



स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED

भिलाई इस्पात संयंत्र
BHILAI STEEL PLANT

No.Mine/IOC/Mahamaya/2018/418

Date: 15/10/2018

To,
Additional Principal Chief Conservator of Forests (C),
Ministry of Environment, Forest and Climate Change,
Regional Office (WCZ), Ground Floor, East Wing,
New Secretariat Building Civil Lines, Nagpur-440001
Tel.No.0712-2531318, Fax: 0712-2531318

Ref: No. No. J-11015/11/2007-IA.II (M) dated 26/03/2015

SUB: Six monthly status of compliance to the conditions stipulated in the Environmental Clearance granted by MoEFCC w.r.t. Mahamaya-Dulki Mining Lease (1522.67 Hect.) for the Proposed Enhancement of Production Capacity from 0.96 TO 1.46 MTPA of M/S SAIL-Bhilai Steel Plant.

Sir,

Please find enclosed herewith the six monthly compliance report for period APR'18 to SEP'18 with respect to conditions stipulated in the Environmental Clearance granted by MoEFCC w.r.t. Mahamaya Dulki Mining Lease (1522.67 Hect.) granted vide above reference.

Thank you,


Mine Manager
Mahamaya Mine
Mine Manager
Mahamaya Mine

Copy to,
Member Secretary
Paryavas Bhavan, North Block Sector-19,
Naya Raipur(C.G.), Phone :0771-2512220

DGM (Env & Leases)

Sub: The point wise Compliances of Environment Clearance condition granted by MoEF&CC vide letter No. J-11015/11/2007-IA.II(M) dated 26/03/2015 wrtMahamayaDulki Mining Lease (1522.67 Hect.) for the Proposed Enhancement of Production Capacity from 0.96 TO 1.46 MTPA of M/S SAIL-Bhilai Steel Plant.

S.No.	Conditions	Compliance
A	SPECIFIC CONDITIONS	
(i)	No mining activities are allowed in forest area for which the FC is not available.	Mining activity is being carried out only in that are for which FC is available.Forestry Clearance of Mahamaya (84 Ha) - Stage-II Clearance granted By MOEF & CC vide no. F No. 8-19/2002-FC Dated 07.03.2003 & Stage-II Forestry Clearance granted by MOEF&CC over 60.0 Ha Vide Letter No.F.No.8-559/89-FC (PT), New Delhi Dated-07.08.2015.
(ii)	The condition 3(iii)b of the guidelines issued by the Forest Conservation Division in this Ministry vide F.No. 11-362/2012-FC dated 1 st February, 2013 is not being prescribed in view of Hon'ble Supreme Court order dated 27/01/2014 and the EC is subject to the final order of the Supreme Court in the matter.	-
(iii)	The project proponent shall obtain Consent to Establish and Consent to Operate from the State Pollution Control Board and effectively implement all the conditions stipulated therein.	The Member Secretary, CECB, Raipur has granted "Consent to Establish" vide no 4088/TS/CECB/2016 Naya Raipur, Dated 14.01.2016, and "Consent to Operate" vide no 259/TS/CECB/2018 Naya Raipur, Dated 05.04.2018,
(iv)	The mining operations shall be restricted to above ground water table and it should not intersect the groundwater table.	The mining operations are being carried out above ground water table.
(v)	The lose solids should be kept separately from flowing water and flow of effluents to nearby areas outside the leasehold shall be prevented. These paved drains along with arrangements for Over Burden Dumps and their drainage may be clearly depicted on a contoured map of the mining area.	Existing Waste dumps are well within the lease area. Garland drainage, check dams and retaining wall are prepared to prevent the flow of effluents to nearby area outside the mine. Total 13 check dams have been constructed around the Mine. Photos of check dams, garland drainage and retaining wall are enclosed in Annexure-1 .

(vi)	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations. Adequate measures shall be taken for conservation and protection of the 1 st and 2 nd order streams, emanating or passing through the mine lease during the course of mining operation.	No natural watercourse and/or water resources are obstructed due to any mining operation.
(vii)	The top soil, if any shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation	Top soil excavated till March'18 has been utilized for reclamation and rehabilitation of dumps. Top soil, excavated during period from Apr'18 to Sep'18, has been preserved and it will be used for reclamation. Photographs of Top Soil preservation site is enclosed in Annexure-4 .
(ix)	The over burden (OB) generated during the mining operation shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time and their phase-wise stabilization shall be carried out. Proper terracing of OB dump(s) shall be carried out so that the overall slope shall not exceed 28°. The over burden dump(s) shall be scientifically vegetated with suitable native species to prevent erosion and surface run off	The over burden (OB) generated during the mining operation is being stacked at earmarked dump site(s). Stabilization and proper terracing of OB dump is done & scientifically vegetated with suitable native species. Till date 12069 numbers of trees have been planted in 5.40 Hectare within lease area and 34531 numbers of trees have been planted in 16.818 Hectare outside mining lease. Photographs of plantation are enclosed in Annexure-2 .
(x)	Catch drains and siltation ponds of appropriate size shall be constructed for the working pit, temporary OB and mineral dumps to arrest flow of silt and sediment directly into the adjoining River and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desalted particularly after the monsoon and maintained properly.	Drainages, and check dams have been prepared to arrest the flow of silt. There is no adjoining river and water body. The drainages and check dams are regularly desilted before Monsoon every year. Photo of drainage, sumps and check dam is enclosed in Annexure-1 .
(xi)	Dimension of the retaining wall at the toe of the OB dump(s) and the OB benches within the mine to check run-off and siltation should be based on the rain fall data.	Retaining wall exists at the toe of OB dump to check run-off and silt. Dimension of RCC wall is 45m x 3.6m x 2m. Photo of retaining wall is enclosed in Annexure-1 .

(xii)	Plantation shall be raised in an area earmarked including a 7.5 m wide green belt in the safety zone around the mining lease, OB dump(s), along the roads, etc. by planting the native species in consultation with the local DFO/Agriculture Department. In addition, plantation shall also be raised in the backfilled and reclaimed area and around water body. The density of the trees should be around 2500 plants per ha.	Thick Forest area exists around the mining lease. Plantation has been done in backfilled and reclaimed area. Till September 2018, total 46600 plants have been planted. Photographs of plantation are enclosed in Annexure-2 .
(xiii)	Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air quality parameters conform to the norms prescribed by the Central pollution Control Board in this regard.	Extensive Water sprinkling is done on haul road. Crushing and screening plant does not exist within the lease. Ambient air quality parameters are monitored and are within norms as prescribed by the Central pollution Control Board in this regard. Water sprinkling on haul road is being carried out by 5 numbers of water tankers of 10 KL capacity.
(xiv)	Regular monitoring of water quality upstream and downstream of perennial nallahs falling in the impact zone shall be carried out and record of monitoring data should be maintained and submitted to Ministry of Environment, Forest and Climate Change, its Regional Office, Nagpur, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	There is no perennial nallah in the impact zone of Mahamaya Mine
(xv)	Appropriate measures shall be taken for treatment of the upper catchment of the mine lease area.	Appropriate measures are taken for treatment of the upper catchment of the mine lease area. 10 numbers of sumps have been prepared in the top of the mine to arrest the surface run-off. Photo of sumps is enclosed in Annexure-1 .
(xvi)	The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	Rain water is collected in pit sumps for ground water recharging. Trenches and drainages have been prepared to recharge ground water by storing run-off within the mine. Photographs are attached in Annexure-1 .

(xvii)	<p>Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezometes during the mining operation. The periodic monitoring[(at least four times in a year – pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January), once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment, Forest and Climate Change and its Regional Office Nagpur, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.</p>	<p>Regular monitoring of ground water level and quality are carried out in and around the lease area and the report is sent regularly.</p>
(xviii)	<p>The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water, required for the project</p>	<p>Mahamaya Mine started in the year 1971. Water requirement is fulfilled from "Boridihi dam" of Bhilai steel Plant. Water Cess is being paid to CECB.</p>
(xix)	<p>Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.</p>	<p>Regional Director, Central Ground Water Board has been consulted for suitable harvesting scheme. Suitable rainwater harvesting measures on long term basis will be planned and implemented in consultation with the Regional Director, Central Ground Water Board.</p> <p>Meanwhile, departmental initiatives have been taken up to augment ground water recharge as per scheme prepared with in-house expertise. Trenches have been prepared and drainages are made to retain run-off and replenish ground water for water harvesting.</p>
(xx)	<p>Appropriate imitative measures should be taken to prevent pollution of nearby River in consultation with the State Pollution Control Board.</p>	<p>No river is in the nearby of the Lease.</p>

(xxi)	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.	Vehicular emissions is being kept under control and regularly monitored. Regular checking of vehicle is done for controlling emission. Preventive maintenance of HEMM and light vehicles is undertaken regularly to keep vehicular emission under control. PUC certification exists for all machinery deployed in the mines. The mineral transportation is being carried out through the covered trucks and the vehicles carrying the mineral are not being overloaded.
(xxii)	Controlled blasting shall be practiced. The imitative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented	Controlled blasting is in practice. The following measures are being practiced at the mine to mitigate hazards: <ol style="list-style-type: none"> 1) Ground vibration is monitored and within the norms as per DGMS guidelines. 2) Controlled blasting by use of SME explosive along with 'Staggered V' drilling pattern in practice. 3) Fly rocks and Boulders have been arrested by practicing controlled blasting. 4) Use of NONEL/Delay detonators to control ground vibration. 5) Avoiding overcharging of blast holes & proper stemming to avoid blown out shots. 6) Maintaining suitable spacing and burden to avoid misfires/fly rocks. 7) Restricting numbers of blasting days to control ground vibration. 8) Avoiding blasting on foggy days, after sunset and at times of high wind velocity.
(xxiii)	Drills shall either be operated with dust extractors or equipped with water injection system.	Drilling is provided with water injection system for suppression of dust. Photo is enclosed at Annexure-3 .
(xxiv)	Mineral handling area shall be provided with the adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Mineral handling areas are provided with water sprinkling system. Mineral handling plant does not exist within the lease.

(xxv)	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.	Waste water is not generated in the mine. Oxidation pond exists for the colony. There is no workshop in the mine therefore there is no ETP.
(xxvi)	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	Pre-placement medical examination and periodical medical examination of the workers engaged in the mines are carried out and records are maintained. All newly appointed workers undergo a comprehensive medical examination (Pre-employment Medical Examination) and subsequently a periodical Medical Examination (PME) at regular interval. All workers undergo a PME every 5 years, however workers whose age is more than 45 years, the PME is done in every 3 years. All contractual workers also undergo medical examination. The Examination is conducted by occupational health specialist of hospital of Bhilai Steel Plant.
(xxvii)	Regular monitoring of free silica in the dust will be carried out and records maintained. It shall be ensured that the levels of silica do not exceed the prescribed limit. The workers will be provided with personal protective measures to guard against inhaling silica dust.	Regular monitoring of dust level is done by centralized environment department at IOC Rajhara. The workers are provided with personal protective measures to guard against inhaling silica dust.
(xxviii)	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	There is no construction labour engaged within the site. In case of any temporary construction work, the labourers engaged in the construction activity reside in nearby villages.
(xxix)	The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered flora as well as endangered fauna spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. Copy of action plan may be submitted to the Ministry and its Regional Office at Nagpur within 3 months.	All precautionary measures during mining operation for conservation and protection of endangered flora as well as endangered fauna spotted in the study area will be taken care. Action plan for conservation of flora and fauna would be prepared and implemented in consultation with the State Forest and Wildlife Department.

(xxx)	The critical parameters such as RSPM (Particulate matter with size less than 10 micron i.e., PM10) and NO _x in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharged water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (TSS))]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The Circular No. J-20012/1/2006-IA.IIM) dated 27/05/2009 issued by Ministry of Environment, Forest and Climate Change, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	The critical parameters in ambient air quality, fugitive dust, peak particle velocity are monitored periodically by our environment department. Quality of discharge water is also monitored. SPM, PM-10, PM-2.5, NO _x and SO ₂ are monitored. Monitoring is done in consultation with officials of state pollution board control board.
(xxxii)	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment, Forest and Climate Change 5 years in advance of final mine closure for approval.	Final Mine closure Plan along with details of Corpus fund will be submitted to the Ministry 5 years in advance of final mine closure for approval. However, the progressive Mine Closure Plan is approved by IBM.
(xxxii)	The project proponent shall undertake all the commitments made during the public hearing and effectively address the concerns raised by the locals in the public hearing as well as during consideration of the project, while implementing the project.	BSP shall undertake all the commitments made during the public hearing and effectively address the concerns raised by the locals in the public hearing as well as during consideration of the project, while implementing the project.
B	General Conditions	Action Taken/Action to be taken
(i)	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment, Forest and Climate Change.	No change in mining technology and scope of working will be made without prior approval of the Ministry of Environment, Forest and Climate Change.
(ii)	No change in the calendar plan including excavation, quantum of mineral and waste should be made.	There is no change in calendar plan including excavation, quantum of mineral and waste.

(iii)	Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e., PM ₁₀) and NO _x monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Ambient air quality-monitoring stations are already established in the core zone as well as in the buffer zone. Monitoring is being conducted in consultation with the state pollution control board.
(iv)	Data on ambient air quality RSPM (Particulate matter with size less than 10 micron i.e., PM ₁₀) & NO _x should be regularly submitted to the Ministry of Environment, Forest and Climate Change including its Regional office located at Nagpur and the State Pollution Control Board/Central Pollution Control Board once in six months.	All the monitoring data is intimated regularly to state pollution control board.
(v)	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Water spraying arrangement is available for controlling dust. Fugitive dust is also monitored and within permissible limit.
(vi)	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs.	Measures are already taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operation of HEMM are provided with ear plug/muffs.
(vii)	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	No Industrial waste water (workshop and waste water) generated. All the equipment is deployed by contractual means and maintenance is done outside the lease area.
(viii)	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed	Personnel working in dusty areas are provided protective respiratory devices. Periodical Medical Examination of all workers is being carried out and there is no contractions exposure of dust.

(ix)	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	Environmental management cell with suitable qualified personnel is at Iron Ore Complex exists.
(x)	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment, Forest and Climate Change and its Regional Office located at Nagpur.	Separate Account is being maintained for funds earmarked for environmental protection measures.
(xi)	The project authorities should inform to the Regional Office located at Nagpur regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	BSP will inform to the Regional Office located at Nagpur regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.
(xii)	The Regional Office of this Ministry located at Nagpur shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer(s) of the Regional Office by furnishing the requisite data/ information / monitoring reports.	—
(xiii)	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment, Forest and Climate Change, its Regional Office, Nagpur, the respective Zonal Office of Central Pollution Control Board the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment, Forest and Climate Change, Nagpur, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board	Will be submitted.

(xiv)	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, ZilaParishad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Already it was sent to concerned Panchayat, ZilaParishad/ Municipal Corporation,
(xv)	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/Tehsildar's Office for 30 days.	
(xvi)	The environmental statement for each financial year ending 31 st March in Form-Vas is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the Regional Office of the Ministry of Environment, Forest and Climate Change, Nagpur by e-mail.	The environmental statements are submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986.

(xvii)

The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at website of the Ministry of Environment, Forest and Climate at – <http://envfor.nic.in> and a copy of the same should be forwarded to the Regional Office of this Ministry located at Nagpur.

8/4/15

नवभारत, रायपुर

**स्टील अथॉरिटी ऑफ इंडिया लिमिटेड**
भिलाई इस्पात संयंत्र
भिलाई, जिला-दुर्ग, छत्तीसगढ़, संख्या-490001 नया

वैधानिक सूचना

भिलाई इस्पात संयंत्र को छत्तीसगढ़ के बालोद व राजनांदगांव जिले में स्थित महामाया-दुल्ही खनिपट्टा, रकबा 1622.67 हेक्टर का लौह अयस्क उत्खानन क्षमता विस्तार प्रोजेक्ट 0.96 एम.टी.पी.ए. से 1.46 एम.टी.पी.ए. के लिए पर्यावरणीय स्वीकृति भारत सरकार, पर्यावरण एवं वन मंत्रालय, नई दिल्ली द्वारा दिनांक 26.03.2015 को प्रदत्त की गई है। स्वीकृति पत्र की एक प्रति राज्य प्रदूषण नियंत्रण मंडल, पर्यावरण एवं वन मंत्रालय के वेबसाइट <http://envfor.nic.in> पर उपलब्ध है।

कार्यालय निदेशक (खदान)

विज्ञापन क्र. - 08/15-16, दिनांक : 07.04.2015

पंजीकृत कार्यालय : इस्पात भवन, लोधी रोड, नई दिल्ली-110003
Corporate Identity Number : L27109DL1973GQ1008454; Website : www.sail.co

हर किसी की जिंदगी में असा हसा है खेल

हरिभूमि,

**स्टील अथॉरिटी ऑफ इंडिया लिमिटेड**
भिलाई इस्पात संयंत्र
भिलाई, जिला-दुर्ग, छत्तीसगढ़, संख्या-490001 हरि

वैधानिक सूचना

भिलाई इस्पात संयंत्र को छत्तीसगढ़ के बालोद व राजनांदगांव जिले में स्थित महामाया-दुल्ही खनिपट्टा, रकबा 1522.67 हेक्टर का लौह अयस्क उत्खानन क्षमता विस्तार 0.96 एम.टी.पी.ए. से 1.46 एम.टी.पी.ए. के लिए पर्यावरणीय स्वीकृति भारत सरकार, पर्यावरण एवं वन मंत्रालय, नई दिल्ली द्वारा दिनांक 26.03.2015 को प्रदत्त की गई है। स्वीकृति पत्र की एक प्रति राज्य प्रदूषण नियंत्रण मंडल, पर्यावरण एवं वन मंत्रालय के वेबसाइट <http://envfor.nic.in> पर उपलब्ध है।




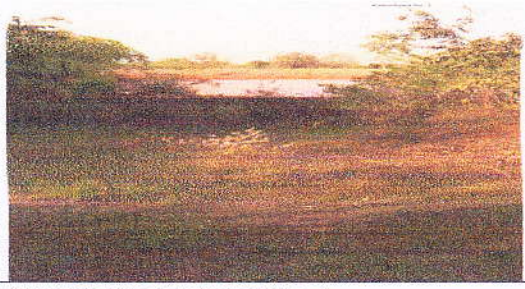



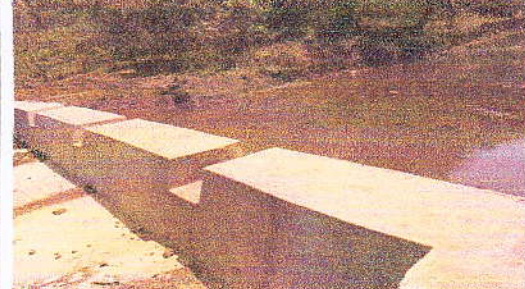
कार्यालय निदेशक (खदान)




विज्ञापन क्र. - 08/15-16, दिनांक : 07.04.2015

पंजीकृत कार्यालय : इस्पात भवन, लोधी रोड, नई दिल्ली-110003
Corporate Identity Number : L27109DL1973GQ1008454; Website : www.sail.co





हर किसी की जिंदगी में असा हसा है खेल

13 check dams have been constructed around Mahamaya Mine

	
Kopedera Check dam No. 4	Kopedera Check dam No. 3
	
Kopedera Check dam No. 2	Kopedera Check dam No. 1
	
Kumurkatta check dam No. 1	Kumurkatta check dam No. 2
	
Kumurkatta check dam No. 3	Kumurkatta check dam No. 4
	
Kopedera Check dam No. 5	Mahamaya Temple Check dam

	
Puswada check dam No.1	Puswada check dam No.2
	
Puswada check dam No.3	

Sumps are prepared in the mine to regenerate ground water by storing runoff and to arrest the flow of silt and sediment

	
Sump prepared at M1A area to regenerate ground water by storing runoff	A sump prepared in M3 area to prevent the flow of silt along with rainwater
	
A Sump prepared in M3 area to arrest the flow of silt and sediment	A sump prepared in M3 area for collection of rain water and ground water recharging

Drainages and trenches are prepared for controlling overflow of silt and rainwater harvesting



Drainages are cleaned to stop overflow of silt



Trenches at M3 area for rain water harvesting

Retaining wall and afforestation along the waste dump

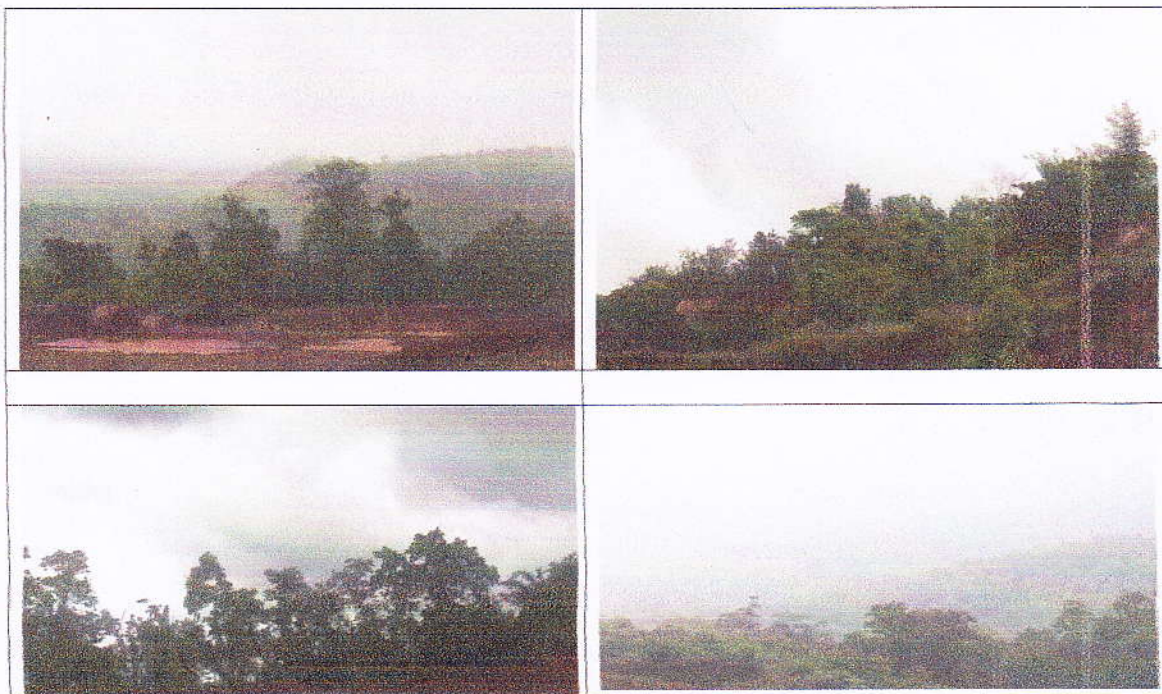


Retaining wall along the waste dump



Plantation along the waste dump

Plantation done at mines area





Drilling machine is provided with water injection system to suppress the dust

Top soil is preserved at Mahamaya & Dulki lease

