

JK Cement WORKS

MUDDAPUR

(Unit . J.K Cement Ltd.)

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Dist Bagalkot (Karnataka) India

No. JKCW/ENV. /E.C. (HALKI)/10/19

Date- 23-05-2017

The Deputy Director
Ministry of Environment & Forest
Govt. of India
Indira Paryavaran Bhavan
New Delhi- 110 003

Sub: **Half Yearly Environmental Clearance Compliance for the period from October-2016 to March-2017 for our Halki Lime stone mine**

Ref: MoEF Letter No. J-11015/384/2006-1A.II (M) /dtd. 21st January 2008

Dear Sir,

With reference to your above cited environmental clearance letter of our Halki Lime Stone Mine. We are sending here with enclosed point wise compliance report for the period from **October-2016 to March-2017** for your kind information and record please.

Thanking you

Yours faithfully
For Halki Lime Stone Mine

RBM Tripathi
(Unit Head)

Encl. – Compliance report, Socio-economic development report, half yearly ambient air quality monitoring, fugitive emission monitoring, water testing and Noise monitoring report

CC:

- 1- The Addl. Principal Chief Conservator of Forest (C) , Ministry of Environment & Forest, Regional Office (South Zone), 4th floor, E&F Wings, Kendriya Sadan, 17th Main Road, IIInd Block, Koramangala, Bangalore
- 2- Chairman, Central Pollution Control Board, Parivesh Bhavan, East Arjun Nagar, New Delhi
- 3- Scientist 'D' & Incharge, Central Pollution Control Board, 1st & 2nd Floors, Nisarga Bhavan , A-Block, Thimmaiah , Main Road, 7th D Cross, Shivanagar, Opp. Pushpanjali Theatre, Bengaluru – 560 010
- 4- Member Secretary, Karnataka Pollution Control Board, Church Street, Bangalore
- 5- The Environmental officer , Karnataka State Pollution Control Board, Sector no.07, by pass road, Navanagar, Bagalkot – 587102



Registered & Corporate Office .

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Halki Limestone Mine, Village- Halki, Taluk- Mudhol, Distt.- Bagalkot, Karnataka

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Half Yearly Compliance Report for the period from October-2016 to March-2017

EC to Halki Limestone Mine (ML area 124.24 ha and 2.0 MTPA of limestone Production) of M/s J.K. cement Ltd., at village Halki, in Mudhol Taluk, Bagalkot, Distt. In Karnataka

Specific Condition:

S.N.	CONDITION	Reply
A.	Specific Conditions	
i)	Land use pattern of nearby village shall be studied and action plan for abatement and compensation for damage to agriculture land /common property land as applicable due to mining activity shall be submitted to the Regional office of the Ministry within six month. Annual status of implementation of the plan and expenditure thereon shall be reported to the regional office of the ministry.	Complied , Land use pattern has been studied with EIA, which submitted to concerned authority. Limestone mining is being done systematically as per the IBM approved mining plan. Most sophisticated mining machineries are being deployed and highly safe methods of drilling & blasting techniques are being practiced. So, There is no damage of public building, common properties and agriculture land etc. due to mining activities.
ii)	Need based assessment for the nearby villages shall be conducted to study economic measures which can help in upliftment of poor section of society such as development of fodder farm, fruit orchard, vocational training etc. Year wise allocation of funds for implementation of these economic measures shall be reported to the regional office of the ministry within six months.	Complied, Need based assessment for the nearby villages have been conducted. CSR activities and budget for it have been submitted to MoEF. We are granting funds to the nearby villages for socio-economic development. As per Annexure- 1
iii)	A no. of mining zone barrier of 50 m from the cannel passing through the lease areas on both sides shall be demarcated and the area shall be afforested with thick species of native vegetations.	Complied, A no. of mining zone barrier of 50 m from the cannel passing through the lease areas on both sides has been demarcated and the area is being afforested with thick species of native vegetations.
iv)	Recommendations of NEERI, Nagpur, as mentioned in their report on status of Environment –"Action plan " for the State of Karnataka, as be applicable to this project, shall be reported to the Regional office of the Ministry.	Not applicable
v)	Conservation plan for wild life shall be prepared in consultation of with the Chief wild life warden and shall be implemented within six months. Necessary allocation of fund for implementation of the same and the status of implementation of the plan shall be reported to the regional office of the Ministry.	Not Applicable
vi)	Measures for control and preventions of soil erosion and management of silt shall be prepared	Complied Details have been Submitted with

Halki Limestone Mine, Village- Halki, Taluk- Mudhol, Distt.- Bagalkot, Karnataka

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	and submitted to the Regional office of the ministry within six months	REIA & EMP Report for Halki Mine Limestone Mine.
vii)	Water quality both for surface as well as ground water in the core zone shall be regularly monitored for contamination due to mining activity and records maintained. In case contamination is observed, measures for control and action taken shall be reported to the State Government as well as the Regional Office of the Ministry within six months.	Complying, Water quality is being monitored regularly and no contamination has been observed. Report has been enclosed as per Annexure- 2
viii)	Water bodies shall be developed and utilized to develop Pisciculture. Fishermen cooperative society shall be established with the land losers (if any) and specially the poorer section as members of society. Initial financial assistance either in the form of shared money or other wise and managerial assistance shall be provided so that the members themselves can run the affairs of the society in due course. The project proponent shall arrange marketing tie up so that the society gets fair price of their produce and the profits are equitably shared by the members of the society as regular source of income.	Will be complied, There is no water body right now in and around the project area so Pisciculture is not possible.
ix)	Action taken report on issues raised during the public hearing shall be submitted to the Ministry and the State Governments within six months.	Complied, it has been submitted.
x)	Occupational health and safety measures for the workers including training on malaria eradication, HIV, health effects on exposure to mineral dust etc. shall be carried out. The company shall engage a full time doctor who is trained in occupational health surveillance .Records of the health of the workers shall be maintained.	Complying, Occupational health and safety measures for the workers have been taken and different types of training are given to workers and employees. The company has engaged a full time doctor who is trained in occupational health surveillance. Records are being maintained.
xi)	Top soil/solid waste(if any) shall be stacked properly with proper slope and adequate safe guards and shall back filled for reclamation and rehabilitation of the mined area	Complying Top soil is being stacked properly with proper slop.
xii)	Over burden if any shall be stacked at earmarked dump site(s) only and shall not be kept active for long period. The maximum height of the dump shall not be exceed 30m,each stage shall preferably be of 10m and overall slope of the dump shall not exceeded 28°. The OB dump shall be backfilled. The OB scientifically vegetated with suitable native	Being Complied, The Over Burden/top soil is being scientifically stacked at earmarked dump site and also being used to construct the soil bunds and over it plantation has been done with suitable native species to prevent erosion and

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	species to prevent erosion and surface run off. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self – sustaining. Compliance status shall be submitted to the Ministry of Environment Forests on six monthly bases.	surface run off. Slope of dump is as per mining scheme. Monitoring and management of plantation area are continuing. Six monthly compliance reports are being submitted to the Ministry of Environment Forests.
xiii)	Garland drains shall be constructed to arrest silt and sediment flows from soil, and mineral dumps. The water so collected shall be utilised for watering the mine areas, roads, green belt development etc. The drains shall be regularly de-silted particularly after monsoon and maintained properly. Garland drain of appropriate size, gradient and length shall be designed keeping 50% safety margin over and above peak sudden rain fall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity will also provide adequate retention period to allow proper settling of silt materials. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals. Check dams and gully checks shall be constructed across nallahs (if any) flowing through the lease area.	Complying, Garland drains have been constructed to arrest silt and sediment flows from soil, and mineral dumps. The collected water in pit is being used for green belt development and Water spray on haul roads for controlling the fugitive dust emission. Drains are regularly de-silted particularly after monsoon and maintained properly. Garland drain has been designed with appropriate size. We have constructed soil bunds around the mined out area to arrest silt and sediments flows at the time of peak sudden rain fall. No nallah is flowing through the lease area. Gully checks have been made on internally garland drains.
xiv)	Slope of mining bench and ultimate pit limit shall be as per the mining scheme approved by Indian Bureau of mines.	As per mining scheme only, we are maintaining bench slope and ultimate pit slope
xv)	Green Belt Development shall be carried out considering CPCB guidelines including selection of plan species and in consultation with DFO. Herbs, shrubs shall also form a part of a forestation programme besides tree plantation. Plantation shall be raised in 22.0 ha around the ML area, haul roads, OB dump sites etc. the density of the trees shall be not less than 2500 plants per ha. The company shall involve local people with the help of self help group for plantation programme.	Being done. We have received a certificate from forest department via. Letter no. B2.GFL/Mines/2007-08/597 dated 30-08-2007 regarding availability of local Flora and Fauna in Mudhol Taluk. Our Horticulture department is planting number of trees every year. Plantation is being raised around the ML area, haul roads, OB dump sites etc. we are planting maximum trees. The density of the trees is not less than 2500 plants per ha. Company is involving local people for plantation programme.
xvi)	Details of the year wise a forestation programmed already under take as well as proposed to be taken of including rehabilitation of mined out areas shall be submitted to the Ministry within six months.	Complied, Details of the year wise a forestation programmed already under take as well as proposed to be taken of including rehabilitation of mined out areas has been

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		submitted to the Ministry in EIA which is already submitted.
xvii)	The project authority shall implement suitable conservation measures to augment ground water resource in the areas in consultation with the Regional Director, Central Ground water Board. Status of implementation shall be reported to the regional office of the Ministry from time to time.	Complying, Rain water harvesting practices are being implemented in residential colony area and mines. Status has been reported to regional office of the Ministry.
xviii)	Prior permission from the competent authority shall be obtained for extraction of ground water, if any.	Complied
xix)	Drilling and blasting (if any) shall be conducted by using dust extractors/ wet drilling.	Complying, Wet drilling is done.
xx)	Vehicles used for transportation of ores and other mining operation shall have valid permission as prescribed under Central Motor Vehicles rules,1989 and its amendments . Transporting of ores shall be done covered with a tarpaulin or other suitable enclosures so that no dust particles /fine matters escape during the course of transportation. No overloading of ores for transportations shall be under taken.	Complying, Vehicles used for transportation of ores and other mining operation have valid permission. Only driving license holders are permitted to drive trucks / dumpers. The trucks are loaded with in the safe. Transporting of ores is being done covered with a tarpaulin.
xxi)	Village roads through which transportation of ores are being carried out shall be regularly maintained by the company at its own expenses.	Being Complied.
xxii)	A final mine closure plan, along with details of corpus funds, shall be submitted to the Ministry of Environments &Forests within six months, in advance of final mine closure for approval.	Will be submitted before closure of mines.
B	General Condition:	
i)	No change in mining technology and scope of working shall be made without prior approval of Ministry of Environment& Forests.	Agreed
ii)	No change in calendar plan including excavation, quantum of mineral, limestone and waste shall be made.	Agreed
iii)	Four Ambient Air Quality – monitoring station shall be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ ,NO _x monitoring . Location of the stations should be decided based on the metrological data, Topographical features and Environmentally and ecologically sensitive targets and frequency of monitoring should be under taken in consultation with the State Pollution Control Board.	Complied, Four Ambient Air Quality monitoring stations have been established. Regular ambient air monitoring is being carried out and reports are being sent to concerned deptt.
iv)	Data on Ambient Air Quality (RSPM, SPM, SO ₂ , and NO _x) should be regularly submitted to the Ministry	Being Complied, Data on Ambient Air Quality (RSPM, SPM, SO ₂ , NO _x) are

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	including its Regional Office located at Bangalore and the State Pollution Control Board/Central Pollution Control Boards once in six months.	being regularly submitted to the Ministry including its Regional Office located at Bangalore and the State Pollution Control Board/Central Pollution Control Boards once in six months. As per Annexure-3
v)	Fugitive dust emissions from all the sources shall be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points shall be provided and properly maintained.	Being Complied. Water is spraying on the haul roads, loading and unloading points by tanker. Report has been enclosed as per Annexure-4
vi)	Measures shall be taken for control of noise level below 85 dBA in the work environments. Workers engaged in operations of HEMM, etc shall be provided with ear plugs/ muffs.	Being complied, suitable measures have been taken for control the noise level. Ear plugs/ muffs have been provided. Noise level is well within the standard (85 dBA) in the work environment. Report has been enclosed as per Annexure-5
Vii)	Industrial waste water (Works shop and waste water from the mine should 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. Oil and Grease trap shall be instilled before discharge of effluents.	Not applicable, there is no work shop in mines area and no waste water is discharged from mines.
viii)	Personnel working in dusty areas shall be provided with protective respiratory devices and they shall also be imparted adequate training and information of Safety and Health aspects.	Complied, Personnel working in dusty areas have been provided with protective respiratory devices and training as well as information of Safety and Health aspects is given to them.
ix)	A separate Environmental Management cell with suitable qualified personnel shall be set up the control of Senior Executive, who will be report directly to the head of the organization.	Complied, A separate Environmental Management cell with suitable qualified personnel has been set up the control of Senior Executive, who is reporting directly to the head of the organization.
X)	The project authorities shall informed to the Regional Office of the Ministry located at Bangalore regarding date of financial closures and final approval of the project by the concern authorities and the date of start of land development work.	Complied
xi)	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 the Ministry and	Complying

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	its Regional office located at Bangalore.	
xii)	The project authorities shall informed to the Regional Office of the Ministry located at Bangalore regarding date of financial closures and final approval of the project by the concern authorities and the date of start of land development work.	Complied
xiii)	The Regional Office of the Ministry, Bangalore shall monitor compliance of the stipulated conditions. The project authorities shall extend full cooperation to the officer(s) of the Regional office by furnishing the requisite data/ information / monitoring reports.	Agreed, we are giving full cooperation to the officer(s) of the Regional office by furnishing the requisite data/ information / monitoring reports.
xiv)	A copy of clearance letter will be marked to concerned panchayat /local NGO, if any from whom suggestion /representation has been received while processing the proposal.	Complied
xv)	State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industry Centre and collector's office /Tehsildar's office for 30 days.	Complied
xvi)	The project authorities shall advertise at least in two local News papers widely circulated , one of which shall be in the vernacular languages of the localities concern within 7days of 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 web site of the Ministry of the Environment & Forests at http: www.envfor.nic.in and a copy of the same shall be forwarded to the Regional Office of the Ministry located at Bangalore .	Complied

We hope, you will find our reply in order.

Thanks with regards.

Yours faithfully
For Halki Lime Stone Mine


RBM Tripathi
(Unit Head)

Annexure-1

Social Development Expenses for the period from October 2016 to March 2017


S.N.	Subject	Amount (Rs.)
1	Durga Pooja Exp	11000.00
2	Sir Padampat Primary School Salary October 2016	140000.00
3	Padayatra To Shri Kshetra Pandarpur Lord Pandurang	3001.00
4	Ganesh Temple Construction 40 Bag Cement	13600.00
5	Sir Padampat Primary School Salary November 2016	100000.00
6	100 Bag Cement Shri Mahalaxmi Devasthan Trust Comm	30000.00
7	Physically Handicapped Activity In Dec.2016 Mudhol	10000.00
8	Sir Padampat Primary School Salary December 2016	100000.00
9	Koti Japyatna Programme & Vedant Mahotsav	21000.00
10	Ro Service Bill Agst School Adjusted	520.00
11	Sir Padampat Primary School Salary January 2017	150000.00
12	Utsaha 2017 Talent Hunt(Shri Sai International)	15000.00
13	Ashwini Hippali Lord Palace School 10th Topper	5000.00
14	Chaitra Muddapur Lord Palace School 10th Top Ranke	5000.00
15	Vivek Adavi Lord Palace School 10th Top Ranker	5000.00
16	Bagalkot Zilla Wrestling Association (R) Mudhol	10000.00
17	Shri Lokeshwar Jathra Lokapur 04.03.17 To 12.03.17	11000.00
18	Hindu Jagran Vedike Rss 05.03.2017 Mudhol	50000.00
19	Sir Padampat Primary School Salary February 2017	134000.00
20	Paid For Yamanureshwar Jatra, Muddapur	175000.00
21	Pandurang Rukmini Devasthan Jathra Annaprasad	25000.00
22	Laying Of Cable 5cx2.5 Sqmm	321.85
23	Laying Of Cable 4cx16 Sqmm	703.00
24	Termination Of Cable 4cx16 Sqm	409.82
25	Making Of Earth Pit	2927.42
26	Fixing Of Earth Patti	562.24
27	Erection Of Control Panel With Frame	7333.09
28	Termination Of Cable5cx2.5sqmm	1756.78
29	Fixing Of Light Fitting 120 Watt Led	2933.23
30	Erection Of High Mast Tower With Complete	8711.06
31	Fixing Of Aviation Fitting	217.44
32	Fixing Of Lightening Arrestor	850.84
33	Termination Of Cable 4cx16 Sqm	819.64
34	Erection Of Control Panel With Frame	14666.19
35	Making Of Earth Pit	5854.85
36	Fixing Of Earth Patti	1124.47
37	Laying Of Cable 4cx16 Sqm	1406.00
38	Laying Of Cable 5cx2.5 Sqm	643.70
39	Termination Of Cable5cx2.5 Sqm	3513.56
40	Fixing Of Light Fitting 120 Watt Led	5866.47
41	Erection Of High Mast Tower With Complete	17422.12
42	Fixing Of Aviation Fitting	434.88
43	Fixing Of Lightening Arrestor	1701.69

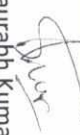
44	Termination Of Cable5cx2.5sqmm	1756.78
45	Fixing Of Light Fitting 120 Watt Led	2933.23
46	Erection Of High Mast Tower With Complete	8711.06
47	Fixing Of Aviation Fitting	217.44
48	Fixing Of Lightening Arrestor	850.84
49	Making Of Earth Pit	2927.42
50	Fixing Of Earth Patti	562.24
51	Erection Of Control Panel With Frame	7333.09
52	Laying Of Cable 4cx16 Sqm	703.00
53	Termination Of Cable 4cx16 Sqm	409.82
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55	Fixing Of Lightening Arrestor	850.84
56	Making Of Earth Pit	2927.42
57	Fixing Of Earth Patti	562.24
58	Erection Of Control Panel With Frame	7333.09
59	Laying Of Cable 4cx16 Sqm	703.00
60	Termination Of Cable 4cx16 Sqm	409.82
61	Laying Of Cable 5cx2.5 Sqmm	321.85
62	Termination Of Cable5cx2.5 Sqm	1756.78
63	Fixing Of Light Fitting 120 Watt Led	2933.23
64	Erection Of High Mast Tower With Complete	8711.06
65	Fixing Of Aviation Fitting	217.44
66	Paid For Revayya Shivayogi Math Jatra, Hebbal	15000.00
67	Kannada Sahithya Sammelan At Sameerwadi 28 June 16	25000.00
68	Durga Devi Jathra Mahotsav Petlur 31.03.2017	11000.00
69	Uniform Exp Agst Lokapur Police Bill	60000.00
70	Sir Padampat Primary School Salary March 2017	137000.00
71	Kasba Jambagi	3200.00
	Total	1398954.88

Halki Limestone Mines (Karnataka)
(Unit: J.K. Cement Ltd.)

Noise monitoring report of Halki mines (Core zone) for the Period from Oct-2016 to March-2017

Sl.No.	Time	Month	Halki Mines boundary	Halki Mines Office	Halki mines Drilling Time	Halki mines Waste dumping site	Halki mines Service Road	Excavator
1	Day	Oct-16	52.4	49.5	65.8	52.4	50.2	50.2
	Night		42.6	38.2	-	41.8	40.5	40.5
2	Day	Nov-16	50.4	50.6	62.3	51.7	56.8	56.8
	Night		40.5	38.5	-	41.6	44.3	44.3
3	Day	Dec-16	50.4	49.6	60.2	54.6	52.5	52.5
	Night		42.5	38.4	-	42.6	41.5	41.5
4	Day	Jan-17	45.4	44.2	48.6	43.5	42.6	54.8
	Night		34.5	32.4	-	30.5	31.7	-
5	Day	Feb-17	44.2	46.5	49.2	42.8	44.1	55.2
	Night		35.2	36.5	-	31.2	32.5	
6	Day	Mar-17	44.6	45.6	48.7	43.2	43.5	54.8
	Night		34.5	35.6		30.5	31.4	


Manjunath.K.T
Monitored By



Dr.Saurabh Kumar
Dy.Manager-Env

HALKI LIME STONE MINES, (KARNATAKA)

(Unit : J.K. Cement Ltd.)

Half yearly Fugitive Emission Monitoring Report of Halki mines for the Period from October-2016 to March-2017

Sl. No.	MONTH/YEAR	SPM ($\mu\text{g}/\text{m}^3$)				
		Loading Area	Drilling Area	Haulage Area	Waste Dumping Site	Service Road
1	October	479.2	491.5	480.7	454.4	543.1
2	November	479.3	488.8	424.2	491.8	477.7
3	December	513.1	485.4	441.0	492.0	469.3
4	January	565.8	697.4	680.2	677.4	664.1
5	February	530.0	696.2	665.0	677.6	608.5
6	March	434.2	651.7	677.9	670.8	629.0
	Minimum	434.2	485.4	424.2	454.4	469.3
	Maximum	565.8	697.4	680.2	677.6	664.1
	Average	500.3	585.2	561.5	577.3	565.3


Manjunath.K.T
Monitored by



Dr. Saurabh Kumar
Dy.Mgr.(Env).


HALKI Limestone MINES, (KARNATAKA)

(Unit: Jk Cemet Ltd.)

HALF YEARLY AAQM REPORT (SO₂, NO₂, PM₁₀, SPM) FOR THE PERIOD FROM OCTOBER-2016 TO MARCH-2017
(ALL VALUES IN MICROGRAMS / CUBIC METER)

Month	Sl. No.	Date	Week	SO ₂				NO ₂				PM ₁₀				SPM			
				Locations				Locations				Locations				Locations			
				A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
O C T O B E R	1	3.10.2016	1st	5.8	6.3	6.2	5.5	6.8	7.0	7.0	6.8	56.2	56.4	58.0	56.7	158.3	157.9	158.8	157.8
	2	6.10.2016		6.3	5.3	6.2	6.3	7.0	6.5	7.0	7.0	56.5	57.7	56.3	57.4	157.6	158.6	157.7	158.8
	3	10.06.2016	2nd	5.0	6.1	5.8	5.0	6.5	7.0	6.6	6.5	57.5	56.1	57.2	54.9	158.9	158.5	158.1	156.3
	4	14.10.2016		5.5	6.2	5.8	6.3	6.5	7.3	6.5	7.5	55.7	57.0	56.3	55.5	157.1	157.1	157.5	157.5
	5	18.10.2016	3rd	5.5	6.6	6.8	6.5	6.8	7.5	7.0	7.6	56.3	55.8	56.1	55.9	157.3	157.1	158.8	156.3
	6	21.10.2016		6.8	6.5	5.5	5.6	7.0	7.0	6.8	7.8	57.8	56.3	57.3	86.3	158.6	158.0	158.2	158.3
	7	25.10.2016	4th	5.1	6.2	5.5	6.0	6.3	7.0	6.8	7.5	56.9	57.8	56.8	56.7	157.8	158.7	157.1	157.8
	8	28.10.2016		6.0	6.2	6.6	6.5	7.5	7.3	7.6	7.0	55.8	56.6	56.9	57.5	157.1	157.6	158.3	158.5
N O V E M B E R	1	3.11.2016	1st	6.0	5.6	6.5	6.6	7.5	7.5	7.0	7.3	57.9	56.5	57.9	56.7	158.1	158.6	158.7	159.0
	2	7.11.2016		5.6	6.0	6.0	6.2	6.6	7.5	7.0	7.0	56.6	57.8	57.9	57.8	158.5	158.2	158.4	159.0
	3	10.11.2016	2nd	5.0	5.5	5.5	5.5	6.6	6.8	6.2	6.8	56.6	56.6	55.1	56.0	157.3	157.5	156.7	157.5
	4	14.11.2016		6.3	6.2	6.2	6.0	7.2	7.5	7.0	7.0	56.2	55.7	56.1	57.3	157.5	156.5	157.1	159.7
	5	17.11.2016	3rd	6.8	6.5	5.5	5.5	7.0	7.5	6.8	6.2	55.1	56.9	57.6	56.5	156.6	157.2	158.5	157.5
	6	21.11.2016		6.3	6.2	6.1	6.0	7.5	7.3	7.1	7.5	56.8	56.2	56.4	56.3	157.6	158.9	158.3	157.9
	7	24.11.2016	4th	5.5	5.1	6.3	6.3	6.5	6.5	7.3	7.3	57.1	57.3	57.5	57.2	158.8	158.3	158.6	158.3
	8	28.11.2016		5.5	5.5	5.5	5.5	6.5	6.3	6.8	6.3	55.4	57.8	56.4	58.7	156.4	159.7	157.9	155.9
D E C E M B E R	1	1.12.2016	1st	5.2	6.5	6.2	6.8	6.6	7.0	7.0	7.5	56.3	57.2	56.5	56.7	157.8	158.7	157.4	157.9
	2	5.12.2016		6.3	6.5	5.8	6.8	7.5	7.2	6.8	7.0	55.7	56.4	57.2	55.5	157.1	158.0	158.5	156.2
	3	8.12.2016	2nd	5.6	5.5	6.2	5.5	6.2	6.8	7.5	6.6	56.0	56.7	56.6	57.9	157.3	157.9	158.8	158.1
	4	12.12.2016		5.8	6.5	5.5	6.5	6.6	7.2	6.8	7.5	57.2	56.4	57.1	56.3	158.8	157.5	158.8	158.8
	5	15.12.2016	3rd	6.2	6.2	6.0	6.2	7.0	7.5	7.0	7.0	55.3	56.9	56.3	55.7	156.5	157.9	157.2	157.2
	6	19.12.2016		6.5	6.6	6.2	5.5	7.2	7.8	7.2	6.3	56.6	57.4	57.5	56.7	158.3	158.8	158.0	157.2
	7	22.12.2016	4th	6.0	7.3	6.5	6.3	7.0	8.0	7.5	7.1	57.1	58.7	58.5	56.9	158.5	158.0	159.0	157.3
	8	26.12.2016		6.5	7.0	5.6	6.6	7.0	8.0	6.2	7.5	55.6	56.5	56.5	55.8	157.0	157.4	157.8	156.2
	9	29.12.2016		5.5	5.5	5.5	5.5	6.5	6.5	6.5	6.5	56.6	57.9	57.9	56.2	158.7	158.3	159.1	157.9
J A N U A R Y	1	2.01.2017	1st	6.0	6.3	6.3	6.2	7.8	7.0	7.0	7.5	59.0	58.0	59.1	56.9	159.0	160.7	160.2	159.0
	2	5.01.2017		5.5	6.3	6.0	5.8	6.8	7.7	7.5	6.8	59.2	58.5	57.7	58.2	160.6	159.8	158.7	159.7
	3	9.01.2017	2nd	5.8	7.0	6.5	6.2	6.8	8.8	7.5	7.5	56.9	56.5	58.4	56.9	157.3	158.5	159.1	157.4
	4	12.01.2017		6.3	6.5	6.2	5.7	7.2	7.5	7.5	6.8	55.3	57.4	57.9	57.3	157.6	158.7	158.5	158.7
	5	16.01.2017	3rd	6.7	7.2	6.2	7.0	8.5	8.5	8.3	9.0	56.3	56.9	56.8	57.5	157.5	158.6	158.1	158.3
	6	19.01.2017		6.7	6.7	7.0	6.8	7.5	8.7	8.2	8.0	55.6	57.3	57.5	56.8	157.3	158.1	159.9	157.8
	7	23.01.2017	4th	7.5	7.8	7.5	7.5	10.5	9.5	9.3	9.0	57.0	57.0	56.8	57.3	159.3	158.5	158.6	158.1
	8	27.01.2017		6.5	7.5	7.0	7.0	7.5	9.0	8.8	9.2	57.6	58.7	57.9	58.5	158.2	159.1	160.7	159.2
	9	31.01.2017		6.5	7.5	7.5	7.5	8.5	8.5	8.5	8.5	56.7	57.7	56.4	58.4	157.9	158.9	158.4	159.2
F E B R U A R Y	1	3.02.2017	1st	6.7	6.8	7.5	7.5	7.0	7.3	8.2	8.8	57.9	56.9	57.7	57.8	158.4	159.0	159.3	158.3
	2	7.02.2017		7.2	7.5	6.7	6.8	8.0	8.2	7.5	7.5	56.5	58.6	58.6	56.1	157.9	159.8	159.0	158.7
	3	10.02.2017	2nd	7.5	7.5	7.0	6.8	8.2	8.3	8.5	8.5	58.6	57.9	57.8	58.7	159.7	159.9	159.3	159.4
	4	14.02.2017		7.5	7.5	6.8	7.5	8.8	8.5	7.5	8.2	57.0	58.2	56.6	57.7	158.7	159.3	157.9	159.6
	5	17.02.2017	3rd	7.5	6.7	7.5	7.2	8.2	7.5	8.2	8.5	58.5	56.3	58.3	58.6	159.2	157.6	159.2	160.1
	6	21.02.2017		7.5	7.0	6.8	6.8	9.2	8.5	7.5	7.5	57.1	58.5	57.7	57.9	159.7	159.8	158.0	159.0
	7	24.02.2017	4th	7.5	6.5	7.5	7.5	8.3	8.5	8.7	8.5	58.2	57.5	56.5	56.3	159.4	159.9	158.9	159.3
	8	28.02.2017		7.5	7.5	6.5	7.5	8.5	8.2	7.7	8.2	57.0	58.4	57.5	57.4	158.6	159.7	158.1	158.5
M A R C H	1	3.03.2017	1st	6.7	7.5	7.1	7.1	7.0	8.1	7.5	7.5	57.9	56.7	57.7	56.9	158.5	158.5	158.0	157.8
	2	7.03.2017		7.2	7.4	7.5	7.5	8.0	8.0	7.8	7.8	56.8	58.6	59.5	57.8	159.3	159.3	160.4	159.2
	3	10.03.2017	2nd	7.5	7.3	7.6	7.6	8.2	8.2	7.8	7.8	59.5	57.2	58.4	58.0	160.8	160.8	159.6	160.1
	4	14.03.2017		7.5	6.5	8.1	8.1	8.8	7.0	8.5	8.5	58.7	56.5	59.8	56.9	159.4	159.4	160.0	157.3
	5	17.03.2017	3rd	7.5	7.8	6.5	6.5	8.2	8.2	6.7	6.7	58.4	59.6	58.3	59.2	159.8	159.8	158.2	159.7
	6	21.03.2017		7.4	7.5	6.4	6.4	9.2	8.3	6.8	6.8	59.2	56.4	56.5	56.7	160.8	160.7	156.6	157.5
	7	24.03.2017	4th	7.5	7.2	7.5	7.5	8.3	8.5	7.8	7.8	55.8	57.6	56.7	57.3	158.2	158.2	159.0	157.2
	8	28.03.2017		7.5	6.5	7.5	7.5	8.5	8.0	7.9	7.9	52.4	59.0	57.6	59.4	152.5	152.5	157.8	161.5
	9	31.03.2017		7.4	6.2	7.0	7.0	8.3	7.1	7.5	7.5	58.3	59.8	57.1	57.1	158.6	158.6	158.6	157.4
Half Yearly Avg.				6.5	6.6	6.5	6.5	7.5	7.7	7.4	7.5	56.9	57.3	57.3	57.7	158.2	158.5	158.5	158.2
Half Yearly Min.				5.0	5.1	5.5	5.0	6.2	6.3	6.2	6.2	52.4	55.7	55.1	54.9	152.5	152.5	156.6	155.9
Half Yearly Max.				7.5	7.8	8.1	8.1	10.5	9.5	9.3	9.2	59.5	59.8	59.8	86.3	160.8	160.8	160.7	161.5


Manjunath.K.T.
Monitored by

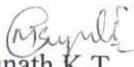

Dr. Saurabh Kumar
Dy. Mgr(Env)

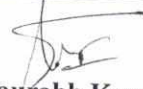
Halki Limestone Mines, (Karnataka)

(Unit: J.K. Cement Ltd.)

PM_{2.5} MONITORING REPORT FROM OCTOBER-2016 TO MARCH-2017

Site	Month	Date	Monitoring Location	Parameter PM _{2.5} (µg/m ³)
HALKI MINE	Oct-16	12.10.2016	A	31.2
		13.10.2016	B	30.4
		14.10.2016	C	32
		15.10.2016	D	33.8
HALKI MINE	Nov-16	12.11.2016	A	40.5
		14.11.2016	B	36.8
		16.11.2016	C	38.5
		18.11.2016	D	40.2
HALKI MINE	Dec-16	12.12.2016	A	30.8
		14.12.2016	B	31.6
		16.12.2016	C	32.2
		19.12.2016	D	33.5
HALKI MINE	Jan-17	13.1.2017	A	30.7
		16.1.2017	B	31.4
		18.1.2017	C	30.5
		20.1.2017	D	32.8
HALKI MINE	Feb-17	13.2.2017	A	30.4
		15.2.2017	B	30.2
		17.2.2017	C	31.6
		20.2.2017	D	32.8
HALKI MINE	Mar-17	14.3.2017	A	31.5
		16.3.2017	B	31.4
		18.3.2017	C	30.9
		20.3.2017	D	31.7
Minimum				30.2
Maximum				40.5
Average				32.81


 Manjunath.K.T
 Monitored By


 Dr. Saurabh Kumar
 Dy. Mgr (Env)