MINING PLAN

Under Rule-43(8) of TNMMCR,19

T.KOPPUCHITAMPATTI LIME KANKAR QUA LEASE

(Lr.No.1769/MMC.2/2018 Dated 12.03.2018)

EXTENT - 294.18.5 Ha.

VILLAGE : T.KOPPUCHITAMPATTI
TALUK : ARUPPUKOTTAI
DISTRICT : VIRUDHUNAGAR

MINERAL : LIMEKANKAR & CLAY (BLACK COTTON SOIL)

TYPE OF LAND : NON FOREST

LESSEE

M/s. The Ramco Cements Limited,
Ramasamyraja Nagar

L.VENKATARAMASUBRAMANIAN
QUALIFIED PERSON

R.RENGARAJ
QUALIFIED PERSON

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MINING PLAN

FOR QUARRYING LIME KANKAR & CLAY(BLACK COTTON SOIL) OVER AN EXTENT OF 294.18.5HECTARES OF LANDS IN T.KOPPUCHITAMPATTI VILLAGE, ARUPPUKOTTAI TALUK, VIRUDHUNAGAR DISTRICT APPLIED FOR QUARRY LEASE.

Submitted under Rule 43(8) of Tamilnadu Minor Mineral Concession Rules, 1959

PREAMBLE:

We have started using lime kankar, basically a low grade one, in our process since 1991. Initially, we added around 10% of lime kankar, as corrective material to increase R2O3 content of the total raw mix quality. Consequent to the use of pet coke/imported coal as fuel, the quality requirement by the plant was brought down and provided avenue for adding more low-grade material, particularly the lime kankar. At present we are using 30% to 35% of lime kankar in our raw mix. The kankar contains 68% to 72% Total carbonate. Being low grade, the kankar cannot be used for cement manufacture as such, but by blending with limestone at our command, it is utilized for cement manufacture, thus effecting utilization of low grade mineral thereby conservation. The kankar in the existing lease hold area at Suddhamadam village will lost for about 2 years. Hence, we have identified areas adjacent the existing leasehold for further fresh lease. Accordingly, an area of 381.85.0 hectares of land in T.Koppuchittanpatti Village, villages of Aruppukottai Taluk, Virudhunagar district has been demarcated, purchased and applied for a fresh mining lease. Out of which, We have received the Precise Area communication over an extent of 294.18.5 hectares from The Industries (MMC.2) Department, Secretariat, Chennai - 600 009 vide its letter No. 1769/MMC.2/2018 dated 12.03.2018 (Annexure I) with the advice to submit the Mining Plan and Environmental Clearance for grant of quarry Lease. To obtain Environmental Clearance, approval of Mining plan is pre-requisite. Accordingly, the Mining Plan with Progressive Mine Closure is prepared and submitted hereunder for its approval after incorporating the following conditions as stipulated in the precise area communication.

- A safety distance of 7.5 meters provided to the adjoining patta lands situated in and around the area applied for Quarry Lease in order not to have any disturbance to the adjacent patta and agricultural lands.
- Approach to the intervening patta lands has been proposed and will be maintained till the life of the mine.
- Stipulated safety distance of 50 meters on either side of water bodies like Odai, vari and all around Kuttai and Oorani and 10 meters on either side of cart track and 50 meters on either sides of the HT Power line.
- We have made proposal to mine only Limekankar and Clay(Black Cotton Soil). If any mineral other than limekankar and clay is discovered while quarrying, we shall not mine or dispose of such mineral and we will intimate to Government immediately About the discovery of such new mineral(s) as per Rule 36 (3) of the Tamil Nadu Minor Mineral Concession Rules, 1959.
- The Company already formed and maintained a private black top road from the existing kankar mine to Pandalgudi Crushing Plant for mineral transport. The same road will be extended to this lease area in order not to have any difficulty to the adjoining patta land owners and the habitant who are living along the transportation pathway.
- The Mining Plan is prepared and submitted for approval to mine only Limekankar and Clay(Black Cotton Soil) confined only within the communicated area of 294.18.5 Hectares.

PART I

CHAPTER 1

I. 0: INTRODUCTION

The Ramco Cements Limited formerly known as "Madras Cements Limited" the flagship company of RAMCO group is producing Ordinary Portland Cement as well as World Class blended cement by its state of art technology. Recently the name of the company has been changed to **"The Ramco Cements Limited"** from its former Name "Madras Cements Limited" after obtaining necessary approvals from Ministry of Corporate affairs under Companies Act, 1956 with effect from 05.08.2013. Copies of Board Resolution, Fresh Certificate of Incorporation Consequent upon change of name and our letter of intimation to the Department of Geology and Mining are enclosed as **Annexure-1.**

The Ramco Cements Limited is well known for its implementation of new and latest technology for not only in cement industry but also in the Mining. The Ramco Cements Limited has installed its cement industry in the various parts of south India more particular in Tamilnadu. The present installed capacity of all units is amounting 14.45 million tonnes of cement per annum. The company is the second largest cement producer in South India and sixth largest manufacturer of cement in the Country. RAMCO Super Grade is one of the most popular brands of cement in South India. The following table shows the location and production capacity of the plants.

Cement Plant Capacity of M/s The Ramco Cements Limited:

The five modern Cement Plants are located at:

Location	District	State	Capacity
RR Nagar	Virudhunagar	Tamilnadu	2.00 MTPA
Alathiyur	Ariyalur	Tamilnadu	3.00 MTPA
Ariyalur	Ariyalur	Tamilnadu	5.50 MTPA
Jayanthipuram	Krishna	Andhra Pradesh	3.65 MTPA
Mathod	Chitradurga	Karnataka	0.30 MTPA
TOTAL			**14.45 MTPA**

Table-1. List of Cement Plant locations owned by The Ramco cements limited

M/s The Ramco Cements Limited commissioned a Cement Plant with a capacity of 2[illegible] tonnes per day during 1961 at Ramasamyraja Nagar, Virudhunagar District, Tamilnadu and increased its production capacity gradually and the present production capacity is 2.00 Million Tonnes per annum in Ramasamyraja Nagar Cement Plant. The Ramco Cements Limited having three captive Limestone mines, of which one mine is located in Virudhunagar District and two other captive limestone mines in Thoothukudi District and a lime kankar mine in Virudhunagar District. The location of all four captive mines is shown in Location Plan (**Plate-01**) and Key Plan (**Plate-1A**).

The Company is employing qualified and experienced mining personnel, to carry out the mining operations in a systematic manner and in accordance with the provisions in the statute. Due to the paucity of limestone resource in Tamilnadu, the kankar proposed to be mined from this lease may also be utilized to our cement plants situated in Ariyalur and Alathiyur after upgrading the quality by a suitable beneficiation system.

PART II

CHAPTER 2

2.0 GENERAL INFORMATION

2.1: Name of the applicant with complete address:

Name of applicant /lessee	:	The Ramco Cements Limited,
Address	:	V floor, Auras Corporate Centre, Dr. Radhakrishnan Road, Mylapore
Taluk	:	Chennai
District	:	Chennai
State	:	Tamil Nadu
Pin code	:	600 004
Phone	:	044- 28478666
Fax	:	044- 28478676
Email id.	:	pjb@ramcocements.co.in

Works:

: The Ramco Cements Limite
: Ramasamyraja Nagar : 626 2
: Virudhunagar District,
: Tamil Nadu.
: Telephone: 04562-256201 and 04562-256241.

2.2 Status of applicant /lessee:

The Company is a Public Limited Company. Copy of the Registration of the Company is enclosed. **(Annexure-1).**

Resolution copy of authorized signatory along with Photo Id of the authorized signatory is also enclosed as **Annexure-3 & Annexure-4.**

A list of the Board of Directors along with address is given with Director Identification number, which will give all the particulars of the Board of Directors. (Refer **Annexure-9**)

2.3 Mineral(s) which is the applicant /lessee intends to mine:

Lime Kankar and Clay

2.4 Name of Qualified Person for preparing Mining Plan:

Name of the RQP	RQP no.& validity
Mr.L.Venkataramasubramanian AGM (Geology) The Ramco cements Limited, Pandalgudi Post, Aruppukottai Taluk, Virudhunagar District. Mobile No-9994442482	RQP/MAS/123/98/A
Mr.R.Rengaraj Manager (Geology) The Ramco cements Limited, Pandalgudi Post, Aruppukottai Taluk, Virudhunagar District Mobile No-9442630455	RQP/MAS/200/2006/A

2.5 Name and address of the Prospecting Agency:

No exploration is carried out in the area applied for mining lease.

2.6 Details of the area:

The area applied for Quarry lease at T.Koppuchittanpatti village is [illegible] on latitudes 9°26'08" N to 9°24'33" N and between longitudes 78°06'42" E to 78°08'03" E vide Survey of India Topo sheet No.58K/3. Refer Location Plan- **Plate-01** and Key Plan enclosed as **Plate-1A**. The general elevation of the area is 60 to 65 meters above MSL. A Cadastral maps showing the Quarry Lease area is enclosed as **Plate No-02**. Copy of Precise Area Communication by the State government is enclosed as **Annexure-2.**

District and State	Virudhunagar, Tamilnadu
Taluk	Aruppukottai
Village	T.Koppuchittanpatti
Khasra No./ Plot No./ Block Range/ Felling Series etc.	Details are furnished in **Annexure-2.**
Lease Area (hectares)	294.18.5 Ha.of Patta lands
Ownership / Occupancy	The entire area applied for quarry is patta land owned by The Ramco Cements Limited
Existence of public road / railway line, if any nearby and approximate distance	Madurai- Thoothukudi Highway (NH 45 B)- 1 Km East of Sethurajapuram Village. No railway line nearby and the nearest railway Station is at Aruppukottai @ 20 km. The nearest Airport is at Madural @80 km and the nearest Port is at Thoothukudi @ 86 km.
Toposheet No. with latitude and longitude	58K/3 **Latitude:** 9°26'08"N to 9°24'33"N **Longitude:** 78°06'42"E to 78°08'03" E

The Mining Lease area falls in Survey of India (Restricted) Topo sheet No 58 K/3. The longitude and Latitude of the boundary pillars are as follows.

OUNDARY PILLAR NO	LATTITUDE	LONGITUDE
BP-1	N 9°25'08"	E 78°06'42"
BP-2	N 9°25'17"	E 78°06'45"
BP-3	N 9°25'29"	E 78°06'49"
BP-4	N 9°25'41"	E 78°06'51"
BP-5	N 9°25'46"	E 78°07'00"
BP-6	N 9°25'50"	E 78°07'06"
BP-7	N 9°25'55"	E 78°07'17"
BP-8	N 9°25'58"	E 78°07'35"
BP-9	N 9°26'07"	E 78°07'48"
BP-10	N 9°26'08"	E 78°07'54"
BP-11	N 9°26'06"	E 78°08'01"
BP-12	N 9°26'03"	E 78°08'01"
BP-13	N 9°25'50"	E 78°07'58"
BP-14	N 9°25'32"	E 78°07'51"
BP-15	N 9°25'29"	E 78°06'00"
BP-16	N 9°25'18"	E 78°08'03"
BP-17	N 9°25'08"	E 78°08'02"
BP-18	N 9°24'47"	E 78°08'01"
BP-19	N 9°24'40"	E 78°08'04"
BP-20	N 9°24'33"	E 78°08'03"
BP-21	N 9°24'34"	E 78°07'53"
BP-22	N 9°24'33"	E 78°07'47"
BP-23	N 9°24'45"	E 78°07'45"
BP-24	N 9°24'43"	E 78°07'37"
BP-25	N 9°24'49"	E 78°07'36"
BP-26	N 9°24'56"	E 78°07'27"
BP-27	N 9°25'10"	E 78°07'28"
BP-28	N 9°25'07"	E 78°07'22"
BP-29	N 9°25'07"	E 78°07'11"
BP-30	N 9°25'08"	E 78°07'06"
BP-31	N 9°25'15"	E 78°06'57"
BP-32	N 9°25'06"	E 78°06'53"

2.7: Period for which Quarry lease is required :

The Quarry lease is required for a period of 10 years.

2.8: Infrastructure :

The areas applied for Quarry Lease has the same terrain condition and continuation of the existing mining lease area for limekankar and clay at Maravarperumpudi, Suddhamalli and Salukkuvarpatti villages, where the required infrastructure exists. Hence, the existing infrastructure will be shifted to this area once the mining operation is started after the grant of Quarry Lease.

Water:

The main source of water is the ground water. The ground water is available at 12.0 to 15 meters depth from the general ground level and it is not potable. Hence, the Company has established a water treatment plant at Pandalgudi mines for drinking purposes for both residential colonies as well all other work sites.

Electricity:

11 KV State E.B. supply is available in the mines site. A standby 380 KVA Generator has been installed to meet the contingency requirements.

Road:

The distance from the area to the nearest village, Koppuchittanpatti is about 1.0 KM. A black top road to the nearest town, Pandalgudi, connects the area, which is about 10.0 K.M from the area. We have also formed our own black top road for a length of 13 K.M from our exiting mines to Pandalgudi crushing plant and the same road will be extended up to this lease area.

Communication:

The area is well connected by public telephone network. In addition to this mobile phones, Walkie – Talkies will also be provided for effective communication.

Transport:

Public transport systems are good for commuting of passengers as well as for transports of goods in this area. The lime Kankar will be transported to our crushing plant at Pandalgudi by tippers/trailers through our own black top road.

Housing:

All the employees have been provided with housing accommodations established by the Company at Pandalgudi mine premises.

CHAPTER 3

3.0 GEOLOGY AND EXPLORATION:

3.1 Physiography:

The area applied for quarry lease is generally flat with an elevation ranging from 60 to 65 metres above MSL. There is no prominent river or stream running in this area except few small rivulet of seasonal nature. All the lands are of dry type devoid of any recognizable vegetation and are not part of any reserve forest area. There is no forest present in the nearby area (shown in **Plate No- 01**). The area applied for Quarry Lease is covered with top soil cover ranging 1.00 to 1.50 mts. The Surface Plan (**Plate No-03**) depicting the permanent physiographic features and contours is furnished.

Vegetation:

The area applied for Quarry Lease is mostly barren ground. Therefore, there exists no specific flora & fauna within the Lease area. There are small shrubs and trees in the area. The flora in the area is generally of common variety trees like Prosopis juliflora, Accasia nilotica, Albizzia amera, Azadirachta indica etc., shrubs namely Morinda tinctoria, Calotrophis gigantica, Jatropha sps., Zizypus jujuba etc.

Climate:

The area experiences tropical climate with temperatures ranging from 19° to 42°C. The area lies in the rain shadow region of the Western Ghats and experiences low rainfall during SW monsoon between May and June. It receives rainfall during the retreating NE monsoon between October and December and the average rainfall is about 769 mm per year.

The mean monthly temperature ranges between 19°C to 42°C and it is maximum during the months of May and June. The relative humidity varies between 28 to 96 % and it is highest during the months of December and January and is lowest during the month of June. The nearest Rainfall gauge station is located at Aruppukottai which is at a distance of about 20 km on the Northwest from the Mine. The Fifty years of Normal Rainfall

recorded is 769 mm out of which, normal NE Monsoon Rainfall is 392.0 mm (Oct-Dec) Normal SW Monsoon Rainfall is 184.0 mm (Jun-Sep) Transit period rainfall from Jan to May is 193.0 m.

METEOROLOGICAL DATA

SEASON : WINTER

PARAMETERS	MINIMUM	MAXIMUM
Temperature in °C	19	42
Humidity in %	28	96
Wind speed km/hr	<1.8	20.4
Predominant wind direction	NE	
Rainfall in mm	NIL	

3.2 Geology

a) Regional Geology

The Precambrian of peninsular India has been classified into Cratons and mobile belts. The litho assemblage of Charnockite, Khondalite (Southern Granulite Complex) and Peninsular Gneissic Complex of Archaean to Palaeoproterozoic age besides Quaternary calcretes are exposed in the area. Quartzite, calc granulites associated with crystalline limestone bands and garnet-sillimanite gneiss belonging to Khondalite and Charnockite Group occur as enclaves within the country rock of hornblende-biotite gneiss.

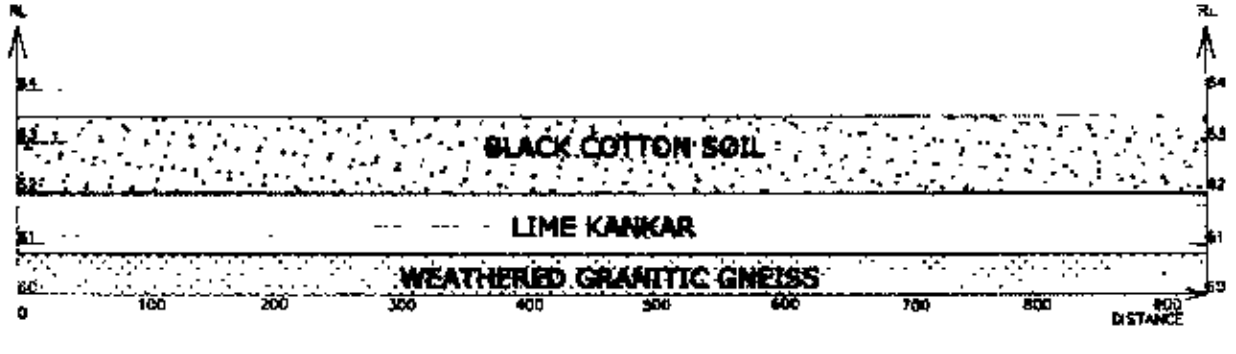
GEOLOGICAL FORMATIONS

The general geological formations met with in the area are as follows:-

Recent and Sub-recent		Alluvium, of the Vaippar. Black soils, laterite, Kankar and tufa etc.
Pre-Cambrian Metamorphic Group		6. Younger granitic injections, pegmatite etc.
		5. Charnockites and associated hybrid types.
		4. Mixed Gneisses - Garnetiferous, granitoid and mica gneiss and other composite types.
		3. Crystalline limestone, calciphyre and calc-granulites.
		2. Quartzite.
		1. Basic metamorphic rocks such as amphibolites, epidiorites, pyroxene and biotite schist and pyroxene-granulite.

b) Geology of the area applied for Quarry Lease

Since this area is in continuation with the existing ML area, the same geology is continuing here also. The entire region is of Archaean metamorphic terrain covered with black cotton soil, but the Kankar bed has been exposed in the mine faces in existing leasehold area and in nallah cuttings. The Kankar bed of around 1.0 to 1.5 meter thick is overlain by around 0.4 m thick of nodular Kankar intermixed with clay and in turn by around 1.5 m thick block cotton soil. The lithological succession is illustrated below.



The Kankar in this area is mostly gravelly type intermixed with more clay and overlain by 0.10 m to 0.40 m thick nodular Kankar. The Kankar occurrence is horizontally bedded

and is grey to whitish in colour. The deposit is almost flat filling over the old eroded surface and hence the lower contact will follow the surface of the old eroded country rock. The Geological Plan & Sections are enclosed as **Plate-04** & **Plate-05.**

3.3: Details of Exploration :

(I) Already carried out in the area:

No prospecting work has been done in the area applied for Quarry lease. However, since the kankar is seen exposed in stream cuttings and also in existing mines, it has become possible to decipher existence of kankar beds below top soil.

(Ii) Proposed to be carried out:

Due to the shallow occurrence of the kankar, it is proposed to carry out the exploration by means of trial pits at 400 metres X 400 metres grid. It is estimated that about 18 Nos. of trial pits will have to be made, which spreads over on the entire deposit. A Surface plan on a scale of 1: 5000 with 1 m contours interval has been prepared and the same is enclosed as **Plate No.03**. A Geological plan on a scale of 1:5000 **(Plate No-04)** is enclosed which shows the proposed locations of the trial pits.

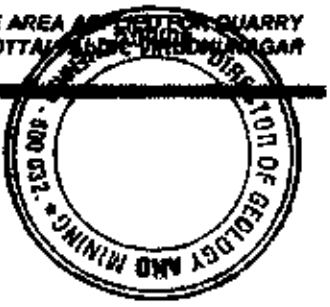
2 Nos. of Geological cross sections on East -West direction and 2 Nos. of section on North-South Direction has been prepared and the same is shown in **Plate No-05.**

3.4: Method of Estimation of Reserves :

The kankar deposit is tabular and wide spread, average thickness method will be best suited the deposit for reserves calculation. Accordingly the reserves were calculated for this deposit by this method. For reserves estimation, an average kankar thickness of 1.25 meter has been considered. Bulk density of '2.2' are the parameter considered. Geological reserves have been estimated for entire area applied area and the mineable reserves are arrived at for the area leaving safety distance from mining lease boundary, road and stream courses.

3.5 : Geological Reserves and Grade :

As explained in the previous chapter, geological reserves were calculated for the entire area applied for Quarry lease by average thickness method. Since no exploration is carried out in this area and the reserves were categorized under inferred category. The details of reserves estimation are furnished below.



Lime Kankar

In-situ Geological Reserves

The area considered for Grant of Quarry Lease : 294.185 Hectares

Area per Hectare : 10,000 Sq.M

Average thickness of Kankar : 1.25 M

Bulk density or Tonnage Conversion Factor : 2.2 tonnes per Cu.M

Tonnage per Hectare = Area X Thickness X Bulk Density

= 10,000 X 1.25 X 2.2

= 27,500 tonnes per hectares

In-situ Geological reserves available = 294.185 X 27,500 tonnes

In 294.185 Hectares = 8,090,087 tonnes or

8.09 million Tonnes

Mineable Reserves

The area considered for Grant of Quarry Lease: 294.185 Hectares

Area blocked by statutory barrier along Mining : 70.388 Hectares

Lease boundary, road and Odai

Balance area available for mining : 223.797 hectares

Area per Hectare : 10,000 Sq.M

Average thickness of Kankar : 1.25 M

Bulk density : 2.2 tonnes per Cu.M

Mineable reserves available in = 223.797 X10000X1.25X2.22 tonnes

= 6,154,417 or

6.15 Million Tonnes

The Block wise reserve estimation is furnished below.

STATEMENT OF MINEABLE KANKAR RESERVE					
BLOCK	AREA		Avg. Kankar Thickness	Volume	[illegible] reserves
	In Ha.	In M²	In M	In M³	In Tons
	-1-	(2=1X10000)	-3-	(4 = 2 X 3)	(5=4 X 2.2)
BLOCK-1	60.245	6,02,454	1.25	7,53,068	16,56,749
BLOCK-2	5.038	50,377	1.25	62,971	1,38,537
BLOCK-3	5.574	55,737	1.25	69,671	1,53,277
BLOCK-4	4.666	46,656	1.25	58,320	1,28,304
BLOCK-5	8.585	85,852	1.25	1,07,315	2,36,093
BLOCK-6	8.663	86,628	1.25	1,08,285	2,38,227
BLOCK-7	45.602	4,56,023	1.25	5,70,029	12,54,063
BLOCK-8	30.083	3,00,832	1.25	3,76,040	8,27,288
BLOCK-9	2.780	27,800	1.25	34,750	76,450
BLOCK-10	52.561	5,25,607	1.25	6,57,009	14,45,419
TOTAL	223.797	22,37,966		27,97,458	61,54,407
Say 6.154 Million tonnes					

Clay (Black Cotton Soil)

In-situ Geological Reserves

The area considered for Grant of Quarry Lease : 294.185 Hectares

Area per Hectare : 10,000 Sq.M

Average thickness of Clay : 1.25 M

Bulk density or Tonnage Conversion Factor : 1.68 tonnes per Cu.M

Tonnage per Hectare = Area X Thickness X Bulk Density

= 10,000 X 1.25 X 1.68

= 21,000 tonnes per hectares

In-situ Geological reserves available = 294.185 X 21,000 tonnes

In 294.185 Hectares = 6,177,885 tonnes or

6.178 million Tonnes

Mineable Reserves

The area considered for Grant of Quarry Lease: 294.185 Hectares

Area blocked by statutory barrier along Mining : 70.388 Hectares

Lease boundary, road and Odai

Balance area available for mining : 223.797 hectares

Area per Hectare : 10,000 Sq.M

Average thickness of Clay : 1.25 M

Bulk density : 1.68 tonnes per Cu.M

Mineable reserves available in = 223.797 X10000X1.25X1.68 tonnes

= 4,699,737 or

4.70 Million Tonnes

The Block wise reserve estimation is furnished below.

STATEMENT OF MINEABLE CLAY RESERVES					
BLOCK	AREA		Avg. Clay Thickness	Volume	Reserves
	in Ha.	in M^2	in M	in M^3	in Tons
	-1-	(2=1X10000)	-3-	(4 = 2 X 3)	(5=4 X 1.68)
BLOCK-1	60.245	6,02,454	1.25	7,53,068	12,65,153
BLOCK-2	5.038	50,377	1.25	62,971	1,05,792
BLOCK-3	5.574	55,737	1.25	69,671	1,17,048
BLOCK-4	4.666	46,656	1.25	58,320	97,978
BLOCK-5	8.585	85,852	1.25	1,07,315	1,80,289
BLOCK-6	8.663	86,628	1.25	1,08,285	1,81,919
BLOCK-7	45.602	4,56,023	1.25	5,70,029	9,57,648
BLOCK-8	30.083	3,00,832	1.25	3,76,040	6,31,747
BLOCK-9	2.780	27,800	1.25	34,750	58,380
BLOCK-10	52.561	5,25,607	1.25	6,57,009	11,03,775
TOTAL	223.797	22,37,966		27,97,458	46,99,729
Say 4.70 Million tonnes					

Sl.No.	Particulars	Extent in Ha.	Reserves in tonnes	
			Lime kankar	Clay
1	In-situ Geological Reserves	294.185	80,90,088	[illegible]
2	Blocked up Reserves	70.388	19,35,681	14,78,156
3	Mineable Reserves	223.797	61,54,407	46,99,729

A Mineable reserve of about 6.154 million tonnes with the grade varying from 60% to 65% Total carbonate are available in the area.

The average chemical analysis of Lime Kankar and Clay is furnished below.

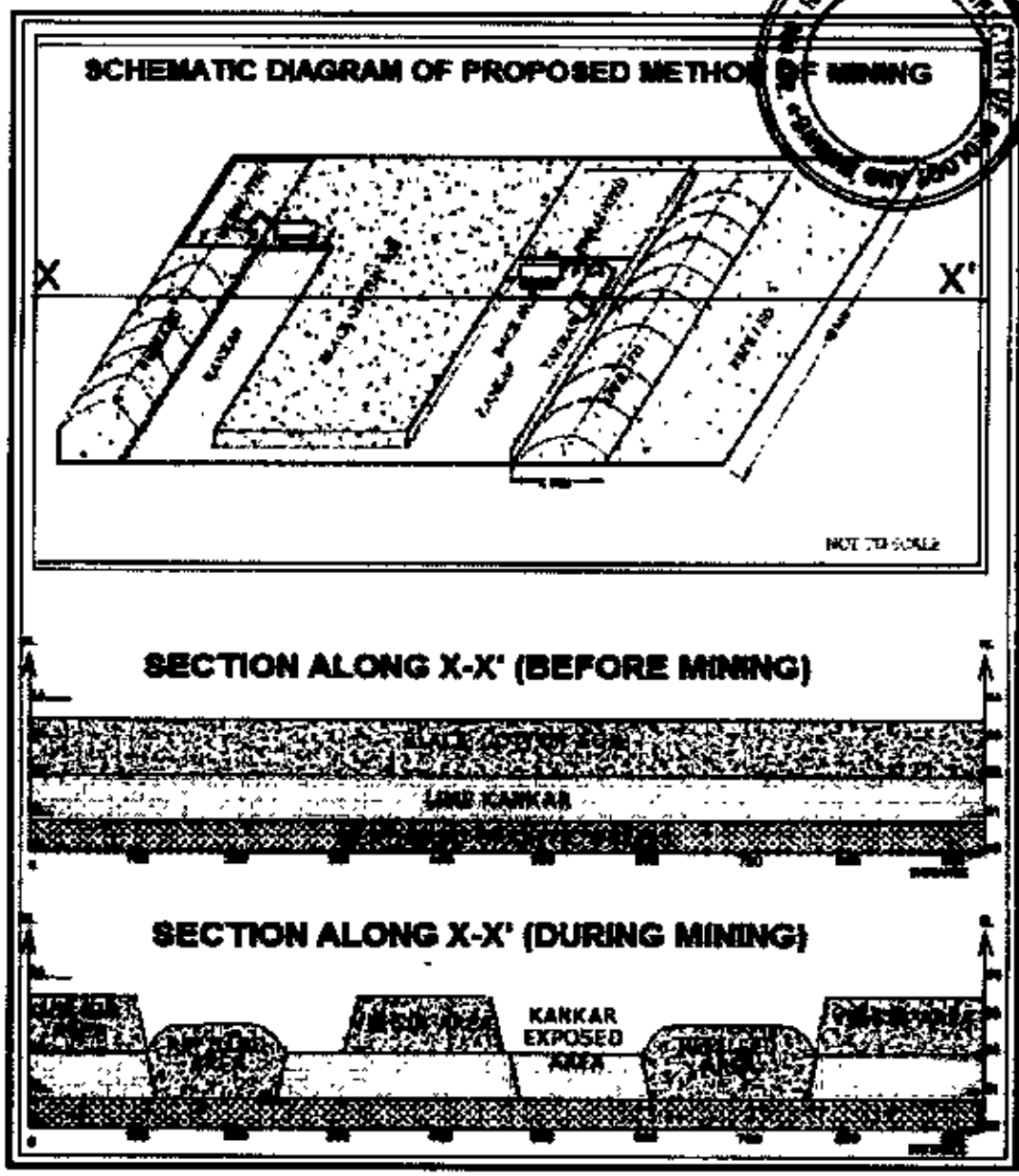
CHEMICAL ANALYSIS OF LIME KANKAR AND CLAY								
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Lime kankar	30.70	19.92	4.31	1.96	38.85	0.25	0.16	1.31
Clay	7.65	48.43	14.32	9.02	16.58	2.27	0.05	0.16

4.0 MINING :

OPEN CAST MINING:

Mechanized open cast mining without Drilling and Blasting, with deployment of heavy earth moving machineries of low HP will be adopted for this mine. The total depth of the Mine will be of maximum of 3.0 mts only. The deposit will be mined by a simple system of simultaneous development, production and refilling by the same excavator called strip mining. The entire area will be mined by dividing it into number of strips of about 8 Meters wide and 25 meters long, corresponding to the yearly production quantity. Initially, a long trench like excavation for a sufficient length on black cotton soil will be made to expose the kankar and then the kankar will be mined by the same excavator. The next strip just adjacent to the previous strip will be mined in the similar manner but the black cotton soil will be side-casted to the exhausted adjacent strip.

Thus, the refilling will be done simultaneously along with development and hence there will not be any external dumps. This is a simple system of simultaneous side casting of overburden black cotton soil and excavation of the exposed kankar by the same excavator. (2 nos EX-200). Since the developmental top soil will be side-casted on the Kankar exhausted adjacent strip, there will not be any hauling of developmental reject and no external dump. In this method of mining, the kankar exhausted area will be refilled simultaneously along with production and development activity. The following diagram illustrates the proposed method of mining.



Schematic Diagram of proposed Mining Method

The total area considered to grant of quarry lease is 294.135 Ha. out of which, 223.797 Ha will available for effective mining after leaving the prescribed safety barrier of about 70.388 Ha. as detailed below.

1. Provided safety distance of 7.5 mts., provided to the adjoining patta lands situated in and around the applied area for Quarry lease.
2. Provided approach to the intervening patta lands.
3. Provided safety distance of 50 mts on either side of Odai, Kuttai, Oorani and vari and 10 mts on either side of cart track and 50 m safety distance on either sides of the HT Power line.

The above mentioned safety distance will be maintained without any disturbance till the expiry of the lease period.

4.1 Year-wise development plan during the plan period :-

The average depth of over burden black cotton soil is 1.25 meters. The ratio of Rom Kankar to O.B works out 1:0.76. It is calculated that about 27,59,625 tonnes of over burden clay will have to be removed during the first five years to mine 36,79,500 tonnes of ROM kankar. Out of 27,59,625 tonnes of over burden clay, around 2,00,000 tonnes will be utilized for our cement manufacturing process and balance 25,59,625 tonnes will be used for simultaneous refilling of the mined out portion.

YEARWISE DEVELOPMENT PROPOSAL						
Year	Area (Hectares)	Area (Sq.m)	Bulk Density	Top Soil Thickness	Top Soil Quantity	
					In M^3	In Tonnes
1	3	4	5	6	7=(4X6)	8=(5X7)
I Year	22.3	2,23,000	1.65	1.25	2,78,750	4,59,938
II Year	22.3	2,23,000	1.65	1.25	2,78,750	4,59,938
III Year	44.6	4,46,000	1.65	1.25	5,57,500	9,19,875
IV Year	22.3	2,23,000	1.65	1.25	2,78,750	4,59,938
V Year	22.3	2,23,000	1.65	1.25	2,78,750	4,59,938
TOTAL	**133.8**	**13,38,004**			**16,72,500**	**27,59,625**

4.2 Year wise Production For The First Five Years:

The estimated Mineable kankar reserves is 6.154 million tonnes and the same will be mined in 10 years period. During the First 5 years of mine operation, 16,72,500 to 36,79,500 tonnes of ROM kankar will be mined. In addition to the kankar, we have also proposal to use top soil clay for our cement manufacturing process @ 40,000 tonnes per annum. The following table shows the production Quantity for the first five years plan period.

YEARWISE PRODUCTION PROPOSAL						
Year	Area (Hectares)	Area (Sq.m)	Bulk Density	Top Soil Thickness	Kankar Quantity	
					In M^3	In Tonnes
1	3	4	5	6	7=(4X6)	8=(5X7)
I Year	22.3	2,23,000	2.2	1.25	2,78,750	6,13,250
II Year	22.3	2,23,000	2.2	1.25	2,78,750	6,13,250
III Year	44.6	4,46,000	2.2	1.25	5,57,500	12,26,500
IV Year	22.3	2,23,000	2.2	1.25	2,78,750	6,13,250
V Year	22.3	2,23,000	2.2	1.25	2,78,750	6,13,250
TOTAL	**133.8**	**13,38,004**			**16,72,500**	**36,79,500**

Year	Production In Tonnes	
	KANKAR (ROM)	Clay (Part of Development)
I Year	6,13,250	40,000
II Year	6,13,250	40,000
III Year	12,26,500	40,000
IV Year	6,13,250	40,000
V Year	6,13,250	40,000
	36,79,500	**2,00,000**

Year wise development programs are shown in the year wise production and development plan **(Plate No-06)** and Year wise section & Year wise longitudinal sections vide **Plate No-07.**

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4.3 Proposed rate of Production when the mine is fully developed:

The normal production from this mine will be 6,13,250 tonnes per annum when the mine is fully developed and the maximum production per annum would be 12,26,500 tonnes of ROM kankar and 40,000 tonnes of clay.

4.4 Mineable reserves & anticipated life of the mine:

The estimated mineable kankar reserves is 6.154 million tonnes and the same will be last for about 10 years as per the details furnished below.

- The total reserves including the Proved mineral reserve - 6.154 Mil.T
- Proposed production for the first 5 years - 3.679 Mil.T.
- Balance Reserves available after 5th year - 2.475 Mil.T
- Proposed production from 6th year to 10th year - 0.247 Mil.T
- Hence the total life of mine - 10 years

Conceptual workings are shown in Conceptual plan **(Plate No–09).**

4.5: PROPOSED METHOD OF MINING:

As mentioned under the head 4.0, mechanized open cast mining will be adopted for this mine. The deposit will be mined by a simple system of simultaneous development, production and refilling by the same excavator.

4.5.1 OPEN – CAST WORKING :

a) The mine is fully mechanized.

b) Operation of the mine: The mine will be operated in two shift basis.

c) The area of development, production, refilling and afforestation are shown in the production and development plan ((**Plate Nos. 6**) and section (**Plate No. 7**).

d) Details of Geotechnical studies.

Slope Stability:

The kankar is medium hard and compact and will not slide. The black cotton soil of 1.25 thick is separately removed. Moreover, most of the area will be refilled immediately after exhausting the kankar, which further reduces the risk of any slope failure.

Ground Water:

The ground water is available at 12 to 15 metres depth. There are no water reservoirs or major rivers nearby except few seasonal odai passing through the area. The rain is also scanty in the area. Since the mine will be a shallow one and will not go beyond the water table.

4.5.2 Underground workings: Not applicable.

4.6 : Conceptual Mining Plan :-

As explained under Chapter 4.0, this deposit will be mined by the conventional open cast mining with deployment of heavy earth moving machineries. The requirement of ROM kankar from this mine would be around 6,13,250 tonnes per annum except during 3rd year of production. During the 3rd year, the proposed kankar production would be 12,26,500 tonnes. Since the kankar deposit is a shallow one, the total depth of mining would be around 2.5 to 3.0 m deep. The deposit will be mined by a simple system of simultaneous development, production and refilling by the same excavator. The entire area will be worked by dividing into number of strips, corresponding to yearly production quantity. Initially, a long trench like excavation for a sufficient length on black cotton soil will be made to expose the kankar and then the kankar will be mined by the same excavator. The next strip just adjacent to the previous strip will be mined in the same manner but the black cotton soil will be side-casted on the kankar exhausted adjacent strip. Thus the refilling will be carried out simultaneously along with development and hence there will not be any external dump.

The expected mineable reserves in the area applied for Quarry lease is about 6.154 million tonnes and the same will be exhausted for about 10 years. Due to the

simultaneous mining activity, almost all the kankar exhausted area will be refilled and part of the refilled area will be reclaimed and afforested.

Conceptual workings are shown in Conceptual plan (**Plate No.9**)

4.7 Extent of Mechanization :

4.7.1: Blasting: The mine will be a mechanized one without drilling and blasting.

4.7.2: Drilling :
Does not arise.

Since the kankar bed is less consolidated, it is digable by excavator and hence it doesn't require any drilling and blasting.

4.7.3: Loading:

3 Nos. of TATA-HITACHI EX 200 hydraulic excavators will load the kankar.

4.7.4: Hauling / Transport:

10 Nos. of Taurus Tippers of 20 tonnes capacity will be used to transport ROM Kankar to the proposed beneficiation system to be established in other lease or to Pandalgudi Crushing plant based on the requirement.

The following machineries are deployed in the mine as of date :

List of Mining Machineries:

Sl.No	Name of the machinery	Capacity	No.
1	TATA Hitachi EX 200	1.8 M^3	3
2	ZL 50 G Wheel Loader	3.2 M^3	1
3	Taurus tippers	20 tonnes	10
4	Water Tanker	10 KL	1

5.0 : BLASTING :

Since the kankar bed is less consolidated, it doesn't require any drilling and blasting.

5.1: Broad Blasting Parameters:

Does not arise

5.2 : Storage Of Explosives :

Does not arise

6.0: MINE DRAINAGE:

The main source of water in this area is the ground water. The other source of water is from rains during monsoon periods. The surface run-offs due to rain are drained by natural courses like odai. Since, the mined out area will be refilled immediately after the exhaustion of Kankar, there will not be any opened out pit and no possibility of accumulation of rain water inside the pit. Due to the shallow occurrence of Kankar, the depth of mining will not be more than 2.5 to 3.0 m, which is well above the water table of this region (30 mts from surface). Hence there will not be any ground water seepage during mining.

7.0 STACKING OF MINERAL REJECTS AND DISPOSAL OF WASTE:

7.1 Nature of Waste:

The lime kankar, which will be mined from this Quarry Lease, will be transported to the proposed beneficiation to be established in other lease hold area or to the Crushing Plant situated at Pandalgudi Mines in ROM form. There is no beneficiation or screening is proposed within area applied for Quarry lease. Hence there will not be any mineral reject generation during mining. The Top soil clay will also be used for simultaneous refilling along with mine Development and production. Hence there will not be any over burden dump also within the area applied for Quarry Lease.

7.2 Selection of Dumping Site:

Does not arise

7.3 Maximum Height & Spread of Dumps.

Does not arise

7.4 Precautions to Prevent Runoff in dumps:

Does not arise

7.5 Post mining land use

The entire deposit will be exhausted in next 10 years. The mined out area will be refilled and restored back along with mine production.

The total area considered for grant of Quarry Lease is 294.185 Ha. out of which, about 70.388 Ha. is occupied by Safety barrier of 10 m on either side of road, 50m on either side stream courses or HT Power line and 7.5 m on all along the quarry lease boundary. The effective area available for mining is 223.797 Ha. Out of 70.388 Ha. covered under safety barrier about 40 Ha. will be afforested during its conceptual stage. The following table shows the land use pattern at the end of 5th Year and at the end of Mine life.

Sl No	Head	At End of 5th year (Area in Ha)	At End of Mine Life (Area in Ha)
-1-	-2-	-3-	-4-
1	Area of excavation	0.500	-
2	Mined Out Land (Refilled)	87.300	158.797
3	Storage of top soil	-	-
4	Overburden/dump	-	-
5	Mineral Storage	-	0.000
6	Infrastructure(Workshop/Building)	0.500	0.500
7	Roads	1.500	1.500
8	Green belt / Afforestation (Reclaimed area)	44.000	63.000
9	Others (Safety Barrier) (Partly Afforested)	70.388	70.388
	Total	**204.188**	**294.185**
	Unused land	90.00	0.00
	Grand Total	**294.185**	**294.185**

**** Out of 70.388 Ha., about 40.0 Ha. will be afforested**

8.0. USE OF THE MINERAL:

The mineral Lime Kankar and clay will be utilized for cement manufacture as a captive raw material source for all 3 nos. of cement plant situated at Ramasamypuram Village in Virudhunagar District, Alathiyur Works and Govindapuram Works in Ariyalur District based on the requirement.

9.0 Other

Site services:

All the services like site office, First Aid Room, Rest shelters, potable water and other necessary amenities will be provided at the site. The details are discussed in the following paras.

Mine Office for General administration:

A mine site office for overall management of total operations will be established at the entrance the area applied for Quarry Lease.

Workshop:

To facilitate the maintenance of all equipments, there is a central workshop is available at our Pandalgudi Mines for electrical, mechanical and instrumentation repairs.

Stores:

Central stores are located at centralized location at Pandalgudi Mines area to facilitate storage and issue of materials along with lifting, loading and unloading facilities.

A licensed fuel storage tanks is established at our Pandalgudi Mine premises and the daily requirement of HSD and other lubricants will be met by a licensed mobile browser.

Fire Fighting:

Fire tending arrangement will be provided at the mines site office with different types of extinguishers to deal with all kinds of fire like electrical, maintenance workshop

and HEMM operations. The vulnerable areas will be provided with fire alarms. Key persons are trained in fire fighting.

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First Aid:

First aid room at the site office, first aid boxes at rest shelter and close to the workings will be provided. All the personnel engaged in the mining activity are trained in first aid. Occupational Health Center is established at Our Pandalgudi Mines with required Paramedical staffs.

Employment potential:

Two shift operations will be practiced to meet the production requirements. The following table shows the man power will be engaged in this mine.

Sl.No	Post	Qualification/ Experience	Numbers	Category
1	Mines Manager	I Class Manager's Certificate of Competency.	1	Skilled
2	Foreman	Foreman's Certificate of Competency	2	Skilled
3	Mining Mates	Mate Certificate	2	Skilled
4	Mechanical Engineer	Diploma in Mech. Engg.	1	Skilled
5	Mechanics	ITI	1	Skilled
6	Time Keeper	Graduate	1	Skilled
7	Mechanical helpers	-	2	Semi-Skilled
8	Operators	Having heavy vehicles license holders	30	Skilled
Sub Total			**40**	

10.0 Mineral Beneficiation:

The management is proposing to establish a wet beneficiation plant (by Washing, Grinding and Floatation) at area applied for Fresh Quarry Lease to utilize the ROM kankar from this Quarry lease area in order to enhance the quality of ROM Kankar by reduction of

silica and to meet the cement plant quality requirement. With such beneficiation, we shall be able to blend the low grade in other mines and conserve the mineral. The proposed quantity of the beneficiated lime kankar from this Beneficiation plant is 6.0 Lakh tons per annum from the ROM material fed from area applied for quarry lease in addition to the other 4 leases being processed simultaneously. The concentrate (product) in the form of dewatered cakes shall be transported to factory and dewatered tailings shall be dumped within the lease / re-used effectively in future towards achieving Zero waste mining. The flow diagram of the proposed beneficiation system is enclosed as Annexure -10

Until the wet beneficiation system, is established and commissioned, the practice of simple dry screening in earlier leases will be continued to screen off the interstitial clay. The existing screening system established in the currently operating mining lease will be shifted to this quarry lease area. The ROM material from the mine will be transported to the screen system. This is a single deck screen normally having the mesh size of +25 MM (or) +15 MM. The mesh size is changeable. Based on the moisture content of the ROM material, the screen mesh size will be decided.

After screening, the product material will be dispatched to Pandalgudi Mines, where we have established common crushing and beneficiation facility for further processing.

11. OTHER PERMANENT STRUTURES

a) Power lines:

There is a HT Line passing on the North eastern part of the area considered for grant of Quarry Lease.

b) water bodies:

There is a small pond situated in S.F.No. 584/4 of T.Koppuchittanpatti Village. No major river found around the 5km radius.

c)Archaeological/Historical Monuments;

There is no archaeological important place, sanctuaries and monuments etc are found within 500m radius.

d)Road:

Koppuchittanpatti is the nearest village to the area applied for quarry lease at 1.0 km on South East direction. A black top road from Pandalgudi village is passing on the [illegible] portion of area. The existing company owned black road connecting the kankar mine being operated to Pandalgudi Crushing Plant will be extended up to this lease area for transport of lime kankar.

e)Reserve Forest/social forest /wild life sanctuaries etc

There is no reserve forest and wild life sanctuaries nearby to the area applied for Quarry Lease.

f)Any other structures etc: Nil.

PART B

12.0 ENVIRONMENTAL MANAGEMENT PLAN

12.1 Environment Base line information:

The area applied for Quarry Lease over an extent of 294.18.5 Ha. is falling in the vicinity of the currently operating Mining Lease for Limekankar and clay granted vide proceedings Lr.No.15823/MM3/2002 dated 24.11.2010. In order to assess the possible impact of mining of lime kankar and clay from the currently operating lease, the base line information on the existing environment being collected regularly for all four seasons (Summer, Winter and Post – Monsoon, Pre-Monsoon) and the same is discussed in detail in the following chapters. The above EIA /EMP being seasonally prepared by M/s Creative Engineers, Chennai for our operating Kankar Mine in this region.

12.1.1 Existing Land Use Pattern:

The entire Quarry lease area is of Non forest land. The major activity in the buffer zone of 10 kms radius area from quarry Lease is dry agriculture, active only in rainy season.

Most of the land in the area is Dry agricultural land (Where rain fed cultivation [illegible]) and waste land with bushes and shrubs.

12.1.2 **Water Regime**:

Surface Water Bodies:

The area is almost flat and plain terrain with a gentle slope towards south east. The Lease area covers neither major rivers (or) Minor River, only first order and second stream, finally drains in to Vaippar River. The odai traverse the Buffer and Core zone areas from NW-SE which is considered as the tributaries. Apart from this is no major drainage course that drains the mining block.

Hence, the study area covering the 10 Km radius from the mine area is a plain terrain. The overall general slope is towards Southeast. Moreover the area is dotted with villages including the hamlets are dotted with ooranies(Ponds) which receive rainwater during peak monsoon seasons. There are no major irrigation tanks in this area.

Ground Water Source :

From groundwater point of view, fractured crystalline rocks constitute the important aquifer systems in the study area. The type of aquifer is phreatic or water table unconfined aquifer. These aquifers are highly heterogeneous in nature due to variation in lithology, texture and structural features even within short distances. Ground water generally occurs under phreatic / water table conditions in the weathered mantle and under unconfined to semi-confined conditions in the fissured and fractured zones at deeper levels. The thickness of weathered zone in the district is in the range of 4 to 15 m. Since the mine is shallow in nature and the mining will not intersect water table.

12.1.3 **Quality of Air, Ambient Noise Level and Water;**

a) Ambient Air Quality:

During EIA study Ambient Air quality monitoring was carried out at 8 locations and the details are as below:

S.No.	LOCATION CODE	CODE
1.	Maravarperungudi Mines Office	MPA1
2.	Kambathupatti	MPA2
3.	Chettipatti	MPA3
4.	Suddhamadam	MPA4
5.	Maniyakaranpatti	MPA5
6.	Sivalarpatti	MPA6
7.	Pandalgudi	MPA7
8.	Pudur	MPA8

Sampling Methodology:

Standard monitoring and analysis procedures were adopted for determining the Air quality parameters. The parameters analyzed and methodology adopted for each parameter is briefly described here under:

S.No	*Parameter*	*National / International Std. Method*
1	Particulate Matter (PM10)	IS:5182:Part 23:2006
2	Particulate Matter (PM2.5)	Instrument manual
3	Sulphur dioxide (SO_2)	IS:5182: Part 02:2001
4	Nitrogen Dioxide (NO_2)	IS:5182: Part 06:2006
5	Carbon Monoxide (CO)	Gas analyzer manual
6	Lead (Pb)	IS:5182:Part 22:2004

Study of the Ambient air quality for 1Vth Quarter – January 2018 to March 2018 show that the PM 10 levels 50.6 $\mu g/m^3$ – 55.4 $\mu g/m^3$, PM 2.5 levels 24.3 $\mu g/m^3$ - 26.7 $\mu g/m^3$, So2 levels 4.8 $\mu g/m^3$ – 5.6 $\mu g/m^3$, NO_2 levels 8.2 $\mu g/m^3$ - 9.1 $\mu g/m^3$ While comparing with the NAAQ Norms, all monitored PM10, PM2.5, SO2, & NOx values were found to be well within the respective limit values.

The existing Ambient Air Quality levels for PM 10, PM 2.5 SO2 & NOX are within the prescribed CPCB limits for "Industrial, Residential, Rural & other areas" Results are tabulated and given vide **Annexure 7.**

b) Noise Levels:

Sound can be defined as atmospheric or air vibration perceptible to ear. Noise usually unwanted or undesired sound. Consequently, particular sound can be noise to one person and not to others or noise at one time and not at other time. The sound loud enough to be harmful is called noise without regard to its characteristics. Noise is a form of pollution because it can cause hearing impairment and psychological stresses.

Monitoring Locations & Methodology:

Noise measurements were carried out for a day once in a Season at about 6n locations. The locations are indicated below.

MONITORING LOCATIONS:

SL NO	LOCATION CODE	LOCATION
1	MPN1	Screening Plant at ML area
2	MPN2	Haul Road (Security Booth)
3	MPN3	Maravarperungudi
4	MPN4	Maniyakaranpatti
5	MPN5	Suddhamadam
6	MPN6	Kambathupatti

Methodology of Assessment:

Noise levels were measured using Envirotech sound level meter with data logger. Sound Pressure Level (SPL) measurements were measured at all locations continuously for a day. The data monitored during EIA studies is enclosed as **Annexure-08.**

c) Water Quality:

In order to access the impact on Ground Water, water samples were collected in the following 7 locations.

Location of Water Sampling Stations

S.NO.	LOCATION CODE	WATER TYPE	SOURCE
1	MPW1	Bore well	Maravarperungudi
2	MPW2	Bore well	Chettipatti
3	MPW3	Bore well	Kambathupatti
4	MPW4	Bore well	Suddhamadam
5	MPW5	Bore well	Sivalarpatti
6	MPW6	Bore well	Pandalgudi
7	MPW7	Bore well	Pudur

Methodology:

Parameters like Temperature, pH & Dissolved Oxygen were measured at site itself. Water samples were collected in 2 litre fresh cans as per IS 3025 Part - I and transported to the laboratory in Ice boxes. Microbiological samples are collected in sterilized bottles. The bottles were first rinsed with the sample water and then filled .Physical chemicals and microbiological parameters were analyzed as per the standard methods .The sampling and analysis of water was carried out as described in standard methods of water and waste water analysis (APHA) and IS 10500. Parameter wise methodology of analysis is given in test results.

Data Analysis:

Ground Water:

In case of the 7 ground water samples, the pH values were ranging in between 6.76 – 7.82, TDS values were found between 139 - 473 mg/l, Chloride values were found between 48.2-181 mg/, Calcium values were found between 12.3 – 43.0 mg/l, Magnesium values were found between 4.70 - 28.9 mg/l, sulphate values were found Between 18.2 - 84.6 mg/l, iron values were found to be less than 0.00 to 0.12 mg/l, and Fluoride values found between 0.11 – 0.45 mg/L respectively. The water quality of ground water was found to be within the prescribed IS: 10500 Norms for Drinking in the absence of an alternative source. The Surface water quality results for the

3 samples and Ground water quality results for the 7 samples collected and analysed reports are provided in **Annexure-09.**

Frequency of sampling:

Ground Water: Once in Month.

12.1.4 Climatic Conditions:

The nearest Rainfall gauge station is located at Aruppukottai which is at a distance of about 11 km on the North from this Mine. The Fifty years of Normal Rainfall recorded is 769 mm out of which, normal NE Monsoon Rainfall is 392.0 mm (Oct-Dec) Normal SW Monsoon Rainfall is 184.0 mm (Jun-Sep) Transit period rainfall from Jan to May is 193.0 m.

12.1.5 Location Of Sampling Stations:

All the monitoring stations are shown in the key plan and environmental management plan enclosed.

12.2 Environmental Impact Assessment:

12.2.1 Land Use Pattern:

The total area applied for quarry lease is 294.185 Ha. out of which, about 70.388 Ha. is occupied by Safety barrier of 10 m on either side of road, 50m on either side stream courses and 7.5 m on all along the quarry lease boundary. The effective area available for mining is 223.797Ha. An area about 63.0 Ha will be used for afforestation. The following table shows the land use pattern at the end of 5th Year and at the end of Mine life.

Sl No	Head	At End of 5th year (Area in Ha)	At End of Mine Life (Area in Ha)
-1-	-2-	-3-	-4-
1	Area of excavation	0.500	-
2	Mined Out Land (Refilled)	87.300	158.797
3	Storage of top soil	-	-
4	Overburden/dump	-	-
5	Mineral Storage	-	0.000
6	Infrastructure(Workshop/Building)	0.500	0.500
7	Roads	1.500	1.500
8	Green belt / Afforestation (Reclaimed area)	44.000	63.000
9	Others (Safety Barrier) (Partly Afforested)	70.388	70.388
	Total	**204.188**	**294.185**
	Unused land	90.00	0.00
	Grand Total	**294.185**	**294.185**

**** Out of 70.388 Ha., about 40.0 Ha. will be afforested**

12.2.2 Air Quality:

In any mining operations, due to mining activities like operation of HEMM, loading in the tippers and transportation activities, some quantity of dust is bound to be generated depending on the topography, nature of material handled and climatological parameters like wind speed, wind direction and stability classification of the area viz., location of buffer zone villages.

The other deleterious parameters of air quality to be considered for the proposed open cast mine shall be SO_2 & Nox. From the baseline data generated so far, it is found that the ambient air quality is within the permissible limits of CPCB.

12.2.3 Water Quality:

a) Surface water:

The surface water in the area is only rainwater passing through dry [illegible]. Since limekankar is an inert material, there will be no change in chemical quality. But there may be slight increase in the turbidity of water.

b) **Ground water:**

Since the depth of mining is hardly 3.0, there is no intersection of Ground Water and the mining activity doesn't have any adverse effect to the ground water regime.

12.2.4 Noise Level:

The noise level of the core & buffer zone have been reported in the base line data which shows that the noise levels are well within the limits as they represent only village activities. The work zone noise levels will be maintained as less than 90 dB(A) for the people exposed to various mining operations. The DGMS Prescribed exposure limit of 90 dB(A) for workmen in a 8-hour working shift.

12.2.5 Water Regime:

Surface Water Bodies :

There are no perennial water sources in the mining lease area. The mine site is in water scarce area with a very low annual average rainfall. The existing seasonal nallahs in the region remain dry and becomes active during rainy day.

Ground Water Source :

The water table will be encountered at 20 – 25m depth i.e. around 45m RL. There shall not be any disturbance on the existing drainage system by the future mining operations.

12.2.6 Historical Monuments

There is no historical monument within 10 kms radius.

12.3 ENVIRONMENT MANAGEMENT PLAN:

GENERAL:

The EMP is prepared for formulation, implementation and monitoring of all the developmental and environmental protection measures during the mining operations. Environmental Management measures are suggested to mitigate the possible negative impacts that may be caused to the various attributes of environment due to the proposed mining operations in area applied for Quarry Lease.

Control on Micro - Meteorological Aspects: -

Since the proposed area of mining operations is confined to a limited extent of 294.185 hectares there will be no appreciable change or adverse effect on the rainfall, temperature, humidity, and wind direction/ velocity at any point of time. This project is not expected to bear any change on the meteorological aspects.

Management Measures for Air Quality:

Dust generation in the working area can be controlled by suitable methods such as

1. Prevention of fine dust getting air borne by spraying water on the dust generation points
2. Development of green barriers along the roads, waste dumps and around statutory buildings.

Management Measures For Water Quality:

As mentioned earlier the only water that will encounter in the project is rain water. The following measures are advocated

1. Provision of garland drain to regulate and to drain the rain water from the quarry and direct its course away from the dumping areas. This will avoid carrying of silt to the near by fields, dumps shall not be exposed to the surface run-off, rain water passing from the higher elevations en-route and joining the water courses.
2. The dump is to be designed to have reverse slopes so that rain water does not flow on the dump slopes. This also helps in retaining the moisture and help in afforestation

Control Measures of Noise & Vibration:

The mining operations will not involve any drilling and blasting and the [illegible] kankar will be removed by excavators directly.

The following abatement measures will be under taken

1. Planting of trees with thick foliage along roads and around the lease boundary to act as acoustic barriers.
2. Regular preventive maintenance of machineries, the transport vehicles and belt conveyors would be ensures.
3. Provision of the silencers to modulate the noise generated by the machines shall be made where required.
4. Provision of ear muffs /ear plugs to excavator, loader operator. This is a statutory requirement from DOMS under MMR-. 1961.

Land Restoration:

The main intention of land reclamation is to restore the pristine ecological condition in the region that is prevailing because of mining. The degraded land due to various mining operations within the lease area need restoration or reclamation by taking up suitable management methods as spelt out below. These measures are both time bound and quantifiable for easy monitoring by regulatory agencies.

The steps adopted to reclaim the lease area are categorized as under and explained.

1. Green belt and afforestation
2. Refilling the mined out land.

MEASURE TO CONTROL EROSION / SEDIMENTATION OF WATER COURSES:

The dump tops are adequately sloped on the so as to prevent accumulation of water and heavy erosion. Earthen banks are provided on the non operating side of dumps to arrest wash off. It is proposed to plant neem and karuvelam along the foot of unused slopes of active dumps, to arrest and prevent erosion and sliding of dump slopes. Agave, Hamata

grass and Nuna will be planted on the slopes during season, to prevent erosion and selling.

GREEN BELT & AFFORESTATION:

The total area applied for quarry lease is 294.185 Ha. out of which, about 70.388 Ha. is occupied by Safety barrier of 10 m on either side of road, 50m on either side stream courses and 7.5 m on all along the quarry lease boundary. The effective area available for mining is 223.797Ha. An area about 63.0 Ha will be used for afforestation. Since we are going to adopt simultaneous refilling of mined out area, the excavated area will be refilled along with mine production. At the conceptual stage, an area 103.0 Ha. will be afforested, out of which 63.0 Ha. will be in the reclaimed area after mining and about 40.0 Ha. in the safety barrier out of 70.388 Ha. earmarked as Safety Barrier. It is proposed to afforest about 50.0 Ha. in the first 5 years period with 20,000 saplings as detailed below

Proposed Afforestation For First Five Years

YEAR	LOCATION	Extent in Ha	No.of Plants
I Year	Safety barrier and part of Reclaimed area	10	4000
II Year	Part of Reclaimed area	10	4000
III Year	Part of Reclaimed area	10	4000
IV year	Part of Reclaimed area	10	4000
V year	Part of Reclaimed area	10	4000
	TOTAL	**50**	**20000**

PRECAUTION AGAINST INUNDATION

There is a nallah passing through the area Quarry lease area. It is only of seasonal in nature. Since the area is of arid region, only small quantity of water is flowing in this nallah during the rainy season. However, we have formed a bund on either side of this nallah with 2 M height. For free flow of water, the entire water course is cleaned of obstructions.

HAZARD CONTROL

In the mining operations, the hazardous operations are running of machinery and transportation of minerals in the case of working of the mine as per metalliferous mines regulations and circulars issued by the director general of mines safety from time to time have to be strictly adhered to see that no untoward hazards are encountered

TREATMENT AND DISPOSAL OF WATER FROM MINE:

Since the mined out area will be refilled simultaneously, there will not be any open up pit to accumulate rain water/ground water. Hence treatment and disposal water does not arise.

MEASURES FOR MINIMISING ADVERSE EFFECTS ON WATER REGIME:

The surface run-offs due to rain are drained by natural courses like nallah. No adverse impact is fore seen on the existing water regime.

PROTECTIVE MEASURE FOR GROUND VIBRATIONS/ AIR BLAST CAUSED BY BLASTING:

Due to the soft nature and shallow occurrence Kankar, there is no requirement of drilling and blasting activity to mine this deposit.

MEASURE FOR PROTECTING HISTORICAL MONUMENTS AND FOR REHABILITATION OF THE HABITAT:

No historical monuments are located within 10 kms distance and hence need of protecting does not arise.

SOCIO-ECONOMIC BENEFITS ARISING FROM THE MINING:

The project will help to employ about 30 people by direct which include mine officials, skilled, semi skilled and unskilled labour besides providing indirect employment to many more people. The lessee shall extend social benefits like drinking water health care measure, educational benefits to the neighboring villagers.

The State and Central Governments will also get benefited in the form of revenues/ royalties, excise, taxes and cess etc. Ultimately the Kankar mining forms the basic activity

for the existing cement plant, which will benefit many more people who can depend upon it for their livelihood for a number of years. Apart from that many Socio Economic Welfare facilities are being provided to surrounding villages.

MONITORING SCHEDULES FOR DIFFERENT MINING ACTIVITIES:

The lessee as per the MOEF guidelines in respect of air, water, noise & vibrations, soil quality etc. will undertake the monitoring of Environmental parameters.

PART -III

13.0 PROGRESSIVE MINE CLOSURE PLAN

i. INTRODUCTION:-

Name of applicant /lessee	:	The Ramco Cements Limited,
Address	:	M/s. The Ramco Cements Limited V floor, Auras Corporate Centre, Dr. Radhakrishnan Road, Mylapore
Taluk	:	Chennai
District	:	Chennai
State	:	Tamil Nadu
Pin code	:	600 004
Phone	:	044- 28478666
Fax	:	044- 28478676
Email id.	:	pjb@ramcocements.co.in

Works:

	:	M/s. The Ramco Cements Limited
	:	Ramasamyraja Nagar : 626 204.
	:	Virudhunagar District,
	:	Tamil Nadu.
	:	Telegraphic address:"RAMCO", Ramasamiraja Nagar.
	:	Telex No.:0449-214 RAMS IN.
	:	Telephone: 04562-256201 and 04562-256241.

ii. Location and Extent of the Lease area:-

The area applied for Quarry lease at T.Koppuchittanpatti village is located between latitudes 9°26'08" N to 9°24'33" N and between longitudes 78°06'42" E to 78°08'03" E vide Survey of India Topo sheet No.58K/3. Refer Location Plan- **Plate-01** and Key Plan enclosed as **Plate-1A**. The general elevation of the area is 60 to 65 meters above MSL. A Cadastral maps showing the Quarry Lease area is enclosed as **Plate No-02**. Copy of Precise Area Communication by the State government is enclosed as **Annexure-2.**

District and State	Virudhunagar, Tamilnadu
Taluk	Aruppukottai
Village	T.Koppuchittanpatti
Khasra No./ Plot No./ Block Range/ Felling Series etc.	Details are furnished in **Annexure-2.**
Lease Area (hectares)	294.18.5 Ha.of Patta lands
Ownership / Occupancy	The entire area applied for quarry is patta land owned by The Ramco Cements Limited
Existence of public road / railway line, if any nearby and approximate distance	Madurai- Thoothukudi Highway (NH 45 B)- 1 Km East of Sethurajapuram Village. No railway line nearby and the nearest railway Station is at Aruppukottai @ 20 km. The nearest Airport is at Madurai @80 km and the nearest Port is at Thoothukudi @ 86 km.
Toposheet No. with latitude and longitude	58K/3 **Latitude:** 9°26'08"N to 9°24'33"N **Longitude:** 78°06'42"E to 78°08'03" E

Type of Lease Area:-

The area applied for Quarry Lease is non-forest land. The area is almost flat topography with an elevation difference of 60m to 65m above MSL. The surrounding lands are of dry type with seasonal crops and devoid of perennial vegetation.

13.1.0 Land use Pattern

The total area applied for quarry lease is 294.185 Ha. out of which, about 70.388 Ha. is occupied by Safety barrier of 10 m on either side of roads, 50m on either side stream courses and 7.5 m on all along the quarry lease boundary. The effective area available for mining is 223.797Ha. An area about 63.0 Ha will be used for afforestation. The following table shows the land use pattern at the end of 5th Year and at the end of Mine life.

Sl No	Head	At End of 5th year (Area in Ha)	At End of Mine Life (Area in Ha)
-1-	-2-	-3-	-4-
1	Area of excavation	0.500	-
2	Mined Out Land (Refilled)	87.300	158.797
3	Storage of top soil	-	-
4	Overburden/dump	-	-
5	Mineral Storage	-	0.000
6	Infrastructure(Workshop/Building)	0.500	0.500
7	Roads	1.500	1.500
8	Green belt / Afforestation (Reclaimed area)	44.000	63.000
9	Others (Safety Barrier) (Partly Afforested)	70.388	70.388
	Total	**204.188**	**294.185**
	Unused land	90.00	0.00
	Grand Total	**294.185**	**294.185**

**** Out of 70.388 Ha., about 40.0 Ha. will be afforested**

13.2.0 Management Measures for Air Quality:

Dust generation in the working area can be controlled by suitable methods such as

1. Prevention of fine dust getting air borne by spraying water on the dust generation points
2. Development of green barriers along the roads, waste dumps and around statutory buildings.

13.3.0 Management Measures For Water Quality:

As mentioned earlier the only water that will encounter in the project is rain water. Since

the most of the area will be refilled simultaneously with mine production, the rainwater will be allowed for natural infiltration to recharge the ground water.

13.4.0 Control Measures of Noise & Vibration:

The mining operations will not involve any drilling and blasting and the lime kankar will be removed by excavators directly.

The following abatement measures will be under taken

1. Planting of trees with thick foliage along roads and around the lease boundary to act as acoustic barriers.
2. Regular preventive maintenance of machineries, the transport vehicles and belt conveyors would be ensures.
3. Provision of the silencers to modulate the noise generated by the machines shall be made where required.
4. Provision of ear muffs /ear plugs to excavator, loader operator. This is a statutory requirement from DOMS under MMR-. 1961.

13.5.0 Land Restoration:

The main intention of land reclamation is to restore the pristine ecological condition in the region that is prevailing because of mining.

The degraded land due to various mining operations within the lease area need restoration or reclamation by taking up suitable management methods as spelt out below. These measures are both time bound and quantifiable for easy monitoring by regulatory agencies.

The steps adopted to reclaim the lease area are categorized as under and explained.

1. Green belt and afforestation
2. Refilling the mined out land.

13.6.0 STABILISATION OF THE DUMPS:

There will not be any over burden or Mineral reject dump within the lease area

13.7.0 MEASURE TO CONTROL EROSION / SEDIMENTATION OF WATER COURSES:

Does not arise

13.8.0 GREEN BELT & AFFORESTATION:

The total area applied for quarry lease is 294.185 Ha. out of which, about 70.388 Ha. is occupied by Safety barrier of 10 m on either side of road, 50m on either side stream courses and 7.5 m on all along the quarry lease boundary. The effective area available for mining is 223.797Ha. An area about 63.0 Ha will be used for afforestation. Since we are going to adopt simultaneous refilling of mined out area, the excavated area will be refilled along with mine production. At the conceptual stage, an area 103.0 Ha. will be afforested, out of which 63.0 Ha. will be in the reclaimed area after mining and about 40.0 Ha. in the safety barrier out of 70.388 Ha. total earmarked as Safety Barrier. It is proposed to afforest about 50.0 Ha. in the first 5 years period with 20,000 saplings as detailed below

Proposed Afforestation For First Five Years

YEAR	LOCATION	Extent in Ha	No.of Plants
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III Year	Part of Reclaimed area	10	4000
IV year	Part of Reclaimed area	10	4000
V year	Part of Reclaimed area	10	4000
	TOTAL	**50**	**20000**

13.9.0 Tailing dam management:

Does not arise.

13.10.0 Infrastructure:

When the mine is permanently closed after exhausting entire mineable kankar, the road will be used for maintaining the green belt developed. The road will also serve the local public for commuting. The power line will be surrendered and associated materials like

transformers, conductors, etc will be disposed off. We do not have permanent installations of machine, but only mobile mining equipments. All the machinery will be disposed off or shifted to other operating mines on need based.

13.11.0 Disposal of mining machinery:-

We will have only the mobile mining equipments and no permanently installed machines. The mobile mining equipments will disposed after reaching OEM specified run hours.

13.12.0 Safety and Security:-

The depth of mining is hardly 2.5 to 3.0 m deep, hence does not pose much problem in safety aspect. As a measure of safety, peripheral bund all along quarry lease area will be formed to avoid unauthorized entry to the excavated area. Proper plantation will be raised all along the periphery of the worked out pit.

13.13.0 . Disaster Management and Risk Assessment:

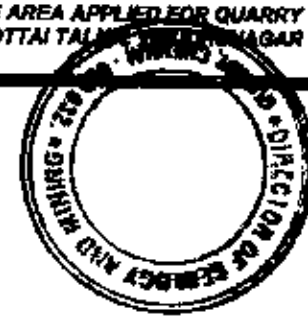
Risk assessment is a process whereby risks are analyzed, assessed and risk management priorities are evaluated. It is defined as the characterization of the potential adverse effect to human health & environment due to environmental hazards.

Objectives of risk assessment:-

- identifying hazardous activities
- assessment of risk level and severity in different operations
- identification of control measures
- setting monitoring process
- reduce the impact of mishaps of all kinds
- reduce the inherent potential for major accidents

Methodology of Risk assessment:-

- Collection of Information & identification of hazard
- Classify their severity and probability of occurrence
- Identification of exposed risks
- Assess the risk and risk rating based on
- Probability



- Exposure
- Consequence
- Prioritization of the risks
- Implementation of control measures
- Monitoring risk assessment
- Evaluation and correction

Risk assessment is mainly based on the environmental impact of various parameters.

S.No	Factors	Causes of risks	Control measures
1	Removal of O.B	a) Top soil bench may slide due to its unconsolidated nature. b) Vibration due to movement of vehicles in the O.B benches	Only 1.5 m high, does not slide. Only a small portion will be under active mining and rest of the area will be refilled simultaneously.
2	Drilling	a)Due to high pressure of compressed air hoses may burst b)Drill rod may broken due to improper maintenance of the rod	No drilling and hence no compressors is required to mine this deposit
3	Blasting	a) Fly rock, ground vibration and noise etc., b) Improper charging of explosives	No Blasting is required to mine the deposit

4	Excavation of Ore	a)Hauling and loading equipment are in such proximity while excavation b)Swinging of bucket over the body of tipper c) Driving of un authorized person	Operator shall not operate machine when person & vehicle are in such proximity Shall not swing the bucket over the cab and operator leaves the machine after ensuring the bucket is on ground Shall not allow any unauthorized person to operate the machine by effective supervision
5	Transportation of ore	a)Operating the vehicle " nose to tail" b) Overloading of material c) While reversal & overtaking of vehicle d) Operator of truck leaving his cabin when it is loaded	It will be ensured that all these causes will be nullified by giving training to the operators No over loading Audio visual reverse horn will be provided Proper training will be given
6	Fire due to electricity and Oil	a)Due to the short circuit of cables & other electrical parts b) Due to the leakage of inflammable liquid like diesel, oil etc,	All electrical parts shall be cleaned frequently with the help of dry air blower All fastening parts and places will be tightening.
7	Natural calamities	Unexpected happenings	The mine management is capable to deal with the situation

The management is able to deal with the situation efficiently to reduce confusion keeping in view of the likely sources of danger in the mine.

The area does not have any water body or river to inundate the mine. Proper fencing and bunds will help inadvertent entry of animals. We have Pit safety committee, which monitors safety, related aspects in the mine and has drawn a management plan to deal with any emergency. The contact persons in wake of any emergency are given below.

Mr. P.JAGDISH BABU,
Sr.Dy. General Manager (Mines),
M/s The Ramco Cements Ltd.,
Pandalgudi (Po),
Virudhunagar Dt.
PIN 626113
Phone: 04566 261380.

13.14.0 Care and maintenance during temporary discontinuance:

If the mine is discontinued due to extraneous factors like Government ruling or unforeseen circumstances, the proper safety measures like bunds and security arrangements will be made. Watch and ward will be arranged to take care of plantation and installations. If the mine will be discontinued temporarily for more than 120 days, notice will be given 30 days before the date of such discontinuance to the concerned authorities. During discontinuance period safety arrangement and fencing will be provided to avoid the entry of unauthorized persons. The accessibility to the mine from the surface will be prevented by providing fencing arrangement.

14.0 ECONOMIC REPERCUSSIONS OF CLOSURE OF MINE AND MAN POWER RETRENCHMENTS

i. No. of local residents employed in the mine, status of the continuation family occupation and scope of joining the occupation back:

There is no man power retrenchment because the employees employed in the mine will be transferred to the other working mines of the same organization.

ii. Compensation given or to be given to the employees connecting with sustenance of himself and their family members:

For the employees in our permanent roll, they will be given alternate employment for the sustenance of themselves and family members even if this mine is closed.

iii. Satellite occupations connected to the mining industry – number of persons engaged therein – continuance of such business after mine closes:

Auto Workshops have come up in the village nearer to the mine to attend the break down / repair work on private trucks / tippers. Nearly 30 persons are working in the workshops. Since the Auto Workshops are situated on the NH 45-B, these workshops not only attend the break down / maintenance work on contract vehicles which are being used in the mines but also to the vehicles plying on the NH 45-B. Hence the running of the workshops will not be affected even the mine is closed.

iv. Continued engagement of employees in the rehabilitated status of mining lease area and any other remnant activities:

After the mine is rehabilitated, there will not be any other activity, and hence no employments other than engaging watch and ward to protect the afforested area and illegal entry and occupation of the property. Persons engaged for this purpose will be paid suitably.

v. Envisaged repercussions on the expectation of the society around due to closure of mine:

There will not be any major repercussions on the expectations of society around the mine due to closure. Person on roll at the time of closure, will get benefit as per the State Government Guideline as applicable at the time of retrenchment.

15.0 TIME SCHEDULE FOR ABANDONMENT OF PART OF THE MINE:-

The available reserves in this deposit will lost for about 10 years. Activities like reclamation and afforestation will start in the day one itself and the mined out area will be refilled simultaneously along with production and development. The afforestation programme will continue till 10th year end and hence the Permanent closure will arise only thereafter.

16.0. ABANDONMENT COST:

This does not arise since the proposal is for progressive closure. The abandonment cost will be discussed in the final closure plan and is not applicable for the present.

Date: 11.05.2017
Place: Pandalgudi

L .VENKATARAMASUBRAMANIAN
Qualified Person

R.RENGARAJ
Qualified Person

This mining Plan is approved under the powers conferred under rule 43 (8) of TNMMCR, 1959 and authorization issued by the Government vide G.O. (D) No. 23 Industries (MMC.1) Department dated 15.02.2018.

Additional Director of Geology and Mining

This Mining Plan is Approved Subject to the Conditions / Stipulation indicated in the Mining Plan Approval Letter No. 585/mm1b/18 Dated 30/5/2018

Rajapalayam Raja Nagar, Virudhunagar District
Tamil Nadu, Pin: 626 204
Ph: 04562 - 256 201 to 203
Fax: 04562 - 258 268
Website: www.ramcocements.in
Corporate Identity Number: L26941TN1957PLC003588

THE RAMCO CEMENTS LIMITED

(formerly Madras Cements Ltd.)

DECLARATION OF THE LESSEE

The Mining Plan in respect of Lime kankar and Clay (Black Cotton Soil) over an extent of 294.185 hectares of Patta lands in T.Koppuchittampatti Village, Aruppukottai Taluk, Virudhunagar District, Tamilnadu State (Precise area communicated vide Letter No. 1769/MMC.2/2018-1, Dated 12.03.2018) has been prepared in full consultation with me.

I have understood its contents and agree to implement the same in accordance with Laws, Rules and Act applicable to Quarry under Tamilnadu Minor Mineral Concession Rules, 1959.

Place : R.R.Nagar
Date : 11.05.2018

(S.RAMALINGAM)
Authorized Signatory

THE RAMCO CEMENTS LIMITED
(formerly Madras Cements Ltd)

Ramasamy Raja Nagar Virudhunagar District
Tamil Nadu Pin 626 204
Ph 04563 256 201 to 203
Fax: 04563 256 268
Website: www.ramcocements.in
Corporate Identity Number L26941TN1957PLC003566

CONSENT LETTER FROM LESSEE

The Mining Plan for quarrying Lime kankar and Clay (Black Cotton Soil) over an extent of 294.185 hectares of Patta lands in T.Koppuchittampatti Village, Aruppukottai Taluk, Virudhunagar District, Tamilnadu State (Precise area communicated vide Letter No. 1769/MMC.2/2018-1, Dated 12.03.2018) has been prepared by **Mr.L.VENKATARAMA SUBRAMANIAN (Qualified Person)** and **Mr.R.RENGARAJ (Qualified Person).**

This is to request the District Collector, Virudhunagar to make any further correspondence regarding the Modification of the Mining Plan with the said Qualified Person at his address below :-

Mr. L. VENKATARAMASUBRAMANIAN M.Sc., (Qualified Person) Asst.General Manager (Geology), The Ramco Cements Limited, Pandalgudi Village, Aruppukottai Taluk, Virudhunagar District – 626 113. Mobile: 99944 42482	**Mr. R.RENGARAJ** M.Sc., (Qualified Person) Manager (Geology), The Ramco Cements Limited, Pandalgudi Village, Aruppukottai Taluk, Virudhunagar District – 626 113. Mobile: 94426 30455

I/We hereby undertake that all modifications if any made in the Mining Plan by the said Qualified Person may be deemed to have been made with our knowledge and consent and shall be acceptable on us and binding in all respects.

Place : R.R.Nagar
Date : 11.05.2018

(S.RAMALINGAM)
Authorized Signatory

THE RAMCO CEMENTS LIMITED
(formerly Madras Cements Ltd.)

Ramasamy[illegible] Nagar Virudhunagar District
Tamil Nadu Pin-626 204
Ph: 0456[illegible] 201 to 203
Fax: 0456[illegible] 268
Website: www.ramcocements.in
Corporate Identity Number: L26941TN1957PLC003566

CERTIFICATE FROM THE RECOGNIZED QUALIFIED PERSON

This is to certify that the Provisions of Tamilnadu Minor Mineral Concession Rules, 1959 have been observed in the Preparation of Mining Plan for Limekankar and Clay (Black Cotton Soil) over an extent of 294.18.5 Ha. in T.Koppuchittanpatti Village, Aruppukottai Taluk, Virudhunagar District, Tamilnadu State has been prepared for

M/s. The Ramco Cements Limited,
Ramasamyraja Nagar,
Virudhunagar Taluk & District,
Tamilnadu – 626204
PH: 04562-256201

Whenever specific permissions / exemptions / relaxations and approvals are required, the applicant will approach the concerned authorities of the District Collector, Virudhunagar, Tamilnadu for such permissions / exemptions / relaxations and approvals.

It is also certified that information furnished in the above Scheme of Mining are true and correct to the best of my knowledge.

Place : R.R.Nagar
Date : 11.05.2018

(L.VENKATARAMASUBRAMANIAN)
Qualified Person

(R.RENGARAJ)
Qualified Person

ANNEXURE – I

Certificate of Incorporation

भारत सरकार–कॉर्पोरेट कार्य मंत्रालय
कम्पनी रजिस्ट्रार कार्यालय, तमिलनाडु, चैन्नई, अंदमान और निकोबार द्वीप

नाम परिवर्तन के पश्चात नया निगमन प्रमाण–पत्र

कॉर्पोरेट पहचान संख्या : L26941TN1957PLC003566

मैसर्स MADRAS CEMENTS LIMITED

के मामले मे, मैं एतद्द्वारा सत्यापित करता हूँ कि मैसर्स
MADRAS CEMENTS LIMITED

जो मूल रूप में दिनांक तीन जुलाई उन्नीस सौ सत्तावन को कम्पनी अधिनियम, 1956 (1956 का 1) के अंतर्गत मैसर्स
MADRAS CEMENTS LIMITED

के रूप मे निगमित की गई थी, ने कम्पनी अधिनियम, 1956 की धारा 21 की शर्तों के अनुसार विशिष्ट आवश्यक विनिश्चय पारित करके तथा लिखित रूप में यह सूचित करके की उसे भारत का अनुमोदन, कम्पनी अधिनियम, 1956 की धारा 21 के साथ पठित, भारत सरकार, कम्पनी कार्य विभाग, नई दिल्ली की अधिसूचना स का नि 507 अ दिनांक एस आर एन दिनांक 05/08/2013 के द्वारा प्राप्त हो गया है, उक्त कम्पनी का नाम आज परिवर्तित रूप में मैसर्स 24 6 1985 B80799745
THE RAMCO CEMENTS LIMITED

हो गया है और यह प्रमाण–पत्र, फर्मिल अधिनियम की धारा 23(1) के अनुसरण में जारी किया जाता है।

यह प्रमाण–पत्र चैन्नई में आज दिनांक पांच अगस्त दो हजार तेरह को जारी किया जाता है।

GOVERNMENT OF INDIA - MINISTRY OF CORPORATE AFFAIRS
Registrar of Companies, Tamil Nadu, Chennai, Andaman and Nicobar Islands

Fresh Certificate of Incorporation Consequent upon Change of Name

Corporate Identity Number : L26941TN1957PLC003566

In the matter of M/s MADRAS CEMENTS LIMITED

I hereby certify that MADRAS CEMENTS LIMITED which was originally incorporated on Third day of July Nineteen Hundred Fifty Seven under the Companies Act, 1956 (No. 1 of 1956) as MADRAS CEMENTS LIMITED having duly passed the necessary resolution in terms of Section 21 of the Companies Act, 1956 and the approval of the Central Government signified in writing having been accorded thereto under Section 21 of the Companies Act, 1956, read with Government of India, Department of Company Affairs, New Delhi, Notification No. G.S.R 507 (E) dated 24/06/1985 vide SRN B80799745 dated 05/08/2013 the name of the said company is this day changed to THE RAMCO CEMENTS LIMITED and this Certificate is issued pursuant to Section 23(1) of the said Act

Given at Chennai this Fifth day of August Two Thousand Thirteen.

Registrar of Companies, Tamil Nadu, Chennai, Andaman and Nicobar Islands

कम्पनी रजिस्ट्रार, तमिलनाडु, चैन्नई, अंदमान और निकोबार द्वीप

*Note: The corresponding form has been approved by HENRY RICHARD, Registrar of Companies and this certificate has been digitally signed by the Registrar through a system generated digital signature under rule 5(2) of the Companies (Electronic Filing and Authentication of Documents) Rules, 2006

The digitally signed certificate can be verified at the Ministry website (www.mca.gov.in)

कम्पनी रजिस्ट्रार के कार्यालय अभिलेख में उपलब्ध पत्राचार का पता :
Mailing Address as per record available in Registrar of Companies office.

THE RAMCO CEMENTS LIMITED
"RAMAMANDIRAM", , VIRUDHUNAGAR DIST.
RAJAPALAYAM - 626117,
Tamil Nadu, INDIA

MADRAS CEMENTS LTD.

Corporate Office : [illegible]
V Floor, 98-[illegible] Road,
Mylapore, [illegible] - 600 004.
Phone : 04[illegible]78666, 28478656
Fax : 044 - [illegible]676 Grams : RAM CE[illegible]

30 May 2013

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED BY THE BOARD OF DIRECTORS AT THE MEETING HELD ON 30.5.2013

"RESOLVED that the Board of Directors be and hereby approve that the name of the Company be changed from Madras Cements Limited to "THE RAMCO CEMENTS LIMITED", subject to the approval of Registrar of Companies, Ministry of Corporate Affairs and subject to passing of a Special Resolution by the Members of the Company and subject to such approvals, as may be necessary.

RESOLVED FURTHER that the consequential changes in the Memorandum and Articles of Association of the Company shall also be carried out.

RESOLVED FURTHER that Shri.P.R.Ramasubrahmaneya Rajha, Chairman & Managing Director, Shri.A.V.Dharmakrishnan, Chief Executive Officer and Shri.K.Selvanayagam, Secretary of the Company be and are hereby severally authorised to submit necessary applications, forms, documents, etc. and to do such acts as may be necessary to give effect and to implement the Resolution".

/CERTIFIED TRUE COPY/

For MADRAS CEMENTS LTD.

K S Nayagam

K. SELVANAYAGAM
SECRETARY

Registered Office : 'Ramamandiram', Rajapalaiyam - 626 117. Tamil Nadu.
Factories : Kumarasamy Raja Nagar (Post) - 521 457, Jaggayapet, Krishna Dist., Andhra Pradesh. Ph : 08654 - 224400. Fax : 08654 - 222532
Ramasamy Raja Nagar (Post) - 626 204. Virudhunagar Dist., Tamil Nadu Ph : 04562 - 256201, 256202, 256203, 256214, 256241. Fax : 04562 - 256268
P.A.C. Ramasamy Raja Nagar, Alathiyur Works, Cement Nagar (Post), Sendurai Taluk, Ariyalur District, Pin code - 621 730 Tamil Nadu. Ph : 04329 - 240305, 240306, 240322 to 240324. Fax : 04329 - 240303
Methodu Works (Post) - 577 533. Hosadurga Taluk, Chitradurga District. Karnataka State. Ph : 08199 - 240039, 240108, 240111. Fax : 08199 - 240314
Govindapuram Works, Sendurai Road, Ariyalur Taluk - 621 713, Ariyalur District, Tamil Nadu Ph : 04329 - 228001, 228002, 228003, 228004. Fax : 04329 - 228005

ANNEXURE – 2

Precise Area Communication letter

Industries (MMC.2) Department,
Secretariat, Chennai – 600 009.

Letter No.1769/MMC.2/2018 , dated 12.03.2018

From

Thiru K.Gnanadesikan, I.A.S.,
Additional Chief Secretary to Government.

To

The President (Manufacturing)
The Ramco Cements Ltd,
Ramasamyraja Nagar,
Virudhunagar District. (w.e.)

Sir,

Sub: Industries - Mines and Minerals - Minor Mineral – Quarry Lease Application of Tvl. The Ramco Cements Ltd, for quarrying Limekankar and Clay (Black Cotton Soil) in S.F.Nos.83/1A,1C,2A,2B,etc., in T.Koppuchithampatti Village, Aruppukottai Taluk, Virudhunagar District - over an extent of 381.85.0 Hectares of Patta lands – Precise Area for an extent of 294.18.5 hectares only recommended and communicated – Approved Mining Plan and Environment Clearance Certificate – Requested.

Ref:
1. Your Quarry Lease application dated 25.05.2017.
2. From the District Collector, Virudhunagar District, Letter Rc.No.KV1/14472/2017 dated 24.01.2018.
3. From the Commissioner of Geology and Mining, File Rc.No.585/MM10/2018, dated 05.02.2018.

****

I am directed to invite your attention to the reference third cited wherein the Commissioner of Geology and Mining has recommended your quarry lease application for quarrying Limekankar and Clay (Black Cotton Soil) over an extent of 294.18.5 Hectares only (Out of the total applied area of 381.85.0 hectares) of Patta lands in S.F.Nos. 208/1,209/1A, 209/1B,209/2, etc., of T. Koppuchithampatti Village, Aruppukottai Taluk,

Virudhunagar District for a period of 10 years under Rule 43 of the Tamil Nadu Minor Mineral Concession Rules, 1959.

2. In this connection, I am directed to request you to furnish an approved mining plan for the above said precise area (as annexed herewith) by incorporating the following conditions to the Government through the Director of Geology and Mining within a period of 3 months as per sub-rule 13 of Rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959:

i. A safety distance of 7.5 mts., shall be maintained to the adjoining patta lands situated in and around the applied area for lease and the applicant company should take all precautionary measures while quarrying without disturbing the adjacent patta and agricultural lands.

ii. Approach to the intervening patta lands shall be provided and maintained.

iii. The applicant company should maintain necessary safety distance of 50 mts on either side of Odai, Kuttai, Oorani and vari and 10 mts on either side of cart track.

iv. The applicant company should not disturb the High Tension electric line passing through the quarry lease applied area while quarrying and should maintain 50 mts safety distance on either sides of the HT Power line.

v. The applicant company is allowed to quarry limekankar and clay only. If any mineral other than limekankar and clay is discovered while quarrying, the applicant company shall not mine or dispose of such mineral and it should be intimated to Government within 30 days from the date of discovery of such new mineral(s) as per Rule 36 (3) of the Tamil Nadu Minor Mineral Concession Rules, 1959.

vi. The applicant company should make its own arrangements to form approach road.

vii. No hindrance should be created to the adjoining patta land owners. Similarly, no hindrance should be created to the habitant who are living along the transportation pathway.

viii. Quarrying operation should be confined within the revised area of 294.18.5 Hects.

ix. The applicant company should produce latest no mining lease certificate in respect of other lease areas before the execution of lease deed.

x. In respect of lands where surface right was obtained by way of registered sale deeds, copies of Chitta and other village accounts shall be produced before the execution of the lease deed.

xi. As the area applied for quarry lease to quarry Limekankar and clay is more than 50.00.0 Ha, necessary Environment Clearance should be obtained from the Ministry of Environment and Forests, New Delhi by the applicant company.

xii. Consent from the Tamil Nadu Pollution Control Board should be obtained before the commencement of quarrying operation.

xiii. If any violation is found during quarrying operation, the penal provisions of the Tamil Nadu Minor Mineral Concession Rules, 1959 and other Acts and Rules in force will attract.

3. I am also directed to request you to obtain and produce Environment Clearance Certificate from the Ministry of Environment and Forests, New Delhi before grant of quarry lease.

Yours faithfully,

S. P. [signature] 13/3/2018

for Additional Chief Secretary to Government

[signature] 13/3/18

Copy to:

The Director of Geology and Mining,
Guindy, Chennai- 600 032.

The District Collector,
Virudhunagar District.

Area recommended for the grant of quarry lease

Annexure - 1

Sl.	SF. No	Sub Div	Extent In Ha.	Sl.	SF.No	Sub Div	Extent In Ha.	Sl.	SF. No	Sub Div	Extent in Ha.
1	208	1	0.385	51	219	2	0.455	101	233	1	0.550
2	209	1A	0.600	52	219	3	0.845	102	234	2	0.585
3	209	1B	0.540	53	219	4	0.675	103	234	3A	0.610
4	209	2	0.585	54	219	5	0.650	104	234	3B	0.620
5	209	3	0.335	55	219	6	0.445	105	235	2A	0.310
6	210	1A	0.365	56	220	2	0.640	106	235	2B	0.300
7	210	2	0.765	57	220	5	0.340	107	235	4	0.585
8	210	3A	0.560	58	221	2	0.225	108	235	5	0.640
9	210	3B	0.500	59	221	3	0.225	109	235	3	0.640
10	211	2 Part	1.695	60	221	4	0.215	110	246	2	0.430
11	211	3	0.125	61	222	2	0.530	111	246	3A	0.105
12	211	4	0.130	62	222	3A	0.300	112	246	3B	0.200
13	212	1	0.510	63	222	4	0.895	113	246	3C Part	0.110
14	212	2	0.285	64	222	5	1.070	114	246	4	0.500
15	212	3	0.245	65	223	2B1	0.960	115	246	5	1.255
16	212	4	0.250	66	224	1	0.630	116	247	1B	0.225
17	212	5	0.430	67	224	2	0.585	117	247	2	0.430
18	213	2A	0.450	68	224	4	0.310	118	247	4A	0.290
19	213	2B	0.455	69	225	1A	0.200	119	247	4B	0.270
20	213	3	0.480	70	225	1B	0.205	120	247	4C	0.280
21	213	4	0.525	71	225	2	0.400	121	247	7A	0.670
22	213	5	0.245	72	225	3	0.480	122	247	7B	0.175
23	214	3B	0.305	73	226	5	0.645	123	248	1	0.275
24	214	3C	0.260	74	226	6	0.275	124	248	2	0.545
25	214	3E	0.120	75	226	7	0.225	125	248	3	0.370
26	214	1	0.945	76	226	8	0.745	126	248	4	0.285
27	214	2	0.770	77	226	9	0.790	127	248	5A	0.210
28	214	3D	0.150	78	227	1	0.500	128	248	5B	0.200
29	215	2	0.325	79	227	2	0.470	129	248	6	0.305
30	215	3	0.385	80	227	4	0.585	130	248	7	2.675
31	215	4	0.695	81	227	5 Part	0.205	131	253	4	0.460
32	215	8A	0.540	82	227	3	1.110	132	259	1	0.280
33	215	8B	0.545	83	228	3A1	1.380	133	259	2	0.460
34	216	2	0.610	84	228	3B	0.810	134	259	6	1.410
35	216	3	0.435	85	228	5	0.650	135	259	7	1.380
36	216	4	0.470	86	229	1B	0.330	136	259	5	1.145
37	216	6	0.530	87	229	1C	0.330	137	260	1	0.690
38	217	3A	0.460	88	229	2	0.815	138	260	2	1.270
39	217	3B	0.380	89	229	3A	0.745	139	261	1	1.015
40	217	2	0.880	90	229	3B	0.745	140	261	2	1.000
41	218	1	1.485	91	229	3C	0.350	141	261	3A	0.360
42	218	2A	0.590	92	229	3D	0.145	142	261	5	1.255
43	218	2B	0.590	93	229	3E	0.145	143	261	4	0.520
44	218	3A	0.120	94	232	1	0.590	144	262	1	0.745
45	218	3B	0.170	95	232	3	0.585	145	262	2A	0.710
46	218	4A	0.125	96	233	2	0.540	146	262	2B	0.650
47	218	4B	0.180	97	233	3A	0.290	147	262	3	0.470
48	218	5A	0.100	98	233	3B	0.250	148	262	4	0.500
49	218	5B	0.255	99	233	3C	0.340	149	262	5	0.240
50	218	5C	0.230	100	233	3D	0.270	150	262	6	0.290

Sl.	SF. No	Sub Div	Extent in Ha.	Sl.	SF.No	Sub Div	Extent in Ha.	Sl.	SF. No	Sub Div	Extent in Ha.
151	263	1	1.175	201	272	4B	0.220	251	287	1A	0.630
152	263	2A	0.420	202	272	5	0.765	252	287	1B	0.840
153	263	2B	0.360	203	273	1B	0.340	253	287	1C	0.360
154	263	2C	1.840	204	273	3	0.625	254	287		1.480
155	264	1	0.140	205	273	4	0.785	255	288	2	0.210
156	264	2	0.090	206	273	5	0.440	256	288	3	1.360
157	264	4	1.385	207	273	6	0.415	257	288	3	1.160
158	264	7	0.530	208	273	1A	0.340	258	290		2.965
159	264	8	0.760	209	274	2A	0.615	259	291	2A	0.555
160	264	9	0.175	210	274	2B	0.705	260	291	2B	0.445
161	265	1	1.175	211	274	3	0.310	261	291	3	0.840
162	265	2	1.195	212	274	4	0.355	262	291	4	1.410
163	265	3	1.165	213	274	5	0.710	263	292	1	0.860
164	265	4	0.540	214	274	6	0.650	264	292	2	0.855
165	266	1A	0.680	215	275	1	0.650	265	292	3	0.810
166	266	3A	0.590	216	275	2	1.010	266	292	4	0.810
167	266	3B	0.645	217	275	4A	0.560	267	293	3A	0.705
168	266	4	0.360	218	275	5A	0.440	268	293	3B	0.425
169	267	4	0.370	219	276	1A	0.120	269	293	4	0.390
170	267	7	0.355	220	276	1B	0.125	270	293	2B	0.445
171	268	1A	0.225	221	276	2	1.010	271	293	2C	0.420
172	268	1B	0.230	222	276	3	0.680	272	294	2	1.115
173	268	1C	0.225	223	276	4	0.745	273	294	3	0.370
174	268	1D	0.440	224	276	5	0.975	274	294	4	0.320
175	268	1E	0.460	225	277	1A	0.840	275	294	5	0.465
176	268	1F	0.450	226	277	1B	0.385	276	295	2	2.895
177	268	2	0.705	227	277	1C	0.355	277	296	2	1.475
178	268	3	0.690	228	277	2	0.890	278	296	3	0.980
179	269	1A	0.470	229	277	3	0.840	279	296	4	0.880
180	269	3	0.570	230	278	1A	0.475	280	297	2	3.065
181	269	4A	0.285	231	278	1B	0.200	281	298	2	0.790
182	269	4B	0.280	232	278	2	0.290	282	298	3A	0.600
183	269	4C	0.045	233	278	3	0.735	283	298	3B	0.600
184	269	5	0.365	234	278	4	0.110	284	298	4	0.060
185	269	6	0.545	235	278	6	1.000	285	298	6	0.330
186	269	7	0.470	236	279	1D	0.580	286	298	7	0.815
187	269	8	0.210	237	280	1	0.415	287	546	2	0.730
188	270	2	0.415	238	280	2	0.475	288	546	3	0.625
189	270	3A	0.700	239	280	3	0.845	289	546	5	0.385
190	270	3B	0.180	240	280	4	0.970	290	546	6	1.800
191	270	4A	0.930	241	281	1A	0.580	291	546	1	0.720
192	270	4B	0.435	242	281	1B	0.510	292	547	1	1.200
193	270	5	0.600	243	281	2A	0.780	293	547	2	0.465
194	271	1	0.500	244	281	2B	0.820	294	547	5	0.880
195	271	2A	1.030	245	281	2C	0.560	295	547	6	0.940
196	271	2B	0.280	246	282	4	0.965	296	554	2 Part	0.260
197	272	1	0.415	247	283	1A	0.750	297	554	3	0.945
198	272	2	0.390	248	283	1B	0.630	298	554	4	0.485
199	272	3	0.850	249	283	2A	0.280	299	554	6	0.395
200	272	4A	0.770	250	283	2B	1.430	300	554	7	1.770

Sl.	SF. No	Sub Div	Extent in Ha.	Sl.	SF.No	Sub Div	Extent in Ha.	Sl.	SF. No	Sub Div	Extent in Ha.
301	555	5	0.415	351	569	3	0.885	401	606	3	1.375
302	555	1	2.105	352	569	5A	0.845	402	607	2	1.230
303	555	2A	0.625	353	571	1	2.125	403	607	4	0.350
304	555	2B	0.620	354	572	1	2.320	404	607	5	0.770
305	555	3	0.605	355	572	2	1.595	405	607	6	0.475
306	555	4	0.635	356	573	1	1.050	406	608	1	0.275
307	556	1	1.880	357	573	2A	0.500	407	608	2	1.295
308	556	2	1.100	358	573	3A	0.810	408	609	6	0.595
309	556	3	0.945	359	573	3B	1.500	409	609	7	0.810
310	557	1	0.400	360	574	1	1.495	410	610	1	0.660
311	557	2	1.765	361	574	2A1	2.150	411	610	2	0.680
312	558	1	0.885	362	574	2A2	0.770	412	610	3A	1.030
313	558	2	0.620	363	574	2B	0.505	413	610	3B	0.960
314	558	3	1.490	364	574	2C	0.505	414	610	4	1.835
315	558	4B	0.345	365	575	1	0.545	415	611	2	0.480
316	558	6	0.390	366	575	2	1.650	416	611	3A	0.300
317	559	1	1.005	367	575	3A	0.540	417	611	4	0.600
318	559	2	2.815	368	575	3B	1.890	418	611	5	0.540
319	560	1	1.480	369	577	2	1.385	419	612	1	1.180
320	560	2A	0.740	370	578	1A	1.075	420	612	2	1.155
321	560	2B	0.735	371	578	1B	0.720	TOTAL			294.185
322	561	1	1.070	372	578	2A	0.415				
323	561	2	0.970	373	578	2B	0.415				
324	561	3A	0.630	374	579	1	0.820				
325	561	3B	0.335	375	581	1A	0.240				
326	562	1	1.095	376	581	2	0.430				
327	562	2	0.970	377	583	4	0.515				
328	562	3	0.930	378	583	6	1.020				
329	562	4	0.420	379	584	1	1.040				
330	562	5	0.485	380	584	2	0.455				
331	563	2	0.780	381	584	3	0.490				
332	563	3	1.205	382	584	5	0.985				
333	563	1	0.800	383	584	6	0.840				
334	564	1	1.370	384	585	1A	0.390				
335	564	2	1.410	385	585	1B	0.470				
336	565	1A	0.380	386	585	2A	0.490				
337	565	1B	0.335	387	585	3	1.725				
338	565	1C	0.670	388	586	3	0.955				
339	565	2	0.980	389	586	1	0.480				
340	565	1D	0.300	390	587	1	1.470				
341	566	1	0.980	391	587	2B	0.575				
342	566	2	0.900	392	589	2	1.435				
343	566	3	0.870	393	592	1	1.445				
344	567	1	1.845	394	592	2	1.205				
345	567	2A	0.555	395	603	2	1.765				
346	567	3	0.905	396	605	1	1.855				
347	568	1A	0.685	397	605	2A	0.815				
348	568	1B	0.730	398	605	2B	0.850				
349	568	1C	0.715	399	606	1	1.215				
350	568	2	0.860	400	606	2	1.215				

Sd/- R. Palaniswamy /05.02.2018
Commissioner of Geology and Mining

Forwarded By/Order

Deputy Director

ANNEXURE 3

Resolution Copy of Authorized Signatory

MADRAS CEMENTS LTD.

Chennai - 600 004.
28478675 Grams

17 November 2012

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED BY THE BOARD OF DIRECTORS AT THE MEETING HELD ON 5.11.2012

"RESOLVED that Sri.S.Ramalingam, be and is hereby authorised

1. To sign all correspondence including letters, applications, reports, returns, forms, proformas and statements submitted to the various Departments of the Government of India, State Governments and autonomous bodies with which the Company has to interact.

2. To sign Applications, Agreements for Purchase and Sale of Power, all documents, Power Purchase Agreements and Amendments thereof on behalf of Madras Cements Ltd. with Tamil Nadu Electricity Board (TNEB), Tamil Nadu Generation and Distribution Development Corporation Limited (TANGEDCO), Tamil Nadu Transmission Corporation Limited (TANTRANSCO) and Tamil Nadu Electricity Regulatory Commission (TNERC), other State Electricity Boards, Electricity Regulatory Commissions and other Statutory Electrical Authorities, under the applicable provisions of the Acts governing generation, purchase and supply of electricity and represent the Company with Chief Electrical Inspectorate of Governments and sign and furnish documents under any statutory requirements.

3. To sign and submit application forms, reports and returns to be submitted to the Central Excise Department and other correspondence addressed to the Department including signing of gate passes for removal of goods and matters relating to Excise Duty / Service Tax, etc.

4. To sign and deliver Railway Credit Notes and other related documents and correspondence addressed to Railways/other authorities concerned.

5. To sign and deliver Tax Returns, Forms and Certificates and other connected papers to the authorities concerned under the Central/State's Commercial Tax Laws, Central Sales Tax Act, VAT Regulations and Income Tax Act as may be necessary or required from time to time.

6. To sign and submit applications to the Department of Telecommunications for getting Telephone, Fax, Internet / Broadband or other electronic installations as may be required from time to time for the Company's affairs.

MADRAS CEMENTS LTD.

Corporate Office : " Auras Corporate Centre"
V Floor, 98-A, Dr. Radhakrishnan Road,
Mylapore, Chennai - 600 004.
Phone : 044 - 28478666, 28478656
Fax : 044 - 28478676 Grams : RAM CEMENTS

7. To sign and execute documents on behalf of the Company for the purpose of entering into rent/lease agreements for hiring premises on behalf of the Company.

8. To sign and execute on behalf of the Company, Deed of Conveyance and other documents relating to purchase of land and other properties in the name of Madras Cements Ltd. and to claim and admit execution thereof and to sign the patta transfer application, declaration under the Land Reforms Act, etc. wherever necessary and be present and to present such documents for registration before the Registering Authorities and to do all that are necessary and are desirable for completing registration of the documents executed in favour of the Company.

9. To sign, execute and deliver letters, documents, etc. addressed to the Controller of Imports and Exports and all shipping documents that may be necessary or required in connection with the Company's imports and exports.

10. To sign, verify, affirm and file written statements, petitions, plaints, affidavits, declarations, vakalatnamas and any legal or other documents as may be required for the purpose from time to time, receive all documents and take all necessary steps and do the requisite follow up work on behalf of the Company in a Court of Law, whether Civil or Criminal and also to defend the Company in a Court of Law.

11. To sign and furnish applications and other documents as may be required by the Transport Authorities from time to time in connection with registration of the vehicles purchased by the Company.

RESOLVED FURTHER that in the event of Common Seal of our Company being required to be affixed on any of the above such applications/agreements/ amendments to agreements/documents, the same be affixed in the presence of Mr.S.Ramalingam and countersigned by Mr.K.Selvanayagam, Secretary of the Company."

/CERTIFIED TRUE COPY/

For MADRAS CEMENTS LTD.

K.Selvanayagam

K. SELVANAYAGAM
SECRETARY

Registered Office : Ramamandiram, Rajapalayam - 626 117. Tamil Nadu.
Factories : Kumarasamy Raja Nagar (Post) - 521 457, Jaggayapet, Krishna Dist., Andhra Pradesh. Ph : 08654 - 224400. Fax : 08654 - 222532
Ramasamy Raja Nagar (Post) - 626 304, Virudhunagar Dist., Tamil Nadu. Ph : 04562 - 256201, 256202, 256203, 256214, 256241. Fax : 04562 - 256208
Alathiyur Works - Cement Nagar (Post) - 621 730, Perambalur Dist., Tamil Nadu. Ph : 04329 - 248305, 248306, 248322 to 248324. Fax : 04329 - 248303
Malkode Works (Post) - 577 533, Hosadurga Taluk, Chitradurga District, Karnataka State. Ph : 08199 - 240039, 240108, 240111. Fax : 08199 - 240314
Gostalaparam Works, Sandural Road, Ariyalur Taluk - 621 713, Ariyalur District, Tamil Nadu. Ph : 04329 - 226001, 226002, 226003, 226004. Fax : 04329 - 226005

ANNEXURE - 4

Photo ID/ Address Proof of Authorized Signatory

[redacted]

भारत सरकार

[redacted]

பதிவேட்டு எண்/Enrolment No.: 2017/49654/01055

Date: 11/04/2016

Ramalingam Singaru (ராமலிங்கம் சிங்காரு)

S/O: Singaru, 7, school street, pallavan nagar, nerkundram, Nerkunram, Tiruvallur, Tamil Nadu - 600107

உங்கள் ஆதார் எண்/ Your Aadhaar No.:

2136 4043 4799

தகவல்

- ஆதார் அடையாளத்திற்கான சான்று, குடியுரிமைக்கு அல்ல.
- அடையாள சான்றை ஆன்லைன் ஆதன்டிகேஷன் மூலமாகப் பெறவும்.
- இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
- To establish identity, authenticate online.
- This is electronically generated letter.

எனது ஆதார், எனது அடையாளம்.

Validity unknown

Digitally signed by [illegible] IDENTIFICATION AUTHORITY OF INDIA
Date: [illegible]

- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- ஆதார் ஆதார் பெறுவதற்கு ஒரே ஒரு முறை மட்டுமே நீங்கள் விண்ணப்பத்தை பூர்த்தி செய்து பதிவு செய்ய வேண்டிய அவசியம் ஏற்படும்.
- தயவுசெய்து உங்களின் சமீபத்தைய புதிய மொபைல் நம்பர் மற்றும் e-மெயில் முகவரியை பதிவு செய்யவும். இதனால் உங்களுக்கு பல்வேறு வசதிகளை பெற்றுக் கொள்ளும் சௌகரியம் கிடைக்கும்.

- Aadhaar is valid throughout the country.
- You need to enrol only once for Aadhaar.
- Please update your mobile number and e-mail address. This will help you to avail various services in future.

[redacted]

[redacted]

ராமலிங்கம் சிங்காரு
Ramalingam Singaru
பிறந்த நாள்/ DOB: 20/11/1956
ஆண் / MALE

[redacted]

[redacted]

முகவரி:
தந்தை / தாய் பெயர்:
சிங்காரு, 7, பள்ளிக்கூடத்தெரு
பல்லவன் நகர்,
நெற்குன்றம், நெற்குன்றம்,
திருவள்ளூர்,
தமிழ் நாடு - 600107

Address:
S/O: Singaru, 7, school street, pallavan nagar, nerkundram, Nerkunram, Tiruvallur, Tamil Nadu - 600107

2136 4043 4799

எனது ஆதார், எனது அடையாளம்.

2136 4043 4799

MERA AADHAAR, MERI PEHACHAN

ANNEXURE –5

Board of Directors

THE RAMCO CEMENTS LIMITED

Corporate Office:
Auras Corporate Centre, V Floor
98-A, Dr. Radhakrishnan Salai, Mylapore,
Chennai - 600 004, India.
Tel: +91 44 2[illegible]6 Fax: +91 44 2847 [illegible]
Website: www.[illegible]cements.in
Corporate Identity Number: L26941TN1[illegible]PLC003586

25 October 2017

LIST OF DIRECTORS

1. Shri.P.R.Venketrama Raja
   Chairman & Managing Director
   "Ramamandiram"
   RAJAPALAIYAM – 626 117.

2. Shri.R.S.Agarwal
   A-102, Chaitanya Towers
   Near Karur Vysya Bank
   Prabhadevi, MUMBAI – 400 025.

3. Shri.M.B.N.Rao
   Flat No:A 906, Purva Heights
   14, Bannerghatta Road
   Bilekahalli, BANGALORE – 560 076.

4. Shri.M.M.Venkatachalam
   No:10, Valliammai Aachi Street
   Kotturpuram
   CHENNAI – 600 085.

5. Smt. Justice Chitra Venkataraman (Retd.)
   No:31, Old No:17B, 4th Main Road
   R.A.Puram
   CHENNAI – 600 028.

6. Shri.M.F.Farooqui
   1102, Tower 9, The Close South
   Nirvana Country,
   Sector 50, Gurgaon
   HARYANA – 122 018.

For THE RAMCO CEMENTS LIMITED,

K. SELVANAYAGAM
SECRETARY

ANNEXURE-6

RQP Certificate

[illegible] POST

GOVERNMENT OF INDIA
MINSTRY OF MINES
INDIAN BUREAU OF MINES

OFFICE OF THE REGIONAL CONTROLLER OF [illegible]

No. :656(43)/2011.MDS

[illegible] Bhavan
Besant Nagar
Chennai 600 090.

Dated : 22/07/2011

To :
Shri L. Venkataramasubramanian, RQP
99A, Neelakandan Koil street
Pasumpon Nagar
Palanganatham
Madurai – 625 003.

Sub. : Renewal of recognition as recognized qualified person under Rule 22C of MCR, 1960 - reg.

Ref. : a) Your letter dated 6.6.2011.
b) Reg. No. RQP/MAS/123/98/A dated 3.6.1998 Valid up to 2.6.2010.

Sir,

With reference to your request for renewal of recognition under Rule 22C of MCR, 1960, please find enclosed herewith the original certificate of recognition duly renewed for a further period of ten years.

02. You are advised to prepare standard mining plans/scheme of mining complete in all respects as per the outline/guidelines and taking into account all requirements as per CCOM's Circular to RQPs and instructions issued from time to time. Further, you are advised not to furnish any deliberate false information in the mining plan/scheme of mining, so as to mislead the authorities. It may please be noted that any such incidence on your part may lead to withdrawal of the recognition granted to you.

03. The recognition is valid up to 1.6.2020.

Yours faithfully,

Encl : Original Certificate of recognition duly renewed.

(Ivan Khess)
Regional Controller of Mines

Copy for kind information to :

The Controller of Mines (S), Indian Bureau of Mines, Bangalore without any enclosure.

(Ivan Khess)
Regional Controller of Mines

Regional Controller of Mines
INDIAN BUREAU OF MINES

CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON TO PREPARE MINING PLANS

(Under Rule 22C of Mineral Concession Rules, 1960)

Shri L. VENKATARAMA SUBRAMANIAN *resident*

of D/5 Ramco Nagar, Pandalgudi Post, Aruppukottai TQ,Virudhunagar Dt.

of V. Lakshmivarahan *, having given satisfactory evidence of his qualifications and experience is hereby granted recognition under Rule 22C of the Mineral Concession Rules, 1960 as a Qualified Person to prepare Mining Plans.*

His registration number is BDP/MAS/123/98/A

This recognition is valid for a period of two years ending 2nd June 2000

M. K. A.
Regional Controller of Mines
Indian Bureau of Mines
Chennai

3/6/98

Place : Chennai - 90
Date : 03.06.98

CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON TO PREPARE MINING PLANS

(Under Rule 22 C of Mineral Concession Rules, 1960)

Shri R .Rengaraj resident of H.No:93c/84/22B, 4 th Street East, Rajiv Nagar (North), Tuticorin - 628008, Tamil Nadu, son of Sri E.Rangasamy having given satisfactory evidence of his qualifications and experience is hereby granted recognition under Rule 22C of the Mineral Concession Rules, 1960 as a Qualified Person to prepare Mining Plans.

His registration number is **RQP/MAS/200/2006/A**

The recognition is valid for a period of ten years ending 25-07-2016

(B. Babu Rao)
Regional Controller of Mines
Indian Bureau of Mines
Chennai Region

Place : Chennai
Date : 26.07.2006

ANNEXURE-7

Ambient Air Quality Data

CREATIVE ENGINEERS & CONSULTANTS

TEST REPORT

Report No.	CEC/18/0529	Report Date	06.04.18

Customer Name & Address	THE RAMCO CEMENTS LIMITED, RAMASAMYRAJA NAGAR, VIRUDHUNAGAR-DIST, TAMIL NADU-626204		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location	MPWA1- QUARRY EDGE		
Sample Collected by	CEC	Positioned height of Sampler	1.5 M above Ground Level
Sampling Duration	24 hrs	Customer Reference	Work Order
Test Commenced on	12.03.18 & 31.03.18	Test Completed on	15.03.18 & 06.04.18

Sample Reference No			CEC/18/MARA-342	CEC/18/MARA-384	-
Sample Collected Date			05.03.18 to 06.03.18	29.03.18 to 30.03.18	-
Sample Received on			12.03.18	31.03.18	-
Temperature °C			37.1°C	38.2°C	-
Relative Humidity %			55.1%	64.3%	-
SL. NO	PARAMETERS	PROTOCOL	UNIT	RESULTS		*LIMITS
1	Particulate Matter less than 10 micron size (PM_{10})	IS:5182:Part 23:2006	µg/m³	50.6	55.4	100
2	Particulate Matter less than 2.5 micron size ($PM_{2.5}$)	Instrument manual	µg/m³	24.3	28.7	60
3	Sulphur dioxide (SO_2)	IS:5182: Part 02:2001	µg/m³	4.8	5.6	80
4	Nitrogen Dioxide (NO_2)	IS:5182: Part 06:2006	µg/m³	8.2	9.1	80
5	Carbon monoxide (CO)	Gas Analyser	µg/m³	BDL(D.L-1144)	BDL(D.L-1144)	4000
6	Lead (Pb)	IS:5182:Part22:2004	µg/m³	BDL(D.L-0.001)	BDL(D.L-0.001)	1.0

*National Ambient air quality standards from CPCB. Remarks: BDL- Below detectable limit. DL –Detectable limit

For Creative Engineers & Consultants

S.S.RAJENDRAN

QUALITY TECHNICAL MANAGER

Authorized Signatory

Verified

Terms and conditions:

. *The test report shall not be reproduced in full or part without the written approval of CEC. *The test items will not be retained for more than 7 days from the date of issue of test report. *The Laboratory's responsibility under this report is limited to proven willful negligence and will in no case be more than the invoiced amount.

Street, East Tambaram, Chennai 600 059.

Ph: [illegible]770, 9444133619,Fax : 91-44-22398643.

[illegible]@yahoo.com, web : www.creativeengineers.co.in

CREATIVE ENGINEERS & CONSULTANTS

[illegible]

TEST REPORT

Report No.	CEC/18/0530	Report Date.	06.04.18

Customer Name & Address	THE RAMCO CEMENTS LIMITED, RAMASAMYRAJA NAGAR, VIRUDHUNAGAR–DIST, TAMIL NADU-626204		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location	MPWA2-HAUL ROAD (SECURITY BOOTH)		
Sample Collected by	CEC	Positioned height of Sampler	1.5 M above Ground Level
Sampling Duration	24 hrs	Customer Reference	Work Order
Test Commenced on	12.03.18 & 31.03.18	Test Completed on	15.03.18 & 06.04.18

Sample Reference No	CEC/18/ MAR/A–343	CEC/18/ MAR/A–385	-
Sample Collected Date	06.03.18 to 06.03.18	29.03.18 to 30.03.18	-
Sample Received on	12.03.18	31.03.18	-
Temperature °C	37.1°C	38.2°C	-
Relative Humidity %	55.1%	64.3%	-

SL. NO	PARAMETERS	PROTOCOL	UNIT	RESULTS		*LIMITS
1	Particulate Matter less than 10 micron size (PM_{10})	IS:5182:Part 23:2006	µg/m³	51.1	53.9	100
2	Particulate Matter less than 2.5 micron size ($PM_{2.5}$)	Instrument manual	µg/m³	23.4	25.6	60
3	Sulphur dioxide (SO_2)	IS:5182: Part 02:2001	µg/m³	4.9	5.9	80
4	Nitrogen Dioxide (NO_2)	IS:5182: Part 06:2006	µg/m³	7.8	8.2	80
5	Carbon monoxide (CO)	Gas Analyser	µg/m³	BDL(D.L-1144)	BDL(D.L-1144)	4000
6	Lead (Pb)	IS:5182:Part22:2004	µg/m³	BDL(D.L-0.001)	BDL(D.L-0.001)	1.0

*National Ambient air quality standards from CPCB. Remarks: BDL - Below detectable limit. DL – Detectable limit.

For Creative Engineers & Consultants

S.S.RAJENDRAN
QUALITY TECHNICAL MANAGER
Authorized Signatory

Verified

Terms and conditions:

. *The test report shall not be reproduced in full or part without the written approval of CEC. *The test items will not be retained for more than 7 days from the date of issue of test report. *The Laboratory's responsibility under this report is limited to proven willful negligence and will in no case be more than the involved amount.

[illegible] Street, East Tambaram, Chennai 600 059.
Ph : [illegible], 9444133619, Fax : 91-44-22[illegible]
e-mail : [illegible]@yahoo.com, web : www.creativeengineers.co.in

CREATIVE ENGINEERS & CONSULTANTS

TEST REPORT

Report No.	CEC/18/0531	Report Date	06.04.18

Customer Name & Address	THE RAMCO CEMENTS LIMITED, RAMASAMYRAJA NAGAR, VIRUDHUNAGAR–DIST, TAMIL NADU-626204		
Sample Description	AMBIENT AIR QUALITY		
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines		
Sample Location	MPWA3- SCREENING PLANT		
Sample Collected by	CEC	Positioned height of Sampler	1.5 M above Ground Level
Sampling Duration	24 hrs	Customer Reference	Work Order
Test Commenced on	12.03.18 & 31.03.18	Test Completed on	15.03.18 & 06.04.18

Sample Reference No			CEC/18/MARIA-344	CEC/18/MARIA-386	-
Sample Collected Date			05.03.18 to 06.03.18	29.03.18 to 30.03.18	-
Sample Received on			12.03.18	31.03.18	-
Temperature °C			37.1°C	39.2°C	-
Relative Humidity %			55.1%	64.3%	-
SL. NO	PARAMETERS	PROTOCOL	UNIT	RESULTS		*LIMITS
1	Particulate Matter less than 10 micron size (PM_{10})	IS:5182:Part 23:2006	µg/m³	53.8	57.6	100
2	Particulate Matter less than 2.5 micron size ($PM_{2.5}$)	Instrument manual	µg/m³	25.8	28.5	60
3	Sulphur dioxide (SO_2)	IS-5182: Part 02:2001	µg/m³	5.2	5.8	80
4	Nitrogen Dioxide (NO_2)	IS:5182: Part 06:2006	µg/m³	9.3	10.9	80
5	Carbon monoxide (CO)	Gas Analyser	µg/m³	BDL(D.L-1144)	BDL(D.L-1144)	4000
6	Lead (Pb)	IS:5182:Part22:2004	µg/m³	BDL(D.L-0.001)	BDL(D.L-0.001)	1.0

*National Ambient air quality standards from CPCB. Remarks: BDL- Below detectable limit. DL –Detectable limit.

For Creative Engineers & Consultants

S.S.RAJENDRAN

QUALITY/TECHNICAL MANAGER

Authorized Signatory

Verified

Terms and conditions:

. *The test report shall not be reproduced in full or part without the written approval of CEC. *The test items will not be retained for more than 7 days from the date of issue of test report. *The Laboratory's responsibility under this report is limited to proven wilful negligence and will in no case be more than the invoiced amount.

Street, East Tambaram, Channai 600 059.

Ph: [illegible]78, 9444133618,Fax : 91-44-22396643.

[illegible]@yahoo.com, web : www.creativeengineers.co.in

ANNEXURE - B

Noise Monitoring Data

CREATIVE ENGINEERS & CONSULTANTS

(ISO 9001:2008 CERTIFIED COMPANY
GOVT. REG. DEPARTMENT OF INDUSTRIES AND COMMERCE - GOVT. - ####
####, ACCREDITED TESTING LABORATORY)

TEST REPORT

Report No.	CEC/17/0475	Report Date.	06.10.17

Customer Name & Address	THE RAMCO CEMENTS LIMITED, RAMASAMYRAJA NAGAR, VIRUDHUNAGAR--DIST, TAMIL NADU-626204
Sample Description	NOISE LEVEL DATA

Customer Reference	WORK ORDER	Sampling method	Instrument manual
Reference No	CEC/17/EPN-178	Date of monitoring	07.09.17
Collected by	CEC	Sample received on	08.09.17

Level in dB (A)

Time in hrs.	MPN 1	MPN 2	MPN 3	MPN 4	MPN 5	MPN 6
6.00	32.7	33.9	41.7	39.6	45.1	41.7
7.00	34.6	46.2	43.7	45.1	47.9	43.7
8.00	45.8	49.6	48.8	49.3	48.8	48.8
9.00	50.5	60.1	51.2	54.8	46.7	51.2
10.00	57.7	69.5	55.2	58.1	54.5	55.2
11.00	75.9	78.5	56.6	50.7	50.3	56.6
12.00	70.5	69.4	58.9	54.2	48.5	58.9
13.00	50.4	67.3	60.3	52.2	40.3	60.3
14.00	53.6	50.1	57.4	51.5	38.9	57.4
15.00	56.6	51.8	56.6	52.9	44.8	56.6
16.00	59.1	53.5	53.9	49.8	48.3	53.9
17.00	46.6	48.8	55.7	46.8	49.2	55.7
18.00	48.6	48.3	50.7	48.8	49.8	50.7
19.00	44.6	49.6	49.2	45.2	49.2	47.1
20.00	48.2	39.2	48.2	40.1	46.1	43.8
21.00	41.2	38.1	47.3	39.3	44.6	40.3
22.00	40.1	36.1	45.9	36.8	40.1	39.9
23.00	38.9	38.6	33.6	34.6	38.7	43.7
24.00	40.3	34.7	35.4	33.1	36.2	40.1
1.00	39.8	37.8	36.7	31.2	32.1	41.7
2.00	35.3	37.1	38.8	33.3	33.8	35.3
3.00	37.1	34.7	40.5	33.7	32.4	34.7
4.00	35.6	35.3	36.6	35.7	35.9	36.3
5.00	35.2	35.7	33.6	39.5	33.2	39.9

98/4, Bharathiyar Street, East Tambaram, Chennai 600 059.
Ph : 22395170, 9444133619,Fax : 91-44-22396643.
e-mail : cecgiri@yahoo.com, web : www.creativeengineers.co.in

CREATIVE ENGINEERS & CONSULTANTS

(ISO 9001:2008 CERTIFIED COMPANY)
GOVT. REG. DEPARTMENT OF INDUSTRIES AND COMMERCE - GOVT. ...
(NABL ACCREDITED TESTING LABORATORY)

TEST REPORT

Report No.	CEC/17/0475

Report Date.	06.10.17

	MPN 1	MPN 2	MPN 3	MPN 4	MPN 5	MPN 6
DAY EQUIVALENT	65.2	67.8	54.8	51.4	48.5	54.7
NIGHT EQUIVALENT	38.3	36.9	39.7	35.5	36.2	39.9
DAY & NIGHT EQUIVALENT	63.4	66.0	53.1	49.7	46.8	53.0

Remarks:
LOCATIONS:
MPN1 Screening Plant
MPN2 Haul road (security booth)
MPN3 Maravarperungudi
MPN4 Manlyakaranpatti
MPN5 suddhamadam
MPN6 Kambathupatti

For Creative Engineers & Consultants

Verified

Authorized Signatory
S.S.RAJENDRAN
QUALITY/TECHNICAL MANAGER

*The test report shall not be reproduced in part without the written approval of CEC. *The test items will not be retained for more than 7 days from the date of issue of [illegible]. Company's responsibility under this report is limited to persons willful negligence and will in no case be more than the [illegible]

CREATIVE ENGINEERS & CONSULTANTS CHENNAI ISO 9001:2008

98/4, Bharathwajar Street, East Tambaram, Chennai 600 059.
Ph : 22395179, 9444133619,Fax : 91-44-22396643.
e-mail : cecgiri@yahoo.com, web : www.creativeengineers.co.in

ANNEXURE-9

Water Quality Data

CREATIVE ENGINEERING & CONSULTANTS

TEST REPORT

Report No.	CEC/18/348	Report Date	06.04.18

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMASAMYRAJA NAGAR, VIRUDHUNAGAR-DIST, TAMIL NADU-626 284
Sample Description	WATER
Sample mark	MPW1-MARAVARPERUNGUDI BOREWELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025 (PART – 1)
Sample Reference No	CEC/18/MAR/W-412	Sample Received on	30.03.18
Sample Collected by	CEC	Test Commenced on	31.03.18
Sample Collected Date	30.03.18	Test Completed on	06.04.18

S.No	Parameter	Protocol	Unit	Result	Limits* Permissible
A.	Physical Parameters				
1	Color	IS:3025 (Part-4)	Hazen	<2.0	15.0
2	Turbidity	IS 3025 (P-10) 1984 (RA – 2002)	NTU	<1.0	5.0
3	pH at 25 °C	IS 3025 (P-11) 1983 (RA – 2002)	-	7.36	6.50-8.50
4	Electrical Conductivity	2510 B APHA 22nd Edition 2012	(µmhos/cm)	716	-
5	Temperature	IS 3025 (P-9) 1984 (RA – 2002)	°C	30.5	-
B.	Chemical Parameters				
6	Total Dissolved Solids	IS 3025 (P – 16) 1984 (RA 2006)	mg/L	436	2000
7	Total hardness as $CaCO_3$	2340 C APHA 22nd Edition 2012	mg/L	122	600
8	Calcium as Ca	IS 3025 (P- 40) 1991 (RA 2003)	mg/L	20.9	200
9	Magnesium as Mg	3500 Mg B APHA 22nd Edition 2012	mg/L	16.7	100
10	Calcium as $CaCO_3$	3500 Ca B APHA 22nd Edition 2012	mg/L	52.3	-
11	Magnesium as $CaCO_3$	3500 Mg B APHA 22nd Edition 2012	mg/L	69.7	-
12	Total alkalinity as $CaCO_3$	IS 3025 (P – 23) 1986 (RA – 2003)	mg/L	172	600
13	Chlorides as Cl	IS 3025 (P – 32) 1988 (RA – 2003)	mg/L	158	1000
14	Free Residual chlorine as Cl	4500 Cl- B APHA 22nd Edition 2012	mg/L	BDL(D.L-0.2)	1.0
15	Sulphates as SO_4^{2-}	4500 SO_4^{2-} -E APHA 22nd Edition 2012	mg/L	71.3	400
16	Iron as Fe	3500 Fe B APHA 22nd Edition 2012	mg/L	0.63	0.3
17	Nitrate as NO_3	IS 3025 (P – 34) 1988 (RA 2003)	mg/L	2.12	45
18	Fluoride as F	4500 F- D APHA 22nd Edition 2012	mg/L	0.32	1.5
19	Dissolved Oxygen	IS 3025 (P – 38) 1989 (RA – 2008)	mg/L	6.60	-
20	Total suspended solids	IS 3025 (P – 17) 1984 (RA 2006)	mg/L	6.66	-

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TEST REPORT

Report No.	CEC/[illegible]	Report Date.	[illegible]

S.No	Parameter	Protocol	Unit	Result	Limits* Permissible
21	Chemical Oxygen Demand (COD)	IS 3025 (P – 58) (2006)	mg/L	12.3	-
22	Biochemical oxygen demand (BOD) 5 Days at 20° C	5210 - B APHA 22nd Edition 2012	mg/L	BDL(D.L-2.0)	-
23	Sodium as Na	IS 3025 (P – 45) 1993 (RA – 2003)	mg/L	21.3	-
24	Potassium as K	IS 3025 (P – 45) 1993(RA – 2003)	mg/L	8.1	-
25	Phosphorous as PO_4	IS 3025 (P – 31) – 1988 (RA 2003)	mg/L	BDL(D.L.0.05)	-
26	Oil & Grease	5520 B APHA 22nd Edition 2012	mg/L	BDL(D.L.2.0)	-
27	Aluminium as Al	IS:3025 (Part-55) 2003	mg/L	BDL(D.L.0.03)	0.03
28	Boron as B	APHA 22nd Edition -2005 4500 B - B	mg/L	BDL(D.L.0.1)	0.5
29	Copper as Cu	IS:3025 (Part-42) 1992 (RA – 2003)	mg/L	BDL(D.L.0.02)	0.05
30	Manganese as Mn	APHA 22nd Edition – 2005 3500 Mn - B	mg/L	BDL(D.L.0.05)	0.1
31	Phenolic compounds as C_6H_5OH	IS:3025 (Part-43), APHA 22nd Edition – 2005 5530 D	mg/L	Absent	0.001
32	Selenium as Se	IS:3025 (Part-56) 2003	mg/L	BDL(D.L.0.005)	0.01
33	Zinc as Zn	IS:3025 (Part-49) 1994 (RA – 2003)	mg/L	BDL(D.L.0.02)	5.0
34	Cadmium as Cd	IS:3025 (Part-41) 1992 (RA -2003)	mg/L	BDL(D.L.0.01)	0.003
35	Cyanide as CN	IS:3025 (Part-27) 2003	mg/L	Absent	0.05
36	Lead as Pb	IS:3025 (Part-47) 1994 (RA – 2003)	mg/L	BDL(D.L.0.01)	0.01
37	Mercury as Hg	IS:3025 (Part-48) 1994 (RA – 2003)	mg/L	BDL(D.L.0.0005)	0.001
38	Total Arsenic as As	IS:3025 (Part-37) 1988 (RA – 2003)	mg/L	BDL(D.L.0.01)	0.01
39	Total Chromium as Cr	APHA 22nd Edition – 3111 - D	mg/L	BDL(D.L.0.05)	0.05
40	Percent Sodium	CEC Standard operating procedure	%	26.1	-

Remarks:

* Permissible limits in the absence of alternative source as per Drinking Water Specifications IS – 10500: 2012

Note: BDL – Below Detectable limit (DL - Detectable limit)

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TEST REPORT

Report No.	CEC/TR/543	Report Date.	06.04.18

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMASAMYRAJA NAGAR, VIRUDHUNAGAR--DIST, TAMIL NADU-626204
Sample Description	WATER
Sample mark	MPW1-MARAVARPERUNGUDI BOREWELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025(PART – 1)
Sample Reference No	CEC/TR/MAR/W-412	Sample Received on	30.03.18
Sample Collected by	CEC	Test Commenced on	31.03.18
Sample Collected Date	30.03.18	Test Completed on	06.04.18

S.No	Parameter	Protocol	Unit	Result	Limits*
A.	MICROBIOLOGICAL EXAMINATION				
1	Total Coliforms	IS 1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample
2	Feecal Coliforms	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample
3	E.Coli	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample

Remarks :

NOTE: 1.The given water sample Total Coliform is absent.

2. The given water sample E.coli is absent.

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TEST REPORT

Report No	CEC/18/641	Report Date.	06.04.18

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMASAMYRAJA NAGAR, VIRUDHUNAGAR-DIST, TAMIL NADU-626204
Sample Description	WATER
Sample mark	NPW2-CHETTIPATTI BOREWELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025 (PART – 1)
Sample Reference No	CEC/18/MAR/W-413	Sample Received on	30.03.18
Sample Collected by	CEC	Test Commenced on	27.03.18
Sample Collected Date	29.03.18	Test Completed on	06.04.18

S.No	Parameter	Protocol	Unit	Result	Limits* Permissible
A.	Physical Parameters				
1	Color	IS:3025 (Part-4)	Hazen	<2.0	15.0
2	Turbidity	IS 3025 (P-10) 1984 (RA – 2002)	NTU	<1.0	5.0
3	pH at 25 °C	IS 3025 (P-11) 1983 (RA – 2002)	-	7.38	6.50-8.50
4	Electrical Conductivity	2510 B APHA 22nd Edition 2012	(µmhos/cm)	318	-
5	Temperature	IS 3025 (P-9) 1984 (RA – 2002)	°C	30	-
B.	Chemical Parameters				
6	Total Dissolved Solids	IS 3025 (P – 16) 1984 (RA 2006)	mg/L	184	2000
7	Total hardness as $CaCO_3$	2340 C APHA 22nd Edition 2012	mg/L	73.7	600
8	Calcium as Ca	IS 3025 (P- 40) 1991 (RA 2003)	mg/L	15.5	200
9	Magnesium as Mg	3500 Mg B APHA 22nd Edition 2012	mg/L	8.4	100
10	Calcium as $CaCO_3$	3500 Ca B APHA 22nd Edition 2012	mg/L	38.8	-
11	Magnesium as $CaCO_3$	3500 Mg B APHA 22nd Edition 2012	mg/L	34.9	-
12	Total alkalinity as $CaCO_3$	IS 3025 (P – 23) 1986 (RA – 2003)	mg/L	48.9	600
13	Chloride as Cl^-	IS 3025 (P – 32) 1988 (RA – 2003)	mg/L	86.1	1000
14	Free Residual chlorine as Cl^-	4500 Cl- B APHA 22nd Edition 2012	mg/L	BDL(D.L-0.2)	1.0
15	Sulphates as SO_4^{2-}	4500 SO_4^{2-} -E APHA 22nd Edition 2012	mg/L	23.1	400
16	Iron as Fe	3500 Fe B APHA 22nd Edition 2012	mg/L	BDL(D.L-0.01)	0.3
17	Nitrate as NO_3	IS 3025 (P – 34) 1988 (RA 2003)	mg/L	1.39	45
18	Fluoride as F	4500 F- D APHA 22nd Edition 2012	mg/L	0.33	1.5
19	Dissolved Oxygen	IS 3025 (P – 38) 1989 (RA – 2003)	mg/L	6.86	-
20	Total suspended solids	IS 3025 (P – 17) 1984 [redacted]	mg/L	BDL(D.L-2.0)	-

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TEST REPORT

Report No	CEC/18541	Report Date	08.11.18

S.No	Parameter	Protocol	Unit	Result	Limits* Permissible
21	Chemical Oxygen Demand (COD)	IS 3025 (P – 58) (2006)	mg/L	BDL(D.L-4.0)	-
22	Biochemical oxygen demand (BOD) 5 Days at 20° C	5210 - B APHA 22nd Edition 2012	mg/L	BDL(D.L-2.0)	-
23	Sodium as Na	IS 3025 (P – 45) 1993 (RA – 2003)	mg/L	15.7	-
24	Potassium as K	IS 3025 (P – 45) 1993(RA – 2003)	mg/L	5.6	-
25	Phosphorous as PO_4	IS 3025 (P – 31) – 1988 (RA 2003)	mg/L	BDL(D.L-0.05)	-
26	Oil & Grease	5520 B APHA 22nd Edition 2012	mg/L	BDL(D.L 2.0)	-
27	Aluminium as Al	IS:3025 (Part-55) 2003	mg/L	BDL(D.L-0.03)	0.03
28	Boron as B	APHA 22nd Edition -2005 4500 B - B	mg/L	BDL(D.L-0.1)	0.5
29	Copper as Cu	IS:3025 (Part-42) 1992 (RA – 2003)	mg/L	BDL(D.L-0.02)	0.05
30	Manganese as Mn	APHA 22nd Edition – 2005 3500 Mn -B	mg/L	BDL(D.L-0.06)	0.1
31	Phenolic compounds as C_6H_5OH	IS:3025 (Part-43), APHA 22nd Edition – 2005 5530 D	mg/L	Absent	0.001
32	Selenium as Se	IS:3025 (Part-56) 2003	mg/L	BDL(D.L-0.005)	0.01
33	Zinc as Zn	IS:3025 (Part-49) 1994 (RA – 2003)	mg/L	BDL(D.L-0.02)	5.0
34	Cadmium as Cd	IS:3025 (Part-41) 1992 (RA -2003)	mg/L	BDL(D.L-0.01)	0.003
35	Cyanide as CN	IS:3025 (Part-27) 2003	mg/L	Absent	0.05
36	Lead as Pb	IS:3025 (Part-47) 1994 (RA – 2003)	mg/L	BDL(D.L-0.01)	0.01
37	Mercury as Hg	IS:3025 (Part-48) 1994 (RA – 2003)	mg/L	BDL(D.L-0.0005)	0.001
38	Total Arsenic as As	IS:3025 (Part-37) 1988 (RA – 2003)	mg/L	BDL(D.L-0.01)	0.01
39	Total Chromium as Cr	APHA 22nd Edition -3111 - D	mg/L	BDL(D.L-0.06)	0.05
40	Percent Sodium	CEC Standard operating procedure	%	38.8	-

Remarks:

* Permissible limits in the absence of alternative source as per Drinking Water Specifications IS – 10500: 2012.

Note: BDL – Below Detectable limit (DL - Detectable limit).

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TEST REPORT

Report No.	CEC/18/641	Report Date.	06.04.18

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMASAMYRAJA NAGAR, VIRUDHUNAGAR-DIST, TAMIL NADU-626204
Sample Description	WATER
Sample mark	MPW2-CHETTIPATTI BOREWELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025(PART - 1)
Sample Reference No	CEC/18/MAR/W-413	Sample Received on	30.03.18
Sample Collected by	CEC	Test Commenced on	31.03.18
Sample Collected Date	30.03.18	Test Completed on	06.04.18

S.No	Parameter	Protocol	Unit	Result	Limits*
A.	MICROBIOLOGICAL EXAMINATION				
1	Total Coliforms	IS:1622-1981 R.2009	MPN/100ml	<2	Shall not be detected in any 100 ml sample
2	Feacal Coliforms	IS:1622-1981 R.2009	MPN/100ml	<2	Shall not be detected in any 100 ml sample
3	E.Coli	IS:1622-1981 R.2009	MPN/100ml	<2	Shall not be detected in any 100 ml sample

Remarks :

NOTE: 1.The given water sample Total Coliform is absent.

2. The given water sample E.coli is absent.

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TEST REPORT

Report No.	CEC/16/542	Report Date.	[illegible]

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMASAMYRAJA NAGAR, VIRUDHUNAGAR-DIST, TAMIL NADU-626204
Sample Description	WATER
Sample mark	MPW3-KAMBATHUPATTI BORE WELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025 (PART – 1)
Sample Reference No	CEC/16/MAR/W-414	Sample Received on	[illegible]
Sample Collected by	CEC	Test Commenced on	[illegible]
Sample Collected Date	30.03.16	Test Completed on	[illegible]

S.No	Parameter	Protocol	Unit	Result	Limits* Permissible
A	**Physical Parameters**				
1	Color	IS:3025 (Part-4)	Hazen	<2.0	15.0
2	Turbidity	IS 3025 (P-10) 1984 (RA – 2002)	NTU	<1.0	5.0
3	pH at 25 °C	IS 3025 (P-11) 1983 (RA – 2002)	-	7.21	6.50-8.50
4	Electrical Conductivity	2510 B APHA 22nd Edition 2012	(µmhos/cm)	546	-
5	Temperature	IS 3025 (P-9) 1984 (RA – 2002)	°C	30.5	-
B.	**Chemical Parameters**				
6	Total Dissolved Solids	IS 3025 (P – 16) 1984 (RA 2006)	mg/L	336	2000
7	Total hardness as $CaCO_3$	2340 C APHA 22nd Edition 2012	mg/L	116	600
8	Calcium as Ca	IS 3025 (P- 40) 1991 (RA 2003)	mg/L	18.8	200
9	Magnesium as Mg	3500 Mg B APHA 22nd Edition 2012	mg/L	16.8	100
10	Calcium as $CaCO_3$	3500 Ca B APHA 22nd Edition 2012	mg/L	46.8	-
11	Magnesium as $CaCO_3$	3500 Mg B APHA 22nd Edition 2012	mg/L	53.0	-
12	Total alkalinity as $CaCO_3$	IS 3025 (P – 23) 1986 (RA – 2003)	mg/L	92	600
13	Chloride as Cl^-	IS 3025 (P – 32) 1986 (RA – 2003)	mg/L	92	1000
14	Free Residual chlorine as Cl^-	4500 Cl- B APHA 22nd Edition 2012	mg/L	BDL(D.L-0.2)	1
15	Sulphates as SO_4^{2-}	4500 SO_4^{2-} -E APHA 22nd Edition 2012	mg/L	33.2	400
16	Iron as Fe	3500 Fe B APHA 22nd Edition 2012	mg/L	0.08	0.3
17	Nitrate as NO_3	IS 3025 (P – 34) 1988 (RA 2003)	mg/L	3.12	45
18	Fluoride as F	4500 F- D APHA 22nd Edition 2012	mg/L	0.47	1.5
19	Dissolved Oxygen	IS 3025 (P – 38) 1989 (RA – 2009)	mg/L	6.70	-
20	Total suspended solids	IS 3025 (P – 17) [illegible]	mg/L	6.8	-

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TEST REPORT

Report No. [redacted] | Report Date. [redacted]

S.No	Parameter	Protocol	Unit	Result	Limits* Permissible
21	Chemical Oxygen Demand (COD)	IS 3025 (P – 58) (2006)	mg/L	8.8	-
22	Biochemical oxygen demand (BOD) 5 Days at 20° C	5210 - B APHA 22nd Edition 2012	mg/L	BDL(D.L-2.0)	-
23	Sodium as Na	IS 3025 (P – 45) 1993 (RA – 2003)	mg/L	19.2	-
24	Potassium as K	IS 3025 (P – 45) 1993(RA – 2003)	mg/L	9.8	-
25	Phosphorous as PO_4	IS 3025 (P – 31) – 1988 (RA 2003)	mg/L	BDL(D.L-0.05)	-
26	Oil & Grease	5520 B APHA 22nd Edition 2012	mg/L	BDL(D.L-2.0)	-
27	Aluminium as Al	IS:3025 (Part-55) 2003	mg/L	BDL(D.L-0.03)	0.03
28	Boron as B	APHA 22nd Edition -2005 4500 B - B	mg/L	BDL(D.L-0.1)	0.5
29	Copper as Cu	IS:3025 (Part-42) 1992 (RA – 2003)	mg/L	BDL(D.L-0.02)	0.05
30	Manganese as Mn	APHA 22nd Edition – 2005 3500 Mn - B	mg/L	BDL(D.L-0.05)	0.1
31	Phenolic compounds as C_6H_5OH	IS:3025 (Part-43), APHA 22nd Edition – 2005 5530 D	mg/L	Absent	0.001
32	Selenium as Se	IS.3025 (Part-56) 2003	mg/L	BDL(D.L-0.005)	0.01
33	Zinc as Zn	IS:3025 (Part-49) 1994 (RA – 2003)	mg/L	BDL(D.L-0.02)	5.0
34	Cadmium as Cd	IS:3025 (Part-41) 1992 (RA -2003)	mg/L	BDL(D.L-0.01)	0.003
35	Cyanide as CN	IS:3025 (Part-27) 2003	mg/L	Absent	0.05
36	Lead as Pb	IS:3025 (Part-47) 1994 (RA – 2003)	mg/L	BDL(D.L-0.01)	0.01
37	Mercury as Hg	IS:3025 (Part-48) 1994 (RA – 2003)	mg/L	BDL(D.L-0.0005)	0.001
38	Total Arsenic as As	IS:3025 (Part-37) 1988 (RA – 2003)	mg/L	BDL(D.L-0.01)	0.01
39	Total Chromium as Cr	APHA 22nd Edition -3111 - D	mg/L	BDL(D.L-0.05)	0.05
40	Percent Sodium	CEC Standard operating procedure	%	34.8	-

Remarks:

* Permissible limits in the absence of alternative source as per Drinking Water Specifications IS – 10500: 2012.

Note: BDL – Below Detectable limit (DL - Detectable limit).

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TEST REPORT

Report No.	CEC/18/342	Report Date.	06.04.18

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMASAMYRAJA NAGAR, VIRUDHUNAGAR-DIST, TAMIL NADU-626304
Sample Description	WATER
Sample mark	MPW3-KAMBATHUPATTI BORE WELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025(PART – 1)
Sample Reference No	CEC/18/MAR/W-414	Sample Received on	30.03.18
Sample Collected by	CEC	Test Commenced on	31.03.18
Sample Collected Date	30.03.18	Test Completed on	06.04.18

S.No	Parameter	Protocol	Unit	Result	Limits*
A.	MICROBIOLOGICAL EXAMINATION				
1	Total Coliforms	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample
2	Fescal Coliforms	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample
3	E.Coli	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample

Remarks :

NOTE: 1.The given water sample Total Coliform is absent.

2. The given water sample E.coli is absent.

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TEST REPORT

[redacted] CEC/1864/0		Report Date.	06.04.18

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMASAMIYRAJA NAGAR, VIRUDHUNAGAR-DIST, TAMIL NADU-626204
Sample Description	WATER
Sample mark	MPW4-SUDDHAMADAM BOREWELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025 (PART - 1)
Sample Reference No	CEC/1864/WW-415	Sample Received on	29.03.18
Sample Collected by	CEC	Test Commenced on	31.03.18
Sample Collected Date	29.03.18	Test Completed on	06.04.18

S.No	Parameter	Protocol	Unit	Result	Limits* Permissible
A.	Physical Parameters				
1	Color	IS:3025 (Part-4)	Hazen	<2.0	15.0
2	Turbidity	IS 3025 (P-10) 1984 (RA – 2002)	NTU	<1.0	5.0
3	pH at 25 °C	IS 3025 (P-11) 1983 (RA – 2002)	-	7.22	6.50-8.50
4	Electrical Conductivity	2510 B APHA 22nd Edition 2012	(µmhos/cm)	562	-
5	Temperature	IS 3025 (P-9) 1984 (RA – 2002)	°C	31.0	-
B.	Chemical Parameters				
6	Total Dissolved Solids	IS 3025 (P – 16) 1984 (RA 2006)	mg/L	332	2000
7	Total hardness as $CaCO_3$	2340 C APHA 22nd Edition 2012	mg/L	112	600
8	Calcium as Ca	IS 3025 (P- 40) 1991 (RA 2003)	mg/L	28.8	200
9	Magnesium as Mg	3500 Mg B APHA 22nd Edition 2012	mg/L	9.5	100
10	Calcium as $CaCO_3$	3500 Ca B APHA 22nd Edition 2012	mg/L	72.0	-
11	Magnesium as $CaCO_3$	3500 Mg B APHA 22nd Edition 2012	mg/L	39.4	-
12	Total alkalinity as $CaCO_3$	IS 3025 (P – 23) 1986 (RA – 2003)	mg/L	82.6	600
13	Chloride as Cl^-	IS 3025 (P – 32) 1988 (RA – 2003)	mg/L	78.9	1000
14	Free Residual chlorine as Cl_2	4500 Cl- B APHA 22nd Edition 2012	mg/L	BDL(D.L-0.2)	1.0
15	Sulphates as SO_4^{2-}	4500 SO_4^{2-} -E APHA 22nd Edition 2012	mg/L	27.6	400
16	Iron as Fe	3500 Fe B APHA 22nd Edition 2012	mg/L	BDL(D.L-0.01)	0.3
17	Nitrate as NO_3	IS 3025 (P – 34) 1988 (RA 2003)	mg/L	4.20	45
18	Fluoride as F	4500 F- D APHA 22nd Edition 2012	mg/L	0.36	1.5
19	Dissolved Oxygen	IS 3025 (P – 38) 1989 (RA – 2003)	mg/L	6.85	-
20	Total suspended solids	IS 3025 (P – [redacted]	mg/L	BDL(D.L-5.0)	-

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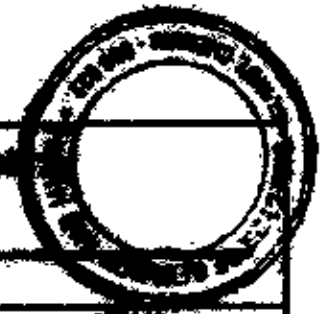

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TEST REPORT

Report No. [illegible] | Report Date [illegible]

S.No	Parameter	Protocol	Unit	Result	Limits* Permissible
21	Chemical Oxygen Demand (COD)	IS 3025 (P – 58) (2006)	mg/L	BDL(D.L-4.0)	-
22	Biochemical oxygen demand (BOD) 5 Days at 20° C	5210 - B APHA 22nd Edition 2012	mg/L	BDL(D.L-2.0)	-
23	Sodium as Na	IS 3025 (P – 45) 1993 (RA – 2003)	mg/L	26.1	-
24	Potassium as K	IS 3025 (P – 45) 1993(RA – 2003)	mg/L	11.9	-
25	Phosphorous as PO_4	IS 3025 (P – 31) – 1988 (RA 2003)	mg/L	BDL(D.L.0.05)	-
26	Oil & Grease	5520 B APHA 22nd Edition 2012	mg/L	BDL(D.L.2.0)	-
27	Aluminium as Al	IS:3025 (Part-55) 2003	mg/L	BDL(D.L.0.03)	0.03
28	Boron as B	APHA 22nd Edition -2005 4500 B - B	mg/L	BDL(D.L.0.1)	0.5
29	Copper as Cu	IS:3025 (Part-42) 1992 (RA – 2003)	mg/L	BDL(D.L.0.05)	0.05
30	Manganese as Mn	APHA 22nd Edition – 2005 3500 Mn - B	mg/L	BDL(D.L.0.05)	0.1
31	Phenolic compounds as C_6H_5OH	IS:3025 (Part-43), APHA 22nd Edition — 2005 5530 D	mg/L	Absent	0.001
32	Selenium as Se	IS:3025 (Part-56) 2003	mg/L	BDL(D.L.0.005)	0.01
33	Zinc as Zn	IS:3025 (Part-49) 1994 (RA – 2003)	mg/L	BDL(D.L.0.02)	5.0
34	Cadmium as Cd	IS:3025 (Part-41) 1992 (RA -2003)	mg/L	BDL(D.L.0.01)	0.003
35	Cyanide as CN	IS:3025 (Part-27) 2003	mg/L	Absent	0.05
36	Lead as Pb	IS:3025 (Part-47) 1994 (RA – 2003)	mg/L	BDL(D.L.0.01)	0.01
37	Mercury as Hg	IS:3025 (Part-48) 1994 (RA – 2003)	mg/L	BDL(D.L.0.0005)	0.001
38	Total Arsenic as As	IS:3025 (Part-37) 1988 (RA – 2003)	mg/L	BDL(D.L.0.01)	0.01
39	Total Chromium as Cr	APHA 22nd Edition –3111 - D	mg/L	BDL(D.L.0.05)	0.05
40	Percent Sodium	CEC Standard operating procedure	%	36.1	-

Remarks:

* Permissible limits in the absence of alternative source as per Drinking Water Specifications IS – 10500: 2012.

Note: BDL – Below Detectable limit (DL - Detectable limit).

For [illegible]

[illegible]

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[illegible], Chennai [illegible]

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e-mail : [illegible]

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[illegible]

TEST REPORT

Report No.	CEC/18/643	Report Date.	06.04.18

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMABAMYRAJA NAGAR, VIRUDHUNAGAR-DIST, TAMIL NADU-626204
Sample Description	WATER
Sample mark	MPW4-SUDDHAMADAM BOREWELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025(PART – 1)
Sample Reference No	CEC/18MMAR/W-416	Sample Received on	30.03.18
Sample Collected by	CEC	Test Commenced on	31.03.18
Sample Collected Date	30.03.18	Test Completed on	06.04.18

S.No	Parameter	Protocol	Unit	Result	Limits*
A.	MICROBIOLOGICAL EXAMINATION				
1	Total Coliforms	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample
2	Fecal Coliforms	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample
3	E.Coli	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample

Remarks :

NOTE: 1.The given water sample Total Coliform is absent.

2. The given water sample E.coli is absent.

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TEST REPORT

Report No.	CEC/18/645	Report Date.	[illegible]

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMASAMYRAJA NAGAR, VIRUDHUNAGAR-DIST, TAMIL NADU-626204
Sample Description	WATER
Sample mark	MPWS-SIVALARPATTI BOREWELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025 (PART – 1)
Sample Reference No	CEC/18/MAR/W-417	Sample Received on	30.03.18
Sample Collected by	CEC	Test Commenced on	31.03.18
Sample Collected Date	30.03.18	Test Completed on	[illegible]

S.No	Parameter	Protocol	Unit	Result	Limits* Permissible
A	**Physical Parameters**				
1	Color	IS:3025 (Part-4)	Hazen	<2.0	15.0
2	Turbidity	IS 3025 (P-10) 1984 (RA – 2002)	NTU	<1.0	5.0
3	pH at 25 °C	IS 3025 (P-11) 1983 (RA – 2002)	-	[illegible]	6.50-8.50
4	Electrical Conductivity	2510 B APHA 22nd Edition 2012	(µmhos/cm)	[illegible]	-
5	Temperature	IS 3025 (P-9) 1984 (RA – 2002)	°C	[illegible]	-
B.	**Chemical Parameters**				
6	Total Dissolved Solids	IS 3025 (P – 16) 1984 (RA 2005)	mg/L	[illegible]	2000
7	Total hardness as $CaCO_3$	2340 C APHA 22nd Edition 2012	mg/L	167	600
8	Calcium as Ca	IS 3025 (P- 40) 1991 (RA 2003)	mg/L	35.7	200
9	Magnesium as Mg	3500 Mg B APHA 22nd Edition 2012	mg/L	16.2	100
10	Calcium as $CaCO_3$	3500 Ca B APHA 22nd Edition 2012	mg/L	[illegible]	-
11	Magnesium as $CaCO_3$	3500 Mg B APHA 22nd Edition 2012	mg/L	67.6	-
12	Total alkalinity as $CaCO_3$	IS 3025 (P – 23) 1986 (RA – 2003)	mg/L	196	600
13	Chloride as Cl^-	IS 3025 (P – 32) 1986 (RA – 2003)	mg/L	[illegible]	1000
14	Free Residual chlorine as Cl^-	4500 Cl- B APHA 22nd Edition 2012	mg/L	BDL(D.L-0.2)	1
15	Sulphates as SO_4^{2-}	4500 SO_4^{2-} -E APHA 22nd Edition 2012	mg/L	35.4	400
16	Iron as Fe	3500 Fe B APHA 22nd Edition 2012	mg/L	0.10	0.3
17	Nitrate as NO_3	IS 3025 (P – 34) 1988 (RA 2003)	mg/L	3.59	45
18	Fluoride as F	4500 F- D APHA 22nd Edition 2012	mg/L	0.33	1.5
19	Dissolved Oxygen	IS 3025 (P – 38) 1989 (RA – 2009)	mg/L	[illegible]	-
20	Total suspended solids	IS 3025 (P – [illegible]) [illegible] (RA 1995)	mg/L	BDL(D.L-2.0)	-

[illegible], Chennai [illegible]
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TEST REPORT

Report No.	CEC/[illegible]	Report Date.	[illegible]

S.No	Parameter	Protocol	Unit	Result	Limits*
					Permissible
21	Chemical Oxygen Demand (COD)	IS 3025 (P – 58) (2006)	mg/L	BDL(D.L-4.0)	-
22	Biochemical oxygen demand (BOD) 5 Days at 20° C	5210 - B APHA 22nd Edition 2012	mg/L	BDL(D.L-2.0)	-
23	Sodium as Na	IS 3025 (P – 45) 1993 (RA – 2003)	mg/L	23.1	-
24	Potassium as K	IS 3025 (P – 45) 1993(RA – 2003)	mg/L	10.7	-
25	Phosphorous as PO_4	IS 3025 (P – 31) – 1988 (RA 2003)	mg/L	BDL(D.L.0.05)	-
26	Oil & Grease	5520 B APHA 22nd Edition 2012	mg/L	BDL(D.L.2.0)	-
27	Aluminium as Al	IS:3025 (Part-55) 2003	mg/L	BDL(D.L.0.03)	0.03
28	Boron as B	APHA 22nd Edition -2005 4500 B - B	mg/L	BDL(D.L.0.1)	0.5
29	Copper as Cu	IS:3025 (Part-42) 1992 (RA – 2003)	mg/L	BDL(D.L.0.02)	0.05
30	Manganese as Mn	APHA 22nd Edition – 2005 3500 Mn - B	mg/L	BDL(D.L.0.05)	0.1
31	Phenolic compounds as C_6H_5OH	IS:3025 (Part-43), APHA 22nd Edition— 2005 5530 D	mg/L	Absent	0.001
32	Selenium as Se	IS:3025 (Part-56) 2003	mg/L	BDL(D.L.0.005)	0.01
33	Zinc as Zn	IS:3025 (Part-49) 1994 (RA – 2003)	mg/L	BDL(D.L.0.02)	5
34	Cadmium as Cd	IS:3025 (Part-41) 1992 (RA -2003)	mg/L	BDL(D.L.0.01)	0.003
35	Cyanide as CN	IS:3025 (Part-27) 2003	mg/L	Absent	0.05
36	Lead as Pb	IS:3025 (Part-47) 1994 (RA – 2003)	mg/L	BDL(D.L.0.01)	0.01
37	Mercury as Hg	IS:3025 (Part-48) 1994 (RA – 2003)	mg/L	BDL(D.L.[illegible])	0.001
38	Total Arsenic as As	IS:3025 (Part-37) 1988 (RA – 2003)	mg/L	BDL(D.L.0.01)	0.01
39	Total Chromium as Cr	APHA 22nd Edition -3111 - D	mg/L	BDL(D.L.0.03)	0.05
40	Percent Sodium	CEC Standard operating procedure	%	22.9	-

Remarks:

* Permissible limits in the absence of alternative source as per Drinking Water Specifications IS – 10500: 2012.

Note: BDL – Below Detectable limit (DL - Detectable limit).

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For Creative Engineers & Consultants

S.S.RAJENDRAN

QUALITY/TECHNICAL MANAGER

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TEST REPORT

Report No.	CEC/18/345	Report Date.	06.04.18

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMASAMYRAJA NAGAR, VIRUDHUNAGAR-DIST, TAMIL NADU-626204
Sample Description	WATER
Sample mark	MPWS-SIVALARPATTI BOREWELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025(PART – 1)
Sample Reference No	CEC/18/MAR/W-417	Sample Received on	30.03.18
Sample Collected by	CEC	Test Commenced on	31.03.18
Sample Collected Date	29.03.18	Test Completed on	06.04.18

S.No	Parameter	Protocol	Unit	Result	Limits*
A.	MICROBIOLOGICAL EXAMINATION				
1	Total Coliforms	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample
2	Fescal Coliforms	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample
3	E.Coli	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample

Remarks :
NOTE: 1. The given water sample Total Coliform is absent.
2. The given water sample E.coli is absent.

For Creative Engineers & Consultants
S.S.RAJENDRAN
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TEST REPORT

Report No.	CEC/18/548	Report Date.	06.04.18

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMASAMYRAJA NAGAR, VIRUDHUNAGAR-087, TAMIL NADU-626 [illegible]
Sample Description	WATER
Sample mark	MPWS-PANDALGUDI BOREWELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025 (PART – 1)
Sample Reference No	CEC/18/MA/WT-418	Sample Received on	28.03.18
Sample Collected by	CEC	Test Commenced on	31.03.18
Sample Collected Date	26.03.18	Test Completed on	06.04.18

S.No	Parameter	Protocol	Unit	Result	Limits* Permissible
A.	Physical Parameters				
1	Color	IS:3025 (Part-4)	Hazen	<2.0	15.0
2	Turbidity	IS 3025 (P-10) 1984 (RA – 2002)	NTU	<1.0	5.0
3	pH at 25 °C	IS 3025 (P-11) 1983 (RA – 2002)	-	7.84	6.50-8.50
4	Electrical Conductivity	2510 B APHA 22nd Edition 2012	(µmhos/cm)	578	-
5	Temperature	IS 3025 (P-9) 1984 (RA – 2002)	°C	31.0	-
B.	Chemical Parameters				
6	Total Dissolved Solids	IS 3025 (P – 16) 1984 (RA 2006)	mg/L	336	2000
7	Total hardness as $CaCO_3$	2340 C APHA 22nd Edition 2012	mg/L	183	600
8	Calcium as Ca	IS 3025 (P- 40) 1991 (RA 2003)	mg/L	37.2	200
9	Magnesium as Mg	3500 Mg B APHA 22nd Edition 2012	mg/L	13.9	100
10	Calcium as $CaCO_3$	3500 Ca B APHA 22nd Edition 2012	mg/L	93.1	-
11	Magnesium as $CaCO_3$	3500 Mg B APHA 22nd Edition 2012	mg/L	55.3	-
12	Total alkalinity as $CaCO_3$	IS 3025 (P – 23) 1986 (RA – 2003)	mg/L	198	600
13	Chloride as Cl	IS 3025 (P – 32) 1988 (RA – 2003)	mg/L	85.1	1000
14	Free Residual chlorine as Cl	4500 Cl- B APHA 22nd Edition 2012	mg/L	BDL(0.1-0.2)	1.0
15	Sulphates as SO_4^{2-}	4500 SO_4^{2-} -E APHA 22nd Edition 2012	mg/L	23.6	400
16	Iron as Fe	3500 Fe B APHA 22nd Edition 2012	mg/L	0.82	0.3
17	Nitrate as NO_3	IS 3025 (P – 34) 1988 (RA 2003)	mg/L	1.97	45
18	Fluoride as F	4500 F- D APHA 22nd Edition 2012	mg/L	0.41	1.5
19	Dissolved Oxygen	IS 3025 (P – 38) 1989 (RA – 2009)	mg/L	6.88	-
20	Total suspended solids	IS 3025 (P – 17) 1984 (RA 1998)	mg/L	BDL(0.1-2.0)	-

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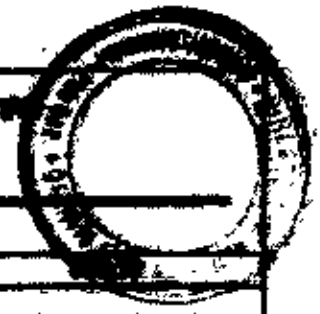
TEST REPORT



Report No.	CEC/18/[illegible]	Report Date.	

S.No	Parameter	Protocol	Unit	Result	Limits* Permissible
21	Chemical Oxygen Demand (COD)	IS 3025 (P – 58) (2006)	mg/L	BDL(D.L-4.0)	-
22	Biochemical oxygen demand (BOD) 5 Days at 20° C	5210 - B APHA 22nd Edition 2012	mg/L	BDL(D.L-2.0)	-
23	Sodium as Na	IS 3025 (P – 45) 1993 (RA – 2003)	mg/L	22.5	-
24	Potassium as K	IS 3025 (P – 45) 1993(RA – 2003)	mg/L	3.9	-
25	Phosphorous as PO_4	IS 3025 (P – 31) – 1988 (RA 2003)	mg/L	BDL(D.L.0.05)	-
26	Oil & Grease	5520 B APHA 22nd Edition 2012	mg/L	BDL(D.L.2.0)	-
27	Aluminium as Al	IS:3025 (Part-55) 2003	mg/L	BDL(D.L.0.03)	0.03
28	Boron as B	APHA 22nd Edition -2005 4500 B - B	mg/L	BDL(D.L.0.1)	0.5
29	Copper as Cu	IS:3025 (Part-42) 1992 (RA – 2003)	mg/L	BDL(D.L.0.02)	0.05
30	Manganese as Mn	APHA 22nd Edition – 2005 3500 Mn - B	mg/L	BDL(D.L.0.05)	0.1
31	Phenolic compounds as C_6H_5OH	IS:3025 (Part-43), APHA 22nd Edition – 2005 5530 D	mg/L	Absent	0.001
32	Selenium as Se	IS:3025 (Part-56) 2003	mg/L	BDL(D.L.0.005)	0.01
33	Zinc as Zn	IS:3025 (Part-49) 1994 (RA – 2003)	mg/L	BDL(D.L.0.05)	5.0
34	Cadmium as Cd	IS:3025 (Part-41) 1992 (RA -2003)	mg/L	BDL(D.L.0.01)	0.003
35	Cyanide as CN	IS:3025 (Part-27) 2003	mg/L	Absent	0.05
36	Lead as Pb	IS:3025 (Part-47) 1994 (RA – 2003)	mg/L	BDL(D.L.0.01)	0.01
37	Mercury as Hg	IS:3025 (Part-48) 1994 (RA – 2003)	mg/L	BDL(D.L.0.0005)	0.001
38	Total Arsenic as As	IS:3025 (Part-37) 1988 (RA – 2003)	mg/L	BDL(D.L.0.01)	0.01
39	Total Chromium as Cr	APHA 22nd Edition –3111 - D	mg/L	BDL(D.L.0.05)	0.05
40	Percent Sodium	CEC Standard operating procedure	%	23.5	-

Remarks:

* Permissible limits in the absence of alternative source as per Drinking Water Specifications IS – 10500: 2012.

Note: BDL – Below Detectable limit (DL - Detectable limit).

For Creative Engineers & Consultants

S.S.RAJENDRAN

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e-mail : [illegible]

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TEST REPORT

Report No.	CEC/18/[illegible]	Report Date.	[illegible]

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMASAMYRAJA NAGAR, VIRUDHUNAGAR-DIST, TAMIL NADU-[illegible]
Sample Description	WATER
Sample mark	MPW5-PANDALGUDI BOREWELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025(PART - 1)
Sample Reference No	CEC/18/MAR/W-418	Sample Received on	30.03.18
Sample Collected by	CEC	Test Commenced on	31.03.18
Sample Collected Date	30.03.18	Test Completed on	[illegible]

S.No	Parameter	Protocol	Unit	Result	Limits*
A.	MICROBIOLOGICAL EXAMINATION				
1	Total Coliforms	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample
2	Faecal Coliforms	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample
3	E.Coli	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample

Remarks :

NOTE: 1.The given water sample Total Coliform is absent.

2. The given water sample E.coli is absent.

For Creative Engineers & Consultants

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TEST REPORT

Report No.	CEC/18/[illegible]	Report Date.	[illegible]

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMASAMYRAJA NAGAR, VIRUDHUNAGAR-DIST, TAMIL NADU-626204
Sample Description	WATER
Sample mark	MPW7-PUDUR BOREWELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025 (PART – 1)
Sample Reference No	CEC/18/MAR/W-419	Sample Received on	[illegible]
Sample Collected by	CEC	Test Completed on	01.03.18
Sample Collected Date	30.03.18	Test Completed on	[illegible]

S.No	Parameter	Protocol	Unit	Result	Limits* Permissible
A.	Physical Parameters				
1	Color	IS:3025 (Part-4)	Hazen	<2.0	15.0
2	Turbidity	IS 3025 (P-10) 1984 (RA – 2002)	NTU	<1.0	5.0
3	pH at 25 °C	IS 3025 (P-11) 1983 (RA – 2002)	-	7.72	6.50-8.50
4	Electrical Conductivity	2510 B APHA 22nd Edition 2012	(µmhos/cm)	[illegible]	-
5	Temperature	IS 3025 (P-9) 1984 (RA – 2002)	°C	30.5	-
B.	Chemical Parameters				
6	Total Dissolved Solids	IS 3025 (P – 16) 1984 (RA 2006)	mg/L	300	2000
7	Total hardness as $CaCO_3$	2340 C APHA 22nd Edition 2012	mg/L	140	600
8	Calcium as Ca	IS 3025 (P- 40) 1991 (RA 2003)	mg/L	32.0	200
9	Magnesium as Mg	3500 Mg B APHA 22nd Edition 2012	mg/L	14.3	100
10	Calcium as $CaCO_3$	3500 Ca B APHA 22nd Edition 2012	mg/L	81.5	-
11	Magnesium as $CaCO_3$	3500 Mg B APHA 22nd Edition 2012	mg/L	60.7	-
12	Total alkalinity as $CaCO_3$	IS 3025 (P – 23) 1986 (RA – 2003)	mg/L	134	600
13	Chloride as Cl^-	IS 3025 (P – 32) 1988 (RA – 2003)	mg/L	113	1000
14	Free Residual chlorine as Cl^-	4500 Cl- B APHA 22nd Edition 2012	mg/L	BDL(D.L-0.2)	1.0
15	Sulphates as SO_4^{2-}	4500 SO_4^{2-} -E APHA 22nd Edition 2012	mg/L	32.9	400
16	Iron as Fe	3500 Fe B APHA 22nd Edition 2012	mg/L	0.06	0.3
17	Nitrate as NO_3	IS 3025 (P – 34) 1988 (RA 2003)	mg/L	4.52	45
18	Fluoride as F	4500 F_2 D APHA 22nd Edition 2012	mg/L	0.45	1.5
19	Dissolved Oxygen	IS 3025 (P – 38) 1989 (RA – 2009)	mg/L	6.7	-
20	Total suspended solids	IS 3025 (P – 17) 1984 (RA 1998)	mg/L	BDL(D.L-2.0)	-

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S.No	Parameter	Protocol	Unit	Result	Limits* Permissible
21	Chemical Oxygen Demand (COD)	IS 3025 (P – 58) (2006)	mg/L	BDL(D.L-4.0)	-
22	Biochemical oxygen demand (BOD) 5 Days at 20° C	5210 - B APHA 22nd Edition 2012	mg/L	BDL(D.L-2.0)	-
23	Sodium as Na	IS 3025 (P – 45) 1993 (RA – 2003)	mg/L	23.7	-
24	Potassium as K	IS 3025 (P – 45) 1993(RA – 2003)	mg/L	16.1	-
25	Phosphorous as PO_4	IS 3025 (P – 31) – 1988 (RA 2003)	mg/L	BDL(D.L.0.06)	-
26	Oil & Grease	5520 B APHA 22nd Edition 2012	mg/L	BDL(D.L.2.0)	-
27	Aluminium as Al	IS:3025 (Part-55) 2003	mg/L	BDL(D.L.0.03)	0.03
28	Boron as B	APHA 22nd Edition -2006 4500 B - B	mg/L	BDL(D.L.0.1)	0.5
29	Copper as Cu	IS:3025 (Part-42) 1992 (RA – 2003)	mg/L	BDL(D.L.0.02)	0.05
30	Manganese as Mn	APHA 22nd Edition – 2005 3500 Mn - B	mg/L	BDL(D.L.0.05)	0.1
31	Phenolic compounds as C_6H_5OH	IS:3025 (Part-43), APHA 22nd Edition – 2005 5530 D	mg/L	Absent	0.001
32	Selenium as Se	IS:3025 (Part-56) 2003	mg/L	BDL(D.L.0.005)	0.01
33	Zinc as Zn	IS:3025 (Part-49) 1994 (RA – 2003)	mg/L	BDL(D.L.0.05)	5.0
34	Cadmium as Cd	IS:3025 (Part-41) 1992 (RA -2003)	mg/L	BDL(D.L.0.01)	0.003
36	Cyanide as CN	IS:3025 (Part-27) 2003	mg/L	Absent	0.05
36	Lead as Pb	IS:3025 (Part-47) 1994 (RA – 2003)	mg/L	BDL(D.L.0.01)	0.01
37	Mercury as Hg	IS:3025 (Part-48) 1994 (RA – 2003)	mg/L	BDL(D.L.0.0005)	0.001
38	Total Arsenic as As	IS:3025 (Part-37) 1988 (RA – 2003)	mg/L	BDL(D.L.0.01)	0.01
39	Total Chromium as Cr	APHA 22nd Edition -3111 - D	mg/L	BDL(D.L.0.05)	0.05
40	Percent Sodium	CEC Standard operating procedure	%	25.2	-

Remarks:

* Permissible limits in the absence of alternative source as per Drinking Water Specifications IS – 10500: 2012.

Note: BDL – Below Detectable limit (DL - Detectable limit).

Verified

For [redacted]

Authorised Signatory

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[redacted]

CREATIVE ENGINEERS & CONSULTANTS

TEST REPORT

Report No.	CEC/18/547	Report Date.	06.04.18

Customer Name & Address	THE RAMCO CEMENTS LIMITED,RAMASAMYRAJA NAGAR, VIRUDHUNAGAR-DIST, TAMIL NADU-626204
Sample Description	WATER
Sample mark	MPW7-PUDUR BOREWELL

Customer Reference	WORK ORDER	Sampling Procedure	IS 3025(PART – 1)
Sample Reference No	CEC/18/MAR/W-419	Sample Received on	30.03.18
Sample Collected by	CEC	Test Commenced on	31.03.18
Sample Collected Date	30.03.18	Test Completed on	06.04.18

S.No	Parameter	Protocol	Unit	Result	Limits*
A	MICROBIOLOGICAL EXAMINATION				
1	Total Coliforms	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample
2	Faecal Coliforms	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample
3	E.Coli	IS:1622-1981 R.2009	MPN/10ml	<2	Shall not be detected in any 100 ml sample

Remarks :
NOTE: 1.The given water sample Total Coliform is absent.
2. The given water sample E.coli is absent.

Verified

For Creative Engineers & Consultants
S.S.RAJENDRAN
QUALITY/TECHNICAL MANAGER
Authorized Signatory

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DEPARTMENT OF GEOLOGY AND MINING

From
Thiru M.Kandan, M.Sc. M.Phil.,
Additional Director of Geology and Mining,
Department of Geology and Mining,
Guindy, Chennai - 600 032.

To
The Additional Chief Secretary to
Government,
Industries Department,
Secretariat,
Chennai - 600 009.

Lr. No. 585/MM10/2018/LK/Vnr, dated. 30.05.2018

Sir,

Sub: Mines and Minerals – Minor Mineral - Limekankar and clay (Black cotton soil) – Virudhunagar District – Aruppukottai Taluk – T.Koppuchithampatti Village - S.F.Nos.208/1, 209/1A, 209/1B etc etc – over an extent of 294.18.5 hects of patta lands – Quarry lease application preferred by Tvl. The Ramco Cements Limited – Precise area communicated by the Government - Approved Mining Plan called for – Mining Plan submitted for approval – Approval accorded – Reg.

Ref:
1) Quarry lease application preferred by Tvl The Ramco Cements Limited, dated 25.05.2017.
2) The District Collector, Virudhunagar letter Roc. No.KV1/14472/2017 dated 24.01.2018
3) The Commissioner of Geology and Mining, Chennai Lr No. 585/MM10/2018 Dated 05.02.2018.
4) Government letter No.1769/MMC2/2018 dated 12.03.2018.
5) Tvl. The Ramco Cements Limited letter dated 11.05.2018.
6) The Deputy Director, Geology and Mining, Virudhunagar letter Roc. No.KV1/478/2018 dated 18.05.2018.
7) G.O.Ms.No.09, Industries (MMC1) Department Dated 08.2.2018.
8) G.O. (D) No. 23, Industries (MMC1) Department Dated 15.02.2018

Kind attention is invited to the references cited.

2) The Government in the reference 4th cited have communicated the precise area to the applicant Tvl. The Ramco Cements Limited with a direction to produce an approved Mining Plan in respect of the area applied for grant of quarry lease for quarrying Limekankar and clay (Black cotton soil)

over an extent of 294.18.5 hects of patta lands in S.F.Nos.208/1, 209/1A, 209/1B etc of T.Koppuchithampatti Village, Aruppukottai Taluk, Virudhunagar District for a period of 10 years as per Rule 43 of Tamil Nadu Minor Mineral Concession Rules, 1959 by incorporating the conditions stipulated in the Government letter dated 12.03.2018.

3) In response to the precise area communication letter issued by the Government vide in reference 4th cited, the applicant has submitted 5 copies of draft mining plan duly prepared by the Qualified Person for approval vide in the reference 5th cited.

4) The Deputy Director of Geology and Mining, Virudhunagar in the reference 6th cited has forwarded the draft mining plan recommending for approval and stating that, the mining plan has been verified with reference to field conditions and the details such as Geological reserves, Mineable reserves, year wise production and development program have been incorporated in the draft mining plan. Further, he has reported that, the conditions imposed in the precise area communication letter have also been incorporated in the Mining Plan. He has further reported that, in the draft mining plan the total mineable reserves in the applied area is 61,54,417 tonnes of Limekankar and 46,99,729 tonnes of clay (Black cotton soil).

5) The draft mining plan submitted in respect of the precise area communication and the report of the Deputy Director of Geology and Mining, Virudhunagar have been examined with reference to the provisions of Rule 43 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the followings are observed:-

i) All the following conditions stipulated in the Government letter No. 1769/MMC2/2018 dated 12.03.2018 have been incorporated in the mining plan.

   a. The applicant company should take all precautionary measures while quarrying in the applied area without disturbing the adjacent patta lands, agricultural lands and 7.5 meters safety distance should be left all along the boundary of the area to be granted on quarry lease

as indicated in the combined FMB sketch which is duly demarcated and shown in the mining plan.

b. Approach to the intervening patta lands shall be provided and which have been demarcated and maintained them in good conditions till the expiry of the lease period.

c. The applicant company should maintain necessary safety distance 50 meters on either side of Odai, Kuttai, Oorani and vari and 10mts on either side of the cart track and the same have been demarcated and shown in the mining plan.

d. The applicant company should not disturb the High tension electric line passing through the quarry lease applied area while quarrying and should maintain 50 meters safety distance on either side of the HT power line as shown in the sketch.

e. Quarry operation should be confined within the revised area of 294.18.5 hect have been demarcated and shown in the mining plan.

ii) The boundary coordinates (GPS readings) for the entire boundary pillars of the area have been incorporated and shown in the mining plan.

iii) The total geological reserve (ROM) in the applied area is 80,90,087 tonnes of Limekankar and 61,77,885 tonnes of the clay (Black cotton soil). Mineable reserve after leaving safety distance with 100% recovery with an assumed depth of 1.25 mts is estimated as 61,54,417 tonnes of Limekankar and 46,99,729 tonnes of clay (Black cotton soil).

iv) The total quantity of production for the first 5 years has been estimated as 36,79,500 tonnes of Limekankar for a depth of 1.25mts and 2,00,000 tonnes of clay (Black cotton soil) for a depth persistence of 1.25 mtrs.

6) In the light of the above, in exercise of the powers conferred under Rule 43 (8) of Tamil Nadu Minor Mineral Concession Rules, 1959, read with G.O.Ms.No.09, Industries (MMC1) Department Dated 08.2.2018 and G.O. (D) No. 23, Industries (MMC1) Department Dated 15.02.2018, I hereby approve the mining plan in respect of Limekankar and clay (Black cotton soil) mine of Tvl. The Ramco Cements Limited subject to the following conditions:-

i) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.

ii) The approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Indian Explosives Act, 1884 (Central Act IV of 1884) and the rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.

iii) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.

iv) The applicant firm should take all precautionary measures while quarrying in the applied area without disturbing the adjacent patta lands, agricultural lands and 7.5 meters safety distance should be left all along the boundary of the area to be granted on quarry lease as indicated in the combined FMB sketch and to be maintained the safety zone till expiry of lease.

v) Approach to the intervening patta lands shall be provided and maintained them in good condition without making any disturbances to the accessibility of the pattadars.

vi) The applicant company should maintain necessary safety distance of 50mts on either side of Odai, Kuttal, Oorani and vari and 10mts on either side of cart track.

vii) The applicant company should not disturb the High Tension electric line passing through the quarry lease applied area while quarrying and should maintain 50 m safety distance on either sides of the HT Power line.

viii) The applicant is allowed to quarry limekankar and clay only. If any mineral other than limekankar and clay (black cotton soil) is discovered while quarrying, the applicant/ lessee shall not mine or dispose of such mineral and it should be intimated to Government within 30 days from the date of discovery of such new mineral(s) as per Rule 36 (3) of Tamilnadu Minor Mineral Concession Rules 1959.

ix) The applicant should make his own arrangement to form approach road.

x) No hindrance should be created to the adjoining patta land owners, similarly no hindrance should be created to the habitant who are living along the transportation path way.

xi) Quarrying operation should be confined within the revised area of 294.18.5 Hects.

xii) The applicant company should produce latest no mining lease certificate in respect of other lease areas before the execution of lease deed.

xiii) No quarrying work should be carried out in the intervening land located within the lease applied blocks. Similarly, waste material generated during quarry operation should not be dumped in the other non lease granted patta/government land area.

xiv) In respect of lands where surface right was obtained by way of registered sale deeds, patta has to be transferred and connected Chitta and other village accounts should be produced before the execution of the lease deed.

xv) As the area applied for quarry lease to quarry Limekankar and clay (black cotton soil) is more than 50.00.0Ha, necessary Environment Clearance has to be obtained from the Ministry of Environment and Forests, New Delhi.

xvi) Consent from the Tamilnadu Pollution Control Board should be obtained before the commencement of quarrying operation.

xvii) If any violation is found during quarrying operation, the penal provisions of Tamilnadu Minor Mineral Concession Rules 1959 and other rules and act in force will be attract.

xviii) The lessee shall strictly adhere to the statutory and safety requirements.

xix) Quarrying operations and production of Limekankar and clay (Black cotton soil) shall be carried out as per the approved Mining Plan.

xx) Scheme of mining along with the progressive mine closure plan shall be submitted within the time stipulated in the rules

A copy of the Approved Mining Plan is sent herewith for further necessary action.

Encl: Approved mining plan.

Additional Director of Geology and Mining

Copy to

1) Tvl. The Ramco Cements Limited,
Ramasamyraja Nagar, Virudhunagar District.
2) The District Collector, Virudhunagar (with AMP)
3) The Director General of Mines Safety,
Chennai-40 (with AMP).

The Ramco Cements Limited, Ramasamy Raja Nagar					
List of Lands Applied for Quarry Lease					
District: Virudhunagar					Village: Koppuchithampatti
Sl.	SF.No	Sub Div.No	Extent in Ha.	Classification	Patta No
1	208	1	0.385	Ryotwari Punjai	2241
2	209	1A	0.600	Ryotwari Punjai	2241
3	209	1B	0.540	Ryotwari Punjai	3389
4	209	2	0.585	Ryotwari Punjai	2870
5	209	3	0.335	Ryotwari Punjai	2870
6	210	1A	0.365	Ryotwari Punjai	2870
7	210	2	0.765	Ryotwari Punjai	2241
8	210	3A	0.560	Ryotwari Punjai	2241
9	210	3B	0.500	Ryotwari Punjai	2870
10	211	2 Part	1.695	Ryotwari Punjai	Doc.No - 183/98
11	211	3	0.125	Ryotwari Punjai	2241
12	211	4	0.130	Ryotwari Punjai	2241
13	212	1	0.510	Ryotwari Punjai	2241
14	212	2	0.285	Ryotwari Punjai	2241
15	212	3	0.245	Ryotwari Punjai	2241
16	212	4	0.250	Ryotwari Punjai	2241
17	212	5	0.430	Ryotwari Punjai	2241
18	213	2A	0.450	Ryotwari Punjai	2241
19	213	2B	0.455	Ryotwari Punjai	2241
20	213	3	0.480	Ryotwari Punjai	2241
21	213	4	0.525	Ryotwari Punjai	2241
22	213	5	0.245	Ryotwari Punjai	2241
23	214	3B	0.305	Ryotwari Punjai	2870
24	214	3C	0.260	Ryotwari Punjai	2241
25	214	3E	0.120	Ryotwari Punjai	2241
26	214	1	0.945	Ryotwari Punjai	Doc.No - 1142/2016
27	214	2	0.770	Ryotwari Punjai	Doc.No - 1263/2015
28	214	3D	0.150	Ryotwari Punjai	Doc.No - 1263/2015
29	215	2	0.325	Ryotwari Punjai	2241
30	215	3	0.385	Ryotwari Punjai	2241
31	215	4	0.695	Ryotwari Punjai	2241
32	215	8A	0.540	Ryotwari Punjai	2241
33	215	8B	0.545	Ryotwari Punjai	2241
34	216	2	0.610	Ryotwari Punjai	2241
35	216	3	0.435	Ryotwari Punjai	2870
36	216	4	0.470	Ryotwari Punjai	2241
37	216	6	0.530	Ryotwari Punjai	2241
38	217	3A	0.460	Ryotwari Punjai	2870

39	217	3B	0.380	Ryotwari Punjai	2241
40	217	2	0.880	Ryotwari Punjai	Doc.No - 975/2016
41	218	1	1.485	Ryotwari Punjai	2241
42	218	2A	0.590	Ryotwari Punjai	2241
43	218	2B	0.590	Ryotwari Punjai	2241
44	218	3A	0.120	Ryotwari Punjai	2241
45	218	3B	0.170	Ryotwari Punjai	2241
46	218	4A	0.125	Ryotwari Punjai	2241
47	218	4B	0.180	Ryotwari Punjai	2241
48	218	5A	0.100	Ryotwari Punjai	2241
49	218	5B	0.255	Ryotwari Punjai	Doc.No - 982/1999
50	218	5C	0.230	Ryotwari Punjai	2241
51	219	2	0.455	Ryotwari Punjai	2241
52	219	3	0 845	Ryotwari Punjai	2241
53	219	4	0.675	Ryotwari Punjai	2241
54	219	5	0.650	Ryotwari Punjai	2241
55	219	6	0.445	Ryotwari Punjai	3389
56	220	2	0.640	Ryotwari Punjai	2870
57	220	5	0.340	Ryotwari Punjai	2870
58	221	2	0.225	Ryotwari Punjai	2241
59	221	3	0.225	Ryotwari Punjai	2241
60	221	4	0.215	Ryotwari Punjai	2870
61	222	2	0.530	Ryotwari Punjai	3478
62	222	3A	0.300	Ryotwari Punjai	2241
63	222	4	0.895	Ryotwari Punjai	3389
64	222	5	1.070	Ryotwari Punjai	Doc.No - 50/2017
65	223	2B1	0.960	Ryotwari Punjai	2241
66	224	1	0.630	Ryotwari Punjai	2241
67	224	2	0.585	Ryotwari Punjai	3389
68	224	4	0.310	Ryotwari Punjai	2241
69	225	1A	0.200	Ryotwari Punjai	2241
70	225	1B	0.205	Ryotwari Punjai	2241
71	225	2	0.400	Ryotwari Punjai	Doc.No - 1495/2015
72	225	3	0.480	Ryotwari Punjai	2870
73	226	5	0.645	Ryotwari Punjai	2241
74	226	6	0.275	Ryotwari Punjai	2241
75	226	7	0.225	Ryotwari Punjai	2241
76	226	8	0.745	Ryotwari Punjai	2241
77	226	9	0.790	Ryotwari Punjai	3476
78	227	1	0.500	Ryotwari Punjai	2241
79	227	2	0.470	Ryotwari Punjai	2241
80	227	4	0.585	Ryotwari Punjai	Doc.No - 137/98
81	227	5 Part	0.205	Ryotwari Punjai	Doc.No - 1141/2016
82	227	3	1.110	Ryotwari Punjai	2241
83	228	3A1	1.380	Ryotwari Punjai	

84	228	3B	0.810	Ryotwari Punjai	3476
85	228	5	0.650	Ryotwari Punjai	2241
86	229	1B	0.330	Ryotwari Punjai	2870
87	229	1C	0.330	Ryotwari Punjai	2870
88	229	2	0.815	Ryotwari Punjai	2241
89	229	3A	0.745	Ryotwari Punjai	2241
90	229	3B	0.745	Ryotwari Punjai	2241
91	229	3C	0.350	Ryotwari Punjai	2241
92	229	3D	0.145	Ryotwari Punjai	3479
93	229	3E	0.145	Ryotwari Punjai	2241
94	232	1	0.590	Ryotwari Punjai	2870
95	232	3	0.585	Ryotwari Punjai	2870
96	233	2	0.540	Ryotwari Punjai	2241
97	233	3A	0.290	Ryotwari Punjai	2241
98	233	3B	0.250	Ryotwari Punjai	2241
99	233	3C	0.340	Ryotwari Punjai	2241
100	233	3D	0.270	Ryotwari Punjai	2241
101	233	1	0.550	Ryotwari Punjai	Doc.No - 457/2015
102	234	2	0.585	Ryotwari Punjai	2241
103	234	3A	0.610	Ryotwari Punjai	2241
104	234	3B	0.620	Ryotwari Punjai	2241
105	235	2A	0.310	Ryotwari Punjai	3476
106	235	2B	0.300	Ryotwari Punjai	2241
107	235	4	0.585	Ryotwari Punjai	2241
108	235	5	0.640	Ryotwari Punjai	2241
109	235	3	0.640	Ryotwari Punjai	Doc.No - 1056/99
110	246	2	0.430	Ryotwari Punjai	2241
111	246	3A	0.105	Ryotwari Punjai	2241
112	246	3B	0.200	Ryotwari Punjai	2241
113	246	3C Part	0.110	Ryotwari Punjai	Doc.No - 372/96
114	246	4	0.500	Ryotwari Punjai	2241
115	246	5	1.255	Ryotwari Punjai	3389
116	247	1B	0.225	Ryotwari Punjai	2241
117	247	2	0.430	Ryotwari Punjai	2241
118	247	4A	0.290	Ryotwari Punjai	2241
119	247	4B	0.270	Ryotwari Punjai	2241
120	247	4C	0.280	Ryotwari Punjai	2241
121	247	7A	0.670	Ryotwari Punjai	2241
122	247	7B	0.175	Ryotwari Punjai	2241
123	248	1	0.275	Ryotwari Punjai	2241
124	248	2	0.545	Ryotwari Punjai	2870
125	248	3	0.370	Ryotwari Punjai	2241
126	248	4	0.285	Ryotwari Punjai	2870
127	248	5A	0.210	Ryotwari Punjai	2241

128	248	5B	0.200	Ryotwari Punjai	2241
129	248	6	0.305	Ryotwari Punjai	2870
130	248	7	2.875	Ryotwari Punjai	2870
131	253	4	0.460	Ryotwari Punjai	2870
132	259	1	0.280	Ryotwari Punjai	2870
133	259	2	0.460	Ryotwari Punjai	2241
134	259	6	1.410	Ryotwari Punjai	2870
135	259	7	1.380	Ryotwari Punjai	2241
136	259	5	1.145	Ryotwari Punjai	Doc.No - 1117/1999
137	260	1	0.690	Ryotwari Punjai	2241
138	260	2	1.270	Ryotwari Punjai	2870
139	261	1	1.015	Ryotwari Punjai	2241
140	261	2	1.000	Ryotwari Punjai	2241
141	261	3A	0.360	Ryotwari Punjai	2241
142	261	5	1.255	Ryotwari Punjai	2241
143	261	4	0.520	Ryotwari Punjai	Doc.No - 940/1999
144	262	1	0.745	Ryotwari Punjai	2870
145	262	2A	0.710	Ryotwari Punjai	2241
146	262	2B	0.650	Ryotwari Punjai	2241
147	262	3	0.470	Ryotwari Punjai	2241
148	262	4	0.500	Ryotwari Punjai	2241
149	262	5	0.240	Ryotwari Punjai	2241
150	262	6	0.290	Ryotwari Punjai	2241
151	263	1	1.175	Ryotwari Punjai	2241
152	263	2A	0.420	Ryotwari Punjai	2241
153	263	2B	0.360	Ryotwari Punjai	2241
154	263	2C	1.840	Ryotwari Punjai	2241
155	264	1	0.140	Ryotwari Punjai	2241
156	264	2	0.090	Ryotwari Punjai	2870
157	264	4	1.365	Ryotwari Punjai	2241
158	264	7	0.530	Ryotwari Punjai	2241
159	264	8	0.760	Ryotwari Punjai	2241
160	264	9	0.175	Ryotwari Punjai	2241
161	265	1	1.175	Ryotwari Punjai	2241
162	265	2	1.195	Ryotwari Punjai	2241
163	265	3	1.165	Ryotwari Punjai	3389
164	265	4	0.540	Ryotwari Punjai	2241
165	266	1A	0.660	Ryotwari Punjai	2241
166	266	3A	0.590	Ryotwari Punjai	2241
167	266	3B	0.645	Ryotwari Punjai	2241
168	266	4	0.360	Ryotwari Punjai	2241
169	267	4	0.370	Ryotwari Punjai	2241
170	267	7	0.355	Ryotwari Punjai	2241
171	268	1A	0.225	Ryotwari Punjai	2241
172	268	1B	0.230	Ryotwari Punjai	2241

173	268	1C	0.225	Ryotwari Punjai	2241
174	268	1D	0.440	Ryotwari Punjai	2241
175	268	1E	0.460	Ryotwari Punjai	2241
176	268	1F	0.450	Ryotwari Punjai	2241
177	268	2	0.705	Ryotwari Punjai	2241
178	268	3	0.690	Ryotwari Punjai	2241
179	269	1A	0.470	Ryotwari Punjai	2241
180	269	3	0.570	Ryotwari Punjai	2241
181	269	4A	0.295	Ryotwari Punjai	2241
182	269	4B	0.280	Ryotwari Punjai	2241
183	269	4C	0.045	Ryotwari Punjai	2870
184	269	5	0.355	Ryotwari Punjai	2241
185	269	6	0.545	Ryotwari Punjai	2870
186	269	7	0.470	Ryotwari Punjai	2241
187	269	8	0.210	Ryotwari Punjai	2241
188	270	2	0.415	Ryotwari Punjai	2241
189	270	3A	0.700	Ryotwari Punjai	2241
190	270	3B	0.180	Ryotwari Punjai	2241
191	270	4A	0.930	Ryotwari Punjai	2241
192	270	4B	0.435	Ryotwari Punjai	2241
193	270	5	0.600	Ryotwari Punjai	3389
194	271	1	0.500	Ryotwari Punjai	2241
195	271	2A	1.030	Ryotwari Punjai	2241
196	271	2B	0.280	Ryotwari Punjai	2241
197	272	1	0.415	Ryotwari Punjai	2241
198	272	2	0.390	Ryotwari Punjai	2241
199	272	3	0.850	Ryotwari Punjai	2241
200	272	4A	0.770	Ryotwari Punjai	2241
201	272	4B	0.220	Ryotwari Punjai	2241
202	272	5	0.765	Ryotwari Punjai	2241
203	273	1B	0.340	Ryotwari Punjai	2241
204	273	3	0.625	Ryotwari Punjai	2241
205	273	4	0.795	Ryotwari Punjai	2241
206	273	5	0.440	Ryotwari Punjai	3389
207	273	6	0.415	Ryotwari Punjai	2241
208	273	1A	0.340	Ryotwari Punjai	Doc.No - 1122/1999
209	274	2A	0.615	Ryotwari Punjai	2241
210	274	2B	0.705	Ryotwari Punjai	2241
211	274	3	0.310	Ryotwari Punjai	2241
212	274	4	0.355	Ryotwari Punjai	2241
213	274	5	0.710	Ryotwari Punjai	2870
214	274	6	0.650	Ryotwari Punjai	2870
215	275	1	0.650	Ryotwari Punjai	2241
216	275	2	1.010	Ryotwari Punjai	2241
217	275	4A	0.560	Ryotwari Punjai	2241

218	275	5A	0.440	Ryotwari Punjai	2241
219	276	1A	0.120	Ryotwari Punjai	2241
220	276	1B	0.125	Ryotwari Punjai	2241
221	276	2	1.010	Ryotwari Punjai	2870
222	276	3	0.680	Ryotwari Punjai	2241
223	276	4	0.745	Ryotwari Punjai	2241
224	276	5	0.975	Ryotwari Punjai	2241
225	277	1A	0.840	Ryotwari Punjai	2241
226	277	1B	0.385	Ryotwari Punjai	2241
227	277	1C	0.355	Ryotwari Punjai	2241
228	277	2	0.890	Ryotwari Punjai	2241
229	277	3	0.840	Ryotwari Punjai	2241
230	278	1A	0.475	Ryotwari Punjai	2241
231	278	1B	0.200	Ryotwari Punjai	2241
232	278	2	0.290	Ryotwari Punjai	2241
233	278	3	0.735	Ryotwari Punjai	2241
234	278	4	0.110	Ryotwari Punjai	2241
235	278	6	1.000	Ryotwari Punjai	2241
236	279	1D	0.580	Ryotwari Punjai	2241
237	280	1	0.415	Ryotwari Punjai	2241
238	280	2	0.475	Ryotwari Punjai	2870
239	280	3	0 845	Ryotwari Punjai	2870
240	280	4	0.970	Ryotwari Punjai	2241
241	281	1A	0.580	Ryotwari Punjai	3389
242	281	1B	0.510	Ryotwari Punjai	2241
243	281	2A	0.760	Ryotwari Punjai	2241
244	281	2B	0.820	Ryotwari Punjai	2241
245	281	2C	0.550	Ryotwari Punjai	2241
246	282	4	0.965	Ryotwari Punjai	2241
247	283	1A	0.750	Ryotwari Punjai	2241
248	283	1B	0.630	Ryotwari Punjai	2241
249	283	2A	0.280	Ryotwari Punjai	2241
250	283	2B	1.430	Ryotwari Punjai	2241
251	287	1A	0.630	Ryotwari Punjai	2241
252	287	1B	0.310	Ryotwari Punjai	2241
253	287	1C	0.380	Ryotwari Punjai	2241
254	287	2	1.480	Ryotwari Punjai	2241
255	288	2B	0.210	Ryotwari Punjai	2241
256	288	3A	1.360	Ryotwari Punjai	2241
257	288	3B	1.160	Ryotwari Punjai	2241
258	290		2.955	Ryotwari Punjai	3476
259	291	2A	0.355	Ryotwari Punjai	2241
260	291	2B	0.445	Ryotwari Punjai	2241
261	291	3	0.840	Ryotwari Punjai	2241
262	291	4	1.410	Ryotwari Punjai	2241

263	292	1	0.860	Ryotwari Punjai	2241
264	292	2	0.855	Ryotwari Punjai	2241
265	292	3	0.810	Ryotwari Punjai	2241
266	292	4	0.810	Ryotwari Punjai	2241
267	293	3A	0.705	Ryotwari Punjai	2241
268	293	3B	0.425	Ryotwari Punjai	2241
269	293	4	0.390	Ryotwari Punjai	2241
270	293	2B	0.445	Ryotwari Punjai	Doc.No - 1138/2016
271	293	2C	0.420	Ryotwari Punjai	Doc.No - 1136/2016
272	294	2	1.115	Ryotwari Punjai	2241
273	294	3	0.370	Ryotwari Punjai	2241
274	294	4	0.320	Ryotwari Punjai	2241
275	294	5	0.465	Ryotwari Punjai	2241
276	295	2	2.895	Ryotwari Punjai	2241
277	296	2	1.475	Ryotwari Punjai	2241
278	296	3	0.980	Ryotwari Punjai	2241
279	296	4	0.880	Ryotwari Punjai	2241
280	297	2	3.065	Ryotwari Punjai	2241
281	298	2	0.790	Ryotwari Punjai	2870
282	298	3A	0.600	Ryotwari Punjai	2241
283	298	3B	0.600	Ryotwari Punjai	2241
284	298	4	0.060	Ryotwari Punjai	2241
285	298	6	0.330	Ryotwari Punjai	2241
286	298	7	0.815	Ryotwari Punjai	2870
287	546	2	0.730	Ryotwari Punjai	2241
288	546	3	0.625	Ryotwari Punjai	2241
289	546	5	0.395	Ryotwari Punjai	2241
290	546	6	1.800	Ryotwari Punjai	2241
291	546	1	0.720	Ryotwari Punjai	Doc.No - 1039/1999
292	547	1	1.200	Ryotwari Punjai	2241
293	547	2	0.455	Ryotwari Punjai	2241
294	547	5	0.880	Ryotwari Punjai	2241
295	547	6	0.940	Ryotwari Punjai	2241
296	554	2 Part	0.260	Ryotwari Punjai	Doc.No - 728/96,730/96
297	554	3	0.945	Ryotwari Punjai	2241
298	554	4	0.485	Ryotwari Punjai	2241
299	554	6	0.395	Ryotwari Punjai	2241
300	554	7	1.770	Ryotwari Punjai	2241
301	554	5	0.415	Ryotwari Punjai	Doc.No - 1039/1999
302	555	1	2.105	Ryotwari Punjai	2870
303	555	2A	0.625	Ryotwari Punjai	3389
304	555	2B	0.620	Ryotwari Punjai	2241
305	555	3	0.605	Ryotwari Punjai	2241
306	555	4	0.635	Ryotwari Punjai	2241
307	556	1	1.880	Ryotwari Punjai	2241

308	556	2	1.100	Ryotwari Punjai	2241
309	556	3	0.945	Ryotwari Punjai	2241
310	557	1	0.400	Ryotwari Punjai	2241
311	557	2	1.765	Ryotwari Punjai	2241
312	558	1	0.885	Ryotwari Punjai	2241
313	558	2	0.620	Ryotwari Punjai	2241
314	558	3	1.490	Ryotwari Punjai	2870
315	558	4B	0.345	Ryotwari Punjai	2870
316	558	6	0.390	Ryotwari Punjai	2241
317	559	1	1.005	Ryotwari Punjai	2241
318	559	2	2.815	Ryotwari Punjai	2241
319	560	1	1.480	Ryotwari Punjai	2241
320	560	2A	0.740	Ryotwari Punjai	2241
321	560	2B	0.735	Ryotwari Punjai	2870
322	561	1	1.070	Ryotwari Punjai	2241
323	561	2	0.970	Ryotwari Punjai	2241
324	561	3A	0.630	Ryotwari Punjai	2241
325	561	3B	0.335	Ryotwari Punjai	Doc.No - 1139/2016
326	562	1	1.095	Ryotwari Punjai	2241
327	562	2	0.970	Ryotwari Punjai	3389
328	562	3	0.930	Ryotwari Punjai	2870
329	562	4	0.420	Ryotwari Punjai	2241
330	562	5	0.485	Ryotwari Punjai	2241
331	563	2	0.780	Ryotwari Punjai	2241
332	563	3	1.205	Ryotwari Punjai	2241
333	563	1	0.800	Ryotwari Punjai	Doc.No - 972/2016
334	564	1	1.370	Ryotwari Punjai	2241
335	564	2	1.410	Ryotwari Punjai	Doc.No - 973/2016
336	565	1A	0.380	Ryotwari Punjai	2870
337	565	1B	0.335	Ryotwari Punjai	2870
338	565	1C	0.670	Ryotwari Punjai	2870
339	565	2	0.980	Ryotwari Punjai	2241
340	565	1D	0.300	Ryotwari Punjai	Doc.No - 1140/2016
341	566	1	0.980	Ryotwari Punjai	2241
342	566	2	0.900	Ryotwari Punjai	3476
343	566	3	0.870	Ryotwari Punjai	Doc.No - 1017/99, 1107/99
344	567	1	1.845	Ryotwari Punjai	2241
345	567	2A	0.555	Ryotwari Punjai	2870
346	567	3	0.905	Ryotwari Punjai	2241
347	568	1A	0.685	Ryotwari Punjai	2241
348	568	1B	0.730	Ryotwari Punjai	2241
349	568	1C	0.715	Ryotwari Punjai	2241
350	568	2	0.860	Ryotwari Punjai	2870
351	569	3	0.885	Ryotwari Punjai	2241
352	569	5A	0.845	Ryotwari Punjai	2241

353	571	1	2.125	Ryotwari Punjai	2241
354	572	1	2.320	Ryotwari Punjai	2241
355	572	2	1.595	Ryotwari Punjai	2241
356	573	1	1.050	Ryotwari Punjai	2241
357	573	2A	0.500	Ryotwari Punjai	2241
358	573	3A	0.810	Ryotwari Punjai	2241
359	573	3B	1.500	Ryotwari Punjai	2241
360	574	1	1.495	Ryotwari Punjai	2241
361	574	2A1	2.150	Ryotwari Punjai	2241
362	574	2A2	0.770	Ryotwari Punjai	2241
363	574	2B	0.505	Ryotwari Punjai	2241
364	574	2C	0.505	Ryotwari Punjai	2870
365	575	1	0.545	Ryotwari Punjai	2241
366	575	2	1.650	Ryotwari Punjai	2241
367	575	3A	0.540	Ryotwari Punjai	2870
368	575	3B	1.890	Ryotwari Punjai	2241
369	577	2	1.385	Ryotwari Punjai	2241
370	578	1A	1.075	Ryotwari Punjai	2241
371	578	1B	0.720	Ryotwari Punjai	2241
372	578	2A	0.415	Ryotwari Punjai	2241
373	578	2B	0.415	Ryotwari Punjai	2241
374	579	1	0.820	Ryotwari Punjai	2241
375	581	1A	0.240	Ryotwari Punjai	2241
376	581	2	0.430	Ryotwari Punjai	2241
377	583	4	0.515	Ryotwari Punjai	2241
378	583	6	1.020	Ryotwari Punjai	2241
379	584	1	1.040	Ryotwari Punjai	2241
380	584	2	0.455	Ryotwari Punjai	2241
381	584	3	0.490	Ryotwari Punjai	2241
382	584	5	0.985	Ryotwari Punjai	2241
383	584	6	0.840	Ryotwari Punjai	2241
384	585	1A	0.390	Ryotwari Punjai	2241
385	585	1B	0.470	Ryotwari Punjai	2241
386	585	2A	0.490	Ryotwari Punjai	2241
387	585	3	1.725	Ryotwari Punjai	2241
388	586	3	0.955	Ryotwari Punjai	3476
389	586	1	0.480	Ryotwari Punjai	Doc.No - 984/2015
390	587	1	1.470	Ryotwari Punjai	Doc.No - 2870
391	587	2B	0.575	Ryotwari Punjai	Doc.No - 974/2016
392	589	2	1.435	Ryotwari Punjai	2241
393	592	1	1.445	Ryotwari Punjai	2241
394	592	2	1.205	Ryotwari Punjai	2870
395	603	2	1.765	Ryotwari Punjai	2870
396	605	1	1.855	Ryotwari Punjai	2241
397	605	2A	0.815	Ryotwari Punjai	2241

398	605	2B	0.850	Ryotwari Punjai	2241
399	606	1	1.215	Ryotwari Punjai	2241
400	606	2	1.215	Ryotwari Punjai	3389
401	606	3	1.375	Ryotwari Punjai	2241
402	607	2	1.230	Ryotwari Punjai	2870
403	607	4	0.350	Ryotwari Punjai	2241
404	607	5	0.770	Ryotwari Punjai	2241
405	607	6	0.475	Ryotwari Punjai	2241
406	608	1	0.275	Ryotwari Punjai	2241
407	608	2	1.295	Ryotwari Punjai	2241
408	609	6	0.595	Ryotwari Punjai	2241
409	609	7	0.810	Ryotwari Punjai	2241
410	610	1	0.660	Ryotwari Punjai	3476
411	610	2	0.680	Ryotwari Punjai	2870
412	610	3A	1.030	Ryotwari Punjai	2870
413	610	3B	0.960	Ryotwari Punjai	2241
414	610	4	1.835	Ryotwari Punjai	2241
415	611	2	0.480	Ryotwari Punjai	3476
416	611	3A	0.300	Ryotwari Punjai	2241
417	611	4	0.600	Ryotwari Punjai	2241
418	611	5	0.540	Ryotwari Punjai	3476
419	612	1	1.180	Ryotwari Punjai	2241
420	612	2	1.155	Ryotwari Punjai	3389
TOTAL			**294.185**		

Additional Director of Geology and Mining.