanbad. The issues raised were increase in pollution level due to expansion, impact of washery effluents to the Damodarnadi and Dungri Jore, Maximum Nos. of tree Plantation, Medical facilities for villagers. Emergency facilities at night time, Supply of Water & Power, etc.

3. The proponent has further informed that:
- i. Jharia coal field is the only coking coal field of the country wherein mining started way back in 1896. There are total 18 seams which are coupled with number of geological distribution in the coal field and were operated by different companies.
 - ii. As per CGWB, the stage of ground water depletion in the Dhanbad district is around 30%. The highest stage of development is in Dhanbad city (58%) and Jharia (53%) blocks and hence it is in the “safe” category. The water table in the wells of the study area varied from 3.99 m to 9.89 m during month of May and 2.11 m to 3.98 m in November, However, depth of water level rises in monsoon season to a minimum level. Detailed hydrological study has been carried out by CIMFR, Dhanbad The Net annual ground water recharge is 30.49 MCM/annum. Ground water net irrigation use 0.26 MCM/annum. And Community use 6.46 MCM/annum. Net Mines discharge 0.02 MCM/annum. Therefore balance available annual ground water recharge 23.75 MCM/annum.
 - iii. As part of CSR, Tata Steel is providing huge quantity of drinking water through water pipeline as well as water tankers to the villagers. The proponent has planned to connect all the villages in the leasehold area with water pipeline connection.
 - iv. A pilot plant to convert mine water into drinking/ domestic water to supply the same to the population of Dhanbad and surrounding areas has been launched at Moonidih Coal Mining area by National Mission Project by CSIR in order to increase ground water recharge. Tanks/ponds are regularly cleaned and maintained under CSR. Plantation activities in the mine areas have been started to contain surface runoff and to increase the ground water recharge.
 - v. Occupational Health Department of the Proponent conducts health check up every year for the workers in the colliery. Major occupational health concerns are hypertension and CVS diseases. Water-borne diseases are non-existent in the community.
 - vi. TSRDS undertakes various CSR activities in over 30 villages in the leasehold area over 15000 households covering a population of about 1.4 lakh. The benefits have reached the people directly in the form of skill development, better infrastructure, improved standard of living, medical facilities, etc. The PP has incurred expenditure with respect to CSR activities in 2009-10 Rs. 91.17 lakhs, 2010-11 Rs. 86.79 lakhs, 2011-12 Rs. 100.43 lakhs, 2012-13 Rs. 503.00 lakhs and 2013-14 Rs. 271.75 lakhs (till September, 2013).
 - vii. The trucks used for the transportation of fly ash and sand are properly covered using tarpaulin sheets. Larger trucks are engaged for reducing no of cycles. The reclamation of the ash dumps has been completed.
 - viii. The PP has assured to explore the possibility of using mechanically covered trucks for the transportation of ash. Until then, the existing system of transporting via tarpaulin-covered trucks will continue.
 - ix. About 10-12% of ash will be utilized for making bricks, tiles and it will be used in pavements, embankments and as road-filling material. Rest 88-90 % of ash has been earmarked for filling abandoned open cast mines.
 - x. As desired by the EAC, no use of fly ash with sand will take place for stowing in underground mines.

4. The proposal was reconsidered in the Expert Appraisal Committee (EAC) (Thermal & Coal Mining) and recommended in its 5th meeting held on 26th - 25th November, 2013 for granting Environmental Clearance. The Ministry of Environment & Forests hereby accords environmental clearance for the above-mentioned **Expansion of Jamadoba Coal Washery (1 MTPA to 2 MTPA in 7 ha Area and 24°31' 30" to 24° 32' 30" N & 87° 25' 00" to 87° 30' 00" E) of M/s Tata Steel Ltd. Tehsil Jharia, dist. Dhanbad, Jharkhand** under the provisions of the Environment Impact Assessment Notification, 2006 and subsequent amendments thereto subject to the compliance of the terms and conditions mentioned below:

A. Specific Conditions:

- i. Adequate green belt shall be provided around coal handling and other areas
- ii. Action plan be developed and implemented for abandoned tailing ponds and for their restoration to the original land use.
- iii. Flyash generated from the captive power plant of the washery be utilised for house construction, roads and such uses, strictly complying to the timeline in the EIA Notification, 2006 and maintaining proper records.
- iv. No use of fly ash with sand will take place for stowing in underground mines.
- v. Transportation of fly ash to be done properly by mechanically covered trucks.
- vi. The proponent shall connect all the villages in the leasehold area with water pipeline connection.
- vii. The proponent shall expedite and implement the pilot plant to convert mine water into drinking/ domestic water to supply the same to the population of Dhanbad and surrounding areas and shall continue to carry out this activity.
- viii. Tanks/ponds shall be regularly cleaned and maintained. Plantation activities shall be intensified in the mine areas.
- ix. The proponent shall expedite the activities undertaken by TSRDS in over 30 villages in the leasehold area over 15000 households covering a population of about 1.4 lakh.
- x. The CSR cost should be Rs 5 per Tonnes of Coal produced which should be adjusted as per the annual inflation.
- xi. Cost for additional environmental protection measures shall be not less than Rs. 503.00 lakhs. The status of implementation including costs incurred shall be regularly reported to this Ministry and its respective Regional Office in the region as part of the compliance report and also uploaded on the company website.
- xii. The slope of the embankment towards the river shall at least 1:3 for stability and shall be stabilised with plantation using native species selected from the study area.
- xiii. Top soil shall be stored in the earmarked area and used within a year of its generation for green belt development and for plantation/reclamation.
- xiv. No external OB dump shall be created for the expansion project. Monitoring and management of existing reclaimed dumpsites shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its respective Regional Office on yearly basis.
- xv. Catch drains and siltation ponds of appropriate size shall be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected shall be utilised for watering the mine area, roads, green belt development, etc. The drains shall be regularly desilted and maintained properly.
- xvi. Garland drains (size, gradient and length) and sump capacity shall be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material.
- xvii. Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data.
- xviii. Crushers at the CHP shall be operated with high efficiency bag filters/water sprinkling system shall be provided to check fugitive emissions from crushing operations, conveyor system which shall be closed, haulage roads, transfer points, etc.
- xix. Drills shall be wet operated only.
- xx. Controlled blasting shall be practiced with use of delay detonators and only during daytime. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders shall be implemented.
- xxi. The Washery shall be a zero-discharge and no wastewater shall be discharged from the washery into the drains/natural watercourses. No groundwater shall be used for washery operations. Recycled water shall be used for development and maintenance of green belt and in the plant operations.

- xxii. The raw coal, washed coal and middling and coal wastes (rejects) shall be stacked properly at earmarked site(s) within sheds/stockyards fitted with wind breakers/shields. Adequate measures shall be taken to ensure that the stored minerals do not catch fire. The storage period shall be not more than 2-3 days.
- xxiii. (xiii) The proponent shall maintain proper records of the ash content of raw (ROM) coal, clean coal, middling and coal rejects along with quantum of raw coal obtained and washed and dispatched every month and the same shall be uploaded on the company website every month.
- xxiv. All internal roads shall be concreted or black topped and the approach roads used for the project shall be blacked topped. Facilities for parking of trucks carrying raw coal from the linked coalmines shall be created within the Unit.
- xxv. Roads used for coal transportation to the linked DRI/TPP shall be developed with 3-tier avenue plantation using a mix of native species. The trucks used for coal transportation shall be high capacity trucks. Drivers of trucks for coal transportation shall be engaged based on past records of road safety and compliance of safety regulations and shall be suitably sensitised about road safety and maintenance of vehicles to keep vehicular emissions to be within prescribed limits.
- xxvi. The roads (internal/approach/and roads used for the project) shall be regularly cleaned with mechanical sweepers and with water sprinklers. A 3-tier avenue plantation shall be developed along the major approach roads, internal roads and nearby roads used by the company.
- xxvii. Green belt shall be developed along the areas such as the washery unit, crushing unit, and stockyards and at transfer points and in between mine operations and habitations.
- xxviii. Hoppers of the coal crushing unit at the crushing shed and washery unit shall be fitted with high efficiency bag filters/Dust extractors and mist spray water sprinkling system shall be installed and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points of belt conveyor systems which shall be closed and from transportation roads.
- xxix. The proponent shall ensure that coal such as stones, shale and other wastes of an ash content of 77% or more only shall be dumped into the mine voids. Coal rejects with an ash content of 76% or less shall be fully utilised for power generation in linked TPP.
- xxx. Regular monitoring of groundwater level and quality including levels of heavy metals such as Hg, Cd, Cr., Se, etc shall be carried out by establishing a network of existing wells and construction of new piezometers. The monitoring for quantity and quality of ground water as per IS:10500 shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons. Proper records of the data thus collected shall be maintained submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring.
- xxxi. As the entire mine water is proposed to be used for the mine-cum-washery operations, measures shall be taken for recharging ground water in and around the mine in the study area. A Plan for water conservation and recharge measures of ground water along with budgetary provisions be prepared and implemented in consultation with the Central/State Ground Water Board to mitigate the adverse impact of mining which may lead to depletion of ground water in the area. The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource in case monitoring of groundwater levels indicate decline of water table. Any additional water requirement for mining operation shall be met from rainwater use only. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.
- xxxii. ETP shall also be provided for treatment of effluents from workshop, CHP and an STP shall be provided in the colony and the treated effluents shall be used for green belt development. Outflow of rainfall, if any, from the mine shall meet prescribed norms and the water quality of such discharge including levels of heavy metals such as Hg, Cd, Cr., Se, etc shall be monitored at the exit points and records maintained thereof and also uploaded on the company website. Online monitoring equipment shall be installed by the proponent to ensure that the water quality parameters of mine water discharge are well within the General Discharge Standards under EP, Rules, 1986.

- xxxiii. Besides carrying out regular periodic health check-up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, through a recognised agency found in the district, and the results reported to this Ministry and to DGMS.
- xxxiv. For monitoring land use pattern and for post mining land use, a time series of landuse maps, based on satellite imagery (on a scale of 1: 5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MOEF and its concerned Regional Office in the region.
- xxxv. Land oustees shall be compensated as per the norms laid out R&R Policy of CIL or the National R&R Policy or R&R Policy of the State Government whichever is higher.
- xxxvi. A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests five year before mine closure for approval. Habitat Restoration Plan of the mine area shall be carried out using a mix of native species found in the original ecosystem, which were conserved in-situ and ex-situ in an identified area within the lease for reintroduction in the mine during mine reclamation and at the post mining stage for habitat restoration and for development of grasslands.
- xxxvii. Corporate Environment Responsibility:
- a) The Company shall have a well laid down Environment Policy approved by the Board of Directors.
 - b) The Environment Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.
 - c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished.
 - d) To have proper checks and balances, the company shall have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.

B. General Conditions:

- i. No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.
- ii. No change in the calendar plan of production for quantum of mineral coal shall be made.
- iii. Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM₁₀, PM_{2.5}, SO₂ and NO_x monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.
- iv. Data on ambient air quality (PM₁₀, PM_{2.5}, SO₂ and NO_x) and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly submitted to the Ministry including its concerned Regional Office and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognised under the EPA rules, 1986 shall be furnished as part of compliance report.
- v. Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.
- vi. Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December

1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.

- vii. Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.
- viii. Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognised under EPA Rules, 1986.
- ix. Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.
- x. Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed and records maintained thereof. The quality of environment due to outsourcing and the health and safety issues of the outsourced manpower should be addressed by the company while outsourcing.
- xi. A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.
- xii. The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its concerned Regional Office.
- xiii. The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the ministry of Environment & Forests at <http://envfor.nic.in>.
- xiv. A copy of the environmental clearance letter shall be marked to concern Panchayat/Zila Parishad, Municipal Corporation or Urban local body and local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on company's website.
- xv. A copy of the environmental clearance letter shall be shall also be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Sector and Collector's Office/Tehsildar's Office for 30 days.
- xvi. The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated environmental clearance 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, PM_{2.5}, SO₂ and NO_x (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.
- xvii. The project proponent shall submit six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the Ministry, respective Zonal Office s of CPCB and the SPCB.
- xviii. The Regional Office of this Ministry located in the Region shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/ information/monitoring reports.
- xix. The Environmental statement for each financial year ending 31 March in For -V is mandated to be submitted by the project proponent 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 Offices of the MoEF by e-mail.

5. The proponent shall abide by all the commitments and recommendations made in the EIA/EMP report so also during their presentation to the EAC.

6. The proponent shall establish an Environmental Audit Cell, which should be responsible and accountable to ensure compliance of all conditions stipulated in the EC.
7. The proponent is required to obtain all necessary clearances/approvals that may be required before the start of the project. The Ministry or any other competent authority may stipulate any further condition for environmental protection.
8. The Ministry or any other Competent Authority may stipulate any further condition for environmental protection.
9. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract the provisions of the Environment (Protection) Act, 1986.
10. The above conditions will be enforced *inter-alia*, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and Rules. The proponent shall ensure to undertake and provide for the costs incurred for taking up remedial measures in case of soil contamination, contamination of groundwater and surface water, and occupational and other diseases due to the mining operations.

(Dr. Manoranjan Hota)
Director

Copy to:

1. Secretary, Ministry of Coal, Shastri Bhawan, New Delhi.
2. Secretary, Department of Environment & Forests, Government of Jharkhand, Secretariat, Ranchi.
3. Chief Conservator of Forests, Regional office (EZ), Ministry of Environment & Forests, A/3 Chandrashekarapur, Bhubaneswar 751023.
4. Member-Secretary, Jharkhand State Pollution Control Board, TA Building, HEC Complex, PO Dhurwa, Ranchi.
5. Member-Secretary, Central Pollution Control Board, CBD-cum-Office Complex, East Arjun Nagar, New Delhi 110032.
6. Member-Secretary, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi.
7. District Collector, Dhanbad, Government of Jharkhand.
8. Shri Chanakya Choudhary, Chief Resident Executive, M/s Tata Steel Ltd., Tower- I, 10th Floor, Jeevan Bharati Building Connaught Place, New Delhi
9. IG (Wild Life), Ministry of Environment and Forests, New Delhi
10. Monitoring File 11. Guard File 12. Record File 13. Notice Board

(Dr. Manoranjan Hota)
Director

Annexure- I Greenbelt Development Report

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



Picture: Existing Green Belt around JCPP

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



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



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

AIR QUALITY REPORT

Core zone & Buffer zone

Period- October'22 to December'22

No. of sampling points: 4

Core zone (as per Air quality standards for coal mines in EPA Notification, 1988)							
Location	Latitude/ Longitude	Date	Weather Condition	SPM 24 Hourly Limit- 700 µg/m ³	RSPM 24 Hourly Limit- 300 µg/m ³	SO ₂ 24 Hourly Limit- 120 µg/m ³	NO _x 24 Hourly Limit-120 µg/m ³
Jamadoba Group Office	23°42'15.3" N/ 86°24'11" E	20.10.22	Clear	208.9	76.3	14.8	16.2
		10.11.22	Clear	236.7	88.2	15.8	17.3
		12.12.22	Clear	242.3	94.5	14.8	16.9
Buffer zone (as per NAAQS 2009 for ambient air quality standards)							
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100µg/m ³	PM2.5 24 Hourly Limit- 60µg/m ³	SO ₂ 24 Hourly Limit- 80µg/m ³	NO ₂ 24 Hourly Limit- 80µg/m ³
Digwadih 12 No. Colony	23°41'42" N/ 86°24'45.3" E	18.10.22	Clear	74.6	38.2	12.4	14.7
		08.11.22	Clear	80.2	46.5	13.7	14.1
		07.12.22	Clear	86.3	44.2	12.7	14.8
New Village Colony, Jamadoba	23°41'51" N/ 86°23'19" E	17.10.22	Clear	77.3	42.6	13.1	15.8
		03.11.22	Clear	89.4	49.2	14.8	16.2
		05.12.22	Clear	82.7	42.6	13.2	15.7
6&7 Pits Kalimandir colony	23°43'15" N/ 86°24'12" E	19.10.22	Clear	86.2	45.7	14.5	16.8
		07.11.22	Clear	78.6	42.6	12.4	14.9
		06.12.22	Clear	89.2	46.5	15.1	17.2



Sr. Manager (Environment)

AIR QUALITY REPORT
Core zone & Buffer zone

Period- January'23 to March'23

No. of sampling points: 4

Core zone (as per Air quality standards for coal mines in EPA Notification, 1988)							
Location	Latitude/ Longitude	Date	Weather Condition	SPM 24 Hourly Limit- 700 µg/m ³	RSPM 24 Hourly Limit- 300 µg/m ³	SO ₂ 24 Hourly Limit- 120 µg/m ³	NO _x 24 Hourly Limit-120 µg/m ³
Jamadoba Group Office	23°42'15.3" N/ 86°24'11" E	09.01.23	Clear	238.7	92.6	15.6	17.8
		17.02.23	Clear	234.6	90.3	13.7	15.4
		20.03.23	Cloudy	187.6	70.8	12.5	14.8
Buffer zone (as per NAAQS 2009 for ambient air quality standards)							
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100µg/m ³	PM2.5 24 Hourly Limit- 60µg/m ³	SO ₂ 24 Hourly Limit- 80µg/m ³	NO ₂ 24 Hourly Limit- 80µg/m ³
Digwadih 12 No. Colony	23°41'42" N/ 86°24'45.3" E	06.01.23	Clear	84.1	42.6	13.9	15.2
		15.02.23	Clear	96.3	52.7	15.8	17.1
		17.03.23	Clear	75.4	36.1	13.2	15.7
New Village Colony, Jamadoba	23°41'51" N/ 86°23'19" E	12.01.23	Clear	90.7	46.0	15.8	16.3
		16.02.23	Clear	94.8	50.3	14.2	16.8
		15.03.23	Clear	92.2	49.7	15.4	18.4
6&7 Pits Kalimandir colony	23°43'15" N/ 86°24'12" E	10.01.23	Clear	87.4	40.5	14.9	15.8
		14.02.23	Clear	85.1	38.2	13.4	16.2
		16.03.23	Clear	87.1	43.5	14.8	15.9



Sr. Manager (Environment)

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

S.No	Date	Location	Time	Depth in meter	pH	Electrical Conductivity, $\mu\text{S/m}$
1	06.11.22	Purnadih (Jorapokhar)	11:55 AM	2.98	7.2	834
2	06.11.22	Bhowra 13 No	12:25 PM	2.09	7.0	946
3	06.11.22	Mohalbani Basti	12:50 PM	3.94	7.3	834
4	06.11.22	Digwadih 10 No F & J	01:15 PM	2.97	7.2	1087
5	06.11.22	Kalimela Shivmandir	11:20 AM	1.38	7.1	938
6	06.11.22	Kalimela Kalimandir	11:35 AM	3.28	7.2	1024
7	06.11.22	Lower Dungari	11:00 AM	3.49	7.2	736
8	06.11.22	Upper Dungari	10:35 AM	3.12	7.3	824
9	06.11.22	Pattia Basti	10:05 AM	2.52	7.2	798
10	06.11.22	Kenduadih Basti	09:40 AM	2.14	7.1	766
11	06.11.22	Jorapokhar Kushtand	02:25 PM	1.47	7.2	844
12	06.11.22	Jamadoba 3 No	02:05 PM	2.52	7.1	795
13	06.11.22	6&7 Pits (Ayodhya Nagri)	01:45 PM	2.08	7.1	938
14	06.11.22	Jorapokhar Basti Chhattand	02:50 PM	1.74	7.2	732



Sr. Manager (Environment)

**Ground Water Quality Analysis (Hand Pump & Dung Well)
(Winter Season- January'2023)**

S.No	Date	Location	Time	Depth in meter	pH	Electrical Conductivity $\mu\text{S/m}$
1	30.01.2023	Purnadih (Jorapokhar)	12:15 PM	3.21	7.1	936
2	30.01.2023	Bhowra 13 No	12:55 PM	2.45	7.2	998
3	30.01.2023	Mohalbani Basti	01:20 PM	4.21	7.1	842
4	30.01.2023	Digwadih 10 No F & J	01:40 PM	3.48	7.2	1139
5	30.01.2023	Kalimela Shivmandir	11:25 AM	1.85	7.2	924
6	30.01.2023	Kalimela Kalimandir	11:45 AM	3.78	7.3	1086
7	30.01.2023	Lower Dungari	11:05 AM	3.73	7.2	748
8	30.01.2023	Upper Dungari	10:40 AM	3.68	7.1	839
9	30.01.2023	Pattia Basti	10:15 AM	2.87	7.2	834
10	30.01.2023	Kenduadih Basti	09:45 AM	2.26	7.3	773
11	30.01.2023	Jorapokhar Kushtand	11:50 AM	2.64	7.2	831
12	30.01.2023	6&7 Pits (Ayodhya Nagri)	02:05 PM	2.35	7.2	956
13	30.01.2023	Jorapokhar Basti Chhattand	02:25 PM	1.82	7.2	747
14	30.01.2023	Jorapokhar Babu Basa	12:35 PM	2.77	7.2	1038

Sr. Manager (Environment)



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Ref. No.: - ARDS/22-23/2051

Date: 12.11.2022

TEST REPORT OF AMBIENT AIR QUALITY

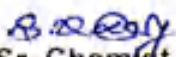
- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 07.11.2022 to 08.11.2022
- Date of Testing : 09.11.2022 to 11.11.2022
- Test Procedure : As per IS-5182

TEST RESULTS

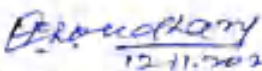
LOCATION – OFFICERS COLONY, 12 NO. DIGWADIH

SI No.	Particulars	Value	NAAQ - CPCB STANDARD
	Avg. Ambient Temperature	29°C	Avg. Humidity 49%
1.	Particulate Matter (PM ₁₀), µg/m ³	74.81	100 µg/m ³
2.	Particulate Matter (PM _{2.5}), µg/m ³	37.84	60 µg/m ³
3.	SO ₂ , µg/m ³	14.60	80 µg/m ³
4.	NO ₂ , µg/m ³	26.61	80 µg/m ³
5.	Ozone, µg/m ³	20.12	180 µg/m ³
6.	NH ₃ , µg/m ³	16.53	400 µg/m ³
7.	CO, mg/m ³	0.96	4 mg/m ³
8.	Pb, µg/m ³	BDL	1 µg/m ³
9.	As, ng/m ³	BDL	6 ng/m ³
10.	Ni, ng/m ³	BDL	20 ng/m ³
11.	Benzene, µg/m ³	BDL	5 µg/m ³
12.	Benzoapyrene ng/m ³	BDL	1 ng/m ³

NOTE: BDL - Below Detection Limit


Sr. Chemist
Aditi R&D Services




Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/2052

Date: 12.11.2022

TEST REPORT OF AMBIENT AIR QUALITY


- Name of the industry : M/S TATA STEEL, JAMADOBA,
TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 07.11.2022 to 08.11.2022
- Date of Testing : 09.11.2022 to 11.11.2022
- Test Procedure : As per IS-5182

TEST RESULTS

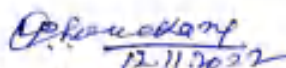
LOCATION – CENTRAL WORKSHOP AREA , JAMADOBA

SI No.	Particulars	Value	NAAQ - CPCB STANDARD
	Avg. Ambient Temperature	29°C	Avg. Humidity 49%
1.	Particulate Matter (PM ₁₀), µg/m ³	86.9	100 µg/m ³
2.	Particulate Matter (PM _{2.5}), µg/m ³	46.8	60 µg/m ³
3.	SO ₂ , µg/m ³	17.52	80 µg/m ³
4.	NO ₂ , µg/m ³	26.61	80 µg/m ³
5.	Ozone, µg/m ³	17.84	180 µg/m ³
6.	NH ₃ , µg/m ³	17.26	400 µg/m ³
7.	CO, mg/m ³	0.99	4 mg/m ³
8.	Pb, µg/m ³	BDL	1 µg/m ³
9.	As, ng/m ³	BDL	6 ng/m ³
10.	Ni, ng/m ³	BDL	20 ng/m ³
11.	Benzene, µg/m ³	BDL	5 µg/m ³
12.	Benzoapyrene ng/m ³	BDL	1 ng/m ³

NOTE: BDL - Below Detection Limit


Sr. Chemist
Aditi R&D Services




12.11.2022
Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/2055

Date: 12.11.2022

TEST REPORT OF AMBIENT AIR QUALITY

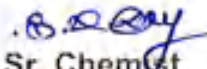
- Name of the industry : M/S TATA STEEL, JAMADOBA,
TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 07.11.2022 to 08.11.2022
- Date of Testing : 09.11.2022 to 11.11.2022
- Test Procedure : As per IS-5182

TEST RESULTS


LOCATION - TATA CENTRAL HOSPITAL

Sl No.	Particulars	Value	NAAQ - CPCB STANDARD
	Avg. Ambient Temperature	29°C	Avg. Humidity 49%
1.	Particulate Matter (PM ₁₀), µg/m ³	73.24	100 µg/m ³
2.	Particulate Matter (PM _{2.5}), µg/m ³	36.49	60 µg/m ³
3.	SO ₂ , µg/m ³	14.52	80 µg/m ³
4.	NO ₂ , µg/m ³	23.19	80 µg/m ³
5.	Ozone, µg/m ³	16.57	180 µg/m ³
6.	NH ₃ , µg/m ³	14.62	400 µg/m ³
7.	CO, mg/m ³	0.83	4 mg/m ³
8.	Pb, µg/m ³	BDL	1 µg/m ³
9.	As, ng/m ³	BDL	6 ng/m ³
10.	Ni, ng/m ³	BDL	20 ng/m ³
11.	Benzene, µg/m ³	BDL	5 µg/m ³
12.	Benzo(a)pyrene, ng/m ³	BDL	1 ng/m ³

NOTE: BDL - Below Detection Limit


Sr. Chemist
Aditi R&D Services




12.11.2022
Quality Manager
Aditi R&D Services, Sindri

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TEST REPORT OF NOISE (AMBIENT) LEVEL MONITORING

Ref. No. & Date		NAME AND ADDRESS OF THE CLIENT			
ARDS/22-23/2028 Date: 09.11.2022		M/S TATA STEEL, JAMADOBA,			
Date of Monitoring		TATA STEEL LIMITED, JAMADOBA GROUP PLANT,			
		DIST. - DHANBAD (JHARKHAND)			
07.11.2022 TO 08.11.2022		Avg. Ambient Temperature (°C)	Average Humidity (%)	Weather Condition	Status of the plant
Work Order 4700092573/932 Dt. 20.07.2021		28	50	Clear	Running

MONITORING RESULTS

Sl. No	Place of Monitoring	Day Time (6 AM to 10 PM) Avg. dB(A)			Night Time (10 PM to 6 AM) Avg. dB(A)			Noise level (Ambient standard) for Industrial Area as per CPCB Noise Pollution (Regulation and Control) (Amendment) Rules, 2000 notified vide S.O. 1046(E) Dt. 22.11.2020 Limit in dB(A) Leq	
		MAX	MIN	AVG. dB(A) Leq	MAX	MIN	AVERAGE dB(A) Leq	Day Time	Night Time
	LOCATION							Industrial Area	Industrial Area
	JAMADOBA GROUP								
1.	Central Workshop	67.3	59.8	65.0	53.7	44.6	51.19		
2.	6 & 7 Pits Colliery Office	64.9	59.6	63.01	51.4	42.5	48.92	75	70
								Residential Area	Residential Area
3.	Officer Colony 12 No. Digwadih	50.7	47.8	49.49	43.5	39.8	42.03	65	55
								Silence Zone	Silence Zone
4.	Tata Central Hospital	46.9	42.4	45.21	40.1	37.9	39.14	50	40

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



Ch. Prasad
29/11/2022
Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/2048

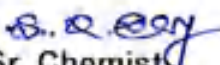
Date: 11.11.2022

TEST REPORT OF MINERALOGICAL COMPOSITION OF PARTICULATE MATTER

- Name of the industry : M/S TATA STEEL, JAMADOBA,
TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 08.11.2022
- Date of Testing : 09.11.2022 – 10.11.2022

TEST RESULTS

Sl No.	Particulars	Mineralogical Composition (%)			
		SiO ₂	FeO	Al ₂ O ₃	CaO
1.	Central Workshop Area Jamadoba	1.13	0.04	0.97	2.6
2.	Officer's Colony, 12 No. Digwadih	1.42	0.09	0.92	2.1


Sr. Chemist
Aditi R&D Services




11.11.2022
Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/2101

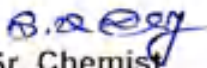
Date: 17.11.2022

TEST REPORT OF SURFACE WATER

- Name of the industry : M/S TATA STEEL, JAMADOBA,
TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Damodar River Up Stream
2. Damodar River Down Stream
- Date of Sample Collection: 07.11.2022 To 08.11.2022
- Date of Testing : 09.11.2022 To 16.11.2022
- Test : pH, TDS, Turbidity, DO, BOD, Cl, F, SO₄

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		Limit as per IS 2296 Class - C	Test Method
		Damodar River Up Stream	Damodar River Dn Stream		
1.	pH	7.5	7.6	6.5 -8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	595	625	1500	IS-3025 (P-16): 1984
3.	Turbidity, NTU	9.5	11.2	-	IS-3025 (P-10):1984
4.	Dissolved Oxygen, mg/l	6.8	6.4	4.0	IS-3025 (P-38):1989
5.	Bio chemical Oxygen Demand, mg/l	2.0	2.2	3.0	IS-3025 (P-44):1994
6.	Chloride as Cl, mg/l	44	52	-	IS-3025 (P-32):1988
7.	Fluoride as F, mg/l	0.52	0.54	1.5	IS-3025 (P-60):2008
8.	Sulphate as SO ₄ , mg/l	36	48	400	IS-3025 (P-24):1986


Sr. Chemist
Aditi R&D Services




17.11.2022
Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/2102

Date: 17.11.2022

TEST REPORT OF MINE WATER DISCHARGE

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. 2 Pit Jamadoba Colliery
2. 3 Pit Jamadoba Colliery
3. 2 Incline Jamadoba Colliery
4. 6 & 7 Pits Colliery
5. Digwadih Colliery
- Date of Sample Collection: 07.11.2022 To 08.11.2022
- Date of Testing : 09.11.2022 to 16.11.2022
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE					Limit as per IS-2296 Class B (For Bathing)	Test Method
		2 Pit Jamadoba Colliery	3 Pit Jamadoba Colliery	2 Incline Jamadoba Colliery	6 & 7 Pits Colliery	Digwadih Colliery		
1.	pH,	7.9	7.3	7.3	7.6	7.8	6.5-8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	896	680	610	660	742	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	38	26	32	18	28	-	IS-3025(P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	2.4	2.7	2.2	1.6	2.4	3	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	48	54	44	32	48	-	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	BDL	BDL	BDL	BDL	BDL	-	IS-3025 (P-39):2021

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



Pradeep Kumar
17.11.2022
Quality Manager
Aditi R&D Services, Sindri

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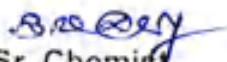
Date: 17.11.2022

TEST REPORT OF SEWAGE

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. S.T.P. Outlet Jamadoba Canteen
2. S.T.P. Outlet J.C.P.P. Canteen
3. S.T.P. Outlet Railway Colony
- Date of Sample Collection: 07.11.2022 to 08.11.2022
- Date of Testing : 09.11.2022 to 16.11.2022
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE			MoEF&C Notification 1 st Jan.2016 Permissible Max. Desirable Limit	Test Method
		S.T.P. Outlet Jamadoba Canteen	S.T.P. Outlet J.C.P.P. Canteen	S.T.P. Outlet Railway Colony		
1.	pH,	7.3	7.6	7.3	6.0-9.0	IS-3025 (P-11):1983
2.	Total Dissolved Solids, mg/l	648	725	760	2100	IS-3025 (P-16):1984
3.	Total Suspended Solids, mg/l	28	22	32	100	IS-3025(P-17):1984
4.	Bio chemical Oxygen Demand, mg/l	11.5	10.0	12.0	30	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	58	52	60	250	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	0.4	B.D.L	1.2	10	IS-3025 (P-39):2021


Sr. Chemist
Aditi R&D Services




Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/2110

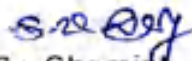
Date: 18.11.2022

TEST REPORT OF EFFLUENT

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. E.T.P. Outlet T.C.H.
2. E.T.P. Outlet Garage
- Date of Sample Collection: 07.11.2022 to 08.11.2022
- Date of Testing : 09.11.2022 to 16.11.2022
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		MoEF&C Notification 1 st Jan.2016 Permissible Max. Desirable Limit	Test Method
		E.T.P. Outlet T.C.H	E.T.P. Outlet Garage		
1.	pH,	7.5	7.6	6.0-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	635	660	2100	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	23	25	100	IS-3025(P-17) : 1984
4.	Bio chemical Oxygen Demand, mg/l	08	10	30	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	48	53	250	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	B.D.L	B.D.L	10	IS-3025 (P-39):2021


Sr. Chemist
Aditi R&D Services




18.11.2022
Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/2111

Date: 18.11.2022

TEST REPORT OF DRINKING WATER

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Canteen Jamadoba Colliery
2. Canteen Jamadoba Washery
3. Canteen Digwadih Colliery
4. Canteen 6&7 Pit Colliery
- Date of Sample Collection: 07.11.2022 to 08.11.2022
- Date of Testing : 09.11.2022 to 16.11.2022
- Test :
Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

TEST RESULT

Sl. No	PARAMETERS OF TEST	VALUE				IS as per IS 10500:2012		Test Method
		Canteen Jamadoba Colliery	Canteen Jamadoba Washery	Canteen Digwadih Colliery	Canteen 6&7 Pit Colliery	Desirable	Permissible	
1.	Colour, (Hazen Unit)	1	1	1	1	5.00	15.0	IS 3025 (P-4):2021
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-5):2018
3.	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-7):2017
4.	Turbidity, NTU	1	1	NIL	NIL	1.0	5.0	IS 3025 (P-10):1984
5.	pH	7.6	7.3	7.5	7.6	6.5-8.5	No. Relax.	IS-3025 (P-11):1983
6.	Total Hardness as CaCO ₃ , mg/l	320	368	340	310	200	600	IS 3025 (P-21):2009
7.	Chloride as Cl ₁ , mg/l	58	54	56	44	250	1000	IS 3025 (P-32):1988
8.	Res. Free chlorine as Cl ₂ , mg/l	NIL	NIL	NIL	NIL	0.20	1.0	IS 3025 (P-26):2021
9.	Total Dissolved Solids, mg/l	795	760	735	715	500	2000	IS 3025 (P-16):1984
10.	Calcium as CaCO ₃ , mg/l	41.5	46	38	32	75	200	IS 3025 (P-40):1991
11.	Copper as Cu, mg/l	BDL	BDL	BDL	BDL	0.05	1.5	IS 3025 (P-42):1992

Continued on Page 2

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Sl. No.	PARAMETERS OF TEST	VALUE				IS as per IS 10500:1991		Test Method
		Jamadoba Canteen Colliery	Jamadoba Canteen Washery	Canteen Digwadih Colliery	Canteen 6&7 Pit Colliery	Desirable	Permissible	
12.	Manganese as Mn, mg/l	BDL	BDL	BDL	BDL	0.10	0.30	IS 3025 (P-59):2006
13.	Sulphate as SO ₄ , mg/l	48	52	62	46	200	400	IS 3025 (P-24):1986
14.	Nitrate as NO ₃ , mg/l	2.6	2.8	2.9	3.2	45	No. Relax	IS 3025 (P-34):1988
15.	Fluoride as F, mg/l	0.32	0.28	0.34	0.33	1.0	1.5	IS 3025 (P-60):2008
16.	Phenolic Compound as (C ₆ H ₅ OH) mg/l	BDL	BDL	BDL	BDL	0.001	0.002	IS 3025 (P-43):1992
17.	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025 (P-48):1994
18.	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025 (P-41):1992
19.	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025 (P-37):1988
20.	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025 (P-27):1986
21.	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025 (P-47):1994
22.	Zinc as Zn, mg/l,	0.16	0.18	0.12	0.12	5	15	IS 3025 (P-42):1992
23.	Total Coliform, No./100ml	Absent	Absent	Absent	Absent	Absent	Absent	IS 3025 (P-49):1994
24.	Hexavalent Chromium as Cr, mg/l	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025 (P-52):2003
25.	Mineral Oil, mg/l	BDL	BDL	BDL	BDL	0.5	No. Relax	IS 3025 (P-39):1989
26.	Alkalinity as CaCO ₃ , mg/l,	370	330	365	345	200	600	IS 3025 (P-23):1983
27.	Aluminium as Al, mg/l	BDL	BDL	BDL	BDL	0.03	0.2	IS 3025 (P-55):2003
28.	Boran as B, mg/l	BDL	BDL	BDL	BDL	0.5	1.0	IS 3025 (P-57):2005

NOTE: BDL - Below Detection Limit

S. R. Singh
Sr. Chemist
Aditi R&D Services



A. K. Chakraborty
18.11.2022
Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/ 2112

Date: 18.11.2022

TEST REPORT OF GROUND WATER

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code :
 1. Purnadi Joraphokhar
 2. Digwadih 10 No. F&J
 3. Kalinala Kali Mandir
 4. Upper Dungri
 5. Kenduadih Basti
 6. 6 & 7 Pit Ayodha Nagari
- Date of Sample Collection : 07.11.2022 to 08.11.2022
- Date of Testing : 09.11.2022 to 16.11.2022
- Test : Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

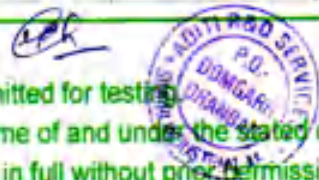
TEST RESULT

PARAMETERS OF TEST	VALUE						IS as per IS 10500:1991		Test Method
	Purandi Joraphokhar	Digwadih 1 No. F&J	Kalinala Kali Mandir	Upper Dungri	Kenduadih Basti	6 & 7 Ayodha Nagari	Desirable	Permissible	
Colour, (Hazen Unit)	1	2	1	2	1	2	5	15	IS 3025 (P-4):2021
Temperature °C	22	24	23	24	22	23	-	-	-
Electrical Conductivity, µmhos/cm	1020	1045	1065	1080	940	1070	-	-	-
Total Dissolved Solids, mg/l	653	680	693	702	611	696	-	-	IS 3025(P-16):1984
pH	7.7	7.6	7.3	7.5	7.6	7.8	6.5-8.5	No Relax	IS-3025(P-11):1983
Total Hardness as CaCO ₃ , mg/l	328	280	365	258	385	260	200	600	IS 3025(P-21):2009
Calcium as Ca, mg/l	67.2	59.2	73.6	51.6	77.2	52	75	200	IS 3025(P-40):1991
Magnesium as Mg, mg/l	37.2	95	42.1	30	44	30.2	30	100	IS 3025(P-46):1994
Chloride as Cl, mg/l	38	32	48	28	52	28	250	1000	IS 3025(P-32):1988
Fluoride as F ₂ , mg/l	0.28	0.26	0.44	0.46	0.36	0.32	1.0	1.5	IS 3025(P-60):2008

Continued on Page 2

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- 2 -

Sl. No	PARAMETERS OF TEST	VALUE						IS as per IS 10500:1991		Test Method
		Purandi Joraphokhar	Digwadih 1 No. F&J	Kalinala Kali Mandir	Upper Dungri	Kendui adih Basti	6 & 7 Ayodha Nagar	Desirable	Permissible	
10	Sulphate as SO ₄ , mg/l	42	66	70	62	58	54	200	400	IS 3025(P-24):1986
12	Nitrate as NO ₃ , mg/l	11.8	12.4	8.2	10.4	9.8	9.4	45	No. Relax	IS 3025(P-34):1988
13	Alkalinity as CaCO ₃ , mg/l	285	260	310	325	345	340	200	600	IS 3025(P-23):1983
14	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-47):1994
15	Zinc as Zn, mg/l	0.18	0.14	0.18	0.16	0.14	0.16	5	15	IS 3025(P-42):1992
16	Iron as Fe, mg/l	0.2	0.1	0.1	0.2	0.2	0.2	0.3	No. Relax	IS 3025(P-53):2003
17	Copper as Cu, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.05	1.5	IS 3025 (P-42):1992
18	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025(P-48):1994
19	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025(P-41):1992
20	Nickel as Ni, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.02	No. Relax	IS 3025(P-37):1992
21	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-37):1988
22	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-27):1986
23	Total Chromium as Cr, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-52):2003

NOTE: BDL - Below Detection Limit


Sr. Chemist
Aditi R&D Services




Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/2050

Date: 12.11.2022

TEST REPORT OF AMBIENT AIR QUALITY

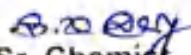
- Name of the industry : M/S TATA STEEL, JAMADOBA,
TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 07.11.2022 to 08.11.2022
- Date of Testing : 09.11.2022 to 11.11.2022
- Test Procedure : As per IS-5182

TEST RESULTS

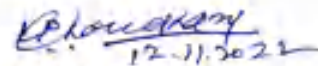
LOCATION - 6 & 7 PITS COLLOIERY OFFICE

SI No.	Particulars	Value	NAAQ - CPCB STANDARD
	Avg. Ambient Temperature	29°C	Avg. Humidity 49%
1.	Particulate Matter (PM ₁₀), µg/m ³	93.80	100 µg/m ³
2.	Particulate Matter (PM _{2.5}), µg/m ³	47.92	60 µg/m ³
3.	SO ₂ , µg/m ³	20.75	80 µg/m ³
4.	NO ₂ , µg/m ³	28.60	80 µg/m ³
5.	Ozone, µg/m ³	24.19	180 µg/m ³
6.	NH ₃ , µg/m ³	18.82	400 µg/m ³
7.	CO, mg/m ³	1.98	4 mg/m ³
8.	Pb, µg/m ³	BDL	1 µg/m ³
9.	As, ng/m ³	BDL	6 ng/m ³
10.	Ni, ng/m ³	BDL	20 ng/m ³
11.	Benzene, µg/m ³	BDL	5 µg/m ³
12.	Benzoapyrene ng/m ³	BDL	1 ng/m ³

NOTE: BDL - Below Detection Limit


Sr. Chemist
Aditi R&D Services




12.11.2022
Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/2908

Date: 18.02.2023

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : M/S TATA STEEL, JAMADOBA,
TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 10.02.2023 to 11.02.2023
- Date of Testing : 15.02.2023 to 17.02.2023
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – 6 & 7 PITS COLLIERY OFFICE

Sl No.	Particulars	Value	NAAQ - CPCB STANDARD
1.	Particulate Matter (PM ₁₀), µg/m ³	81.37	100 µg/m ³
2.	Particulate Matter (PM _{2.5}), µg/m ³	48.62	60 µg/m ³
3.	SO ₂ , µg/m ³	20.19	80 µg/m ³
4.	NO ₂ , µg/m ³	25.58	80 µg/m ³
5.	Ozone, µg/m ³	17.29	180 µg/m ³
6.	NH ₃ , µg/m ³	14.49	400 µg/m ³
7.	CO, mg/m ³	0.83	4 mg/m ³
8.	Pb, µg/m ³	BDL	1 µg/m ³
9.	As, ng/m ³	BDL	6 ng/m ³
10.	Ni, ng/m ³	BDL	20 ng/m ³
11.	Benzene, µg/m ³	BDL	5 µg/m ³
12.	Benzoapyrene ng/m ³	BDL	1 ng/m ³

NOTE: BDL - Below Detection Limit

A. Das,

Sr. Chemist

Aditi R&D Services



Technical Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/2909

Date: 18.02.2023

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 10.02.2023 to 11.02.2023
- Date of Testing : 15.02.2023 to 17.02.2023
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – OFFICERS COLONY, 12 NO. DIGWADIH

Avg. Ambient Temperature		24 ^o C	Avg. Humidity	42%
Sl No.	Particulars	Value	NAAQ - CPCB STANDARD	
1.	Particulate Matter (PM ₁₀), µg/m ³	87.76	100 µg/m ³	
2.	Particulate Matter (PM _{2.5}), µg/m ³	52.66	60 µg/m ³	
3.	SO ₂ , µg/m ³	19.41	80 µg/m ³	
4.	NO ₂ , µg/m ³	26.35	80 µg/m ³	
5.	Ozone, µg/m ³	17.63	180 µg/m ³	
6.	NH ₃ , µg/m ³	14.82	400 µg/m ³	
7.	CO, mg/m ³	0.79	4 mg/m ³	
8.	Pb, µg/m ³	BDL	1 µg/m ³	
9.	As, ng/m ³	BDL	6 ng/m ³	
10.	Ni, ng/m ³	BDL	20 ng/m ³	
11.	Benzene, µg/m ³	BDL	5 µg/m ³	
12.	Benzoapyrene ng/m ³	BDL	1 ng/m ³	

NOTE: BDL - Below Detection Limit

A. Das,

Sr. Chemist

Aditi R&D Services



Technical Manager

Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/2910

Date: 18.02.2023

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : M/S TATA STEEL, JAMADOBA,
TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 10.02.2023 to 11.02.2023
- Date of Testing : 15.02.2023 to 17.02.2023
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – CENTRAL WORKSHOP AREA, JAMADOBA

SI No.	Particulars	Value	NAAQ - CPCB STANDARD
	Avg. Ambient Temperature	26°C	Avg. Humidity 39%
1.	Particulate Matter (PM ₁₀), µg/m ³	86.77	100 µg/m ³
2.	Particulate Matter (PM _{2.5}), µg/m ³	52.12	60 µg/m ³
3.	SO ₂ , µg/m ³	19.64	80 µg/m ³
4.	NO ₂ , µg/m ³	28.23	80 µg/m ³
5.	Ozone, µg/m ³	16.60	180 µg/m ³
6.	NH ₃ , µg/m ³	17.65	400 µg/m ³
7.	CO, mg/m ³	1.06	4 mg/m ³
8.	Pb, µg/m ³	BDL	1 µg/m ³
9.	As, ng/m ³	BDL	6 ng/m ³
10.	Ni, ng/m ³	BDL	20 ng/m ³
11.	Benzene, µg/m ³	BDL	5 µg/m ³
12.	Benzoapyrene ng/m ³	BDL	1 ng/m ³

NOTE: BDL - Below Detection Limit

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Ref. No.: - ARDS/22-23/2911

Date: 18.02.2023

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : M/S TATA STEEL, JAMADOBA,
TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 10.02.2023 to 11.02.2023
- Date of Testing : 15.02.2023 to 17.02.2023
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – TATA CENTRAL HOSPITAL

LOCATION – TATA CENTRAL HOSPITAL				
	Avg. Ambient Temperature	24 ⁰ C	Avg. Humidity	40%
Sl No.	Particulars	Value	NAAQ - CPCB STANDARD	
1.	Particulate Matter (PM ₁₀), µg/m ³	78.07	100 µg/m ³	
2.	Particulate Matter (PM _{2.5}), µg/m ³	45.84	60 µg/m ³	
3.	SO ₂ , µg/m ³	17.68	80 µg/m ³	
4.	NO ₂ , µg/m ³	26.61	80 µg/m ³	
5.	Ozone, µg/m ³	16.44	180 µg/m ³	
6.	NH ₃ , µg/m ³	17.38	400 µg/m ³	
7.	CO, mg/m ³	0.89	4 mg/m ³	
8.	Pb, µg/m ³	BDL	1 µg/m ³	
9.	As, ng/m ³	BDL	6 ng/m ³	
10.	Ni, ng/m ³	BDL	20 ng/m ³	
11.	Benzene, µg/m ³	BDL	5 µg/m ³	
12.	Benzoapyrene ng/m ³	BDL	1 ng/m ³	

NOTE: BDL - Below Detection Limit

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TEST REPORT OF NOISE (AMBIENT) LEVEL MONITORING

Ref. No. & Date		NAME AND ADDRESS OF THE CLIENT			
ARDS/22-23/2862 Date: 13.02.2023		M/S TATA STEEL, JAMADOBA,			
Date of Monitoring		TATA STEEL LIMITED, JAMADOBA GROUP PLANT,			
10.02.2023 TO 11.02.2023		Avg. Ambient Temperature (°C)		Average Humidity (%)	Weather Condition
Work Order 4700092573/932 Dt. 20.07.2021		24		40	Clear
					Status of the plant
					Running

MONITORING RESULTS

Sl. No	Place of Monitoring	Day Time (6 AM to 10 PM) Avg. dB(A)			Night Time (10 PM to 6 AM) Avg. dB(A)			Noise level (Ambient standard) for Industrial Area as per CPCB Noise Pollution (Regulation and Control) (Amendment) Rules, 2000 notified vide S.O. 1046(E) Dt. 22.11.2020 Limit in dB(A) Leg	
		MAX	MIN	AVG. dB(A) Leq	MAX	MIN	AVERAGE dB(A) Leq	Day Time	Night Time
LOCATION								Industrial Area	Industrial Area
JAMADOBA GROUP									
1.	Central Workshop	67.4	53.2	64.55	54.4	47.5	52.2	75	70
2.	6 & 7 Pits Colliery Office	69.2	61.8	66.92	56.8	50.3	54.67		
								Residential Area	Residential Area
3.	Officer Colony 12 No. Digwadih	52.4	48.6	50.9	47.8	42.8	45.98	65	55
								Silence Zone	Silence Zone
4.	Tata Central Hospital	48.2	44.6	46.76	46.2	38.2	43.83	50	40

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Ref. No.: - ARDS/22-23/2912

Date: 18.02.2023

TEST REPORT OF MINERALOGICAL COMPOSITION OF PARTICULATE MATTER

- Name of the industry : M/S TATA STEEL, JAMADOBA,
TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 11.02.2023
- Date of Testing : 15.02.2023 - 17.02.2023

TEST RESULTS

Sl No.	Particulars	Mineralogical Composition (%)			
		SiO ₂	FeO	Al ₂ O ₃	CaO
1.	6 & 7 Pits Colliery Office	1.70	0.06	1.18	2.3
2.	Tata Central Hospital	2.08	0.12	1.26	2.78

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Ref. No.: - ARDS/22-23/2931

Date: 20.02.2023

TEST REPORT OF SURFACE WATER

- Name of the industry : M/S TATA STEEL, JAMADOBA,
TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Damodar River Up Stream
2. Damodar River Down Stream
- Date of Sample Collection: 11.02.2023
- Date of Testing : 13.02.2023 To 18.02.2023
- Test : pH, TDS, Turbidity, DO, BOD, Cl, F, SO₄

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		Limit as per IS 2296 Class - C	Test Method
		Damodar River Up Stream	Damodar River Dn Stream		
1.	pH	8.2	8.2	6.5 -8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	328	328	1500	IS-3025 (P-16): 1984
3.	Turbidity, NTU	01	01	-	IS-3025 (P-10):1984
4.	Dissolved Oxygen, mg/l	5.6	5.8	4.0	IS-3025 (P-38):1989
5.	Bio chemical Oxygen Demand, mg/l	2.2	2.4	3.0	IS-3025 (P-44):1994
6.	Chloride as Cl, mg/l	32	34	-	IS-3025 (P-32):1988
7.	Fluoride as F, mg/l	0.49	0.52	1.5	IS-3025 (P-60):2008
8.	Sulphate as SO ₄ , mg/l	53	54	400	IS-3025 (P-24):1986

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Ref. No.: - ARDS/22-23/2916

Date: 18.02.2023

TEST REPORT OF MINE WATER DISCHARGE

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. 2 Pit Jamadoba Colliery
2. 3 Pit Jamadoba Colliery
3. 2 Incline Jamadoba Colliery
4. 6 & 7 Pits Colliery
5. Digwadih Colliery
- Date of Sample Collection: 10.02.2023 to 11.02.2023
- Date of Testing : 13.02.2023 To 18.02.2023
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE					Limit as per IS-2296 Class B (For Bathing)	Test Method
		2 Pit Jamadoba Colliery	3 Pit Jamadoba Colliery	2 Incline Jamadoba Colliery	6 & 7 Pits Colliery	Digwadih Colliery		
1.	pH,	7.3	8.0	7.8	6.5	7.9	6.5-8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	658	699	788	683	892	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	36	32	36	23	34	-	IS-3025(P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	2.4	1.8	2.4	1.2	2.4	3	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	40.2	48	59.5	52	54	-	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	0.4	0.4	BDL	BDL	BDL	-	IS-3025 (P-39):2021

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Ref. No.: - ARDS/22-23/2917

Date: 18.02.2023

TEST REPORT OF SEWAGE

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. S.T.P. Outlet J.C.P.P. Canteen
2. S.T.P. Outlet Jamadoba Canteen
3. S.T.P. Outlet Railway Colony
- Date of Sample Collection: 10.02.2023 to 11.02.2023
- Date of Testing : 13.02.2023 to 18.02.2023
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE			General Standards For Discharge Of Environmental Pollutants, Inland Surface Water By The MOEF&C	Test Method
		S.T.P. Outlet J.C.P.P. Canteen	S.T.P. Outlet Jamadoba Canteen	S.T.P. Outlet Railway Colony		
1.	pH,	7.7	7.9	7.5	5.5-9.0	IS-3025 (P-11):1983
2.	Total Dissolved Solids, mg/l	638	678	693	2100	IS-3025 (P-16):1984
3.	Total Suspended Solids, mg/l	28	30	38	100	IS-3025(P-17):1984
4.	Bio chemical Oxygen Demand, mg/l	13.6	12.4	14.8	30	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	80	73	86.8	250	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	BDL	BDL	1.6	10	IS-3025 (P-39):2021

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Ref. No.: - ARDS/22-23/2918

Date: 18.02.2023

TEST REPORT OF EFFLUENT

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. E.T.P. Outlet T.C.H.
2. E.T.P. Outlet Garage
- Date of Sample Collection: 10.02.2023
- Date of Testing : 13.02.2023 to 18.02.2023
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		General Standards For Discharge Of Environmental Pollutants, Inland Surface Water By The MOEF&C	Test Method
		E.T.P. Outlet T.C.H	E.T.P. Outlet Garage		
1.	pH,	7.3	7.2	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	890	752	2100	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	28	27	100	IS-3025(P-17) : 1984
4.	Bio chemical Oxygen Demand, mg/l	8.6	9.5	30	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	54	59	250	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	0.8	BDL	10	IS-3025 (P-39):2021

A. Das.
Sr. Chemist
Aditi R&D Services



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Aditi R&D Services, Sindri

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Ref. No.: - ARDS/22-23/2932

Date: 20.02.2023

TEST REPORT OF DRINKING WATER

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED
JAMADOBA GROUP PLANT,
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Canteen - Jamadoba Colliery
2. Canteen - Digwadih Colliery
3. Canteen - 6 & 7 Pit Colliery
4. Canteen - Jamadoba Washery
- Date of Sample Collection: 10.02.2023
- Date of Testing : 13.02.2023 to 18.02.2023
- Test :

Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

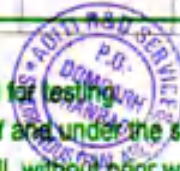
TEST RESULT

Sl. No	PARAMETERS OF TEST	VALUE				IS as per IS 10500:2012		Test Method
		Canteen Jamadoba Colliery	Canteen Digwadih Colliery	Canteen 6 & 7 Pit Colliery	Canteen Jamadoba Washery	Desirable	Permissible	
1.	Colour, (Hazen Unit)	1	1	1	1	5.00	15.0	IS 3025 (P-4):2021
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-5):2018
3.	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-7):2017
4.	Turbidity, NTU	NIL	NIL	NIL	NIL	1.0	5.0	IS 3025 (P-10):1984
5.	pH	7.5	8.2	7.8	8.0	6.5-8.5	No. Relax.	IS-3025 (P-11):1983
6.	Total Hardness as CaCO ₃ , mg/l	376	380	224	416	200	600	IS 3025 (P-21):2009
7.	Chloride as Cl ₁ , mg/l	58	60	36	60	250	1000	IS 3025 (P-32):1988
8.	Res. Free chlorine as Cl ₂ mg/l	NIL	NIL	NIL	NIL	0.20	1.0	IS 3025 (P-26):2021
9.	Total Dissolved Solids, mg/l	828	750	406	738	500	2000	IS 3025 (P-16):1984
10.	Calcium as CaCO ₃ , mg/l	43.2	43.2	36.8	52.8	75	200	IS 3025 (P-40):1991
11.	Copper as Cu, mg/l	BDL	BDL	BDL	BDL	0.05	1.5	IS 3025 (P-42):1992

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- 2 -

Sl. No.	PARAMETERS OF TEST	VALUE				IS as per IS 10500:1991		Test Method
		Canteen Jamadoba Colliery	Canteen Digwadih Colliery	6 & 7 Pit Colliery	Jamadoba Washery Canteen	Desirable	Permissible	
12.	Manganese as Mn, mg/l	BDL	BDL	BDL	BDL	0.10	0.30	IS 3025 (P-59):2006
13.	Sulphate as SO ₄ , mg/l	72.7	36.6	31.3	62	200	400	IS 3025 (P-24):1986
14.	Nitrate as NO ₃ , mg/l	3.3	3.1	2.8	2.9	45	No. Relax	IS 3025 (P-34):1988
15.	Fluoride as F, mg/l	0.38	0.32	0.34	0.28	1.0	1.5	IS 3025 (P-60):2008
16.	Phenolic Compound as (C ₆ H ₅ OH) mg/l	BDL	BDL	BDL	BDL	0.001	0.002	IS 3025 (P-43):1992
17.	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025 (P-48):1994
18.	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025 (P-41):1992
19.	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025 (P-37):1988
20.	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	0.05	No. Relax*	IS 3025 (P-27):1986
21.	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025 (P-47):1994
22.	Zinc as Zn, mg/l,	0.14	0.12	0.12	0.18	5	15	IS 3025 (P-42):1992
23.	Total Coliform, No./100ml	Absent	Absent	Absent	Absent	Absent	Absent	IS 3025 (P-49):1994
24.	Hexavalent Chromium as Cr, mg/l	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025 (P-52):2003
25.	Mineral Oil, mg/l	BDL	BDL	BDL	BDL	0.5	No. Relax	IS 3025 (P-39):1989
26.	Alkalinity as CaCO ₃ , mg/l,	492	500	220	492	200	600	IS 3025 (P-23):1983
27.	Aluminium as Al, mg/l	BDL	BDL	BDL	BDL	0.03	0.2	IS 3025 (P-55):2003
28.	Boran as B, mg/l	BDL	BDL	BDL	BDL	0.5	1.0	IS 3025 (P-57):2005

NOTE: BDL - Below Detection Limit

A. Das,

Sr. Chemist
Aditi R&D Services



[Signature]

Technical Manager
Aditi R&D Services, Sindri

Statements :

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3. This particular test report cannot be reproduced except in full, without prior written permission of Quality Manager of the laboratory.



ADITI R&D SERVICES

Testing Laboratory

NABL ACCREDITED

(A Constituent Board of Quality Council of India)

ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified

Plot No. - I-B-17 (P)
Sindri, Industrial Area,
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Website: aditirnds-services.com
Phone: 0326-2952377 (O)
Fax: 0326-2952377
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/22-23/2937

Date: 21.02.2023

TEST REPORT OF GROUND WATER

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code :
 1. Moholbani Basti
 2. Jorapukhar Kushtand
 3. Bhowra 13 No
 4. Jamadoba 3 No
 5. Lower Dungri
- Date of Sample Collection : 10.02.2023
- Date of Testing : 13.02.2023 to 18.02.2023
- Test : Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

TEST RESULT

Sl. No	PARAMETERS OF TEST	VALUE					IS as per IS 10500:1991		Test Method
		Moholbani Basti	Jorapukhar Kushtand	Bhowra 13 No	Jamadoba 3 No	Lower Dungri	Desirable	Permissible	
1.	Colour, (Hazen Unit)	1	1	1	1	1	5	15	IS 3025 (P-4):2021
2.	Temperature °C	22	23	23	22	23	-	-	-
3.	Electrical Conductivity, µmhos/cm	930	1280	750	350	630	-	-	-
4.	Total Dissolved Solids, mg/l	609	835	489	232	414	-	-	IS 3025(P-16):1984
5.	pH	7.0	8.1	7.5	7.9	7.7	6.5-8.5	No Relax	IS-3025(P-11):1983
6.	Total Hardness as CaCO ₃ , mg/l	436	544	356	140	264	200	600	IS 3025(P-21):2009
7.	Calcium as Ca, mg/l	144	81.6	72	33.6	70.4	75	200	IS 3025(P-40):1991
8.	Magnesium as Mg, mg/l	18.2	81.6	42.2	13.4	21.1	30	100	IS 3025(P-46):1994
9.	Chloride as Cl, mg/l	99.9	70	52	22	62	250	1000	IS 3025(P-32):1988
10.	Fluoride as F, mg/l	0.36	0.26	0.28	0.32	0.36	1.0	1.5	IS 3025(P-60):2008

Continued on Page -2

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[Handwritten Signature]



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Phone: 0326-2952377 (O),
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Mobile: 09471358492, 09431512608

2

Sl. No	PARAMETERS OF TEST	VALUE					IS as per IS 10500:1991		Test Method
		Moholbani Basti	Jorapukhar Kushtand	Bhowra 13 No	Jamadoba 3 No	Lower Dungri	Desirable	Permissible	
11	Sulphate as SO ₄ , mg/l	75	44	58.4	45.3	21.8	200	400	IS 3025(P-24):1986
12	Nitrate as NO ₃ , mg/l	9.8	12.4	11.3	9.4	9.8	45	No. Relax	IS 3025(P-34):1988
13	Alkalinity as CaCO ₃ , mg/l,	328	504	312	104	184	200	600	IS 3025(P-23):1983
14	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-47):1994
15	Zinc as Zn, mg/l,	0.14	0.16	0.12	0.10	0.16	5	15	IS 3025(P-42):1992
16	Iron a Fe, mg/l	0.1	0.1	0.08	0.08	0.1	0.3	No. Relax	IS 3025(P-53):2003
17	Copper as Cu, mg/l	BDL	BDL	BDL	BDL	BDL	0.05	1.5	IS3025 (P-42):1992
18	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025(P-48):1994
19	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025(P-41):1992
20	Nickel as Ni, mg/l	BDL	BDL	BDL	BDL	BDL	0.02	No. Relax	IS 3025(P-37):1992
21	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-37):1988
22	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-27):1986
23	Total Chromium as Cr, mg/l	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-52):2003

NOTE: BDL - Below Detection Limit

A. Das.

Sr. Chemist
Aditi R&D Services



[Signature]
Technical Manager
Aditi R&D Services, Sindri

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ENVIRONMENTAL POLICY

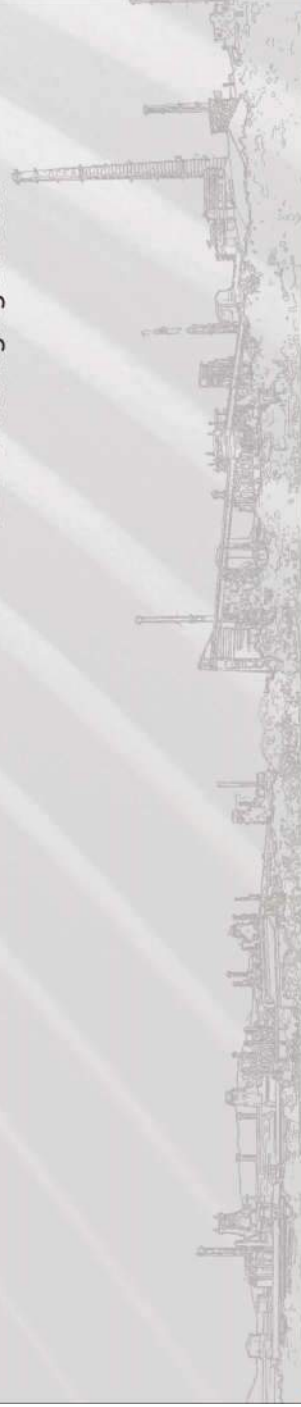
Tata Steel's environmental responsibilities are driven by our commitment to preserve the environment and are integral to the way we do business.

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

Date : November 1, 2017



T V Narendran
CEO & Managing Director



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


सूचना

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

महाप्रबंधक (झरिया)
टाटा स्टील, जामाडोबा (धनबाद)

FROM THE PRESS

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



**TATA
TATA STEEL**

सूचना

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

महाप्रबंधक (झरिया)

टाटा स्टील, जामाडोबा (धनबाद)

CORPORATE COMMUNICATIONS
JHARIA DIVISION

FROM THE PRESS

Publication

DAINIK BHASKAR, DHANBAD Date 11-3-14



TATA
TATA STEEL

सूचना

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महाप्रबंधक (झारिया)

टाटा स्टील, जामाडोबा (धनबाद)

CORPORATE COMMUNICATIONS
JHARIA DIVISION

FROM THE PRESS

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



TATA
TATA STEEL

सूचना

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महाप्रबंधक (झारिया)

टाटा स्टील, जामाडोबा (धनबाद)

CORPORATE COMMUNICATIONS
JHARIA DIVISION

Municipal Commissioner,
Dhanbad.

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

September 17 , 2018

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

Dear Sir,

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

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

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

Thanking You,

Yours faithfully,


Head, Planning
Jharia Division

