

FORM - V
(See Rule -14)

ENVIRONMENT STATEMENT
FOR THE FINANCIAL YEAR ENDING THE 31st MARCH, 2017

GOMARDIH DOLOMITE QUARRY, TATA STEEL LTD.

PART-A

1. Name and address of the owner/
Occupier of the industry, operation : Gomardih Dolomite Quarry
:Tata Steel Ltd., P.O-Tunmura
Dist - Sundargarh, Odisha -770070
- Agent : Mr. Rajesh Kumar
Nominated Owner : Mr. T.V Narendran,
Managing Director
Tata Steel, Jamshedpur
2. Industry Category : Opencast Mining
3. Production Capacity : Dolomite Ore -8,16,000 TPA
4. Year of establishment : 1962
5. Date of submission of previous
Environment Audit Report. 26th September' 2015

PART-B

A) Water consumption in m³ / day under all the three heads for the assessment Year is as follows:

(i) Water Consumption:

Quarry water is used for processing, spraying and cooling.

Consumption Head	2015-16 (Cum/day) (Annual average)	2016-17(Cum/day) (Annual average)
Process (for washing equipment and crusher plant)	1	14.75
Cooling	0	0
Domestic	68	37.8

Name of products	Water Consumption for unit of products	
	During the previous financial year (2015-16)	During the current financial year (2016-17)
Dolomite	Nil	0.06

Dolomite Ore is produced by mechanized method of mining, which does not involve beneficiation and thus precludes the consumption of water. Presently about Av. 130.00 m³ of water is being pumped out from the pit per day. Part of this water is utilized every day for dust suppression on haul roads, crushing & screening plant and in equipment maintenance. The balance water is discharged to the nearby agricultural fields, where it is utilized by the villagers for irrigation.

Domestic water requirement is being met by pumping water from Nakti Jor, a perennial stream nearby. Gomardih Dolomite Quarry. It has obtained NOC vide No. 21-4(302)/CGWA/SER/2011-169 dated 05/02/2011 from CGWA, Bhubaneswar. The application for drawl of surface water from the Nakti Jor is under consideration by the "Water Resources Department, Govt. of Odisha. Interim agreement for drawing water from Nakti Jor has been executed with Executive Engineer, Sundargarh Irrigation Sub-division on 14th September'2015. The copy of the NOC issued by CGWA and application submitted for drawl of surface water & the interim agreement for drawl of surface water are annexed as **Annexure-I,II & III** respectively.

(ii) Raw Material Consumption

The other material consumed during the process of mining like lubricants, oil & grease, brake fluid, explosives and accessories, electric power, industrial gas etc. Are given as follows:

Other Raw Materials used	During the current financial year (2015-16)	During the current financial year (2016-17)
High Speed Diesel (ltrs)	9663.45	13388
Gas (cum)	1297.313	1490.97
Lubricant (ltrs)	1596	11540
Grease (kg)	0	360
Electricity consumed (kwh)	1596726	1758000
Explosives of all types (Explosive, cordex, detonator)	88935.00 KG, 0.00mtr,11718nos.	216275KG,0.00mtr, 12760 nos.

PART-C

POLLUTION DISCHARGED TO ENVIROMENT/ UNIT OF OUTPUT **(Parameters as specified in the consent issued)**

Water Pollution:

The water, which gets accumulated in the pit, is regularly pumped out to continue the mining operations. The mine discharge is allowed to settle at the series of settling ponds made at the top of the quarry. Then it is allowed to go outside. The same water is used at the nearby paddy fields for irrigation purpose. Similarly the canteen effluent is discharged to a soak pit. The domestic sewage is discharged to septic tanks and soak pits. The mine discharge and canteen effluent quality are regularly monitored. The sample of few parameters are given as Table-I and the annual average for the year 2015-16 of the effluent quality (Mine discharge water quality and canteen discharge water quality) are annexed as **Annexure-IV and IV** respectively. The results show that the parameters are within the prescribed limits.

Details of Water Quality Monitoring: **(Table -1)**

Pollutants	Units	Concentration of pollutants (milligrams/litre)	Standards (milligrams/litre)	Percentage of variation from standards with reasons
Mines Discharge	Unit			
pH	-	7.54	5.5-9.0	-
BOD 3 days	mg/l	2	30	(-) 75.00
Fe	mg/l	0.5	3	(-) 82.66

Note: (-) deviation implies better than standard

Air:

Since this is an open cast Mine, the dust generation is mainly due to the movement of vehicles in the haul roads, drilling activities, crusher plant etc, which is fugitive in nature and cannot be quantified. The fugitive dust is controlled at source by provision of wet drilling in the drill machines and installation of dry fog system at the crusher plant. Besides, dust is suppressed by sprinkling of water using mobile water tankers. Green belt has been developed by plantation of trees at lease boundary as well as around the residential colony to prevent propagation of dust.

The annual average of some important parameters are given below. The details of the annual average of ambient air quality data is enclosed as **Annexure-VI**. It shows that the concentrations of the pollutants are well within the permissible standards.

Details of Ambient Air Quality Monitoring:

1. Near Gate No.1

Parameter	Average Concentration (Apr'16 to Mar'17)	CPCB Standard Annual Average $\mu\text{g}/\text{m}^3$	% of Variation from the Standards	Remarks
PM-10 ($\mu\text{g}/\text{m}^3$)	47.12	100	(-)52	
PM2.5 ($\mu\text{g}/\text{m}^3$)	22.91	60	(-)61	
SO ₂ ($\mu\text{g}/\text{m}^3$)	4.4	80	(-)94	
No _x ($\mu\text{g}/\text{m}^3$)	10.9	80	(-)86	
CO (mg/m^3)	0.221	4 mg/m³	(-)99	

2. Near Crusher Plant

Parameter	Average Concentration (Apr'16 to Mar'17)	CPCB Standard Annual Average $\mu\text{g}/\text{m}^3$	% of Variation from the Standards	Remarks
PM-10 ($\mu\text{g}/\text{m}^3$)	53.26	100	(-)46	
PM2.5 ($\mu\text{g}/\text{m}^3$)	26.46	60	(-)55	
SO ₂ ($\mu\text{g}/\text{m}^3$)	4.72	80	(-)94	
No _x ($\mu\text{g}/\text{m}^3$)	12.07	80	(-)84	
CO (mg/m^3)	0.24	4 mg/m³	(-)99	

3. Near VT Centre

Parameter	Average Concentration (Apr'16 to Mar'17)	CPCB Standard Annual Average $\mu\text{g}/\text{m}^3$	% of Variation from the Standards	Remarks
PM-10 ($\mu\text{g}/\text{m}^3$)	48.42	100	(-)51	
PM2.5 ($\mu\text{g}/\text{m}^3$)	23.64	60	(-)60	
SO ₂ ($\mu\text{g}/\text{m}^3$)	4.505	80	(-)94	
No _x ($\mu\text{g}/\text{m}^3$)	11.328	80	(-)85	
CO (mg/m^3)	0.22	4 mg/m³	(-)99	

4. Near Hospital

Parameter	Average Concentration (Apr'16 to Mar'17)	CPCB Standard Annual Average $\mu\text{g}/\text{m}^3$	% of Variation from the Standards	Remarks
PM-10 ($\mu\text{g}/\text{m}^3$)	47.12	100	(-)52	
PM2.5 ($\mu\text{g}/\text{m}^3$)	22.91	60	(-)61	
SO ₂ ($\mu\text{g}/\text{m}^3$)	4.4	80	(-)94	
No _x ($\mu\text{g}/\text{m}^3$)	9.3	80	(-)86	
CO (mg/m^3)	0.21	4 mg/m³	(-)99	

5. Near Substation

Parameter	Average Concentration (Apr'16 to Mar'17)	CPCB Standard Annual Average $\mu\text{g}/\text{m}^3$	% of Variation from the Standards	Remarks
PM-10 ($\mu\text{g}/\text{m}^3$)	48.42	100	(-)51	
PM2.5 ($\mu\text{g}/\text{m}^3$)	23.64	60	(-)60	
SO ₂ ($\mu\text{g}/\text{m}^3$)	4.505	80	(-)94	
No _x ($\mu\text{g}/\text{m}^3$)	11.32	80	(-)85	
CO (mg/m^3)	0.22	4 mg/m³	(-)99	

Note: (-) deviation implies better than standard.

This is an opencast mine and does not have any single point source of air pollution. Hence, quantitative estimation of air pollutants discharged in Kg/day cannot be ascertained. The above ambient air quality data shows that the concentrations of the pollutants are well within the permissible standards.

PART-D

HAZARDOUS WASTES

As specified under the Hazardous Waste (Management, Handling and Trans-boundary) Rules, 2008 and amendment thereof

Hazardous Waste generation		Total Quantity in Kilograms	
		During the previous financial year (2014-15)	During the current financial year (2015-16)
a)	From process		
	-Used oil in liquid form	0.650 KL	0.57KL
	-Oily wastes in solid form	0.010 mt	NIL
	-Used battery in solid form	Nil	10
b)	From pollution control facilities	Nil	NIL

PART-E

SOLID WASTES

Solid Waste		Total Quantity	
		During the previous financial year (2015-16)	During the current financial year (2016-17)
a)	From process		
	- Mining Overburden	13781 m ³	14665
	- Rejects	Nil	Nil
	- Spoils	Nil	Nil
	- Ore washing slimes	Nil	Nil
b)	from pollution control facilities	Nil	Nil
c)	1. Quantity recycled or re-utilized	Nil	Nil
	2. Sold	Nil	Nil
	3. Disposed	Nil	Nil

PART-F

THE CHARACTERISTICS (in terms of composition and quantum) OF HAZARDOUS AS WELL AS SOLID WASTES AND INDICATE DISPOSAL PRACTICE ADOPTED FOR BOTH THESE CATEGORIES OF WASTES.

The oil containing sludge and materials having oil, used oil from vehicle maintenance, used automobile batteries and used up torch cells has been identified as hazardous materials generated. We have been granted authorization for disposal of hazardous materials under Hazardous Waste (Management and Handling) Rules, 2008. Kindly refer to your letter no: -Ind-IV-HW-308-1045 dated 1st June 2015 which is valid up to 31st March'2020.

DISPOSAL PRACTICE:-

a) SOLID WASTES:

Solid Waste generated as overburden mainly consists of morrum. Overburden is systematically and scientifically dumped on a non-mineralised area and the same will be reclaimed by afforestation once it becomes inactive.

b) HAZARDOUS WASTE:

The oil containing sludge and materials having oil, used oil from vehicle maintenance, used automobile batteries and used up torch cells has been identified as hazardous materials generated. We have been granted authorization for disposal of hazardous materials under Hazardous Waste (Management and Handling) Rules, 2008 vide letter no: --Ind-IV-HW-308-1045 dated 1st June 2015 issued by Odisha State Pollution Control Board which is valid up to 31st March'2020.

WASTE OIL:

The waste oil generated at various sources is collected in leak proof barrels and then is kept on an impervious floor with oil catch pit. It is also ensured that the caps of the barrels remain intact and horizontal. The storage area is properly fenced and caution board displayed. During transfer of waste oil to barrels, a trough is placed underneath in order to prevent land contamination due to oil spillage. Then at a fixed interval, these barrels are supposed to be sold to the authorized vendor of OSPCB. Provision of impervious pit with oil for collection of oily waste is there at the workshop premises in addition to the existing practice of collection at specified barrels. Oil and water separation arrangements are also made at the workshop premises.

WASTE BATTERIES:

The used lead acid batteries with diluted acid and caps intact are kept under a shed having impervious floor. Then at a fixed interval, these batteries are supposed to be disposed through auction to the authorized recycler after due intimation to State Pollution Control Board.

Note:

Now we have made an agreement on 09.04.2013 with M/s West Bengal Waste Management Limited, a division of Ramky Enviro Engineers Limited located at Haldia, West Bengal to dispose the waste containing oil falling in line with the recent directive from Member Secretary, State Pollution Control Board, Orissa vide his letter no. 14315/ IND-IV-Misc,-256, dated 04.09.09. This agreement is valid till 12th April,2018.

According to the agreement between M/S Tata Steel, Ferro Alloys and Minerals Division (FAMD) and M/S Ramky Enviro Engineers Pvt. Ltd; the hazardous waste generated at the premises of the Generator located at FAMD (Sukinda Chromite Mines, Ferro Alloys Plant, Bamnibal, Manganese Group of Mines, Joda, Gomardih Dolomite Quarry) shall be disposed to the authorized party. The hazardous waste generated so far at Gomardih is very negligible in quantity. The service of the authorized vendor shall be rendered as per requirement.

PART-G

IMPACT OF POLLUTION ABATEMENT MEASURES TAKEN ON CONSERVATION OF NATURAL RESOURCES AND ON THE COST OF PRODUCTION

DUST SUPPRESSION:

- Water spraying on mine haul roads by water tankers has reduced the dust levels in the ambient air.
- The dry fog system has been installed in the crusher plant. Besides, spraying of water in crusher hopper, screens and transfer points has improved the work zone environment in the plant.
- Tarpaulin sheets are now being used to cover the Dolomite fines stacks to avoid dust nuisance during dry seasons.
- Wet drilling is in practice to control the generation of fugitive dust at source.
- Water spraying is done on the blasted mock pile to reduce generation of dust during loading.
- The people working in the areas of potential dust generation points have been provided with dust respirators.
- Photographs of different activities of dust suppression are attached as **Annexure-VIII**.

MANAGEMENT OF SURFACE RUN-OFF & MINE DISCHARGE WATER:

- About 700 meters of garland drain was made during the year 2015-2016 along the northern lease boundary of the mine. All the garland drain and settling pits are being maintained to check run-off during monsoon season.
- Garland drain around the mine is maintained regularly at the toe of dumps, periphery of the quarries and mineral storage area.
- The garland drains are made of avg. width 1.5 m and depth min. 1m and cleaned before monsoon every year.
- The garland drains are provided with intermittent settling ponds where the rain water along with surface run-off gets settled and clean water is allowed to go outside the mining lease area. This water is utilized for irrigation purpose by the neighbor villages.

TOP SOIL & SOLID WASTE MANAGEMENT:

- The top soil generated during the course of OB excavation is stacked separately at a designated place. It is used as sweet earth while doing plantation at OB dumps and other places.
- The overburden is dumped at a place earmarked for the purpose and the approved design of the Mining Plan is being followed while developing the dump.
- The reclamation of the OB dump is done by phase-wise plantation at the dump slopes.
- Toe wall has been provided at the bottom of the OB dump to arrest the slided material at the toe of the dump.
- Company had spent an amount of Rs. 11 Lakhs on a study on Dump Stability engaging CIMFR, Dhanbad.
- Photographs of dumps management activities are attaches as **Annexure-IX**.

WATER TREATMENT & RECYCLING:

- The mine has two filter plant units one at the mine premises and another at its colony area. The mine discharge water as well as the water drawn from the Nakti Jor is treated at these filter plants before it is supplied for domestic use. The water quality meets all the parameters as prescribe by the statutory authorities.
- The canteen effluent is discharged to a soak pit made for the purpose.
- The oil and grease separation system is there for treating workshop effluent.
- A roof top Rainwater Harvesting Structure has been installed at the Guest House on a trial basis.
- Photographs of water treatment are attached as **Annexure-X**.

ENVIRONMENTAL MONITORING:

- Regular monitoring of the Ambient Air Quality of both core and buffer zone is being done by engaging a vendor i.e. M/S Visiontek Consultancy Pvt. Ltd. Bhubaneswar, authorized by OSPCB and having its environmental laboratory accredited by NABL. The monitoring consists of ambient air quality monitoring at a frequency of twice in a week with 24 hourly sampling, water quality monitoring once in a month for all the parameters and ambient noise quality.
- Meteorological station installed at project site at a height of 10m above ground level for measurement of parameters like Temperature, Humidity, Wind speed, Wind Direction, rainfall, on hourly basis continuously for the study period by using automated "Davis" make weather monitoring station.

AFFORESTATION:

- About 500 numbers of saplings covering an area of 0.96 ha inside mining lease hold have been planted in different places like OB dump, along the road side area leading from Mine to Sonakhan during the year FY'15-16.
- In addition to this, the 7000 saplings planted outside mine lease boundary especially along the side of road connecting SH-10 and mine, and area around colony are being maintained.
- Apart from the above, TSRDS (Tata Steel Rural Development Society) has distributed 8000 saplings to different schools near Gomardih.
- Photographs of afforestation are attached as **Annexure-XI**.

NOISE REDUCTION:

- Periodic maintenance of the HEMM is in practice which has helped in reduction of noise generation at source.
- People working at HEMM and crusher plant area have been provided with earmuffs to use as a contingency measure.
- Constant monitoring of the noise level is in practice. The six monthly monitoring results as attached in **Annexure-VII** shows that it is within prescribed limits.

SANITATION & WATER SUPPLY:

- Potable water is supplied to all the camp residents after treatment in the pressure filter plant.
- Sufficient nos. of toilets with washing facility has been provided at the work place for sanitation jobs. Besides, all the residential houses inside the colony are having individual toilets and bathrooms. All these toilets are connected with a sewage network, septic tanks and soak pits.
- Construction of a new sewage treatment plant (STP) at the residential colony of Gomardih is under progress and will be commissioned shortly.

MEDICAL FACILITIES & HEALTH MONITORING:

- All the employees do undergo periodical medical examination (PME) in hospital every five years. However as per the recent notification, PME of all the employees shall be carried out once in three years for those employees who have reached 45 years of age or more.
- M/S Utkal Polyclinic has been assigned for doing the PME of all the departmental and contractual employees of Gomardih.
- As of now, no occupational diseases have been reported till date. Approx. 111 nos. of contract workers and 53 departmental workers were covered under PME and pre placement medical examination respectively during June 2014 which is valid up to 3year/ five year.
- The medical facilities are also extended to the local community by organizing regular health camps. Health initiatives in the nearby villages were taken care by our TSRDS unit.

ENVIRONMENT AWARENESS:

- Mines Environment and Mineral Conservation week was observed by participation of most of the mines of Bhubaneswar region, under the aegis of Indian Bureau of Mines, Govt. of India. Our mine bagged total one numbers of prizes i.e. Top soil management.
- The mine has also hosted the environment and mineral awareness programme amongst school children, organized by SGAT on Dt. 08/11/2015.
- Biodiversity conservation program has been started with the help of IUCN. The aim of this initiative was to adopt a Comprehensive Biodiversity Conservation and Management Policy for the company. An Agreement has signed between the IUCN & TS for the study and conservation of biodiversity. It also aims to promote good practice by sharing the learning with the wider industry and conservation communities through dialogue, which will provide input into the development of Indian minerals policies and laws.

PERIPHERAL DEVELOPMENT UNDER CSR ACTIVITIES:

The TATA STEEL RURAL DEVELOPMENT SOCIETY (TSRDS) was formed way back in the early eighties of the last century to provide services in the domains of health, education, agriculture & empowerment to the people of surrounding villages for improving their standard of life. TSRDS organizes free medical treatment camps at the surrounding villages with the help of specialist doctors and paramedical staff from the Tata Main Hospital, Jamshedpur with company's expenditure. They conduct Free Medical treatment. Immunization programs, School health programs, Health education and other national health programs like Malaria, TB and HIV/AIDS and also provides primary medical facilities to the surrounding villages with the help of well-equipped mobile medical units throughout the year.

Besides, The Tata Steel Rural Development Society, also organizes different income generation programs for the villagers. It encourages youth sponsoring different sports events in the periphery villages. The list of various CSR activities along with the cost incurred for the same are enumerated in Part-H.

PART-H

**ADDITIONAL MEASURES/ INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION
INCLUDING ABATEMENT OF POLLUTION, PREVENTION OF POLLUTION**

EXPENDITURE INCURRED FOR DIFFERENT ENVIRONMENTAL ACTIVITIES DURING 2016-17

Items	2016-17(Actual) in Rupees
Afforestation	3,78,089
Dust suppression	2,85,000
Treatment of mine discharge & recycling	4,10,400
Environment & weather , exhaust monitoring	2,39,000
Horticulture development	13,500
Drinking water supply	2,26,525
Sanitation	13,79,942
Malaria eradication	1,51,110
Garland drain& storm water drain	58,667
Environment awareness (EMS)	34,000
Community Development through TSRDS	26,88,556
Hazardous waste management	99,600
Total (Rs.)	59,64,389

The photographs of peripheral activities done under CSR in and around Gomardih are given in **Annexure-X**.

LIST OF PERIPHERL ACTIVITIES DONE BY TATA STEEL IN THE YEAR 2016-17

Sl. No.	Activities	Amount (Rs.)
1	Multi-Specialty Health Camp	80,000.00
2	Construction/ Repairing of Hand Tube Well and Soak pit	2,26,525.00
3	Local foot ball tournament	30,000.00
4	Inter village hockey tournament	12500.00
5	Grass Root hockey development program	14,70,000.00
6	Women Empowerment programs	8000.00
7	Observing World Env. Day	8000.00
8	Celebration of Children day	3000.00
9	Jyoti fellowship Scholarship for meritorious tribal students	7,16,131.00
10	AIDS awareness program	8500.00
TOTAL:		25,62,656.00

PART-I

ANY OTHER PARTICULARS FOR IMPROVING THE QUALITY OF THE ENVIRONMENT

- Company is committed for prevention of pollution, continual improvement of environmental performance, committed to comply with relevant environmental and other legislation, regulation & other requirements and continual effort are made to minimize the adverse environmental impacts of our activities, products or services.
- One roof top rain water harvesting structure has already been completed at Guest House building.
- Company is now installing a STP at the residential colony of Gomardih.
- The Management conducts the awareness development programme on environmental protection for school children and camp residents.
- Company has started initiative to combat Climate Change. Energy Audit has already been conducted and time bound action plan has been made to reduce energy consumption.
- The Mine management celebrates and participates in ‘Mine Environment & Mineral Conservation Week’ every year under the aegis of Indian Bureau of Mines, Bhubaneswar Region.
- Company has installed electronic display board to display the important environmental parameters and messages for the knowledge of the public.
- Meteorological Data for the year 2016-17:

Maximum temperature: -	41.5 ⁰ C
Minimum temperature: -	7.4 ⁰ C
Maximum rainfall :-	80 mm

**Manager cum Agent
Gomardih Dolomite Quarry
Tata Steel Limited**

Copy to: Regional Officer, OPCB, Rourkela.



TATA STEEL

LIST OF ANNEXURES

Annexure-I	NOC issued be CGWA, Bhubaneswar for ground water
Annexure-II	Application made for drawl of Surface water from Nakti Jor
Annexure-III	Interim Agreement made with Executive Engineer, Sundargarh Irrigation Division, Sundargarh on 14 th September'2015 valid till 13 th Septmber'2016 for drawl of Surface water from Nakti Jor.
Annexure-IV	Annual average monitoring data for Mine Discharge of Gomardih
Annexure-V	Annual average monitoring data for Canteen Effluent of Gomardih
Annexure-VI	Annual average monitoring data of Ambient Air Quality (CZ) of Gomardih
Annexure-VII	Annual average monitoring data of Ambient Noise Quality of Gomardih
Annexure-VIII	Photographs showing different activities done for dust suppression at Gomardih
Annexure-IX	Photographs showing garland drain and toe wall of Gomardih
Annexure-X	Photographs of Water Treatment Plant and roof top RWH structure of Guest House at Gomardih
Annexure-XI	Photographs of plantation at different locations of Gomardih
Annexure-XII	Photographs showing the peripheral activities done around Gomardih under CSR of Tata Steel

Central Ground Water Authority
Ministry of Water Resources
Government of India

No. 21-4(302)/CGWA/SER/2011-

169

Dated-

To,

Mr. Rimal Joshi
 Mines side: Gomardih
 Gomardih Dolomite Quarry, M/s Tata Steel Ltd.
 Sundargarh, Orissa- 755028

15 FEB 2011

Sub: Request for Ground Water clearance in respect of Gomardih Dolomite Quarry, of M/s Tata Steel Ltd., for proposed expansion programme of Gomardih Dolomite Mines at village Gomardih, Block Kutra, Tehsil Rajgangpur, District Sundargarh, Orissa-reg.

Sir,

The area where the project falls comes under safe category as per the ground water assessment carried out by Central Ground Water Board. Since the total requirement of ground water is 400 m³/day, NOC is not required for ground water withdrawal from Central Ground Water Authority. However, to neutralize the adverse impact of ground water withdrawal that may arise on a long term basis, the industry/ project is advised to undertake the following measures:

1. Ground Water withdrawal shall not exceed the proposed quantity of 400 m³/day.
2. The abstraction structures should be fitted with water meter by the industry and monitoring of ground water abstraction to be undertaken accordingly on regular basis, at least once in a month. The data may be submitted on a yearly basis to the Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar for perusal and records.
3. The industry should adopt and implement artificial recharge measures/rain water harvesting measures for augmenting the ground water resources of the area as per the hydrogeological investigation.
4. The industry shall ensure proper conservation measures, recycling and reuse of waste water after adequate treatment.
5. The industry shall monitor the ambient ground water regime of the area through piezometers and submit the data on a yearly basis to the Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar for perusal and records.

Yours faithfully,

S. Bhattacharya
 (S. Bhattacharya)
 Scientist 'D'
 for Member Secretary

Copy to:

1. The Member Secretary, State Pollution Control Board, Orissa, Department of Forest & Environment, Government of Orissa, Parivesh Bhawan, A-118, Nilakantha Nagar, Unit VIII, Bhubaneswar, Orissa-751012, with a request to ensure that Rain Water Harvesting and Artificial Recharge methods are being implemented by the firm and quantity of ground water withdrawal is not exceeding 400 m³/day.
2. The Regional Director, Central Ground Water Board, South Eastern Region, Bhujal Bhawan, Khandagiri, Bhubaneswar-751030, Orissa. This has reference to your letter No. 5-22/SER/ CGWA/2010-53 dated 12.01.2011.
3. The TS to Chairman, Central Ground Water Board, NH-IV, Faridabad.

(S. Bhattacharya)
 Scientist 'D'
 for Member Secretary

16/11, Jamnagar House, Mansingh Road, New Delhi- 110011

Tel: (011) 23381089, 23384973; Fax (011) 23386743

e-mail: tsmsml-cowb@nic.in

web site: http://cgwb.gov.in



Ref: Letter No. GD/943/39
Dated: 18.9.2012

To

The Principal Secretary,
Department of Water Resources,
Govt. of Odisha,
Bhubaneswar.

Sub: Application for obtaining permission to draw water @ 800m³/day or 0.327 cusec from Naktijor, tributary of Sankh River of Brahmani Basin for our Gomardih Dolomite Quarry, Tata Steel Limited, Villages : Tunmura & Jharbera, P.O: Tunmura, Tahsil-Rajgangpur, Dist. Sundargarh, Odisha.

Dear Sir,

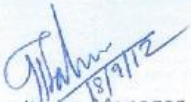
We would like to inform you that, currently we are drawing @250m³/day water from Naktijor, tributary of Sankh River of Brahmani Basin near villages Girjatoli, just adjacent to our Gomardih Colony and paying water tax regularly to the Govt. The additional water @550m³/day is required from the same source i.e. Nakti Jor for our Gomardih Quarry, Colony, nearby villages and others. So that the total water requirement is estimated @ 800m³/day or 0.327 cusec.

We are enclosing here with the filled-in application in Form-J duly signed by the applicant along with the requisite fees in shape of Demand Draft ie. (1) DD No.656661, Dated. 17/09/2012 for Rs.1,000/- (Rupees one thousand) only towards processing fees and (2) DD No.656660, dated.17/09/2012 for Rs. 49,100/- (Rupees forty nine thousand one hundred) only towards security deposit, drawn on State Bank of India, in favor of AFA Cum Under Secretary, DOWR, payable at Bhubaneswar, for your kind perusal and necessary approval for drawl of water @800m³/day from Naktijor for mines & residential purpose.

The Water Management Plan along with necessary annexure will be submitted shortly.

Thanking you.

Yours faithfully,
F: Tata Steel Limited


Agent-cum-Manager
Gomardih Dolomite Quarry

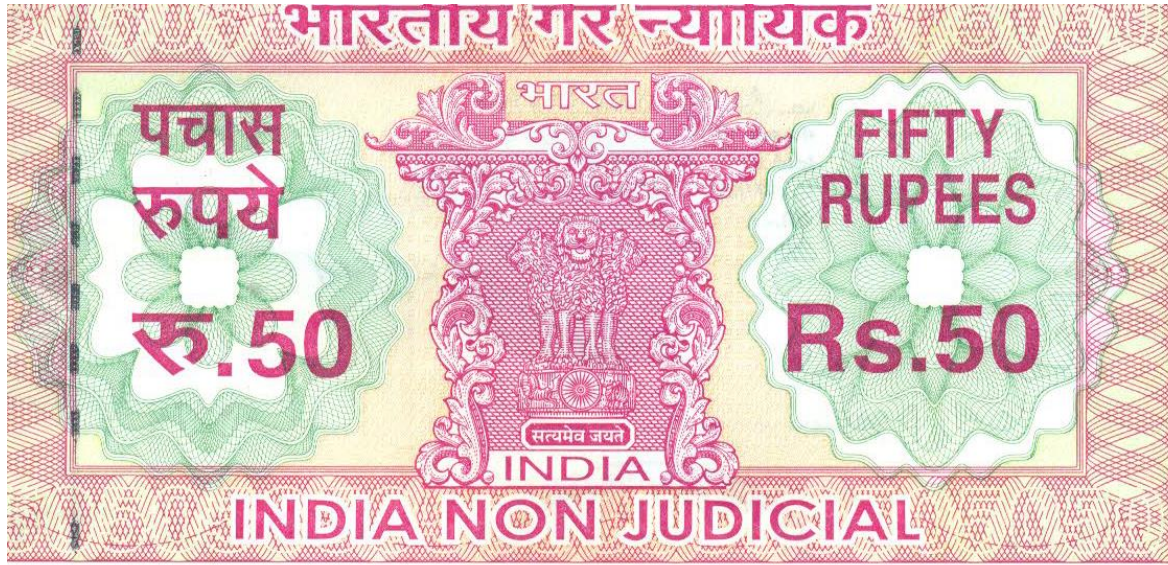
Received
DD no. 656660 for ₹ 49,100/-
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21/9/12
AFA-cum-Under Secy. to Govt.
Department of Water Resources

TATA STEEL LTD.

Ferro Alloys & Minerals Division, Gomardih Dolomite Quarry P. O. Tunmura
Dist. Sundargarh, Orissa - 770070
Tel. (06624) 249038

Regd. Office : Bombay House, 24 Homi Modi Street, Mumbai - 400 001



डीसा ORISSA

A 017288

"FORM 'K'

[See rule 23-A (2) (e) & rule 26]

**AGREEMENT FOR SUPPLY OF WATER FOR THE PURPOSE OF
INDUSTRIAL/COMMERCIAL USE**

THIS INTERIM AGREEMENT is made on the ~~14th September~~ 14th September Two Thousand Fifteen BETWEEN Sri D.B. Sundara Ramam, S/o. Sri D.B. Gopala Krishna, Village: Vizianagarm, District. Vizianagarm, Andhra Pradesh, by profession, working as Executive-in-Charge of M/s. Tata Steel Ltd., Gomardih Dolomite Quarry, At/Po.- Tunmura, P.S-Kutra, Dist.-Sundargarh (Hereinafter called The "Applicant") of the first part.

AND

Sri Subhransu Sekhar Mishra, S/o. Sarat Chandra Mishra, At: Kashipur PO: Keonjhar, Dist. Keonjhar, Odisha, Pin-758001, by profession, working as Agent-Cum-Manager of M/s. Tata Steel Ltd., Gomardih Dolomite Quarry, At/Po.- Tunmura, P.S-Kutra, Dist.-Sundargarh (Hereinafter referred to as The "Surety") of the second part.

AND


The Governor of Odisha which expression unless repugnant to the context, shall include his successors and assigns (hereinafter called "The Government") of the third part.

WHEREAS, the applicant has made an application for supply of water from Government water source for the period as mentioned in the Schedule here to annexed;

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For Tata Steel Ltd.
By their Constituted Attorney


D. B. SUNDARA RAMAM
Executive-in-Charge
Ferro Alloys & Minerals


Executive Engineer
Sundargarh Irrigation Division
SUNDARGARH
14/9/15

WATER QUALITY OF MINE DISCHARGE OF GOMARDIH DOLOMITE QUARRY

Sl. No	Parameter	Unit	Detecti on limit	Standards (In land Surface water)	2015-16
1	Colour & Odour	Hazen	--	Colourless/Odourless as far as practicable	CL&U/O
2	Suspended Solids	mg/l	--	100	24.9
3	Particulate size of SS	μ(micron)	--	Shall pass 850 micron IS Sieve	Passes through 850 μm IS Sieve
4	pH Value	--	--	5.5-9.0	7.8
5	Temperature	°C	--	Shall not exceed 5°C above the receiving water temperature	28.3
6	Oil & Grease(max)	mg/l	0.2	10	1.1
7	Total Residual Chlorine	mg/l	0.2	1	0.2
8	Ammonical Nitrogen (as N)	mg/l	--	50	0.4
9	Total Kjeldahl nitrogen (as NH ₃)	mg/l	--	100	1.3
10	Free ammonia (as NH ₃)	mg/l	0.7	5	0.3
11	BOD(3 days at 27°C (max)	mg/l	--	30	7.5
12	Chemical Oxygen Demand as COD	mg/l	--	250	25.6
13	Arsenic as As	mg/l	0.001	0.2	0.008
14	Mercury (Hg)	mg/l	0.001	0.01	0.001
15	Lead as Pb(max)	mg/l	0.001	0.1	0.01
16	Cadmium as Cd (max)	mg/l	0.001	2	0.001
17	Hexavalent Chromium as Cr ⁺⁶	mg/l	0.002	0.1	0.01
18	Total Chromium (Cr)	mg/l	0.002	2	0.01
19	Copper as Cu (max)	mg/l	0.001	3	0.02
20	Zinc as Zn(max)	mg/l	0.001	5	0.03
21	Selenium (Se) (max)	mg/l	0.001	0.05	0.004
22	Nickel (Ni)	mg/l	0.001	3	0.02
23	Cyanide as CN (max)	mg/l	0.03	0.2	0.02
24	Fluoride as F (max)	mg/l	--	2	0.4
25	Dissolved Phosphates (P)	mg/l	--	5	5.9
26	Sulphide (S)	mg/l	--	2	0.54
27	Phenolic Compounds as C ₆ H ₅ OH (max)	mg/l	0.001	1	0.4
28	Bio-assay test	--	--	90% survival of fish after 96 hours in 100% effluent	100% survival of fish after 96 hours in 100% effluent
29	Manganese (Mn)	mg/l	0.001	2	0.02
30	Iron as Fe (max)	mg/l	--	3	0.52
31	Vanadium (V)	mg/l	0.001	0.2	0.2
32	Nitrate Nitrogen	mg/l	--	10	4.3

Note: CL: Colourless , U/O: Unobjectionable.

ANNEXURE-V**QUALITY OF DOMESTIC WASTE WATER (Canteen effluent) OFGOMARDIH DOLOMITE QUARRY**

Sl. No	Parameter	Unit	Detection limit	Standards (In land Surface water)	2015-16
1	Colour & Odour	Hazen	--	Colourless/Odourless as far as practicable	12.3 & pungent smell
2	Suspended Solids	mg/l	--	100	28.4
3	Particulate size of SS	μ(micron)	--	Shall pass 850 micron IS Sieve	Passes through 850 μm IS Sieve
4	pH Value	--	--	5.5-9.0	7.7
5	Temperature	°C	--	Shall not exceed 5°C above the receiving water temperature	28.4
6	Oil & Grease(max)	mg/l	--	10	1.9
7	Total Residual Chlorine	mg/l	0.2	1	0.2
8	Ammonical Nitrogen (as N)	mg/l	--	50	2.2
9	Total Kjeldahl nitrogen (as NH ₃)	mg/l	--	100	3.7
10	Free ammonia (as NH ₃)	mg/l	0.7	5	0.3
11	BOD(3 days at 27°C (max)	mg/l	--	30	6.0
12	Chemical Oxygen Demand as COD	mg/l	--	250	7.2
13	Arsenic as As	mg/l	0.001	0.2	27.2
14	Mercury (Hg)	mg/l	0.001	0.01	0.008
15	Lead as Pb(max)	mg/l	0.001	0.1	0.001
16	Cadmium as Cd (max)	mg/l	0.001	2	0.01
17	Hexavalent Chromium as Cr ⁺⁶	mg/l	0.002	0.1	0.001
18	Total Chromium (Cr)	mg/l	0.002	2	0.01
19	Copper as Cu (max)	mg/l	0.001	3	0.01
20	Zinc as Zn(max)	mg/l	0.001	5	0.02
21	Selenium (Se) (max)	mg/l	0.001	0.05	0.04
22	Nickel (Ni)	mg/l	0.001	3	0.004
23	Cyanide as CN (max)	mg/l	0.03	0.2	0.02
24	Fluoride as F (max)	mg/l	--	2	0.02
25	Dissolved Phosphates (P)	mg/l	--	5	0.3
26	Sulphide (S)	mg/l	--	2	0.8
27	Phenolic Compounds as C ₆ H ₅ OH (max)	mg/l	0.001	1	0.6
28	Bio-assay test	--	--	90% survival of fish after 96 hours in 100% effluent	100% survival of fishes
29	Manganese (Mn)	mg/l	0.001	2	0.02
30	Iron as Fe (max)	mg/l	--	3	0.9
31	Vanadium (V)	mg/l	0.001	0.2	0.2
32	Nitrate Nitrogen	mg/l	--	10	5.1

*The canteen effluent is discharged to a soak pit.

ANNEXURE-VI

AMBIENT AIR QUALITY RESULTS, Annual Average (April-15 to Mar-16)

Month	Location	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	NH ₃ (µg/m ³)	O ₃ (µg/m ³)	CO (mg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	Benzene (µg/m ³)	Benzo (a) pyrene (ng/m ³)
APR'15	Old Geological Office	52.27	26.44	13.74	19.27	<20.0	<4.0	0.23	<0.001	<0.01	<0.001	<0.001	<0.002
MAY'15	Old Geological Office	54.25	27.13	14.18	20.18	<20.0	<4.0	0.24	<0.001	<0.01	<0.001	<0.001	<0.002
JUNE'15	Old Geological Office	36.56	18.61	12.24	16.6	<20.0	<4.0	0.17	<0.001	<0.01	<0.001	<0.001	<0.002
JULY'15	Near First Gate	50.8	21.3	4.2	21.7	12.5	21.65	0.30	<0.02	4.06	<1.0	<2.08	<0.4
AUG'15	Near First Gate	50.63	20.38	5.2	21.5	15.9	22.9	0.26	<0.02	<4.0	<1.0	<2.08	<0.4
SEP'15	Near First Gate	54.6	22.4	4.9	15.7	<10.0	<19.62	0.23	<0.02	<4.0	<1.0	<2.08	<0.4
OCT'15	Near First Gate	69.90	27.50	5.6	23.0	<10.0	<19.62	0.22	<0.02	<4.0	<1.0	<2.08	<0.4
NOV'15	Near First Gate	70.50	31.30	5.7	25.5	<10.0	<19.62	0.27	<0.02	<4.0	<1.0	<2.08	<0.4
DEC'15	Near First Gate	64.50	33.30	6.2	23.1	<10.0	<19.62	0.26	<0.02	<4.0	<1.0	<2.08	<0.4
JAN'16	Near First Gate	71.00	34.00	6.2	24.8	10.5	19.62	0.23	0.02	4	1	2.08	0.4
FEB'16	Near First Gate	60.00	29.00	5.6	21.8	10.4	19.62	0.23	0.02	4	1	2.08	0.4
MAR'16	Near First Gate	61.00	30.00	5.0	18.1	10.2	19.62	0.17	0.02	4	1	2.08	0.4
Yearly Average	Near First Gate	58.00	26.78	7.40	20.93	13.30	16.20	0.23	0.02	3.01	0.75	1.56	0.30
Limit	CPCB	60.00	40.00	50.00	40.00	100.00	100.00	2	0.50	20.00	6	5	1

Month	Location	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	NH ₃ (µg/m ³)	O ₃ (µg/m ³)	CO (mg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	Benzene (µg/m ³)	Benzo (a) pyrene (ng/m ³)
APR'15	Near Sub Station	52.01	26.46	13.53	18.87	<20.0	<4.0	0.22	<0.001	<0.01	<0.001	<0.001	<0.002
MAY'15	Near Sub Station	53.89	27.95	14.8	19.97	<20.0	<4.0	0.26	<0.001	<0.01	<0.001	<0.001	<0.002
JUNE'15	Near Sub Station	37.37	19.44	12.49	16.9	<20.0	<4.0	0.17	<0.001	<0.01	<0.001	<0.001	<0.002
JULY'15	Near Sub Station	35.4	15.8	4.1	13.2	10.57	19.72	0.18	<0.02	<4.0	<1.0	<2.08	<0.4
AUG'15	Near Sub Station	50.1	20.3	4.7	22.3	13.8	21.4	0.26	<0.02	<4.0	<1.0	<2.08	<0.4
SEP'15	Near Sub Station	53.5	23.9	4.7	18.2	<10.0	<19.62	0.24	<0.02	<4.0	<1.0	<2.08	<0.4
OCT'15	Near Sub Station	70.3	31.5	5.7	26.5	<10.0	<19.62	0.30	<0.02	<4.0	<1.0	<2.08	<0.4
NOV'15	Near Sub Station	73.0	34.8	6	27.2	13.65	<19.62	0.32	<0.02	<4.0	<1.0	<2.08	<0.4
DEC'15	Near Sub Station	66.1	33.4	6.3	24.3	13.85	<19.62	0.27	<0.02	<4.0	<1.0	<2.08	<0.4
JAN'16	Near Sub Station	74.00	36.0	6.1	27	10.8	19.62	0.29	0.02	4	1	2.08	0.4
FEB'16	Near Sub Station	64.00	32.0	5.4	23	10.3	19.62	0.24	0.02	4	1	2.08	0.4
MAR'16	Near Sub Station	62.00	31.0	5.3	20.6	10.1	19.62	0.21	0.02	4	1	2.08	0.4
Yearly Average	Near Sub Station	57.64	27.70	7.43	21.50	13.59	15.87	0.25	0.02	3.00	0.75	1.56	0.30
Limit	CPCB	60.00	40.00	50.00	40.00	100.00	100.00	2	0.50	20.00	6	5	1

Month	Location	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	NH ₃ (µg/m ³)	O ₃ (µg/m ³)	CO (mg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	Benzene (µg/m ³)	Benzo (a) pyrene (ng/m ³)
APR'15	Near Crusher Plant	53.64	27.39	14.01	19.68	<20.0	<4.0	0.25	<0.001	<0.01	<0.001	<0.001	<0.002
MAY'15	Near Crusher Plant	55.25	27.9	14.64	21.68	<20.0	<4.0	0.31	<0.001	<0.01	<0.001	<0.001	<0.002
JUNE'15	Near Crusher Plant	35.91	18.23	12.09	16.4	<20.0	<4.0	0.16	<0.001	<0.01	<0.001	<0.001	<0.002
JULY'15	Near Crusher Plant	38.3	16.4	4.2	15.6	10.15	<19.62	0.15	<0.02	<4.0	<1.0	<2.08	<0.4
AUG'15	Near Crusher Plant	56.1	23.4	4.9	25.4	14.6	<19.62	0.32	<0.02	<4.0	<1.0	<2.08	<0.4
SEP'15	Near Crusher Plant	62.0	25.6	5.0	19.0	<10.0	<19.62	0.18	<0.02	<4.0	<1.0	<2.08	<0.4
OCT'15	Near Crusher Plant	73.4	30.9	5.2	22.8	<10.0	<19.62	0.18	<0.02	<4.0	<1.0	<2.08	<0.4
NOV'15	Near Crusher Plant	81.4	39.4	6.2	29.7	<10.0	<19.62	0.32	<0.02	<4.0	<1.0	<2.08	<0.4
DEC'15	Near Crusher Plant	75.4	38.9	6.6	25.7	<10.0	<19.62	0.29	<0.02	<4.0	<1.0	<2.08	<0.4
JAN'16	Near Crusher Plant	81	41	6.3	29.5	10	19.62	0.29	0.02	4	1	2.08	0.4
FEB'16	Near Crusher Plant	69	36	6.1	25.5	10	19.62	0.26	0.02	4	1	2.08	0.4
MAR'16	Near Crusher Plant	67	35	5.6	21.9	10.4	19.62	0.23	0.02	4	1	2.08	0.4
Yearly Average	Near Crusher Plant	62.37	30.01	7.57	22.74	12.93	15.72	0.25	0.02	3.00	0.75	1.56	0.30
Limit	CPCB	60.00	40.00	50.00	40.00	100.00	100.00	2	0.50	20.00	6	5	1

Month	Location	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	NH ₃ (µg/m ³)	O ₃ (µg/m ³)	CO (mg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	Benzene (µg/m ³)	Benzo (a) pyrene (ng/m ³)
APR'15	Near V.T.Center	50.23	25.58	14.1	21	<20.0	<4.0	0.24	<0.001	<0.01	<0.001	<0.001	<0.002
MAY'15	Near V.T.Center	54.12	27.54	15.58	22.24	<20.0	<4.0	0.27	<0.001	<0.01	<0.001	<0.001	<0.002
JUNE'15	Near V.T.Center	33.26	16.67	10.9	14.62	<20.0	<4.0	0.14	<0.001	<0.01	<0.001	<0.001	<0.002
JULY'15	Near V.T.Center	52.3	19.9	4.6	21.2	14.07	20.53	0.31	0.02	8.14	<1.0	<2.08	<0.4
AUG'15	Near V.T.Center	51.8	21.6	4.5	21.3	14.5	<19.62	0.24	<0.02	<4.0	<1.0	<2.08	<0.4
SEP'15	Near V.T.Center	53.3	21.9	4.9	18.5	<10.0	<19.62	0.24	<0.02	<4.0	<1.0	<2.08	<0.4
OCT'15	Near V.T.Center	67.9	30.1	5.5	22.9	<10.0	<19.62	0.22	<0.02	<4.0	<1.0	<2.08	<0.4
NOV'15	Near V.T.Center	70.4	34.6	5.7	28.7	<10.0	<19.62	0.30	<0.02	<4.0	<1.0	<2.08	<0.4
DEC'15	Near V.T.Center	62.1	31.1	6.3	26.2	<10.0	<19.62	0.26	<0.02	<4.0	<1.0	<2.08	<0.4
JAN'16	Near V.T.Center	71	35	6	28.1	10	19.62	0.29	0.02	4	1	2.08	0.4
FEB'16	Near V.T.Center	59	29	5.1	23.8	10	19.62	0.26	0.02	4	1	2.08	0.4
MAR'16	Near V.T.Center	58	28	5.3	21.6	10.1	19.62	0.21	0.02	4	1	2.08	0.4
Yearly Average	Near V.T.Center	56.94	26.75	7.37	22.52	13.22	15.72	0.25	0.02	3.35	0.75	1.56	0.30
Limit	CPCB	60.00	40.00	50.00	40.00	100.00	100.00	2	0.50	20.00	6	5	1

Month	Location	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	NH ₃ (µg/m ³)	O ₃ (µg/m ³)	CO (mg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	Benzene (µg/m ³)	Benz o (a) pyre ne (ng/ m ³)
APR'15	Near Hospital	51.03	25.86	13.5	19.73	<20.0	<4.0	0.2	<0.001	<0.01	<0.001	<0.001	<0.002
MAY'15	Near Hospital	52.93	26.23	14.79	22.07	<20.0	<4.0	0.22	<0.001	<0.01	<0.001	<0.001	<0.002
JUNE'15	Near Hospital	31.76	15.92	10.47	14.27	<20.0	<4.0	0.13	<0.001	<0.01	<0.001	<0.001	<0.002
JULY'15	Near Hospital	43.9	19.0	4.3	17.8	11.21	19.81	0.18	<0.02	<4.0	<1.0	<2.08	<0.4
AUG'15	Near Hospital	45.88	20.38	4.7	21.5	15.0	20.7	0.35	0.03	<4.0	<1.0	<2.08	<0.4
SEP'15	Near Hospital	50.3	19.1	4.8	17.2	22.0	<19.62	0.21	<0.02	<4.0	<1.0	<2.08	<0.4
OCT'15	Near Hospital	63.4	28	5.4	21.3	13.4	<19.62	0.23	<0.02	<4.0	<1.0	<2.08	<0.4
NOV'15	Near Hospital	65.1	32	5.9	23.1	12.6	<19.62	0.25	<0.02	<4.0	<1.0	<2.08	<0.4
DEC'15	Near Hospital	60.1	30.5	5.9	24.4	<10.0	<19.62	0.26	<0.02	<4.0	<1.0	<2.08	<0.4
JAN'16	Near Hospital	66	33	6	23.8	10	19.62	0.26	0.02	4	1	2.08	0.4
FEB'16	Near Hospital	56	29	5.1	19.1	10	19.62	0.21	0.02	4	1	2.08	0.4
MAR'16	Near Hospital	55	27	5	19.4	10	19.62	0.19	0.02	4	1	2.08	0.4
Yearly Average	Near Hospital	53.45	25.50	7.16	20.31	14.12	15.82	0.22	0.02	3.00	0.75	1.56	0.30
Limit	CPCB	60.00	40.00	50.00	40.00	100.00	100.00	2	0.50	20.00	6	5	1

ANNEXURE-VII

Noise Monitoring Report (April'15 to Sep'15)

Date of Survey	Time of Survey	Noise Value in dB(A)	Permissible Limit in dB(A)	Remarks
		Industrial Area		
April'14 to sept'14	Day Time 6AM-10Pm	74.64	75	Within the standard
	Night Time 10:00 PM to 6:00AM	52.78	70	Within the standard

Noise Monitoring Report (Oct'15 to Mar'16)

Date of Survey	Time of Survey	Noise Value in dB(A)	Permissible Limit in dB(A)	Remarks
		Industrial Area		
Oct'14 to Mar'15	Day Time 6AM-10Pm	49.55	75	Within the standard
	Night Time 10:00 PM to 6:00AM	40.73	70	Within the standard