

GTN/WH/MINES/RO-MOEF/COMP./125

To,

Ministry of Environment Forest & Climate Change

Integrated Regional Office, Jaipur

A-209 & 218," ARANYA BHAWAN"

Jhalana Institutional Area,

Jaipur-302004 (Raj)

Regd. A/D

Date: 28.11.2023

EC Letter No.: J-11015/03/2009-IA-II (M) dated 30.08.2010

Sub.: Six monthly Compliance Report from the period of April 2023 to Sept. 2023 in respect of Dhanappa limestone Mines, Tehsil Merta city, District Nagaur, Rajasthan

Sir,

Please find enclosed herewith the six monthly compliance report from the period of April 2023 to Sept.2023 of our Dhanappa Limestone mines near village Dhanappa, Tehsil Merta city, District Nagaur in Rajasthan admeasuring 400.00 ha. And M.L. 03/1993.

Thanks

Yours Truly,

For JK White Cement Works

(Unit of JK Cement Ltd)

(Deepak Kalla)

Sr. General Manager (Mines)

Enc.: - Monitoring Reports.

CC: The Additional Director (S),
Ministry of Environment & Forests,
Paryavaran Bhavan, CGO Complex,
Lodi Road. New Delhi -110003

Regd. A/D

CC: Member Secretary
Rajasthan State Pollution Control Board,
4th Institutional Area, Jhalana Doongari,
Jaipur - 302004

Regd. A/D

Corporate Office

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SIX MONTHLY COMPLIANCE REPORT

Name of the Project: Dhanappa Limestone Mine (ML No. 03/93)

Enc. Clearance Letter No.: J-11015/03/2009-IA-II(M) dated 30.08.2010

Period of Compliance Report: April. 2023 to September. 2023

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE STATUS
(i)	The project proponent shall obtain Consent to Establish and Consent to Operate from the Rajasthan State Pollution Control Board and effectively implement all the conditions stipulated therein.	The Consent to Establish and Consent to Operate obtained from RSPCB vide letter no. F (Mines)/Nagaur (Merta) /43 (1)/2010 -2011/6693-6697 dated 25.01.2011 and F (Mines)/Nagaur (Merta) /2652(1)/2017 -2018/4988-4992 dated 20.12.2022 respectively.
(ii)	Environmental Clearance is granted subject to final outcome of Hon'ble Supreme Court of India in Contempt Petition © No. 412/2004 in IA No. 833 in Writ Petition © No. 202 of 1995, as may be applicable to this project.	The area doesn't falls in Aravalli hills range therefore doesn't cover by the order of the Hon'ble Supreme Court dated 08.04.2005 in the contempt petition © 412/2004 in the writ petition 202 of 1995 in the matter of Godavarman vs Union of India, however we are communicating our agreement for final outcome of above said petition, as may be applicable for this project.
(iii)	The environmental clearance is subject to approval of the State Land Use Department, Government of Rajasthan for diversion of agricultural land for non-agricultural use.	Agreed
(iv)	Necessary prior permission from the Competent Authority as may be applicable for use of grazing land for mining purpose shall be obtained.	Mining lease renewal was granted for 20 years from 08/04/1994 to 07/04/2014 and extended up to 07.04.2034 as per the MMDR Amendment ACT 2015. The permission for mining was granted by State Department of Mines & Geology, Govt. of Rajasthan.
(v)	The project proponent shall develop fodder plots in the non-mineralized area in lieu of use of grazing land.	The fodder plots in the non-mineralized area shall be developed in lieu of use of grazing land.
(vi)	The mining operation shall be restricted to above ground water table and it should not intersect the groundwater table. In case of working below the ground water table, prior approval of the Ministry of Environment and Forest and the Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.	The avg. ultimate working depth of mine will be 25 m bgl whereas the ground water table in the area is more than 80 m bgl in the area during post-monsoon so no ground water intersection will be there due to mining operations.
(vii)	The project proponent shall ensure that no natural watercourse and/or water resources are	Shall be complied with.

	obstructed due to any mining operations. Adequate measures shall be taken for protection of the 1 st order and 2 nd order streams, if any emanating/ passing through the mine lease during the course of mining operation.	
(viii)	The top soil shall temporarily be stored at earmarked sit (s) only & it should not be kept unutilized for long. The top soil shall be used for land reclamation & plantation.	Topsoil availability is very poor. Topsoil available, if any is being utilized by means of spreading on reclaimed (backfilled) area for plantation purposes simultaneously with mining operations.
(ix)	The overburden (OB) generated during the mining operation shall be concurrently backfilled. The existing waste dump shall be liquidated by the end of the 7 th year and thereafter there shall be no external OB dump. The entire excavated area of 156.12 ha, shall be backfilled and reclaimed by plantation. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office, Lucknow on six monthly basis.	Presently OB/waste is being backfilled in the worked out area for the reclamation & rehabilitation point of view. In the phased restoration, total 55.86 ha area has been reclaimed and out of this total 46.52 hac area has been rehabilitated till Sept.2023 and is being carried out as per MCDR.
(x)	Catch drains and siltation ponds of the appropriate size shall be constructed for the working pit, temporary soil, OB and mineral dumps to arrest flow of silt and sediment directly into the agricultural fields, the Jojri Nadi 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 desilted particularly after the monsoon and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and the temporary over burden dumps to prevent runoff of water and flow of sediments directly into the agricultural fields, the Jojri Nadi and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.	Catch drains and siltation ponds of appropriate size have been constructed to arrest silt and sediment flows from mine pit and temporary over burden dump. The water collected in mine pit is being utilized for watering the mine area, roads, green belt development etc.

(xi)	Dimension of the retaining wall at the toe of the temporary OB dumps and the OB benches within the mine to check run-off and siltation should be based on the rain fall data.	Retaining walls at the toe of the OB dumps has been constructed.
(xii)	Plantation shall be raised in an area of 172.2 ha including a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, along the roads etc. by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 1000 plants per ha. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.	Presently 57.13 ha area is covered under greenbelt/plantation up to September. 2023. We have planted 3203 nos. of plant saplings covering 3.2 ha area on back filled ML area during the current financial year 20223-24. Plantation shall be raised in an area of 172.2 ha area during the mine life along periphery, along road and on backfilled and dump area.
(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.	Water spraying arrangement on haul roads, dump, and trucks (loading & unloading) has been provided to control the fugitive dust emission. Regular monitoring for ambient air quality has been carried out; results are well within the stipulated norms.
(xiv)	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.	We are maintaining Seven no. of rainwater harvesting stations and utilizing rain water collected in mining pits for plantation and spraying on haul roads.
(xv)	The project proponent shall undertake provision of artificial recharge to ground water through rainwater harvesting to the tune of 2.5 to 3.0 ML/year in the area in consultation with the Rajasthan State Ground Water Department.	The project of rainwater harvesting has been completed. We have constructed seven rainwater harvesting stations within lease area and maintaining them in good conditions for recharging the ground water.
(xvi)	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 piezometers 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); one 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 and Forest and its Regional Office Lucknow, the	<p>We are doing regular monitoring of ground water level in the mines as per guideline. Piezometers are installed and complete monitoring record is maintained.</p> <p>Comply with conditions, ground water level monitoring details are being regularly submitted to the concerned office.</p>

	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.	
(xvii)	Appropriate mitigative measures shall be taken to prevent pollution of the Jojri Nadi in consultation with the State Pollution Control Board.	The Nadi Jojri flows at about 1.50 km south of the lease area which is a seasonal one. No impact is envisaged due to mining activities on this said Nadi.
(xviii)	The project proponent shall obtain necessary prior permission of the component authorities for drawl of requisite quantity of water (surface water Ground water, if any) required for the project.	Not applicable. The water requirement for the site is being met from the mine sump water and nearby area.
(xix)	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.	We have planned and implemented seven nos. of rain water harvesting structures in the lease area.
(xx)	The project proponent shall ensure that the fluoride level in the water to be used for drinking purpose in this area are within prescribed limits by making provision of RO System.	The J.K. White Cement Works Management already has installed RO System in the factory colony for workers, staff. The management also installed RO System in village Gotan for nearby villagers to check fluoride level.
(xxi)	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance 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.	All the vehicles used for mining operations are on hired basis and we supervise & force them for periodic maintenance & servicing. PUC certified vehicles are being used.
(xxii)	The project proponent shall take specific safeguard measure to control RSPM levels in the area.	Safeguard measures are being taken to control RSPM levels in the area. The RSPM results are within the stipulated norms.
(xxiii)	Blast vibration study shall be carried out. Based on the same, charge per delay should be so adjusted that there is no adverse impact in the surrounding area due to vibration.	Blast Vibration Study is being regularly carried out and no adverse impact of blasting in the surrounding area due to vibration.
(xxiv)	Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Blasting operation is being carried out during the daytime only. Controlled blasting is being practiced by using most advance and safe technology i.e. Shock Tubes Blasting by competent persons and also as per recommendations

		made in Blast Vibration Studies Report.
(xxv)	Drills shall either be operated with dust extractors or equipped with water injection system.	Wet drilling operation is being practiced.
(xxvi)	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.	Not applicable as handling of mineral is being carried out by manual means only. No loading of limestone by mechanized means.
(xxvii)	Sewage treatment plant shall be installed for the colony. ETP shall be provided for the workshop and wastewater generated during the mining operation.	Not applicable, as no effluents are envisaged from mine. The workers come from nearby villages.
(xxviii)	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 is being carried out and records are maintained.
(xxix)	Digital processing of the entire lease area using remote sensing technique should be done regularly once in three years for monitoring land use pattern and report submitted to MOEF and its Regional Office located at Lucknow.	Digital Processing of the entire lease area using remote sensing technique is being conducted regularly once in every three years for monitoring of land use pattern. Latest digital processing has been done during 2023-24 by Mr. Shailendra Kumar Soni (QP), Jodhpur and report has been sent to MOEF and its regional Office.
(xxx)	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 structure to be removed after the completion of the project.	Not applicable as it is mining project hence no construction activity is involved.
(xxxi)	The critical parameters such as RSPM (Particulate matter with size less than 10 microns i.e. PM ₁₀), 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 discharge water shall also be monitored [(TDS, DO, pH and Total Suspended Solids (TSS)]. The monitored	Ambient Air Quality-monitoring stations have been set up in mines area. Periodical monitoring is being carried out by our environment Cell and third party monitoring is being also done. All the parameters w. r. t. SPM, RSPM, NO _x , SO ₂ are well within the stipulated norms. Annexure-I. The monitored data have been displayed

	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.II(M) dated 27.05.2009 issued by Ministry of Environment and Forest, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	on a display board at the Mine site. No water is being discharged from the lease area.
(xxxii)	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final closure for approval.	A final mine closure plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forest well before as directed.
	B. General Conditions	
(i)	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forest.	No change in mining technology and scope of working shall be made without prior approval of Ministry of Environment & Forests.
(ii)	No change in the calendar plan including excavation, quantum of mineral limestone and waste should be made.	No change in the calendar plan including excavation, quantum of mineral limestone and waste is made.
(iii)	Conservation measures for protection of flora and fauna in the core & buffer zone should be drawn up in consultation with the local forest and wildlife department and effectively implemented.	No endangered to endemic species of flora and fauna found in the study area. However we have been developed the area for conservation of flora and fauna in the lease area.
(iv)	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 microns i.e. PM ₁₀), NO _x monitoring. Location of the stations should be decided based on the meteorological, topographical features and environmentally and 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 have been set up in Core and Buffer zone. Regular monitoring of AAQ is being carried out.
(v)	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 and Forest including its Regional office located at Lucknow and the State Pollution Control Board / Central	Data on ambient air quality RSPM (Particulate matter with size less than 10 microns i.e., PM ₁₀), NO _x is attached herewith. Annexure –I

	Pollution Control Board once in six month.	
(vi)	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 on haul roads, unloading of waste trucks has been provided to control the fugitive dust emission. Blasted/ fragmented limestone loading in trucks is by manual means so no dust generation is envisaged.
(vii)	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.	All the equipment's are maintained properly & workers are provided with all necessary PPE. Noise monitoring is being done & results are well within the prescribed norms.
(viii)	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 effluent.	Not applicable. There is no generation of industrial waste water from the Dhanappa Limestone Mines.
(ix)	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.	PPE has been provided to person working in such area & time to time training about safety & awareness is given to all the workers. Occupational health surveillance program of the workers is being conducted periodically. There is no occupational disease observed so far.
(x)	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.	A separate environmental management cell with suitable qualified personnel has been set-up.
(xi)	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 and Forests and its Regional Office located at Lucknow.	The funds earmarked for environmental protection measures kept in a separate account and not diverted for other purpose. Expenditure incurred for the environmental protection measures during the compliance period is Rs. 10.19 lacs.
(xii)	The project authorities should inform to the Regional Office located at Lucknow regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	The mining project in question is an operative mining unit since 1987.
(xiii)	The Regional Office of this Ministry located at	We are extending full cooperation to the

	Lucknow 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.	officer (s) of the Regional Office by furnishing the requisite data/ information/ monitoring reports regularly.
(xiv)	The project proponent shall submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Lucknow, the respective Zonal Office of Central Pollution Control Board the State Pollution Control Board. The proponent shall upload the status of compliance of the EC 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 and Forest, Lucknow, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board.	The reports on the status of compliance of stipulated EC conditions including results of monitoring is being sent to concern offices within time frame (Both in hard copies as well as by e-mail) The status of compliance in hard copies is being done.
(xv)	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad / 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.	Copy of clearance letter has sent to the concerned Panchayat / Local NGO.
(xvi)	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.	Complied with.
(xvii)	The environmental statement for each financial year ending 31 st March in form –V as 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 EC conditions and shall also be sent to the Regional Office of the Ministry of Environment and Forests, Lucknow by e-mail.	The Environmental Statement for financial year April 2022 to 31 st March 2023 has been submitted in August. 2023
(xviii)	The project authorities should advertise at least in two local newspapers widely circulated, one of	Advertisement of Environmental Clearance published in Rajasthan Patrika

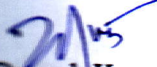
	which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forest at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Lucknow	& Dainik Bhaskar dated 10 Sept. 2010.
3	The Ministry of other competent authority may alter/ modify the above conditions or stipulate any further condition in the interest of environment protection.	Agreed
4	Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.	Agreed
5	The above conditions will be enforced inter-alia, under the provisions of the water (Prevention & Control of Pollution) Act 1974, the Air (prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/High Court of Rajasthan and any other Court of Law relating to subject matter.	We are communicating our agreement to fulfill the other statutory requirements under any law/ rules/ notifications if any applicable.
6	Any appeal against this environmental clearance shall lie with the National Environment Appellate Authority, if preferred within a period of 30 days as prescribed under Section 11 of the National Environment Appellate Authority Act, 1997.	Agreed

Thanking you,

Yours faithfully

For J.K. White Cement Works

(Unit of J.K. Cement Ltd.)


(Deepak Kumawat)
Sr. Manager-Mines

Sample Number: VTL/AA/01-04
Name & Address of the Party: M/s JK White Cement Works, Gotan (Unit of JK Cement Ltd.) Dhanappa Limestone Mines (ML.No.03/93) Village- Dhanappa, Teh.- Merta, Dist.- Nagaur, Raj.

Report No.: VTL/A/2306150009-12
Format No.: 7.8 F 02
Party Reference No.: NIL

Sample Description : Ambient Air Quality Monitoring

Report Date: 21/06/2023
Period of Analysis: 15- 21/06/2023
Receipt Date: 15/06/2023

General Information:-

Sample collected by : VTL Team
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear sky
Date of Sampling : 12/06/2023 to 13/06/2023
Ambient Temperature (°C) : Min. 25°C, Max. 39 °C
Surrounding Activity : Human , Vehicular & Plant Activities
Scope of Monitoring : Regulatory Requirement
Sampling & Analysis Protocol : IS-5182 & CPCB Guidelines
Sampling Duration : 24 hrs.
Parameter Required : As Per Work Order

Sr.	Parameter	Protocol	Location & Lat. Long				Unit	NAAQS 2009
			Mines Office (ML.No.- 03/93)(Core Zone)	Pit No.-1 (ML.No.- 03/93)(Core Zone)	Pit No.-2 (ML.No.- 03/93)(Core Zone)	Pit No.-3 (ML.No.- 03/93)(Core Zone)		
			73°45'41"E 26°33'53"N	73°46'22"E 26°33'34"N	73°46'9"E 26°33'38"N	73°46'5"E 26°33'52"N		
1.	Particulate Matter (PM10)	IS: 5182 (P-23), 2006, RA 2017	62.14	68.42	60.63	66.21	µg/m ³	100
2.	Particulate Matter (PM2.5)	IS 5182 (P-24) -2019	32.11	35.74	30.89	33.56	µg/m ³	60
3.	Nitrogen Dioxide (NO2)	IS: 5182 (P-6), 2006 RA 2018	16.18	17.89	15.48	15.89	µg/m ³	80
4.	Sulphur Dioxide (SO2)	IS: 5182 (P-2), 2001, RA 2018	8.24	9.52	8.21	9.74	µg/m ³	80
5.	Benzene (as C6H6)	IS: 5182 (P-11)-2006, RA.2017	*BLQ(**LOQ1.0)	*BLQ(**LOQ1.0)	*BLQ(**LOQ1.0)	*BLQ(**LOQ1.0)	µg/m ³	5
6.	Ammonia (as NH3)	3 rd Ed. 1988, Method No. 401	*BLQ(**LOQ2.0)	*BLQ(**LOQ2.0)	*BLQ(**LOQ2.0)	*BLQ(**LOQ2.0)	µg/m ³	400
7.	Ozone (as O3)	IS:5182 (P-9):1974, RA.2019	7.90	6.95	7.10	7.54	µg/m ³	180
8.	Lead (as pb)	IS:5182 (P-22):2004, RA.2019	*BLQ(**LOQ0.02)	*BLQ(**LOQ0.02)	*BLQ(**LOQ0.02)	*BLQ(**LOQ0.02)	µg/m ³	1
9.	Arsenic (as As)	3 rd Ed. 1988, Method No. 302	*BLQ(**LOQ0.15)	*BLQ(**LOQ0.15)	*BLQ(**LOQ0.15)	*BLQ(**LOQ0.15)	ng/m ³	6
10.	Nickel (as Ni)	USEPA Compendium IO-3.2, 1999	*BLQ(**LOQ5.0)	*BLQ(**LOQ5.0)	*BLQ(**LOQ5.0)	*BLQ(**LOQ5.0)	ng/m ³	20
11.	Benzo (a) Pyrene	IS:5182 (P-12):2004, RA.2019	*BLQ(**LOQ0.2)	*BLQ(**LOQ0.2)	*BLQ(**LOQ0.2)	*BLQ(**LOQ0.2)	ng/m ³	1

Checked By



RK Yadav
Lab Incharge
Authorized Signatory

Approved & Certified EPA 1986 Recognized, ISO:9001 and OHSAS:45001 Certified

Vibrant Techno Lab Pvt. Ltd.

SC-40, 3rd Floor, Narayan Vihar S, Ajmer Road, Jaipur Raj. 302020

9929108691, 9810205356, 8005707098, 9549956601

0141-2954638

bd@vibranttechnolab.com

www.vibranttechnolab.com

12.	Carbon Monoxide (as CO)	Lab SOP no. VTL/STP/02:2022, STP-08	0.49	0.49	0.52	0.80	mg/m ³	4
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-----End of the Report-----



MD Mishra
Checked By



RK Yadav
Lab Incharge
Authorized Signatory



Approved & Certified EPA 1986 Recognized, ISO:9001 and OHSAS:45001 Certified

Vibrant Techno Lab Pvt. Ltd.

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9929108691, 9810205356, 8005707098, 9549956601

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www.vibranttechnolab.com

Sample Number: VTL/AA/01-04
Name & Address of the Party: M/s JK White Cement Works, Gotan (Unit of JK Cement Ltd.) Dhanappa Limestone Mines (ML.No.03/93) Village- Dhanappa, Teh.- Merta, Dist.- Nagaur, Raj.

Report No.: VTL/A/2306150013-16
Format No.: 7.8 F 02
Party Reference No.: NIL

Sample Description: Ambient Air Quality Monitoring

Report Date: 21/06/2023
Period of Analysis: 15- 21/06/2023
Receipt Date: 15/06/2023

General Information:-

Sample collected by : VTL Team
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear sky
Date of Sampling : 12/06/2023 to 13/06/2023
Ambient Temperature (°C) : Min. 27°C, Max. 41 °C
Surrounding Activity : Human , Vehicular & Other Activities
Scope of Monitoring : Regulatory Requirement
Sampling & Analysis Protocol : IS-5182 & CPCB Guidelines
Sampling Duration : 24 hrs.
Parameter Required : As Per Work Order

Sr.	Parameter	Protocol	Location & Lat. Long				Unit	NAA 200
			Dhanappa Vill. (ML.- 03/93,75/90, 25/2006) (Buffer Zone) 73°44'45"E 26°33'57"N	Basni Vill. (ML.- 03/93,75/90, 25/2006) (Buffer Zone) 73°48'37"E 26°36'31"N	Ramnagar Vill. (ML.- 03/93,75/90, 25/2006) (Buffer Zone) 73°45'19"E 26°36'42"N	Pundlu Vill. (ML.- 03/93,75/90, 25/2006) (Buffer Zone) 73°48'41"E 26°32'57"N		
1.	Particulate Matter (PM10)	IS: 5182 (P-23), 2006, RA 2017	61.78	66.94	63.52	68.24	µg/m ³	10
2.	Particulate Matter (PM2.5)	IS 5182 (P-24) -2019	32.11	33.56	31.75	34.90	µg/m ³	60
3.	Nitrogen Dioxide (NO2)	IS: 5182 (P-6), 2006 RA 2018	15.05	17.96	15.13	17.04	µg/m ³	80
4.	Sulphur Dioxide (SO2)	IS: 5182 (P-2), 2001, RA 2018	8.50	9.59	8.34	9.54	µg/m ³	80
5.	Benzene (as C6H6)	IS: 5182 (P-11)-2006, RA.2017	*BLQ(**LOQ1.0)	*BLQ(**LOQ1.0)	*BLQ(**LOQ1.0)	*BLQ(**LOQ1.0)	µg/m ³	5
6.	Ammonia (as NH3)	3 rd Ed. 1988, Method No. 401	*BLQ(**LOQ2.0)	*BLQ(**LOQ2.0)	*BLQ(**LOQ2.0)	*BLQ(**LOQ2.0)	µg/m ³	40
7.	Ozone (as O3)	IS:5182 (P-9):1974, RA.2019	9.13	10.85	9.31	9.81	µg/m ³	18
8.	Lead (as pb)	IS:5182 (P-22):2004, RA.2019	*BLQ(**LOQ0.02)	*BLQ(**LOQ0.02)	*BLQ(**LOQ0.02)	*BLQ(**LOQ0.02)	µg/m ³	1
9.	Arsenic (as As)	3 rd Ed. 1988, Method No. 302	*BLQ(**LOQ0.15)	*BLQ(**LOQ0.15)	*BLQ(**LOQ0.15)	*BLQ(**LOQ0.15)	ng/m ³	6
10.	Nickel (as Ni)	USEPA Compendium IO-3.2, 1999	*BLQ(**LOQ5.0)	*BLQ(**LOQ5.0)	*BLQ(**LOQ5.0)	*BLQ(**LOQ5.0)	ng/m ³	20
11.	Benzo (a) Pyrene	IS:5182 (P-12):2004, RA.2019	*BLQ(**LOQ0.2)	*BLQ(**LOQ0.2)	*BLQ(**LOQ0.2)	*BLQ(**LOQ0.2)	ng/m ³	1

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12.	Carbon Monoxide (as CO)	Lab SOP no. VTL/STP/02:2022, STP-08	0.50	0.53	0.51	0.56	mg/m ³	4
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-----End of the Report-----



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Sample Number: VTL/AN/01-04
Name & Address of the Party: M/s JK White Cement Works, Gotan
(Unit of JK Cement Ltd.) Dhanappa Limestone
Mines (ML.No.03/93) Village- Dhanappa, Teh.-
Merta, Dist.- Nagaur, Raj.
Sample Description: Ambient Noise Level Monitoring
Scope of Monitoring: Regulatory Requirement
Protocol Used: IS 9989
Instrument Used: SLM

Report No.: VTL/N/2306150009-12
Format No.: 7.8 F 04
Party Reference No.: NIL
Report Date: 21/06/2023
Receipt Date: 15/06/2023
Sampling Duration: 24 Hrs.
Sample Collected by: VTL Team
Instrument: Calibrated
Calibration Status: Calibrated

Ambient Noise Level Monitoring Results

General Information:-

Meteorological condition during monitoring : Clear sky
Date of Monitoring : 12/06/2023 to 13/06/2023
Time of Monitoring : 06:00 AM to 06:00AM
Ambient Temperature (°C) : Min. 25°C, Max. 39 °C
Surrounding Activity : Human, Vehicular & Plant Activities
Parameter Required : As per Work Order

Sr.	Test Parameter	Protocol	Location & Latlong							
			Mines Office (ML.No.- 03/93)(Core Zone)		Pit No.-1 (ML.No.- 03/93)(Core Zone)		Pit No.-2 (ML.No.- 03/93)(Core Zone)		Pit No.-3 (ML.No.- 03/93)(Core Zone)	
			73°45'41"E 26°33'53"N		73°46'22"E 26°33'34"N		73°46'9"E 26°33'38"N		73°46'5"E 26°33'52"N	
1.	Leq, dB(A)	IS:9989-1981, RA 2020	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
			55.8	44.2	59.3	47.6	56.4	46.8	60.9	49.6

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
2. Night Time is reckoned between 10.00 PM to 6.00 AM.
3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeakers and bursting of crackers is banned in these zones.
Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

-----End of the Report-----

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Sample Number: VTL/AN/01-04
Name & Address of the Party: M/s JK White Cement Works, Gotan
(Unit of JK Cement Ltd.) Dhanappa Limestone
Mines (ML.No.03/93) Village- Dhanappa, Teh.-
Merta, Dist.- Nagaur, Raj.
Sample Description: Ambient Noise Level Monitoring
Scope of Monitoring: Regulatory Requirement
Protocol Used: IS 9989
Instrument Used: SLM

Report No.: VTL/N/2306150013-16
Format No.: 7.8 F 04
Party Reference No.: NIL
Report Date: 21/06/2023
Receipt Date: 15/06/2023
Sampling Duration: 24 Hrs.
Sample Collected by: VTL Team
Instrument: Calibrated
Calibration Status: Calibrated

Ambient Noise Level Monitoring Results

General Information:-

Meteorological condition during monitoring : Clear sky
Date of Monitoring : 12/06/2023 to 13/06/2023
Time of Monitoring : 06:00 AM to 06:00AM
Ambient Temperature (°C) : Min. 27°C, Max. 41 °C
Surrounding Activity : Human, Vehicular & Plant Activities
Parameter Required : As per Work Order

Sr.	Test Parameter	Protocol	Location & Latlong							
			Dhanappa Vill. (ML.-03/93,75/90 ,25/2006) (Buffer Zone) 73°44'45"E 26°33'57"N		Basni Vill. (ML.-03/93,75/90, 25/2006) (Buffer Zone) 73°48'37"E 26°36'31"N		Ramnagar Vill. (ML.-03/93,75/90, 25/2006) (Buffer Zone) 73°45'19"E 26°36'42"N		Pundlu Vill. (ML.-03/93,75/90, 25/2006) (Buffer Zone) 73°48'41"E 26°32'57"N	
			Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
1.	Leq, dB(A)	IS:9989-1981, RA 2020	57.6	47.1	55.2	45.1	52.9	41.3	55.7	48.1

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
2. Night Time is reckoned between 10.00 PM to 6:00 AM.
3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeakers and bursting of crackers is banned in these zones.
Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

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Sample Number : VTL/W/01

Name & Address of the Party : M/s JK White Cement Works, Gotan
(Unit of JK Cement LTD.) Dhanappa Limestone Mines
(ML. No. 03/93) Village Dhanappa, Teh.- Merta,
Dist.- Nagaur Rajasthan

Report No. : VTL/W/2306150010/A

Format No : 7.8 F-01

Party Reference No : NIL

Report Date : 21/06/2023

Period of Analysis : 15/06/2023-21/06/2023

Receipt Date : 15/06/2023

Sampling Date : 13/06/2023

Sampling Type : Grab

Sample Quantity : 2 Ltr.

Sample Description : Water Sample

Sampling Location : Dhanappa Village (Tubewell M.L.No.-03/93)

Sample Collected By : VTL Team

Preservation : Suitable Preservation

Method of sampling : IS :3025

S.No.	Test Parameters	Test Method	Results	Units	IS:10500-2012	
					Acceptable Limit	Permissible Limit
1	pH (at 25°C)	IS : 3025 (P-11) : 2022	7.89	--	6.5 to 8.5	No Relaxation
2	Turbidity	IS : 3025 (P-10):1984, RA 2017	*BLQ(**LOQ-1.0)	NTU	1	5
3	Total Hardness (as CaCO ₃)	IS: 3025 (P-21): 2009, RA 2019	420.00	mg/l	200	600
4	Calcium (as Ca)	IS: 3025 (P- 40): 1991 RA 2019	106.21	mg/l	75	200
5	Total Alkalinity (as CaCO ₃)	IS: 3025 (P-23): 1986, RA 2019	389.50	mg/l	200	600
6	Chloride (as Cl)	IS: 3025 (P-32): 1988, RA 2019	612.58	mg/l	250	1000
7	Magnesium (as Mg)	IS: 3025 (P-46): 1994, RA 2019	37.67	mg/l	30	100
8	Total Dissolved Solids	IS :3025 (P-16): 1984, RA 2017	1535.20	mg/l	500	2000
9	Sulphate (as SO ₄)	IS: 3025 (P-24): 1986, RA 2022	115.21	mg/l	200	400
10	Fluoride (as F)	APHA 23rd Edition ,4500FD :2017	1.02	mg/l	1.0	1.5
11	Nitrate (as NO ₃)	IS: 3025 (P-34): 1988	29.93	mg/l	45.0	No Relaxation
12	Iron (as Fe)	APHA 23rd Edition , 3111B,2017	0.34	mg/l	1.0	No Relaxation
13	Aluminium (as Al)	IS 3025 (P-55): 2003, RA 2019	*BLQ(**LOQ-0.03)	mg/l	0.03	0.2
14	Boron (as B)	APHA 23rd Edition, 4500B,2017	*BLQ(**LOQ-0.2)	mg/l	0.5	1.0
15	Total Chromium (as Cr)	APHA 23rd Edition 2017 3113 B, 2017	*BLQ(**LOQ-0.02)	mg/l	0.05	No Relaxation
16	Phenolic Compounds (C ₆ H ₅ OH)	APHA 23rd Edition 5530C: 2017	*BLQ(**LOQ-0.001)	mg/l	0.001	0.002
17	Zinc (as Zn)	APHA 23rd Edition,3030D,	0.41	mg/l	5.0	15.0



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Sample Number : VTL/W/01

Report No. : VTL/W/2306150010/A

S.No.	Test Parameters	Test Method	Results	Units	IS:10500-2012	
					Acceptable Limit	Permissible Limit
17		3113 B, 2017				
18	Copper (as Cu)	APHA 23rd Edition 3111B 2017	*BLQ(**LOQ-0.02)	mg/l	0.05	1.5
19	Manganese (as Mn)	APHA 23rd Edition, 3030D, 3111 B, 2017	*BLQ(**LOQ-0.05)	mg/l	0.1	0.3
20	Cadmium (as Cd)	APHA 23rd Edition, 3030D, 3113 B, 2017	*BLQ(**LOQ-0.002)	mg/l	0.003	No Relaxation
21	Lead (as Pb)	APHA 23rd Edition, 3030D, 3113 B, 2017	*BLQ(**LOQ-0.005)	mg/l	0.01	No Relaxation
22	Selenium (as Se)	APHA 23rd Edition, 3114C, 2017	*BLQ(**LOQ-0.005)	mg/l	0.01	No Relaxation
23	Arsenic (as As)	APHA 23rd Edition, 3114C, 2017	*BLQ(**LOQ-0.005)	mg/l	0.01	0.05
24	Mercury (as Hg)	APHA 23rd edition, 3114C 2017	*BLQ(**LOQ-0.001)	mg/l	0.001	No Relaxation
25	Total Coliform	IS : 15185 : 2016	Absent	per 100 ml	Shall not be detectable in any 100 ml sample	--
26	E.Coli	IS : 15185 : 2016	Absent	per 100 ml	Shall not be detectable in any 100 ml sample	--
27	Ammonia (as N)	IS-3025 (P-34)- 1988, Sec. RA :2022	*BLQ(**LOQ-0.3)	mg/l	0.5	No Relaxation
28	Sulphide	IS 3025 (P-29) :1986 RA 2019 Idometric	*BLQ(**LOQ-0.1)	mg/l	0.05	No Relaxation
29	Nickel as Ni	APHA 23rd Edition, 3030D, 3113B 2017	*BLQ(**LOQ-0.01)	mg/l	0.02	No relaxation
30	Free Residual Chlorine	IS 3025 (P-26):2021	*BLQ(**LOQ-0.2)	mg/l	0.2	1.0
31	Sodium as Na	APHA 23rd Edition 3500B 2017	376.88	mg/l	-	-



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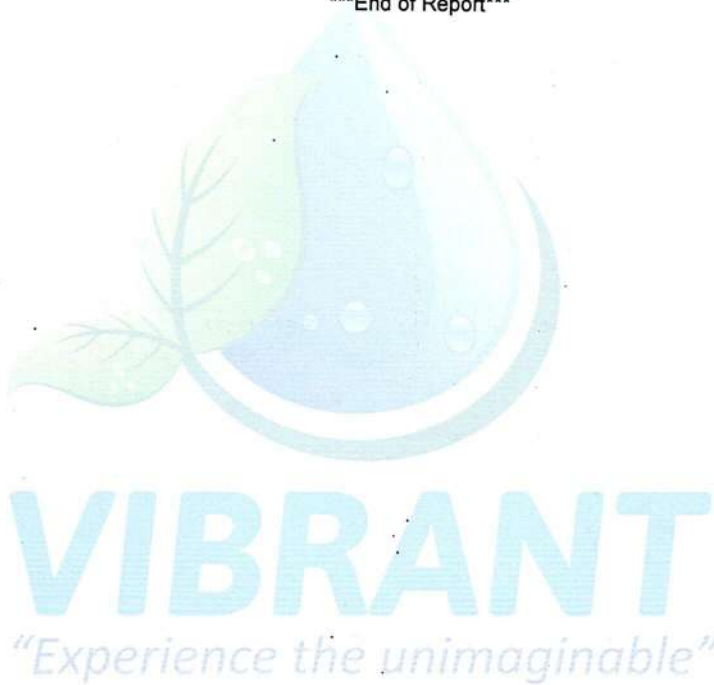
Sample Number : VTL/W/01

Report No. : VTL/W/2306150010/A

S.No.	Test Parameters	Test Method	Results	Units	IS:10500-2012	
					Acceptable Limit	Permissible Limit
32	Potassium as K	APHA 23rd Edition, 3030D, 3113 B 2017	14.25	mg/l	-	-

*BLQ-Below Limit Of Quantification, **LOQ- Limit of Quantification

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Sample Number : VTL/W/01

Name & Address of the Party : M/s JK White Cement Works, Gotan
(Unit of JK Cement LTD.) Dhanappa Limestone Mines
(ML. No. 03/93) Village Dhanappa, Teh.- Merta,
Dist.- Nagaur Rajasthan

Report No. : VTL/W/2306150010/B

Format No : 7.8 F-01

Party Reference No : NIL

Report Date : 21/06/2023

Period of Analysis : 15/06/2023-21/06/2023

Receipt Date : 15/06/2023

Sampling Date : 13/06/2023

Sampling Type : Grab

Sample Quantity : 2 Ltr.

Sample Description : Water Sample

Sampling Location : Dhanappa Village (Tubewell M.L.No.-03/93)

Sample Collected By : VTL Team

Preservation : Suitable Preservation

Method of sampling : IS :3025

S.No.	Test Parameters	Test Method	Results	Units	IS:10500-2012	
					Acceptable Limit	Permissible Limit
1	Colour	IS : 3025:(P-4)1983, :RA 2017	*BLQ(**LOQ-5.0)	Hazen	5	15
2	Odour	IS : 3025 (P-5) : RA 2018	Agreeable	--	Agreeable	Agreeable
3	Taste	IS :3025 (P-8): 1984 RA 2017	Agreeable	--	Agreeable	Agreeable
4	Mineral Oil	IS 3025 (P-39) 1989	*BLQ(**LOQ-0.05)	mg/l	0.5	No Relaxation
5	Anionic Detergents (as MBAS)	APHA 23rd Edition , 5540C 2017	*BLQ(**LOQ-0.05)	mg/l	0.2	1.0
6	Silver as Ag	APHA 23rd Edition, 3111B 2017	*BLQ(**LOQ-0.01)	mg/l	0.1	No relaxation
7	Chloramines as CL2	APHA 23rd Edition,4500G 2017	*BLQ(**LOQ-0.5)	mg/l	4.0	No relaxation
8	Barium as Ba	APHA 23rd Edition,3111B 2017	*BLQ(**LOQ-0.02)	mg/l	0.7	No relaxation
9	Molybdenum	APHA 23rd Edition,3111B 2017	*BLQ(**LOQ-0.5)	mg/l	0.07	No relaxation
10	Polynuclear-aromatic Hydrocarbon (PAH)	APHA 23rd Edition,5175/6630 2017	*BLQ(**LOQ-0.01)	mg/l	0.0001	No relaxation
11	Polychlorinated biphenyls (PCB)	APHA 23rd Edition,6440, 2017	*BLQ(**LOQ-0.01)	mg/l	0.0005	No relaxation

*BLQ-Below Limit Of Quantification, **LOQ- Limit of Quantification

End of Report



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Sample Number : VTL/SW/02

Name & Address of the Party : M/s JK White Cement Works, Gotan
(Unit of JK Cement LTD.) Dhanappa Limestone Mines
(ML. No. 03/93) Village Dhanappa, Teh.- Merta,
Dist.- Nagaur Rajasthan

Report No. : VTLW/2306150011/A

Format No : 7.8 F-01

Party Reference No : NIL

Report Date : 21/06/2023

Period of Analysis : 15/06/2023-21/06/2023

Receipt Date : 15/06/2023

Sampling Date : 13/06/2023

Sampling Type : Grab

Sample Quantity : 2 Ltr.

Sample Description : Water Sample

Sampling Location : Dhanappa Village (Surface Water M.L.No.-03/93)

Sample Collected By : VTL Team

Preservation : Suitable Preservation

Method of sampling : IS :3025

S.No.	Test Parameters	Test Method	Results	Units	IS:10500-2012	
					Acceptable Limit	Permissible Limit
1	pH (at 25°C)	IS : 3025 (P-11) : 2022	7.79	--	6.5 to 8.5	No Relaxation
2	Turbidity	IS : 3025: (P-10)1984, RA 2017	*BLQ(**LOQ-1.0)	NTU	1	5
3	Total Hardness (as CaCO ₃)	IS: 3025 (P-21): 2009, RA 2019	44.00	mg/l	200	600
4	Calcium (as Ca)	IS: 3025 (P- 40): 1991 RA 2019	8.02	mg/l	75	200
5	Total Alkalinity (as CaCO ₃)	IS: 3025 (P-23): 1986, RA 2019	38.00	mg/l	200	600
6	Chloride (as Cl)	IS: 3025 (P-32): 1988, RA 2019	57.43	mg/l	250	1000
7	Magnesium (as Mg)	IS: 3025 (P-46): 1994, RA 2019	5.83	mg/l	30	100
8	Total Dissolved Solids	IS :3025 (P-16): 1984, RA 2017	195.20	mg/l	500	2000
9	Sulphate (as SO ₄)	IS: 3025 (P-24): 1986, RA 2022	15.53	mg/l	200	400
10	Fluoride (as F)	APHA 23rd Edition ,4500FD :2017	0.24	mg/l	1.0	1.5
11	Nitrate (as NO ₃)	IS: 3025 (P-34): 1988	9.28	mg/l	45.0	No Relaxation
12	Iron (as Fe)	APHA 23rd Edition , 3111B,2017	0.16	mg/l	1.0	No Relaxation
13	Aluminium (as Al)	IS 3025 (P-55): 2003, RA 2019	*BLQ(**LOQ-0.03)	mg/l	0.03	0.2
14	Boron (as B)	APHA 23rd Edition, 4500B,2017	*BLQ(**LOQ-0.2)	mg/l	0.5	1.0
15	Total Chromium (as Cr)	APHA 23rd Edition 2017 3113 B, 2017	*BLQ(**LOQ-0.02)	mg/l	0.05	No Relaxation
16	Phenolic Compounds (C ₆ H ₅ OH)	APHA 23rd Edition 5530C: 2017	*BLQ(**LOQ-0.001)	mg/l	0.001	0.002
17	Zinc (as Zn)	APHA 23rd Edition,3030D,	0.28	mg/l	5.0	15.0



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Sample Number : VTL/SW/02

Report No. : VTLW/2306150011/A

S.No.	Test Parameters	Test Method	Results	Units	IS:10500-2012	
					Acceptable Limit	Permissible Limit
17		3113 B, 2017				
18	Copper (as Cu)	APHA 23rd Edition 3111B 2017	*BLQ(**LOQ-0.02)	mg/l	0.05	1.5
19	Manganese (as Mn)	APHA 23rd Edition, 3030D, 3111 B, 2017	*BLQ(**LOQ-0.05)	mg/l	0.1	0.3
20	Cadmium (as Cd)	APHA 23rd Edition, 3030D, 3113 B, 2017	*BLQ(**LOQ-0.002)	mg/l	0.003	No Relaxation
21	Lead (as Pb)	APHA 23rd Edition, 3030D, 3113 B, 2017	*BLQ(**LOQ-0.005)	mg/l	0.01	No Relaxation
22	Selenium (as Se)	APHA 23rd Edition, 3114C, 2017	*BLQ(**LOQ-0.005)	mg/l	0.01	No Relaxation
23	Arsenic (as As)	APHA 23rd Edition, 3114C, 2017	*BLQ(**LOQ-0.005)	mg/l	0.01	0.05
24	Mercury (as Hg)	APHA 23rd edition, 3114C 2017	*BLQ(**LOQ-0.001)	mg/l	0.001	No Relaxation
25	Total Coliform	IS : 15185 : 2016	Absent	per 100 ml	Shall not be detectable in any 100 ml sample	--
26	E.Coli	IS : 15185 : 2016	Absent	per 100 ml	Shall not be detectable in any 100 ml sample	--
27	Ammonia (as N)	IS-3025 (P-34)- 1988, Sec. RA :2022	*BLQ(**LOQ-0.3)	mg/l	0.5	No Relaxation
28	Sulphide	IS 3025 (P-29) :1986 RA 2019 Idometric	*BLQ(**LOQ-0.1)	mg/l	0.05	No Relaxation
29	Nickel as Ni	APHA 23rd Edition, 3030D, 3113B 2017	*BLQ(**LOQ-0.01)	mg/l	0.02	No relaxation
30	Free Residual Chlorine	IS 3025 (P-26):2021	*BLQ(**LOQ-0.2)	mg/l	0.2	1.0
31	Sodium as Na	APHA 23rd Edition 3500B 2017	52.50	mg/l	-	-



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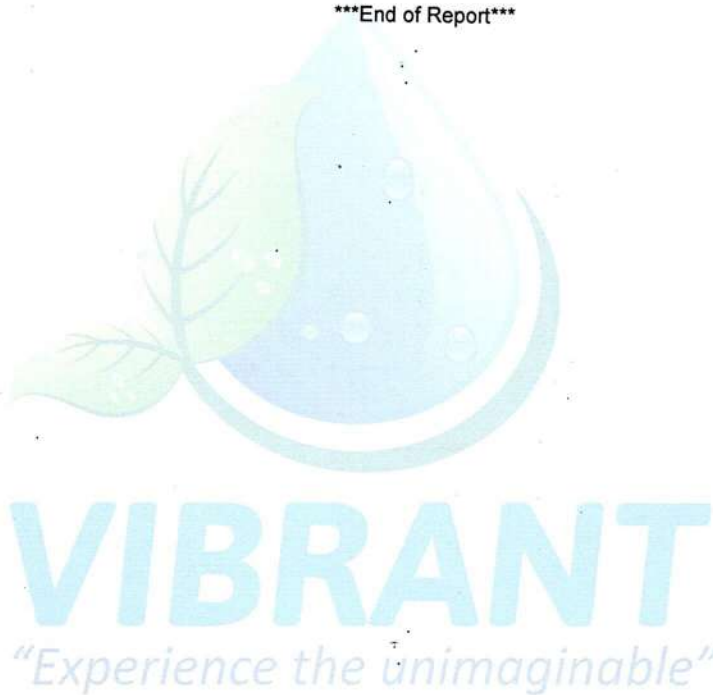
Sample Number : VTL/SW/02

Report No. : VTL/W/2306150011/A

S.No.	Test Parameters	Test Method	Results	Units	IS:10500-2012	
					Acceptable Limit	Permissible Limit
32	Potassium as K	APHA 23rd Edition, 3030D, 3113 B 2017	4.31	mg/l	-	-

*BLQ-Below Limit Of Quantification, **LOQ- Limit of Quantification

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Sample Number : VTL/SW/02

Name & Address of the Party : M/s JK White Cement Works, Gotan
(Unit of JK Cement LTD.) Dhanappa Limestone Mines
(ML. No. 03/93) Village Dhanappa, Teh.- Merta,
Dist.- Nagaur Rajasthan

Report No. : VTL/W/2306150011/B

Format No : 7.8 F-01

Party Reference No : NIL

Report Date : 21/06/2023

Period of Analysis : 15/06/2023-21/06/2023

Receipt Date : 15/06/2023

Sampling Date : 13/06/2023

Sampling Type : Grab

Sample Quantity : 2 Ltr.

Sample Description : Water Sample

Sampling Location : Dhanappa Village (Surface Water M.L.No.-03/93)

Sample Collected By : VTL Team

Preservation : Suitable Preservation

Method of sampling : IS :3025

S.No.	Test Parameters	Test Method	Results	Units	IS:10500-2012	
					Acceptable Limit	Permissible Limit
1	Colour	IS : 3025:(P-4)1983, -RA 2017	*BLQ(**LOQ-5.0)	Hazen	5	15
2	Odour	IS : 3025 (P-5) : RA 2018	Agreeable	--	Agreeable	Agreeable
3	Taste	IS :3025 (P-8): 1984 RA 2017	Agreeable	--	Agreeable	Agreeable
4	Mineral Oil	IS 3025 (P-39) 1989	*BLQ(**LOQ-0.05)	mg/l	0.5	No Relaxation
5	Anionic Detergents (as MBAS)	APHA 23rd Edition , 5540C 2017	*BLQ(**LOQ-0.05)	mg/l	0.2	1.0
6	Silver as Ag	APHA 23rd Edition, 3111B 2017	*BLQ(**LOQ-0.01)	mg/l	0.1	No relaxation
7	Chloramines as CL2	APHA 23rd Edition,4500G 2017	*BLQ(**LOQ-0.5)	mg/l	4.0	No relaxation
8	Barium as Ba	APHA 23rd Edition,3111B 2017	*BLQ(**LOQ-0.02)	mg/l	0.7	No relaxation
9	Molybdenum	APHA 23rd Edition,3111B 2017	*BLQ(**LOQ-0.5)	mg/l	0.07	No relaxation
10	Polynuclear-aromatic Hydrocarbon (PAH)	APHA 23rd Edition,5175/6630 2017	*BLQ(**LOQ-0.01)	mg/l	0.0001	No relaxation
11	Polychlorinated biphenyls (PCB)	APHA 23rd Edition,6440, 2017	*BLQ(**LOQ-0.01)	mg/l	0.0005	No relaxation

*BLQ-Below Limit Of Quantification, **LOQ- Limit of Quantification

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Sample Number: VTL/AA/01-04
Name & Address of the Party: M/s JK White Cement Works, Gotan (Unit of JK Cement Ltd.)Dhanappa Limestone Mines (ML.No.03/93) Village-Dhanappa, Teh.- Merta, Dist.- Nagaur, Raj.

Report No.: VTL/A/2310030001-04/A
Format No.: 7.8 F 02
Party Reference No.: NIL

Sample Description : Ambient Air Quality Monitoring

Report Date: 07/10/2023
Period of Analysis: 03-07/10/2023
Receipt Date: 03/10/2023

General Information:-

Sample collected by : VTL Team
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear sky
Date of Sampling : 28/09/2023 to 29/09/2023
Ambient Temperature (°C) : Min. 25°C, Max. 39 °C
Surrounding Activity : Human , Vehicular & Plant Activities
Scope of Monitoring : Regulatory Requirement
Sampling & Analysis Protocol : IS-5182 & CPCB Guidelines
Sampling Duration : 24 hrs.
Parameter Required : As Per Work Order

Sr.	Parameter	Protocol	Location & Lat. Long				Unit	NAAQS 2009
			Mines Office (ML.No.- 03/93)(Core Zone)	Pit No.-1 (ML.No.- 03/93)(Core Zone)	Pit No.-2 (ML.No.- 03/93)(Core Zone)	Pit No.-3 (ML.No.- 03/93)(Core Zone)		
			73°45'41"E 26°33'53"N	73°46'22"E 26°33'34"N	73°46'9"E 26°33'38"N	73°46'5"E 26°33'52"N		
1.	Particulate Matter (PM10)	IS: 5182 (P-23), 2006, RA 2017	61.32	67.12	59.89	64.65	µg/m ³	100
2.	Particulate Matter (PM2.5)	IS 5182 (P-24) -2019	31.85	34.58	31.25	33.23	µg/m ³	60
3.	Nitrogen Dioxide (NO2)	IS: 5182 (P-6), 2006 RA 2018	15.89	17.24	15.41	15.79	µg/m ³	80
4.	Sulphur Dioxide (SO2)	IS: 5182 (P-2), 2001, RA 2018	8.02	9.03	7.87	9.08	µg/m ³	80
5.	Benzene (as C6H6)	IS: 5182 (P-11)-2006, RA.2017	*BLQ(**LOQ1.0)	*BLQ(**LOQ1.0)	*BLQ(**LOQ1.0)	*BLQ(**LOQ1.0)	µg/m ³	5
6.	Ammonia (as NH3)	3 rd Ed. 1988, Method No. 401	*BLQ(**LOQ2.0)	*BLQ(**LOQ2.0)	*BLQ(**LOQ2.0)	*BLQ(**LOQ2.0)	µg/m ³	400
7.	Ozone (as O3)	IS:5182 (P-9):1974, RA.2019	6.89	7.02	6.65	7.54	µg/m ³	180
8.	Lead (as pb)	IS:5182 (P-22):2004, RA.2019	*BLQ(**LOQ0.02)	*BLQ(**LOQ0.02)	*BLQ(**LOQ0.02)	*BLQ(**LOQ0.02)	µg/m ³	1
9.	Arsenic (as As)	3 rd Ed. 1988, Method No. 302	*BLQ(**LOQ0.15)	*BLQ(**LOQ0.15)	*BLQ(**LOQ0.15)	*BLQ(**LOQ0.15)	ng/m ³	6
10.	Nickel (as Ni)	USEPA Compendium IO-3.2, 1999	*BLQ(**LOQ5.0)	*BLQ(**LOQ5.0)	*BLQ(**LOQ5.0)	*BLQ(**LOQ5.0)	ng/m ³	20
11.	Benzo (a) Pyrene	IS:5182 (P-12):2004, RA.2019	*BLQ(**LOQ0.2)	*BLQ(**LOQ0.2)	*BLQ(**LOQ0.2)	*BLQ(**LOQ0.2)	ng/m ³	1

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Lab Incharge
Authorized Signatory

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Sample Number: VTL/AA/01-04
Name & Address of the Party: M/s JK White Cement Works, Gotan (Unit of JK Cement Ltd.) Dhanappa Limestone Mines (ML.No.03/93) Village- Dhanappa, Teh.- Merta, Dist.- Nagaur, Raj.
Sample Description: Ambient Air Quality Monitoring
Report No.: VTL/A/2310030001-04/B
Format No.: 7.8 F 02
Party Reference No.: NIL
Report Date: 07/10/2023
Period of Analysis: 03-07/10/2023
Receipt Date: 03/10/2023

General Information:-


Sample collected by : VTL Team
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear sky
Date of Sampling : 28/09/2023 to 29/09/2023
Ambient Temperature (°C) : Min. 25°C, Max. 39 °C
Surrounding Activity : Human , Vehicular & Plant Activities
Scope of Monitoring : Regulatory Requirement
Sampling & Analysis Protocol : IS-5182 & CPCB Guidelines
Sampling Duration : 24 hrs.
Parameter Required : As Per Work Order

Sr.	Parameter	Protocol	Location & Lat. Long				Unit	NAAQS 2009
			Mines Office (ML.No.-03/93)(Core Zone)	Pit No.-1 (ML.No.-03/93)(Core Zone)	Pit No.-2 (ML.No.-03/93)(Core Zone)	Pit No.-3 (ML.No.-03/93)(Core Zone)		
			73°45'41"E 26°33'53"N	73°46'22"E 26°33'34"N	73°46'9"E 26°33'38"N	73°46'5"E 26°33'52"N		
1.	Carbon Monoxide (as CO)	Lab SOP no. VTL/STP/02:2022, STP-08	0.50	0.50	0.51	0.72	mg/m ³	4

-----End of the Report-----

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Name & Address of the Party

VTL/AA/10-13
M/s JK White Cement Works, Gotan
(Unit of JK Cement Ltd.)Dhanappa
Limestone Mines (ML.No.03/93) Village-
Dhanappa, Teh.- Merta, Dist.- Nagaur, Raj.

Report No.: VTL/A/2310030010-13/A
Format No.: 7.8 F 02
Party Reference No.: NIL

Sample Description : Ambient Air Quality Monitoring

Report Date: 07/10/2023
Period of Analysis: 03-07/10/2023
Receipt Date 03/10/2023

General Information:-

Sample collected by : VTL Team
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear sky
Date of Sampling : 28/09/2023 to 29/09/2023
Ambient Temperature (°C) : Min. 27°C, Max. 41 °C
Surrounding Activity : Human , Vehicular & Other Activities
Scope of Monitoring : Regulatory Requirement
Sampling & Analysis Protocol : IS-5182 & CPCB Guidelines
Sampling Duration : 24 hrs.
Parameter Required : As Per Work Order

Sr.	Parameter	Protocol	Location & Lat. Long				Unit	NAAQS 2009
			Dhanappa Vill. (ML.- 03/93,75/90 ,25/2006) (Buffer Zone)	Basni Vill. (ML.- 03/93,75/90, 25/2006) (Buffer Zone)	Ramnagar Vill. (ML.- 03/93,75/90, 25/2006) (Buffer Zone)	Pundlu Vill. (ML.- 03/93,75/90, 25/2006) (Buffer Zone)		
			73°44'45"E 26°33'57"N	73°48'37"E 26°36'31"N	73°45'19"E 26°36'42"N	73°48'41"E 26°32'57"N		
1.	Particulate Matter (PM10)	IS: 5182 (P-23), 2006, RA 2017	58.62	64.15	61.29	65.89	µg/m ³	100
2.	Particulate Matter (PM2.5)	IS 5182 (P-24) -2019	31.25	32.89	31.54	33.65	µg/m ³	60
3.	Nitrogen Dioxide (NO2)	IS: 5182 (P-6), 2006 RA 2018	13.52	17.25	14.69	17.52	µg/m ³	80
4.	Sulphur Dioxide (SO2)	IS: 5182 (P-2), 2001, RA 2018	7.85	9.03	8.02	9.41	µg/m ³	80
5.	Benzene (as C6H6)	IS: 5182 (P-11)-2006, RA.2017	*BLQ(**LOQ1.0)	*BLQ(**LOQ1.0)	*BLQ(**LOQ1.0)	*BLQ(**LOQ1.0)	µg/m ³	5
6.	Ammonia (as NH3)	3rd Ed. 1988, Method No. 401	*BLQ(**LOQ2.0)	*BLQ(**LOQ2.0)	*BLQ(**LOQ2.0)	*BLQ(**LOQ2.0)	µg/m ³	400
7.	Ozone (as O3)	IS:5182 (P-9):1974, RA.2019	8.95	9.85	8.89	9.69	µg/m ³	180
8.	Lead (as pb)	IS:5182 (P-22):2004, RA.2019	*BLQ(**LOQ0.02)	*BLQ(**LOQ0.02)	*BLQ(**LOQ0.02)	*BLQ(**LOQ0.02)	µg/m ³	1
9.	Arsenic (as As)	3rd Ed. 1988, Method No. 302	*BLQ(**LOQ0.15)	*BLQ(**LOQ0.15)	*BLQ(**LOQ0.15)	*BLQ(**LOQ0.15)	ng/m ³	6
10.	Nickel (as Ni)	USEPA Compendium IO-3.2, 1999	*BLQ(**LOQ5.0)	*BLQ(**LOQ5.0)	*BLQ(**LOQ5.0)	*BLQ(**LOQ5.0)	ng/m ³	20
11.	Benzo (a) Pyrene	IS:5182 (P-12):2004, RA.2019	*BLQ(**LOQ0.2)	*BLQ(**LOQ0.2)	*BLQ(**LOQ0.2)	*BLQ(**LOQ0.2)	ng/m ³	1

-----End of the Report-----

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Sample Number: VTL/AA/10-13
Name & Address of the Party: M/s JK White Cement Works, Gotan (Unit of JK Cement Ltd.) Dhanappa Limestone Mines (ML.No.03/93) Village- Dhanappa, Teh.- Merta, Dist.- Nagaur, Raj.
Report No.: VTL/A/2310030010-13/B
Format No.: 7.8 F 02
Party Reference No.: NIL
Report Date: 07/10/2023
Period of Analysis: 03-07/10/2023
Receipt Date: 03/10/2023
Sample Description: Ambient Air Quality Monitoring

General Information:-

Sample collected by : VTL Team
Instrument Calibration Status : Calibrated
Meteorological condition during monitoring : Clear sky
Date of Sampling : 28/09/2023 to 29/09/2023
Ambient Temperature (°C) : Min. 27°C, Max. 41 °C
Surrounding Activity : Human , Vehicular & Other Activities
Scope of Monitoring : Regulatory Requirement
Sampling & Analysis Protocol : IS-5182 & CPCB Guidelines
Sampling Duration : 24 hrs.
Parameter Required : As Per Work Order

Sr.	Parameter	Protocol	Location & Lat. Long				Unit	NAAQS 2009
			Dhanappa Vill. (ML.- 03/93,75/90 ,25/2006) (Buffer Zone)	Basni Vill. (ML.- 03/93,75/90, 25/2006) (Buffer Zone)	Ramnagar Vill. (ML.- 03/93,75/90, 25/2006) (Buffer Zone)	Pundlu Vill. (ML.- 03/93,75/90, 25/2006) (Buffer Zone)		
			73°44'45"E 26°33'57"N	73°48'37"E 26°36'31"N	73°45'19"E 26°36'42"N	73°48'41"E 26°32'57"N		
1.	Carbon Monoxide (as CO)	Lab SOP no. VTL/STP/02:2022, STP-08	0.53	0.52	0.54	0.50	mg/m ³	4

-----End of the Report-----

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Sample Number: VTL/AN/01-04
Name & Address of the Party: M/s JK White Cement Works, Gotan
(Unit of JK Cement Ltd.)Dhanappa Limestone
Mines (ML.No.03/93) Village- Dhanappa, Teh.-
Merta, Dist.- Nagaur, Raj.
Sample Description: Ambient Noise Level Monitoring
Scope of Monitoring: Regulatory Requirement
Protocol Used: IS 9989
Instrument Used: SLM

Report No.: VTL/N/2310030001-04/A
Format No.: 7.8 F 04
Party Reference No.: NIL
Report Date: 07/10/2023
Receipt Date: 03/10/2023
Sampling Duration: 24 Hrs.
Sample Collected by: VTL Team
Instrument Calibration Status: Calibrated

Ambient Noise Level Monitoring Results

General Information:-

Meteorological condition during monitoring : Clear sky
Date of Monitoring : 28/09/2023 to 29/09/2023
Time of Monitoring : 06:00 AM to 06:00AM
Ambient Temperature (°C) : Min. 25°C, Max. 39 °C
Surrounding Activity : Human , Vehicular & Plant Activities
Parameter Required : As per Work Order

Sr.	Test Parameter	Protocol	Location & Latlong							
			Mines Office (ML.No.- 03/93)(Core Zone)		Pit No.-1 (ML.No.- 03/93)(Core Zone)		Pit No.-2 (ML.No.- 03/93)(Core Zone)		Pit No.-3 (ML.No.- 03/93)(Core Zone)	
			73°45'41"E 26°33'53"N		73°46'22"E 26°33'34"N		73°46'9"E 26°33'38"N		73°46'5"E 26°33'52"N	
1.	Leq, dB(A)	IS:9989-1981, RA 2020	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
			54.9	43.5	58.7	47.4	56.7	46.1	59.7	48.9


Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

1. Day Time is from 6.00 AM to 10.00 PM.
2. Night Time is reckoned between 10.00 PM to 6.00 AM.
3. Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeakers and bursting of crackers is banned in these zones.
Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

-----End of the Report-----

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Sample Number: VTL/AN/10-13
Name & Address of the Party: M/s JK White Cement Works, Gotan
(Unit of JK Cement Ltd.)Dhanappa Limestone
Mines (ML.No.03/93) Village- Dhanappa, Teh.-
Merta, Dist.- Nagaur, Raj.
Sample Description: Ambient Noise Level Monitoring
Scope of Monitoring Regulatory Requirement
Protocol Used: IS 9989
Instrument Used: SLM

Report No.: VTL/N/2310030010-13/A
Format No.: 7.8 F 04
Party Reference No.: NIL
Report Date: 07/10/2023
Receipt Date: 03/10/2023
Sampling Duration 24 Hrs.
Sample Collected by VTL Team
Instrument Calibration Status Calibrated

Ambient Noise Level Monitoring Results

General Information:-

Meteorological condition during monitoring : Clear sky
Date of Monitoring : 28/09/2023 to 29/09/2023
Time of Monitoring : 06:00 AM to 06:00AM
Ambient Temperature (°C) : Min. 27°C, Max. 41 °C
Surrounding Activity : Human , Vehicular & Plant Activities
Parameter Required : As per Work Order

Sr.	Test Parameter	Protocol	Location & Latlong							
			Dhanappa Vill. (ML.-03/93,75/90 ,25/2006) (Buffer Zone)		Basni Vill. (ML.-03/93,75/90, 25/2006) (Buffer Zone)		Ramnagar Vill. (ML.-03/93,75/90, 25/2006) (Buffer Zone)		Pundlu Vill. (ML.-03/93,75/90, 25/2006) (Buffer Zone)	
			73°44'45"E 26°33'57"N		73°48'37"E 26°36'31"N		73°45'19"E 26°36'42"N		73°48'41"E 26°32'57"N	
1.	Leq, dB(A)	IS:9989-1981, RA 2020	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
			54.8	43.2	53.2	44.5	51.8	42.3	53.9	42.9

Category of Zones	Leq in dB (A)	
	Day	Night
Industrial	75	70
Commercial	65	55
Residential	55	45
Silence Zone	50	40

- Day Time is from 6.00 AM to 10.00 PM.
 - Night Time is reckoned between 10.00 PM to 6.00 AM.
 - Silence Zone is defined as an area up to 100 m around premises of Hospitals, Educational and Courts. Use of vehicle horn, Loudspeakers and bursting of crackers is banned in these zones.
- Note: Mixed categories of areas be declared as one of the four above mentioned categories by the competent Authority and the corresponding standards shall apply

-----End of the Report-----

Checked By



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Sample Number : VTL/SW/02

Name & Address of the Party : M/s JK White Cement Works, Gotan
(Unit of JK Cement LTD.) Dhanappa Limestone Mines
(ML. No. 03/93) Village Dhanappa, Teh.- Merta,
Dist.- Nagaur Rajasthan

Sample Description : Water Sample

Sampling Location : Dhanappa Village (Surface Water M.L.No.-03/93)

Sample Collected By : VTL Team

Preservation : Suitable Preservation

Method of sampling : IS :3025

ULR No. : TC1122723000000171F

Report No. : VTL/W/2310030016/A

Format No : 7.8 F-01

Party Reference No : NIL

Report Date : 07/10/2023

Period of Analysis : 03/10/2023-07/10/2023

Receipt Date : 03/10/2023

Sampling Date : 29/09/2023

Sampling Type : Grab

Sample Quantity : 2 Ltr.

Coordinates : 73°46'9" & 26°33'38"

S.No.	Test Parameters	Test Method	Results	Units
1	pH (at 25°C)	IS : 3025 (P-11) : 2022	7.73	--
2	Turbidity	IS : 3025: (P-10)1984, RA 2017	*BLQ(**LOQ-1.0)	NTU
3	Total Hardness (as CaCO ₃)	IS: 3025 (P-21): 2009, RA 2019	54.00	mg/l
4	Calcium (as Ca)	IS: 3025 (P- 40): 1991 RA 2019	10.13	mg/l
5	Total Alkalinity (as CaCO ₃)	IS: 3025 (P-23): 1986, RA 2019	40.00	mg/l
6	Chloride (as Cl)	IS: 3025 (P-32): 1988, RA 2019	59.12	mg/l
7	Magnesium (as Mg)	IS: 3025 (P-46): 1994, RA 2019	6.98	mg/l
8	Total Dissolved Solids	IS :3025 (P-16): 1984, RA 2017	210.00	mg/l
9	Sulphate (as SO ₄)	IS: 3025 (P-24): 1986, RA 2022	17.21	mg/l
10	Fluoride (as F)	APHA 23rd Edition ,4500FD :2017	0.21	mg/l
11	Nitrate (as NO ₃)	IS: 3025 (P-34): 1988	10.13	mg/l
12	Iron (as Fe)	APHA 23rd Edition , 3111B,2017	0.18	mg/l
13	Aluminium (as Al)	IS 3025 (P-55): 2003, RA 2019	*BLQ(**LOQ-0.03)	mg/l
14	Boron (as B)	APHA 23rd Edition, 4500B,2017	*BLQ(**LOQ-0.2)	mg/l
15	Total Chromium (as Cr)	APHA 23rd Edition 2017 3113 B, 2017	*BLQ(**LOQ-0.02)	mg/l
16	Phenolic Compounds (C ₆ H ₅ OH)	APHA 23rd Edition 5530C: 2017	*BLQ(**LOQ-0.001)	mg/l
17	Zinc (as Zn)	APHA 23rd Edition,3030D, 3113 B , 2017	0.27	mg/l
18	Copper (as Cu)	APHA 23rd Edition 3111B 2017	*BLQ(**LOQ-0.02)	mg/l
19	Manganese (as Mn)	APHA 23rd Edition, 3030D, 3111 B, 2017	*BLQ(**LOQ-0.05)	mg/l
20	Cadmium (as Cd)	APHA 23rd Edition, 3030D, 3113 B, 2017	*BLQ(**LOQ-0.002)	mg/l
21	Lead (as Pb)	APHA 23rd Edition, 3030D, 3113 B,2017	*BLQ(**LOQ-0.005)	mg/l
22	Selenium (as Se)	APHA 23rd Edition, 3114C, 2017	*BLQ(**LOQ-0.005)	mg/l



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Lab Incharge
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Sample Number : VTL/SW/02

Name & Address of the Party : M/s JK White Cement Works, Gotan
(Unit of JK Cement LTD.) Dhanappa Limestone Mines
(ML. No. 03/93) Village Dhanappa, Teh.- Merta,
Dist.- Nagaur Rajasthan

Sample Description : Water Sample

Sampling Location : Dhanappa Village (Surface Water M.L.No.-03/93)

Sample Collected By : VTL Team

Preservation : Suitable Preservation

Method of sampling : IS :3025

Report No. : VTL/W/2310030016/B

Format No : 7.8 F-01

Party Reference No : NIL

Report Date : 07/10/2023

Period of Analysis : 03/10/2023-07/10/2023

Receipt Date : 03/10/2023

Sampling Date : 29/09/2023

Sampling Type : Grab

Sample Quantity : 2 Ltr.

Coordinates : 73°46'9" & 26°33'38"

S.No.	Test Parameters	Test Method	Results	Units
1	Colour	IS : 3025:(P-4)1983, :RA 2017	*BLQ(**LOQ-5.0)	Hazen
2	Odour	IS : 3025 (P-5) : RA 2018	Agreeable	--
3	Taste	IS :3025 (P-8): 1984 RA 2017	Agreeable	--
4	Mineral Oil	IS 3025 (P-39) 1989	*BLQ(**LOQ-0.05)	mg/l
5	Anionic Detergents (as MBAS)	APHA 23rd Edition , 5540C 2017	*BLQ(**LOQ-0.05)	mg/l
6	Silver as Ag	APHA 23rd Edition, 3111B 2017	*BLQ(**LOQ-0.01)	mg/l
7	Chloramines as CL2	APHA 23rd Edition,4500G 2017	*BLQ(**LOQ-0.5)	mg/l
8	Barium as Ba	APHA 23rd Edition,3111B 2017	*BLQ(**LOQ-0.02)	mg/l
9	Molybdenum	APHA 23rd Edition,3111B 2017	*BLQ(**LOQ-0.5)	mg/l
10	Polynuclear-aromatic Hydrocarbon (PAH)	APHA 23rd Edition,5175/6630 2017	*BLQ(**LOQ-0.01)	mg/l
11	Polychlorinated biphenyls (PCB)	APHA 23rd Edition,6440, 2017	*BLQ(**LOQ-0.01)	mg/l

*BLQ-Below Limit Of Quantification, **LOQ- Limit of Quantification

End of Report

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TEST REPORT



Sample Number : VTL/SW/02

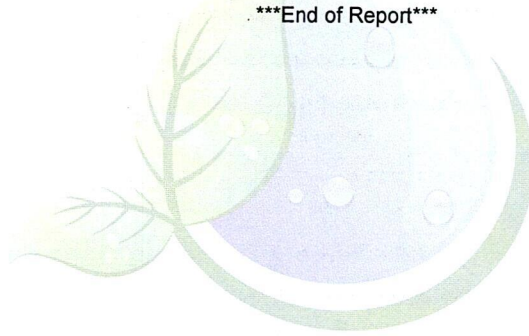
ULR No. : TC1122723000000171F

Report No. : VTL/W/2310030016/A

S.No.	Test Parameters	Test Method	Results	Units
23	Arsenic (as As)	APHA 23rd Edition, 3114C, 2017	*BLQ(**LOQ-0.005)	mg/l
24	Mercury (as Hg)	APHA 23rd edition, 3114C 2017	*BLQ(**LOQ-0.001)	mg/l
25	Total Coliform	IS : 15185 : 2016	Absent	per 100 ml
26	E.Coli	IS : 15185 : 2016	Absent	per 100 ml
27	Ammonia (as N)	IS-3025 (P-34)- 1988, Sec. RA :2022	*BLQ(**LOQ-0.3)	mg/l
28	Sulphide	IS 3025 (P-29) :1986 RA 2019 Idometric	*BLQ(**LOQ-0.1)	mg/l
29	Nickel as Ni	APHA 23rd Edition,3030D,3113B 2017	*BLQ(**LOQ-0.01)	mg/l
30	Free Residual Chlorine	IS 3025 (P-26):2021	*BLQ(**LOQ-0.2)	mg/l
31	Sodium as Na	APHA 23rd Edition 3500B 2017	54.16	mg/l
32	Potassium as K	APHA 23rd Edition,3030D,3113 B 2017	5.40	mg/l

*BLQ-Below Limit Of Quantification, **LOQ- Limit of Quantification

End of Report



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Sample Number : VTLW/01

Name & Address of the Party : M/s JK White Cement Works, Gotan
(Unit of JK Cement LTD.) Dhanappa Limestone Mines
(ML. No. 03/93) Village Dhanappa, Teh.- Merta,
Dist.- Nagaur Rajasthan

Sample Description : Water Sample
Sampling Location : Dhanappa Village (Tubewell M.L.No.-03/93)
Sample Collected By : VTL Team
Preservation : Suitable Preservation
Method of sampling : IS :3025

ULR No. : TC1122723000000170F
Report No. : VTLW/2310030015/A
Format No : 7.8 F-01
Party Reference No : NIL
Report Date : 07/10/2023
Period of Analysis : 03/10/2023-07/10/2023
Receipt Date : 03/10/2023
Sampling Date : 29/09/2023
Sampling Type : Grab
Sample Quantity : 2 Ltr.
Coordinates : 73°46'9" & 26°33'38"

S.No.	Test Parameters	Test Method	Results	Units	IS:10500-2012	
					Acceptable Limit	Permissible Limit
1	pH (at 25°C)	IS : 3025 (P-11) : 2022	7.82	--	6.5 to 8.5	No Relaxation
2	Turbidity	IS : 3025: (P-10)1984, RA 2017	*BLQ(**LOQ-1.0)	NTU	1	5
3	Total Hardness (as CaCO ₃)	IS: 3025 (P-21): 2009, RA 2019	410.00	mg/l	200	600
4	Calcium (as Ca)	IS: 3025 (P- 40): 1991 RA 2019	104.12	mg/l	75	200
5	Total Alkalinity (as CaCO ₃)	IS: 3025 (P-23): 1986, RA 2019	378.16	mg/l	200	600
6	Chloride (as Cl)	IS: 3025 (P-32): 1988, RA 2019	600.10	mg/l	250	1000
7	Magnesium (as Mg)	IS: 3025 (P-46): 1994, RA 2019	36.50	mg/l	30	100
8	Total Dissolved Solids	IS :3025 (P-16): 1984, RA 2017	1608.00	mg/l	500	2000
9	Sulphate (as SO ₄)	IS: 3025 (P-24): 1986, RA 2022	110.25	mg/l	200	400
10	Fluoride (as F)	APHA 23rd Edition ,4500FD :2017	1.01	mg/l	1.0	1.5
11	Nitrate (as NO ₃)	IS: 3025 (P-34): 1988	30.56	mg/l	45.0	No Relaxation
12	Iron (as Fe)	APHA 23rd Edition , 3111B,2017	0.32	mg/l	1.0	No Relaxation
13	Aluminium (as Al)	IS 3025 (P-55): 2003, RA 2019	*BLQ(**LOQ-0.03)	mg/l	0.03	0.2
14	Boron (as B)	APHA 23rd Edition, 4500B,2017	*BLQ(**LOQ-0.2)	mg/l	0.5	1.0
15	Total Chromium (as Cr)	APHA 23rd Edition 2017 3113 B, 2017	*BLQ(**LOQ-0.02)	mg/l	0.05	No Relaxation
16	Phenolic Compounds (C ₆ H ₅ OH)	APHA 23rd Edition 5530C: 2017	*BLQ(**LOQ-0.001)	mg/l	0.001	0.002
17	Zinc (as Zn)	APHA 23rd Edition,3030D, 3113 B , 2017	0.40	mg/l	5.0	15.0



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Sample Number : VTL/W/01

ULR No. : TC1122723000000170F

Report No. : VTL/W/2310030015/A

S.No.	Test Parameters	Test Method	Results	Units	IS:10500-2012	
					Acceptable Limit	Permissible Limit
18	Copper (as Cu)	APHA 23rd Edition 3111B 2017	*BLQ(**LOQ-0.02)	mg/l	0.05	1.5
19	Manganese (as Mn)	APHA 23rd Edition, 3030D, 3111 B, 2017	*BLQ(**LOQ-0.05)	mg/l	0.1	0.3
20	Cadmium (as Cd)	APHA 23rd Edition, 3030D, 3113 B, 2017	*BLQ(**LOQ-0.002)	mg/l	0.003	No Relaxation
21	Lead (as Pb)	APHA 23rd Edition, 3030D, 3113 B, 2017	*BLQ(**LOQ-0.005)	mg/l	0.01	No Relaxation
22	Selenium (as Se)	APHA 23rd Edition, 3114C, 2017	*BLQ(**LOQ-0.005)	mg/l	0.01	No Relaxation
23	Arsenic (as As)	APHA 23rd Edition, 3114C, 2017	*BLQ(**LOQ-0.005)	mg/l	0.01	0.05
24	Mercury (as Hg)	APHA 23rd edition, 3114C 2017	*BLQ(**LOQ-0.001)	mg/l	0.001	No Relaxation
25	Total Coliform	IS : 15185 : 2016	Absent	per 100 ml	Shall not be detectable in any 100 ml sample	--
26	E.Coli	IS : 15185 : 2016	Absent	per 100 ml	Shall not be detectable in any 100 ml sample	--
27	Ammonia (as N)	IS-3025 (P-34)- 1988, Sec. RA :2022	*BLQ(**LOQ-0.3)	mg/l	0.5	No Relaxation
28	Sulphide	IS 3025 (P-29) :1986 RA 2019 Idometric	*BLQ(**LOQ-0.1)	mg/l	0.05	No Relaxation
29	Nickel as Ni	APHA 23rd Edition, 3030D, 3113B 2017	*BLQ(**LOQ-0.01)	mg/l	0.02	No relaxation
30	Free Residual Chlorine	IS 3025 (P-26):2021	*BLQ(**LOQ-0.2)	mg/l	0.2	1.0
31	Sodium as Na	APHA 23rd Edition 3500B 2017	371.20	mg/l	-	-
32	Potassium as K	APHA 23rd Edition, 3030D, 3113 B 2017	12.10	mg/l	-	-



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Sample Number : VTL/W/01

*BLQ-Below Limit Of Quantification, **LOQ- Limit of Quantification

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ULR No. : TC1122723000000170F

Report No. : VTL/W/2310030015/A



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Sample Number : VTL/W/01

Name & Address of the Party : M/s JK White Cement Works, Gotan
(Unit of JK Cement LTD.) Dhanappa Limestone Mines
(ML. No. 03/93) Village Dhanappa, Teh.- Merta,
Dist.- Nagaur Rajasthan

Report No. : VTL/W/2310030015/B

Format No : 7.8 F-01

Party Reference No : NIL

Report Date : 07/10/2023

Period of Analysis : 03/10/2023-07/10/2023

Receipt Date : 03/10/2023

Sampling Date : 29/09/2023

Sampling Type : Grab

Sample Quantity : 2 Ltr.

Coordinates : 73°46'9" & 26°33'38"

Sample Description : Water Sample
Sampling Location : Dhanappa Village (Tubewell.M.L.No.-03/93)
Sample Collected By : VTL Team
Preservation : Suitable Preservation
Method of sampling : IS :3025

S.No.	Test Parameters	Test Method	Results	Units	IS:10500-2012	
					Acceptable Limit	Permissible Limit
1	Colour	IS : 3025:(P-4)1983, :RA 2017	*BLQ(**LOQ-5.0)	Hazen	5	15
2	Odour	IS : 3025 (P-5) : RA 2018	Agreeable	--	Agreeable	Agreeable
3	Taste	IS :3025 (P-8): 1984 RA 2017	Agreeable	--	Agreeable	Agreeable
4	Mineral Oil	IS 3025 (P-39) 1989	*BLQ(**LOQ-0.05)	mg/l	0.5	No Relaxation
5	Anionic Detergents (as MBAS)	APHA 23rd Edition , 5540C 2017	*BLQ(**LOQ-0.05)	mg/l	0.2	1.0
6	Silver as Ag	APHA 23rd Edition, 3111B 2017	*BLQ(**LOQ-0.01)	mg/l	0.1	No relaxation
7	Chloramines as CL2	APHA 23rd Edition,4500G 2017	*BLQ(**LOQ-0.5)	mg/l	4.0	No relaxation
8	Barium as Ba	APHA 23rd Edition,3111B 2017	*BLQ(**LOQ-0.02)	mg/l	0.7	No relaxation
9	Molybdenum	APHA 23rd Edition,3111B 2017	*BLQ(**LOQ-0.5)	mg/l	0.07	No relaxation
10	Polynuclear-aromatic Hydrocarbon (PAH)	APHA 23rd Edition,5175/6630 2017	*BLQ(**LOQ-0.01)	mg/l	0.0001	No relaxation
11	Polychlorinated biphenyls (PCB)	APHA 23rd Edition,6440, 2017	*BLQ(**LOQ-0.01)	mg/l	0.0005	No relaxation

*BLQ-Below Limit Of Quantification, **LOQ- Limit of Quantification

End of Report



Checked by 



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LAND USE & LAND COVER STUDY

BY DIGITAL PROCESSING

AT

DHANAPPA LIMESTONE MINE

USING REMOTE SENSING TECHNIQUE

(Submitted in compliance of Environmental Clearance
accorded Under the provision of EIA Notification, 2006)

**Near Village Dhanappa, Tehsil Merta
District Nagaur, State Rajasthan
(Total Lease Area: 400 ha)**

YEAR : 2023

MINING LEASE OWNED BY

M/s J.K. White Cement Works (Unit of J.K. Cement Ltd.)

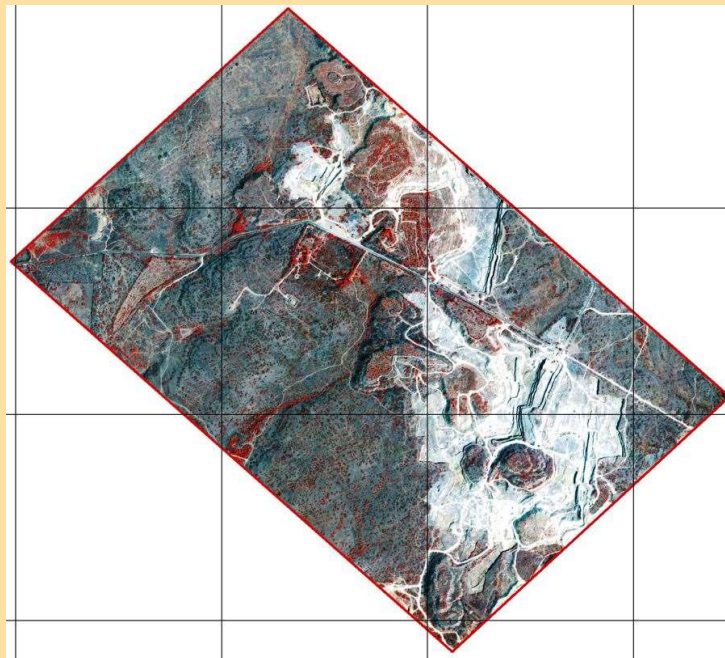
Regd. Office: Kamla Tower, Kanpur – 208 001 (U.P.) India

Ph. +91 512 237 1478-81, fax. +91 512 239 9854

Works Office: J.K. White Cement Works (Unit of J.K. Cement Ltd.)

Gotan, Tehsil Merta, Distt. Nagaur, Rajasthan - 342 902

Phone No. +91 1591 230201, Fax No. +91 1591 230206



Study conducted by:

Shailendra Kumar Soni

Jodhpur – 342 011

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Land Use Land Cover of Dhanappa Limestone Mining Lease **J.K. White Cement Works**

1.0 INTRODUCTION

About the Company

1. J.K. Cement Ltd. has over four and half decades of experience in cement manufacturing. J.K. Cement Ltd. have integrated cement manufacturing plants and split grinding units.
2. From modest beginning in the year 1974 with a capacity of 0.3 million tonnes at Nimbahera in Rajasthan, today the company has an installed grey cement capacity of 14 million tonnes, with plants located at Rajasthan, Karnataka, Haryana, Gujarat and UP.
3. J.K. White Cement is the second largest manufacturer of white cement in India, with an annual capacity 880000 tonnes and the company is also the leading producer of wall putty in the country.
4. J.K. White Cement Works plant, Gotan is accredited with ISO:9001 and ISO:14001, ISO:45001, ISO:50001 by LRQA and Social Accountability SA:8000 accredited by RINA. Having established a strong presence in India, the Company made its first international foray with the setting up to a green-field dual process white cement cum grey cement plant in the free trade zone at Fujairah, UAE to cater the GCC and African markets.
5. J.K. Cement Ltd. has total grey cement capacity is 20 million tonnes, white cement capacity 1.2 million tonnes (including capacity of Fujairah, UAE) and wall putty capacity of 9,00,000 tonnes.

About the J.K. White Cement Works

1. J.K. White Cement Works, a white cement manufacturing plant situated in the district Nagaur, Rajasthan is one of the leading white cement brand in India.
2. J.K. White Cement Works commenced production of white cement in 1984.
3. J.K. White Cement Works pristine white canvas for crafting architectural elegance. It's the key ingredient of decorative cement paints, mosaic tiles, terrazzo floorings and marble laying.
4. J.K. White Cement Works, a prominent player in the white cement industry over the last two and a half decades is a division of J.K. Cement Ltd.

About the Dhanappa Limestone Mine

A mining lease (ML No. 03/93) for mining limestone was granted as major category for captive use for white cement manufacturing vide Govt. Order dated 07/12/1988 over an area of 400.0ha near village Dhanappa Tehsil Merta District Nagaur, Raj. The period of mining lease is 50 years from the date of execution of lease deed and hence expiry is 07.04.2034. The mining lease area falls within the Survey of India Topo Sheet No. 45 F/14. Boundary pillars



Land Use Land Cover of Dhanappa Limestone Mining Lease
J.K. White Cement Works

latitude and longitude has been issued by Department of Mines & Geology, Govt. of Rajasthan and is tabulated below in **Table**.

Boundary Pillar ID	Latitude	Longitude
A	26°34'29.15"N	73°45'39.92"E
B	26°33'32.25"N	73°46'44.40"E
C	26°32'55.13"N	73°46'03.93"E
D	26°33'52.02"N	73°44'59.43"E

The annual limestone production is 5,00,000 tonne of white cement grade for which Environmental Clearance has been accorded from MoEF and mining plan approved by IBM, Ministry of Mines for limestone production capacity 5.0 lakh per annum.

In order to compliance of EC condition (no. xxix of Specific Conditions) and to submit land use and land cover map within every three years period, a processed satellite imagery over the entire mining lease area with remote sensing techniques has to be sent to the authority.

The land use land cover mapping was performed thrice earlier in years 2011, 2014, 2017 and 2020. The variation in the land use land cover pattern during the every three years period was compared and furnished in respective reports.

For the purpose, obtained a satellite imagery of the area from National Remote Sensing Agency, Hyderabad and prepared the land use and land cover map of the lease area covering 400ha by identifying the different land use and land cover units and the area of each land use and land cover unit of the total lease area. In addition to above, the assessment of the land use of the area, G.T. Sheets and Google Images etc. were also processed and analyzed to identify and mapped various land use and land cover classes for confirmation up to an extent.

The existing Land Use and Land Cover map prepared based on Resource CartoSat-3 Satellite Imagery of year March'2023.



2.0 METEOROLOGY OF THE AREA (at a glance)

2.1 Climate

Gotan has the desert climate prevailing. The climatic pattern of the area and surroundings has classified as tropical desert, arid and hot. There are four seasons in a year as listed below. The nearest IMD Station is Jodhpur which is about 85km from the area radially.

1. Winter Season (mid-December to February)
2. Summer Season (March to mid-July)
3. Pre-monsoon Season (April to June)
4. Monsoon Season (July to mid-September)

The area is south-west monsoon dominant area.

2.2 Temperature

As stated above, the period from March to June is summer season among which month May is the hottest month of the year.

The daily mean maximum and minimum temperature is 42°C in May and 27.2°C respectively and lowest is 4°C to 23°C in Jan. respectively.

2.3 Rainfall

The area is a part of arid to semi-arid type of climatic condition of the Nagaur district. The 80% part of the annual rainfall precipitates during the southwest monsoon. The rainy days are limited to maximum 15 in a year. The district is generally prone to mild and normal type of droughts but severe type of drought is very rare.

J.K. White Cement Plant, Gotan is the nearest rain gauge station and the annual average rainfall of last 21 years data calculated to avg. 393.82mm whereas the average annual rainfall at Jodhpur station is 402mm. A table below furnished with the recorded annual rainfall at J.K. White Cement Plant site 2002 onwards in **Table-1**. **Table-2** is indicating recorded monthly temperature in terms of max. and min. during the year 2023.



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Table-1: Annual rainfall recorded

Year	Rainfall recorded in mm	
	At the JK White Cement Plant	At Tehsil HQ Merta
2002	178.3	-
2003	380.4	-
2004	52.5	-
2005	172.5	-
2006	445.29	-
2007	665.4	-
2008	425.6	-
2009	493.2	-
2010	392	-
2011	309	-
2012	465	-
2013	573	-
2014	414	-
2015	263.5	-
2016	505	440
2017	339.5	439
2018	330.5	450
2019	394.5	841
2020	423	827
2021	453	947
2022	556.5	567
2023 till July.2023	432.5	not available
Annual Average	393.82	644

Table-2: Meteorological data as recorded at Jodhpur for year 2023

Month	Temperature	
	Max. °C	Min.°C
Jan.	23.88	10.55
Feb.	27.22	13.33
Mar.	33.33	18.88
Apr.	37.23	23.88
May	40.55	28.89
Jun.	37.22	28.89
Jul.	35.55	27.77
Source: Weather Spark, Google		



3.0 HYDROLOGY OF JOJRI RIVER SUB-BASIN

3.1 Physiography of Jojri River Sub-basin

The mining lease area is part of Trans-Aravali Vindhyan Basin which is located on the western side of Aravali Ranges whose trend is NE-SW. It is part of broad alluvial plains with isolated low raised hillocks of dolomitic limestone and limestone appearing as stony waste land. The area is drained as per natural slope.

3.2 Luni River Basin

Luni river basin is an important basin of Rajasthan and is bounded by various other basins covering parts of various Districts like Barmer, Nagaur, Ajmer, Jalore, Jodhpur, Rajasamnd, Pali, Sirohi and lastly Udaipur. The basin covers about 38000 sq km catchment area. The mining lease area is ultimately part of Luni river basin.

3.3 Catchment area of Jojri river sub-basin

Jojri starts from the hills topography near village Pundloo and joins Luni river. Jojri river drains the area in focus with about 2500 sq km catchment area. It is a non-perennial river so a seasonal one.

3.4 Drainage Pattern

The area is having dendritic drainage pattern and also in the surroundings. The entire runoff generating due to rainwater within the mining lease area, mostly becomes the part of ground water by way of installation of rainwater harvesting structures. Surrounding's runoff produced by the annual rainfall, mostly joins Jojri river. A part of this surface runoff tends to lost due to evapo-transpiration. Of course, at some local places, rainwater accumulates in small patches of low-lying land.



3.5 Quality of surface water

Water sample collected from nearby area during periodic environment study by the company indicated all parameters within permissible limits.

3.6 Hydrogeology

The main aquifer in the area in focus is sedimentary rock limestone. A very thin layer of alluvium rests above the zone of saturation.



4.0 METHODOLOGY OF DIGITAL PROCESSING

In compliance of conditions stipulated in EC accorded by The Ministry of Environment and Forest, Govt. of India to the mining project, the study to assess impacts of mining on environment i.e. its surroundings. Remote Sensing Technology is one of the best tool to this.

4.1 Data source

Since long back, the study of area, atmosphere, environment etc. are being carried out by remote sensing satellite which plays a major role due to their characteristics of repetitiveness and general gospel at a large. The baseline data platform can be made stronger and wider in terms of land use pattern.

For preparing the land use maps of Dhanappa mining lease along with different thematic layers using following data from NRSC, Hyderabad was procured and used. This was the latest digitized data available with NRSC for this area (**Table-3, Figure-1**).

Table-3: Satellite imagery specification

S. No.	Specification:	
1.	Satellite ID	CARTOSAT-3
2.	Sensor	MX
3.	Scene No.	48
4.	Gen Agency	NRSC
5.	Column	512
6.	Row	512
7.	Date of Pass	27-MAR-2023
8.	No. of Bands	4
9.	Band Numbers	1 2 3 4
10.	Pass Type	SSR
11.	Generation Date Time	09-OCT-2023
12.	Prod Type	GEOREF
13.	Input Resolution Along	1.14m
18.	Input Resolution Across	1.17m
19.	DEM source	CDEM10
20.	Zone no.	43
21.	Season	Rabi
22.	Image Format	GEOTIFF
23.	Map Projection	UTM
24.	Ellipsoid	WGS 84
25.	Datum	WGS 84



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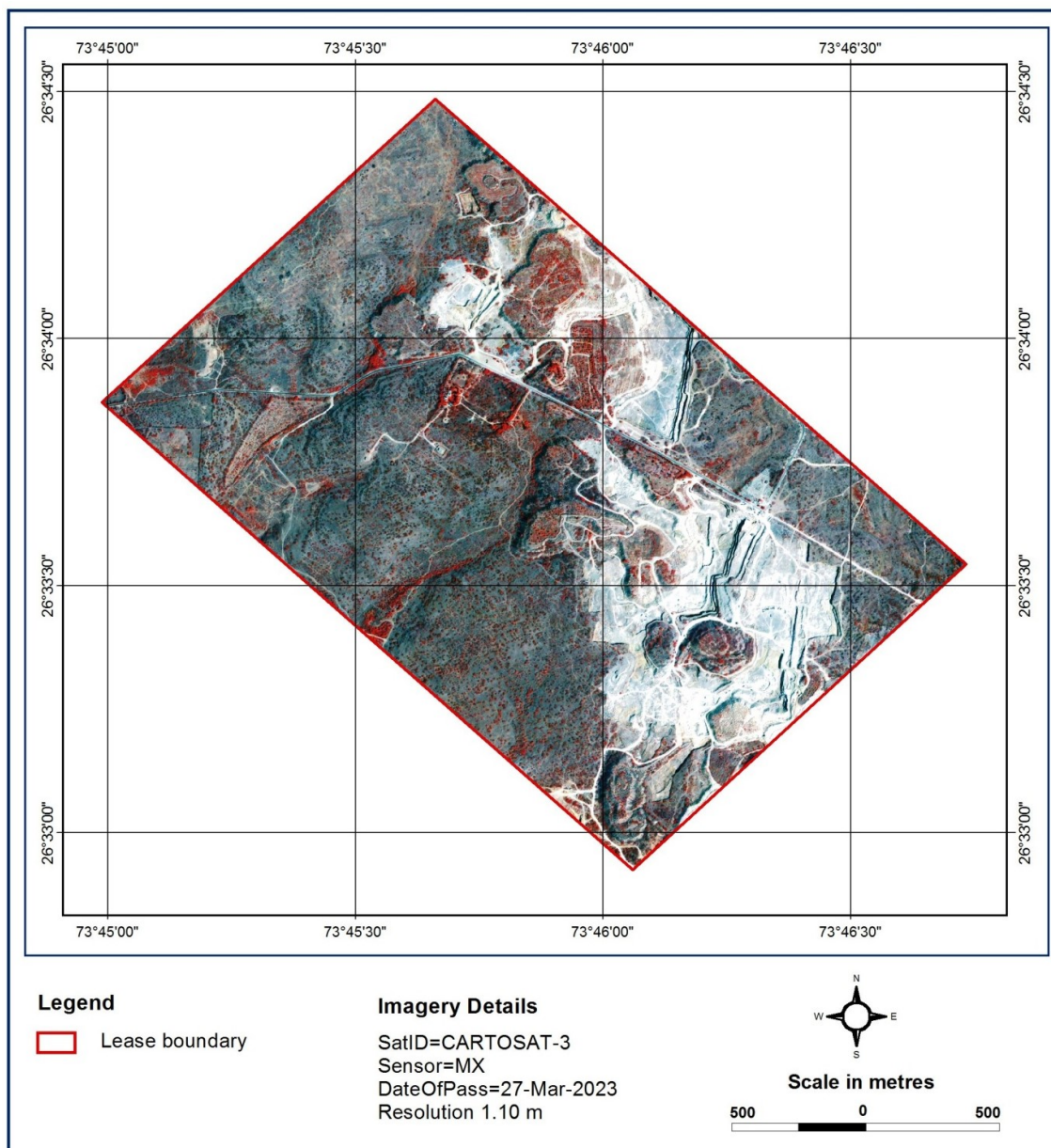


Figure-1

The base line information has also been taken from Survey of India toposheet No. 45 F/14 on scale 1:50,000. The information on hydrogeology has already generated in past during hydrogeological investigations of the mining lease and surroundings so basic data on hydrogeological information are already established.



4.2 Method for preparing different themes

The following steps were used in the processing, interpretations and analysis: -

1. Preparation of Base Map
2. Mosaicing
3. Geo-Referencing
4. Unsupervised Classification
5. Delineation of different Zones within the mine area

1. Preparation of Base Map

For this purpose, AUTOCAD SOFTWARE were used in the area of interest which is covered by one Survey of India Topographical Sheets namely 45 F/14 as settlements, roads, river/streams, notified forest area etc. were transferred from G. T. Sheets on to the base map. SOI toposheets were geo-referenced to superimpose on ortho-rectified satellite image.

2. Mosaicing

The mosaic of Survey of India G.T. Sheet used for base map using AUTOCAD Software comprising features such as administrative boundaries major roads, nallah and other structures as well. Mosaicing was performed for the geo-referenced toposheets to form a continuous frame.

3. Geo-Referencing:

This is the process in which all the information available on the Base Map was transferred on the satellite images prepared using Survey of India Topo Sheet. In this process, the linear feature is an important attribute for Geo- Referencing of objects. The various settlements road, streams etc. were also Geo-referenced to rectify the images to the G.T. Sheet scale with matching the objects.

4. Unsupervised Classification

In unsupervised classification technique all the similar pixels of specified object were grouping together to form a land use/ land cover class. The different objects impart different impressions in the images. The different objects were characterized with their tone, texture, pattern shades and association with other features, in the images for their identifications.

Various thematic layers has prepared including drainage pattern covering major and minor drainages. It was also prepared the integrated land use land cover map of the mining lease area.

The image IRS-R2, L4FX is a high-resolution image having resolution of 1.1m*1.1m. The adequate and appropriate sensing data processed in order to have land use pattern by Digital Image Processing Techniques. Various geomorphic features are easily readable in the IRS data.



Land Use Land Cover of Dhanappa Limestone Mining Lease J.K. White Cement Works

This has high degree of measurability through various combinations of bands. IRS-Cartosat-3, MX data are being used for land use mapping.

The ortho rectification along with processing of image has done in a software and spatial data created in Arc GIS Software. Area of interest selected and extracted from the satellite image.

An interpretation visually is further followed by supervised classification performed to classify areas of land use and land cover. Many signatures for classification were collected prior to applying supervised classification.

4.3 Land Use-Land cover classification

The major land use classes delineated in the mining lease area includes land use refers to man's activities on land utilitarian in nature, whereas land cover denotes vegetation and artificial constructions.

Department of Space, Govt. of India has standardized the land use and land cover classification system for mapping different agro-climatic zones and the same has been adopted for the classification. The classification has 6 major land use classes at level I and 28 at level II.

The major classes of Level-I and Level-II are tabulated below in **Table-4**:

Table 4: Land use/Land cover classification standardized

S. No.	Level-I	Level-II	
1.	Built up land	1.1	Built up land
		1.2	Road
		1.3	Railway
2.	Agriculture land	2.1	Crop land
		2.2	Fallow (Residual) land
3.	Forest	3.1	Evergreen Forest
		3.2	Deciduous Forest
		3.3	Degraded forests
		3.4	Forest Plantations
		3.5	Mangroves
		3.6	Cropland is forest
		3.7	Forest Blank
4.	Wastelands	4.1	Salt affected land
		4.2	Waterlogged land
		4.3	Marshy/ Swampy Land
		4.4	Gullied/ Ravenous Land



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		4.5	Land with or without scrub
		4.6	Sandy Area (Coastal and Desertic)
		4.7	Barren rocky/ Stony Waste/ Sheetrock area
5.	Water Bodies	5.1	Rivers/ Streams
		5.2	Lake/ Reservoir
		5.3	Tank/ Canal
6.	Others	6.1	Grassland/ grazing land
		6.2	shifting Cultivation
		6.3	Snow cover/ Glacial area

- Built-up land- This comprises areas of land covered by structures
- Agricultural land- land used for production of food, fiber, crops and plantation
- Forest- This includes land such as dense or sparse evergreen forests, deciduous forests and degraded forests.
- Wastelands- Land having potential for development of vegetative cover but not being used due to constraints including salt affected land, eroded land water logged areas.
- Water bodies-Areas persistently covered by water such as river/streams, reservoirs/tanks, lakes/ ponds and canals.
- Others- Grassland and snow covered land are included in this category
- Using the above classification system and digital analysis techniques with restricted field checks, land use and land cover distribution in the study area has been estimated.

Base maps of mining lease area have been prepared including major all the important features using toposheet i.e.:

1. Villages,
2. Major rural roads
3. Rivers and streams,
4. Water bodies

The base maps are used for mapping various themes by:

1. Digital and
2. Visual interpretation of satellite data

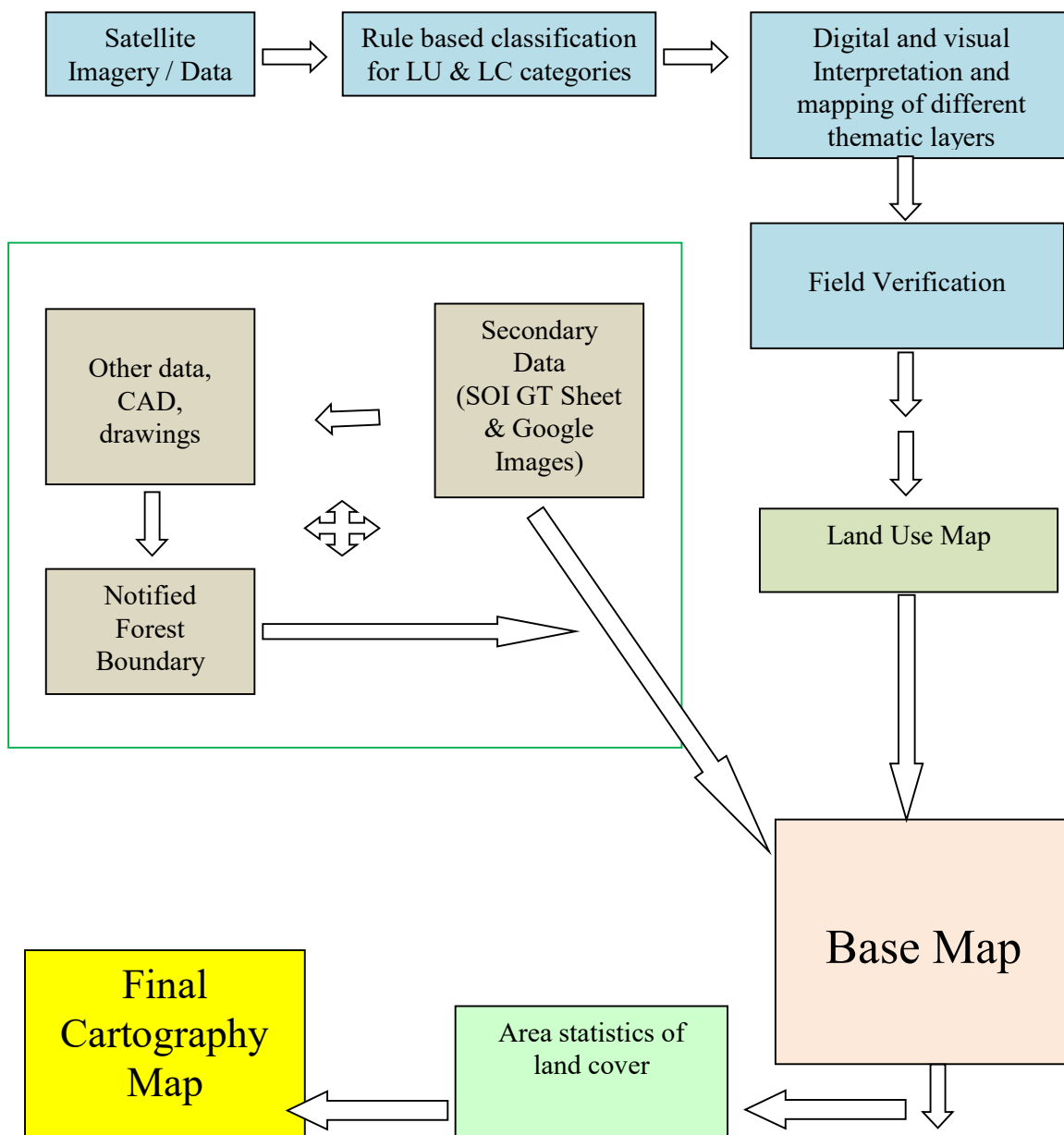
The maps were processed on GIS platform and matched with field verification data also with respect of various details and then reached at final stage.



4.4 Procedure Flow Diagram

The procedural Flow Diagram towards preparation of land use and land cover map of mining lease area and with respective thematic layers has shown below. The procedure for preparing thematic layer has discussed below.

Flow diagram showing the methodology adopted for land use mapping





4.4.1 Land use/ Land cover map

The satellite data collected and has been interpreted on digital platform and categorized under different land use units for which digital techniques has been utilized.

4.4.2 Drainage & water bodies

The entire drainage pattern and net work like ponds, streams, nallah, etc of the mining lease has marked using various maps like toposheets, google map, local district map and lastly satellite imagery. The two no. water sheds has also marked in the mining lease.

4.4.3 Villages and rural roads

The mining lease area is devoid of any habitation. One public road is seen in toposheet and on google image which has been marked and also updated with the help of satellite image.



5.0 THEMATIC MAPPING

Various thematic layers on land use and drainage within the area of 400ha have been prepared. The thematic layer wise discussion has been made below.

5.1 Base map

There is no human settlement, village, major road or railway line, HT lines etc in the Mining Lease. The other prominent features in the area as enclosed herewith as **Photoplate-all**. Almost the entire land is barren and rocky exposures. The thematic layer indicating important features has been prepared and shown as **Figure-2**.

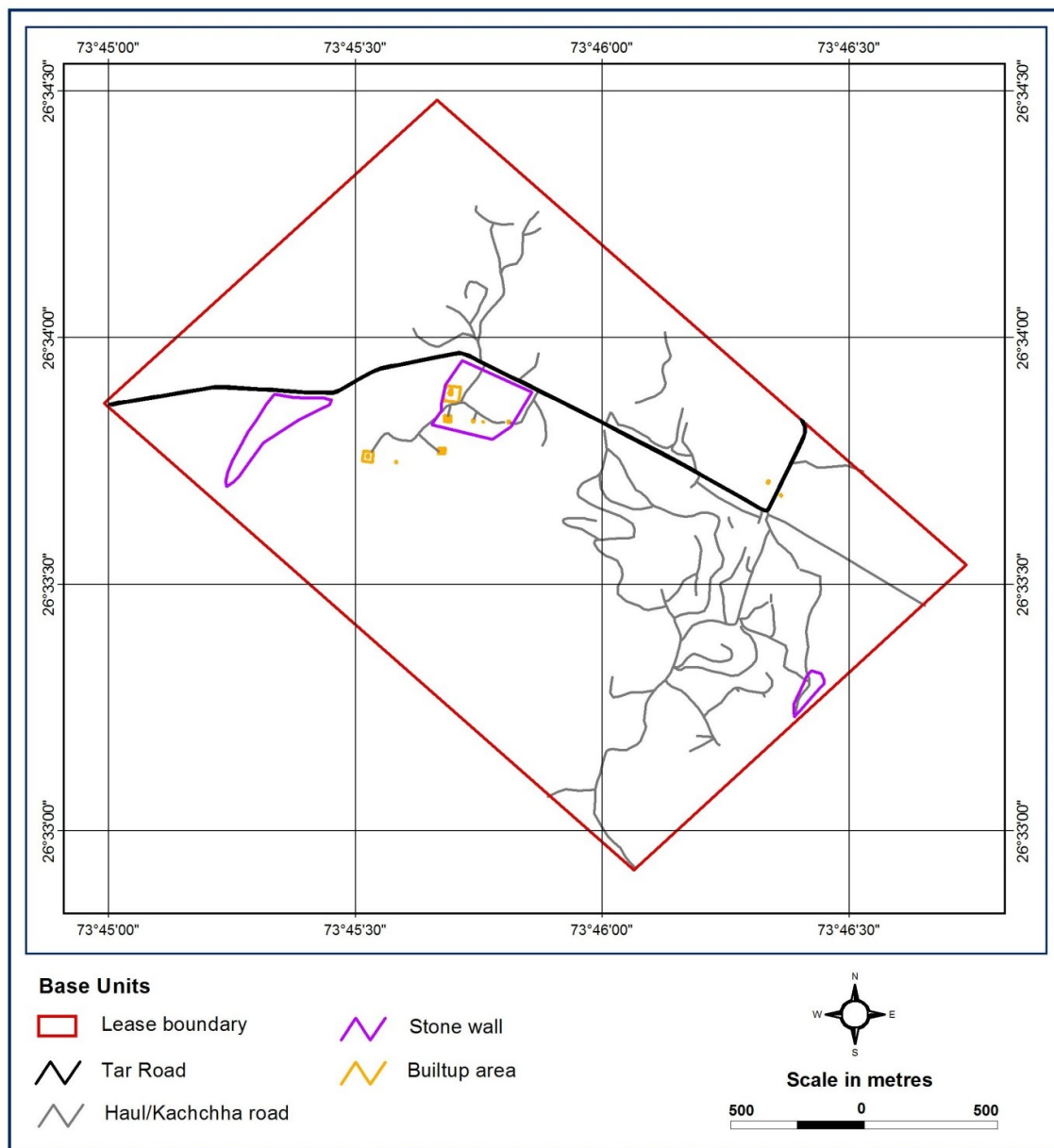


Figure-2

5.2 Drainage and water shed map of the mining lease area

The dendritic drainage pattern has been developed in the mining lease area. Due to its topography, drainage is not well developed as the handsome quantity of rainwater accumulates in pot holes in limestone which causes week surface runoff.

The availability of river, stream or any other water body etc. is almost nil in the area. The entire mining lease area has been designated with two number water sheds named as WS-1 and WS-2.



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Thematic layer showing the drainage and water sheds in the mining lease area has shown as **Figure-3** and refer **Table-5** for watershed area measurement.

Table-5: Water Sheds Area in Dhanappa Limestone Mine

S. No.	ID of Water shed	Watershed Area (in ha)	% w.r.t. total ML area
1.	WS-1	240.85	60.21
2.	WS-2	159.15	39.79
Total		400.00	100.00

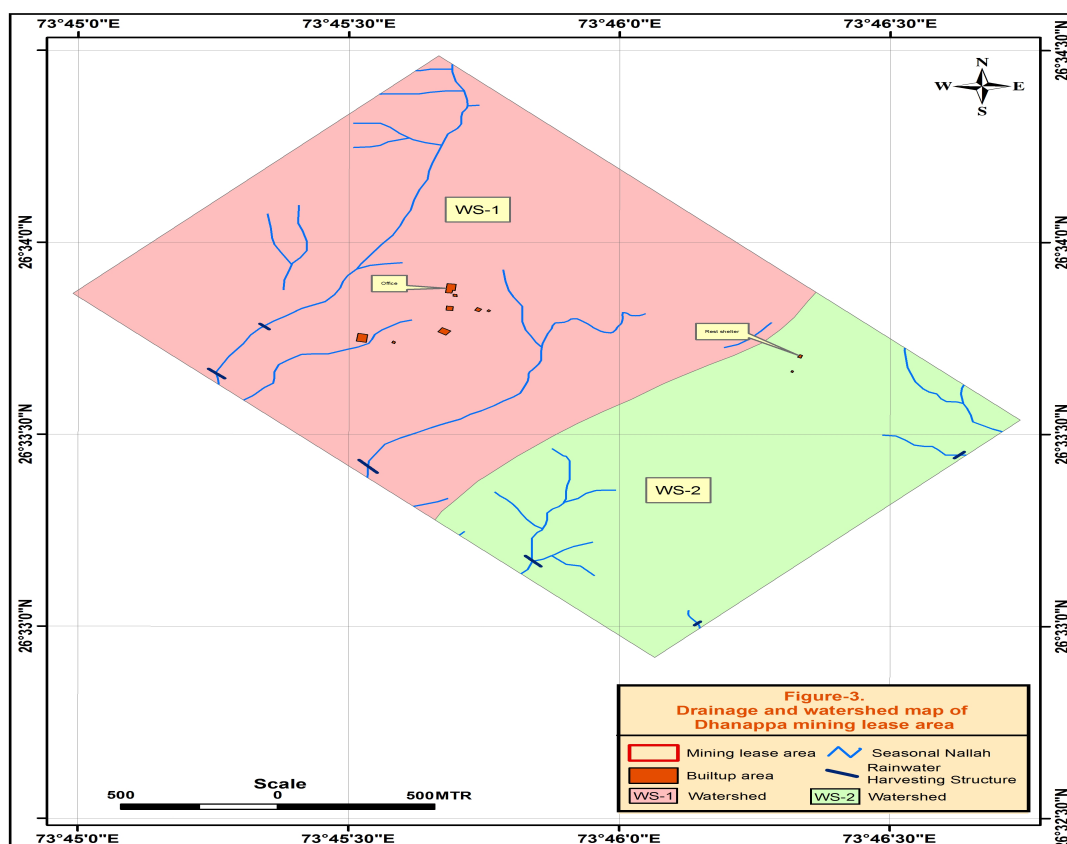


Figure-3

5.3 Digital Elevation model:

A digital elevation model prepared to understand the relief of mining lease. The general relief of the area is 42.65m considering 333m as highest elevation and 290.35m as lowest. The area is dominated by dolomitic limestone as outcrops and characterized with low elevation stony waste mounds. The satellite imagery data varies in tones due to shadow of small hillocks. (Refer **Figure-4**)

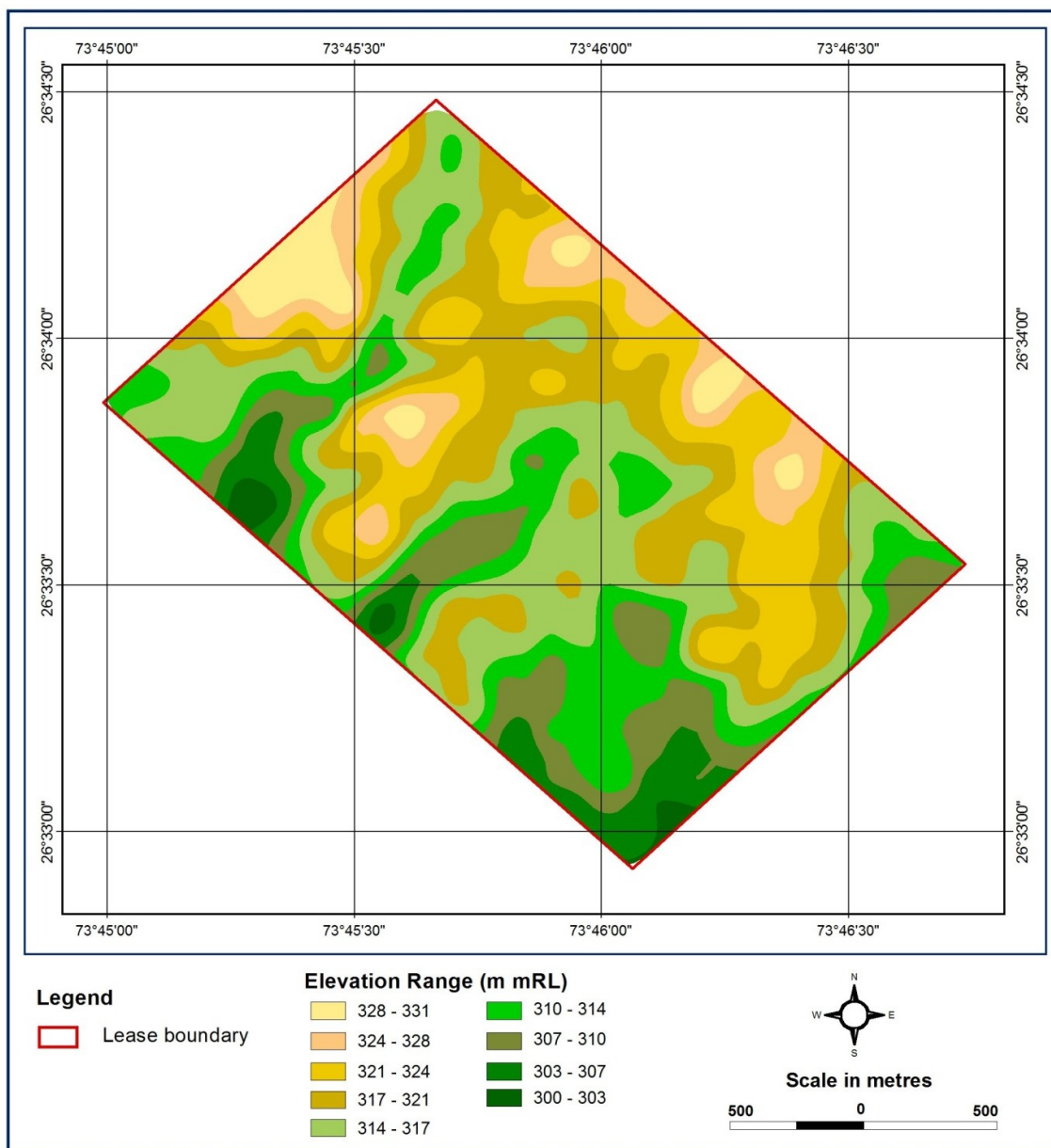


Figure-4

6.0 INTEGRATED LAND USE MAP OF THE MINING LEASE

A thematic layer of an integrated map has been prepared as shown in **Figure-5**. The area is devoid of agricultural activities hence no cropping pattern is specified as there are no well and tubewells in the entire leasehold boundary.



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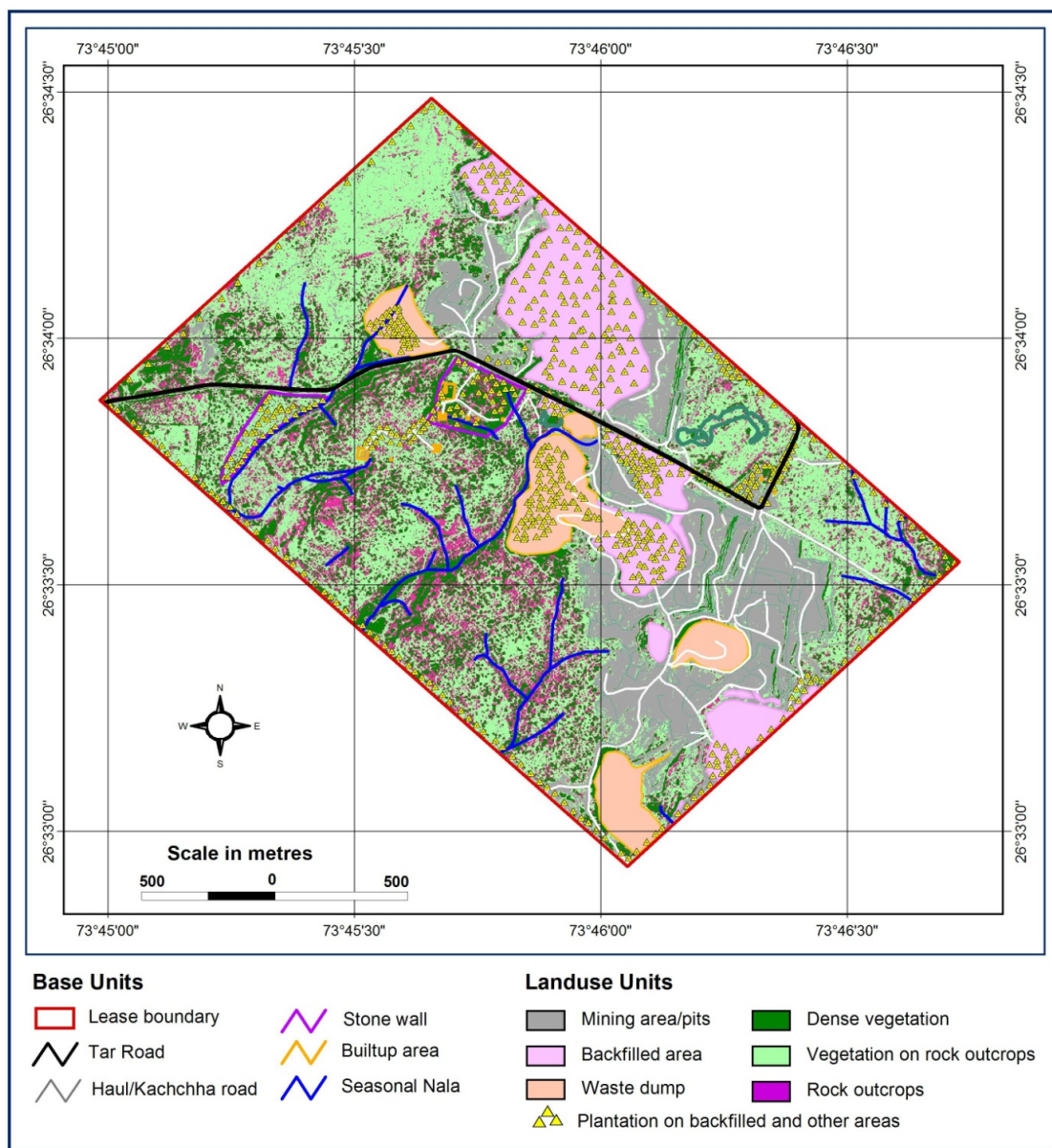


Figure-5

6.1 Land use and land cover

The mapping of land use and land cover within the mining lease boundary is in accordance with standard classification. No habitation is there in the area and also no agricultural activities so no thematic maps of Rabi and Kharif has prepared.



Land Use Land Cover of Dhanappa Limestone Mining Lease J.K. White Cement Works

One tar road joining Mega Highway (Gotan to Khariya Mithapur) to village Dhanappa is passing through the area. Other than this, various mine roads are being seen. No perennial water bodies i.e. nallah, pond, etc. exist in the mining leasehold area.

The units of land use identified have been indicated in **Table-5** with unit wise area in hectares and also in percentage w.r.t. the total mining lease area. The major features identified from the satellite data are discussed as under:

6.2 Built up land

It is a mining lease granted for limestone mining purpose for captive use hence built up land is almost negligible comprising mines office, first aid room, rest shelter, explosive storage magazine, weigh bridge room, first aid room, security rooms etc. (**Photoplate-1**). The builtup area covers an area 4.05 hectares which 1.01 % of the lease area.

6.3 Mining Pit

It is a mining lease granted for limestone mining purpose for captive use hence the increment in pitting area shall be there. The area covering under various mining excavations/ pits is nearly 111.33ha which contributes about 27.83% part of the entire mining lease area. Excavation activities are the main activities for which the lease has granted. Numerous Pits has been created as depicted in **Photoplate-2**. The maximum depth reached so far is approx. 24 metres w.r.t. general ground level in Pit-2.

6.4 Water bodies

The area is devoid of permanent water bodies like river, nallahs, dam etc. Seasonal nallahs are there in the mining lease area. Nowhere rainwater accumulation takes place in any part of the mining lease area. Mine Management has developed a very good system of ground water table recharging with rainwater within the entire ML boundary by constructing five number Rainwater Harvesting Structures. The overflow part of runoff gets down towards natural slope outside the boundary of property.

The rainwater in these water bodies lasts for few months' hardly up to Nov./ Dec. During summer season, the water bodies remain totally dry.



6.5 Reclaimed (Backfilled) Area and Dumps with and without stabilization

The Mine Management is very keen towards betterment of keeping environment at its best. In this direction, the Mine Management is on the track having motto “continuous reclamation and rehabilitation”. So, the backfilling and its stabilization are being performed concurrently with excavation without any extra toll on the environment.

By virtue of great planning, waste dumping activities has been stopped totally at this mine in order to keep the reclamation continuous and so environment healthy. The disposal of generated waste/ overburden is being carried out by means of simultaneous backfilling only. The major part of backfilling has been/ is being stabilized with suitable plantation on it. The planted trees species include Cassia Siamea, Azadirachta Indica (Neem) etc. Stabilized dumps are on non-mineralized area. **(Photoplate-3,5&9)** Three no. waste dumps are seen without stabilization as these are to be re-handled in future.

The Mine Management has covered almost 6 locations under backfilling and formed 5 waste dumps with plantation grown over it. The waste dumps have no changes.

6.6 Rock outcrops / Stony wasteland having shrubs

The undulating stony wasteland with small shrubs is also seen in the lease **(Photoplate-6)**. This area has natural vegetation possessing bushes, shrubs and short trees. This wasteland covering about 50.64ha having 12.66% of the entire mining lease area.

6.7 Dense vegetation

The mining lease area is devoid of any kind of forest land. Besides this, dense vegetation can be seen specifically along the seasonal nallah mostly comprising species Accia Arabica (Babul), Kair and Khejri as shown in **Photoplate-8**. The area covered under dense vegetation is about 50.63a contributes a 12.66% of the leased area.

6.8 Vegetation of rock out crops

Vegetation on the rocky outcrops is a natural phenomenon indicates suitability of soil and rain for plant growth. A separate land unit appeared in image showing growth of shrubs and small trees on rock outcrops appears as wasteland having vegetation which could be distinguished as



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separate land unit as shown in **Photoplate-7**. The extent of this land unit is covering an area 121.83ha which is about 30.46% part of the lease area. The area of each land use unit and its percentage in the lease area is shown in the **Table-7**.

The land use and land cover map of the mining lease area shown in percentage within the lease area. Land use unit has been elaborated with respect of its nature, composition etc.

Table-6: Area under different land use classes in the mining lease area- Year: 2020

S. No.	Category Level I	Level II	Area in ha.	% of the total ML area
1.	Built up land	Mines office/ First aid and shelter room and tar road	4.05	1.01
2.	Mining area	Pits	99.26	24.83
3.	Water bodies	Streams	5.66	1.42
4.	Dumps having Plantation	Waste dumps with backfilled area	49.53	12.38
5.	Rock outcrop	Stony Wasteland	98.52	24.63
6.	Dense vegetation along stream courses	Non-forest area	50.63	12.66
7.	Vegetation on rock outcrop	Non-forest area	92.35	23.08
			400.00ha	100 %



Land Use Land Cover of Dhanappa Limestone Mining Lease
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Table-7: Area under different land use classes in the mining lease area - Year: 2023

S. No.	Category Level I	Level II	Area in ha.	% of the total ML area
1.	Built up land	Mines office/ First aid and shelter room and tar road	4.05	1.01
2.	Mining area	Pits	111.33	27.83
3.	Water bodies	Streams	5.66	1.42
4.	Dumps having Plantation	Waste dumps and backfilling duly planted	55.86	13.97
5.	Rock outcrop	Stony Wasteland	50.64	12.66
6.	Dense vegetation along stream courses	Non-forest area	50.63	12.66
7.	Vegetation on rock outcrop	Non-forest area	121.83	30.46
			400.00ha	100%

Table-8: Changes in land use classes in the mining lease area during year: 2020 to 2023

S. No	Category Level I	Level II	Area in ha. (Yr-2020)	Area in ha. (Yr-2023)	Change in area in ha.	Change in area in %
1.	Built up land	Mines office/ First aid and shelter room and tar road	4.05	4.05	0	0.00
2.	Mining area	Pits	99.26	111.33	12.07	3.02
3.	Water bodies	Streams	5.66	5.66	0	0.00
4.	Dumps	Waste dumps and backfilling duly planted	49.53	55.86	6.33	1.58
5.	Rock outcrop	Stony wasteland	98.52	50.64	-47.88	-11.97
6.	Dense vegetation along stream courses	Non-forest area	50.63	50.63	0	0.00
7.	Vegetation on rock outcrop	Non-forest area	92.35	121.83	29.48	7.37
			400.00ha	400.00ha	-	-



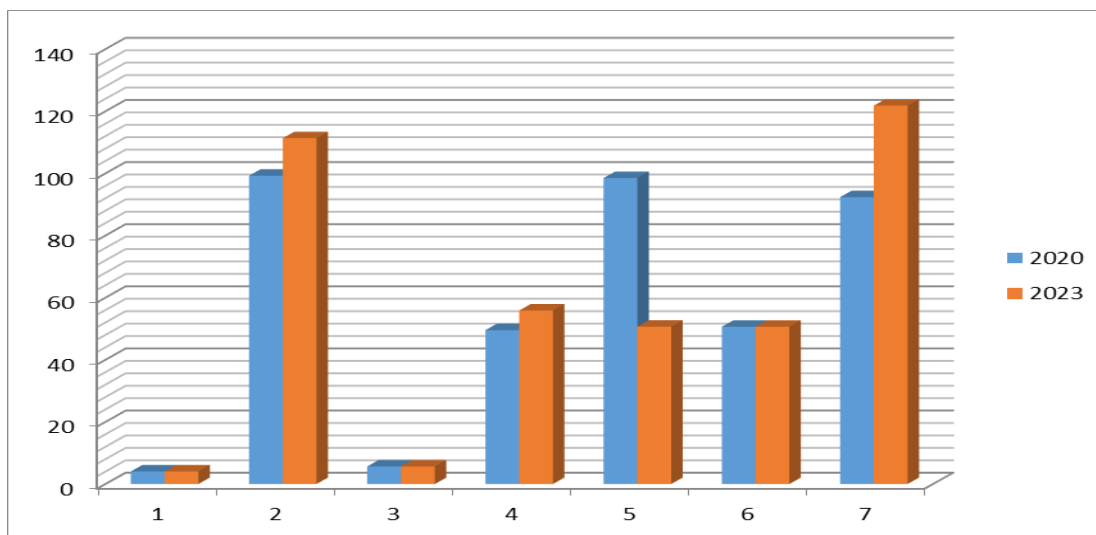
7.0 CHANGES IN LAND USE LAND COVER DURING 2020 to 2023

No noticeable changes noted except pitting by virtue of studying the satellite imagery during the said period of last three years within the Dhanappa Limestone Mining Lease of J.K. White Cement Works. The following observation has made from the study as:

1. Excavation covering has been increased from 99.26ha in 2020 to 111.33ha in 2023
2. No area has increased under waste dump
3. Rocky outcrop reduced from 98.52ha to 50.64ha
4. Vegetation along streams remain unchanged
5. No change noticed in built up area, water bodies

The variation can be seen in each land unit during last 3 years with the help of histogram shown below in **Figure-6**.

Figure-6: Histogram showing changes in the land use pattern in ML in last 3 years



Area (ha) ↑								
	Category Level-I →	Built up land	Mining area	Water bodies	Waste dumps & backfilling duly planted	Rock outcrop	Dense vegetation along stream courses	Vegetation on rock outcrop



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By virtue of the digital processing, no negative impact has been observed on environment including hydrology of the mining lease area, its vegetation pattern etc. due to mining and applied activities during the period in focus from 2020 to 2023.

Digitally signed by SHAILENDRA

KUMAR SONI

Date: 2023.11.18

09:43:29

+05'30'



(Shailendra Kumar Soni)



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Photoplate-1: Mine office and lush green all around





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Photoplate-2: Working mining pit





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Photoplate-3: Greenbelt/ Plantation (On dump and ok backfilling in pit-3)





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.....Photoplate-3: contd.....





Land Use Land Cover of Dhanappa Limestone Mining Lease
J.K. White Cement Works

.....Photoplate-3: contd.....

Greenbelt/ Plantation (On dump and ok backfilling in pit-2)





Land Use Land Cover of Dhanappa Limestone Mining Lease
J.K. White Cement Works

.....Photoplate-3: contd.....





Land Use Land Cover of Dhanappa Limestone Mining Lease
J.K. White Cement Works

.....Photoplate-3: contd.....

Greenbelt/ Plantation (On dump and on backfilling in pit-1)





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Photoplate-4: Greenbelt developed on Virgin Land along tar road to & near Dhanappa





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Photoplate-5: Reclaimed & Rehabilitation done of waste dump near Dhanappa road





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Photoplate-6: Stony land with shrubs





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Photoplate-7: Rock outcrop with vegetation





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Photoplate-8: Backfilling near road (Mine office to Weigh Bridge)





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Photoplate-9: Greenbelt developed in an area reserved for fauna and flora





Land Use Land Cover of Dhanappa Limestone Mining Lease
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.....Photoplate-9: contd.....





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A Bird Eye view of Pit-3 from View Point

